

# AT-SEA MONITORING PROGRAM MANUAL



U.S. Department of Commerce/NOAA  
National Marine Fisheries Service  
Northeast Fisheries Science Center  
Fisheries Sampling Branch  
166 Water Street  
Woods Hole, MA 02543



**NORTHEAST  
FISHERIES AT-SEA MONITORING  
PROGRAM MANUAL**

**3rd EDITION**

**JUNE, 2011**

## PAPER REDUCTION ACT STATEMENT

Information collected through the At-sea Monitoring Program will be used to: (1) monitor catch and bycatch; (2) understand the population status and trends of fish stocks and protected species, as well as the interactions between them; (3) determine the quantity and distribution of net benefits derived from living marine resources; (4) predict the biological, ecological, and economic impacts of existing management actions and proposed management options; and (5) ensure that the At-sea Monitoring Program can safely and efficiently collect the information required for the previous four uses. In particular, the At-sea Monitoring Program provides information that is used in analyses that support the conservation and management of living marine resources and that are required under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act (RFA), Executive Order 12866 (EO 12866), and other applicable law. Most of the information collected by at-sea monitors is obtained through "direct observation by an employee or agent of the sponsoring agency or through non-standardized oral communication in connection with such direct observations".

Under the Paperwork Reduction Act (PRA) regulations at 5 C.F.R. 1320.3(h) (3), facts or opinions obtained through such observations and communications are not considered to be "information" subject to the PRA. The public reporting burden for responding to the questions that at-sea monitors ask and that are subject to the PRA is estimated to average 74 minutes per trip, including the time for hearing and understanding the questions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. However, depending on the fishery and trip duration, the public reporting burden can range from 4-250 minutes per trip.

Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: Amy Van Atten, National Marine Fisheries Service, Northeast Fisheries Science Center, Northeast Fisheries At-sea Monitoring Program, 166 Water Street, Woods Hole, MA 02543-1026. Providing the requested information is mandatory under regulations at 50 C.F.R. 600.746 for the safety questions and at 50 C.F.R. §600.725, §600.746, §648.11; 16 U.S.C. 1387 §118; 16 U.S.C. 1531 *et seq.*, 16 U.S.C. 742a §222 for the other questions. All information collected by at-sea monitors will be kept confidential as required under Section 402(b) of the MSA (18 U.S.C. 1881a (b)) and regulations at 50 C.F.R. Part 600, Subpart E. Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number. This is an approved information collection under OMB Control No. 0648-0593 through 09/30/2012.

# TABLE OF CONTENTS

<b>PAPER REDUCTION ACT STATEMENT</b>	<b>ii</b>
<b>TABLE OF CONTENTS</b>	<b>iii</b>
<b>INTRODUCTION TO AT-SEA MONITORING</b>	<b>1-12</b>
<b>iPAQ ELECTRONIC REPORTING</b>	<b>13-23</b>
<b>GENERAL iPAQ OVERVIEW</b>	13
Basic iPAQ Operations	13
Battery Power	20
Tips on Using SectorASM Program	20
Deleting Zip Files	22
Deleting Trip Data	23
CalPos: Statistical Area and LORAN Conversion	23
<b>REPORTING SectorASM DATA</b>	<b>24-96</b>
<b>Trip Tab</b>	24
More Trip Tab	27
Common Warnings and Errors	29
<b>Gear Tab</b>	<b>31-56</b>
Trawl Gear	31
Common Warnings and Errors	39
Gillnet Gear	41
Common Warnings and Errors	45
Longline Gear	48
Common Warnings and Errors	51
Multi Gear	53
Same Gear Category	53
Different Gear Categories	55
<b>Haul Tab</b>	<b>57-73</b>
Haul Begin	60
Haul End	61
Haul Species	62
Haul Length	64
Common Warnings and Errors	67
Gillnet More Haul Tab	70
Longline More Haul Tab	72
<b>Incidental Take Tab</b>	<b>74-80</b>
Common Warnings and Errors	79
<b>Individual Animal Log (IAL) Tab</b>	<b>81-88</b>
Common Warnings and Errors	86

<b>Cost Tab</b>	<b>89-92</b>
Common Warnings and Errors	91
<b>Trip End Tab</b>	<b>93-96</b>
Common Warnings and Errors	95
<b>CREATING A ZIP FILE</b>	
<b>97-99</b>	
<b>UPLOADING DATA</b>	
<b>100-106</b>	
PC Users	100
Wireless Users	101
Uploading Data Instructions	103
<b>DIGITAL CAMERA PROTOCOLS</b>	
<b>107-130</b>	
Confidentiality	107
General Camera Use	107
Photograph Protocols	107
Incidental Takes: Marine Mammals	109
Incidental Takes: Sea Turtles	114
Incidental Takes: Sea Birds	118
Individual Animals: Sharks	120
Individual Animals: Sturgeon	122
Uploading Pictures	124
Naming Convention with Examples	125
Transferring Photos to the iPAQ	129
Accessing Photos on the iPAQ	130
Renaming Photo Files	130
<b>BIOLOGICAL SAMPLING PROTOCOLS</b>	
<b>131-143</b>	
<b>INCIDENTAL TAKE SAMPLING PROTOCOLS</b>	
<b>144-170</b>	
Marine Mammals	144
Sea Turtles	146
Resuscitation Guidelines	150
Quick Reference Sea Turtle ID Guide	153
Turtle Stranding Contact Information	157
Sea Birds	158
Animal Condition Descriptions	161
Dead, Fresh	161
Dead, Moderate	165
Dead, Severely Decomposed	168
<b>PAPER LOGS and REPORTING PROTOCOLS</b>	
<b>171-348</b>	
<b>ORDER OF PAPER LOGS</b>	171
<b>HEADER INSTRUCTIONS</b>	
<b>172</b>	

<b>Marine Safety Information</b>		<b>174-187</b>
<b>SAFETY CHECKLIST</b>		
Safety Checklist Instructions		188
Safety Checklist with Field Numbers		193
Safety Checklist Example		195
Safety Checklist		197
<b>EPIRB VERIFICATION Inspection Card (EVIC)</b>		
EVIC Instructions		199
EVIC Card		200
<b>TRIP LOG (includes Trip, More Trip, Cost, and Trip End)</b>		
Trip Log Instructions		201
Trip Log with Field Numbers		202
Trip Log Example		204
Trip Log		206
<b>Gillnet Gear Information and Background</b>		<b>208-212</b>
<b>GILLNET GEAR LOG</b>		
Gillnet Gear Log Instructions		213
Gillnet Gear Log with Field Numbers		216
Gillnet Gear Log Example		217
Gillnet Gear Log		218
<b>GILLNET HAUL LOG</b>		
Gillnet Haul Log Instructions		219
Gillnet Haul Log with Field Numbers		226
Gillnet Haul Log Example		227
Gillnet Haul Log		228
<b>Trawl Gear Information and Background</b>		<b>229-232</b>
<b>TRAWL GEAR LOG</b>		
Trawl Gear Log Instructions		233
Trawl Gear Log with Field Numbers		241
Trawl Gear Log Example		242
Trawl Gear Log		243
<b>TRAWL HAUL LOG</b>		
Trawl Haul Log Instructions		244
Trawl Haul Log with Field Numbers		251
Trawl Haul Log Example		252
Trawl Haul Log		253

---

<b>Longline Gear Information and Background</b>	<b>254-257</b>
---	----------------

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**LONGLINE GEAR LOG**

Longline Gear Log Instructions	258
Longline Gear Log with Field Numbers	261
Longline Gear Log Example	262
Longline Gear Log	263

**LONGLINE HAUL LOG**

Longline Haul Log Instructions	270
Longline Haul Log with Field Numbers	271
Longline Haul Log Example	272
Longline Haul Log	273

**INDIVIDUAL ANIMAL LOG**

Individual Animal Log Instructions	274
Individual Animal Log with Field Numbers	279
Individual Animal Log Example	280
Individual Animal Log	281

---

<b>Catch Estimation Information and Background</b>	<b>282-310</b>
--	----------------

Catch Estimation Document Terms	283
Calculations	285
Guidelines and Methods	286
Methodologies	288
Subsamples	290
Guidelines for Working the Catch	294
Calculating using Volume-to-Volume	296
Special Scenarios	300
Conveyor Belts	300
Deckloading	302
Flooding the Fish Bin	302
Overflowing Catches	303
Potential Bias: Problems and Solutions	306
Random Sampling Guidelines	307
Area and Volume Calculations (cheatsheet)	309

---

**CATCH ESTIMATION WORKSHEET**

Catch Estimation Worksheet Instructions	311
Catch Estimation with Field Numbers	317
Catch Estimation Example	318
Catch Estimation Worksheet	319
Photographing Protocols for Catch Estimation Worksheets	320

---



**LENGTH FREQUENCY LOG**

Length Frequency Log Instructions	323
Length Frequency Log with Field Numbers	325
Length Frequency Log Example	326
Length Frequency Log	327

**INCIDENTAL TAKE LOG**

Incidental Take Log Instructions	328
Incidental Take Log with Field Numbers	333
Incidental Take Log Example	335
Incidental Take Log	336

**FISHERMEN'S COMMENT LOG**

Fishermen's Comment Log Instructions	338
Fishermen's Comment Log with Field Numbers	340
Fishermen's Comment Log Example	341
Fishermen's Comment Log	342

**DISCARD LOG**

Discard Log Instructions	343
Discard Log with Field Numbers	346
Discard Log Example	347
Discard Log	348

**APPENDICES**

<b>A. Species Names and Corresponding Tabs/Logs</b>	<b>A. 1</b>
<b>B. Fish Disposition Codes</b>	<b>A. 16</b>
<b>C. Port List</b>	<b>A. 18</b>
<b>D. Gear Codes and Gear Names</b>	<b>A. 32</b>
<b>E. Gear Conditions Codes and Gear Condition Description</b>	<b>A. 33</b>
<b>F. Charts</b>	
<b>1. Overview of the Northeast Statistical Areas</b>	<b>A. 35</b>
<b>2. Chart Area of the Gulf of Maine</b>	<b>A. 36</b>
<b>3. Chart Area of Georges Bank</b>	<b>A. 37</b>
<b>4. Chart Area for US/CAN Area and SAPs</b>	<b>A. 38</b>
<b>5. Chart Area of Southern New England</b>	<b>A. 39</b>
<b>G. At-sea Monitor/Trip Identifier Instructions</b>	<b>A. 40</b>

<b>H. Vernier Caliper Instructions</b>	<b>A. 41</b>
<b>I. Net Name and Net Type</b>	<b>A. 43</b>
<b>J. Dealer List</b>	<b>A. 47</b>
<b>K. Weather Conditions and Beaufort Force Wind Scale</b>	<b>A. 64</b>
<b>L. Field Diary</b>	<b>A. 67</b>
<b>M. General Conversions</b>	<b>A. 70</b>
<b>N. At-Sea Monitoring Program Standards</b>	<b>A. 71</b>
<b>O. Species Verification Program</b>	<b>A. 80</b>
<b>Memorandum to At-sea Monitors</b>	
<b>P. Mandatory Gear Requirements and Maintenance</b>	<b>A. 82</b>
<b>Q. Alternate Species Names</b>	<b>A. 86</b>
<b>Glossary</b>	<b>A. 93</b>



### **Introduction to At-Sea Monitoring**

The Fisheries Sampling Branch collects processes and manages data and biological samples obtained during commercial fishing trips. These data are collected by trained observers and at-sea monitors for scientific and fisheries management purposes. Data from observed trips are required under many of the region's fishery management plans, and for some fisheries by federal laws and statutes including the Northeast Multispecies Fishery Management Plan, Magnuson-Stevens Fishery Conservation and Management Act, Marine Mammal Protection Act, the Endangered Species Act, the and the Sustainable Fisheries Act.

#### **Why Sample Catches at Sea?**

Landings from commercial fishing trips have been sampled in Northeast ports for more than 100 years. However, identifying the species and numbers of fish landed and sold in our ports is only part of the story. Managing fisheries and the effects of fishing on the ecosystem requires information not only about what is landed, but also about what is not landed. There is a need to know when and where and in some cases, how these fish are caught. The objectives of the Fisheries Sampling Branch are to collect operational fishing data, biological data and economic data from the various fisheries. Additionally, in support of the Marine Mammal Protection Act and the Endangered Species Act, observers and at-sea monitors document interactions with protected and endangered species to ensure continued survival of these animals.

#### **Estimating Discard of Fishery Resources**

Catches brought aboard fishing vessels are typically sorted by marketable species and sizes, and the rest of the catch is thrown back, or discarded. Discarding may occur for a number of reasons; fish may be smaller or larger than the allowable legal size, may be of little market value or species that can't be legally possessed (e.g., marine mammals and protected fish species), or may be marketable fish for which the vessel has already caught its legal limit for the trip. To get an accurate picture of the status of a fish stock, and the influence of fishing on the ecosystem, it is

important to gather biological information about what and how much is removed from the ecosystem through landings, and what is discarded.

Accompanying fishermen on regular commercial trips is the most reliable method of acquiring data on the quantity and species composition of discards and documenting the specific reasons why discarding occurs. With these data, it is possible to better understand the effects of fishing on the ecosystem as a whole and to determine the fishing mortality for a stock, and to better estimate the potential biological and economic benefits of changes in fisheries management methods, such as minimum legal sizes and trip quotas for individual species.

At-sea monitors collect data that are used to track the Annual Catch Entitlements (ACEs) allocated to the sectors established under Amendment 16, as of May 1, 2010.

### **Getting Biological Information About the Catch**

Biological information forms the basis of what we know about fish population changes over time. Examples include weights and lengths of individual fish. These data are collected annually from fish collected during scientific surveys conducted by the Northeast Fisheries Science Center. Information about these scientific surveys can be seen at the NEFSC [Ecosystems Survey Branch](#) website. These data are collected independently of the commercial fisheries and also through the Northeast Fisheries Observer Program (NEFOP) and the Northeast Fisheries At-sea Monitoring Program from the discarded as well as retained portion of a vessel's catch. The resulting data allow scientists to characterize catch by species, size, age, gender, and frequency, and then use that information, in conjunction with that from other data sources, to compile information for a species or stock.

### **Learning About the Economics of Fishing**

What is the economic health of a fishery? Revenue data (e.g., landed value) collected from fishermen and dealers in the ports provide the income side of the economic equation. However, data on the costs of fishing are equally important. Observers and at-sea monitors gather economic information from vessel owners and captains regarding the costs of items used on a trip (e.g., ice, fuel, gear, and bait), and fixed costs (e.g., repairs). The intent of these studies is to better understand the economic health and efficiency of fishing. This information is important for fisheries management because it allows quantitative analyses of economic impacts of various management options. Federal rules require that the economic benefits of regulation exceed the costs of such measures. Net economic benefits to the nation comprise benefits and costs to the producers (e.g., fishermen), and benefits and costs to the consumers. The fisheries at-sea monitor and observer programs provide an important source of contact with knowledgeable individuals in the industry best able to provide these data.

### **Measuring Gear Performance and Characteristics**

When observers and at-sea monitors are deployed aboard commercial vessels, they take measurements of various attributes of the fishing gear. These measurements are important for two reasons. First; by documenting gear characteristics such as mesh size, number of hooks, time of trawl tow, hanging dimension (e.g., square vs. diamond mesh) etc., in relation to catch attributes (e.g., quantity, species composition, size distribution of catch) it is possible to determine the factors that result in high or low rates of discard, species mix, etc. Second; gear performance observations, when collected over time, can be used to better calibrate catch-per-unit-effort abundance measures. For example, if the average size of nets, duration of tow, etc., change over time, these may have a direct effect on catch per day fished by the fleet (even for same sized vessels). Given sufficient information, these factors can be included in stock assessment analyses to provide a more complete and accurate picture of fishing intensity and effectiveness.

### **Keeping Up with Fishermen**

The At-sea Monitor Program and Observer programs have always provided an excellent channel for communication between fishermen and fishery scientists. In the 1970s and 1980s, some scientists went along on commercial trips for specific experiments or simply to obtain first-hand knowledge of fishing operations. Although valuable to the

scientists, the resulting data came from only a few dozen trips in a year. Today's At-sea Monitor and Observer programs are larger and more comprehensive in both the frequency of trips and the types of data collected. The programs remain an important link between scientists and fishermen. Ideas, complaints, and information communicated between at-sea monitor, observer, captain, and crew are a valuable source of information for all parties and we hope to continue to strengthen this aspect of the program in the future.

### **At-sea Monitor Operations**

Presently, at-sea monitors are recruited and deployed through three (3) independent firms (A.I.S., Inc., East West Technical Services, LLC, and MRAG Americas) under contract to the Northeast Fisheries Science Center (more information can be found at the Fisheries Sampling Branch website <http://www.nefsc.noaa.gov/fsb/>). The Fisheries Sampling Branch staff oversees at-sea monitor training, translates data requirements from the Center's research programs into a detailed schedule of fisheries to be sampled, manages data collected by at-sea monitors, and provides qualified researchers with audited data files and summaries. Summaries of at-sea monitor data are appropriately aggregated so individual vessels cannot be identified. These summaries are provided to scientists and analysts of the National Marine Fisheries Service (NMFS) Regional Office and the Regional Fishery Management Councils to support quantitative evaluations of various management actions. Individual vessel records are strictly confidential and are not made available.

At-sea monitors themselves have diverse backgrounds. A large number are recent college graduates with a concentration in biology. Some have extensive practical experience in commercial fishing or other maritime occupations. At-sea monitor training is comprehensive. An initial two (2) week training course is conducted at the Northeast Fisheries At-sea monitor Program Training Center by dedicated training staff from the Fisheries Sampling Branch with the assistance of experts in a variety of fields. At-sea monitors are instructed in fish identification, marine mammal, bird, turtle, and invertebrate species identification, as well as, gear identification and measurement, various sampling protocols, marine safety, and survival skills.

Priorities for sampling of various fisheries are determined by marine resource management priorities identified at the national level (such as endangered or protected species), by regional fishery management councils, and by the region's scientists who are called on to evaluate the status of marine populations and the economics of businesses that depend on them. Plots of the locations of observed trips by fishery and examples of aggregated data collected by these trips can be seen at <http://www.nefsc.noaa.gov/femad/fsb/> under the Reports/Publications sidebar.

The at-sea monitor program is a critical resource for information on the groundfish fishery, unobtainable by any other means. Data acquired by this program are important in identifying the species and size selectivity of several marine fisheries in the Northeast, calculating Annual Catch Entitlements (ACEs) per sector, and quantifying discard rates. Furthermore, these data support improved biological and economic assessments of the region's fisheries.

The cooperation of vessel owners, captains, and crew in taking at-sea monitors onboard and supporting their data collection is instrumental in the success of this program. Most recognize that the goal of the program is to monitor sector ACEs and to provide managers with the data needed to ensure sustainable fisheries for generations to come.

### **Estimating Takes of Protected Species**

Marine mammals, sea turtles, and sea birds are protected under a variety of federal statutes intended to reduce the risk of harm to these animals by fishing and other human activities at sea. Chief among these statutes are the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA). The Fisheries Sampling Branch monitors marine fisheries to identify those that take protected species and, if necessary, help develop ways to reduce these takes. [Note: The term "take" is defined in the MMPA as "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture or kill any marine mammal. It has a similar meaning under the Endangered Species Act, which applies to all wild plants and animals, including those in the ocean.] Monitoring efforts in the Northeast region have been

concentrated in several fisheries: groundfish gillnet in the Gulf of Maine, gillnet fisheries in the mid-Atlantic, pelagic drift-net, pelagic pair-trawl, and the scallop fishery. At-sea monitors document each take of a protected species during a fishing trip in addition to other catch and discard information. Total takes of protected species can be estimated from the data obtained on observed trips in a particular fishery and expanded to the whole fleet.

### **Monitoring Experiments and Experimental Fisheries**

The fishing industry is always looking for methods to reduce the incidental catch of unwanted species, including protected species. Conducting and evaluating the performance of novel or experimental gear is another responsibility of at-sea monitors. Sometimes it is possible to reduce unintended catch during fishing operations by changing the way gear is constructed and/or used. To properly evaluate new gear types and methods, an experimental version must be tested under a variety of conditions likely to be encountered during a typical commercial trip. Testing not only demonstrates what effects are achieved, but also whether the gear can be safely and efficiently used.

In the Gulf of Maine northern shrimp fishery, for example, the Nordmore grate was tested and subsequently required on shrimp trawls to reduce the take of juvenile groundfish. NEFOP observers participated in the initial gear trials, and have continued to monitor the fishery since use of the grate became mandatory. Subsequent data collected by the Observer Program indicate significant reductions in finfish bycatch from trawls using the grate.

Experimental fisheries typically occur when, in order to gather needed data, an experiment must be conducted using gear or methods that would otherwise be prohibited by existing regulations. For example, an experimental fishery occurred in Cape Cod Bay where small mesh nets were rigged to catch whiting, but avoid bycatch of groundfish such as cod, haddock, and flounder. The experiment was carefully monitored and eventually became an exempted fishery; one that has less than five percent catch of regulated groundfish.

Similarly, observers were critical during experiments that evaluated the effectiveness of acoustic alarms, or pingers, in reducing harbor porpoise entanglements in the groundfish sink gillnet fishery. The studies found that harbor porpoise bycatch was reduced by more than 90% with the use of pingers, and resulted in their mandatory use in the fishery during times when harbor porpoise bycatch would otherwise be high. Observers and at-sea monitors continue to monitor pinger effectiveness in bycatch reduction, and their use continues to mitigate this risk to a protected marine mammal.

### **Monitoring International Fishing in U.S. Waters**

During the 1970s and early 1980s, international vessels were allowed within the U.S. Economic Exclusionary Zone (EEZ, better known as the 200-mile limit.) Under these agreements, the international vessel operator paid a set fee per ton of fish landed, and assumed the costs of providing 100% U.S. observer coverage on their vessels. The observers collected information similar to that presently obtained from domestic trips through the Observer Program.

U.S. law still provides ways for fishery managers to allow international vessels to fish in the U.S. EEZ when there is a surplus of fish not likely to be taken by domestic fleets. At present, there is little international fishing activity in federal waters off the Northeastern U.S., but there is growing interest in joint ventures with U.S. companies for under utilized fish resources, particularly those with established international markets. When these fishing operations do occur with international partners in the EEZ, the fisheries Observer and At-sea Monitor programs continue to monitor them.

**WHAT TO EXPECT DURING A MONITORED TRIP**

ACTIVITY	MONITOR RESPONSIBILITIES	VESSEL RESPONSIBILITIES
<b>PRIOR TO VESSEL'S DEPARTURE</b>		
Pre-Trip Notification System	Arrive to F/V 1 hour prior to departure	Notify the Pre-Trip Notification System 48 hours prior to departure
Pre-Trip Safety Inspection	<ol style="list-style-type: none"> <li>1. Vessel Walk Through</li> <li>2. Safety Decal Check</li> <li>3. EPIRB Expiration Dates: Battery Hydrostatic Release</li> <li>4. Life Raft Expiration Dates: Hydrostatic Release Raft Service</li> <li>5. Immersion Suits</li> <li>6. Radio</li> <li>7. Fire Extinguishers</li> <li>8. Flares &amp; Expiration Date</li> <li>9. First Aid Materials</li> <li>10. Life Ring(s)</li> <li>11. Questions for the Captain: Are safety drills conducted? Are wheel watches maintained? Are there any stability concerns?</li> </ol>	<p>Allow access to all safety items</p> <p>Posses a current USCG Commercial Fishing Vessel Safety Examination Decal</p> <p>Assist when necessary (Monitors may not remove/manipulate EPIRB casings)</p> <p>Answer accordingly</p>
<b>DURING FISHING ACTIVITIES</b>		
	<p>Explain sampling duties. Offer ASM Duty Sheet</p> <p>Collect data on a haul-by-haul basis:</p> <ol style="list-style-type: none"> <li>1. Times &amp; Positions of set/haul back</li> <li>2. Wave height</li> <li>3. All kept and discard information (fish, invertebrates, and debris)</li> <li>4. Kept and discard weight and</li> </ol>	<p>Allow access to:</p> <p>Positional instruments and access to the wheelhouse</p> <p>Adequate space for a sampling station</p> <p>Access to kept and discarded catch</p>

ACTIVITY	MONITOR RESPONSIBILITIES	VESSEL RESPONSIBILITIES
	<p>disposition reason</p> <p>5. Obtain actual weights (whenever possible) or obtain a subsample to extrapolate large catches</p> <p>6. Record lethal/non-lethal interactions with protected species (incidental takes); Including photographing incidentally taken species</p> <p><b>NOTE:</b> Mandatory sampling protocols involve photographing, lengthing, tagging, or retaining fish species for scientific purposes</p>	<p>Access to any protected species incidentally taken in fishing gear</p>

**WHILE A MONITOR IS DEPLOYED ON A FISHING VESSEL**

	<p>1. Adhere to all vessel rules and safety precautions as are required of a crew member</p> <p>2. Supply the following:                      Immersion suit                      Personal Floatation Device                      CPR &amp; First Aid certifications                      Passport                      Foul weather gear                      Sampling equipment                      Digital camera                      Field guides &amp; manuals                      Logs (paper and/or electronic)</p> <p>3. Monitor a minimum of 75% of hauls, striving for 100%</p> <p>4. Take fish lengths of kept and discard species at least every other haul</p> <p>5. Obtain gear information (i.e., mesh sizes, net height)</p> <p>6. Obtain economic trip information (i.e. cost of fuel; trip supplies)</p>	<p>Provide the monitor with living quarters, meals, and amenities equal to that of a crew member</p> <p>Allow appropriate area to store gear</p> <p>Notify the monitor when fishing operations are to begin and end</p> <p>Allow the monitor access to kept and discarded species</p> <p>Access to gear</p> <p>Provide accurate trip information when requested</p>
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ACTIVITY	MONITOR RESPONSIBILITIES	VESSEL RESPONSIBILITIES
<b>UPON COMPLETEION OF THE FISHING TRIP</b>		
	<ol style="list-style-type: none"> <li>1. Offer a Fisherman’s Comment Card</li> <li>2. Offer a Data Release Form</li> <li>3. Meal reimbursements will not be issued by NMFS. This is the responsibility of the service provider</li> </ol>	<p>Voluntarily submitted to NMFS</p> <p>Complete, sign, and submit form to the Fisheries Sampling Branch</p> <p>Contact At-sea Monitoring Service Provider</p>
<b>PROHIBITED ACTIVITIES</b>		
	<ol style="list-style-type: none"> <li>1. Provide regulatory advice</li> <li>2. Accept any gift or direct payment from the captain, crew, or vessel owner</li> <li>3. Engage in any commercial fishing activities (i.e. dressing fish, standing wheel watches)</li> <li>4. Slow fishing operations beyond reasonable levels</li> <li>5. Use any recording device for personal use</li> <li>6. Use vessel communication equipment for personal use</li> <li>7. Disclose any trip information with anyone other than program staff</li> </ol>	<p>Assault, harass or sexually harass, intimidate or attempt to influence monitors</p> <p>Ask monitors to stand watch or help with fishing operations</p> <p>Interfere with or impede monitor duties</p> <p>Fish without a monitor on board the vessel after the owner or agent of the vessel has been selected to carry a monitor</p>

## HOW ARE AT-SEA MONITORING DATA BEING USED?

COLLECTED DATA	PURPOSE OF DATA
<p><b>Trip Data</b></p> <ol style="list-style-type: none"> <li>1. Sail/Land Date and Time</li> <li>2. Port Sail/Land</li> <li>3. Target Species</li> <li>4. Gear Type</li> <li>5. Vessel Information <ul style="list-style-type: none"> <li>▪ Vessel Name</li> <li>▪ USCG DOC</li> <li>▪ VTR #</li> </ul> </li> <li>6. Sector Enrollment</li> <li>7. Program Code</li> <li>8. Dealer</li> </ol>	<ol style="list-style-type: none"> <li>1. Helps match an individual trip</li> <li>2. Tracks fishing activity and port effort</li> <li>3. A necessary criteria identifying a groundfish trip</li> <li>4. Identifies appropriate discard rates for gear type by sector</li> <li>5. Identifies individual vessel fishing effort; matches trip data</li> <li>6. Sector participation; ACE monitoring by sector</li> <li>7. Identifies Special Management Programs</li> <li>8. Identifies where catch is being sold</li> </ol>
<p><b>Catch Data</b></p> <ol style="list-style-type: none"> <li>1. Record all catch (fish, invertebrates, ghost gear, etc) <ul style="list-style-type: none"> <li>▪ Species Information: kept &amp; discard</li> </ul> </li> <li>2. Fish Disposition</li> <li>3. Weights by Disposition</li> <li>4. Length Frequency of priority species (kept and discard)</li> <li>5. Positional Information (haul by haul)</li> </ol>	<ol style="list-style-type: none"> <li>1. Directly documents catch data per sector; quota management and discard rates</li> <li>2. Reason fish is kept or discarded</li> <li>3. Actual weights are a top priority</li> <li>4. Aids in stock assessments</li> <li>5. Identifies individual and broad stock areas; Special Management Programs</li> </ol>
<p><b>Gear Data</b></p> <ol style="list-style-type: none"> <li>1. Trawl: <ul style="list-style-type: none"> <li>▪ Codend mesh sizes (10)</li> <li>▪ Net Type/Net Name</li> </ul> </li> <li>2. Gillnet: <ul style="list-style-type: none"> <li>▪ # of nets</li> <li>▪ Net Height &amp; Length</li> <li>▪ Tie downs</li> <li>▪ # of pingers (if present)</li> </ul> </li> <li>3. Longline <ul style="list-style-type: none"> <li>▪ # of hooks</li> <li>▪ Hook type (pattern &amp; size)</li> <li>▪ Mainline length</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>1. Trawl: <ul style="list-style-type: none"> <li>▪ Collected for scientific purposes; helps identify efficiency of mesh; catchability</li> <li>▪ Aids in determining discard rate; Monitors gear used in gear restricted areas</li> </ul> </li> <li>2. Gillnet: <ul style="list-style-type: none"> <li>▪ Amount of gear being fished</li> <li>▪ Type of gillnet being used</li> <li>▪ Monitors gear used in gear restricted areas</li> <li>▪ Protected species information; affect on bycatch</li> </ul> </li> <li>3. Longline: <ul style="list-style-type: none"> <li>▪ Amount of gear being fished</li> <li>▪ Efficiency of gear; affect on targeted species and bycatch</li> </ul> </li> </ol>

COLLECTED DATA	PURPOSE OF DATA
<p><b>Protected Species Data</b></p> <ol style="list-style-type: none"> <li>1. Marine Mammals                             <ul style="list-style-type: none"> <li>▪ Photograph &amp; ID</li> <li>▪ Attach carcass tag (if dead)</li> </ul> </li> <li>2. Sea Turtles                             <ul style="list-style-type: none"> <li>▪ Photograph &amp; ID</li> <li>▪ Resuscitate (if comatose)</li> </ul> </li> <li>3. Sea Birds                             <ul style="list-style-type: none"> <li>▪ Photograph &amp; ID</li> <li>▪ Record band information (if present)</li> </ul> </li> </ol> <p><b>NOTE:</b> Protected species are not retained by at-sea monitors</p>	<ol style="list-style-type: none"> <li>1. Bycatch information for Protected Species Branch                             <ul style="list-style-type: none"> <li>▪ Allows for positive identification an animal condition</li> <li>▪ Prevents animal from being counted twice if incidentally taken</li> </ul> </li> <li>2. Bycatch information for Protected Species Branch                             <ul style="list-style-type: none"> <li>▪ Allows for positive identification and animal condition</li> </ul> </li> <li>3. Bycatch information for Protected Species Branch                             <ul style="list-style-type: none"> <li>▪ Allows for positive identification and animal condition</li> <li>▪ Helps track activity</li> </ul> </li> </ol>
<p><b>Economic Data (per trip)</b></p> <ol style="list-style-type: none"> <li>1. Ice used; Ice/ton</li> <li>2. Fuel used; fuel/gallon</li> <li>3. Damage</li> <li>4. Supplies</li> <li>5. Food</li> <li>6. Water (does not include drinking water)</li> <li>7. Oil</li> <li>8. Bait</li> </ol>	<p>Provided cost information to analyze the impact of Sector Management on fishing communities before and after the implementation of Amendment 16, May 1, 2010.</p>

**PRIMARY GOALS OF AT-SEA MONITOR TRAINING**

1. Instruct, motivate, and inspire trainees so that they can work in a self supervised mode.
2. Instruct trainees to collect accurate, representative, and unbiased data according to Fisheries Sampling Branch data collection protocols and standards.
3. Provide trainees with adequate knowledge of the risks associated with performing their duties in an effort to educate and prepare at-sea monitors for dangerous or potentially life-threatening situations.

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## GENERAL iPAQ OVERVIEW



## USING THE STYLUS

1. The HP iPAQ has a stylus that should be used to tap or click on the screen.

**NOTE:** To prevent damage to the iPAQ screen, never use any device other than the stylus or an approved replacement to tap on the screen.

**NOTE:** If you lose or break your stylus, be sure to immediately ask for a replacement.

2. To select or open an item, lightly touch the screen and then lift the stylus off of the screen. Tapping is equivalent to clicking an item with the mouse on your computer.
3. To display a menu (if one is available on that screen), hold the stylus pointer on an item for a short time until a menu displays. A circle of dots will appear around the stylus to indicate that the menu will soon appear. Tapping and holding is equivalent to right-clicking your computer mouse button.

## START MENU, NAVIGATION BAR, AND OPENING THE SECTORASM PROGRAM

The Navigation Bar is located at the top of the screen. It displays the current time, the status of sounds and connections, and allows you to open new programs.

**Tap to view Connectivity Settings**



**Tap to change volume or mute all sounds**



Use the Start Menu to select a program. The program that you will use to enter your data is **SectorASM**.



### Tap to view Programs Menu (Start Menu)

Select this program by clicking on it with the stylus. A red/green/yellow/blue circle will appear. That tells you that the program is loading. It will take a minute to load.



**NOTE:** If the **SectorASM** program does not appear when using the Start Menu, use the following procedure to open the program:

- a. From the Start Menu, click on PROGRAMS. Click on FILE EXPLORER (File Explorer may appear on the Start Menu and you can access it from there as well). Make sure the menu is set to MY DEVICE. Click on PROGRAM FILES.
- b. Click on **SectorASM**. Double click the **SectorASM** file.
- c. A red/green/yellow/blue circle will appear. That tells you that the program is loading. It will take a minute to load.



### STATUS ICONS

You may see the following status icons displayed on the Navigation bar. Tap the icon on the screen to view more information related to the item.

	Active sync connection to computer.
	No connection to computer.
	Active Wi-Fi connection.
	Microsoft ActiveSync is synchronizing.
	Speaker is on.
	Speaker is off.

## SETTING A PASSWORD

To protect data confidentiality, password protection should be on at all times.

1. Click the START MENU in the top left corner of the screen.

2. Click SETTINGS



3. Click LOCK (Key icon)

4. Check the box next to "Prompt if device is unused for"

5. Select 0 minutes

6. For PASSWORD TYPE, select Strong alphanumeric

7. Type in the Password (use the password you have been provided). The keyboard is in the middle of the blue bar at the bottom of the screen. Click on the white keyboard symbol to type in your password.

8. Confirm the Password by typing it in again.

9. Click OK in the top right hand corner of the screen to save the information.




**Keyboard**

## SETTING THE TIME ZONE, DATE AND TIME

The correct Date should appear on the home page of the iPAQ.


If the date is incorrect, use the following procedure:

1. From the START MENU, click SETTINGS.
2. On the bottom of the Settings screen, click the SYSTEM TAB.
3. Click CLOCK & ALARMS (clock icon). 
4. Make sure that the button next to HOME is black. If it is not black, click the empty circle.
5. Time Zone: The time zone should be set to **GMT-5 Eastern US**. Use the drop down arrow to change it if it is set to a different time zone.
6. TIME: Click on the hour or minutes and use the upward and downward arrow to change the time.
7. DATE: Use the drop down calendar to change the date.
8. When you are done making all changes, click OK in the top right hand corner of the screen.



## SWITCHING BETWEEN LANDSCAPE AND PORTRAIT SCREEN ORIENTATIONS

The screen orientation defaults to portrait (vertical). If you would like to change the orientation to landscape (horizontal), use the procedures that follow:


1. From the START MENU, click SETTINGS.
2. On the bottom of the Settings screen, click the SYSTEM TAB.
3. Click SCREEN (iPAQ with stylus icon). 
4. Make your selection by clicking in the empty circle next to your choice.
5. Click OK in the top right hand corner of the screen.

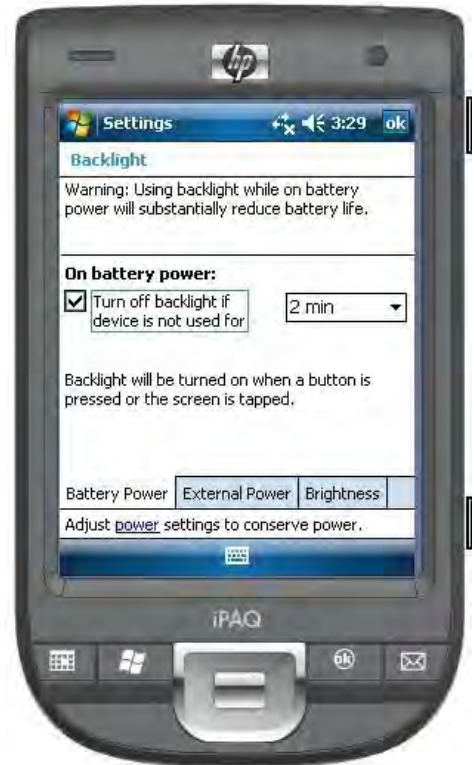
**NOTE:** The SectorASM program is designed for a portrait screen orientation.



**CHANGING THE BACKLIGHT SETTINGS**

To change the backlight from turning off quickly, adjust the backlight settings.

1. From the START MENU, click on SETTINGS.
2. On the bottom of the Settings screen, click on the SYSTEM TAB.
3. Click on BACKLIGHT (iPAQ with light bulb icon). 
4. The backlight is pre-set to turn off when the device is not used for 2 minutes. Changing this to a longer time frame will use additional battery power.

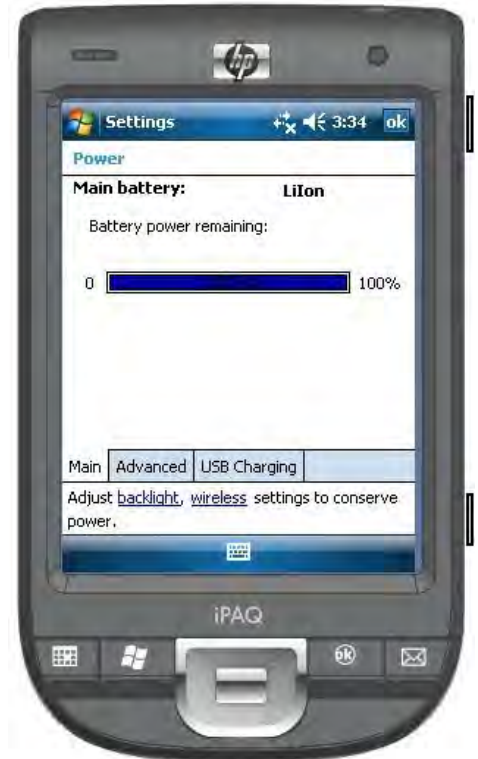


## BATTERY POWER

It is important to conserve battery power on the iPAQ. **The iPAQ battery should be charged at all times.** Turning the iPAQ off using the power button will cause the iPAQ to go to standby mode and the iPAQ will continue to use battery power.

To find out how much power is left on the battery:

1. From the START MENU, click on SETTINGS.
2. On the bottom of the Settings screen, click on the SYSTEM TAB.
3. Click on POWER (Battery with plug icon).



## TIPS ON USING THE SectorASM PROGRAM

Things to keep in mind when using the SectorASM Program:

1. When exiting the program, always use FILE → EXIT. If you click on the "X" located in the top right hand corner of the screen, it will only minimize the program. The program will still run and use up the battery power. If you minimize the program and then open it up, it may block out the ability to enter information into the fields.
2. To access the keyboard, click on the white keyboard icon located at the bottom right hand corner of the screen.



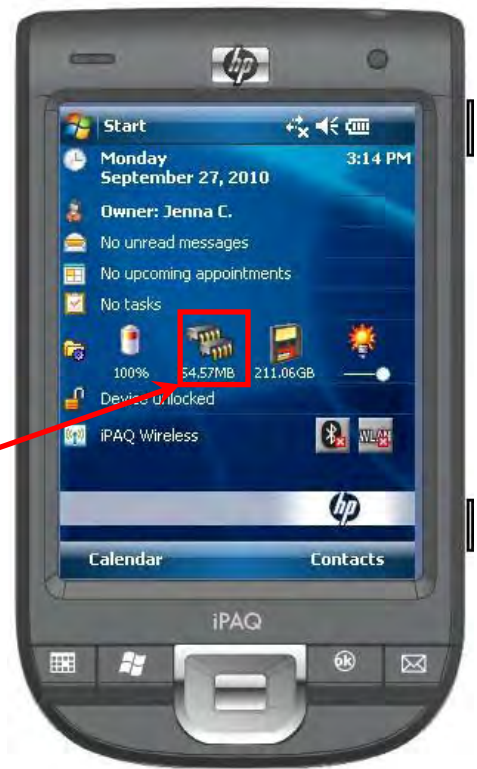
**NOTE:** On some screen the keyboard may be located in the middle of the lower portion of the screen

3. To see what programs are running and using the battery power:
  - a. Using the Start Menu, click SETTINGS.
  - b. Click the SYSTEMS TAB
  - c. Click MEMORY
  - d. Click the RUNNING PROGRAMS TAB
  - e. You can either select a running program then click STOP to end the program, or click STOP ALL to stop all running programs.

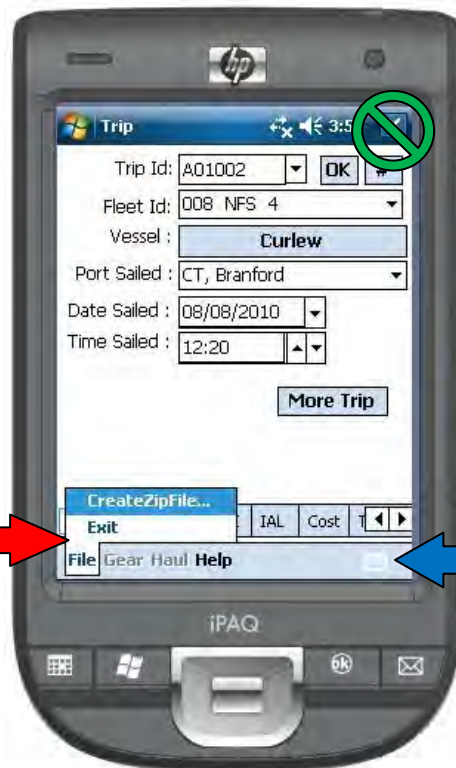
**NOTE:** It is best to look at the running program list often to make sure that there are no unnecessary programs running and using your battery power.

**SHORTCUT:**

- a. Click the Memory icon on the main screen
- b. Click the RUNNING PROGRAMS TAB
- c. Select a running program or click STOP to end the program, or click STOP ALL to stop all running programs



**The “X” minimizes the Program; it DOES NOT exit the program**



**To Exit the SectorASM program use File > Exit**

**Keyboard**

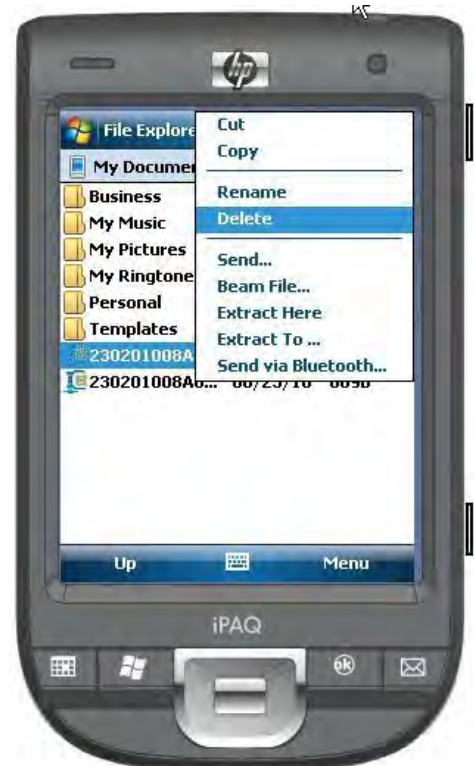
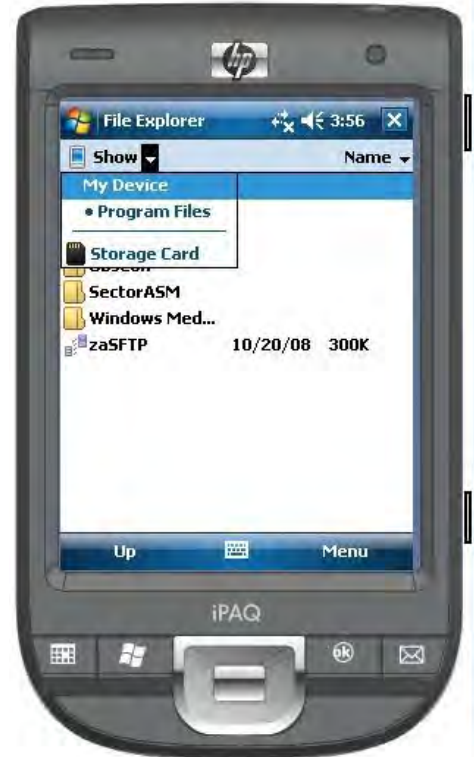
## DELETING ZIP FILES AND TRIP DATA

To DELETE Zip File follow these procedures:

1. From the Start Menu, click FILE EXPLORER.
2. Next to the iPAQ icon near the top of the screen, using the drop down menu ▼, choose MY DEVICE. This will list all of the folders and files that are on the iPAQ.
3. Click on MY DOCUMENTS.
4. The zip files that you have created (XXXXXXXXXX TRIPID\_ASM) will be listed in My Documents.


Example of a Zip File Name: 230201008A01002

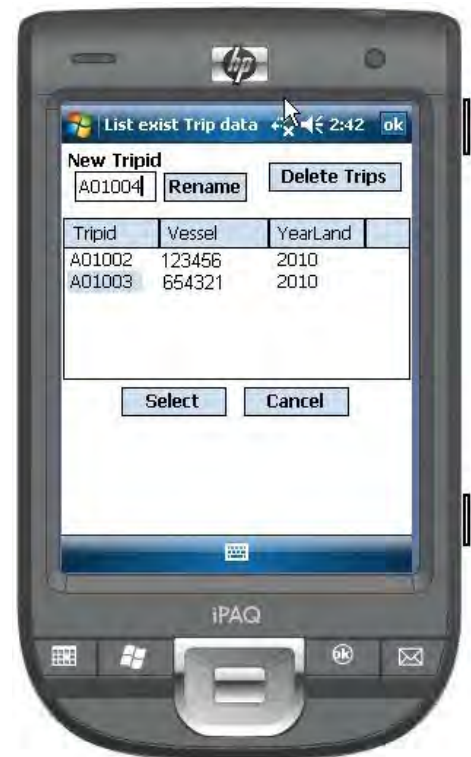
5. Hold the stylus down on the zip file you would like to delete and a menu will come up on the screen. Choose DELETE. If you are sure that you want to delete the file, confirm the deletion by clicking on YES.





To DELETE trip data from within the SectorASM Program:

1. With the SectorASM Program open and on the Trip Tab, click on the  located to the right of the Trip Id field and then click OK.
2. Highlight the Trip Id that you want to delete
3. Click DELETE TRIPS. The program will ask you if you are sure you want to delete the trip and the related data. If the trip has been successfully uploaded and you are sure that you want to delete the trip, click YES.
4. After all changes are made, click OK in the top right hand corner of the screen.



### CALCULATING STATISTICAL AREA & CONVERTING LORAN TO LATITUDE/ LONGITUDE

CalPosData is a program on the iPAQ that will calculate the statistical area of the beginning and end of a haul. This will also convert a LORAN bearing to a latitude/longitude position. To access this program, follow the procedures below:

1. From the Start Menu, click on **CalPosData** (globe icon).
2. Using the drop down menu, choose the format of the positional data you are entering.

**NOTE:** The most common LORAN station used is 9960 (xxxxx)

3. Enter in the beginning and end positions of the haul.
4. Click on SUBMIT.

The result will show both the values that you entered on the previous screen for verification as well as the output values. The output will also appear with the area of the Haul Begin and Haul End as well as the latitude and longitude positions in the format of decimal minutes (ddmm.m). Decimal minutes is the format used and entered on the Haul Begin and Haul End sub-Tabs in the SectorASM program.


When you are done with the information, click OK in the top right hand corner of the screen to return to the previous screen. Click OK to exit the CalPosData program.




**TRIP TAB****MORE TRIP****INSTRUCTIONS**

1. **ASM/TRIP IDENTIFIER:** Using the keyboard, record your three character At-sea Monitor Identifier (ASM ID) combined with the three digit Trip Number assigned to you for this trip.


**NOTE:** The trip extension is not included in Trip ID on the iPAQ. The trip extension is entered on the Trip End tab in the TRIP EXT field.

To **CHANGE** the Trip Id that has been entered or to **DELETE** a trip, click on 

**To CHANGE the Trip Id:**

- Click on 
- Click on the TRIP ID that needs to be changed
- Enter the correct Trip Id in the NEW TRIP ID field
- Click on RENAME.

**To DELETE a trip:**

- Click on 
- Click on the TRIP ID that needs to be deleted
- Click on DELETE TRIPS.
- The iPAQ program will ask if you are sure you want to delete the trip. Click YES if you wish to permanently delete the selected trip.



**Do NOT delete any trips before receiving confirmation that the trip has been successfully uploaded!**

- FLEET ID CODE:** Record the type of trip you are observing by selecting the appropriate three-digit code/Sector name from the drop down menu under FLEET ID. See Table 1. This information may be obtained from the captain and should be asked at the beginning of the trip. See Table 1.

**NOTE:** Each code corresponds to an individual sector. The captain will know the name of the sector to which his/her vessel belongs.

**Table 1:** Fleet ID Codes and Corresponding Sector Names

<b>FLEET ID CODE</b>	<b>SECTOR NAME</b>
002	Common Pool - Groundfish
003	Georges Bank Cod Fixed Gear Sector
005	Sustainable Harvest Sector
006	Port Clyde Community Groundfish Sector
007	Northeast Fishery Sector VII
008	Northeast Fishery Sector (NFS) IV
009	Northeast Fishery Sector (NFS) VIII
010	Northeast Fishery Sector (NFS) XI
011	Northeast Fishery Sector (NFS) XII
012	Northeast Fishery Sector (NFS) II
013	Northeast Fishery Sector (NFS) III
014	Northeast Fishery Sector (NFS) I
015	Northeast Fishery Sector (NFS) X
016	Northeast Fishery Sector (NFS) XIII
017	Northeast Fishery Sector (NFS) IX
018	Northeast Fishery Sector (NFS) V
019	Tri-State Sector
020	Northeast Fishery Sector (NFS) VI
021	Northeast Coastal Communities Sector (NCCS)
022	Sustainable Harvest Sector 3
023	Maine (State Permit Bank)

3. **VESSEL:** To select the appropriate vessel, click on the blue box on the right-side of the VESSEL field.

From the menu provided, you may select the vessel, **to which you are deployed**, by clicking on the appropriate HULL NUMBER, PERMIT NUMBER, or VESSEL NAME. Then click SELECT.

**NOTE:** The HULL NUMBER is either the US Coast Guard Documentation Number or the State Registration Number. This number may have up to eight (8) characters and can also be found on the side of the vessel or on the wheelhouse.

<b>USCG Documentation Number</b>	<b>State Registration Number</b>
123456	ME1234AB

**NOTE:** If the vessel is not located in the provided menu, select NEW VESSEL in the drop down menu and record the vessel's hull number and vessel name in the COMMENTS section of the More Trip Tab in the following format:

**Hull Number\_Vessel Name**  
123456\_Windy Gale

**NOTE:** Before entering a new vessel in the COMMENTS section, double check that the FLEET ID CODE is correct.

4. **PORT SAILED:** Select the name of the port where the vessel departed from the drop down menu.
5. **DATE SAILED:** Select the month, day, and year that the vessel leaves the dock to go fishing using the drop down calendar.
6. **TIME SAILED:** Record the local time, using the 24 hour clock (0000-2359), that the vessel leaves the dock to go fishing. You may use the keyboard to punch in the numbers OR click on the hour and minutes using the upward and downward arrows.



Click **MORE TRIP** to complete trip information.

### MORE TRIP TAB

7. **PRIMARY GEAR:** Record the principal gear used during this trip by selecting the most appropriate gear from the drop down menu.

**NOTE:** PRIMARY GEAR is defined as the gear used on the **majority of the hauls** on a single trip.

Example: You are deployed on a gillnet boat that has pulled 3 strings of gear (3 total hauls). Throughout the trip the crew used a rod and reel for a total of 5 hauls. The primary gear for this trip is Handline, Rod and Reel (020).

8. **TARGET 1:** Indicate the principal species (or species group) targeted with the type of gear selected as the PRIMARY GEAR by selecting the most appropriate and specific species name possible from the drop down menu. This information must be obtained from the captain before any gear is hauled and should not be based on the results of the trip's catch.



9. **TARGET 2:** Record the secondary species (or species group) targeted with the type of gear recorded as the PRIMARY GEAR by selecting the most appropriate and specific species name possible from the drop down menu. If there is no secondary species targeted leave this field blank.

**NOTE:** Do not select NONE.

**To DELETE a Target 2** click the blue box surrounding TARGET 2, and the field will clear.

10. **VENDOR ID CODE:** Record the vendor from the drop down menu. This information can be obtained from your At-sea Monitor Provider.
11. **PROGRAM:** Record the appropriate program for the fishing trip by selecting from the drop down menu. This information can be obtained from the captain. See Table 2.

**Table 2:** Program Codes and Corresponding Trip Types

PROGRAM CODE	TRIP TYPE
230	At-sea Monitoring (ASM)
231	ASM, US/Canada Management
232	ASM, Regular B-DAS Program
233	ASM, Closed Area I Haddock Hook SAP
234	ASM, Closed Area II Yellowtail/Haddock Hook SAP

**NOTE:** Monitors should verify the trip type with the captain.

**NOTE:** At-sea Monitors should never select Program 250: Electronic Monitoring/ Video Monitoring. This information will be recorded by the At-sea Monitor on the upload page as detailed in the UPLOADING DATA portion of this program manual.

12. **INC TAKE:** Record whether a marine mammal, sea turtle, or sea bird has been incidentally taken on this trip by checking the INC TAKE box. When a check mark appears within the box, it indicates that an incidental take has occurred on this trip. If an incidental take has not occurred on this trip leave this box empty.
13. **PHOTO:** If any photos are taken during this trip, check the PHOTO box. When a check mark appears within the box, it indicates that a photo(s) has been taken on this trip. If photos are not taken on the trip, leave this box empty.

**NOTE:** Record in the COMMENTS section of the More Trip Tab the number of photos that will be uploaded with the corresponding trip.



14. **FIELD DIARY:** Record whether a field diary was submitted for this trip by checking the FIELD DIARY box. When a check mark appears within the box, it indicates that a field diary has been submitted for this trip. If there is no field diary associated with this trip leave the box empty.
15. **COMMENTS:** To enter additional information about the corresponding trip click COMMENTS. Using the keyboard, type in any comments that relate to the corresponding trip. You may enter up to 250 characters (including spaces) in the COMMENTS field.

**After all comments have been entered click OK.** This will take you back to the More Trip Tab.

**If all information has been entered click DONE.** This will take you back to the Trip Tab.

**After all information on the Trip Tab and the More Trip Tab have been entered click SAVE before moving on to the next tab.** Failing to SAVE will result in a loss of data.

## COMMON WARNINGS and ERRORS

### WARNINGS

When the SectorASM program generates a WARNING message it usually indicates that an entered value lies outside an average range. WARNING messages should be evaluated immediately before moving on in the program. However, WARNING messages may be bypassed if the value entered is correct.

To exit a WARNING message click OK in the upper right corner of the Warning Message box. You may then continue entering information or SAVE.

**NOTE:** Record in the COMMENTS section of the Tab generating the Warning, the reason the Warning was generated.

Example: On Haul 5 you are unable to obtain the Haul Begin position. Enter in the Statistical Area for HAUL BEGIN. This will generate a Warning. Record in the COMMENTS section why you were unable to obtain the Haul Begin information.

**NOTE:** Warning messages from the More Trip Tab will appear on this screen.

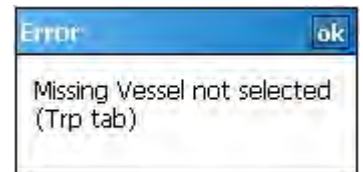
### ERRORS

When the SectorASM program generates an ERROR message it usually indicates that an entered value is unacceptable. ERROR messages must be corrected immediately in order to continue. ERROR messages may not be bypassed.

To exit an ERROR message click OK in the upper right corner of the Error Message box. Enter in correct information then click SAVE.

**NOTE:** These ERROR messages will likely occur when creating a Zip file.

1. The Vessel Name is missing. This information must be entered in order to move on. Click OK in the upper right hand corner of the Error Message and enter in the appropriate information.



2. The Fleet ID is missing. This information must be entered in order to move on. Click OK in the upper right hand corner of the Error Message and enter in the appropriate information.



3. The Date Sailed is out of range. Carefully check that the year on the drop down calendar is current. If the year is not current use the arrow on the calendar to scroll to the correct month and year.

**NOTE:** When the iPAQ battery power is allowed to drain to zero, the date may reset to a different year. You must go into the SETTINGS on the iPAQ a reset the date.



4. The Program Code is missing (More Trip screen). This information must be entered in order to move on. Click OK in the upper right hand corner of the Error Message and enter in the appropriate information.





## TRAWL GEAR TAB



## DEFINITIONS

**Otter Trawl:** A device constructed of twine webbing so that when fully assembled and rigged, it will take the shape of a funnel while being towed. To spread the net opening so that it will cover the largest possible area, each wing is fastened to a trawl “door”. Each door is fitted with chains to be attached to a towing cable from the trawling vessel. The resistance of the water to the forward motion of the doors, as they are towed at opposing angles, forces them to pull in opposite directions and thus keep the mouth of the net open.

**Codend:** Two trapezoidal pieces of netting made with heavy twine. The top edges are joined to the narrow end of the bellies, the selvages are laced together and a codline or codend clip is woven through the lower meshes for securing the section into a bag where the fish are held until released onboard the trawler. The codend is the section of a trawl net most often affected by mesh size regulations. The size of the codend may depend on the captain’s preference, species being targeted and regulations.

**Codend Liner:** A section of small mesh net sewn into the inside of the codend bag. The purpose of which is to restrict the escapement of smaller species, e.g., squid.

**Escape Outlet:** An opening in the net to facilitate escape of fish, sea turtles, marine mammals, etc.

**Gear:** A trawl, commonly referred to as “the net”. This includes ground cables, headrope, footrope, floats, weights, netting and any attached equipment.

**New Gear:** Anytime a field on the gear log changes, a new gear number is assigned.

Example 1: A captain decides to change out the codend. The monitor must then assign a new gear number to the new gear, complete a new gear record, and collect 10 random codend measurements from the new codend. This new gear number must correspond to all hauls using this new gear.

Example 2: A captain is using a net with an escape outlet (Escape Outlet=Y). He has the crew sew the escape outlet shut (Escape Outlet=N). The monitor must then assign a new gear number, and complete a new gear record. This new gear number must correspond to all hauls using this new gear.

**NOTE:** If no other changes have been made and the escape outlet is later reopened, the monitor would use the original gear number assigned to that gear when the escape outlet was in use.

**To begin entering trawl gear information click the Gear Tab in the blue Tabs bar.**

1. **GEAR CODE:** Using the drop down menu select the type of gear being used.

- 050: Trawl, Otter, Bottom, Fish
- 054: Trawl, Otter, Bottom, Ruhle
- 057: Trawl, Otter, Bottom, Haddock Separator

Click OK. This will bring you to the main Trawl Gear screen.

2. **GEAR NUMBER:** Using the keyboard record the number assigned to each uniquely configured gear hauled and for which characteristics are described, then click OK. See the definition of gear in the introduction.

3. **NET NAME:** Using the drop down menu select the most specific name of the net. If the captain does not know the net name, record UNKNOWN and record information on characteristics (e.g.; short vertical opening, sweep gear not heavy) that help to identify the net in the COMMENTS section. See Table 1.

**Table 1:** Net Names for Otter Trawls

NET NAME	ADDITIONAL INFORMATION
Beam Trawl	Consists of a cone-shaped body ending in a bag or codend. The horizontal opening of the net is provided by a beam, made of wood or metal. The vertical opening is provided by two hoop-like trawl heads ("shoes") that are mostly made from steel. No hydrodynamic forces are needed. Typically targets flatfish or shrimp. Often equipped with tickler chains to disturb the fish from the seabed.
Bottom Trawl	Net fishes directly on the bottom. Trouser, Beam and Twin Trawl should take precedence over Bottom Trawl.

NET NAME	ADDITIONAL INFORMATION
Other	A net that can be considered to be completely different than other nets listed. Must provide descriptive information concerning the gear in the COMMENTS section.
Pelagic Trawl	Net that fishes in the water column, and does not come in contact with the ocean bottom.
Semi-Pelagic Trawl	Net that fishes in the water column just above the bottom, but may come in contact with the ocean bottom occasionally.
Trouser Trawl	A research trawl net with a pair of codends (each constructed from a different size mesh and/or shape of mesh) used in mesh selectivity experiments. The vertical separator panel is intended to separate the flow of fish at the trawl mouth before the fish can detect the difference between the two codends.
Twin Trawl	A combination of 2 distinct trawl nets (port and starboard) deployed and fished at the same time. In order to be considered a twin trawl, both nets must be fishing at the same time. These nets typically fish on the bottom.
Unknown	A net without a common name. Must provide descriptive information concerning the gear in the COMMENTS section.

4. **NET TYPE:** Using the drop down menu select the name of the net type used. This information may be obtained from the captain. If the net has multiple names, select the most specific net type. See Table 2.

**Table 2:** Net Types for Otter Trawls

NET TYPE	ADDITIONAL INFORMATION
Unknown	Must provide descriptive information concerning the gear in the COMMENTS section.
2-Seam Trawl	<ul style="list-style-type: none"> <li>Made of two panels and mesh, a top and a bottom, which are laced along the two sides this is known as the gore line or seam</li> <li>Will maintain geometric shape</li> <li>Less material to make, therefore less expensive</li> </ul>
4-Seam Trawl	<ul style="list-style-type: none"> <li>Made of four panels of twine (top, bottom and two sides) that are placed together to form four gore lines or seams</li> <li>Maintains a geometric shape</li> <li>Generally has a high vertical lift</li> </ul>
Balloon Trawl Balloon Trawl, 2-Seam Balloon Trawl, 4-Seam	<ul style="list-style-type: none"> <li>Made of a lighter net material</li> <li>Has a high mouth</li> <li>Has floats attached to the headrope so that the sweep floats just above the rocky bottom</li> <li>2-Seam or 4-Seam</li> </ul>
Box Trawl, 4-Seam	<ul style="list-style-type: none"> <li>Used to target squid and silver hake and is always a 4-Seam trawl</li> <li>Typically a high rise net, in the shape of a box</li> </ul>
Eliminator Trawl 2-Seam 4-Seam	<ul style="list-style-type: none"> <li>Similar to a Ruhle trawl, however, it does not meet the regulatory specifications that constitute a Ruhle trawl</li> <li>2-Seam or 4-Seam</li> </ul>
Flatfish Trawl	<ul style="list-style-type: none"> <li>A low-rise constructed bottom trawl</li> <li>The trawl, depending on the location and time of year, may (in compliance with 50 C.F.R. 684.80(a)(4)) contain a section of mesh at least 10 feet long and</li> </ul>

NET TYPE	ADDITIONAL INFORMATION
Flatfish Trawl, 2-Seam Flatfish Trawl, 4-Seam	<ul style="list-style-type: none"> <li>stretching from selvedge to selvedge (which joins the upper and lower panels of the trawl), composed of at least 12-inch mesh that is inserted no farther than 4.5 meshes behind the headrope</li> <li>• 2-Seam or 4-Seam</li> </ul>
Flynet  Flynet, 2-Seam Flynet, 4-Seam	<ul style="list-style-type: none"> <li>• Headrope length is typically 80-120 ft across with a wing mesh size of 16-64 inches that will slowly taper to smaller mesh sizes in the body extension and codend</li> <li>• Headrope will also be slightly larger than the footrope</li> <li>• Codend mesh size is about 3.5-3.75 inches</li> <li>• Uses a large number of floats to keep the net slightly off the bottom</li> <li>• Typically use bottom otter trawl gear (negear = 050)</li> <li>• 2-Seam or 4 Seam</li> </ul>
Groundfish Trawl  Groundfish Trawl, 2-Seam Groundfish Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• A trawl that can really use any of the above designs. For example, can use a flatfish trawl to target groundfish</li> <li>• 2-Seam or 4-Seam</li> </ul>
Haddock Separator Trawl  Haddock Separator, 2-Seam Haddock Separator, 4-Seam	<ul style="list-style-type: none"> <li>• A groundfish trawl with 2 extensions arranged one over the other.</li> <li>• Codend is attached only to the upper extension, and the bottom extension is left open with no codend attached</li> <li>• In addition, a horizontal separating panel constructed with a minimum of 6.0 inch diamond mesh must be installed laterally between the seams joining the upper and lower panels, extending forward from the front of the trouser junction to the aft edge of the first belly behind the fishing circle</li> <li>• Horizontal mesh panel dividing net body in half</li> <li>• Top half leads back to a closed codend</li> <li>• Bottom half leads to a semi-circle opening near the rear of the net</li> <li>• Escape outlet present</li> <li>• 2-Seam or 4-Seam</li> </ul>
Millionaire Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• Always 4-Seam</li> <li>• Very large openings in mouth and large mesh in the wings becoming small meshes in belly leading to the codend</li> </ul>
Monkfish Trawl  Monkfish Trawl, 2-Seam Monkfish Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• Typically uses a flatfish trawl, however, since Monkfish are not a herding species, large wing extensions are used which increases the area swept by the gear</li> <li>• Have 1 leg (a.k.a OLAK)</li> <li>• 2-Seam or 4-Seam</li> </ul>
Other	Must provide descriptive information concerning the gear in the COMMENTS

NET TYPE	ADDITIONAL INFORMATION
	section.
Pelagic Pair Trawl Pelagic Pair, 2-Seam Pelagic Pair, 4-Seam	<ul style="list-style-type: none"> <li>• Pair trawl that typically does not use doors and targets herring and mackerel</li> <li>• 2 vessels are used to deploy and fish this type of net</li> <li>• 2-Seam or 4-Seam</li> </ul>
Raised Footrope Trawl  Raised Footrope, 2-Seam Raised Footrope, 4-Seam	<ul style="list-style-type: none"> <li>• Small mesh trawl required in some whiting management areas (e.g. Gulf of Maine)</li> <li>• If this trawl is "sweepless" it is a separate net type (see description below)</li> <li>• Typically fished 1-2 feet off the bottom</li> <li>• Has a chain sweep connected with drop chains</li> <li>• 2-Seam or 4-Seam</li> </ul>
Rope Separator, 4-Seam	<ul style="list-style-type: none"> <li>• 4-Seam bottom trawl net</li> <li>• Separator panel made only of ropes</li> <li>• Escape opening in the bottom belly of the net below the separator panel</li> </ul>
Ruhle Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• Characterized by the large meshes (8ft) at the front of the net</li> <li>• Escape outlet</li> <li>• Three bridle configuration</li> <li>• Kite Panels</li> <li>• Rockhopper sweep gear</li> </ul>
Separator Trawl Separator Trawl, 2-Seam Separator Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• A trawl net that has either a horizontal or vertical separator panel that runs from trouser junction to the aft edge of the first belly behind the fishing circle</li> <li>• 2-Seam or 4-Seam</li> </ul>
Shrimp Trawl Shrimp Trawl, 2-Seam Shrimp Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• Small mesh, used to target shrimp</li> <li>• Often have T.E.D.s</li> <li>• 2-Seam or 4- seam</li> </ul>
Shuman Trawl  Shuman Trawl, 2-Seam Shuman Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• A trawl net used mainly by squid fishermen</li> <li>• Typically used when targeting squid and butterfish</li> <li>• Contains very large meshes in the mouth and has a high-opening net that may have canvas kites on headline to keep the mouth open</li> <li>• 2-Seam or 4-Seam</li> </ul>
Sweepless Trawl  Sweepless Trawl, 2-Seam Sweepless Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• Identical to the raised footrope trawl except there is no chain sweep and the dropper chains are heavier</li> <li>• Required to target whiting in some management areas and may also be used by common pool vessels to fish for haddock when using BDAS</li> <li>• 2-Seam or 4-Seam</li> </ul>

NET TYPE	ADDITIONAL INFORMATION
Unknown	No net type could be determined. Must provide descriptive information concerning the gear in the COMMENTS section.

5. **ESCAPE OUTLET USED?** Record whether an escape outlet is used on this gear by checking the ESCAPE OUTLET box. When a check mark appears within the box, it indicates that an escape outlet has been used. If an escape outlet has not been used on this gear leave the box empty. This information may be obtained from the captain.
6. **EXCLUDER/ SEPARATOR USED?** Record whether an excluder or separator device is used on this gear by checking the EXCLUDER/SEPARATOR box. When a check mark appears within the box, it indicates that an excluder/separator device has been used. If an excluder/separator has not been used on this gear leave the box empty. This information may be obtained from the captain.
7. **CODEND LINER USED:** Record whether a codend liner is used on this gear by checking the CODEND LINER box. When a check mark appears within the box, it indicates that a codend liner has been used. If a codend liner has not been used on this gear leave the box empty.

**After all information has been entered click MORE TRAWL to continue entering trawl gear information.**

8. **CODEND HUNG:** Using the drop down menu choose the hanging configuration of the codend for this unique gear.
9. **CODEND TWINE TYPE:** Using the drop down menu choose the type of twine used in the codend.
10. **LINER HUNG:** If a codend liner is used for this gear, use the drop down menu to choose the hanging configuration of the codend liner for this unique gear. This field will only populate if the CODEND LINER box is checked.
11. **LINER TWINE TYPE:** If a liner is used for this gear, use the drop down menu to choose the type of twine used in the liner.

**After all information has been entered click SAVE.**

**To enter codend or liner mesh measurements click CODEND or LINER.**

**If mesh sizes are not entered at this time click DONE. This will take you back to the main Trawl Gear Tab.**



12. **CODEND MESH SIZE:** Using the keyboard record (in whole millimeters) ten randomly selected meshes from the codend. These measurements should be stretched inside knot to knot taken in the direction in which the mesh is hung. Use NMFS issued calipers for these measurements. See [Appendix H: Vernier Caliper Instructions](#) for further information.

**NOTE:** These measurements are **not** bar lengths.

**NOTE:** To clear the entered mesh sizes click CLEAR. Be aware that if you click CLEAR this will erase all entered values.

**NOTE:** To edit a single mesh measurement, click on the value within the box and enter in the new value.



#### Mesh Measurement Criteria:

1. Use only NMFS issued Vernier calipers.
2. Select a portion of the net that is relatively free of mends. Do not measure mended or broken meshes.
3. Must be at least 5 meshes up from the terminus of the codend and 5 meshes in from a seam.
4. The codend is empty.
5. The net is wet. To ensure the net is "wet" or "soaked," it is measured after being fished or used at least once.
6. Measurements should not be taken when the codend is frozen.
7. Inform the captain prior to measuring the codend.

**NOTE:** Do not measure mesh within the chaffing gear.

13. **LINER MESH SIZE:** If a liner is used for this gear use the keyboard to record (in whole millimeters) ten randomly selected meshes from the liner in the codend. These measurements should be stretched inside knot to knot taken in the direction in which the mesh is hung. Use calipers for these measurements.

**NOTE:** The liner mesh size should be smaller than the codend mesh size.

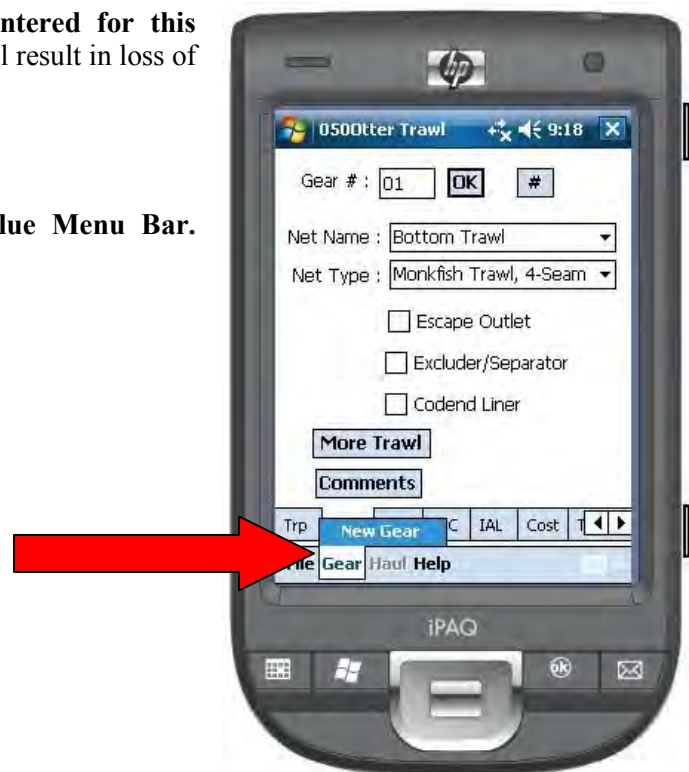
**NOTE:** If no liner is used on this gear, leave the liner mesh sizes blank.

**After all 10 mesh measurements have been entered click DONE.** This will take you back to the More Trawl Tab. Click SAVE. Failure to SAVE will result in lost data. Click DONE. This will take you back to the main Trawl Gear Tab.

14. **COMMENTS:** Record any additional information about this gear (i.e., unusual arrangements of the gear, type of net, etc.) in the COMMENTS section.

**After all Trawl gear information has been entered for this particular gear click SAVE.** Failure to SAVE will result in loss of data.


**To enter another gear click GEAR in the blue Menu Bar. Select NEW GEAR. Repeat steps # 1-14.**



The Trawl Gear Tab also has a listing feature. To view the gears you have entered click 

**NOTE:** Once a Gear Number has been saved it cannot be deleted. However, gear information can be modified.

**To MODIFY gear information:**

- a. Click 
- b. Click on the Gear Number you wish to modify
- c. Click SELECT
- d. Click OK
- e. Enter in the appropriate information
- f. Click SAVE



## COMMON WARNINGS and ERRORS

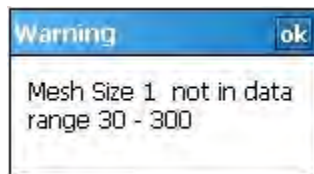
### WARNINGS

When the SectorASM program generates a WARNING message it usually indicates that an entered value lies outside an average range. WARNING messages should be evaluated immediately before moving on in the program. However, WARNING messages may be bypassed if the value entered is correct.

To exit a WARNING message click OK in the upper right corner of the Warning Message box. You may then continue entering information or SAVE.

**NOTE:** Record in the COMMENTS section of the Tab generating the Warning, the reason the Warning was generated.

1. Codend mesh size or liner mesh size not in range. If the mesh size entered is correct, click OK in the upper right corner of the Warning box and click SAVE.



### ERRORS

When the SectorASM program generates an ERROR message it usually indicates that an entered value is unacceptable. ERROR messages must be corrected immediately in order to continue. ERROR messages may not be bypassed.

To exit an ERROR message click OK in the upper right corner of the Error Message box. Enter in correct information the click SAVE.

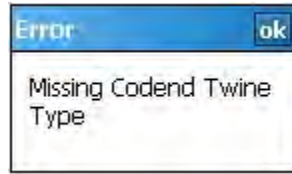
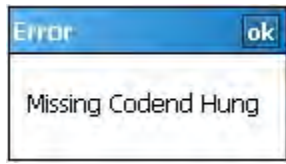
**NOTE:** Most ERROR messages will occur when creating a Zip file.

1. Codend or liner mesh size entered not in data range. For this field to generate an ERROR, the entered value entered is so far out of range that the program will not allow you to continue. The value must be corrected before moving on.



**NOTE:** If mesh sizes are not obtained, leave the mesh sizes blank and record the reason for not obtaining mesh sizes in the COMMENTS. Do not enter „0’ as a value.

2. Codend Hung and/or Codend Twine Type field(s) is blank (i.e. diamond; square; etc). This information is entered on the More Trawl screen and must be entered before moving on.



## GILLNET GEAR TAB



## DEFINITIONS

**Gillnet:** A vertical wall of netting, typically stretched between a weighted leadline on the bottom and a floatline, with or without floats, on the top to support it vertically in the water column.

**Bridles:** The trailing ends of the floatline and leadline on an individual net.

**Gear:** A gillnet, or series of gillnets connected by bridles, with or without spaces in between, commonly referred to as “the string”.

**Dropline:** A line that connects the floats on the water's surface to the mainline/floatline. Droplines are used along the entire string to suspend the gear in the water column.

**Tie down:** A line used between the floatline and the leadline as a way to create a pocket or bag of netting. It is the working height of the net, not to be confused with net height.

**Buoynline:** A line that connects the buoy(s) or high flyer(s) at the surface to the gear (anchor or net) fishing in the water below. A line that connects the gear to the vessel is not considered a buoynline.

**Groundline:** A line that connects a gillnet or gillnet bridle to an anchor. If no anchor is used, there is no groundline.

To begin entering gillnet gear information click the Gear Tab in the blue Tabs bar.

1. **GEAR CODE:** Using the drop down menu select the type of gear being used.
  - 100: Gillnet, Anchored, Sink
  - 105: Gillnet, Anchored, Float
  - 117: Gillnet, Drift, Sink

Click OK. This will bring you to the main Gillnet Gear Tab screen.

2. **GEAR NUMBER:** Using the keyboard record the consecutive number assigned to each uniquely configured gear hauled. See the definition of gear in the introduction. Then click OK. Once you click OK the gear number field will grey out and additional information can then be entered.

**NOTE:** Once a gear number is entered and saved, it cannot be deleted. However, the gear information may be modified. If a gear number is accidentally entered and not used, record the reason in the COMMENTS.

3. **NUMBER OF NETS:** Using the keyboard record the **total** number of individual nets used in this gear.

The questions asked in this section describe a **single, average net**, from the many that may be put together to make up this gear. Since each gear is not always made up of uniform nets, provide an **average**, when necessary.

4. **NET LENGTH:** Using the keyboard record (in whole feet) the **average** horizontal distance of a single net on this gear, as measured along the floatline. This information should be obtained from the captain.

**NOTE:** If there is a space between two nets, **do not** include this distance in the net length.

5. **NET HEIGHT (endline):** Using the keyboard, record (to the nearest tenth of a foot) the **average** height of a net in this gear. This value is the length of the endline on the end of a net where the meshes are attached. This information should be obtained from the captain.

**NOTE:** This value should reflect the fishing height of the net as it sits in the water. This value is not the tie down length.

**NOTE:** This value should not be a calculated height and is not a fully stretched measurement.

6. **TIE DOWN?:** Record whether tie downs are used in this gear by checking the TIE DOWN box. When a check mark appears within the box, it indicates that tie downs have been used on this gear. If tie downs are not used on this gear, leave the box empty.

**NOTE** If tie downs are only used on part of the gear, check the TIE DOWN box and record in the COMMENTS sections how many nets within the gear have tie downs.

7. **LENGTH:** Using the keyboard record (to the nearest tenth of a foot) the average length of the tie downs used in this gear. This information should be obtained from the captain.

**After all information has been entered for this screen click SAVE.**

**NOTE:** A new Gear Tab must be filled out for each individual gear hauled, regardless of whether the gear is identical to a previous gear. If the exact same piece of gear is used for multiple hauls, do not fill out a new Gear Tab. Record the gear number on the corresponding Haul Tab.

**To continue entering gear information click MESH SIZE.**

8. **MESH SIZE RANGE:** Using the keyboard record (to the nearest hundredth of an inch) the minimum and maximum mesh sizes used in this gear. This information should be obtained from the captain.

**NOTE:** Do not complete this field if you have completed the NUMBER OF NETS AT EACH MESH SIZE

**To CLEAR the information entered click on CLEAR RANGE and reenter the appropriate information.**

9. **NUMBER OF NETS AT EACH MESH SIZE:** Complete the table by recording the number of nets, and the corresponding mesh size (to the nearest hundredth of an inch). This information should be obtained from the captain and is recorded as an estimate.

Minimum	Maximum
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

Measurements	Actual	
NNets	Meshsize	Actual
<input type="text"/> @	<input type="text"/>	<input type="checkbox"/>
<input type="text"/> @	<input type="text"/>	<input type="checkbox"/>
<input type="text"/> @	<input type="text"/>	<input type="checkbox"/>

**To CLEAR the measurements entered click on the CLEAR MEASUREMENTS box and reenter the appropriate information.**

**NOTE:** If this information is unavailable, complete MESH SIZE RANGE instead.

**NOTE:** If this information is obtained from the captain, make sure the value given is stretched length, not bar length. Stretched length is approximately twice the bar length.

Example 1: 1.25 in. mesh bar length would equal approximately 2.50 in. mesh stretched.

Example 2: 3 nets @ 6.25 inch mesh  
3 nets @ 6.50 inch mesh.

10. **ACTUAL or ESTIMATED?** Indicate if the measurement is an actual or estimated value by clicking the ACTUAL box. When a check mark appears within the box, it indicates that this is an actual measurement. If an actual measurement has not been taken leave this box empty.

**NOTE:** **Actual** mesh size measurements are obtained using calipers. Due to the fragile nature of gillnet meshes, monitors should not measure gillnet meshes with calipers. **Estimated** mesh size measurements should be obtained from the captain.

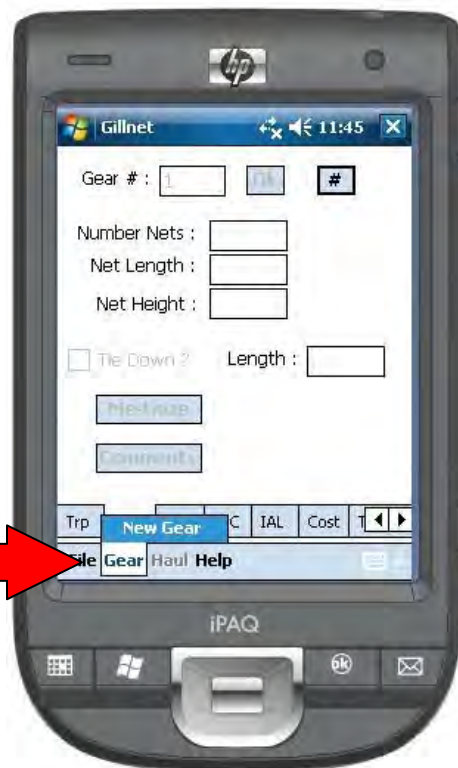
Example: If the at-sea monitor asks the captain the mesh size and he responds „6.25 inches,’ the at-sea monitor would record 6.25 and leave the ACTUAL box empty.


11. **COMMENTS:** Using the keyboard, record any additional information about this gear in the COMMENTS section.

**After all mesh information has been entered click DONE.** This will bring you back to the main Gillnet Gear Tab.

**After all gillnet gear information has been entered for this particular gear click SAVE. Failure to SAVE will result in loss of data!**


**To enter another gear click GEAR in the blue Menu Bar. Select NEW GEAR. Repeat steps # 1-11.**



The Gillnet Gear Tab also has a listing feature. To view the gears you have entered click .

**NOTE:** Once a Gear Number has been saved it cannot be deleted. However, gear information can be modified.

**To MODIFY gear information:**

- a. Click 
- b. Click on the Gear Number you wish to modify
- c. Click SELECT
- d. Click OK
- e. Enter in the appropriate information
- f. Click SAVE



## COMMON WARNINGS and ERRORS

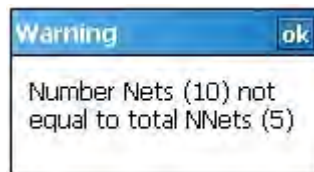
### WARNINGS

When the SectorASM program generates a WARNING message it usually indicates that an entered value lies outside a typical range. WARNING messages should be evaluated immediately before moving on in the program. However, WARNING messages may be bypassed if the value entered is correct.

To exit a WARNING message click OK in the upper right corner of the Warning Message box. You may then continue entering information or SAVE.

**NOTE:** Record in the COMMENTS section of the Tab generating the Warning, the reason the Warning was generated.

1. Number of Nets entered on the main Gillnet Gear Tab does not match up with the Number of Nets (NNets) entered on the Mesh Size screen.



2. Net length entered is out of normal range. If the net length you have entered is correct click OK on the upper right corner of the Warning box and click SAVE.

If the net length you have entered is NOT correct click OK on the upper right corner of the Warning, enter in the correct information, then click SAVE.



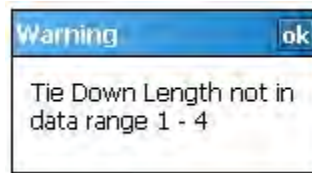
3. Net height entered is out of normal range. If the net height you have entered is correct click OK on the upper right corner of the Warning box and click SAVE.

If the net height you have entered is NOT correct click OK on the upper right corner of the Warning, enter in the correct information, then click SAVE.



4. Tie Down length is out of normal range. If the tie down length you have entered is correct click OK on the upper right corner of the Warning box and click SAVE.

If the tie down length you have entered is NOT correct click OK on the upper right corner of the Warning, enter in the correct information, then click SAVE.



## **ERRORS**

When the SectorASM program generates an ERROR message it usually indicates that an entered value is unacceptable. ERROR messages must be corrected immediately in order to continue. ERROR messages may not be bypassed.

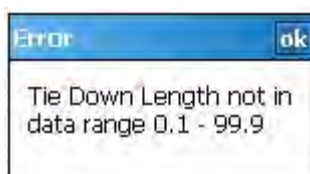
To exit an ERROR message click OK in the upper right corner of the Error Message box. Enter in correct information the click SAVE.

**NOTE:** ERROR messages may occur when saving data or creating a Zip file.

1. Average net length not in range. For this field to generate an ERROR, it means that the value entered is so far out of range that the program will not allow you continue. The value must be corrected before moving on.



2. Tie down length not in range. For this field to generate an ERROR, it means that the value entered is so far out of range that the program will not allow you continue. The value must be corrected before moving on.



3. The entered minimum mesh size is larger than the entered maximum mesh size in the RANGE portion of the Mesh Size screen. These values must be corrected before moving on. Entering a mesh size of ,0' will generate an ERROR and should not be entered.

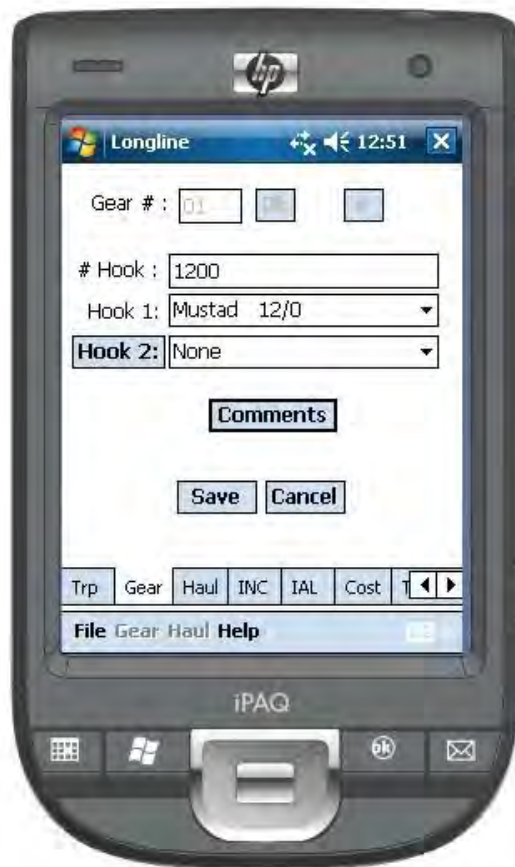




4. The entered minimum mesh has likely been entered as „0’ or the maximum mesh size has been entered as  $\geq 100$ . These mesh sizes must be corrected before moving on.



**LONGLINE GEAR TAB**



**DEFINITIONS**

**Handline:** A weight, leader, and at least one hook that may be baited, attached to a line. Handlines are not always held during fishing (e.g. rod and reel).

**Troll line:** One or more lines with hooks and bait or lures attached, that are towed behind a moving boat.

**Longline:** A mainline (“the string”) with spaced gangion lines attached which have baited hooks on the free end. The mainline is divided into sections of hook and float arrangements which are distinguished by a high flyer, radio beacon, or beeper buoy. **This may include multiple "tubs" of gear tied together.**

**Demersal Longline:** Bottom Longline or Tub Trawl.

**Mainline:** The main component of the gear that is usually made up of a braided nylon line that could be miles in length.

**Section:** Each portion of the entire longline string beginning with a high flyer, radio beacon, or beeper buoy and ending with the next high flyer, radio beacon, or beeper buoy.

**Gangion:** A line and hook attached to the mainline. Gangions may vary in length and have up to two swivels, one below a snap (if present) and possibly another one above the hook. Fishermen may sometimes refer to these as leaders.

**Leader:** A relatively short section of mono or steel wire placed between a swivel and the hook. It reduces bite offs, makes hook replacement easier and helps to maintain gangion length.

**Demersal Longline**

**Gear:** A longline string composed of one or more "tubs" uniquely configured for a specific target species or a single mainline of steel cable with snap-on hooks.

**Rod and Reel and Troll Gears**

**Gear:** An individual line with hooks and bait attached.

**Jig:** A type of fishing lure designed to resemble prey species. The typical build up of a jig consists of a heavy head with a ring to attach the line to, connected to the head is a hook with a barb.

**Auto Jig:** An electronic mechanism that creates a vertical bobbing motion in the water column (jigging) to one or more artificial lures attached to a line. The hooks on this gear may vary in style, size, and shape. This gear should be distinguished from electronic reels that do not impart a regular up and down jigging motion to the line.

**To begin entering longline gear information click the Gear Tab in the blue Tabs Bar.**

1. **GEAR CODE:** Using the drop down menu select the type of gear being used.
  - 010: Bottom Longline
  - 020: Handline
  - 021: Handline, Jig (Auto Jig only)

Click OK. This will bring you to the main Longline Gear screen.

2. **GEAR NUMBER:** Using the keyboard record the consecutive number assigned to each uniquely configured gear hauled and for which characteristics are described. All „strings’ of gear are given a separate gear number and its gear characteristics are recorded as a separate gear record. Then click OK.
3. **NUMBER OF HOOKS:** Using the keyboard record the **total** number of individual hooks set on this gear. This information should be obtained by the captain.

**NOTE:** This should be independent hooks. If one piece is used that has 3 points is still considered „1 hook’.



= 1 hook

- HOOK TYPE 1:** Using the drop down menu, select the primary type of hook used on this gear. The information being collected from this drop down menu is the Brand, Model/Pattern, and size.

Example:

BRAND	MODEL/PATTERN NUMBER	SIZE
Eagle Claw	L9016	9/0
Mustad	33960	10/0

**NOTE:** This information may be found on the box in which the hooks were purchased, or obtained from the captain.

- HOOK TYPE 2:** Using the drop down menu, select the secondary type of hook used on this gear.

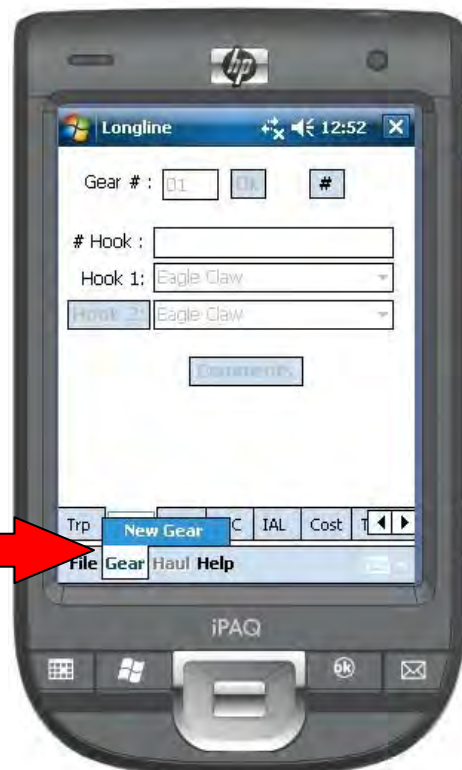
**NOTE:** If there is no secondary hook type select NONE. This field cannot be left blank.

- COMMENTS:** Using the keyboard record any additional information about this gear in the COMMENTS.

**After all longline gear information has been entered, click SAVE.** Failure to SAVE will result in loss of data!




**To enter another gear click GEAR in the blue Menu Bar. Select NEW GEAR. Repeat steps #1-6.**



**The Longline Gear Tab has a listing feature. To view the entered Gears click .**

**NOTE:** Once a Gear Number has been saved it cannot be deleted. However, gear information can be modified.

**To MODIFY gear information:**

- Click 
- Click on the Gear Number you wish to modify
- Click SELECT
- Click OK
- Enter in the appropriate information
- Click SAVE



## COMMON WARNINGS and ERRORS

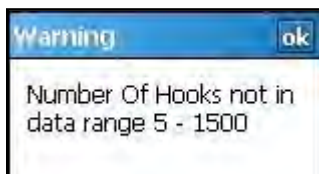
### WARNINGS

When the SectorASM program generates a WARNING message it usually indicates that an entered value lies outside an average range. WARNING messages should be evaluated immediately before moving on in the program. However, WARNING messages may be bypassed if the value entered is correct.

To exit a WARNING message click OK in the upper right corner of the Warning Message box. You may then continue entering information or SAVE.

**NOTE:** Record in the COMMENTS section of the Tab generating the Warning, the reason the Warning was generated.

1. When entering Handline (020) and Handline, Jig (021) information, if the number of hooks used are < 5 (which is likely), the following Warning message will appear:



To bypass this Warning message, click OK in the upper right hand corner of the Warning box and click SAVE.

If you are entering gear information for a Bottom Longline (010) and this Warning appears, click OK on the upper right hand corner of the Warning box and verify the correct information has been entered. It is unlikely that a bottom longline would be outside of this range.

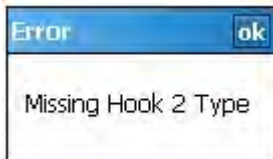
### ERRORS

When the SectorASM program generates an ERROR message it usually indicates that an entered value is unacceptable. ERROR messages must be corrected immediately in order to continue. ERROR messages may not be bypassed.

To exit an ERROR message click OK in the upper right corner of the Error Message box. Enter in correct information the click SAVE.

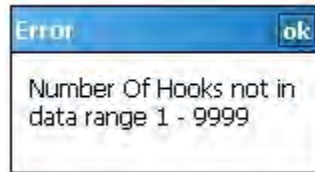
**NOTE:** Most ERROR messages will occur when creating a Zip file.

1. Hook 2 Type has not been entered. In order for the program to allow you to continue you must select a Hook 2 value from the drop down menu. If there is no Hook 2 used for the gear entered select NONE.



2. The value entered is so far out of range the program will not allow you to continue.

Example: A value of „0’ has been entered for # of Hooks. When a gear is entered, there must be at least 1 hook entered in # of Hooks. If for some reason the number of hooks is „0’ enter a value of 9999 and record the reason in the COMMENTS section of the Longline Gear Tab.



## MULTI GEAR TRIPS

When more than one gear type is used within a single fishing trip, all gear types and the corresponding hauls must be recorded. This includes different gears within the same gear category (i.e. a vessel uses a 2 seam bottom otter trawl and a haddock separator trawl within the same fishing trip) or different gears outside of the primary gear category (i.e. a vessel uses handline and gillnet gear). Any secondary gear within the same gear category can easily be selected like the first.

Typically handline will be the secondary gear used.

**Primary Gear** is defined as the gear that is used the majority of the trip (i.e. the majority of the hauls for the trip)

**Secondary Gear** is defined as any other gear used other than the primary gear (i.e. on a gillnet trip a handline gear is deployed).

## INSTRUCTIONS

### SAME GEAR CATEGORY

These instructions are for recording gear within the same gear category (i.e. different trawl gears; different types of longline gears)

#### TRAWL



#### GILLNET



#### LOGLINE



Select the new gear type and fill in all fields as outlined in the Trawl Gear Tab, Gillnet Gear Tab, or Longline Gear Tab.

**SCENARIO:** On a bottom otter trawl trip the captain starts the trip off with a 2-seam bottom otter trawl (gear code = 050). On Haul 3 of the trip the captain uses a Ruhle trawl. For the remainder of the trip the captain uses the same 2-seam bottom otter trawl net he initially used.

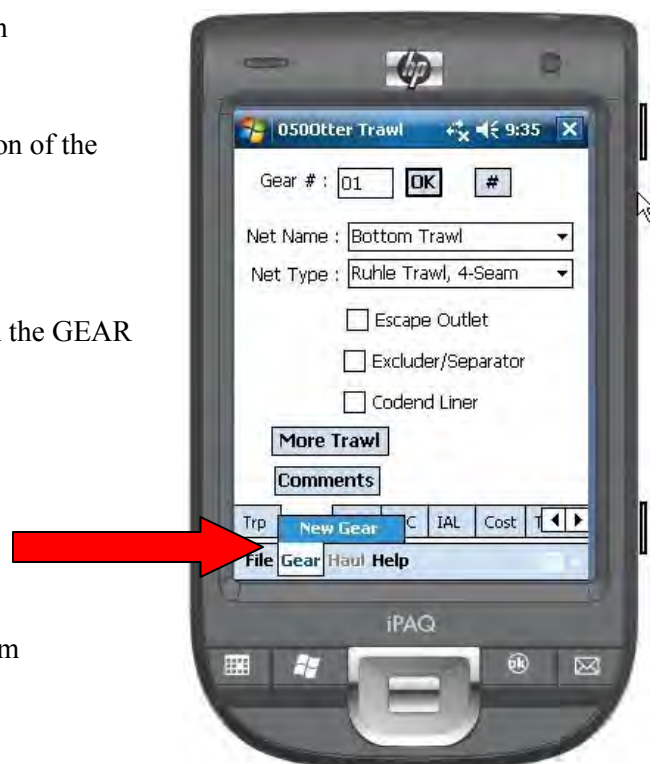
Trawl Gear Recording:

2-Seam Bottom Otter Trawl: GEAR 01

1. More Trip Tab
  - PRIM GEAR: **Select 050-Trawl, Ot, Bot, Fish**
2. Gear Tab: Select **050-Trawl, Ot, Bot, Fish**
3. OTTER TRAWL
  - **GEAR #: 01**
  - NET NAME: Bottom Trawl
  - NET TYPE: 2-seam Trawl
  - ESCAPE OUTLET (Y or N)
  - EXCLUDER/SEPARATOR (Y or N)
  - CODEND LINER (Y or N)
4. MORE TRAWL
  - CODEND HUNG (Select appropriate shape)
  - CODEND TWINE (Select appropriate twine type)
5. MESH SIZE
  - Enter in 10 random codend mesh measurements
6. Enter in all corresponding information of the HAUL TAB.

Ruhle Trawl: GEAR 02

1. Gear Tab: Select NEW GEAR from the GEAR sub Tab
2. Select **054-Trawl, Ot, Bot, Ruhle**
3. OTTER TRAWL
  - **GEAR #: 02**
  - NET NAME: Bottom Trawl
  - NET TYPE: Ruhle Trawl 4-seam





- ESCAPE OUTLET (Y or N)
  - EXCLUDER/SEPARATOR (Y or N)
  - CODEND LINER (Y or N)
4. More Trawl
    - CODEND HUNG (Select appropriate shape)
    - CODEND TWINE (Select appropriate twine type)
  5. MESH SIZE
    - Enter in 10 random codend mesh measurements
  6. Enter in all corresponding information of the HAUL TAB for Haul 03.

**NOTE:** All other hauls will use **Gear 01**

### **DIFFERENT GEAR CATEGORY**

These instructions are for recording gear with different gear categories (i.e. recording longline line gear and trawl gear used on the same trip).

**SCENARIO:** You have been deployed on a gillnet boat. The crew hauls in 3 strings of gillnet gear. Before setting their nets out they use a rod and reel to „test the waters’.

Gillnet Gear Reporting:

100-Gillnet, Anchored, sink: GEARS 01, 02, 03

A separate gear record must be recorded for all gillnet gears

1. More Trip Tab
  - PRIM GEAR: **Select 100-Gillnet, Anchored, Sink**
2. Gear Tab: **Select 100-Gillnet, Anchored, Sink**
3. GILLNET
  - **GEAR #s: 01, 02, 03** (reported as individual records)
  - NUMBER NETS
  - NET LENGTH
  - NET HEIGHT
  - TIE DOWN? (Y or N)
  - TIE DOWN LENGTH
  - MESH SIZE
    - Range: Minimum/Maximum
    - OR
    - Number of Nets @ Mesh Size (Actual or Estimated?)

4. Enter in all corresponding information of the Haul Tab and More Gillnet Subtab.

Rod and Reel (020-Handline): GEAR 04

To create new gear to record the rod and reel gear

1. Select same gear type as primary gear (100-Gillnet, Anchored, Sink)
2. Make all values unknown/null on the Gear Tab
3. Enter ALL Handline gear information into the Gillnet Gear Tab COMMENTS screen. Make sure to record ALL necessary fields for secondary gear

Example: “Gear code = 020-Handline

#Hooks = 1

Hook type = Eagle Claw L9015 9/0

Mainline = 0.01nm”

**NOTE:** Make sure to carry other gear logs or the At-sea Monitor Program Manual with you so you know the necessary gear fields.

4. Enter a comment in the Trip Tab COMMENTS section that a second gear has been used on the trip. Include then second gear code used and when it was used

Example: “Gear code = 020-handline used Haul 2”

**NOTE:** Be aware that the COMMENTS field only allows a maximum of 250 characters (including spaces).

## HAUL TAB



## DEFINITIONS

### Haul Begin:

Gillnet and Longline: Hauling equipment put into gear or retrieval of gear commences, i.e. the first piece of longline gear comes onboard (usually the high flyer or buoy).

Trawl: When the first component of the net is deployed (e.g., net hits the water).

### Haul End:

Gillnet and Longline: The last of gear is completely retrieved and onboard the vessel (e.g., the last highflyer is brought onboard the vessel).

Trawl: When the winches are first engaged with the intention of completely hauling back the gear. This does not include when the vessel makes turns.

**Observed Haul**: A haul where all of the catch is recorded, regardless of whether it is kept or discarded.


**Unobserved Haul**: A haul where complete kept and discard information from the haul is not collected. Discard data is collected only for incidental takes and those species that are recorded on the Individual Animal Log. A haul may be unobserved because a monitor is below deck for weather related safety reasons, illness, etc. **Do not record any other discard information for unobserved hauls.** Record all kept catch information. This should be obtained by the captain.

## INSTRUCTIONS


To enter Haul information click the Haul Tab in the Tabs Menu bar.

1. **HAUL NUMBER:** Using the keyboard, record the haul number each time gear is hauled on this trip. Start with "1" for the first haul, and continue numbering sequentially for the following hauls. After entering the haul number, click OK.

**NOTE:** Haul numbers are automatically generated. This prevents mis-numbering or skipping hauls. All hauls should be entered in the same sequential order as recorded on the corresponding paper logs.

To see all entered Hauls click on . This screen shows all hauls and their associated Gear Number entered.

To **MODIFY** or **CHANGE** haul information for a Haul that has been entered:

- a. Click on 
- b. Click on the Haul you wish to modify
- c. Click SELECT

**NOTE:** Once a Haul Number is saved, it cannot be deleted or changed to a different Haul Number. However, the information entered within a particular haul can be changed or modified.

Example: If you entered a total of 6 hauls and only 5 hauls actually occur on the trip, „Haul 6’ cannot be deleted. Enter the reason for the unused haul in the COMMENT field of the Haul Tab.



2. **GEAR NUMBER:** Using the drop down menu, select the corresponding gear number entered on the Gear Tab.

**NOTE:** If no Gear Number is entered an ERROR Message will appear. A Gear Number must be entered in order to continue.



3. **OBSERVED?** Record whether this haul is observed by checking the HAUL OBSERVED box. When a check mark appears within the box, it indicates that the haul has been fully observed. If the haul is unobserved, leave this box empty.

**NOTE:** Do not record any discard information for unobserved hauls.

4. **INCIDENTAL TAKE:** Record whether a marine mammal, sea turtle, or sea bird is caught by the gear in this haul by checking the INC TAKE box. When a check mark appears within the box, it indicates that an incidental take has occurred in this haul. If an incidental take did not occur, leave this box empty.

5. **WEATHER:** Record the weather condition at the beginning of the haul by selecting the most appropriate condition from the drop down menu.

6. **WAVE HEIGHT:** Using the keyboard, record the wave height (in whole feet) at the beginning of the haul. If the wave height is less than 6 inches record "0."

7. **GEAR CONDITION:** Using the drop down menu, select the most appropriate gear condition of the gear at haul back, regardless of the condition of the gear when set.

8. **TARGET 1:** Indicate the principal species or species group targeted in this haul by selecting the most appropriate and specific species name possible from the drop down menu. This information must be obtained from the captain for every haul, and should be asked before the gear is hauled. It should not be based on the results of the haul's catch.

9. **TARGET 2:** If a secondary species is targeted in this haul, select the most appropriate and specific species name possible from the drop down menu. This information must be obtained from the captain for every haul, and should be asked before the gear is hauled. It should not be based on the results of the haul's catch.

**NOTE:** If there is no secondary target species, leave this field BLANK. Do not select NONE.

**To DELETE a TARGET 2** click the blue box surrounding TARGET 2 and the field will clear.

10. **COMMENTS:** Comments for the following Tabs should be recorded within the COMMENTS field on the Haul Tab:

- Haul Tab
- Haul Begin Tab
- Haul End Tab

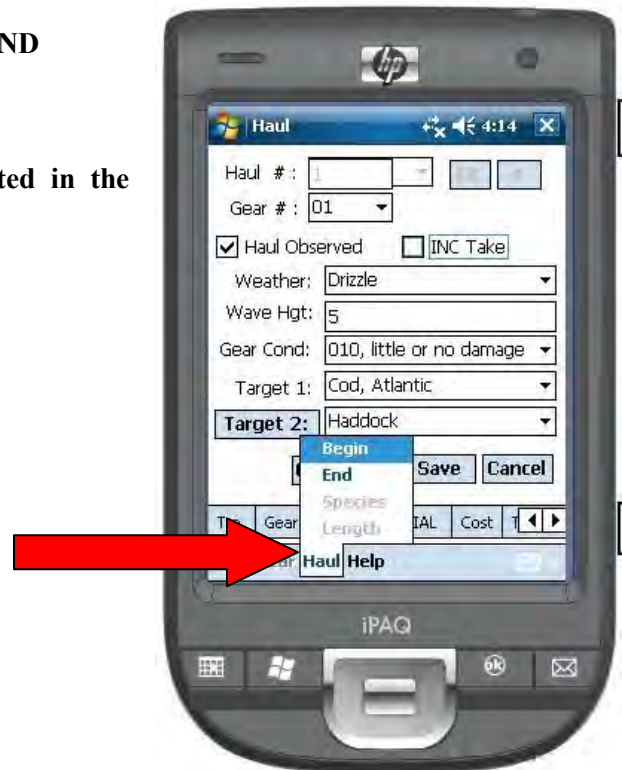


**NOTE:** „No catch’ or „No kept catch’ comments for an individual haul are recorded in the Haul Tab COMMENTS field.

After all information has been entered for this screen click **SAVE**.

### HAUL BEGIN & HAUL END

To enter **HAUL BEGIN** information, click **HAUL** listed in the **Menu Bar** at the bottom of the screen and select **BEGIN**.



11. **HAUL BEGIN DATE:** Select the day, month, and year, based on local time, which this haul begins by using the drop down calendar.

**NOTE:** Haul Begin information is not collected for hauls using handline gear (020 & 021). A value must be entered in this field or an Error Message will be generated. For handline gear only, enter the **HAUL END DATE** information in this field.

12. **HAUL BEGIN TIME:** Record the local time using the 24 hour clock (0000-2359), that this haul begins (See Haul Begin definition). You may use the keyboard to punch in the numbers OR click on the hour and minute using the up and down arrow buttons.

**NOTE:** Haul Begin information is not collected for hauls using handline gear (020 & 021). A value must be entered in this field or an Error Message will be generated. For handline gear only, enter the **HAUL END TIME** information in this field.



13. **HAUL BEGIN LATITUDE/ LONGITUDE:** Using the keyboard, record the latitude and longitude location (to the nearest tenth of a minute) where the haul begins. If the latitude and longitude location is given in seconds, convert them to tenths of minutes.

**NOTE:** LORAN stations and bearings are not acceptable.

**NOTE:** The CalPos Program on the iPAQ should be used to convert LORAN stations to latitude/longitude locations.

**NOTE:** Haul Begin information is not collected for hauls using handline gear (020 & 021). A value must be entered in this field or an Error Message will be generated. For handline gears only, enter the HAUL END LATITUDE/LONGITUDE information in this field.

**After all information has been entered for this screen click DONE.**

14. **HAUL END DATE:** Select the day, month, and year, based on local time that this haul ends by using the drop down calendar.

15. **HAUL END TIME:** Record the local time using the 24 hour clock (0000-2359), that this haul ends. You may use the keyboard to punch in the numbers OR click on the hour and minutes using the up and down arrow buttons.

16. **HAUL END LATTITUDE/ LONGITUDE:** Using the keyboard, record the latitude and longitude location, to the **tenth of a minute**, where the haul ends. If the latitude and longitude location is given in seconds, convert them to tenths of minutes.

**NOTE:** LORAN stations and bearings are not acceptable.

**NOTE:** The CalPos Program on the iPAQ may be used to convert LORAN stations to latitude/longitude locations.

**After all information has been entered for this screen click DONE.**

## SPECIES TAB

Species records cannot be entered until main haul information on the Haul Tab are saved.

To enter Species information, click HAUL listed in the blue Menu Bar at the bottom of the screen and select SPECIES.

17. **SPECIES NAME:** To enter a species caught in this haul, select the complete common name of the species from the drop down menu. This includes all debris and non-living matter caught in this haul.

**NOTE:** The Species Tab is equipped with two (2) Species Lists.

- The „Short’ list is an abbreviated list with commonly encountered species.
- The „Long’ list is a complete list of all species, debris, and non-living matter.

18. **WEIGHT:** Using the keyboard, record the dressed or round, actual or estimated weight for each caught species. Record this weight in the most accurate form possible, i.e. if a species is gutted prior to weighing, record a dressed weight for this species. Actual weights should be recorded whenever possible.

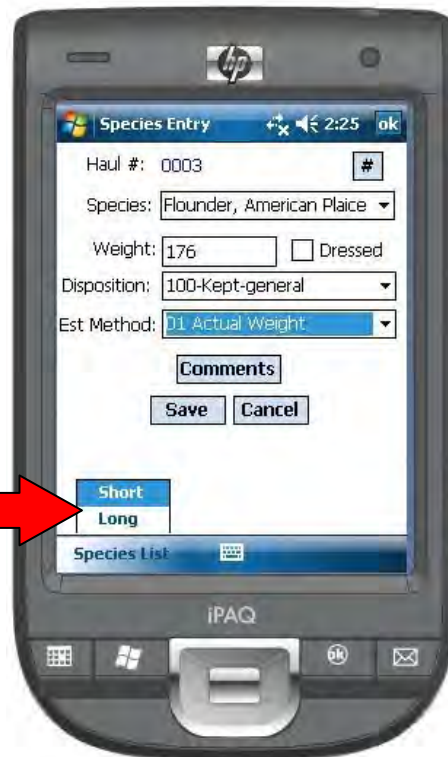
**NOTE:** Actual weights are recorded to the nearest tenth of a pound.

Estimated weights greater than one pound are recorded to the nearest whole pound. Estimated weights less than one pound are recorded to the nearest tenth of a pound.

**NOTE:** Kept is defined as brought on board the vessel and retained for market or consumptive purposes.

**NOTE:** If a fish is "upgraded" or "high graded", and a previously kept fish is discarded and replaced with one that is larger (or of higher quality/value), record the discarded animal(s) and POUNDS discarded on the Haul Tab/Log corresponding to the haul in which the animal(s) was (were) originally caught, and code it 062 for FISH DISPOSITION. Be sure to subtract the weight of the animal(s) from the original POUNDS kept record. Upgrading may result in dressed discard weights. Upgrading is typically done with swordfish and tuna, but may also occur with other fish species.

**NOTE:** When a fish is discarded by the vessel, but retained whole by the observer, for scientific purposes, i.e. species identification, record the discarded fish weight next to the correct species name, and code it 007 for FISH DISPOSITION.





19. **DRESSED:** If a species is gutted/dressed at sea and weighed as such, record a dressed weight for this species by checking the DRESSED. When a check mark appears within the box it indicates that the weight of that species is dressed. If the weight is a round weight, leave this box blank.

**NOTE:** Shark fins, skate wings, monkfish tails, monkfish livers, and fish chunks are considered DRESSED.

**NOTE:** Dressed and round weights for the same species and fish disposition reason should be recorded as separate species records.

**Example:** The monitor is unable to weigh all of the kept cod before the crew begins to dress them. The monitor obtains actual weights for all undressed cod and actual weights for the remaining dressed cod. The monitor will record the weight for the round/actual cod and dressed/actual cod separately.

**NOTE:** For species coded ‚poor quality, previously discarded fish’ (039), select ‚Fish, nk’ for the species, record the weight in the WEIGHT field, check the DRESSED box, and record the species name in the COMMENTS (i.e., Fish, nk = monkfish head).

20. **DISPOSITION:** Indicate whether the species recorded is kept or discarded by selecting the appropriate code and reason from the drop down menu.

**NOTE:** Kept is defined as brought onboard the vessel and retained for market or consumptive purposes.

**NOTE:** When a fish is discarded by the vessel, but retained whole by the monitor, for scientific purposes (e.g., species identification) record the discarded fish weight next to the correct species name, and select “007” as the fish disposition.

**NOTE:** If more than one fish disposition applies to a species, separate the species into two or more lines, and record the appropriate weights and fish disposition for each. However, if there is one overriding fish disposition code for all animals of a species group, do not attempt to break this group into smaller discard reason groups.

**Exception 1:** In the event that a fish disposition changes in the middle of a haul, the monitor should maintain the fish disposition code(s) from when sampling began.

**Example:** The crew is keeping winter flounder, however, in the middle of a haul the captain says that he cannot keep anymore winter flounder because the quota has been reached. The monitor should continue to assign disposition codes as originally intended and comment on the situation.

**Exception 2:** American lobster should be categorized into specific disposition codes, i.e. (022) v-notch; (023) soft-shelled; (024) with eggs, etc.

## Examples:

- a. All Atlantic wolfish caught is discarded because "Regulations prohibit any retention, including no permit" (025). Therefore, any „undersized’ wolfish are still recorded as (025).
  - b. Of the 500 lbs of Summer Flounder discarded
    - 400 lbs are discarded because they are of poor quality due to hagfish damage (036)
    - 100 lbs are discarded because regulations prohibit their retention because they are too small (012)
20. **ESTIMATION METHOD:** Enter the method used to estimate the catch weight of the individual species (including debris) by selecting the appropriate method from the drop down menu.
- NOTE:** Actual Weight: Species weighed with the NMFS issued scale.
- NOTE:** If the haul is unobserved, but kept information is obtained from the captain, then (04) CAPTS ESTIMATE should be recorded as the ESTIMATION METHOD.
- NOTE:** Visual estimates should rarely be used except when estimating very large objects or for accounting for objects such as seaweed attached to fishing gear or very fine and unevenly distributed items such as clay and sand.
21. **COMMENTS:** Using the keyboard, record any additional information related to this particular species and haul, i.e. unusual species, levels of bycatch, reasons for unobserving a haul, etc.

**After all comments have been entered click OK.** This will take you back to the main Haul Tab.

**If all information has been entered click SAVE.** Failure to SAVE will result in lost data.

### LENGTH FREQUENCY TAB

**To enter LENGTH FREQUENCY information, click HAUL listed in the blue Menu Bar at the bottom of the screen and select LENGTH.**

22. **SPECIES NAME:** To enter the species for the corresponding length, select the complete common name of the species from the drop down menu.



**NOTE:** Length entries can only be entered for species that already exist on the Species Tab.

23. **FISH DISPOSITION CODE:** Indicate the disposition of the species listed in SPECIES NAME by selecting the corresponding FISH DISPOSITION from the drop down menu.

**NOTE:** Only fish disposition options on the Length Tab are those that have been entered on the Species Tab.

24. **SAMPLE WEIGHT:** Using the keyboard, record (to the nearest tenth of a pound), the actual weight of all of the animals measured for the species being sampled.

**NOTE:** All species with associated lengths should be ROUND ACTUAL weights.

**NOTE:** Do not take length frequencies for dressed or damaged fish.

To enter in fish lengths, click LENGTH FREQUENCY.

To enter in length frequencies click NEW LENGTH.

25. **LENGTHS:** Click the box under LENGTHS. Using the keyboard enter in the first length.

**NOTE:** Lengths should be entered consecutively from shortest to longest.

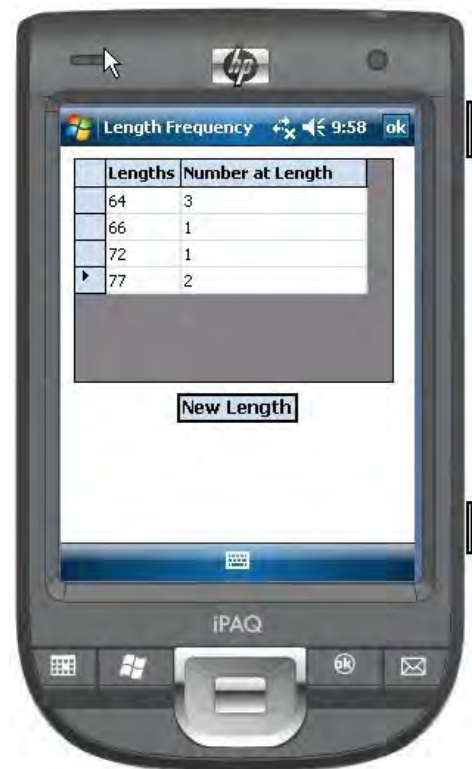
**NOTE:** Finfish and squid are measured in whole centimeters.

26. **NUMBERS-AT-LENGTH:** Using the keyboard, record the total number of animals measured at each centimeter.

To enter a new length click NEW LENGTH and follow steps #25 and #26.

After all Lengths have been entered for the selected species click SAVE. Then click OK in the upper right hand corner of the screen.

This will take you back to the LENGTH screen. Follow the same LENGTH FREQUENCY steps to enter additional lengths for species sampled within this haul.



**After all lengths for this haul have been entered click OK in the upper right hand of the screen.** This will take you to the main Haul Tab.

27. **COMMENTS:** Using the keyboard, record any additional information regarding the species lengthed on this haul.

**NOTE:** IAL species are not recorded on the Length Frequency Tab. Record weight and length measurements of IAL species on the IAL Tab.

**After all haul information has been entered click SAVE.** Failure to SAVE will result in lost data.

## COMMON WARNINGS and ERRORS

### WARNINGS

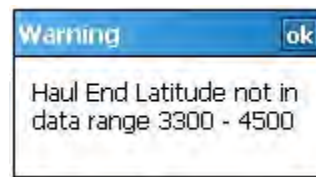
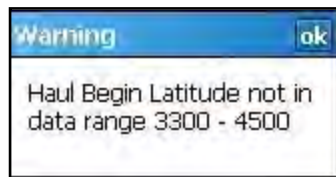
When the SectorASM program generates a WARNING message it usually indicates that an entered value lies outside an average range. WARNING messages should be evaluated immediately before moving on in the program. However, WARNING messages may be bypassed if the value entered is correct.

To exit a WARNING message click OK in the upper right corner of the Warning Message box. You may then continue entering information or SAVE.

**NOTE:** Record in the COMMENTS section of the Tab generating the Warning, the reason the Warning was generated.

1. The latitude entered for Haul Begin or Haul End is out of range.

**NOTE:** If a position was not recorded for the haul, enter in the Statistical Area. This will automatically generate a WARNING message. Click OK in the upper right corner of the Warning box.



### ERRORS

When the SectorASM program generates an ERROR message it usually indicates that an entered value is unacceptable. ERROR messages must be corrected immediately in order to continue. ERROR messages may not be bypassed.

To exit an ERROR message click OK in the upper right corner of the Error Message box. Enter in correct information the click SAVE.

**NOTE:** Most ERROR messages will occur when creating a Zip file.

1. The latitude/longitude is out of range. In order for an ERROR to occur the value entered is so far out of range the program will not let you continue. Click OK in the upper right corner of the Error message then change the entered value.



- A gear number has not been selected for the corresponding haul. In order to continue a gear number must be entered.

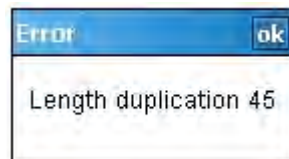
**NOTE:** Gear information in the Gear Tab must be entered before haul information is entered.



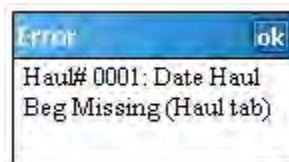
- Species entries must be entered before length frequencies can be entered.



- Two (2) identical lengths have been entered. The program does not allow duplicate entries. Carefully check that the lengths have been entered properly for each species and fish disposition.



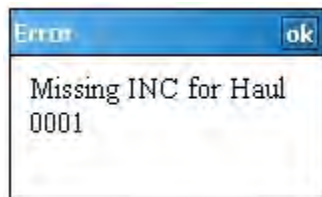
- The Haul Begin date has not been entered. The program will tell you the haul with the missing information. Return to that particular Haul and enter in the appropriate information.



- The date entered in for a haul does not occur within the Date Sailed and Date Landed. The program will tell you the haul with the inaccurate date. Return to that particular Haul and enter in the appropriate information.



- This ERROR occurs when you have checked the INC TAKE box for a particular haul (Haul Tab) and have not filled out a corresponding Incidental Take Tab. If an incidental take has occurred for the haul, enter in the appropriate information on the Incidental Take Tab. If an incidental take has not occurred, return to the identified haul and uncheck the Inc Take box.



## GILLNET MORE HAUL TAB

**DEFINITIONS**

**Haul Begin:** Hauling equipment put into gear or retrieval of gear commences, i.e. first piece of gillnet gear comes onboard (usually the high flyer or buoy).

**Haul End:** The last of gear is completely retrieved and onboard the vessel (e.g., the last highflyer is brought onboard the vessel).

**Fields #1-9 on the main Haul Tab must be completed before additional gillnet haul information can be entered.**

**To complete haul information fields specific to gillnet click MORE on the Haul Tab screen.**

1. **NETS HAULED:** Using the keyboard, record the **total** number of nets that are hauled back from this set, regardless of how many nets were originally set. If a net is partially hauled, round this number to the nearest whole net.

Example: If 200 ft of a 300 ft net is hauled record one net hauled.

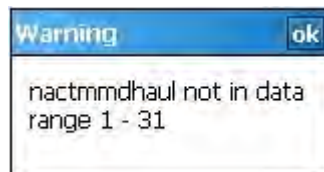


**NOTE:** Record a zero (0) if less than half of one net of a string is hauled and there is NO catch. Record a one (1) if less than half of one net of a string is hauled and there is catch.

- PINGERS HAULED:** Using the keyboard, record the **total number** of pingers hauled on the gear, regardless of how many pingers were originally set.

**NOTE:** If pingers were placed on the gear during the set, and no pingers are hauled on the gear record a zero '0'. Do not leave this field blank.

Entering in '0' will generate the following Warning. To exit, click OK in the upper right hand corner of the Warning box



If no pingers were placed on the gear during the set, leave this field blank.

**NOTE:** If the gear is partially hauled, record the number of pingers **only on the portion of gear hauled.**

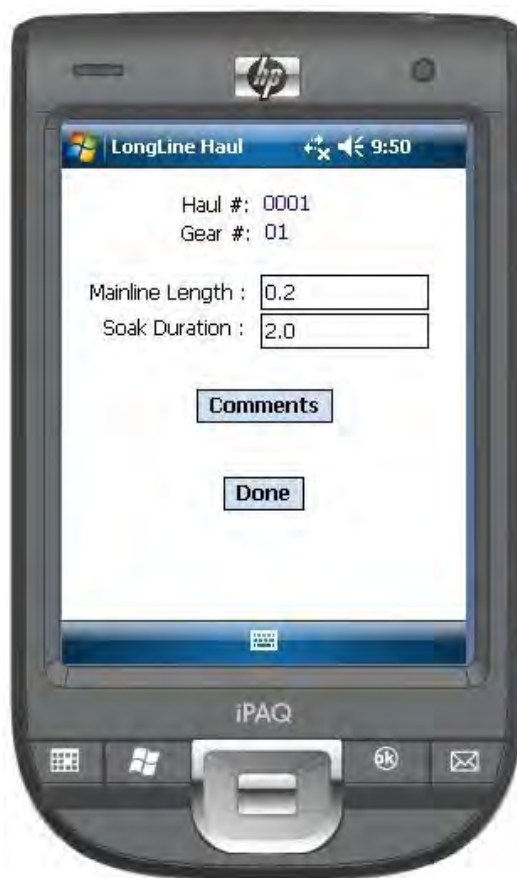
**NOTE:** This number should reflect the number of these devices on the gear regardless of whether or not it is believed these devices are actually working. Information of this nature should be recorded in the COMMENTS of the More Gillnet Tab.

- SOAK DURATION:** Using the keyboard, record (to the nearest tenth of an hour) the amount of time that the gear for this haul is in the water fishing. This is the amount of time from when the string is secured to an anchoring device, until the retrieval of gear commences (Haul Begin). If the gear set was not witnessed, obtain this time from the captain. If the set is witnessed, calculate the soak duration.
- COMMENTS:** Using the keyboard, record any additional information regarding the fields on the More Gillnet Tab (e.g. additional pinger information). Reference each comment with its corresponding field name.

**After all correct information has been entered for this screen click DONE.** This will take you back to the main Haul Tab.

**After all information and comments have been entered, click SAVE.** Failure to SAVE will result in loss of data.

**LONGLINE MORE HAUL TAB**



**DEFINITIONS**

**Haul Begin:** Hauling equipment put into gear or retrieval of gear commences, i.e. the first piece of longline gear comes onboard (usually the high flyer or buoy).

**Haul End:** The last of gear is completely retrieved and onboard the vessel (e.g., the last highflyer is brought onboard the vessel).

**Observed Haul:** A haul where all of the catch is recorded, regardless of whether it is kept or discarded.

**Unobserved Haul:** A haul where complete kept and discard information from the haul is not collected. Discard data is collected only for incidental takes and those species that are recorded on the Individual Animal Log. A haul may be unobserved because a monitor is below deck for weather related safety reasons, illness, etc. **Do not record any other discard information for unobserved hauls.** Record all kept catch information. This should be obtained by the captain.

**Fields #1-9 on the main Haul Tab must be completed before additional longline haul information can be entered.**

**To complete haul information fields specific to longline click **MORE** on the Haul Tab Screen.**

1. **MAINLINE LENGTH:** Using the keyboard record (to the nearest tenth of a nautical mile) the length of the mainline for this gear. This should account for all of the tubs that are tied together on that particular "string" of gear. This information can be obtained from the captain or calculated by the monitor.

**NOTE:** One nautical mile = 6,080 feet

**NOTE:** For rod and reel and other handline gears, leave this field blank.

2. **SOAK DURATION:** Using the keyboard, record (to the nearest tenth of an hour) the amount of time that the gear for this haul is in the water fishing. This is the amount of time from when the string is secured to an anchoring device, until the retrieval of gear commences (Haul Begin). If the gear set was not witnessed, obtain this time from the captain. If the set is witnessed, calculate the soak duration.

**NOTE:** For rod and reel and other handline gears, leave this field blank.

3. **COMMENTS:** Using the keyboard, record any additional information regarding the fields on the More Longline Tab. Reference each comment with its corresponding field name.

**After all correct information has been entered for this screen click **DONE**.** This will take you back to the main Haul Tab.

**After all information and comments have been entered, click **SAVE**.** Failure to **SAVE** will result in loss of data.

## INCIDENTAL TAKE TAB

Comments and photos MUST be provided for all Incidental Takes.

### DEFINITIONS


**Incidental Take:** If at any time during an observed trip a marine mammal, sea turtle, or sea bird directly contacts the vessel, or the vessel's fishing gear AND any part of the animal is entangled, snagged, ensnared, caught, hooked, collided with, hit, injured or killed by the vessel or its gear, regardless of the final condition and release of the animal, it should be documented on the Incidental Take Tab.

Single bones or disarticulated marine mammal, sea turtle, or sea bird skeletons are recorded in the species section of the Haul Tab as bone, nk. Articulated ( $\geq 75\%$  of skeleton) marine mammal, sea turtle, or sea bird skeletons are recorded on the Incidental Take Tab and the INC TAKE? field on the Trip Tab and corresponding Haul Tab should be checked as 'YES'. Comments and photos MUST be provided in both instances.

1. **PSID#:** A consecutive identification number (Protected Species ID) is assigned to each animal that is incidentally taken on this trip. The sequences of numbers assigned for each animal should correspond to the sequence of the take event. They are numbered in order of time taken. Using the keyboard, record the consecutive PSID number assigned to each animal that was incidentally taken on this trip. Start with '01' and number consecutively over the course of the entire trip. Once you have entered the appropriate PSID number, click OK.


The **Incidental Take Tab** has a listing feature you can use to view all entered incidental takes. You may also use this feature to modify or delete entries.

**To MODIFY or CHANGE incidental take information for a PSID that has been entered:**

- a. Click on 
- b. Click on the PSID record you wish to modify
- c. Click SELECT. This will bring you to that PSID entry screen.
- d. Click OK
- e. Enter in the information
- f. After all information has been entered click SAVE. Failure to SAVE will cause the new changes to be lost.

**NOTE:** Once a PSID has been saved it cannot be changed to a different PSID. However, the information entered for a particular PSID may be modified or deleted.

**To DELETE an entered Incidental Take record:**

- a. Click on 
- b. Click on the PSID record you wish to delete
- c. Click DELETE. The program will ask if you wish to delete the record.
- d. Click YES



2. **HAUL NUMBER:** Using the keyboard or the drop down menu, record the haul number assigned to the haul in which the take occurred.
  
3. **GEAR NUMBER:** Using the drop down menu, record the gear number assigned to this uniquely identified gear in which the animal was taken, as specified on the corresponding Gear Tab (i.e., Trawl Gear Tab, Gillnet Gear Tab, and Longline Gear Tab).
  
4. **SPECIES NAME:** Select the complete common name of each animal incidentally taken on this trip by selecting the species from the drop down menu. The species are listed in alphabetical order.

**NOTE:** If it is not possible to make a positive species identification, identify the animal to the most specific generic group of which you are positive (e.g., baleen whale nk, dolphin nk, seal nk, hard-shelled sea turtle, etc).

**DO NOT GUESS AT SPECIES IDENTIFICATION!**

5. **ANIMAL CONDITION:** Indicate the condition of the animal **when released** by selecting the most appropriate animal condition from the drop down menu. See Table 1 for more information.

**NOTE:** For more descriptive details on dead animal condition codes, specifically, dead fresh, dead moderately decomposed and dead severely decomposed, see pages 161-170 of this manual.

**Table 1:** Animal Conditions

ANIMAL CONDITION	SUMMARY
<b>ALIVE</b>	
<b>Alive-Captain/Crew Saw</b>	Seen by captain/crew ONLY; Provide detailed comments
<b>Alive-Hook/Gear + 1 Part</b>	Hook/gear in or around another single body part(e.g., hook in neck or plastron); Provide detailed comments
<b>Alive-Hook/Gear + Flipper</b>	Hook/gear in or around flipper (e.g., Hook in the flipper or gear around the flipper); Provide detailed comments
<b>Alive-Hook/Gear &gt; 1 Part</b>	Hook/gear in or around several body parts; Provide detailed comments
<b>Alive-Hook/Gear + Mouth</b>	Attempt to determine where in the mouth the hook is located; Provide detailed comments
<b>Alive-Resuscitated Sea Turtle</b>	Provide detailed comments
<b>Alive</b>	Provide detailed comments
<b>DEAD</b>	
<b>Dead-Capt/Crew Saw</b>	Seen by captain/crew ONLY; Provide detailed comments
<b>Dead-Condition Unknown</b>	Provide detailed comments
<b>Dead-Fresh</b>	Provide detailed comments (see to pages 161-164)

<b>ANIMAL CONDITION</b>	<b>SUMMARY</b>
<b>Dead-Moderately Decomposed</b>	Provide detailed comments (see to pages 165-167)
<b>Dead-Severely Decomposed</b>	Provide detailed comments (see to pages 168-170)
<b>Other</b>	Provide detailed comments
<b>Unknown</b>	Provide detailed comments

**ALL Animal Conditions require COMMENTS**

**NOTE:** If more than one code applies, choose the code that describes the most specific condition of the animal (e.g. a turtle is alive and released with gear around the left front flipper - chose ‘Alive-Hook/Gear + Flipper’ as it is the most specific).

**NOTE:** Per ESA Permit requirements and Northeast Fisheries At-sea Monitor Program protocols, monitors are required to make every effort to revive all sea turtles incidentally taken during commercial fishing operations that come on board, and are comatose (unconscious) or inactive. A resuscitated turtle is any turtle that was comatose (i.e., no signs of life; unconscious; non-responsive) and later became active, possibly as a result of placing the turtle into a recovery position.

- 6. **ENTANGLEMENT SITUATION:** Indicate the initial entanglement situation of the animal by selecting the most appropriate entanglement situation from the drop down menu. See Table 2.

**Table 2:** Entanglement Situations

<b>ENTANGLEMENT</b>	<b>SUMMARY</b>
<b>Bird- Gangion- Mainline</b>	Sea Bird caught, gangion attached to mainline.
<b>Caught- Trawl Wings</b>	Caught in wings of trawl net.
<b>Contact Vessel/Equip</b>	Contact with vessel or vessel equipment
<b>Entg- Bridle/Cable/Warp</b>	Entangled in the bridle, cable, or warp of the gear
<b>Entg- Gear Other Vessel</b>	Entangled in gear other than vessel's fishing gear, i.e. ghost gear caught by vessel
<b>Entg- Sweep/Footrope</b>	Caught in sweep or footrope of trawl net.
<b>Entg- Sweep/Tlkr/Chain</b>	Caught on sweep, tickler, or chains of the trawl gear
<b>Fell Out, B/C Rollers</b>	Fell from gear due to force of roller (e.g., the animal reached the haul back roller and the roller’s force caused it to fall from the gear).
<b>Fell Out, In Water</b>	Fell from gear before exiting water (e.g., the animal was still under water when it fell from the gear).
<b>Fell Out, Out Of Water</b>	Fell from gear once hauled out of the water (e.g., the animal was mostly/completely out of the water when it fell from the gear because the weight of the animal and pulling action of the net caused the animal

ENTANGLEMENT	SUMMARY
	to fall from the gear).
<b>Fell Out, Point Unk</b>	Fell from gear at a point unknown. Describe situation in the COMMENTS.
<b>Hooked, Beak</b>	Hook attached to the beak of a sea turtle or sea bird.
<b>Hooked, Carapace</b>	Hook attached to the carapace of a sea turtle.
<b>Hooked, Flipper</b>	Hook attached to the flipper of a sea turtle or marine mammal.
<b>Hooked, Head</b>	Hook attached to the head of a sea turtle, sea bird, or marine mammal.
<b>Hooked, Ingested</b>	Hook swallowed by a sea turtle, sea bird, or marine mammal.
<b>Hooked, Other Unk</b>	Hooked, other/unknown, describe the hooked entanglement situation in the COMMENTS.
<b>In Trawl Net Belly</b>	Inside belly of trawl net.
<b>In Trawl Net Codend</b>	Inside codend of trawl net.
<b>In Trawl Net Mouth</b>	Inside mouth of trawl net.
<b>Other (Comment)</b>	Describe the entanglement situation in the COMMENTS.
<b>Removal- Must Cut</b>	Removal requires cutting of gear/animal, i.e. the gear and/or the animal is cut in order to remove the animal from the gear.
<b>Removal- No Cutting</b>	Removal does NOT require cutting of gear/animal, i.e. pulling, unwrapping, unrolling, and/or detangling the gear allows the animal to be removed from the gear, without cutting the gear and/or the animal.
<b>Unknown</b>	Describe situation in the COMMENTS.

**NOTE:** If more than one entanglement applies to a situation choose the entanglement that describes the primary entanglement or interaction (e.g. a turtle is observed inside the codend of a trawl and falls from the gear as it is hauled up: choose IN TRAWL NET CODEND as it best describes the primary interaction.

7. **PHOTO(S) TAKEN?:** Indicate whether any photograph(s) is (are) taken of the animal by checking the box next to PHOTO. When a check mark appears within the box it indicates that a photo(s) of that particular animal will accompany the trip upload. If no photographs are taken, leave this box empty and record the reason in the COMMENTS section of the Incidental Take Tab.

**NOTE:** All marine mammals, sea turtles, and sea birds incidentally taken **must be photographed** as photos are necessary to assist in corroborating species identification. Only under extreme conditions should this field reflect that no photos were taken. Record these reasons in the COMMENTS section of the Incidental Take Tab.

8. **COMMENTS:** Using the keyboard, record any additional information regarding the incidental take, especially when data are unable to be collected.

**TAGS:**

- a. Any tags or bands present on an animal must be recorded in the COMMENTS.
- b. Any marine mammal tag number(s) affixed to an animal must be recorded in the COMMENTS.

**After all comments have been entered click OK.** This will take you back to the main Incidental Take Tab screen.



**After all correct information is entered click SAVE.**

**To enter another animal record the next consecutive PSID NUMBER and follow steps #1-8.**

## COMMON WARNINGS and ERRORS

### WARNINGS

When the SectorASM program generates a WARNING message it usually indicates that an entered value lies outside an average range. WARNING messages should be evaluated immediately before moving on in the program. However, WARNING messages may be bypassed if the value entered is correct.

To exit a WARNING message click OK in the upper right corner of the Warning Message box. You may then continue entering information or SAVE.

**NOTE:** Record in the COMMENTS section of the Tab generating the Warning, the reason the Warning was generated.

### ERRORS

When the SectorASM program generates an ERROR message it usually indicates that an entered value is unacceptable. ERROR messages must be corrected immediately in order to continue. ERROR messages may not be bypassed.

To exit an ERROR message click OK in the upper right corner of the Error Message box. Enter in correct information the click SAVE.

**NOTE:** Most ERROR messages will occur when creating a Zip file.

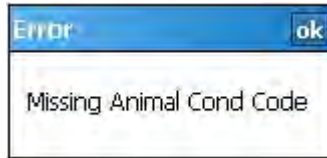
1. No haul number has been entered. You must enter in the appropriate haul number before the program will allow you to move on.



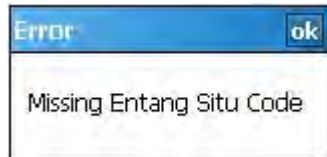
2. No species has been entered. Using the drop down menu, select the appropriate species or species group. This must be entered before the program will allow you to move on.



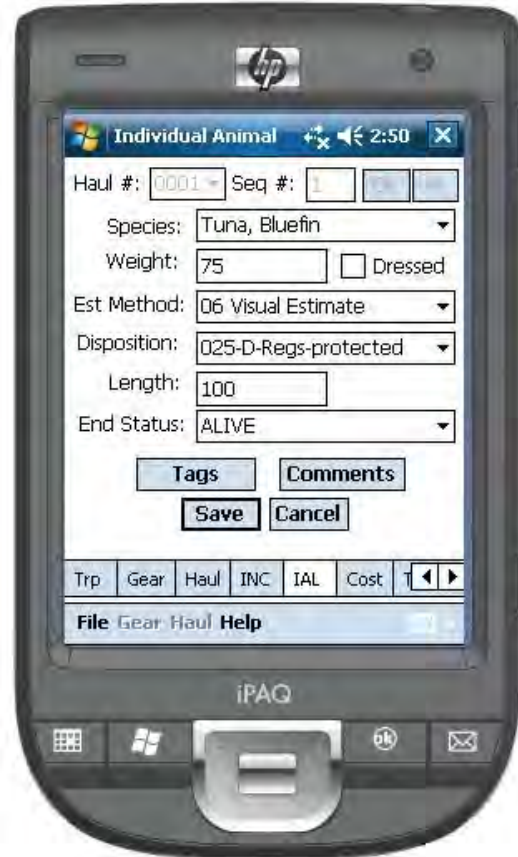
3. No animal condition has been entered. Using the drop down menu, select the appropriate animal condition. This must be entered before the program will allow you to move on.



4. No entanglement situation has been entered. Using the drop down menu, select the appropriate entanglement situation. This must be entered before the program will allow you to move on.



### INDIVIDUAL ANIMAL LOG TAB



**This tab should be used under the following circumstances:**

- A. In gillnet fisheries, to record all pelagics, sturgeons, tagged fish and shellfish EXCEPT:
- Bonito
  - Skipjack tuna
  - False albacore
  - King mackerel

These species should be recorded on the Gillnet Haul Tab/Log.

- B. In all other fisheries, record only pelagics, sturgeons, and tagged fish caught in a particular haul. It is important to ensure that a weight or count is recorded for **every** animal (except chunked fish carcasses and only heads of animals).
- C. In all fisheries, record catches of **terrapins** on the IAL Tab/Log.

**Any animal recorded on this tab should NOT be recorded in the species section of the Haul Tab.**

**Pelagic species:** include, but are not limited to: Swordfish, billfish, sharks, Atl. needlefish, tuna, bonito, torpedo ray, cutlassfish, wahoo.

See [Appendix A: Species List and Corresponding Tabs/Logs](#) for a list of species and the tab(s)/log(s) on which to record them.

### INSTRUCTIONS

**ALL animals listed on the Individual Animal Log require photographs.** If multiple animals of the same species are caught, photograph the first species, according to the IAL photographing protocols located in the [Digital Camera Protocols](#) section of this manual. Photographs of the same species are not required throughout the remainder of the trip.

1. **HAUL NUMBER:** Using the keyboard, record the corresponding haul in which the IAL species is caught. After entering the haul number, click OK.
2. **SEQUENCE NUMBER:** Using the keyboard, record the consecutive SEQ NUMBER assigned to each animal that was caught on this haul. Start with 01 and continue numbering consecutively within the same haul. Once you have entered the appropriate SEQ NUMBER, click OK.
3. **SPECIES:** Using the drop down menu, select the complete common name of the species from the drop down menu. Species are listed in alphabetical order.
4. **WEIGHT:** Using the keyboard record the dressed or round weight for the selected species.
5. **DRESSED:** If the weight entered is dressed, click the DRESSED box. When a check mark appears within the box it indicates that the weight is a dressed weight. If the weight is a round weight leave this box empty.

In general, the types of weights the monitor should be able to obtain are as follows:

**Kept Pelagic Species:** the dealer's actual dressed individual animal weight for those species tagged and carcass weights obtained dockside (e.g., swordfish, billfish, tuna, bonito, sharks, etc).

**Discarded Pelagic Species:** the monitor's estimated round individual animal weight for those species discarded (e.g., swordfish, billfish, tuna, bonito, sharks, etc).

**NOTE:** Actual weights may be recorded to the nearest tenth of a pound. Estimated weights greater than one pound should be recorded to the nearest whole pound.

**NOTE:** When a **shark is finned**, with the carcass discarded or kept, record the **carcass** and its corresponding length and dressed weight information on this log. Check Y=Yes for Dressed. Create a separate summary record, by species, on the corresponding [Haul Tab](#), for **kept fins**.

**NOTE:** When a **fish or shark is "upgraded" or "high graded"**, and a previously kept fish or shark is discarded and replaced with one that is larger (or of higher quality/value), record the discarded animal and its weight, and code it appropriately for FISH DISPOSITION.

Upgrading may result in dressed discard weights. Upgrading is typically done with swordfish and tuna, but may also occur with sharks and other fish.

**NOTE:** When a **fish or shark is filleted** on the vessel, record the round weight for the animal before filleting.

**NOTE:** Do not record any weight information for chunked fish or only heads of animals. Create a separate summary record, by species, on the corresponding Haul Log, for kept fish chunks.

**NOTE:** Do not record any weight information for terrapins.

6. **ESTIMATION METHOD:** Select the method used to estimate the catch weight of the selected species using the drop down menu.
7. **DISPOSITION:** Indicate whether the species recorded is kept or discarded by selecting the appropriate code and reason from the drop down menu. The fish disposition reason should be obtained from the captain.

### **INDIVIDUAL ANIMAL MEASUREMENTS**

Do not try to piece animals together that have been cut up, but do try to record an ESTIMATED LENGTH for these animals.

Do not record any length information for only heads of animals.

### **LENGTH DESCRIPTIONS**

**Lower Jaw to Fork Length:** Tip of lower jaw to fork of the tail.

**Fork Length:** Tip of upper jaw to fork of the tail.

**Total Length:** Tip of upper snout to end of tail.

8. **LENGTH:** Using the keyboard record the measured length (in whole centimeters) of the selected species. See Table 1.

**NOTE:** If unable to obtain required length, leave the field blank and record the reason in the COMMENTS section of the IAL Tab.

**Table 1:** IAL Length Types

<u>Swordfish and Other Billfish</u> (e.g., white marlin, blue marlin, sailfish, and spearfish). Lower Jaw to Fork Length (curvilinear)	<u>Other Fish</u> (e.g., sturgeon) Fork Length (straight)
<u>Tunas and Bonito</u> Fork Length (straight)	<u>Tagged Fish</u> Fork Length (e.g., haddock, Atlantic cod, Pollock)
<u>Sharks</u> Fork Length (straight)	Total Length (e.g., flounders)
<u>Rays</u> Total Length (straight)	<u>Terrapins</u> Total Length- nuchal notch to the posterior marginal tip (curvilinear)

9. **END STATUS:** Indicate the final status of the selected species, whether it's brought onboard or not, by selecting the appropriate description.

**NOTE:** If the End Status is "Unknown" record the reason in the COMMENTS section of the IAL Tab.

**To enter TAG information click TAGS on the main IAL Tab.**

10. **TAG #1:** Using the keyboard record the complete alphanumeric sequence, with no spaces or hyphens, from the tag that is attached to the selected species.

**NOTE:** This number may be from:  
A **recaptured species**. If the animal is kept by the vessel, record the recaptured animal TAG NUMBER in this field, and the corresponding TAG CODE. If the tag is preceded by a letter, be sure to include that when recording the tag number. Examples: M145697, R324061

11. **TAG CODE 1:** Indicate the origin of the TAG NUMBER recorded above, for each tag attached to the animal, by selecting the appropriate reason from the drop down menu.

**NOTE:** Use NO TAGS when no tag is present; **do not leave this field blank.**

12. **TAG # 2:** If there is a second tag present on the selected species, using the keyboard record the complete alphanumeric sequence, with no spaces or hyphens, from the tag that is attached to the selected species.



13. **TAG CODE 2:** Indicate the origin of the tag number recorded, for each tag attached to the animal, by selecting the appropriate reason from the drop down menu. If there is no second tag select NONE. Do not leave this field blank.


**After all information has been entered click DONE.** This will take you back to the main IAL Tab.

14. **COMMENTS:** To enter any comments concerning this individual animal, click COMMENTS. Using the keyboard, record any additional information regarding the animal.


**After all information has been entered click OK.** This will take you back to the main IAL Tab.

**After all information has been entered, click SAVE.** Failure to SAVE will result in loss of data.

**To enter additional individual animals, follow steps #1-14.**


The IAL Tab also has a listing feature. To view the IAL species you have entered click 

**To MODIFY IAL information:**

- a. Click on 
- b. Click on the IAL species you wish to modify
- c. Click SELECT
- d. Click OK
- e. Enter in the appropriate information
- f. Click SAVE



**To DELETE an IAL species:**

- a. Click on 
- b. Click on the IAL species you wish to delete
- c. Click DELETE
- d. The program will ask you if are sure you want to delete the IAL species. If you wish to delete the selected species click YES.
- e. Click OK in the upper right hand of the screen.

**COMMON WARNINGS and ERRORS****WARNINGS**

When the SectorASM program generates a WARNING message it usually indicates that an entered value lies outside an average range. WARNING messages should be evaluated immediately before moving on in the program. However, WARNING messages may be bypassed if the value entered is correct.

To exit a WARNING message click OK in the upper right corner of the Warning Message box. You may then continue entering information or SAVE.

1. The length for the species entered is out of range. Carefully check that the entered length is correct. If the entered length is correct click OK in the upper right corner of the Warning message box and click SAVE.





## ERRORS

When the SectorASM program generates an ERROR message it usually indicates that an entered value is unacceptable. ERROR messages must be corrected immediately in order to continue. ERROR messages may not be bypassed.

To exit an ERROR message click OK in the upper right corner of the Error Message box. Enter in correct information the click SAVE.

**NOTE:** Most ERROR messages will occur when creating a Zip file.

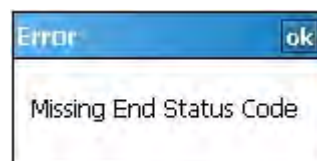
1. A Tag Code has not been entered. Click TAGS on the main IAL Tab screen and enter in the proper information. Even if a tag is not present this field must be filled out.



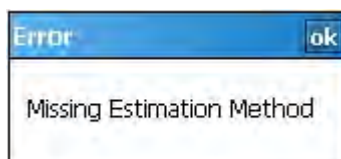
2. A species has not been selected. Select the proper species from the drop down menu.



3. An End Status has not been selected. Select the appropriate End Status from the drop down menu.



4. An Estimation Method has not been selected. Select the appropriate Estimation Method form the drop down menu.



5. A Fish Disposition code has not been selected. Select the appropriate Fish Disposition code from the drop down menu.



## COST TAB

The image shows a handheld device screen with the following data:

Category	Field	Value
Usage	Ice Used	15.00
	Fuel Used	950
Price	Ice/ton	50.00
	Fuel/gal	2.43
Costs in whole dollars	Damage	100
	Supplies	25
	Food	550
	Water	0
	Oil	15
	Bait	0

This tab is used to record economic information for an individual trip. This information is obtained from the captain on a **per trip** basis and pertains only to the trip on which a monitor is deployed.

**NOTE:** If the vessel takes on more food, fuel, ice, water, oil, or bait during a dockage mid-trip (when fish are not offloaded), add each amount to the appropriate field's total for the trip.

**NOTE:** If no costs are incurred, record a zero "0" in the appropriate field(s).

1. **ICE USED:** Using the keyboard, record (to the nearest hundredth of a ton) the estimated amount of ice used during this trip. Include purchased ice and ice made by the vessel. This entered value should reflect the amount of ice used only for this individual trip.

**NOTE:** Do not include unused ice that may be on the vessel.

2. **ICE/TON:** Using the keyboard, record (in dollars and cents) the price paid **per ton** of ice purchased for this trip.

**NOTE:** If the vessel makes its own ice, or if no money is paid for ice, record "0". Do not leave this field blank. If the value is unknown record it in the COMMENTS of the Trip End Tab.

3. **FUEL USED:** Using the keyboard, record (in whole gallons) the estimated amount of fuel consumed during this trip. This should be obtained from the captain at the end of the trip.
4. **FUEL/GALLON:** Using the keyboard, record (in dollar and cents) the price paid per gallon for fuel purchased for this trip. This information may be obtained from the captain or owner before the vessel leaves port.

**The following information will be recorded in WHOLE DOLLARS.**

5. **DAMAGE:** Using the keyboard record (in whole dollars) the captain's estimate of the cost of gear and/or equipment lost or damaged during this trip. This information may be obtained by the captain at the end of the trip.

Example: Damaged net = \$300  
Lost highflyer = \$75

**NOTE:** All reported damage requires a description of the specific items damaged in the COMMENTS section. This does not include normal wear and tear.

6. **FOOD:** Using the keyboard record (to the nearest whole dollar) the cost for food purchased for this trip, including the monitor's food.

**NOTE:** Drinking water should be included in food costs.

7. **OIL:** Using the keyboard, record (to the nearest whole dollar) the cost of lubricating oil used on this trip. This should be obtained from the captain at the end of the trip.

**NOTE:** This does not include hydraulic oil or any other specialty oil.

**NOTE:** Oil is used on all trips so this value should not be "0".

8. **SUPPLIES:** Using the keyboard, record (to the nearest whole dollar) the price paid for commonly used supplies purchased for this trip. List the items included in this value in the COMMENTS section. This information may be obtained from the captain or crew member(s).

Example: Gloves, boots, foul weather gear, knives, fish picks, hooks, boxes, bags, ties, lobster bands, rags, tape, line, twine, rope, etc.

9. **WATER:** Using the keyboard, record (to the nearest whole dollar) the cost of fresh water purchased for this trip. This value should not include drinking water.

**NOTE:** If the vessel makes its own fresh water, or if no money is paid for fresh water, record "0".

10. **BAIT:** Using the keyboard, record (to the nearest whole dollar) the total cost of bait purchased for this trip. If no bait is purchased for the trip, record zero (,0').

**After all correct information has been entered click SAVE.** Failure to SAVE will result in loss of data.

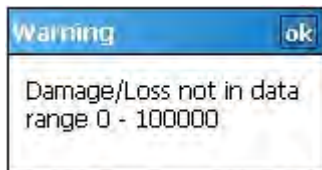
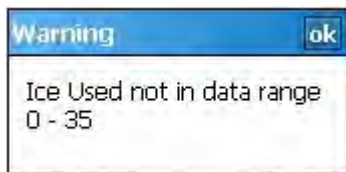
## COMMON WARNINGS and ERRORS

### WARNINGS

When the SectorASM program generates a WARNING message it usually indicates that an entered value lies outside an average range. WARNING messages should be evaluated immediately before moving on in the program. However, WARNING messages may be bypassed if the value entered is correct.

To exit a WARNING message click OK in the upper right corner of the Warning Message box. You may then continue entering information or SAVE.

1. The value entered is out of range. Carefully check that the entered value is correct. If the entered value is correct click OK in the upper right corner of the Warning Message box and click SAVE. Otherwise correct the value and click SAVE.



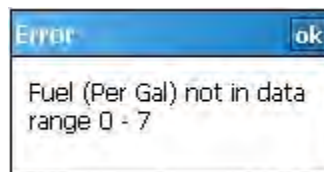
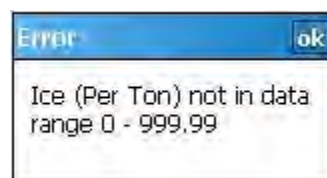
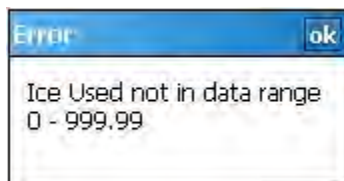
## **ERRORS**

When the SectorASM program generates an ERROR message it usually indicates that an entered value is unacceptable. ERROR messages must be corrected immediately in order to continue. ERROR messages may not be bypassed.

To exit an ERROR message click OK in the upper right corner of the Error Message box. Enter in correct information the click SAVE.

**NOTE:** Most ERROR messages will occur when creating a Zip File.

1. The value entered is so far out of range that the program will not allow you to continue. In order to continue you must correct the error.



### TRIP END TAB



The following instructions are for recording information regarding the fields that are obtained at the end of a trip. Some of these fields will require questioning the captain of the vessel for the information. Do not record assumptions. If the information is unclear, verify the answers with the captain.

### INSTRUCTIONS

1. **TRIP EXTENSION:** Using the drop down menu, select the appropriate trip extension for this trip.

**Table 1.** Trip extension and corresponding trip type

TRIP EXTENSION	TRIP TYPE
A	Aborted, Non-Gillnet
C	Gillnet, Complete fish sampling
D	Gillnet, Complete fish sampling, Aborted
-	Trawl, Longline trips
E	Gillnet, Complete fish sampling, Set Only

**NOTE:** An aborted trip is defined as when the gear is not used (set, hauled, or washed) regardless of time on the water.

2. **PORT LANDED:** Using the drop down menu, select the name of the port, including the state, where the vessel offloads its catch. This may be different from the PORT SAILED or the port of registry on the vessel's stern.

**NOTE:** If the vessel sells its catch at more than one port, record the port where most of the catch is sold.

3. **DATE LANDED:** Using the drop down calendar, select the month, day, and year that the vessel arrives first in port at the completion of your deployment. This is the docking port where the captain intends to sell the majority of this trip's catch. Record this date whether or not the catch is sold.

4. **TIME LANDED:** Record the local time, using the 24 hour clock (0000-2359), that the vessel first arrives in port at the completion of your deployment. This is the docking port where the captain intends to sell the majority of this trip's catch. Record this time whether or not the catch is sold. You may use the keyboard to punch in the numbers OR click on the hour and minutes using the upward and downward arrows.

5. **VTR SERIAL NUMBER:** Using the keyboard, record the serial number obtained from the captain's Fishing Vessel Trip Report (VTR).

**NOTE:** If more than one Vessel Trip Report (VTR) log is used during a trip, record the serial number of the first log used on the trip and all other subsequent VTR numbers in the COMMENTS section. This information should be obtained from the captain.

**NOTE:** Do not record a VTR SERIAL NUMBER for aborted trips or set only trips. Leave this field blank.

**NOTE:** If an eVTR number is recorded for this trip, leave this field blank.

6. **eVTR TRIP ID:** Using the keyboard, record the serial number obtained from the captain's Electronic Fishing Vessel Trip Report (eVTR).

**NOTE:** If a VTR number is recorded for this trip, leave this field blank.

7. **DEALER:** Using the drop down menu, select the name of the dealer where the captain intends to sell the majority of the trip's catch. If the catch is not sold immediately after arrival in port, obtain this information from the captain.

8. **COMMENTS:** Using the keyboard record any additional information regarding the trip.

**After all comments have been entered click OK. This will take you back to the main Trip End screen.**

**After all correct information has been entered, click SAVE. Failure to SAVE will result in lost data.**



## COMMON WARNINGS and ERRORS

### WARNINGS

When the SectorASM program generates a WARNING message it usually indicates that an entered value lies outside an average range. WARNING messages should be evaluated immediately before moving on in the program. However, WARNING messages may be bypassed if the value entered is correct.

To exit a WARNING message click OK in the upper right corner of the Warning Message box. You may then continue entering information or SAVE.

**NOTE:** Warning messages from the Cost Tab may appear on this screen.

### ERRORS

When the SectorASM program generates an ERROR message it usually indicates that an entered value is unacceptable. ERROR messages must be corrected immediately in order to continue. ERROR messages may not be bypassed.

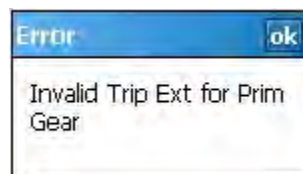
To exit an ERROR message click OK in the upper right corner of the Error Message box. Enter in correct information the click SAVE.

**NOTE:** These ERROR messages will likely occur when creating a Zip file.

1. The Primary Gear does not match the Trip Extension.

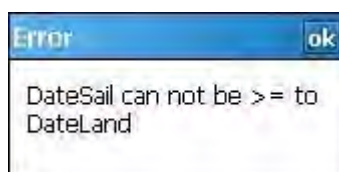
Example: Primary Gear is 050 – Bottom Otter Trawl and the entered Trip Extension is Gillnet, Complete. These must correlate to one another before the program will allow you to move on.

Solution: Primary Gear is 050 – Bottom Otter Trawl. Trip Extension is Non-Gillnet Trip.



2. The Date Landed has been entered as occurring before the Date Sailed. You must correct the dates before the program will allow you to move on.

**NOTE:** This message will also appear if the Time Sailed occurs after the Time Landed.



3. The Port Land field has been left blank. You must enter in a port in order to move on.



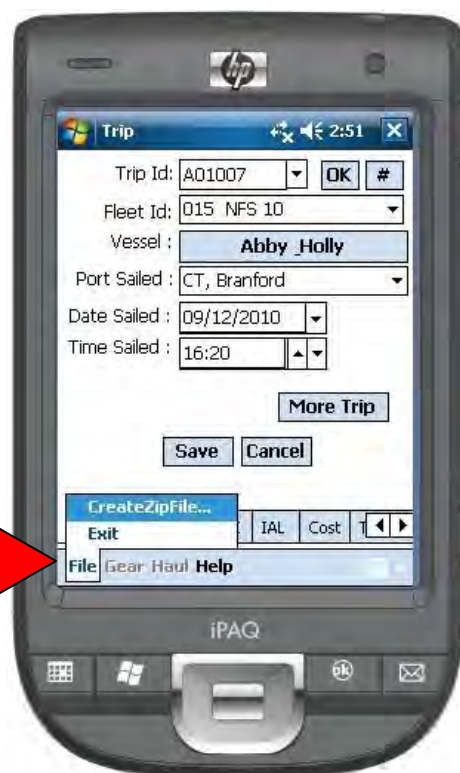
### CREATING A ZIP FILE



**Before you can upload your trip, you must first create a Zip File.**

## INSTRUCTIONS

1. Enter in all trip information within the appropriate Tabs. To create a Zip File you must be on the Trip Tab.
2. Click FILE in the blue Menu Bar.
3. Click CREATE ZIP FILE.
4. Using the drop down menu chose the TRIP ID you wish to create a Zip File for.
5. Once you have selected the trip, click CREATE FILE.
6. If you receive an ERROR Message you must go back into the selected trip and correct the information before you can successfully create a Zip File.

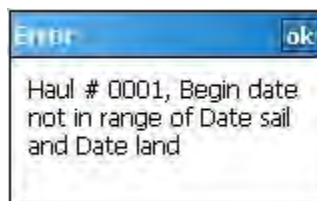


**NOTE:** Many ERROR Messages will show up here.

In the SectorASM Program, most ERROR Messages will direct to you the location of the error.

Examples:

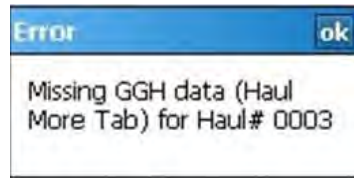
- a. In Haul 1 the Haul Begin Date does not match up with the Date Sail and Date Land. Return to the Haul Tab and carefully check the date on Haul 1 to make sure it has been entered correctly.



- b. Date Land is missing. Return to the Trip End Tab and enter in the proper DATE LAND.



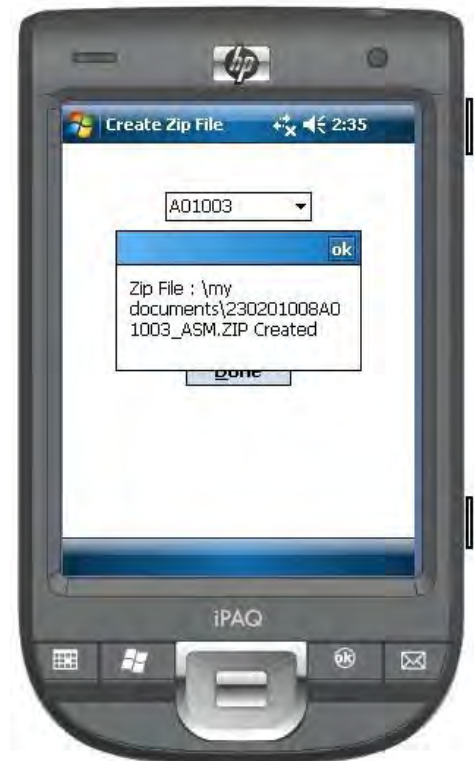
- c. There is missing gillnet information. Return to the More Haul Tab contained within the main Haul Tab and enter in the proper information.



7. When a Zip File has been successfully created you will see the following message:



8. After you see the Zip File Message click OK in the upper right hand corner then click DONE.
9. To properly exit the program click FILE in the Blue Menu bar, then click EXIT. This will close out the SectorASM program.



## UPLOADING DATA

### **PC USERS**

If you are using a PC (not Wi-Fi) for uploading, you must first install software that synchronizes the iPAQ to your PC.

**NOTE:** Wi-Fi is faster and easier and can be utilized anywhere you have a signal, whereas using your PC's connection can be problematic.

### **For all Windows Operating Systems (except Windows Vista):**

You must download Microsoft Active Sync (currently 4.5) from the following website:

<http://www.microsoft.com/downloads>

*OR*

GoodSync for Windows

<http://www.goodsync.com>

Download the most current version of Active Sync on the right hand side of the website.

### **Windows Vista, Windows 7, & Windows 8 Operating Systems**

You must download Windows Mobile Device Center (currently 6.1) from the following website:

<http://www.microsoft.com/downloads>

### **For Macintosh Computers**

You must download SyncMate from the following website:

<http://www.simplehelp.net/2008/08/29/how-to-sync-your-windows-mobile-device-with-your-mac>

*OR*

GoodSync for Mac

<http://www.goodsync.com>

Follow the steps on your computer to install the software. It is important to wait until you are prompted by the installation instructions to connect your iPAQ to your computer using the USB cable.

Now that your iPAQ is connected to your computer, follow the Uploading Data Instructions (pg 97).

**WIRELESS USERS**

Be sure that you have access and are able to successfully connect to a wireless network before following these instructions.

1. Click **iPAQ Wireless** on the home page of the iPAQ screen.



2. Click the All Tab in the upper left hand corner of the screen.

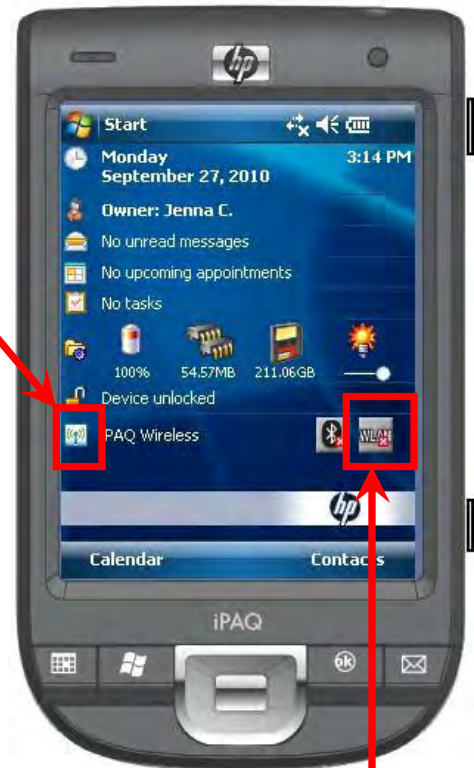
3. Either click Turn On under WLAN

OR

Click the WLAN icon



4. A red/green/yellow/blue circle will appear. This tells you that the iPAQ is searching for a wireless connection. This may take a few moments.



While the iPAQ searches for a connection the WLAN box will turn amber in color.

Once a successful connection has been made the WLAN box will turn green.

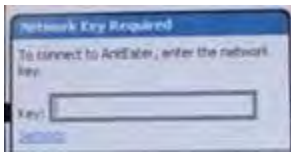
**SHORTCUT:** On the main iPAQ screen, you will find the WLAN icon. You can click this icon and the iPAQ will begin to search for a connection. This box will also turn amber, then to green when a successful connection has been made.



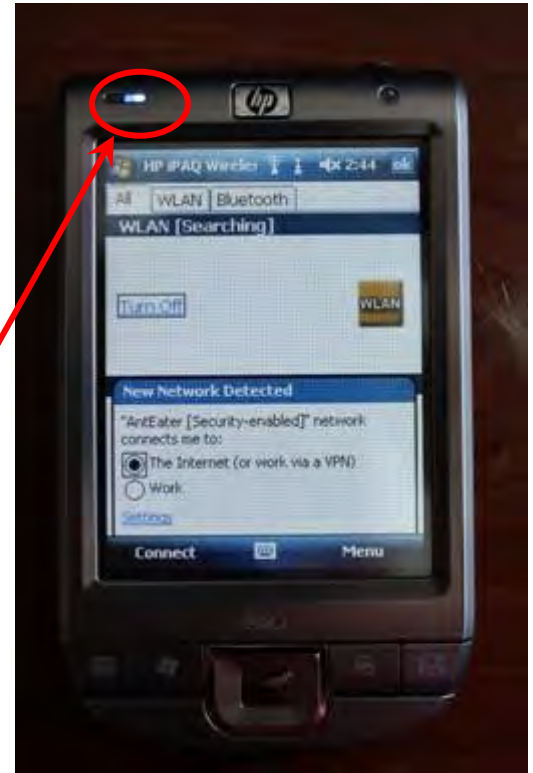
5. If this is your first time connecting to a wireless network, a screen will pop up notifying you that there are wireless networks available to connect to and whether they are password protected (Security-enabled) or not (Unsecured). Choose the radio button next to the network you wish to connect to and click OK on the blue task bar at the bottom of the screen.
6. The next step is to connect the wireless network to The Internet by choosing the radio button next to "The Internet" and clicking on Connect on the blue task bar at the bottom of the screen



7. If the network that you are trying to connect to is password protected (Security-enabled), you will have to enter in the password (network key) and click on CONNECT on the blue task bar at the bottom of the screen.



8. If you have successfully connected to a wireless network, the WLAN button will turn from amber to green. There should also be a blue light on the top left corner of the iPAQ.
9. To view or configure available wireless networks click on the WLAN tab at the top of the iPAQ Wireless screen and click on View WLAN Networks. The screen will display wireless networks that are available and also which networks you are connected to. If you see one that is available, hold the stylus down on the word AVAILABLE and then click on CONNECT in the box that pops up. You can also add a new network using this screen by clicking on "Add New".



**Now that your iPAQ is connected to a wireless network, follow the uploading instructions.**

**Be sure to turn WLAN off when you are not using it by either clicking on the WLAN button (the button is gray with a red x when it is turned off) on the WLAN Tab or clicking on Turn Off on the All Tab.**



## UPLOADING DATA INSTRUCTIONS

The following instructions are for uploading your trip data. The data will be uploaded through a secure website. You will be uploading a Zip File that will contain your trip information.

**You must be successfully connected to a wireless network before following these steps.**

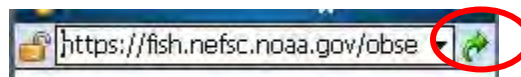
1. Turn on the iPAQ.
2. Click on the START Menu in the upper left hand corner of the screen.
3. Click on INTERNET EXPLORER.
4. Either type in the website below or use the drop down menu on the address bar at the top of the screen and click on the website:

[https://fish.nefsc.noaa.gov/observer\\_upload](https://fish.nefsc.noaa.gov/observer_upload)

Either click on the enter button on the keyboard

OR

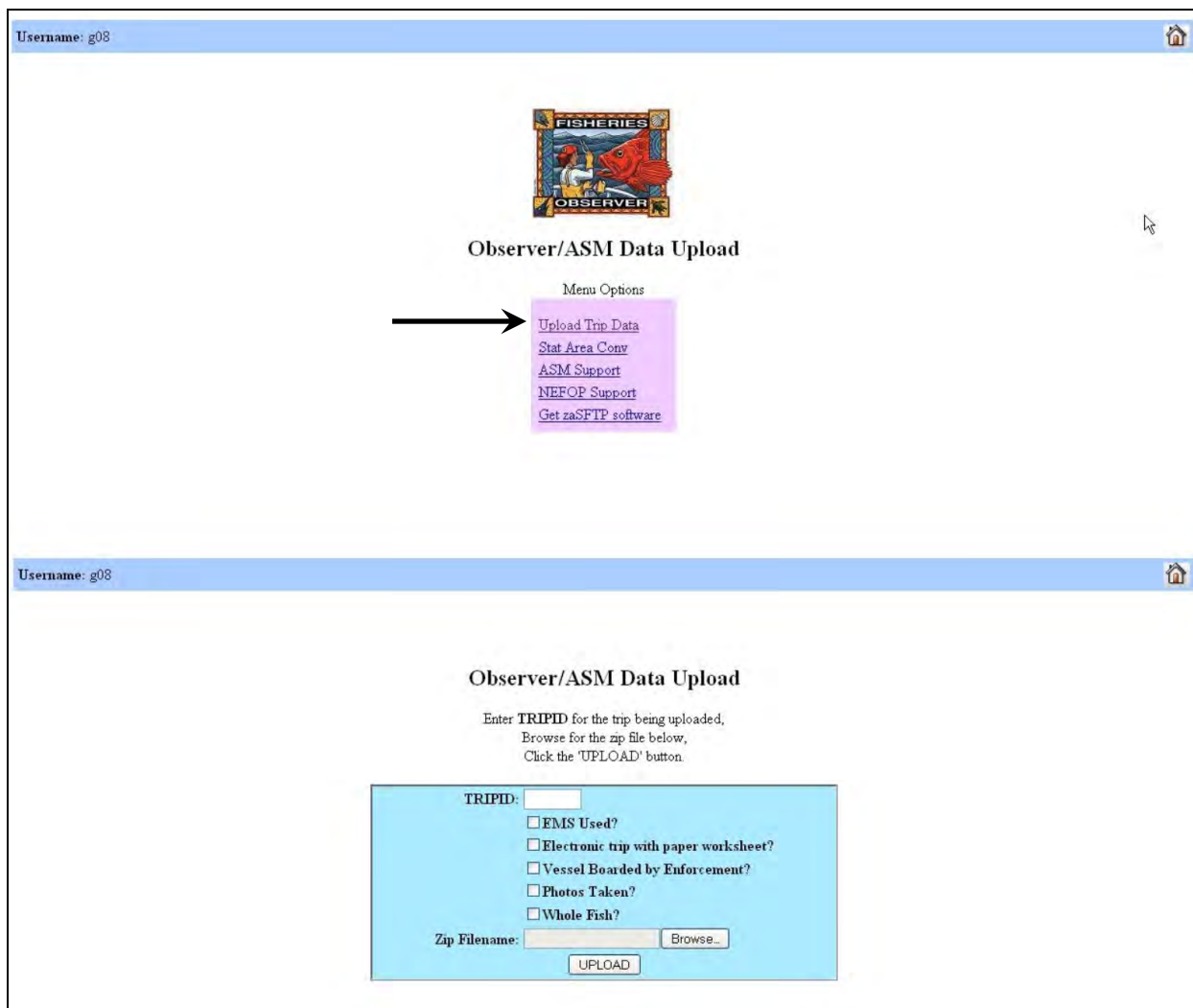
Click on the green arrow next to the address bar



5. You will be prompted to enter your User Name and Password. Enter the information you have been provided and click OK.
6. When you have successfully logged on, you will be brought to the Observer/ASM Data Upload main page.
7. Click UPLOAD TRIP DATA.
8. **TRIP ID:** Enter the Trip Id that corresponds to the data that you are uploading. Do not enter Trip Extensions or any additional spaces.

Example: Z99002

**NOTE:** Sometimes the program will generate a space at the end of the TRIP ID. If you receive an Error Message check to make sure that no additional spaces have been generated.



9. Check off all items that apply specifically to the trip you are uploading:

- EMS USED?** If the trip includes an Electronic Monitoring System (EMS) equipment (and therefore the vessel is participating in the EMS pilot study), check this box.

**NOTE:** Verify with the vessel captain that the equipment onboard is EMS equipment

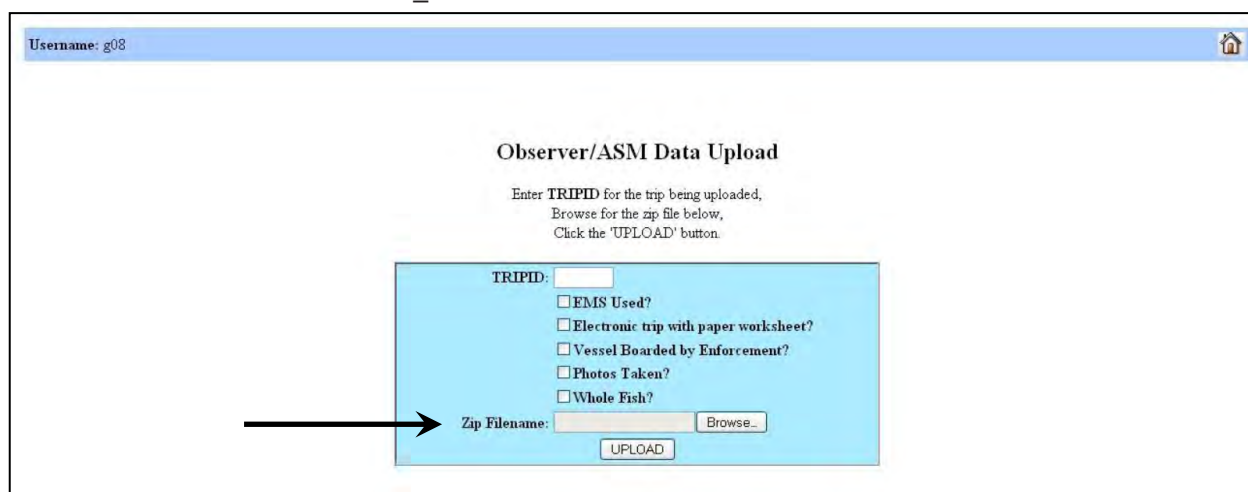
- ELECTRONIC TRIP WITH PAPER WORKSHEET?** The paper worksheets include:
  - Safety Checklist
  - Incidental Take Worksheet
  - Discard Log
  - Fishermen's Comment Log.

Check this box if you are mailing in any of these paper forms.

- VESSEL BOARDED BY ENFORCEMENT?** If an enforcement boarding by any enforcement agency, not just USCG, occurred on the trip, the ASM would indicate that by checking this box.
  
- PHOTOS TAKEN?** This applies to all photos. Photos of gear, catch estimation worksheets, incidental takes, IALs, and other miscellaneous photos would all be included in this question. Therefore, if you took photos on your trip, check this box. (The digital camera photo upload is a separate procedure).
  
- WHOLE FISH?** If fish are being sent in to the Fisheries Sampling Branch (e.g. Species Verification Program), check this box.

10. **ZIP FILENAME:** Click on BROWSE to the right of this field to navigate to your zip file. The screen on the iPAQ will read "Open". Make sure that it says "All Folders" for the Folder and "All Files" for the Type. Scroll to find the file that you created. The name of the file will be in the following form:

XXXXXXXXXXTRIPID\_ASM  
 23320103Z99002\_ASM



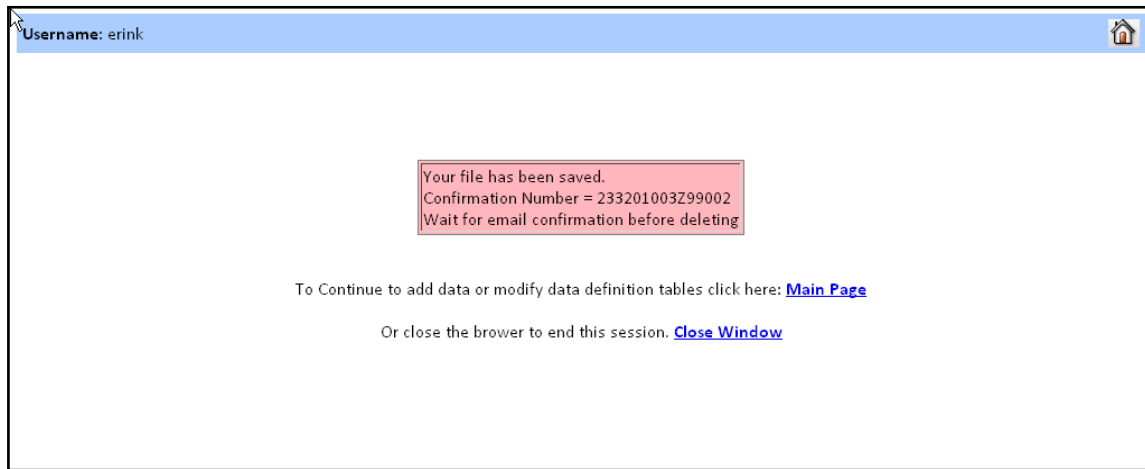
Once you have found the correct file, double click on the filename and make sure that it appears in the ZIP FILENAME on the website. The filename will be in the following form:

SectorASM Filename Example:

\\My Documents\XXXXXXXXXXTRIPID\_ASM.zip  
 \\My Documents\233201003Z99002\_ASM.zip

11. Once all of the information is completed and has been check for correctness, click UPLOAD.

12. Once you click UPLOAD, provided that everything is ok with your trip, you will receive a Confirmation Number. Be sure to write this number down. You will receive an e-mail confirmation that your trip data was saved.



13. Click on CLOSE WINDOW to end the session

**NOTE:** Make sure that you are either turning off the WLAN connection or disabling the connection between the iPAQ and your PC. Failure to do so will result in a loss of battery power.

## DIGITAL CAMERA PROTOCOLS

### CONFIDENTIALITY

These cameras are **NOT FOR PERSONAL USE**. All photos/images and video taken while deployed as an at-sea monitor are considered confidential data and are the property of National Marine Fishery Service (NMFS) Fishery Sampling Branch (FSB). Digital photos and video should **NOT** be shared/viewed with anyone other than FSB staff and should **NOT** be downloaded to any personal or public electronic device or website at any time. After trip images or videos have successfully been uploaded following the below procedures, they must be deleted from the camera to prevent breach of confidentiality.

### GENERAL CAMERA USE

Explore the features and functions of the camera. With the exception of the two items listed below, the monitor may choose the settings according to preference (i.e., Shutter speed, exposure, etc.).

Image quality should **NOT** be changed. It is adjusted to 3M to provide for faster uploading. If the image quality is higher, upload times will increase. Videos are larger files and will therefore take longer to upload.

Photos and video should **NOT** be downloaded to personal PC at any time. If a wireless connection cannot be located, then photos or videos can be uploaded using the Active Sync software and docking station that comes with the iPAQ.

Monitors need to remember to bring the battery charger with them out to sea, especially on long trips. Battery life is dependent two factors; monitors use and the temperature so it is advised that monitors always bring their chargers.

### PHOTOGRAPH PROTOCOLS

When photographing incidental takes, photograph any unusual marks and scars, new and/or healed wounds, location of gear entanglement (preferably when incidental take is still entangled), and characteristics of the animal which can be used for species identification.

Place the **waterproof Photo Sheet** (Figure 1) with the **At-Sea Monitor/Trip Identifier, PSID #, date, and species name** filled out next to the animal's body, and include it in every photo. Do not cover important features of the animal's body with the worksheet. See Figure 2 and Figure 4 for an example of a photo using the worksheet appropriately. For marine mammals, include a picture of the marine mammal tag, see Figure 3.

INCIDENTAL TAKE/AL PHOTO SHEET  
NORTHWEST FISHERY AND SEA MONITORING PROGRAM

TRIP ID:

ID #: (PSID or Seq. #)

DATE:

SPECIES:

10 CM

**Figure 1:** Waterproof Photo Sheet



**Figure 2:** Harp seal photographed with properly placed waterproof Photo Sheet.



**Figure 3:** Marine Mammal Tag.



**Figure 4:** Kemp's Ridley turtle photographed with properly placed waterproof Photo Sheet.

**NOTE:** Even if the monitor is able to identify a species, take several photographs of the animal. Photographs of incidental takes and Individual Animal Log (IAL) species are **always** required. Include the waterproof Photo Sheet in all photos. In order to make the most of the photographs taken the monitor should use the following guidelines documented below. These are especially important for hard-to-identify species and species that are cataloged (i.e. humpback whales). All animals should be photographed individually.

## **INCIDENTAL TAKES**

### **I. MARINE MAMMALS:**

Photograph:

1. The entire animal on all sides (with gear and without, if possible). See Figures 5 & 6.
2. Close-up of head. See Figure 7.
3. Close up of teeth. See Figures 8a, 8b, & 9.
4. Close-up of the gear entanglement. See Figures 10a & 10b.
5. Genital Area. See Figures 11 and 12.
6. New and/or healed wounds, marks, scars or areas of damage. See Figures 13a & 13b.
7. Any existing tags or tags attached by the monitor to the animal.

In addition:

**Whales:** Close-up of head (side & top), flipper and dorsal fin position & shape, fluke shape, teeth or baleen.

**Dolphins/Porpoises:** Close-up of head (side), coloration patterns, distinctive blazes or stripes, shape of dorsal fin (side view from both sides). See Figure 17.

**Seals:** Whole body – dorsal and ventral view, head on, each side; head profile, rear flippers; coat coloration pattern; teeth, especially post-canines.



**Figure 5:** Seal with gear entanglement.



**Figure 6:** Seal with gear removed.



**Figure 7:** Close up of white-sided dolphin head.



**Figure 8a:** Close up of grey seal teeth.



**Figure 8b:** Close up of harbor seal teeth.





**Figure 9:** Close up of a pilot whale, nk teeth.



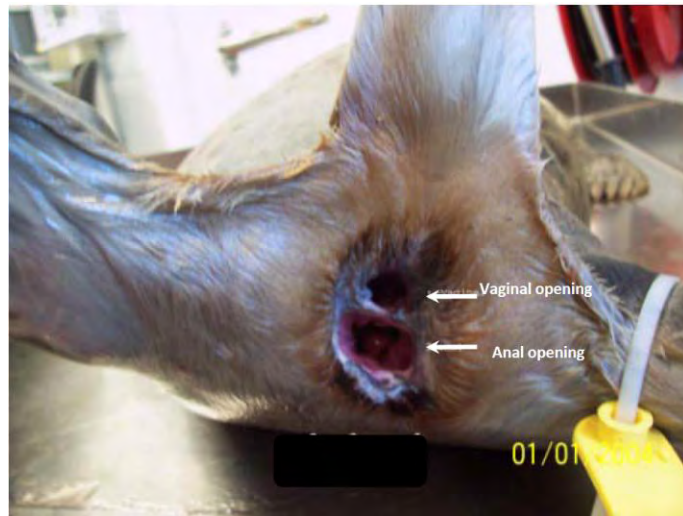
**Figure 10a:** Common dolphin entangled in gillnet gear.



**Figure 10b:** Pilot whale nk entangled in trawl net.



**Figure 11:** Genital area of a pilot whale.



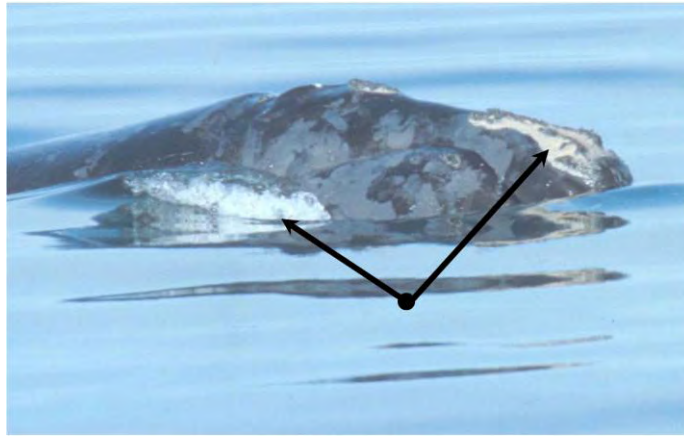
**Figure 12:** Genital area of a female seal.



**Figure 13a:** Marks and wounds on a pilot whale.



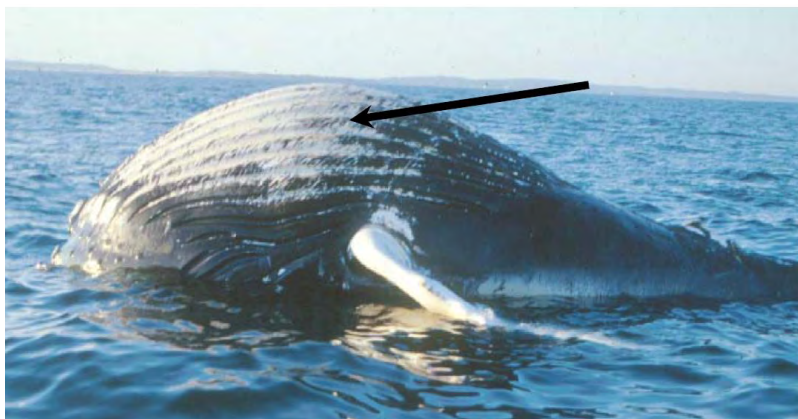
**Figure 13b:** Gear marks on a grey seal.



**Figure 14:** Right whales: Callosities on Head.



**Figure 15:** Humpback whales: Ventral fluke.



**Figure 16:** Belly-up floaters: Particularly the presence or absence of throat grooves.



**Figure 17.** Dorsal fin of a bottlenose dolphin.

## **II. SEA TURTLES:**

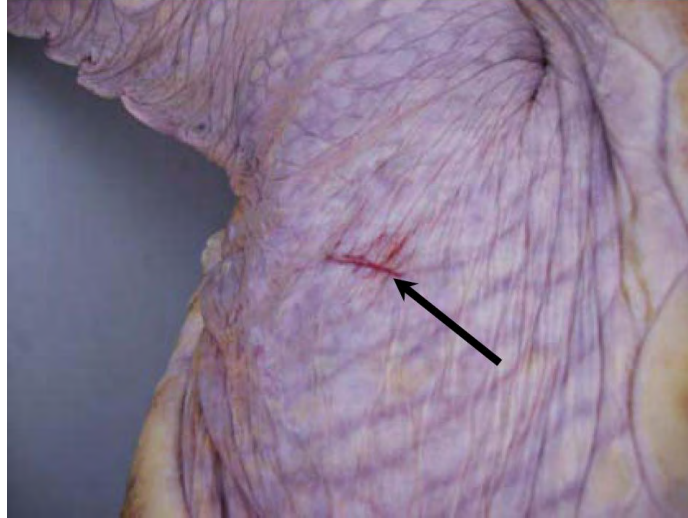
1. Photograph the entire animal, along with photos of the carapace and plastron. See Figures 18 and 19.
2. Any new or healed wounds or areas of damage. See Figure 20.
3. Lesions or marks, including a close-up of each area. See Figure 21.
4. Any gear, if present.
5. Photograph the head shape (top view). See Figure 22.
6. Prefrontal scales (head on). See Figure 22.
7. Each side of the head. See Figure 23.
8. Any tags that are present. See Figure 24.



**Figure 18:** Kemp's Ridley turtle carapace.



**Figure 19:** Kemp's Ridley turtle plastron.



**Figure 20:** Wound on a loggerhead turtle.



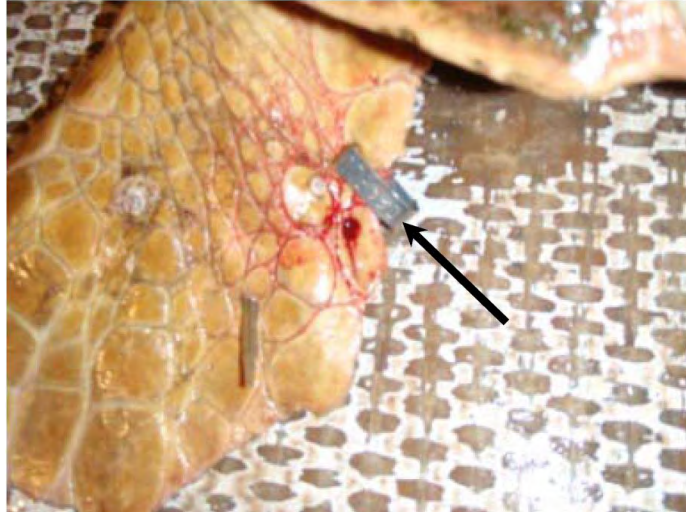
**Figure 21:** Wound on a loggerhead turtle with a mechanical pencil for scale.



**Figure 22:** Close up of prefrontal scales.



**Figure 23:** Side view of a loggerhead turtle head.



**Figure 24:** Tag on the flipper of a loggerhead turtle.

### III. SEA BIRDS:

1. Photograph the whole bird on both sides. See Figure 25.
2. Wings spread out from dorsal and ventral body view. See Figure 26.
3. Close-up of beak (side, top, and bottom). See Figure 27.
4. Foot and leg structure. See Figure 28.
5. Any visible bands or tags.



**Figure 25:** Ventral view of a Greater Shearwater.





**Figure 26:** Dorsal view of a black-back gull.



**Figure 27:** Close up of a Greater shearwater head.



**Figure 28:** Close up of toes, webbing, and leg.

**IV. IAL and OTHER SPECIES:  
Sharks:**

Photograph:

1. The entire shark from the side. See Figure 29.
2. Underside of the head (showing length of the snout in relation to the width of the mouth). See Figure 30

**NOTE:** For hammerhead sharks, also take a photo showing a dorsal view of the head (from directly above). See Figure 31.

3. First dorsal fin (showing the placement of the first dorsal fin in relation to the pectoral fins). See Figure 32.
4. Tail. See Figure 33.
5. Any visible tags.



**Figure 29:** Picture of a porbeagle shark.



**Figure 30:** Underside picture of a sandbar shark.



**Figure 31:** Left: Scalloped hammerhead; Right: Smooth hammerhead.



**Figure 32:** Dorsal fin in relation to pectoral fin.



**Figure 33:** Spinner shark tail.

**Sturgeon:**

## Photograph:

1. The entire sturgeon from the side. See Figure 34.
2. Underside of the head (to show the width of the mouth in relation to the width of the head). See Figure 35.
3. Head shape (from side & top). See Figures 36 and 37.
4. Dorsal and ventral views of the caudal region including the dorsal and anal fins and tail. See Figure 38.
5. Any visible tags.



**Figure 34:** Entire side view of a sturgeon.



**Figure 35:** Underside of a sturgeon head.



**Figure 36:** Side view of a sturgeon head.



**Figure 37:** Top view of a sturgeon head.



**Figure 38:** Ventral view of a sturgeon anal/caudal region.

**Other Fish/Rays/Crustaceans:****Rays**

Photograph:

1. Whole dorsal view
2. Close up of fin folds

Refer to Peterson's Field guides for identifying characteristics of that species.

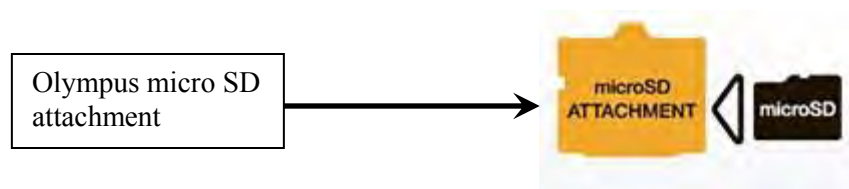
**NOTE:** Photos are not a substitution for comments regarding species identification. Comments should always be entered in the COMMENTS section of the IAL TAB/LOG. Both steps are necessary parts of every IAL species.

**UPLOADING PICTURES**

1. To upload photos:
  - a. Remove yellow Olympus micro SD attachment card from the camera
  - b. Remove the micro SD card from the attachment card
  - c. Place the micro SD card into the SanDisk adapter
  - d. Place the SanDisk adapter into the card slot on the iPAQ.
  - e. **Do this in a safe place** (i.e., at home, not on a boat).



2. Photos must be renamed as outlined in the examples below. This will allow End Users to search file names easily and efficiently. Each photo name will begin with a two digit subject code according to the event captured in the photo.



**NAMING CONVENTION:**

The subject codes are:

SUBJECT	SUBJECT CODE
Incidental Take	01
Sighting	02
Fish Verification	03
Gear	04
Gear Conflict	05
Observer/At-sea Monitor Duties	06
Compliance Situation	07
IAL Species	08
Other	09
Catch Estimation Worksheet	10

- 01: Incidental Takes:** Any photos/videos associated with an incidental take (marine mammals, sea turtles or sea birds), i.e. entanglement scenario, images of the body, documentation of release.
- 02: Sighting:** Any photos/videos of a protected species sighting (marine mammals and sea turtles only), i.e. a loggerhead turtle swimming at the surface, a pod of common dolphins swimming past the boat, etc.
- 03: Fish Verification:** Any photos/videos of fish (non-IAL species) for either the Species Verification Program or photos of “fish, nk” requiring positive identification.
- 04: Gear:** Any photos/videos of gear, i.e. an excluder panel, escape outlet, modified sweep gear.
- 05: Gear Conflict:** Any photos/videos that document a conflict with a vessel’s gear, i.e. a trawl boat that pulls up a string of lobster pots or gillnets.
- 06: Observer/At-Sea Monitor Duties:** Any photos/ videos of an observer or monitor working on the boat, i.e. photos of weighing a basket of fish, measuring the length of a fish, doing paperwork.
- 07: Compliance Situation:** Any photos/ videos related to a vessel boarding, i.e. pictures of US Coast Guard boarding the vessel, inspecting the boat.
- 08: IAL:** Any photos/ videos associated with an IAL species, i.e. tunas, most sharks, tagged fish to confirm species identification.
- 09: Other:** Any photos/videos that do not fall into any other subject codes, i.e. any paperwork other than catch estimation worksheets, scenic photos.
- 10: Catch Estimation Worksheets:** Any photos of catch estimation worksheets (back of haul logs), this excludes any other types of paperwork.

Based on the subject code, all photos should be renamed as follows:

SUBJECT	NAMING CONVENTION	EXAMPLE
Incidental take	01_year_Tripid_nespp4_haulnum_psid_seq	01_2009_A76024_6940_001_01_1
Sighting	02_year_Tripid_nespp4_eventnum_seq	02_2009_A76024_6946_04_1
Fish verification	03_year_Tripid_nespp4_haulnum_seq	03_2009_A76024_0818_005_2
Gear	04_year_Tripid_gearcode_seq	04_2009_A76024_050_1
Gear conflict	05_year_Tripid_gearcode_seq	05_2009_A76024_050_1
At-sea monitor duties	06_year_Tripid_seq	06_2009_A76024_3
Compliance situation	07_year_Tripid_seq	07_2009_A76024_1
IAL spp	08_year_Tripid_nespp4_haulnum_seqnum_seq	08_2009_A76024_4811_004_01_3
Other	09_year_Tripid_seq	09_2009_A76024_1
Catch Estimation Worksheet	10_year_Tripid_haulnum	10_2009_A76024_001

**NOTE:** All photo names must lead off with the subject code, followed by the year and Trip ID, each separated by an underscore. These three elements MUST be in all photo names in the above order.

**NOTE:** For incidental takes, IAL species, and fish verification species, a 4 digit species code will be used to identify the species captured in the photo. A list of all species codes can be obtained from Appendix A: Species Names and Corresponding Tabs/Logs.

**NOTE:** For gear related photos, the gear code is a standard 3 digit gear code that the monitor would list on the Trip Tab/Log.

**NOTE:** “Seq” is a sequence number for photos if multiple photos are taken of the same subject (1, 2, 3...etc.).

**NOTE:** The same labeling procedure applies to videos as well. In order to ensure that all photos and videos are uploaded and stored correctly, they must be renamed as outlined above. **There are no exceptions.**



3. To rename files (with the SD card in the iPAQ):
  - a. Click START. Select FILE EXPLORER.
  - b. At the top, click PROGRAM FILES and select STORAGE CARD.
  - c. Select DCIM. Then select 1000OLYMP. This will allow you to view the photo files.
  - d. Click on any photo to open it. The photo will open and the other photos on the card will appear in a filmstrip along the bottom of the screen.
  - e. To rename the current photo selected, click on MENU at the bottom of the screen, then click RENAME.
  - f. Rename the file accordingly and proceed with all files in the filmstrip that will be uploaded.

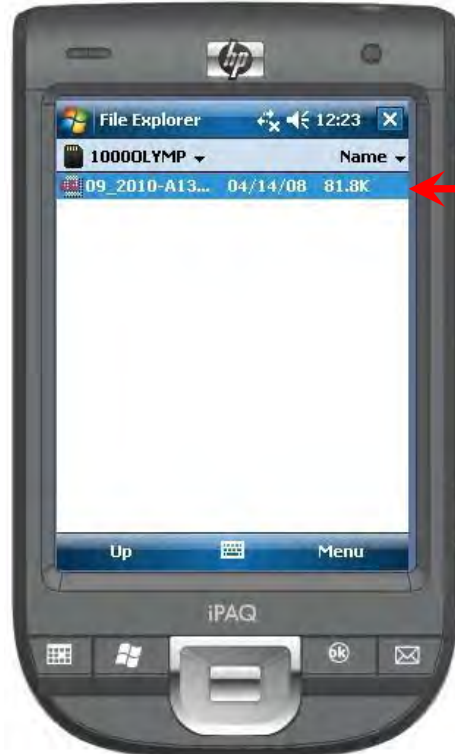


Photo file

4. To connect to the ZASFTP software:
  - a. Connect to an available network using the iPAQ wireless (or use Active Sync through the PC).
  - b. Go to FILE EXPLORER > MY DEVICE ▼ > PROGRAM FILES
  - c. Open ZASFTP
  - d. The following address must be entered into the first field titled:  
<ftp.wh.who.edu>
  - e. Make sure the correct USERNAME and PASSWORD is entered. All other fields should be left as is.
  - f. Click CONNECT at the bottom left side of the screen.



5. Once you are connected:
  - a. Click on SHOW LOCAL at the bottom left side of the screen.
  - b. Open the STORAGE CARD FOLDER; select the DCIM folder; then select the 100OLYMP folder.
  - c. Select all the photos and/or videos to be uploaded using the check boxes to the left of the file name
  - d. Once all the files to be uploaded are selected, click on MENU at the bottom right side of the screen
  - e. Select UPLOAD, and then click OK in the bottom left side of the screen.
  - f. The files should begin uploading one at a time. At 3M, each photo should take 1-2 minutes to upload; videos will take longer depending on length.
6. To EXIT the program:
  - a. Click MENU
  - b. Select MAIN FORM and be brought back to the screen with the monitors username and password
  - c. Click MENU again and select DISCONNECT. Then click MENU > EXIT. The program will ask you if you wish to disconnect and close the application. If you have finished uploading photos/videos then click YES.

**NOTE:** The iPAQ will not turn off automatically. You must press the POWER button to turn it off.

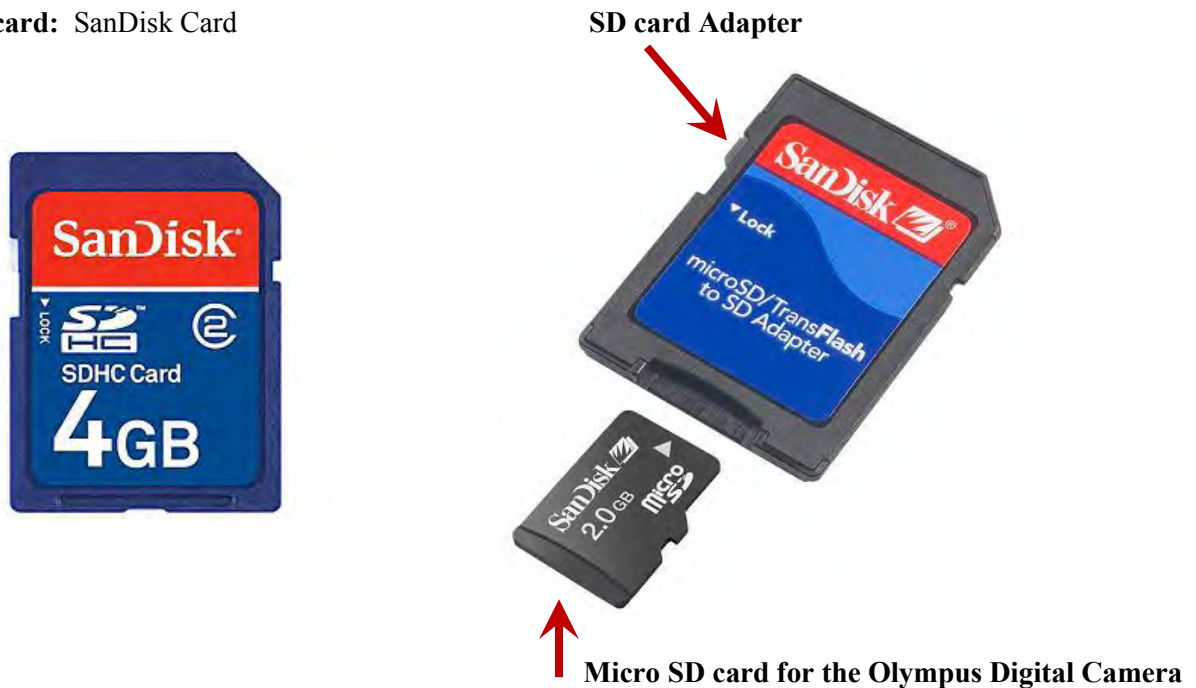
- An automatic confirmation email will be generated by the system stating that the photos have been received. It will also provide a list of file names of the photos and/or videos that were uploaded. Double check that all files (including each individual photo or video) were uploaded. Once you receive the confirmation email you may delete all photos and/or videos from the confirmed trip from the memory card.

**NOTE:** Make sure to upload photos and/or videos after every trip. Monitors should always upload photos shortly after the trip is uploaded. It will allow program staff access to review photos more quickly and will prevent the build-up or loss of photos on the memory card.

**NOTE:** Once the photos are renamed the camera will not recognize those photos any longer. In order to delete them from the memory card, you must use the iPAQ. In the SD card folder on the iPAQ you can delete each file by holding the stylus on the file name and clicking delete from the pop-up menu.

### TRANSFERRING PHOTOS TO iPAQ

**SD card:** SanDisk Card



**Micro SD card:** Transfers photo data from the Olympus digital camera to the iPAQ.

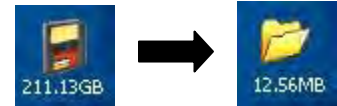
**Olympus Micro SD Attachment**



1. Turn off the camera
2. Open hatch and remove the Olympus micro SD attachment card (Yellow)
3. Remove the Micro SD Card from the attachment card (smaller black card)
4. Place the Micro SD card into the SD Card Adapter.
5. Now the SD Adapter + micro SD card is ready to be inserted into the iPAQ

### **ACCESSING PHOTOS ON THE iPAQ**

1. Insert the SD Card. The Folder Icon will start flashing to SD Card icon
2. Click START
3. Click File Explorer
4. Click on the Down Arrow next to My Documents
5. Select Storage Card
6. Select the Folder named DCIM
7. Select the Folder named 1000OLYMP. You should see the list of the photo files



### **RENAMING PHOTO FILES** (See NAMING CONVENTION on [page 117](#))

1. Click the first Photo
2. Highlight a photo and HOLD stylus on it to get a sub-menu
3. Select RENAME and enter the new name according to the naming protocols listed on page 117.
4. Click OK when you have correctly entered the photo name.
5. Repeat for remaining photos.
6. Select MENU > EXIT. This will return you to the Picture Folder
7. Click the “X” in upper right hand corner of the screen to Close View

**NOTE:** This will not close the program

## BIOLOGICAL SAMPLING PROTOCOLS

### INTRODUCTION

Biological sampling involves collecting data on the species caught in order to aid in determining the effect of fishing effort on catch size and species distribution. These data are also useful in establishing length-weight relationships, aging, migration patterns, food habits, and other valuable biological information.

A general rule concerning biological sampling priorities is to attempt to answer the following questions (in the order listed) for each catch disposition, i.e. kept and discarded fish:

1. Which species are caught?
2. How much of each species are caught?
3. What is the size composition of the species caught?
4. What is the age composition of the species caught?

Biological sampling should generally occur after or during every other observed haul, as the instructions for each fishery specify. Sampling after every other observed haul is requested in order to allow adequate time to **thoroughly** sample hauls. Whenever possible, monitors should sample every haul. Sampling consists of the collection of the following information from both the kept and discarded catch:

1. Actual weights
2. Length frequencies

A monitor's priorities are as follows:

1. Observing all hauls, including properly documenting the following:
  - Pertinent vessel information (Hull number, Vessel permit number, VTR and/or eVTR number)
  - Gear information (gear type, net type, mesh sizes, etc)
  - Haul information (location, time, and date)
2. Complete catch composition (i.e. fully observing the haul). This includes: collecting complete information on discarded catch, kept catch, IAL species, and incidental takes according to all protocols.
3. Actual weights of priority discarded species (i.e. groundfish species and commercially important species).
4. Actual weights of priority kept species.
5. Length frequencies, as detailed in the Biological Sampling Manual, for discards.
6. Length frequencies, as detailed in the Biological Sampling Manual, for kept catch.

The At-sea Monitor Program Biological Sampling Manual is designed to give the monitor enough information to make decisions about which species to sample, and in what priority, on a per haul basis. **Located in the Biological Sampling Manual** are the following tables that detail species to sample and according to priority:

1. Tables 1a-c. Length Frequency Sampling Priorities

- These tables are organized by fishery, and statistical area, with species listed alphabetically. Each list includes species most likely to be encountered in the fishery, and gives a priority rating to guide in choosing the order in which to sample species on a per haul basis.

- 1 = high
- 2 = medium
- 3 = low

2. Table 2. Fish Sampling Requirements by Species per Statistical Area

- This table lists the number and type of lengths to collect for each species per statistical area.

Table 2: Fish Sampling Requirements by Species per Statistical Area (Biological Sampling Manual)  
(for kept and discard separately)

SPECIES NAME	LENGTH TARGET	LENGTH TYPE	SPECIES NAME	LENGTH TARGET	LENGTH TYPE
Alewife	100	FL	Halibut, Atlantic	100	FL
Bass, Striped	100	FL	Herring, Atlantic	50	TL
Bluefish	100	FL	Herring, Blueback	100	FL
Butterfish	100	FL	Mackerel, Atlantic	100	FL
Cod, Atlantic	100	FL	Mackerel, Spanish	100	FL
Croaker, Atlantic	50	TL	Menhaden	50	FL
Cusk	100	TL	Monkfish ( $\geq 40$ cm)	100	O
Dogfish, Spiny	100	TL	Monkfish ( $< 40$ cm)	100	O
Drum, Black	50	FL	Ocean Pout	100	TL
Drum, Red	50	FL	Pollock	100	FL
Flounder, Am. Plaice	100	TL	Redfish	100	FL
Flounder, Sand Dab	100	TL	Scup	100	FL
Flounder, Summer	100	TL	Sea Bass, Black	100	TL
Flounder, Winter	100	TL	Shad, American	100	TL
Flounder, Witch	100	TL	Spot	100	FL
Flounder, Yellowtail	100	TL	Squid, Atl. Long-fin	100	ML
Haddock, Large ( $>56$ cm)	100	FL	Squid, Short-fin	100	ML
Haddock, Scrod (48-56 cm)	50	FL	Tautog	100	TL
Haddock, Small ( $<48$ cm)	50	FL	Tilefish	100	TL
Hagfish	100	TL	Weakfish	100	FL
Hake, Red	100	TL	Wolfish	100	TL
Hake, Silver	100	FL			
Hake, White	100	TL			

### 3. Table 3. Pelagic Species Sampling Requirements by Species

- This table lists the number and type of lengths to collect for each pelagic species which may be sampled and gives a priority rating to guide in choosing the order in which to sample species on a per haul basis.

1 = high

2 = medium

3 = low

These tables are guidelines, and not absolute instructions. Every fishery, every trip, and every haul may be different. Thus, sampling procedures must be adapted by the monitor to each unique situation. However, a monitor should attempt to obtain at least one priority #1 (high priority) species sample from both the kept and discarded portion of the catch every time the vessel enters a new statistical area.

#### **Marine mammal, sea turtle and sea bird sampling**

Marine mammals, sea turtles and sea birds are high sampling priority species in all fisheries. Refer to the Incidental Take Biological Sampling Protocols and the Biological Sampling Protocols in this manual for detailed information.

#### **NON-PELAGIC FISHERIES**

In general, only those species listed in Table 2 in the Biological Sampling Manual should have length frequencies collected, as these species are considered the commercially important (marketable) species taken by the specific gear in the designated area. However, significant quantities (catches) of targeted species or commercially important species which may not be listed in these tables may also be sampled. In general, the monitor should attempt to obtain a large variety of kept and discard samples of the requested size (see Table 2 in the Biological Sampling Manual) from species in the same haul or statistical area. Sampling a larger quantity of animals requested produces data of little additional value.

Pelagic species listed in Table 3 in the Biological Sampling Manual are occasionally caught in non-pelagic fisheries. Regardless of the fishery being observed, whenever a pelagic species is caught, an Individual Animal Log Tab/Log must be completed, photos taken, and the required information collected.

When pelagic species are caught during deployments in non-pelagic fisheries, monitors should collect actual length and weight measurements from these species according to the priorities listed in Table 3 in the Biological Sampling Manual.

#### **Catch weights**

For **every observed** haul, **complete** catch weights of each species **must** be collected. These data must be collected by species, catch disposition (i.e. kept and/or discarded), and fish disposition (i.e. specific kept category or discard reason).

For each observed haul, actual weights to the nearest tenth of a pound, if reasonable, should be obtained by the monitor using the scale issued by NMFS. If time or circumstances do not permit the collection of actual weights, estimated weights may be substituted, and must be recorded appropriately on the corresponding Haul Tab/Log. Additionally, catch estimation methods should be recorded on the Catch Estimation Worksheet located on the back of all Haul Logs.

When large amounts of discard are present for a haul and weighing these amounts is not possible, catch estimation and subsampling will be necessary. For guidelines on these practices, see the Catch Estimation Guidelines located in The Biological Sampling Manual or the Catch Estimation Information & Background (pg. 271-301) of this manual.

### **Length frequencies**

For those hauls that are biologically sampled, length frequencies are to be collected based on the priorities assigned in Tables 1a-c of the Biological Sampling Manual. Each table is fishery dependant and sections within each table are dependant on the statistical area fished. Finfish and squid length frequencies are to be recorded on the Length Frequency Tab/Log. When biologically sampling, the monitor should attempt to collect length frequencies from as many kept and discarded priority #1 (high priority) through #3 (low priority) species, **within the same haul**, as possible. Since time is usually a limiting factor, focusing on the discarded catch (unless Tables 1a-c in the Biological Sampling Manual indicates otherwise) is appropriate as some of these samples may only be obtained by at-sea monitors.

Table 2 in the Biological Sampling Manual provides further guidance on the number of length frequencies requested for each species. The standard sample size for these animals is 100 individuals per statistical area. If the total catch or discard is less than this amount, smaller numbers should still be sampled. Within a trip, the monitor should attempt to collect at least one kept and one discarded priority #1 through #3 species sample of the requested number, within a single statistical area.

Table 2 in the Biological Sampling Manual also includes the types of fish lengths (i.e. total, fork, or other) to collect. All fish and squid lengths are recorded in whole centimeters.

### **Discards**

Tables 1a-c in the Biological Sampling Manual outline the priority order in which discarded species should be measured. However, if large numbers of a commercially important species, not listed as a priority, are being discarded, then at least one length frequency sample per statistical area should be collected for this species. For multiple species assigned the same priority, the monitor's best judgment should be exercised in order to obtain a complete and varied length frequency profile for the entire trip.

### **Kept**

Length frequencies should also be done on the kept portion as time permits. In addition to the priorities outlined in Tables 1a-c in the Biological Sampling Manual, length frequencies of at least one hundred lengths per statistical area should be taken for the trip's kept species. Also, commercially important species not listed in Tables 1a-c should be measured only when significant numbers of them are caught.

## **SAMPLING REQUIREMENTS FOR PELAGIC SPECIES**

### **Length measurements**

All pelagic species (i.e. sharks, tunas, billfish, swordfish, rays, sturgeons, etc.) should be measured according to the following instructions. Pelagic species measurements should be recorded on the Individual Animal Log Tab/Log unless specifically instructed otherwise. Refer to Figure 1.



**Standard Length Measurements (See Figure 1):**

Tunas and Bonito: **Fork Length (FL)** - tip of upper jaw to caudal fork of the tail (**straight**).

Sharks: **Fork Length (FL)** - tip of snout to caudal fork of the tail (**straight**).

Swordfish and Other Billfish (i.e. white marlin, blue marlin, sailfish, and spearfish):

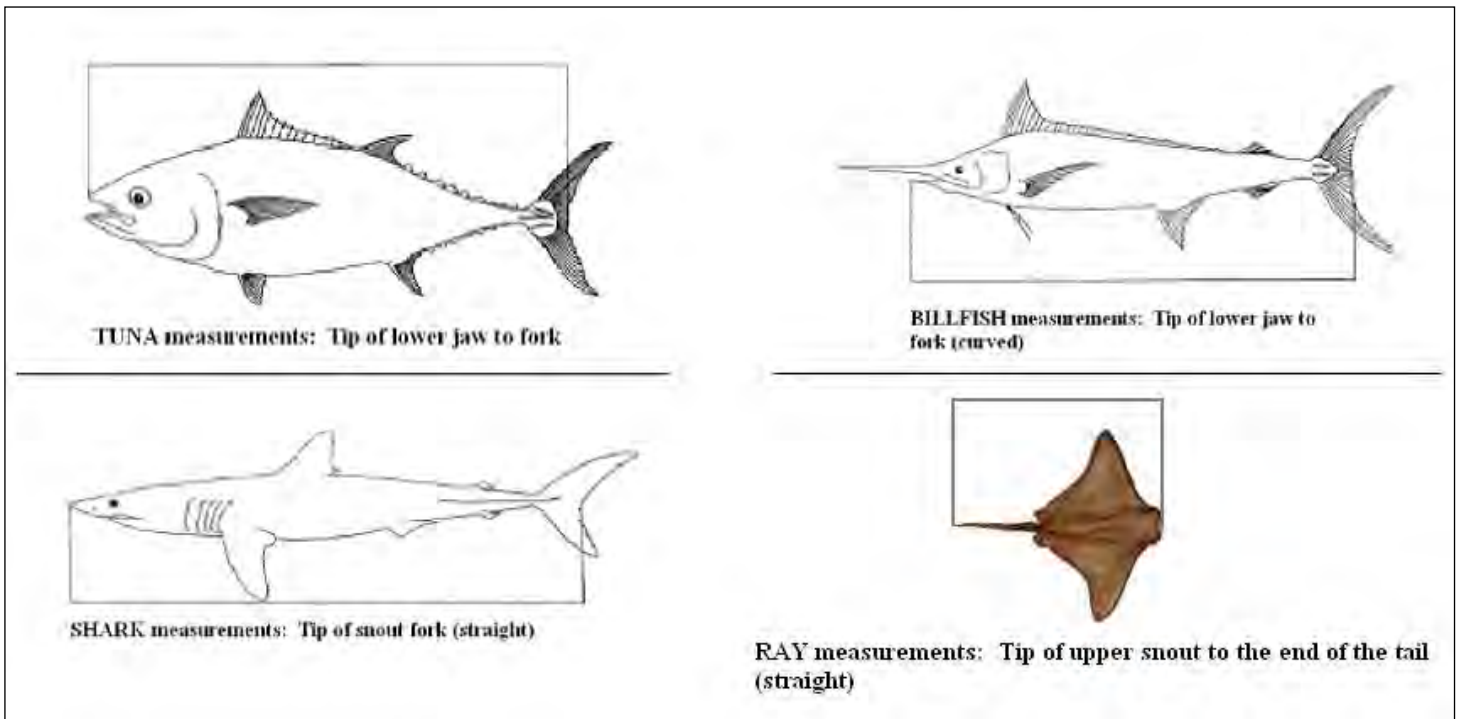
**Lower Jaw to Fork length (LJFL)** - tip of lower jaw to caudal fork of the tail (**curvilinear**).

Rays: **Total length (TL)** - tip of upper snout to end of the tail (**straight**).

Other Fish (i.e. sturgeon): **Fork length (FL)** - tip of upper snout to fork of the tail (**straight**).

Terrapins: **Total length (TL)** - nuchal notch to the posterior marginal tip (**curvilinear**).

**Figure 1:** Standard Lengths

**WEIGHT MEASUREMENTS****Discarded live pelagics**

For those pelagic species discarded alive, it is a high priority to record these animals on the Individual Animal Log Tab/Log with the lengths and weights of these animals estimated and recorded according to the Tab/Log's instructions.

## TAGGING AND TAG RECAPTURE

### INTRODUCTION

These instructions are designed to serve as guidelines for tagging and handling recaptures of fish, sharks, and turtles, as well as tagging marine mammals and recaptures of sea birds. The items covered below foster more efficient tagging efforts, and greater accountability of tag resources.

### TAG SUPPLY, DISTRIBUTION, AND TRACKING

Prior to each deployment, monitors should ensure that they have an adequate supply of marine mammal carcass tags. Monitors should ALWAYS carry a minimum of 5 tags.

All tags should be signed out from NEFSC staff. The monitor is responsible for all tag types issued to them. **Transfer of any tags to the vessel operator or anyone else is not allowed.** Refer these people to the tagging agencies listed at the end of this section. Monitors should be supportive of other organization's tag release programs and tagging efforts of crew members. Upon separation from the program, all tag types are to be returned to NEFSC At-sea Monitor Program by the monitor.

Each group of tags will normally be packaged along with several pairs of latex gloves. Documentation of lost tags is very important in helping to improve tracking of tag resources. Notify the NEFSC of all lost or damaged tags.

### SPECIES TO TAG

#### **LIVE MARINE MAMMALS SHOULD NOT BE TAGGED!**

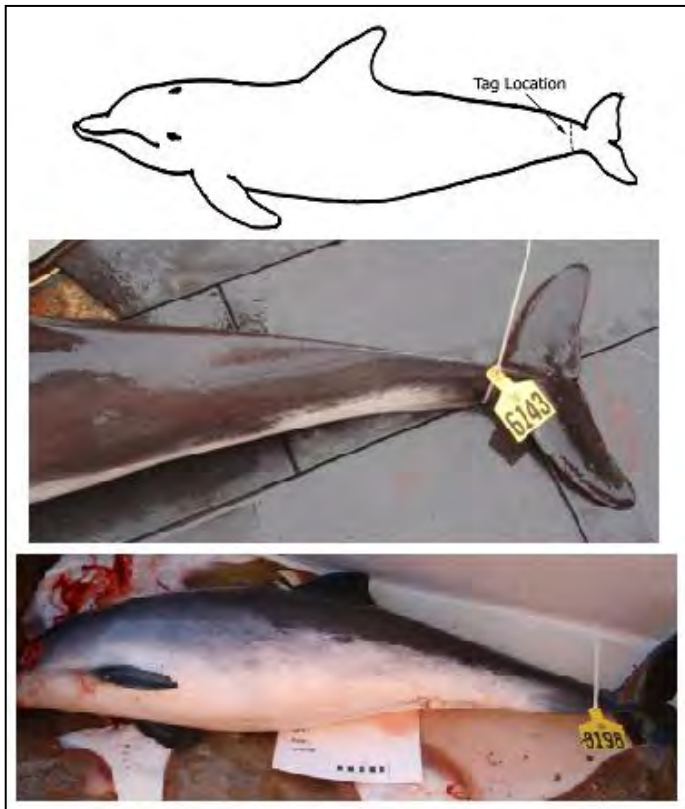
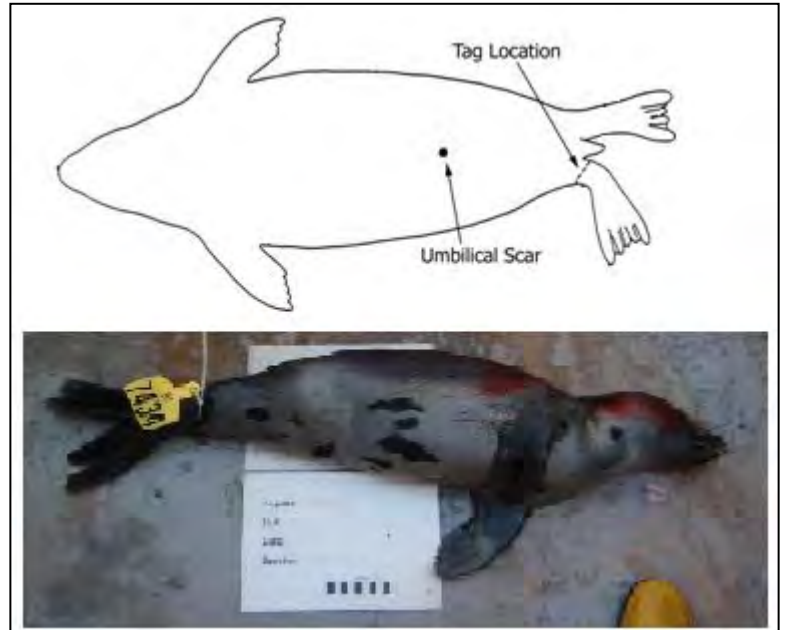
Efforts should be made to photograph all tagged animals, and to describe any key characteristics noted, so that species identifications may be verified. This procedure is especially important if a species occurs in large numbers on a particular deployment.

#### **Tracking Tags for Dead Marine Mammals**

Dead marine mammals are tagged by the monitor with a marine mammal carcass tag (Figure 2). For dead cetaceans, place the tag around the caudal peduncle. For dead pinnipeds, the tag should be placed around a rear flipper. Please refer to Figures 3 and 4 for proper tag locations this tag allows the monitor to uniquely identify each animal. This is required when the dead animal is returned to the water.

**Figure 2:** Marine mammal carcass tag



**Figure 3:** Proper tag location for cetaceans**Figure 4:** Proper tag location for pinnipeds

## Sea Turtles

The following are general guidelines adapted from the NMFS Cooperative Marine Turtle Tagging Project (CMTTP) literature. These should be applied to ensure successful treatment of a turtle.

### Handling Guidelines

1. Keep clear of the head.
2. Keep clear of flapping flippers. Adult male sea turtles of all species other than leatherbacks have claws on their flippers.
3. Pick up sea turtles by the carapace, except for Leatherbacks. Do not pick up sea turtles by flippers, the head, or the tail.
4. Avoid straddling animals when you are working with them.
5. Wear gloves when possible; clean and disinfect any cuts or abrasions incurred when handling sea turtles.

### Resuscitation

Per ESA Permit requirements and Northeast Fisheries At-sea Monitor Program protocols, monitors are required to make every effort to revive all sea turtles incidentally taken during commercial fishing operations that come on board, and are comatose (unconscious) or inactive. Refer to the Sea Turtle Sampling Protocols (pg 31) in the Biological Sampling Manual for detailed instructions on how to properly resuscitate a comatose sea turtle.

## **TAG NUMBER RECORDING**

For ease in database management, **no spaces, dashes, etc. should appear in tag numbers** in a monitor's data. The following number recording guidelines below should be followed, keeping in mind that new tag types are constantly being developed and used:

Example: Numbers and letters.  
405A155500

Marine mammal tag numbers should be preceded by a "D" for domestic vessels, followed by five digits.

Example: D02340

## **TAG RECAPTURES**

The monitor should always be on the lookout for animals that may be tag-recapture animals. All tag-recaptured animals should be treated as important biological specimens. Marine mammal, sea turtle, and sea bird tag-recaptures should be recorded on the Incidental Take Tab/Log and all other tag-recapture species should be recorded on the Individual Animal Log Tab/Log.

### **Sharks or Fish (Excluding Tunas & Billfish)**

When a tag is already attached to any fish species, the treatment of the animal must be made based on the unique circumstances of the recapture. For instance:

- If the animal is dead, and will not be retained by the vessel, the animal should be fully sampled by the monitor. This complete sampling entails:
  - recording the tag number
  - recapture location
  - specified length measurement
  - appropriate photographs
- If the animal is kept by the vessel, every effort should be made to fully sample the animal (as specified above), realizing that the crew needs to process the fish. Often the crew is willing to assist with sampling requests if asked. The monitor should explain the value of the samples needed.
- If the vessel intends to release the animal, and the animal is in good condition, the monitor should record the tag number and attempt to measure the animal (if the animal is brought onboard the vessel), or estimate its length, and take the proper photographs. Sampling the animal further should occur at the monitor's discretion, with the goal of maximizing data collection potential, i.e. more data may be obtained from an animal recaptured if a second recapture seems likely. Additionally, the following guidelines should be helpful in deciding whether to sample or release a live recapture:
  1. **Do not** sample animals when the vessel and crew's safety will be jeopardized by efforts to manipulate the animal, i.e. bring it onboard.
  2. **Do not** sample animals if it seems the animal may have been tagged recently, i.e. in the last two years. While recent tagging is not obviously evident, there are some items which may give an indication of the relative date of tagging:
    - **an animal's size** -- a small animal may be a young, recently tagged animal.
    - **a tag's type, condition, and number** -- tags numbers similar to ones currently used could indicate a recently tagged animal.

3. **Do** sample “unusual” species, i.e. a species recaptured in an area beyond its range, or species which vary from the majority of the rest of the catch.
4. **Do** sample if in doubt, and it is safe and feasible to do so. Correctly collected recapture information will certainly be valuable and appreciated.
5. It is not necessary to cut off the tag of a recaptured animal to be released. If the tag number can be obtained without cutting off the tag, do so, and release the animal with the same tag. Any “old” tags cut off should be saved and submitted to NEFSC with other trip data.

### **Marine Mammals**

If a dead marine mammal already has a tag when taken, re-tag it and record both tag numbers on the Incidental Take Tab/Log. Incidental takes of marine mammals should be handled as specified in the Incidental Take and Biological Sampling Protocols in this manual or in the Biological Sampling Manual.

### **Sea Birds**

Incidental takes of sea birds should be handled as specified in the Incidental Take Biological Sampling Guidelines in this manual or the Biological Sampling Manual. Occasionally these animals have a band around their leg. This band number should be recorded in the TAG NUMBER(S) field on the Incidental Take Log and the COMMENTS section of the Incidental Take Tab.

### **Other Species**

When tagged species other than the above are recaptured, the monitor should record the tag number and any appropriate length measurements, condition, etc. for the species on the Individual Animal Log Tab/Log or in the comments section of the appropriate Haul Tab/Log. When possible, the actual tag should be removed and submitted with the trip data if the animal will not be released alive. Any additional information regarding the recapture, i.e. the number to call with the recapture information if the tag is not retained, should also be recorded in the data.

The monitor should allow the captain and/or crew to return the tag if requested, after insuring that all relevant information has been recorded on the appropriate logs.

## **TAGGING PROGRAMS**

Below is a list of the current, major Atlantic Coast tagging programs. This list is provided for information purposes only. Monitors should not contact tagging agencies independently. All tagging and recapture information should be submitted to NEFSC with other trip data.

### **Sharks**

Cooperative Shark Tagging Program  
National Oceanic and Atmospheric Administration  
Narragansett Laboratory  
28 Tarzwell Drive  
Narragansett, RI 02882  
(401) 782-3328

### **Yellowtail Flounder**

Yellowtail Flounder Tagging Project  
www.cooperative-tagging.org  
Cooperative Tagging Project / S Mast  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Northeast Fisheries Science Center  
166 Water Street  
Woods Hole, MA 02543  
(877) 826-2612 or (866) 447-2111

**Atlantic Cod**

Northeast Regional Cod Tagging Program  
www.codresearch.org  
Cooperative Tagging Program  
Gulf of Maine Research Institute  
350 Commercial St.  
Portland, ME 04101  
(207) 228-1639

**Other Fish Species**

American Littoral Society  
Highlands, NJ 07732  
(908) 291-0176

**Haddock**

Northeast Consortium Cooperative Haddock  
Tagging  
www.ccchfa.org/tagging  
Cooperative Tagging Project  
Gulf of Maine Research Institute  
350 Commercial Street  
Portland, ME 04101

**Sea Scallop**

Sea Scallop Research Program  
www.smast.umasse.edu/Fisheries/Scallops/index.  
php  
University of Massachusetts-Dartmouth  
School for Marine Science and Technology  
706 S. Rodney French Blvd.  
New Bedford, MA 02744  
(508) 910-6359 or (508) 910-6373

**BIOLOGICAL SAMPLE TAG**

The purpose of this two-sided tag is to provide a sturdy label for biological samples collected by the monitor. One tag should be used for each sample, and each sample should be bagged separately, unless otherwise instructed. All samples collected, should also be recorded on the appropriate tab(s)/log(s). A permanent marker should be used to complete the tag.

See Figure 6 for an example of a Biological Sample Tag filled out correctly.

**INSTRUCTIONS**

1. **MONITOR/TRIP IDENTIFIER:** Record your three character Monitor Identifier combined with the three digit Trip Number and one character Trip Extension assigned to you for this trip.
2. **HAUL NUMBER:** Record the haul number that the sample or animal was taken. This number must agree with the number recorded for this haul on the corresponding Individual Animal Log Tab/Log or Incidental Take Tab/Log.
3. **TAG NUMBER:** Record the tag number(s), if any, associated with this animal. The tag number(s) must agree with the number(s) recorded for this animal on the corresponding Individual Animal Log Tab/Log or Incidental Take Tab/Log. Refer to the Tagging and Tag Recapture section of this manual for tag recording instructions.

4. **PSID:** Record the consecutive identifying sequence number assigned to this animal. The consecutive identification number must agree with the number(s) recorded for this animal on the corresponding Individual Animal Log Tab/Log or Haul Tab/Log.

**NOTE:** Marine mammal, sea turtle, and sea bird samples are not collected by monitors.

5. **DATE:** Record the month, day, and year, based on local time when the haul began. This date must agree with the date recorded for this haul on the corresponding Haul Tab/Log.

**NOTE:** For Protected Species record the month, day, and year, based on local time when the haul ends.

6. **SPECIES NAME:** Record the **complete** common name of the animal collected, or the animal from which this sample was taken. The complete common species names are found in Appendix A: Species Names and Corresponding Tabs/Logs. This name must agree with the name recorded for this animal on the corresponding Haul Tab/Log or Individual Animal Log Tab/Log.

7. **STATISTICAL AREA:** Record the statistical area where the animal was collected.

**NOTE:** For Protected Species record the month, day, and year, based on local time when the haul ends

**NOTE:** If more than one statistical area is fished during a haul, record the Statistical area that the haul began.

8. **FISHERY:** Record the name of the fishery being conducted by the vessel to which you are deployed by recording the appropriate gear code.

9. **LENGTH:** Record, in whole centimeters, the standard length of the animal sampled.


10. **DISPOSITION:** Indicate the disposition of the animal sampled by recording the most appropriate three digit code as listed in Appendix B: Fish Disposition Codes.

11. **SAMPLE TYPE:** Indicate which sample(s) are collected, and in the bag by placing an "X" in the appropriate box(s).

**Figure 5:** Biological Sample Tag with Field Numbers

**Front**

**NMFS FISHERIES OBSERVER PROGRAM**


 Trip ID           **1**           Haul #           **2**            
 Tag#           **3**           PSID           **4**           Date           **5**            
 Species           **6**           Stat Area           **7**            
 Fishery           **8**           Length           **9**           Disp           **10**

**Back**

**SAMPLE TYPE:**

BLUBBER <input type="checkbox"/>	JAW <input type="checkbox"/>	REP. ORGAN <input type="checkbox"/>
FETUS <input type="checkbox"/>	KIDNEY <input type="checkbox"/>	STOMACH <input type="checkbox"/>
HEAD <input type="checkbox"/>	LIVER <input type="checkbox"/>	VERTEBRA <input type="checkbox"/>
HEART <input type="checkbox"/>	MUSCLE <input type="checkbox"/>	WHOLE <input type="checkbox"/>

OTHER \_\_\_\_\_

**11**

**DNA**

FINCLIP <input type="checkbox"/>
FLIPPER <input type="checkbox"/>
BIOPSY <input type="checkbox"/>
SKIN <input type="checkbox"/>



Figure 6: Example of a completed Biological Sample Tag

**Front**

**NMFS FISHERIES OBSERVER PROGRAM**

Trip ID   A02002C   Haul #   10  

Tag#   12345   PSID   Seq. 01   Date   07/10/03  

Species   Yellowtail Flounder   Stat Area   514  

Fishery   100   Length   90   Disp

**Back**

SAMPLE TYPE:

BLUBBER <input type="checkbox"/>	JAW <input type="checkbox"/>	REP. ORGAN <input type="checkbox"/>
FETUS <input type="checkbox"/>	KIDNEY <input type="checkbox"/>	STOMACH <input type="checkbox"/>
HEAD <input type="checkbox"/>	LIVER <input type="checkbox"/>	VERTEBRA <input type="checkbox"/>
HEART <input type="checkbox"/>	MUSCLE <input type="checkbox"/>	WHOLE <input checked="" type="checkbox"/>

OTHER \_\_\_\_\_

DNA

FINCLIP

FLIPPER

BIOPSY

SKIN

## INCIDENTAL TAKE BIOLOGICAL SAMPLING

### INTRODUCTION

The following are guidelines for documenting incidental takes. These guidelines are to be used for all fisheries, keeping in mind that each incidental take species may have different sampling priorities. Also, each trip may present different challenges in accommodating these priorities and may be affected by circumstances such as rough weather conditions, the animal falling out of the net, etc. It is up to the monitor to use his/her best judgment.

See also: pages 26-27 (Marine Mammal); pages 28-29 (Sea Birds); pages 30-31 (Sea Turtles) instructions in the At-sea Monitor Program Biological Sampling Manual for Incidental Take biological sampling.

### MARINE MAMMAL BIOLOGICAL SAMPLING

#### MARINE MAMMAL REQUIREMENTS

##### LIVE ANIMALS:

1. PHOTOGRAPH:
  - a. Close up of gear entanglement
  - b. Entire animal on all sides
  - c. Close up of the head
  - d. Close up of the teeth (safety permitting)
  - e. Genital area (when possible)
  - f. Any wounds, marks, scars, or damage
  - g. Close up of dorsal fin on both sides (cetaceans)
  - h. Any existing tags
2. ID: Using the Incidental Take Worksheet, describe in detail identifying characteristics of the animal.
3. RELEASE: After all protocols have been met return the animal to the water and comment on behavior upon release (e.g. sank immediately) and any gear remaining on the animal.

##### DO NOT TAG LIVE ANIMALS

Return the marine mammal to the water as quickly as possible in a manner that minimizes further stress and injury.

**DEAD ANIMALS:**

1. **PHOTOGRAPH:** Include the waterproof Photo Sheet for all pictures. See Figure 1.
  - a. Close up of gear entanglement
  - b. Entire animal on all sides
  - c. Close up of the head
  - d. Close up of the teeth
  - e. Genital area
  - f. Any wounds, marks, scars, or damage
  - g. Close up of dorsal fin on both sides
  - h. Any existing tags or marine mammal tag affixed by the monitor
2. **TAG:** Using the yellow marine mammal tag provided, tag the tail of cetaceans or the hind flipper of seals. See Figures 2 & 3.
3. **ID:** Describe in detail identifying characteristics of the animal.
4. **RELEASE:** After all protocols have been met return the animal to the water and comment on behavior upon release (e.g. sank immediately, floated at surface) and any gear remaining on the animal.

INCIDENTAL TAKE PHOTO SHEET  
NORTHWEST FISHERIES AND SEA MAMMALS PROGRAM

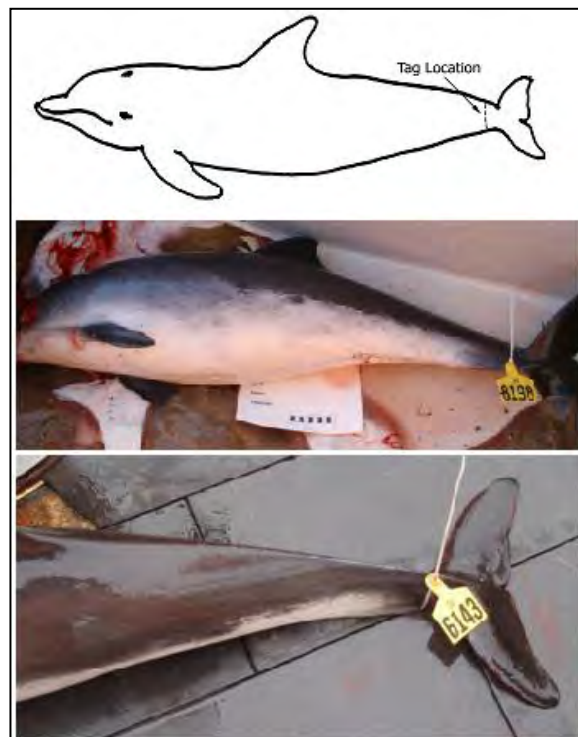
TRIP ID:

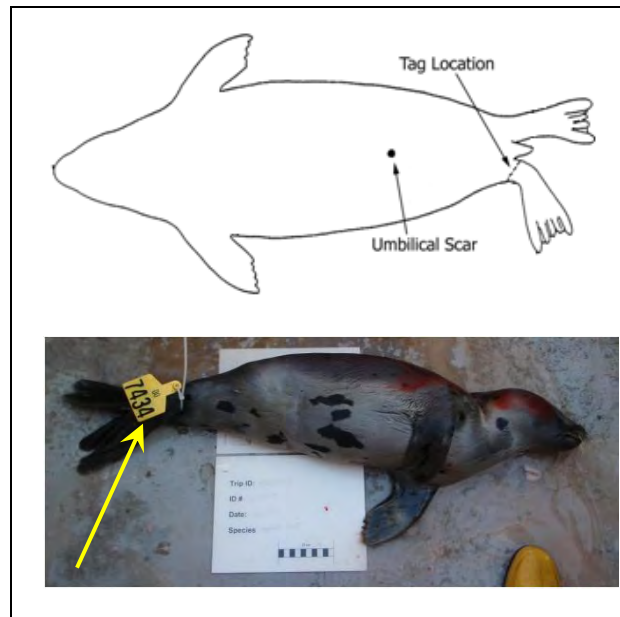
ID #: (PSID or Seq. #)

DATE:

SPECIES:

10 CM

**Figure 1:** Waterproof Photo Sheet**Figure 2:** Proper tag location for cetaceans

**Figure 3:** Proper tag location for pinnipeds

### Describing New or Healed Wounds

Record these comments on the waterproof Incidental Take Worksheet and/or the Incidental Take Log. As you observe the animal, describe any new or healed wounds on the animal. Sketch and record these on the Incidental Take Worksheet. Description should include size, shape, texture, depth and location. Comment if fresh blood is seen or if unusual tissue marks are present. If the animal is released with gear still attached to any area of the body, be sure to illustrate and comment as to how much remains and where the gear remains attached. Also comment on the animal's behavior, on deck and also immediately after release. These include, but are not limited to, vocalizing, calm, inability to dive, response to stimuli, lethargic, sinking or floating etc.

**NOTE:** In addition to sketches, photographs of new and healed wounds are required. These are helpful in assessing the condition of the animal.

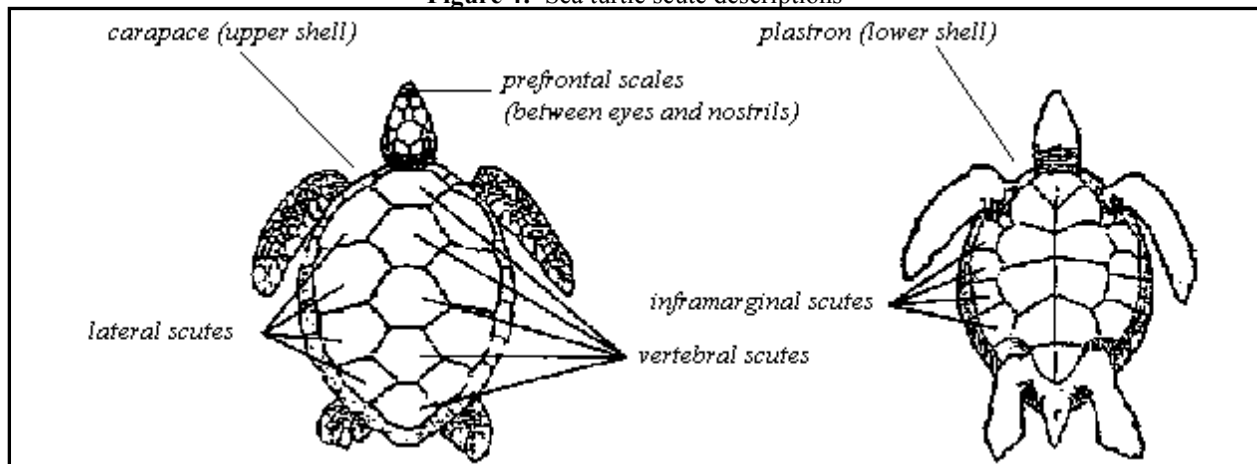
### SEA TURTLE BIOLOGICAL SAMPLING

The following are guidelines for documenting sea turtles. These guidelines are to be used for all fisheries. Also, each trip may present different challenges in accommodating these priorities and may be affected by circumstances such as rough weather conditions, the animal falling out of the net, etc. It is up to the monitor to use his/her best judgment in following these guidelines. All sea turtles incidentally caught by the vessel, or entangled in its gear, during any stage of fishing activity, are considered incidental takes.

### SAFE SEA TURTLE HANDLING

- Sea turtles have powerful jaws. Always keep clear of the head and wear durable footwear when working around them on deck.
- Sea turtles of all species, except leatherbacks, have claws on their flippers. Keep clear of flapping flippers, especially if the animal is on its back (carapace). Avoid straddling animals when you are working with them.
- Never pick up sea turtles by the flippers, head or tail. For all turtles except leatherbacks, pick them up by placing one hand at the front and back of the carapace or one hand at each side of the carapace.
- Placing a clean, damp cloth over an agitated turtle's head/eyes can sometimes have a calming effect. Be careful not to suffocate animal.
- Wear gloves and clean and disinfect any cuts or abrasions incurred when handling sea turtles.
- Turtles brought on deck should be protected from adverse weather conditions as much as possible. If it is sunny and hot, turtles should be covered with a clean damp cloth/towel and kept in the shade. If it is cold, turtles should be insulated with available clean dry material and kept out of the weather.

**Figure 4:** Sea turtle scute descriptions



- Extra care should be taken when handling leatherback turtles since they are covered with skin. Leatherback turtles should never be turned over on their carapace and should always be picked up by their plastron, i.e., by supporting their underneath instead of just picking up by their carapace. Since leatherback turtles can be large, you might need assistance when moving - do not try to drag or push them.

**SEA TURTLE REQUIREMENTS****DEAD**

1. **PHOTOGRAPH:** Include the waterproof Photo Sheet in all photos.
  - a. Close up of gear entanglement
  - b. Head: top, both sides, and head on (prefrontal scales)
  - c. Entire animal on all sides, including the plastron and carapace
2. **ID:** Describe in detail identifying characteristics of the animal. Include scute counts (vertebral, costal, inframarginals, pre-frontals)

**NOTE:** For dead sea turtles only.

- d. Any wounds, damage, lesions, and marks
- e. Any tags that are present

**NOTE:** Sea turtles should be identified to the most specific generic group of which you are positive. Please note if the turtle is hard-shelled (Cheloniidae, including Loggerhead, Green, Hawksbill and Ridleys) or a leathery-shelled turtle (Dermochelyidae).

3. **CHECK FOR PRESENCE OF TAGS:** If there is a tag present, record the number in the COMMENTS section
4. **RELEASE:** After all protocols have been met return the animal to the water.

**NOTE:** All turtles must be released over the stern of the boat when fishing gear is not in use, the engine gears are in neutral, and in areas where they are unlikely to be recaptured or injured by fishing gear or vessels. This includes sea turtles that fail to respond to the reflex test or fail to move within several hours (up to 24, if possible).

**ALIVE or COMATOSE**

1. **PHOTOGRAPH:** Include the waterproof Photo Sheet for all photos.
  - a. Close up of gear entanglement
  - b. Head: top, both sides, and head on (prefrontal scales)
  - c. Entire animal on all sides, including the plastron and carapace
2. **ID:** Describe in detail identifying characteristics of the animal. Include scute counts (vertebral, costal, inframarginals, pre-frontals)

**NOTE:** Large sea turtles, especially leatherbacks, should not be placed on their carapace. For large sea turtles and leatherbacks, do not take photos of the plastron.

- d. Any wounds, damage, lesions and marks
- e. Any tags that are present

3. **CHECK FOR PRESENCE OF TAGS:** If there is a tag present, record the number in the COMMENTS section
4. **RESUSCITATION:** See Handling and Resuscitation requirements on pg. 150.

### Describing New or Healed Wounds

Record these comments on the waterproof Incidental Take Worksheet and/or the Incidental Take Log. As you observe the sea turtle, describe any new or healed wounds on the animal. This includes carapace condition e.g., cracks, wounds, presence of barnacles. Sketch and record these in the comments section of the Incidental Take Worksheet. Description should include shape, size, depth and location. Comment if fresh blood is seen or if scar tissue is present. If animals are released with gear still attached to any area of the body, be sure to illustrate and comment as to how much remains and where the gear remains attached. Also, comment on the sea turtle's behavior, on deck and immediately after release. These include, but are not limited to, listlessness, inability to dive, response to stimuli, lethargic etc.

### Identification Criteria

Record how the animal is identified on the waterproof Incidental Take Worksheet and/or the Incidental Take Log. Animals should be identified to the most specific generic group of which you are positive. Do not guess at identification. Refer to the identification guides to assist you while on a deployment. A Turtle Identification Key is provided at the end of this section.

#### *Vertebral scute count:*

Count the number of vertebral scutes on the carapace of the turtle. The vertebral scutes are the plates that run down the middle of the carapace.

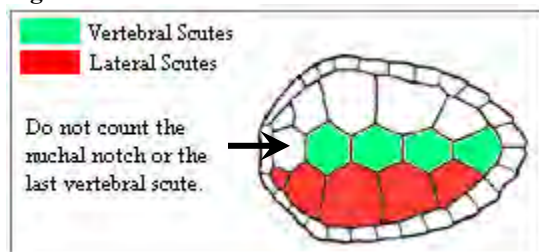
#### *Lateral scute count:*

Count the number of lateral scutes on the carapace of the turtle. The lateral scutes are the plates that run on either side of the midline vertebral scutes. See Figure 5.

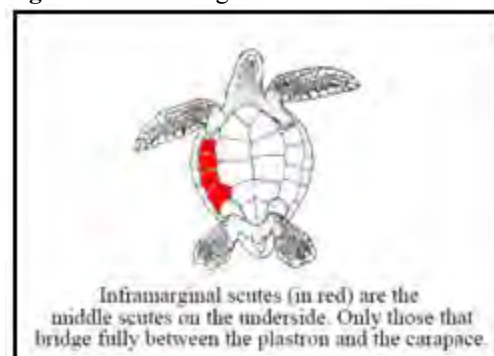
#### *Inframarginal scute count:*

Count the number of inframarginal scutes on the plastron of the turtle. See Figure 6.

**Figure 5: Scute Count Guidelines**

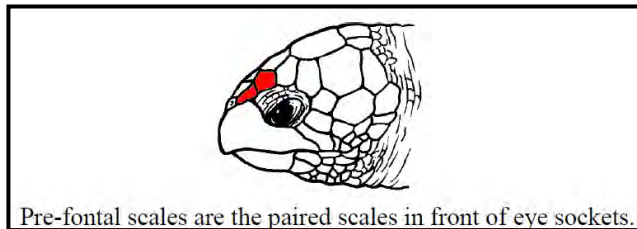
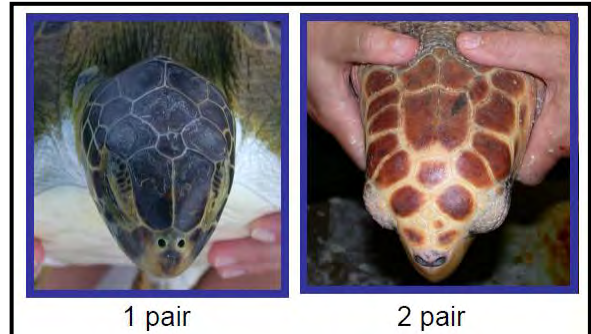


**Figure 6: Inframarginal Scute Count Guidelines**



***Pre-frontal scales:***

Note whether or not the sea turtle has one **pair** of prefrontal scales. The prefrontal scales are the scales between the eyes of the turtle. There should be either one or two pairs. See Figures 7 and 8.

**Figure 7:** Pre-frontal Scale Guidelines**Figure 8:** Example of Pre-frontal scales***Overlap scutes:***

Note whether or not the sea turtle has overlapping scutes on the carapace.

**Figure 9:** Overlapping scutes of a hawksbill sea turtle.***Dorsal color:***

Note the dorsal coloration of the sea turtle. The monitor should use their judgment to choose the color that most accurately describes the sea turtle's carapace. Most sea turtle coloration can be described as black, gray-green, orange/red-brown, or brown.

**HANDLING AND RESUSCITATION REQUIREMENTS**

Any live sea turtle taken incidentally taken during the course of commercial fishing or scientific research activities must be handled with due care to prevent injury. Incidentally taken sea turtles should be observed for activity and then returned to the water according to the following procedures:

1. Sea turtles that are alive or dead must be released over the stern of the boat. In addition, they must be released only when fishing gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by fishing gear or vessels.



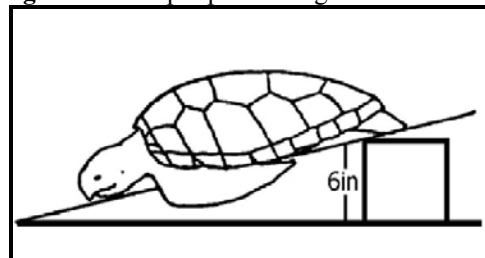
2. Resuscitation must be attempted on sea turtles that are comatose or inactive, but not obviously dead by placing the turtle right side up (on plastron) and elevating the hindquarter 6 inches for a period of 4 up to 24 hours. The amount of the elevation depends on the size of the turtle; greater elevations are needed for larger turtles (refer to Figure 9). Periodically rock the turtle from side to side by holding the outer edge of the carapace and lifting one side about 3 inches. Alternate lifting from one side to the other. This allows the lungs to drain off water. Sea turtles being resuscitated must be protected from the elements at all times. If it is sunny and warm then shade the turtle and keep moist using clean sea water or clean damp towels. If it is cold then keep the turtle out of the weather and warm by insulating with clean rags or other suitable material.

**Figure 10:** Rocking a sea turtle during resuscitation.



3. Gently touch the upper eyelid and pinch the tail (reflex test) periodically to see if there is a response. Those that revive and become active must be released over the stern of the boat only when fishing gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by fishing gear or vessels. Sea turtles that fail to respond to the reflex test or fail to move within several hours (up to 24, if possible) must be returned to the water in the same manner.

**Figure 11:** Proper positioning for resuscitation



**IMPORTANT:** Do not assume that an inactive turtle is dead. The onset of rigor mortis or the rotting of flesh is often the only definitive indication that a turtle is dead. Otherwise the turtle is determined to be comatose or inactive and resuscitation attempts are necessary. There are three methods that may elicit a reflex response from an inactive animal:

- a. Cloaca or tail reflex. Stimulate the tail with a light touch. This may cause a retraction or side movement of the tail.
- b. Eye reflex. Lightly touch the upper eyelid. This may cause an inward pulling of the eyes, flinching or blinking response.
- c. Nose reflex. Press the soft tissue around the nose which may cause a retraction of the head or neck region or an eye reflex response.

**TRANSFER OF INJURED TURTLES FOR REHABILITATION**

Turtles can sustain a variety of life threatening injuries when they interact with fishing gear. Beyond resuscitation, monitors are not trained or expected to administer medical aid. When injured animals are released, it is likely that a number of them die. With treatment and rehabilitation by trained professionals, these animals can survive and be released back into the wild. When possible, the monitor is requested to transfer live, injured turtles to a cooperating U.S. Coast Guard vessel or to deliver them to a NMFS permitted member of the Sea Turtle Stranding and Salvage Network (STSSN) in the state where the vessel lands.

On single day trips, all injured turtles should be brought in whenever possible. On multi-day trips, arrangements should only be made to bring in injured turtles if the observed fishing vessel will land within a 36 hour period. If the observed vessel will not be landing within the 36 hour period, contact NEFOP staff to make arrangements for a U.S. Coast Guard at sea pick up. Keep in mind that these plans should be discussed with the captain first.

A plan for the exchange of an injured turtle needs to be established before making the decision to bring an injured turtle in to the dock. The monitor may need to request the use of the vessel's satellite phone or radio to contact NEFOP staff or the STSSN. Vessels will be reimbursed for all incurred costs. Turtles should not be brought in for rehabilitation unless the STSSN can meet the monitor at the dock when the vessel lands.

It is not the monitor's responsibility to deliver the turtle to a rehabilitation facility. If the monitor is unable to establish contact with the STSSN then the animal should be released. NEFOP staff may be able to help monitors contact the STSSN.

It is understood that any request to transfer or bring in a turtle is contingent on the cooperation of the vessel operator. The monitor is advised to make a polite request of the vessel operator and to be aware that a number of factors may prevent the vessel operator's cooperation. In that case, the turtle should be released following the above release guidelines. The behavior of the released turtle should be noted on the Incidental Take Log.

**QUICK REFERENCE KEY FOR SEA TURTLE ID**

**TURTLE KEY**

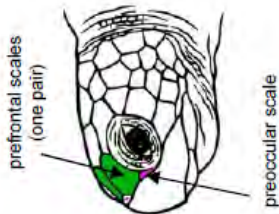
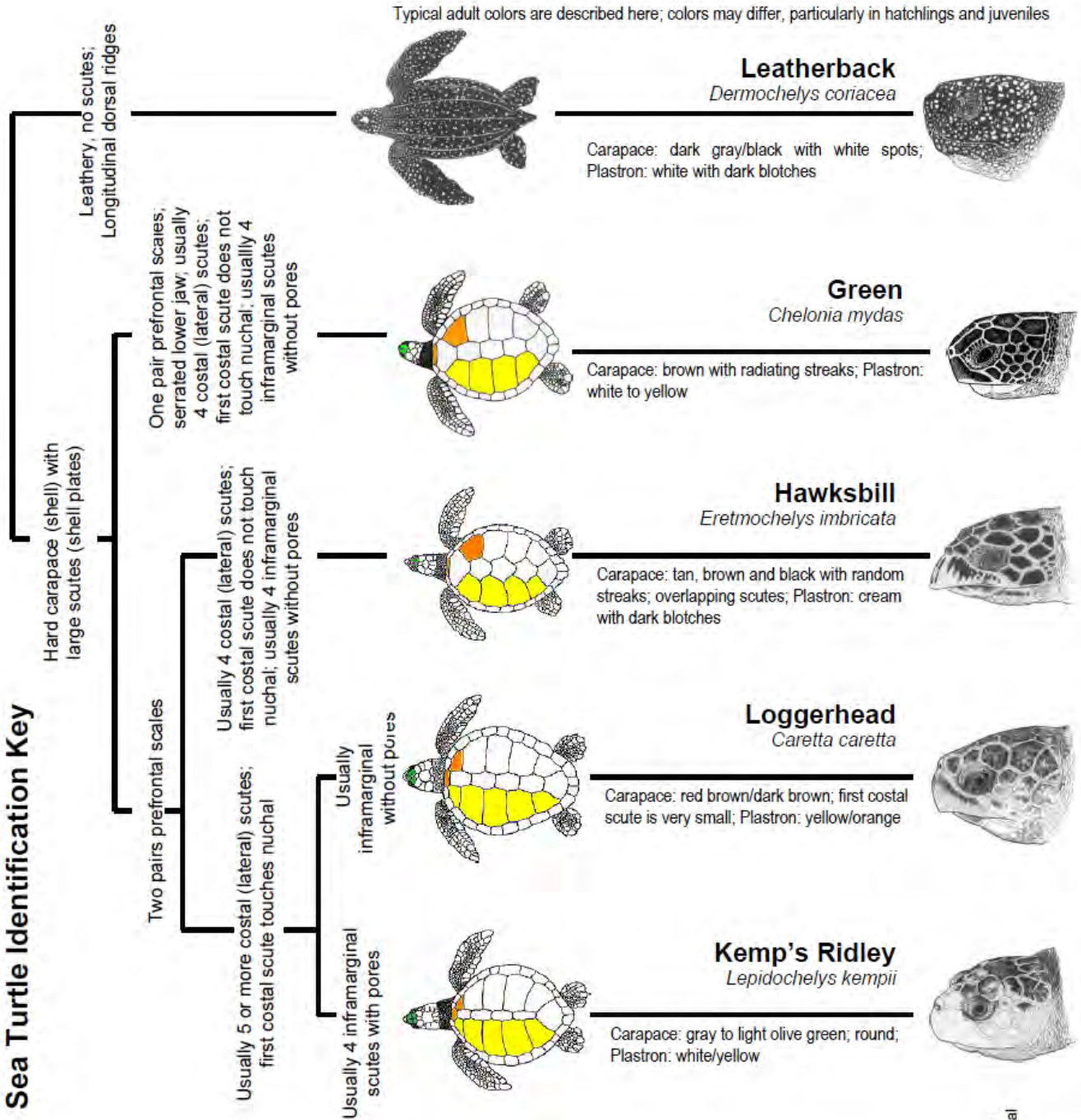
- A. Carapace black and leathery with longitudinal ridges.....LEATHERBACK
- A. Carapace not black and hard..... B
  
- B. Lateral scutes 4.....C
- B. Lateral scutes 5.....D
  
- C. Two large scutes (1 pair) between eyes, carapace smooth, mouth normal, carapace color light brown with yellow starburst patterns, top of flippers and head light brown.....GREEN
- C. Four scutes (2 pairs) between eyes, scutes overlapping, upper jaw has overhanging beak, carapace color dark brown with light brown blotches, top of flippers and head black.....HAWKSBILL
  
- D. Plastron has 3 inframarginals; carapace, head and flippers reddish brown.....LOGGERHEAD
- D. Plastron has 4 inframarginals with pores; carapace, head and flippers greenish gray.....KEMP'S RIDLEY

Northeast Fisheries At-sea Monitor Program  
 ESA Sea Turtle Permit #1448 Descriptions

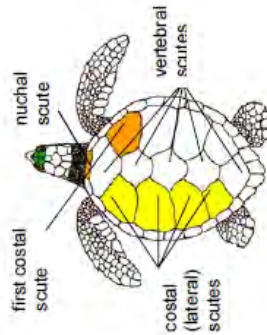
The National Marine Fisheries Service and the U.S. Fish and Wildlife Service share the responsibility for sea turtle recovery under the authority of the Endangered Species Act of 1973. Monitors in the Northeast Fisheries Monitor Program (NEFOP) can encounter five species of protected sea turtles:

Common Name	Scientific Name	Status
Loggerhead	<i>Caretta caretta</i>	Threatened
Leatherback	<i>Dermochelys coriacea</i>	Endangered
Kemp's Ridley	<i>Lepidochelys kempii</i>	Endangered
Green	<i>Chelonia mydas</i>	Endangered/Threatened
Hawksbill	<i>Eretmochelys imbricata</i>	Endangered (very rare in Northeast waters)

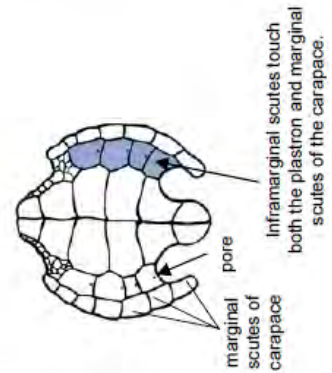
# Sea Turtle Identification Key



## Dorsal View (Carapace)



## Ventral View (Plastron)





**Leatherback, *Dermochelys coriacea*** (Spanish: Baula, Tortuga Laud, Tora; French: Tortue Luth; Portuguese: Tartaruga Gigante, Tartaruga-de-couro)  
**Adult Size Range: Length:** 165-190+ cm/ 65-75+ in; **Weight:** 400-500 kg females, males to 900 kg/ 885-1985 lb  
**Range:** All oceans, sub-arctic to tropical; mainly pelagic oceanic (surface dwelling in the open ocean) but found in bays and over continental shelves

**Green, *Chelonia mydas*** (Spanish: Tortuga Verde, French: Tortue Verte; Portuguese: Tartaruga Verde)  
**Adult Size Range: Length:** 90-120 cm/ 35-45 in; **Weight:** 120-230 kg/ 265-510 lb  
**Range:** All subtropical and tropical seas; bays and coastal waters; pelagic oceanic (surface dwelling in the open ocean) small juveniles; benthic neritic (bottom dwelling in coastal waters) large juveniles and adults

**Hawksbill, *Eretmochelys imbricata*** (Spanish: Tortuga Carey; French: Tortue Imbriquée, Tortue Caret; Portuguese: Tartaruga-de-pente, Tartaruga de Escamas, Tartaruga Bico de Falcão, Tartaruga Verdadeira)  
**Adult Size Range: Length:** 90-110+ cm/ 35-45+ in; **Weight:** 60-80 kg/ 130-175 lb  
**Range:** All oceans; tropical waters, rarely subtropical; reef areas; pelagic oceanic (surface dwelling in the open ocean) small juveniles; benthic neritic (bottom dwelling in coastal waters) large juveniles and adults

**Loggerhead, *Caretta caretta*** (Spanish: Caguama, Amarilla, Cabezona, Tortuga Boba; French: Caouanne; Portuguese: Tartaruga Boba, Tartaruga Comum, Tartaruga Careta, Tartaruga Cabeçuda, Tartaruga amarela, Careba Dura, Careba Amarela)  
**Adult Size Range: Length:** 90-130 cm/ 35-50 in; **Weight:** 100-180 kg/ 220-400 lb  
**Range:** All oceans; primarily subtropical and temperate waters; often associated with structures (i.e., reefs, wrecks, platforms); pelagic oceanic (surface dwelling in the open ocean) small juveniles; benthic neritic (bottom dwelling in coastal waters) large juveniles and adults

**Kemp's Ridley, *Lepidochelys kempii*** (Spanish: Tortuga Lora, Cotorra; French: Tortue de Kemp; Portuguese: Tartaruga de Kemp)  
**Adult Size Range: Length:** to 70 cm/ 28 in; **Weight:** 35-50 kg/ 80-110 lb  
**Range:** Gulf of Mexico, eastern USA, rarely in eastern North Atlantic; coastal, primarily subtropical and temperate waters; pelagic oceanic (surface dwelling in the open ocean) small juveniles; benthic neritic (bottom dwelling in coastal waters) large juveniles and adults

#### Sources:

Seaturtle.org

Pritchard, P. C. H. and Mortimer, J. A. (1999) Taxonomy, External Morphology, and Species Identification. pp. 21-38. In: Eckert, K.L., K.A. Bjorndal, F.A. Abreu-Grobois, and M. Donnelly (Editors). 1999. Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group Publication No. 4. (for further details see [http://www.iucn-  
mtsg.org/publications.htm](http://www.iucn-mtsg.org/publications.htm))

Wyneken, J. The Anatomy of Sea Turtles. 2001. U.S. Department of Commerce NOAA Technical Memorandum NMFS-SEFSC-470, 172 pp.

Sea turtle figures used by permission of the Marine Turtle Specialist Group ([iucn-  
mtsg.org](http://iucn-<br/>mtsg.org)), Peter Pritchard and Jeanette Wyneken  
 Illustrations by Tom McFarland and Dawn Witherington

Modified for NEFOP purposes 9-07 from SEFSC Sea Turtle Identification Key

Data obtained from the At-sea Monitor Program are used to estimate sea turtle mortalities caused by commercial fishery interactions. Accurate and thorough data collection on sea turtle takes will help National Marine Fisheries Service (NMFS) implement sound fisheries management decisions. Additional valuable information can be obtained on the genetic origin, seasonal geographic distribution and population characteristics of sea turtle stocks in the Northeast. Monitors should consider each encounter with a protected sea turtle as an opportunity to contribute to our knowledge of sea turtles.

### **Photographic Documentation of Sea Turtle Takes**

Monitors are required to photograph **all** sea turtles that are observed as incidentally taken during commercial fishing operations. Although a properly completed Incidental Take Log should provide all identifying characteristics used for species determination, it is imperative that the monitor also provide photographic documentation to verify this identification for **every live or dead turtle reported**. Photographs should be taken of the head, flippers, carapace, and plastron. Photographs should also be taken of any new or healed wounds, including a close-up of each wound with scale reference and any gear if present. Additionally, photograph the head shape (top), and obtain a close-up of the head (top and side). Photos should be sent in with the trip data immediately.

### **Conditions of ESA Sea Turtle Permit #1448**

The Endangered Species Act permit authorizes NEFOP staff and monitors to handle and conduct the following activities with protected sea turtles:

- Photograph
- Release
- Resuscitate (as needed)
- Transport for rehabilitation (as needed)

These activities shall **only** be conducted following the established protocols in this manual and the Biological Sampling Manual.

### **The following conditions also apply:**

- Monitors must not intentionally kill or cause any sea turtle to be killed.
- Care must be taken when handling live turtles to minimize injury to turtles and the monitor.
- Monitors will request that all sea turtles captured by a fishery be lowered to the deck as carefully as possible.
- All sea turtles brought on board will be protected from any weather or fishing activity that may cause injury. The area surrounding the turtle will be free of any material that the turtle might ingest.
- Healthy, active turtles will not be kept on board longer than 30 minutes.
- Appropriate resuscitation techniques must be used on any comatose turtle prior to returning it to the water.
- During release, engines should be in neutral and turtles shall be released away from fishing gear and as close to the surface of the water as possible.
- The monitor will observe the newly released animal and record the behavior on the Incidental Take Log.
- When possible, monitors should coordinate with the Sea Turtle Stranding and Salvage Network (STSSN) to transfer stressed or injured animals to rehabilitation facilities ashore. The easiest and quickest way to do this might be through the monitor's Area Coordinator or Program Manager.

It is understood that several of these requirements are out of the monitor's control. In those cases, it is important that the monitor work with the captain/crew to meet these requirements. If the vessel operator is unable or unwilling to meet a request, then the monitor should provide comments on the Incidental Take Log. Monitors are responsible for their actions only, not for those of the crew.

Any questions regarding the NEFOP ESA Sea Turtle Permit should be directed to Mike Tork, 508-495-2339 or Mike.Tork@noaa.gov.

The following individuals at the **Northeast Fisheries Science Center** and the **Northeast Regional Office** can be contacted to help coordinate the transfer, or care, of injured animals or salvage of dead sea turtles.

**NEFSC NEFOP:**

Amy Van Atten, Branch Chief: 508-495-2266

**NERO STSSN**

Sara McNulty: 978-281-9300 x6520  
978-281-9351 (pager)

**Contact Information for the Northeast Sea Turtle Stranding and Salvage Network**

Participating STSSN organizations can also be contacted directly.

**Delaware**

Suzanne Thurman  
MERR Institute Inc.  
Nassau, DE  
302-228-5026

**Maryland**

Jose C. Barrios  
National Aquarium in Baltimore  
508 E. Pratt St, Pier 3  
Baltimore, MD  
800-628-9944 (hotline)

**Connecticut / Rhode Island**

Janelle Schuh  
Mystic Aquarium  
55 Coogan Blvd.  
Mystic, CT 06355  
phone (860) 572-5955 ext. 154  
(After hours, call mainline and ask for them to page Janelle.)

**Maryland**

Tricia Kimmel  
Maryland Dept of Natural Resources  
Oxford Cooperative Laboratory  
904 South Morris St  
Oxford MD  
800-628-9944 (hotline)

**Maine**

Sean Todd or Rosie Seton  
College of the Atlantic  
105 Eden Street  
Bar Harbor, ME  
207-818-3852 (pager/hotline)

**Massachusetts / New Hampshire**

Connie Merigo or Kate Sardi  
New England Aquarium  
Central Wharf  
Boston, MA  
617-973-5247 (hotline)

**Maine**

Keith Matassa or Kristen Patchett  
University of New England  
Biddeford, ME  
800-532-9551 (hotline)

**New Jersey**

Bob Schoelkopf  
Marine Mammal Stranding Center  
PO Box 773  
Brigantine, NJ  
609-266-0538

**New York**

Kimberly Durham  
Riverhead Foundation for Marine Research  
467 East Main St  
Riverhead, NY  
631-369-9829 (hotline)

**North Carolina**

Wendy M. Cluse or Matthew Godfrey  
NC Wildlife Resources Commission  
158 Channel Rock Road  
Beaufort, NC  
252-247-8117 (hotline pager / emergencies)

**Virginia**

Mark Swingle or Sue Barco  
Virginia Marine Science Museum  
717 General Booth Blvd.  
Virginia Beach, VA  
757-437-6159 (hotline)

**Virginia**

Kate Mansfield  
Virginia Institute of Marine Science  
College of William and Mary  
Gloucester Point, VA  
866-493-1085 (Hotline)

**SEABIRD BIOLOGICAL SAMPLING****INTRODUCTION**

The following are guidelines for documenting seabirds. These guidelines are to be used for all fisheries. Each trip may present different challenges in accommodating these priorities and may be affected by circumstances such as rough weather conditions, the animal falling out of the net, etc. It is up to the monitor to use his/her best judgment in following these guidelines.

**SEABIRD REQUIREMENTS****DEAD**

1. **PHOTOGRAPH**: Include the waterproof Photo Sheet in all photos.
  - a. Close up of gear entanglement
  - b. Whole bird
  - c. Dorsal and ventral with the wings spread out
  - d. Close up of beak
  - e. Close up of feet and legs
  - f. Any wounds, marks, scars, or damage
  - g. Any bands or tags
2. **ID**: Describe in detail identifying characteristics of the animal.

**NOTE:** Animals should be identified to the most specific generic group of which you are positive. Do not guess at identification. Refer to the identification guides to assist you while on a deployment.



3. CHECK FOR PRESENCE OF BANDS: If there is a band present, remove the band, record the number, and send in the band with your trip data. See Figures 12 and 13.

**Figure 12:** Example of commonly used bird bands.



**Figure 13:** Placement of bird band around the leg and a tag on the wing.



4. RELEASE: After all protocols have been met return the animal to the water and comment.

## ALIVE

1. PHOTOGRAPH:
  - a. Close up of gear entanglement
  - b. Whole bird
  - c. Dorsal and ventral with the wings spread out (if possible)
  - d. Close up of beak (safety permitting)
  - e. Close up of feet and legs
  - f. Any wounds, marks, scars, or damage
  - g. Any bands or tags
2. ID: Describe in detail identifying characteristics of the animal
3. CHECK AND RECORD BAND(S): If there is a band present, record the number, and photograph when possible.
4. RELEASE: With the vessel slowed, lower the bird by hand to the water (or as close as possible), releasing hold of the head last. Release away from gear. Comment on behavior upon release.

## **LIVE SEABIRD HANDLING**

Occasionally monitors will encounter situations where seabirds interact with fishing gear as it is being hauled and entangled seabirds come aboard alive. This occurs most often in fisheries targeting herring, mackerel and squid. If it is safe to be on deck and the monitor is comfortable doing so, assisting the crew with disentangling birds in a gentle manner is appropriate and can significantly increase a seabird's chance of survival. Additionally, assessing a live bird's condition before release and allowing stunned birds the benefit of a brief recovery period will also contribute to their survival. In general, birds are sensitive to handling and their bones can be easily broken. Larger birds, particularly Northern Gannets, can inflict injury with powerful bills. If handled with care and caution, risk of injury to both birds and the monitor can be avoided. The following guidelines should be followed when possible:

### **Bringing Birds Aboard Vessel/Removing From Gear:**

- Preferably lift bird with a net (longline).
- Avoid pulling bird up with line tension (longline).
- Support body of bird if possible while disentangling.
- Extract bird from gear as gently as possible; avoid tugging on neck or wings.
- Evaluate whether bird is releasable (active and alert) or may benefit from a brief rest on deck if space is available.

### **Restraining Birds:**

- Keep face away from bill (wear glasses).
- If possible wrap bird in towel and cover eyes to keep calm.
- Hold back of head, avoid soft neck, and don't cover nostrils.
- Be aware birds may vomit when stressed; if regurgitating, briefly release bill or bird may suffocate.
- Carefully fold wings.
- If necessary hold bird firmly but do not squeeze chest area.

### **Rest and Dry:**

- If bird is water logged and exhausted, place in quiet dry area (crate or box with holes for an hour or two or on quiet part of deck).
- Do not feed and check every ½ hour.

### **Release:**

- If bird is dry, holds head erect, stands with wings in normal folded position, it is ready for release.
- If possible slow the vessel and slowly lower bird by hand to the water (do not toss birds into the air).

**ANIMAL CONDITIONS (When Released)****DEAD FRESH****Marine Mammals:**

- Normal appearance (as if the animal was still alive).
- Carcass not bloated with gas; no sound of gas escaping.
- Tongue and penis not bloated and/or protruding.
- Body, muscles, and blubber firm to the touch.
- Muscle tissue appearance close to that of meat for human consumption.
- Blubber creamy white or pinkish coloration, no evidence of liquefying fat.
- Skin cannot be easily pulled or separated from underlying tissue firm with normal coloration.
- Eyes, when present, may be clear, cloudy blue/white, or red.
- May have white foam seeping from mouth/blowhole.
- May have fresh scavenger damage with tissue missing, but remaining muscle is firm.
- Fresh blood, bright red.
- Organs still easily distinguishable.
- Easily recognizable or identifiable to species.

**Figure 14:** Dead, Fresh harbor porpoise



**Figure 15:** Dead, Fresh Harbor porpoise



**Sea Turtles:**

- Normal appearance (as if the animal was still alive) *but has not responded to stimulus tests for more than 24 hours and/or rigor mortis has set in.*
- Carcass not bloated with gas; no sound of gas escaping.
- If hard shelled, scutes are not flaking or disintegrating.
- Muscles and blubber firm.
- Muscle tissue pink or red in coloration.
- Blubber creamy with no evidence of liquefying fat.
- Skin cannot be easily pulled or separated from underlying tissue.
- Eyes- when present may be clear, cloudy blue/white, or red.
- May have fresh scavenger damage with tissue missing, but remaining muscle is firm.

- Fresh blood, bright red.
- Organs still easily distinguishable.
- Easily recognizable or identifiable to species.

**Figure 16:** Dead Fresh Kemp's Ridley



#### **Sea Birds:**

- Feather, skin of legs, feet & bill coloration close to or same as that of live bird.
- Feathers resist being separated from skin.
- Exposed muscle tissue firm and pink/red coloration.
- Skin on feet/legs firm and not separated easily from bone.
- May have fresh scavenger damage with tissue missing, but remaining muscle is firm.
- Fresh blood, bright red.
- Organs still easily distinguishable.
- Easily recognizable or identifiable to species.

**Figure 17:** Dead Fresh Northern Gannet



**DEAD, MODERATELY DECOMPOSED****Marine Mammals:**

- Does not appear as if it was "just alive or swimming".
- Blood, if present, is not bright red.
- Carcass bloated with decomposition gases and/or if body cavity can be punctured- likely to have gas escape or body cavity collapse.
- Tongue and/or penis may be bloated and protruding from orifices.
- Skin cracked and sloughing, may be easily separated from underlying body tissue.
- Hair may easily be separated from underlying tissue without tugging or stroking.
- Edges of wounds/tissue damage likely to be soft, mushy with grayish/whitish coloration.
- Muscle tissues likely to be soft and poorly defined and pinkish white/gray in coloration.
- Organs/musculature mostly intact but different types may not be easily distinguishable.
- Carcass may be intact but collapsed due to internal tissue/organ deterioration.
- Tissues usually smell strongly of rotting flesh.
- May be fragile but can usually be moved mostly intact.
- Recognizable by species (even though body parts may be missing).

**Figure 18:** Illustration of a Dead, Moderately Decomposed White-sided dolphin.



**Sea Turtles:**

- Does not appear as if it was "just alive or swimming".
- Carcass bloated with decomposition gases.
- If body cavity punctured- likely to have gas escaping or body cavity collapses.
- Tissue may be bloated and protruding from cracks/openings in the shell.
- Scutes may be sloughing, may be easily separated from underlying body tissue.
- Edges of wounds/tissue damage likely to be soft, or mushy with grayish/whitish coloration.
- Muscle tissues likely to be soft and poorly defined and pinkish white/grey in coloration.
- Organs/musculature mostly intact but different types may not be easily distinguishable.
- Carcass may be intact but collapsed due to internal tissue/organ deterioration.
- Tissues usually smell strongly of rotting flesh.
- May be fragile but can usually be moved mostly intact.
- Recognizable by species (even though body parts may be missing).

**Figure 19:** Moderately Dead Loggerhead Turtle





**Sea Birds:**

- Feathers easily separated from body tissue.
- Usually faded/discolored facial tissue, feet, legs, and beak.
- Muscle tissue usually soft to mushy and poorly defined, with light pink to grey coloration.
- Feathers usually waterlogged.
- Body organs/tissue smells like rotting flesh.
- Recognizable by species (even though body parts may be missing).

**Figure 20:** Moderately Dead Sooty Shearwater (same bird)



**DEAD, SEVERLY DECOMPOSED****Marine Mammals:**

- Any remaining skin/hair is easily separated from underlying tissue.
- Where skin/hair is gone, exposed blubber and other soft tissue is mushy and ill-defined.
- Muscle/blubber may be liquefied and/or falling off bones.
- Muscle tissue usually uniform in coloration and texture with no distinct fibers visible.
- Absence of bright red blood.
- Tissues/organs exuding from body are dull in coloration with little visible distinction between tissue/organ types.
- Carcass may be collapsed and deteriorating or partially intact.
- Connective tissue holding bones together is soft and deteriorating.
- Unrecognizable to species or species group by typical coloration, patterns, or markings.

**Figure 21:** Illustration of a Dead, Severely Decomposed Seal, nk.



**Figure 22:** Close up of Dead, Severely Decomposed Seal, nk (same seal as Figure 20)



**Sea Turtles:**

- Any remaining scutes and/or skin are easily separated from underlying tissue.
- Where scutes and/or skin is gone, exposed blubber and other soft tissue is mushy and ill-defined.
- Muscle/blubber may be liquefied and/or falling off bones.
- Muscle tissue usually uniform in coloration and texture with no distinct fibers visible.
- Tissues/organs exuding from body are dull in coloration with little visible distinction between tissue/organ types.
- Carcass may be collapsed and deteriorating or partially intact.
- Connective tissue holding bones together is soft and deteriorating.
- Unrecognizable to species or species group by typical coloration, patterns, or markings.

**Figure 23:** Dead, Severely Decomposed turtles**Sea Birds:**

- Beak may be separating from the head/body.
- Feathers easily falling/or pulled out of skin.
- Skin on feet/legs falling off bones.
- Skin separated from other body tissues and mushy; tears easily.
- Remaining tissue is usually sparse and is very mushy or liquefied.
- Tissue falling off bones and skeleton disarticulating due to disintegration of connective tissue.
- Unrecognizable to species.

## **ORDER OF PAPER LOGS**

### **PER HAUL**

1. Haul Log (Catch Estimation Worksheet located on the back of all Haul Logs not numbered)
2. IAL Log (when present)
3. Length Frequency Log
4. Discard Log (when present)

### **OVERALL TRIP**

1. Data Release Form (when present)
2. Trip Log
3. Gear Log(s)
4. Haul Log, which includes logs on a PER HAUL basis
  - a. Haul Log(s)
  - b. IAL Log (when present)
  - c. Length Frequency Log
  - d. Discard Log (when present)
5. Incidental take Log(s)
6. Fishermen's Comment Log
7. Safety Checklist

### **PAGE NUMBERING**

DATA RELEASE FORM: No page numbering required.

TRIP LOG: No page number required (double sided log)

GEAR LOGS: Per trip basis. Numbering includes only Gear Logs

HAUL LOG: Per Haul basis (acts as a coversheet)

IAL LOG: Per Haul (Haul Log as a coversheet)

LENGTH FREQUENCY LOG: Per Haul (Haul Log as a coversheet)

DISCARD LOG: Per Haul (Haul Log as a coversheet)

INCIDENTAL TAKE LOG: Per trip basis. Numbering includes only Incidental Take Logs

FISHERMEN'S COMMENT LOG: Per trip basis. Numbering includes only Fishermen's Comment Logs

SAFETY CHECKLIST: No page number required.

## HEADER INSTRUCTIONS

- A. **MONITOR/TRIP IDENTIFIER:** Record your three character Monitor Identifier combined with the three digit Trip Number and one character Trip Extension assigned to you for this trip. This combination of characters is the number recorded on the Trip Log. Use this Monitor/Trip Identifier on all forms for this trip. Use Table 1 to determine the correct trip extension.

**Table 1:** Trip Extensions

TRIP EXTENSION	TRIP TYPE
A	Aborted, Non-Gillnet
C	Gillnet, Complete fish sampling
D	Gillnet, Complete fish sampling, Aborted
-	Trawl, Longline trips
E	Gillnet, Complete fish sampling, Set Only

**NOTE:** Set only trips are classified as a gillnet trip with a deployed monitor that does not haul any gear. Only setting of the gear occurs. The monitor will record set only trips using a unique Trip ID. Because there is no catch, no VTR number is collected.

Example: Observer Green, who has been assigned identifier A02, is on her second trip of the calendar year, and it is a complete fish sampling gillnet trip. The monitor/trip identifier is recorded as A02002C.

- B. **DATE LANDED:** Record the month and year that the vessel first arrives in port and at the completion of this deployment as recorded on the Vessel and Trip Information Log. Record this date whether or not the catch is sold.

Example: You land February 17, 2011. Record 02/11

- C. **PAGE NUMBER:** Depending on the log, pages are numbered on a per trip or per haul basis. See page 171 for detailed instructions on page numbering.

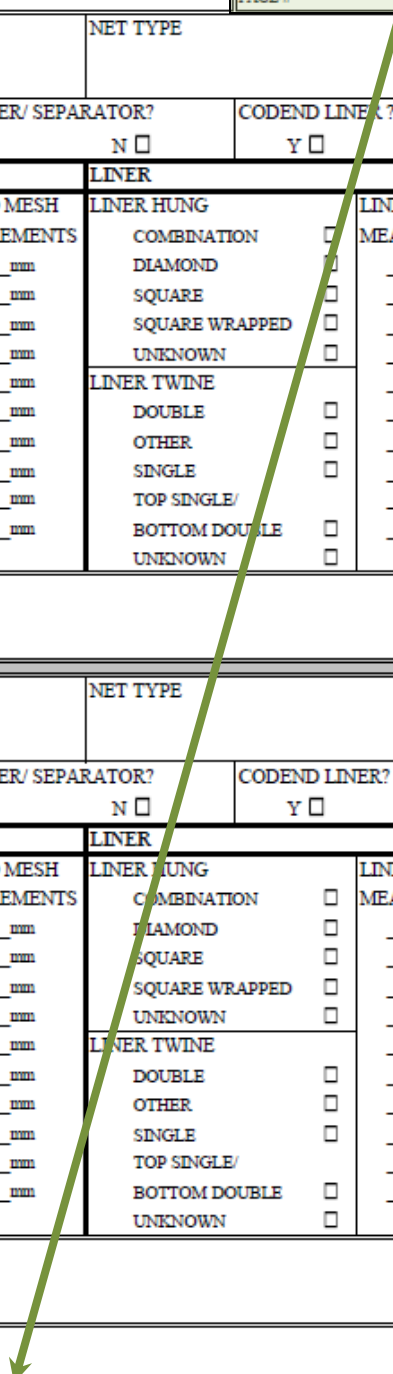
**TRAWL GEAR LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMOTG**

ASM/TRIPID	
DATE LANDED mm/yy	/
PAGE #	__ of __

GEAR CODE □□□	GEAR # □□	NET NAME	NET TYPE
ESCAPE OUTLET? Y <input type="checkbox"/> N <input type="checkbox"/>		EXCLUDER/ SEPARATOR? Y <input type="checkbox"/> N <input type="checkbox"/>	
CODEND LINDER? Y <input type="checkbox"/> N <input type="checkbox"/>			
<b>CODEND</b>		<b>LINER</b>	
CODEND HUNG		CODEND MESH	
COMBINATION <input type="checkbox"/>		MEASUREMENTS	
DIAMOND <input type="checkbox"/>		_____ mm	
SQUARE <input type="checkbox"/>		_____ mm	
SQUARE WRAPPED <input type="checkbox"/>		_____ mm	
UNKNOWN <input type="checkbox"/>		_____ mm	
CODEND TWINE		LINER TWINE	
DOUBLE <input type="checkbox"/>		DOUBLE <input type="checkbox"/>	
OTHER (COMMENT) <input type="checkbox"/>		OTHER <input type="checkbox"/>	
SINGLE <input type="checkbox"/>		SINGLE <input type="checkbox"/>	
TOP SINGLE/ <input type="checkbox"/>		TOP SINGLE/ <input type="checkbox"/>	
BOTTOM DOUBLE <input type="checkbox"/>		BOTTOM DOUBLE <input type="checkbox"/>	
UNKNOWN <input type="checkbox"/>		UNKNOWN <input type="checkbox"/>	
COMMENTS			

GEAR CODE □□□	GEAR # □□	NET NAME	NET TYPE
ESCAPE OUTLET? Y <input type="checkbox"/> N <input type="checkbox"/>		EXCLUDER/ SEPARATOR? Y <input type="checkbox"/> N <input type="checkbox"/>	
CODEND LINDER? Y <input type="checkbox"/> N <input type="checkbox"/>			
<b>CODEND</b>		<b>LINER</b>	
CODEND HUNG		CODEND MESH	
COMBINATION <input type="checkbox"/>		MEASUREMENTS	
DIAMOND <input type="checkbox"/>		_____ mm	
SQUARE <input type="checkbox"/>		_____ mm	
SQUARE WRAPPED <input type="checkbox"/>		_____ mm	
UNKNOWN <input type="checkbox"/>		_____ mm	
CODEND TWINE		LINER TWINE	
DOUBLE <input type="checkbox"/>		DOUBLE <input type="checkbox"/>	
OTHER (COMMENT) <input type="checkbox"/>		OTHER <input type="checkbox"/>	
SINGLE <input type="checkbox"/>		SINGLE <input type="checkbox"/>	
TOP SINGLE/ <input type="checkbox"/>		TOP SINGLE/ <input type="checkbox"/>	
BOTTOM DOUBLE <input type="checkbox"/>		BOTTOM DOUBLE <input type="checkbox"/>	
UNKNOWN <input type="checkbox"/>		UNKNOWN <input type="checkbox"/>	
COMMENTS			



ASM/ TRIP ID	A
DATE LAND (mm/yy)	B /
PAGE #	C of

### **After At-sea Monitor Training**

Once you start working as an at-sea monitor you will be required to complete the entire Pre-trip Vessel Safety Checklist for each deployment. That Pre-trip Vessel Safety Checklist will be sent in with your trip data and will become a permanent part of the trip file.

Also, be aware that a valid U.S. Coast Guard Commercial Fishing Vessel Examination Decal (a waiver might be issued in some circumstances, which will also be onboard) is required. Checking for this decal is part of your Pre-Trip Vessel Safety Checklist.

The bottom line is that the final decision to go out or to stay on shore, based on safety, is yours. A vessel could have all of the items on the Pre-trip Vessel Safety Checklist and still not be safe. You always have the right to refuse a trip for any safety concern without fear of retribution. Such cases would need to be fully documented in your official field diary.

The Pre-trip Vessel Safety Checklist should be used as an aid to vessel safety determination. It is not a comprehensive list. If there is any doubt regarding the safety of a particular vessel, or crew, you are encouraged to speak to your Contract Provider, Program Manager, Area Coordinator or, if needed, directly to the Fisheries Sampling Branch Chief.

## **COMMUNICATIONS**

### **Operational Guidelines**

The following guidelines provide communication procedures and methods for monitors on foreign and domestic fishing vessels. Also, these guidelines and associated materials may be used as communication reference material at sea.

### **Communication Procedures for Foreign & Domestic Vessels**

Should the need arise, or the occasion warrants it, monitors may contact the NMFS staff, other deployed monitors, the contractor, and/or the Coast Guard (CG) by one of the following methods:

1. Single sideband radio.
2. Marine radiotelephone.
3. Cellular phone.
4. Satellite.
5. Facsimile (Fax) machine.
6. SITOR (Teletype).
7. Telex.



## Radio Communications

### Phonetic Alphabet

The phonetic alphabet is used to identify any letter of the alphabet, or to spell a word or group of letters.

<u>Letter</u>	<u>Phonetic</u>	<u>Spoken as</u>
A	ALFA	<b>AL</b> FAH
B	BRAVO	<b>BRAH</b> VOH
C	CHARLIE	<b>CHAR</b> LEE
D	DELTA	<b>DELL</b> TAH
E	ECHO	<b>ECK</b> OH
F	FOXTROT	<b>FOXS</b> TROT
G	GOLF	GOLF
H	HOTEL	<b>HOH</b> TELL
I	INDIA	<b>IN</b> DEE AH
J	JULIETT	<b>JEW</b> LEEETT
K	KILO	<b>KEY</b> LOH
L	LIMA	<b>LEE</b> MAH
M	MIKE	MIKE
N	NOVEMBER	NO <b>VEM</b> BER
O	OSCAR	<b>OSS</b> CAH
P	PAPA	PAH <b>PAH</b>
Q	QUEBEC	KEH <b>BECK</b>
R	ROMEO	<b>ROW</b> ME OH
S	SIERRA	SEE <b>AIR</b> RAH
T	TANGO	<b>TANG</b> GO
U	UNIFORM	<b>YOU</b> NEE
V	VICTOR	<b>VIC</b> TAH
W	WHISKEY	<b>WISS</b> KEY
X	XRAY	<b>ECKS</b> RAY
Y	YANKEE	<b>YANK</b> KEY
Z	ZULU	<b>ZOO</b> LOO

**NOTE:** The **bold** syllables carry the accent.

### Pronunciation of Numerals

To distinguish numerals from words having the same sound, the PROWORD "FIGURES" is used preceding such numbers.

NUMBER	SPOKEN	NOTE
0	ZE-RO	The <b>bold</b> letters carry the accent. A hyphen represents a pause. Numbers shall be transmitted by pronouncing each digit separately, except in the case of whole thousands. The exception of this rule is that day-time groups are always sent digit by digit.
1	WUN	
2	TOO	
3	TREE	
4	FOW-ER	
5	FIFE	
6	SIX	
7	SEV-EN	
8	AIT	
9	NIN-ER	
Decimal	DAY-SEE-MAL	
Thousand	THOU-SAND	

NUMBERS	SPOKEN	NOTE
10	Wun ze-ro	The figure zero should be written as 0 to distinguish it from an "O". The figure one should be underlined to distinguish it from an "I".
75	Sev-en fife	
100	Wun ze-ro ze-ro	
583	Fife ait tree	
3,000	Tree thou-sand	
11,000	Wun wun thou-sand	
38,143	Tree ait wun fow-er tree	
122.4	Wun too too day-see mal fow-er	

## Time

Each digit shall be spoken separately and in accordance with the 2400 hour system. The world is divided into 24 time zones. Each time zone has a letter (zone suffix) assigned for identification. Universal Time Coordinated (UTC), located at Greenwich, England, 0° longitude (also known as Greenwich Mean Time or GMT), is assigned the letter "z", and is the reference by which all time is used.

All message date-time-groups contain 6 digits for the date and time followed by the zone suffix "z", the month abbreviated, and the last two digits of the year.

The first 2 digits designate the day of the month, the second pair the hour of the day, and the last pair is the minute of the hour.

Examples:

220102Z JUL 74 Indicates the 22nd day of JUL 74, the 1st hour of the day, and the 2nd minute of the hour UTC.

It is spoken as:

TIME-TOO TOO ZE-RO WUN ZE-RO TOO ZULU JULY SEV-EN FOW-ER. 0920 - Spoken as: ze-ro nin-er too ze-ro. 1643 - spoken as: wun six fow-er tree.

## Prowords

Prowords are words or phrases that have been assigned standard meanings. Do not substitute prowords for textual matter in a message. Slang expressions are strictly forbidden in radio communications.

### Prowords

### Meaning

ALL AFTER

The message portion I have referenced is as follows.

ALL BEFORE

The message portion I have referenced precedes.

BREAK

Indicates the separation of the text from other portions of the message.

CORRECT

You are correct, or what you have transmitted is correct.

CORRECTION

An error has been made in this transmission. Transmission will continue with the last word correctly sent. Follow with the correct version.

DISREGARD THIS  
FIGURES

This transmission is in TRANSMISSION error, disregard it.  
Numerals follow.

FROM	The originator of this message is indicated by the address designation immediately following.
GROUPS	This message contains the number of groups indicated by the number following.
I READ BACK	The following are my response to your instructions to read back.
I SAY AGAIN	I am repeating transmission or portion indicated at your request.
I SPELL	I shall spell the next word phonetically.
INFO	The addressee designations immediately following are addressed for information.
MESSAGE	A message which must be recorded is about to follow.
OUT	This is the end of my transmission to you and no answer is required.
OVER	This is the end of my transmission to you and a response is necessary: Go ahead, transmit.
READ BACK	Repeat this entire transmission back to me exactly as received.
RELAY (TO)	Transmit this message to all addressees or to the address designations immediately following.
ROGER	I have received your transmission satisfactorily.
SAY AGAIN	Repeat all of your last transmission.
SILENCE	Cease all transmission immediately. Silence will be maintained until instructed to resume.
SILENCE LIFTED	Resume normal transmission. (Silence can only be lifted by the station imposing it or a higher authority.)
SPEAK SLOWER	Reduce speed of transmission, it's too fast.
STAND BY	I must pause for more than a few seconds.
THAT IS CORRECT	You are correct or what you have transmitted is correct.
THIS IS	This transmission is from the station whose designation immediately follows.
TIME	That which follows is the time or date-time-group of the message
TO	The addressees whose designations immediately follow are to take action on this message.
UNKNOWN STATION	The identity of the station with whom I am attempting to establish communication is unknown.
WAIT	I must pause for a few seconds.
WAIT OUT	I must pause for more than a few seconds.

WORD AFTER	The word of the message to which I have reference is that which follows.
WORDS BEFORE	The word of the message to which I have reference is that which precedes.
WORDS TWICE	Communication is bad. Transmit each phrase (or code group) twice.
WRONG	Your last transmission was incorrect. Follow with the correct version.

**NOTE:** Use the words “Affirmative” and “Negative” instead of “Yes” and “No”.

### **Marine Radio Telephone Services**

There are three types of marine radio services that provide full communication coverage for a wide range of needs:

1. **High Seas High Frequency (HF):** The effective range of this service is 200-1000+ miles, operating on channels in the 3 to 30 MHz range.
2. **Coastal Harbor Medium Frequency (MF):** The operating range of this service is normally to distances up to 300 miles, operating on channels in the 2 MHz range along the East and West Coast.
3. **VHF (Very High Frequency):** This provides good transmission quality over distances of 20 to 50 miles, via FM and channels in the 156-162 MHz range.

### **High Seas Radiotelephone Service**

High Seas Radiotelephone service provides two-way voice communication between ships on the high seas (or aircraft) and telephone on land, sea, or in the air. While primarily intended for long range communications, it can also be used for short and medium range radiotelephone contact.

Seven day, around-the-clock service is provided by station Whiskey Lima Oscar (WLO) in Alabama. This station utilizes FCC assigned duplex channels in the 4 to 23 MHz band.

All High Seas calls are treated as person-to-person and charged at the same rate, whether they are directed to individuals or telephone numbers. Payments are handled by either credit card or name and address.

The High Seas rates for calls are \$4.99 per minute on calls to the U.S. (U.S. Domestic Landline charges are included) and \$6.99 per minute on calls outside the U.S. (Foreign Landline charges included). There is a three minute minimum on all calls.

### **Placing High Seas Calls**

#### ***Ship-to-Shore***

First select a channel then LISTEN for the WLO voice operator. Along with your vessel name and call sign, give the channel on which you are calling. Procedures for ship-to-shore calls for MF and VHF are the same.

Personal calls may be made while deployed, but it is not appropriate for the monitor to charge personal calls to the domestic or foreign vessel owner.

**Shore-to-Ship**

Contact the Radiotelephone Operator at 1.334.666.3487. State the vessel's name and call sign, which will be broadcasted every hour on the hour.

**WLO****High Seas Coast Station: Alabama**

<u>Channel Designation</u>	<u>Coast Station Transmit (KHz)</u>	<u>Ship Station Transmit (KHz)</u>
405	4077.0	4369.0
414	4104.0	4396.0
419	4119.0	4411.0
607	6218.0	6519.0
824	8264.0	8788.0
829	8279.0	8803.0
830	8282.0	8806.0
1212	12263.0	13110.0
1225	12302.0	13149.0
1226	12305.0	13152.0
1607	16378.0	17260.0
1641	16480.0	17362.0
1807	18798.0	19773.0
2237	22108.0	22804.0

**VHF Coast Stations**

<u>Service Area</u>	<u>VHF Channel(s)</u>	<u>Service Area</u>	<u>VHF Channel(s)</u>
<b>Maine</b>		<b>New York</b>	
Portland	24, 87	Staten Island	28
<b>Massachusetts</b>		<b>New Jersey</b>	
Gloucester	28	Sandy Hook	24
Boston	26	Tom's River	27
Hyannisport	28	Ship Bottom	28
Nantucket	85	<b>Delaware</b>	
New Bedford	24, 26	Dover	84
<b>Rhode Island</b>		<b>Maryland</b>	
Narragansett	84	Ocean City	26
<b>Connecticut</b>		<b>Virginia</b>	
New London	26, 86	Belle Haven	25
Bridgeport	27	Virginia Beach	26, 27
		<b>North Carolina</b>	
		Morehead City	28
		Wilmington	26

**Important Frequencies****SSB**

2182	International calling and distress
2670	USCG frequency. Restricted to communications with the Coast Guard.
2638	International ship-to-ship.
2738	International ship-to-ship.
3023.5	International Search and Rescue on-scene.

**VHF**

6	International ship-to-ship.
12	Port operations working frequency.
13	Vessel-to-bridge for navigation purposes.
14	Port operations working frequency.
16	International calling and safety.
22	Communication between non-government vessels and CG vessels and stations. Also used by the CG for National Radiotelephone Safety and Distress System and the Marine Information Broadcast Frequency.
21	Intra-Coast Guard working frequency.
81	Joint command control and surveillance frequency for US and Canadian units working with Marine Pollution Contingency Plan for Spills of Oil and Other Noxious Substances.

**Coast Guard Frequencies**

Channel            Coast/Ship Tx (Transmit)

2182.0            Hail & Distress

**Distress Frequencies**

The US Coast Guard monitors the following Distress frequencies by request or 24 hour monitoring:

Channel	kHz
450	4125
650	6215
850	8291
1250	12290
1650	16420

The VHF or SSB may be used by monitors to communicate with other deployed monitors. Communications between monitors should be for purposes of clarifying sampling protocol, discussing safety issues, or transferring gear or related fishing information. Please be aware that all VHF and SSB communications can and will be heard by other captains and the Coast Guard in the area.

**NOTE:** Keep in mind that contacting the Coast Guard should be done with discretion and through the Contractor and/or NMFS if at all possible. If you determine that a Coast Guard boarding is necessary, one of the emergency frequencies such as 2182 kHz, or VHF channel 16 may be used. Speak clearly and state your name, the name of your vessel, your position, and a brief description of the emergency. You are cautioned to be extremely mindful of what you say on the air. Criticism of your vessel or flippant language is strictly forbidden. You are a visitor aboard that vessel. Also, you are a representative of the U.S. government, and therefore, expected to behave in a professional manner.

### Teletype

SITOR is a teletype communication system where printed matter is transmitted over a modem to a receiving modem. This system is good for long distance communications. It checks incoming messages several times before verifying receipt and by doing so, eliminates many of the errors encountered using CW.

### Distress Communications

Separate priorities are assigned to distress, urgency, and safety messages.

- Distress signal- **MAYDAY**

**MAYDAY** has priority over all other communications. It signals an immediate danger of loss of life or property.

- Urgent signal- **PAN-PAN**

Second in priority to MAYDAY, it signifies a threat to the safety of a vessel or person on board, including a “man overboard”.

- Safety signal- **SECURITY**

Third in importance, this signal precedes messages about navigation hazards or emergency weather warnings.

### Delivering a proper “MAYDAY”:

#### Speak **SLOWLY- CLEARLY - CALMLY**

1. Make sure your radio is turned on.
2. Select either VHF Channel 16 (156.8 MHz) or 2182 kHz (SSB).
3. Press microphone button and repeat: “MAYDAY-MAYDAY-MAYDAY.”
4. State: “THIS IS **your vessel name, your vessel name, your vessel name, and your call letters.**”
5. Give your position or describe nearby navigational aids or landmarks.

6. State the nature of your distress.
7. Briefly describe your vessel: **Registration or Documentation number, length** (in feet), **type** of vessel, **hull color, horsepower, and construction material**. Include any information which might assist rescuers in identifying the vessel. Also, give the number of persons onboard, and the condition of any injured parties.
8. End the message by saying: “THIS IS **your vessel name and call sign**, OVER.”
9. Release the microphone button. If you hear no response, repeat the call. If there is still no response, switch to another channel, perhaps 21 or 22, and begin again.

## INTRODUCTION TO NAVIGATION

### Charts

A chart represents, on a flat piece of paper, a picture of part of a sphere, or the Earth's surface. There are various ways of getting the curved surface of the Earth onto a flat piece of paper. The one that we will be concerned with is called the Mercator Projection. The reason that a **Mercator Chart is used is that a straight line on the Mercator Chart represents a constant direction on the Earth's surface**. This means, that when you steer a steady course in your vessel, you can draw a straight line on the chart to represent it.

Using the information on the chart and what you can see and measure from your vessel, you can obtain:

- Your position in:
  - Latitude and Longitude
  - Loran
  - Relation to some landmark
- The safe course(s)
- Distances from one position to another

These are the essentials you require for safe navigation.

### LORAN

LORAN stands for **LOng Range Navigation**. It is an electronic system using shore-based radio transmitters and shipboard receivers to allow mariners to determine their positions at sea.

**NOTE:** As of January 20, 2010 the U.S. Coast Guard no longer transmits LORAN frequency signals. However, fishermen still use „ghost’ LORAN positions converted from GPS in fishing operations.

### How LORAN-C Works

Loran-C is a chain of three to five land-based transmitting stations separated by several hundred miles. Within the chain, one station is designated as the master station (M), and the other stations are designated as secondary stations, Whiskey (W), X-ray (X), Yankee (Y), Zulu (Z). Signals transmitted from the secondaries are synchronized with the master signal. The Loran receiver on your boat measures the difference in time (TD) it takes these signals to reach the boat from this pair of transmitters. These time differences, or *time delays* or TD's,



are measured in microseconds and displayed on the receiver numerically. The onboard receiver tuned to the pairs of transmission station receives the signal. These stations are called chains. Each chain has a specific pulse *group repetition interval* (GRI), or rate, identified by a number that consists of the first four digits of the GRI, i.e. 9960. Letters on the rate identify signals sent by secondary stations, i.e. 9960-X.

### **LORAN Problems**

While Loran-C has historically been the navigation system of choice for most mariners, it is not without problems. Errors often result when a boat is either near a transmitter or near a *baseline extension*, which is an imaginary line running from a master transmitter to a secondary transmitter. You're near a baseline extension or a transmitter if the printed TD lines on the chart near your plotted position make tight turns. If the boat is exactly halfway between the two stations, on what is called the center line, there will be no time difference between the receptions of the two signals. If the boat is anywhere else between the stations, one signal will be received before the other one.

In addition, land may bend signals. This is why the Coast Guard usually does not allow TD lines to be printed on harbor charts. Signals may also be made inaccurate by precipitation, lighting or electronic "noise" caused by fluorescent lights, television sets and alternators. Therefore, Loran fixes should be backed up by compass bearings or depth soundings.

### **What Is GPS?**

GPS stands for *Global Positioning System*. It is a satellite-based radio navigation system developed by the U.S. Department of Defense (DOD).

GPS permits land, sea and airborne users to determine their three-dimensional position, velocity and time 24 hours a day, in all weather, anywhere in the world with a precision and accuracy far better than other radio navigation systems available today. GPS consists of three segments: space, control and user.

The *space segment* consists of 24 operational satellites in six circular orbits 20,200 km (10,900 NM) above the earth at an inclination angle of 55 degrees with a 12 hour period. The satellites are placed in orbit so that at any time a minimum of 6 satellites will be in view to users anywhere in the world. The satellites broadcast position and time data continuously.

The *control segment* consists of a master control station in Colorado Springs, CO, with five monitor stations and three ground antennas located throughout the world. The monitor stations track all GPS satellites in view and collect ranging information from the satellite broadcasts. The monitor stations send the information they collect from each of the satellites back to the master control station, which computes extremely precise satellite orbits. The information is then formatted into updated navigation messages for each satellite. The updated information is transmitted to each satellite via the ground antennas, which also transmit and receive satellite control and monitoring signals.

The *user segment* consists of the receivers, processors and antennas that allow land, sea and/or airborne operators to receive the GPS satellite broadcasts and compute their precise position, velocity and time.

The GPS concept of operation is based on satellite ranging. Users figure their position on earth by measuring their distance from the group of satellites in space. The satellites act as precise reference points. Each GPS satellite transmits an accurate position and time signal. The user's receiver measures the time delay for the signal to reach the receiver, which is the direct measure of the apparent range to the satellite. Measurements collected simultaneously from four satellites are processed to solve for the three dimensions of position, velocity and time. GPS receivers collect signals from satellites in view. They display the user's position, velocity and time, as needed for their marine, terrestrial or aeronautical applications.

## Chart Scales

The scales of a chart represent the number of units of length on the ground represented by a certain distance on the chart.

On charts, a ratio is normally used for the scale. For example, if you look at the title of Chart 13200, you will see scale 1:400,000 at Latitude 40°00'. This means that 1 inch on the chart represent 400,000 inches on the ground at latitude of 40°00' North.

The area covered by a chart varies with the scale; a **large-scale** chart covers a **small** area, a **small-scale** chart covers a **large** area.

## The Nautical Mile

The basic unit of length used by mariners is the nautical mile. Because the Earth is not a perfect sphere, the sea mile is not a constant length. It is slightly longer near the Poles than at the Equator. However, it has been agreed internationally that a fixed length will be used. This International Nautical Mile is defined as:

**1 Nautical Mile (nm) = 6076 Feet (ft)**

## Speed - The Knot:

At sea speed is measured in knots:

**1 knot = 1 nm per hour**

Thus, if your vessel has a speed of 3.5 knots, it will travel 3.5 nm in one hour.

Everything is correct if: **speed** is measured in **knots**; **distance** is measured in **nautical miles**; and **time** is measured in **hours**. Then, if we know any of the two items, the remaining one can be found.

Examples:      Distance and time are known:  
**speed = distance/time (in hours).**

Speed and time are known:  
**distance = speed x time.**

Speed and distance are known:  
**time = distance/speed.**

## Direction and Angular Measure

Direction is measured on a chart by using a compass rose. The outer circle is in degrees, with the zero at true north. Thus, the compass rose is divided into 360 equal divisions, each one called a degree. Each degree can be divided into sixty parts called minutes. For further accuracy each minute can be divided into tenths of minutes. The inner circles are points and degrees with the arrow indicating magnetic north.

Directions are measured starting from North, which is 0°. To avoid misunderstandings, 0° is said and written as 000°. The direction is taken as the angle round in a clockwise direction. From North to South is half a revolution, and therefore, the direction South is 180°.

## Latitude and Longitude

The position of any point on the surface of the Earth may be stated in terms of its latitude and longitude, e.g. the position of the radar responder beacon in the separation zone of Nantucket to Ambrose Traffic Lane, (Chart 13200) is: latitude, 40° 30' North and longitude, 069° 26' West.

The lines that run from pole to pole are called **Meridians of Longitude** and are measured from East or West from 0° to 180°. The meridian that goes through Greenwich, England, is called the **Greenwich or Prime Meridian** (0°). The lines which cut the meridians at right angles, run parallel to the equator, and are numbered from 0° to 90°, are called **Parallels of Latitude**. The Equator is latitude 0°, and all latitudes are measured to the North or South of the Equator.

### Latitude

Parallels of Latitude can be thought of as being the angle at the center of the Earth between the plane of the equator, and the line going from the center to a point on the surface. This angle is shown as the angle LCF in Figure 2. **Latitude is recorded as NORTH or SOUTH.** The maximum value for latitude is 90° N or S.

Latitude is a measure of how far a place is North or South of the equator. Parallels run East -West, and because no point on a parallel is further North or South than any other point, we can say that every place on a given parallel has the same latitude.

### Longitude

In measuring latitude, the equator is the origin. However, there is no such natural starting line to use measuring longitude.

By convention, the Prime (or Greenwich) Meridian is the start (0°). Longitude can be thought of as being the angle at the center of the Earth between the line going to where Prime Meridian meets the equator, and the line going to the place where the meridian of the position meets the equator. This angle is shown as the angle GCL in Figure 2.

Figure 1: Angle of Latitude

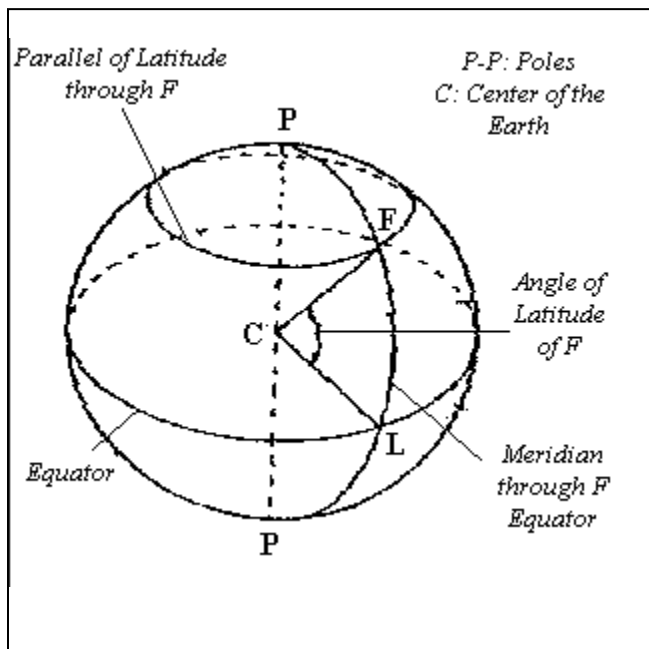
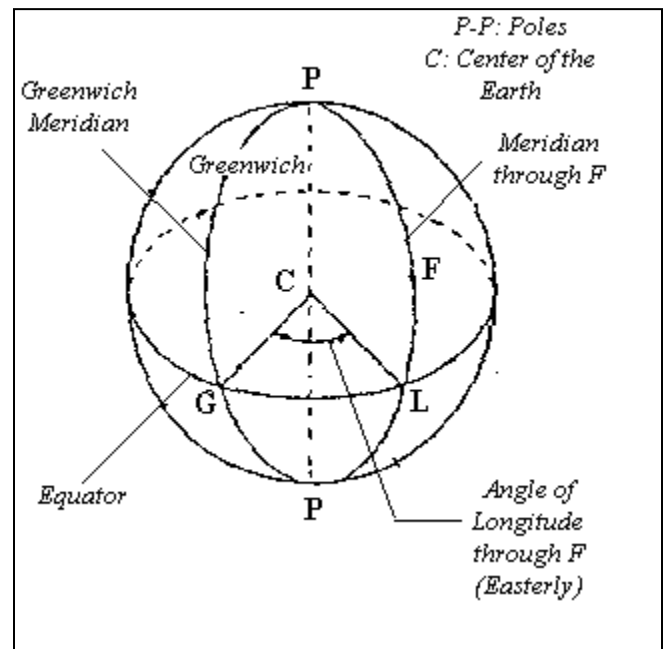


Figure 2: Angle of Longitude



Longitude is measured from  $0^{\circ}$  to  $180^{\circ}$ , East or West. In other words, if you go  $180^{\circ}$  around to the West, you will meet somebody who went  $180^{\circ}$  eastward; the  $180^{\circ}$  W meridian is the same as the  $180^{\circ}$  E meridian. **You must always name longitude, East or West.** While two parallels are always the same distance apart, the meridians, which converge on the Poles, are further apart at the equator.

Remember, Latitude is measured from  $0^{\circ}$  to  $90^{\circ}$  in a North or South direction. Longitude is measured from  $0^{\circ}$  to  $180^{\circ}$  in an East or West direction. Parallels run East - West, but every point on a parallel has the same latitude. Meridians run North - South, but every point on a meridian has the same longitude.

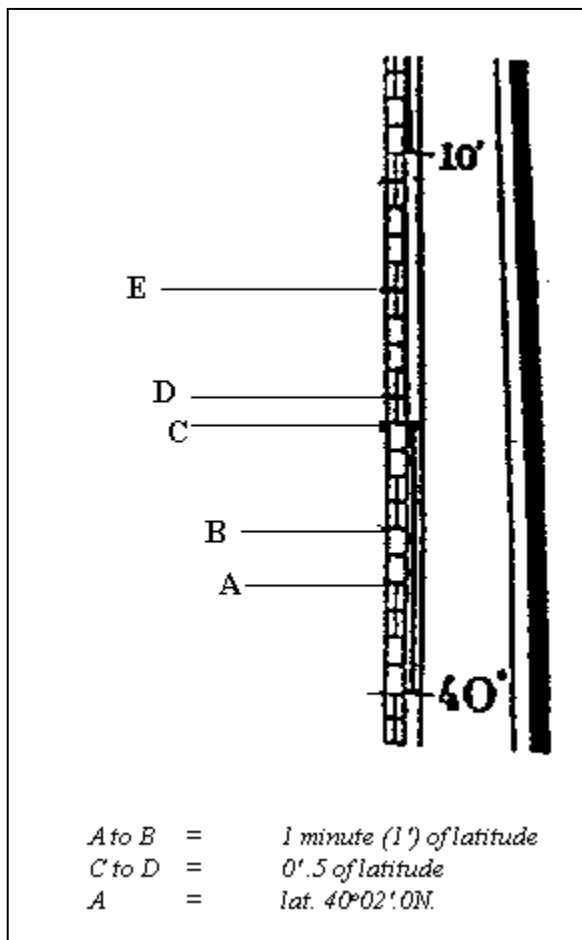
### Graduation of a Chart Border

The border of the chart is divided up so that positions in latitude and longitude can be both plotted on the chart and taken from the chart.

These divisions are known as graduations. At either side of the chart you will find the latitude scale, and the parallels of latitude run across the chart from right to left, East to West, (or vice versa). The longitude scale runs along the top and bottom, and the meridians run up and down the chart.

For example, if you look at the left-hand border of Chart 13200, near the bottom you will find  $40^{\circ}$  N in the margin. This is the parallel of  $40^{\circ}$  N, and its value is  $40^{\circ} 00.0'$  N. About eight centimeters from the bottom of the border you will see  $10'$ . This marks the latitude of  $40^{\circ} 10.0'$  N. There are 10 minutes of latitude between the two points. If you count, you will find there are two large divisions between the two, each about 2.5 centimeters long, the first division having a heavy black line on the outer part. Upon closer examination, you will find there are 10 small divisions between the parallels, each about 0.5 centimeters long. Alternate minutes have a black line in the inner part so that your eye can pick out one from the next more easily. See Figure 3.

**Figure 3:** Latitude gradation on Chart 13200



**NOTE:** On a chart, latitude is read from the bottom to the top of the chart. Longitude is read from right to left.

## Plotting and Measuring Latitude and Longitude

When plotting a given latitude on a chart, draw a parallel to one of the printed parallels, opposite the correct reading on the latitude scale.

Example: Using chart 13200, we want to plot the parallel of latitude  $41^{\circ} 07.0' N$ . Set your dividers at the  $41^{\circ} N$  parallel in the margin of the latitude scale (in the left or right border). Holding one point steady at the  $41^{\circ} N$  parallel, move the other point seven of the smallest divisions (minutes), toward the top of the chart. Your dividers are now set at  $41^{\circ} 07.0' N$ , and being careful not to alter the span of the dividers, move them along the  $41^{\circ} N$  parallel until it intersects a meridian. Placing one point at the intersection of the parallel and the meridian, and the other point along the meridian (in the same direction that you counted the seven minutes), make a tic mark. Repeating this procedure at each meridian that intersects the  $41^{\circ} N$  parallel, and drawing a line through the tic marks, you can plot the parallel of  $41^{\circ} 07.0' N$  across the chart.

Longitudes are plotted in a very similar way.

Example: Line up your dividers on a meridian ( $69^{\circ} W$ ), in the margin of the longitude scale (top or bottom of chart). Count seven minutes (remember longitude is read from right to left), move your dividers up the meridian, being careful not to alter the span of the dividers until you intersect a parallel. Place one point at the intersection, and the other point along the parallel (in the direction you counted), and make a tic mark. Repeating this procedure at every parallel that intersects  $69^{\circ} W$ , and drawing a line through the tic marks, you can plot the meridian of  $69^{\circ} 07.0' W$ .

## The Measurement of Distance

Looking at the chart 13200, you may have noticed that there is no scale for measuring distances. The reason for this is that the **nautical mile is defined as the length of one minute of latitude**. This is also the reason the symbol “'”, represents both nautical miles and minutes of latitude and longitude. So from  $41^{\circ} 00.0' N$  to  $41^{\circ} 07.0' N$  is both 7 minutes of latitude and 7 nautical miles. This means that we can, and **always do, use the latitude scale for the measurement of distance**.

Example: Again, looking at chart 13200, take your dividers and open them out to reach between  $40^{\circ} 00.0' N$  and  $40^{\circ} 10.0' N$  on the latitude scale. Check to ensure that you have a point accurately on each of these two graduations. Then, without altering the span of the dividers, put one of the points on the graduation of  $42^{\circ} 00.0' N$ . The other point should, you would think, reach to  $42^{\circ} 10.0' N$ , but you will find it is slightly short.

In representing the Earth's curved surface on a flat piece of paper, the chart has a varying latitude scale which cannot be avoided. If we want to measure the distance between two points, we set a point of the dividers on each position, and then use the scale, in about the same latitude, to read the distance.

## PRE-TRIP VESSEL SAFETY CHECKLIST

Once you start working as an at-sea monitor you will be required to complete the entire Pre-trip Vessel Safety Checklist for each deployment. That Pre-trip Vessel Safety Checklist will be sent in with your trip data and will become a permanent part of the trip file.

Also, be aware that a valid U.S. Coast Guard Commercial Fishing Vessel Examination Decal is required (a waiver might be issued in some circumstances, which will also be onboard). Checking for this decal is part of your Pre-Trip Vessel Safety Checklist.

The bottom line is that the final decision to go out or to stay on shore, based on safety, is yours. A vessel could have all of the items on the Pre-trip Vessel Safety Checklist and still not be safe. You always have the right to refuse a trip for any safety concern without fear of retribution. Such cases would need to be fully documented in your official field diary.

The Pre-trip Vessel Safety Checklist should be used as an aid to vessel safety determination. It is not a comprehensive list. If there is any doubt regarding the safety of a particular vessel, or crew, you are encouraged to speak to your Contract Provider, Program Manager, Area Coordinator or, if needed, directly to the Fisheries Sampling Branch Chief.

### INSTRUCTIONS

This Pre Trip Vessel Safety Checklist (PTVSC) is a detailed log of the safety equipment and safety practices onboard a vessel. All fields of this log, with the exception of items 4, 18, and 19, must be filled out prior to departing on a trip. For your safety, and the safety of others, it is imperative that you record the correct expiration dates for all required safety equipment. USCG Safety Examination Decal and equipment expiration dates are compared with previous trips so that a consistent and accurate database for individual vessels can be maintained. Irregularities will be investigated. If the USCG Safety Examination Decal is missing and can't be verified by some other form of legitimate documentation, or has expired, **you may not deploy** on the vessel. In addition, if any of the following required safety items are missing or expired, **you may not deploy** on the vessel: immersion suits (enough for everyone onboard), flares, fire extinguishers, EPIRB, survival craft, ring buoy. At any time, the at-sea monitor has the right to refuse deployment based on any safety concerns, regardless of whether it is, or isn't, covered on the PTVSC. If you refuse a trip based on safety concerns/reasons you must contact your area coordinator or program manager, fully document the event in your field diary and mail it in with your next trip.

DO NOT make any markings or notes outside of the designated areas on the front of the log. If you have comments, record them in the appropriate box in the comments section on the back of the log. If information is unavailable or unknown regarding a piece of safety equipment or safety practices, leave the associated box(s) blank and comment in the comments section on the back of the log. DO NOT record partial numbers or partial dates. ONLY make comments regarding legitimate safety and stability concerns or an explanation as to why a field was left blank. All equipment expiration dates are to be recorded in the MM/YY format (2-digit month and 2-digit year). DO NOT put slashes (/) or dashes (-) between the boxes when recording any of the expiration dates.

1. **VESSEL NAME:** Record the name of the vessel to which you are deployed. Leave a space between individual words and/or names. Care should be taken to record the correct spelling of the vessel's name.
2. **TRIP ID:** Record your three character At-Sea Monitor Identifier combined with the three character Trip Number and one character Trip Extension.
3. **HULL NUMBER:** Record the number written on the hull of the vessel to which you are assigned. This number will be either the U.S. Coast Guard Documentation Number or the state registration number. This number may have up to eight (8) characters.
4. **DATE LANDED:** Record the month, day, and year (MM/DD/YYYY format) that the vessel first arrives in port at the completion of your deployment.
5. **VESSEL WALK THROUGH:** Did you conduct a vessel walk through? At a minimum, a safety orientation is required for every deployment. Mark the appropriate checkbox:  
Y = Yes  
N = No

**NOTE:** Examples of things to take notice of during a vessel walk through are listed on the back of the log.

6. **CURRENT USCG COMMERCIAL FISHING VESSEL SAFETY EXAMINATION DECAL:** Is there a current USCG Commercial Fishing Vessel Safety Examination Decal? Mark the appropriate checkbox:  
Y = Yes  
N = No

Record the Safety Decal Number and the expiration date (MM/YY format). If you cannot obtain the number or a portion of the number you must ask the captain for another form of documentation to complete the field(s). If the captain does not have any other form of documentation you may contact NEFOP staff and request they search the USCG database for Safety Examination verification.

7. **EMERGENCY POSITION INDICATING RADIO BEACON (EPIRB):** Is there an EPIRB onboard the vessel? Mark the appropriate checkbox:  
Y = Yes  
N = No  
NR = Not required

Vessels fishing within 3 miles are not required to have an EPIRB.

You must physically see the EPIRB (visual inspection), use a current EPIRB Visual Inspection Card (EVIC) or be provided approved USCG documentation in order to mark the "Y" checkbox. If the EPIRB is contained in a housing unit, ask the captain or a qualified crew member to remove the housing for you. Do not remove the housing or the EPIRB from the bracket yourself. Record the

hydrostatic release and battery expiration dates (MM/YY format). If the EPIRB does not have a hydrostatic release (Category II, manual activation), leave the associated boxes blank and make a comment in the comments section on the back of the log.

8. **LIFE RAFTS(S):** Is there a life raft present onboard the vessel? Mark the appropriate checkbox:

Y = Yes

N = No

NR = Not required

Vessels within 12 miles of the coast,  $\leq$  3 people, and  $\leq$  36 feet in length are not required to have a life raft

Record the hydrostatic release and raft service expiration dates (MM/YY format). Note the raft capacity (sufficient for everyone onboard, including the monitor?). If the life raft is considered “float free” and does not have a hydrostatic release, leave the associated boxes blank and make a comment in the comments section on the back of the log. Vessels are not required (NR) to carry a life raft in the case where ALL three of the following conditions are met: 1) The vessel is operating less than twelve (12) miles of the coast, 2) there are fewer than three (3) people onboard and 3) the vessel is less than thirty-six (36) feet in length. All other vessels must have some type of survival craft onboard. If the “not required” field is checked leave the expiration dates blank.

9. **IMMERSION SUITS AND PERSONAL FLOTATION DEVICES:** Are there enough immersion suits and personal flotation devices for everyone onboard? Mark the appropriate checkbox:

Y = Yes

N = No

NR = Not required

**NOTE:** PFDs are required to be worn by the at-sea monitor while out on deck.

10. **RADIO(S):** Are there marine communication radios onboard the vessel? Mark the appropriate checkbox:

Y = Yes

N = No

NR = Not required

11. **FIRE EXTINGUISHERS:** Are there a sufficient number, and type, of fire extinguishers onboard the vessel? Mark the appropriate checkbox:

Y = Yes

N = No

NR = Not required

Vessels < 26 feet in length, with an outboard motor, and portable fuel tanks are not required to have fire extinguishers



12. **EMERGENCY SIGNALING FLARES:** Are there signaling flares onboard the vessel? Mark the appropriate checkbox:  
Y = Yes  
N = No  
NR = Not required
- If the vessel is operating less than three (3) miles from the coast it is required to have a night light and smoke flares or three day/night flares onboard.
  - If the vessel is operating more than three (3) miles from the coast it is required to have three (3) parachute flares, six (6) hand held flares and three smoke flares.
  - Check number, type and expiration dates.
13. **FIRST AID MATERIAL:** Is there a first aid kit and/or first aid material onboard the vessel? Mark the appropriate checkbox:  
Y = Yes  
N = No  
NR = Not required
14. **LIFE RINGS:** Are there life rings onboard the vessel? Mark the appropriate checkbox:  
Y = Yes  
N = No  
NR = Not required
- Vessels < 26 feet in length are required to have a cushion life ring.
  - Vessels >26 feet and < 65 feet are required to have one life ring buoy.
  - Vessels >65 feet are required to have three (3) life ring buoys.
15. **ARE SAFETY DRILLS CONDUCTED ON THIS VESSEL?:** Ask the captain if safety drills are regularly conducted on the vessel and mark the appropriate checkbox:  
Y = Yes  
N = No
16. **WILL ONE BE CONDUCTED WHILE YOU ARE ONBOARD?:** Ask the captain if a safety drill will be conducted while you are onboard and mark the appropriate checkbox:  
Y = Yes  
N = No
17. **WILL AN UNDERWAY WHEELWATCH BE MAINTAINED DURING THIS TRIP?:** Ask the captain if a wheel watch will be maintained throughout the duration of the entire trip and mark the appropriate checkbox:  
Y = Yes  
N = No

18. **WERE THERE ANY STABILITY CONCERNS/ISSUES, EITHER BECAUSE OF BEHAVIOR OR VESSEL DESIGN, DURING THE TRIP?:** On the back of the log are examples of things to consider when assessing the stability of a vessel. Mark the appropriate box if you had or did not have stability concerns during your trip:

Y = Yes

N = No

If you answer “Y”, you must provide comments in the stability comments section on the back of the log.

19. **DID YOU PROVIDE ADDITIONAL COMMENTS?:** If you left any box(es) blank or had any SAFETY RELATED concerns, you must record comments in the comments section on the back of the log. Mark the appropriate box if you had or did not have additional comments during your trip:

Y = Yes

N = No

20. **PLEASE CHECK THE METHOD YOU USED TO VERIFY THE EPIRB HYDROSTATIC RELEASE AND BATTERY EXPIRATION DATES:** You must check the appropriate box indicating what method you used to verify the expiration dates of the EPIRB. Record the EVIC card number and date issued if you visually inspected the EPIRB and issued an EVIC or if you used an existing and current EVIC.



\*The following is a list of examples that you should/could check while doing a vessel walk through. They are listed here to assist you in determining the relative safety of a particular vessel. The list is not comprehensive, but one that is intended to start you thinking.

- Does the vessel seem well maintained? Is it neat, clean and being maintained by a careful and prepared crew?
- Any visible hydraulic leaks?
- Is the vessel being used for the purpose it was originally designed? Have significant changes been made?
- Do obvious hazards exist? Note potentially hazardous areas/conditions. ALWAYS USE CAUTION AROUND WINCHES.
- Identify water tight doors. Can they be secured in case of severe weather or emergencies?
- Are the hatches or passageways blocked or difficult to get to?
- Does the deck gear appear to be in good working condition? Identify unsafe areas. Note overhead wires or rusted/worn shackles or blocks.
- Is the vessel long overdue for a haul out (excessive growth at waterline or hull paint in poor condition)?
- How often is the bilge pump going on?
- How is the fish hold covered? Is hatch readily available and in good condition? Are there other openings in the deck and are good hatches in place or readily available?
- Would anything prevent you from abandoning ship from the living quarters?
- What are the escape routes from every part of the vessel you might find yourself?
- Visualize egress for all possible scenarios (fire, flooding, capsized, dark, etc.) and mentally note landmarks.
- What are the most combustible items on board and where are they stored?
- Are there any exposed exhaust pipes/manifolds that might pose burn hazards?
- Is there heavy equipment on deck that is not latched down?
- Are there any exposed drive chains, pulleys or belts?
- Would you be able to access the life raft if conditions were icy or the wheelhouse was on fire?
- Wood hulls: Rust stains between planks?(may indicate weak fasteners). Protruding planks or inconsistencies in the hull? (may indicate broken frame/fasteners). Wood rot present? (if yes, likely to be worse in unseen areas).
- Are there safety issues involved with boarding?
- Is the number and size of the scuppers sufficient to be effective? Do they become plugged during fishing practices?
- Is there a station bill posted and is your role clear during all shipboard emergencies?
- Are there emergency instructions, or did the captain (or designee) give safety orientation, explaining the following: survival craft embarkation stations; survival craft assignments; fire/emergency/ abandon ship signals; procedures for rough weather; procedures for recovering man overboard; procedures for fighting fire; essential actions required of each person in an emergency?

**\*Required to conduct at least 1 of the following: 1) orientation, 2) safety instructions or 3) safety drills.**

\*The following are examples of things to consider related to the vessel design or fishing practices in determining general concerns with vessel stability.

- Note the roll period of the vessel. Generally a boat with a quick, snappy roll is more stable than a boat that has a slow or sluggish roll period. A boat that seems to hesitate on its side, before righting, could be unstable.
- Does the vessel list excessively?
- Do the fishing practices involve a pattern of towing heavy bags or dumping the catch to one side of the vessel?

<p><b>Comments</b></p>	<p><b>Stability</b></p>
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**20 WHEN WAS THE LAST TIME YOU CHECKED YOUR PERSONAL SAFETY EQUIPMENT?**

**Please check the method you used to verify the EPIRB hydrostatic release and battery expiration dates:**

- Visual inspection; record card number and date issued below
- EPIRB Visual Inspection Card (EVIC); record card number and date issued below
- Approved USCG documentation (comments required)

EVIC card number  Date issued  (MM/YY)

At-sea monitor signature

Date







\*The following is a list of examples that you should/could check while doing a vessel walk through. They are listed here to assist you in determining the relative safety of a particular vessel. The list is not comprehensive, but one that is intended to start you thinking.

- Does the vessel seem well maintained? Is it neat, clean and being maintained by a careful and prepared crew?
- Any visible hydraulic leaks?
- Is the vessel being used for the purpose it was originally designed? Have significant changes been made?
- Do obvious hazards exist? Note potentially hazardous areas/conditions. ALWAYS USE CAUTION AROUND WINCHES.
- Identify water tight doors. Can they be secured in case of severe weather or emergencies?
- Are the hatches or passageways blocked or difficult to get to?
- Does the deck gear appear to be in good working condition? Identify unsafe areas. Note overhead wires or rusted/worn shackles or blocks.
- Is the vessel long overdue for a haul out (excessive growth at waterline or hull paint in poor condition)?
- How often is the bilge pump going on?
- How is the fish hold covered? Is hatch readily available and in good condition? Are there other openings in the deck and are good hatches in place or readily available?
- Would anything prevent you from abandoning ship from the living quarters?
- What are the escape routes from every part of the vessel you might find yourself?
- Visualize egress for all possible scenarios (fire, flooding, capsized, dark, etc.) and mentally note landmarks.
- What are the most combustible items on board and where are they stored?
- Are there any exposed exhaust pipes/manifolds that might pose burn hazards?
- Is there heavy equipment on deck that is not latched down?
- Are there any exposed drive chains, pulleys or belts?
- Would you be able to access the life raft if conditions were icy or the wheelhouse was on fire?
- Wood hulls: Rust stains between planks?(may indicate weak fasteners). Protruding planks or inconsistencies in the hull? (may indicate broken frame/fasteners). Wood rot present? (if yes, likely to be worse in unseen areas).
- Are there safety issues involved with boarding?
- Is the number and size of the scuppers sufficient to be effective? Do they become plugged during fishing practices?
- Is there a station bill posted and is your role clear during all shipboard emergencies?
- Are there emergency instructions, or did the captain (or designee) give safety orientation, explaining the following: survival craft embarkation stations; survival craft assignments; fire/emergency/ abandon ship signals; procedures for rough weather; procedures for recovering man overboard; procedures for fighting fire; essential actions required of each person in an emergency?

**\*Required to conduct at least 1 of the following: 1) orientation, 2) safety instructions or 3) safety drills.**

\*The following are examples of things to consider related to the vessel design or fishing practices in determining general concerns with vessel stability.

- Note the roll period of the vessel. Generally a boat with a quick, snappy roll is more stable than a boat that has a slow or sluggish roll period. A boat that seems to hesitate on its side, before righting, could be unstable.
- Does the vessel list excessively?
- Do the fishing practices involve a pattern of towing heavy bags or dumping the catch to one side of the vessel?

<p><b>Comments</b></p>	<p><b>Stability</b></p>
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**WHEN WAS THE LAST TIME YOU CHECKED YOUR PERSONAL SAFETY EQUIPMENT?**

**Please check the method you used to verify the EPIRB hydrostatic release and battery expiration dates:**

- Visual inspection; record card number and date issued below
- EPIRB Visual Inspection Card (EVIC); record card number and date issued below
- Approved USCG documentation (comments required)

EVIC card number       Date issued     (MM/YY)

At-sea monitor signature \_\_\_\_\_

Date \_\_\_\_\_



**METHODS FOR VERIFYING THE EPIRB HYDROSTATIC RELEASE AND BATTERY EXPIRATION DATES FOR THE PRE-TRIP VESSEL SAFETY CHECKLIST (PTVSC)**

1. Visual inspection. The at-sea monitor records the hydrostatic release and battery expiration dates on the PTVSC, checks the 'Visual inspection' box on the back of the PTVSC and records the EPIRB Visual Inspection Card (EVIC) number and the date issued.
2. A previously issued EPIRB Visual Inspection Card. In this case, the at-sea monitor checks the 'EPRIB Visual Inspection Card (EVIC)' box on the back of the PTVSC, does not record the hydrostatic release and battery expiration dates on the PTVSC and records the EVIC number and the date the card was issued in the appropriate area on the back of the PTVSC.
3. Approved USCG documentation. The approved documentation would be the USCG Safety Examiners form with the hydrostatic release and battery expiration dates. In this case, the at-sea monitor would record the expiration dates on the PTVSC and comment in the comments section.

**ISSUING A EPIRB VISUAL INSPECTION CARD (EVIC)**

1. To issue a card, an at-sea monitor would have to ask the captain for any type of required assistance (e.g. remove housing, remove EPIRB from mounting bracket, etc) to visually inspect the battery and hydrostatic release expiration dates.
2. The at-sea monitor would fill out the dates on the PTVSC and the relevant fields on the EVIC.
3. The at-sea monitor will explain the purpose of the card to the captain, explaining the time period it will be valid for and recommend that the captain keep the card in an accessible area to show to future at-sea monitors.
4. An at-sea monitor has the option to visit a vessel the day before departing on a trip to complete the PTVSC and issue an EVIC.
5. Another option would be that if an at-sea monitor was down at the docks and wanted to be proactive in issuing EVICs, this could be done by filing out portions of the PTVSC (vessel name, at-sea monitor ID (instead of trip ID), hull number, the EPIRB portion on the front of the checklist and the card information on the back of the checklist). These forms could be mailed separately or with the at-sea monitor's next trip.

**EVIC**

00001

**EPIRB VISUAL INSPECTION CARD  
NMFS NORTHEAST FISHERIES AT-SEA MONITORING PROGRAM**

On \_\_\_\_\_ (mm/dd/yy), onboard the F/V \_\_\_\_\_ (vessel name),  
I verified (visually inspected) the expiration dates for the Emergency Position Indicating Radio Beacon  
(EPIRB) hydrostatic release and EPIRB battery. These items will NOT expire during the next 90 days,  
which will be on \_\_\_\_\_ (mm/dd/yy).

**- - OR, IF ITEMS WILL EXPIRE WITHIN 90 DAYS - -**

EPIRB hydrostatic release expiration date: \_\_\_\_\_ (mm/yy)

EPIRB battery expiration date: \_\_\_\_\_ (mm/yy)

At-sea monitor Id: \_\_\_\_\_ At-sea monitor signature: \_\_\_\_\_

This card is for the vessel's records and may be presented to subsequent observers when completing their PRE TRIP VESSEL SAFETY CHECKLIST and safety orientation. Observers are not to open or handle the EPIRB to obtain these dates. The captain or other designee must handle the EPIRB. The USCG encourages monthly inspections of your EPIRB. OMB Control No. 0648-0593 thru 9/30/12

### TRIP INFORMATION LOG

The following instructions are for recording information regarding a particular vessel and trip. Some data requirements will require questioning the captain of the vessel for the information. Do not record assumptions. If the information is unclear, verify the answers with the captain.

This section includes instructions for the following Logs:

- Trip Log**
- More Trip Log**
- Cost Log**
- Trip End Log**

### TRIP & MORE TRIP LOG

#### INSTRUCTIONS

1. **AT-SEA MONITOR/TRIP IDENTIFIER:** Record your three character At-sea Monitor Identifier combined with the three digit Trip Number and one character Trip Extension assigned to you for this trip. Use Table 1 to determine the correct trip extension. Use this At-sea monitor/Trip Identifier on all logs and forms for this trip. See Table 1. For further instructions and specific examples on completing this field refer to Appendix G. At-Sea Monitor/Trip Identifier Instructions.

Example: At-sea monitor Green, who has been assigned identifier A02, is on her second trip of the calendar year, and it is a complete fish sampling gillnet trip. The at-sea monitor/trip identifier is recorded as A02002C.

**NOTE:** If the catch is not offloaded when the vessel returns to the dock, and the vessel returns to sea, use the same At-sea monitor/Trip Identifier. If any of the catch is offloaded, and the vessel returns to sea, use a new At-sea monitor/Trip Identifier and complete another Trip Information Log.

**Table 1.** Trip extension and corresponding trip type

TRIP EXTENSION	TRIP TYPE
A	Aborted, Non-Gillnet
C	Gillnet, Complete fish sampling
D	Gillnet, Complete fish sampling, Aborted
-	Trawl, Longline trips
E	Gillnet, Complete fish sampling, Set Only

**NOTE:** An aborted trip is defined as when the gear is not used (set, hauled, or washed) regardless of time on the water. An aborted trip is considered to be a unique trip and should be numbered accordingly.

Example: Monitor Green is on a trawl trip that is aborted. That trip will be identified as A02003A. The next trip will be numbered A02004(trip ext.).

2. **FLEET ID CODE & NAME:** Record the type of trip you are observing by recording the appropriate three-digit code and Sector name. This information may be obtained from the captain and should be asked at the beginning of the trip. See Table 2.

**NOTE:** Each code corresponds to an individual sector. The captain will know the name of the sector to which his/her vessel belongs.

**Table 2:** Fleet ID Codes and Corresponding Sector Names (FY 2011)

FLEET ID CODE	SECTOR NAME
002	Common Pool - Groundfish
003	Georges Bank Cod Fixed Gear Sector
005	Sustainable Harvest Sector
006	Port Clyde Community Groundfish Sector
007	Northeast Fishery Sector VII
008	Northeast Fishery Sector (NFS) IV
009	Northeast Fishery Sector (NFS) VIII
010	Northeast Fishery Sector (NFS) XI
011	Northeast Fishery Sector (NFS) XII
012	Northeast Fishery Sector (NFS) II
013	Northeast Fishery Sector (NFS) III
014	Northeast Fishery Sector (NFS) I
015	Northeast Fishery Sector (NFS) X
016	Northeast Fishery Sector (NFS) XIII
017	Northeast Fishery Sector (NFS) IX
018	Northeast Fishery Sector (NFS) V
019	Tri-State Sector
020	Northeast Fishery Sector (NFS) VI
021	Northeast Coastal Communities Sector (NCCS)
022	Sustainable Harvest Sector 3
023	Maine (State Permit Bank)

3. **VESSEL NAME:** Record the name of the vessel to which you are deployed. Care should be taken to record the correct spelling of the vessel's name.
4. **VESSEL NUMBER:** Record the number written on the hull of the vessel to which you are deployed. This number will be either the U.S. Coast Guard Documentation Number or the state registration number. This number may have up to eight characters. This is not the same as the NMFS or state fishing permit number.

Example:

USCG Documentation Number	State Registration Number
123456	ME1234AB

5. **VESSEL PERMIT NUMBER:** Record the permit number of the vessel to which you are deployed. This number will be different than the VESSEL NUMBER. This information must be obtained from the Captain.
6. **PORT SAILED:** Record the name of the port, including the state, where the vessel left to begin the trip. This may be different from the PORT LANDED, or the port of registry on the vessel's stern.
7. **DATE SAILED:** Record the month, day, and year that the vessel leaves the dock to go fishing (MMDDYY).
8. **TIME SAILED:** Record the local time, using the 24 hour clock (0000-2359), that the vessel leaves the dock to go fishing.
9. **PRIMARY GEAR:** Indicate the principal gear used during this trip by recording the most appropriate gear code possible, as listed in Appendix D. Gear Codes.

**NOTE:** Primary gear is defined as the gear used for the **majority of the hauls** on a single trip.

Example: You are deployed on a gillnet boat that has pulled 3 strings of gear (3 total hauls). Throughout the trip the crew used a rod and reel for a total of 5 hauls. The primary gear for this trip is Handline, Rod and Reel (020).

10. **TARGET 1:** Indicate the principal species (or species group) targeted with the type of gear selected as the PRIMARY GEAR by selecting the most appropriate and specific species name possible. This information must be obtained from the captain before any gear is hauled and should **not** be based on the results of the trip's catch.

Examples: Haddock  
Groundfish, NK

11. **TARGET 2:** Select the secondary species (or species group) targeted with the type of gear recorded as the PRIMARY GEAR by selecting the most appropriate and specific species name possible. If there is no secondary species targeted leave this field blank.
12. **VENDOR ID CODE:** Record the vendor identification name. This information can be obtained from your At-sea monitor Service Provider.  
  
**NOTE:** For Fishing Years 2010-2012 this will be: Your Service Provider-NMFS Funds
13. **PROGRAM CODE:** Record the appropriate program code for the fishing trip by recording the most specific three-digit code. See Table 3.

**Table 3:** Program Codes & Corresponding Fishing Trip Types

<b>PROGRAM CODE</b>	<b>TRIP TYPE</b>
230	At-sea Monitoring (ASM)
231	ASM, US/Canada Management
232	ASM, Regular B-DAS Program
233	ASM, Closed Area I Haddock Hook SAP
234	ASM, Closed Area II Yellowtail/Haddock Hook SAP

**NOTE:** Monitors should verify the trip type with the captain.

**NOTE:** Monitors should never select Program 250: Electronic Monitoring/ Video Monitoring. This information will be recorded by the monitor on the upload page as detailed in the UPLOADING DATA portion of this program manual.

14. **INCIDENTAL TAKE:** Record whether a sea bird, marine mammal, and/or sea turtle has been incidentally taken on this trip by checking Yes or No.
15. **PHOTOS:** Record whether photos were taken for this trip by checking Yes or No. Record in the COMMENTS section the total number of photos associated with the trip.
16. **FIELD DIARY:** Record whether a field diary was completed for this trip by checking Yes or No.
17. **COMMENTS:** Record any additional trip information (i.e. total number of photos, etc.)

### **COST AND TRIP END LOG**

Complete Header Information.

#### **COSTS**

**NOTE:** If the vessel takes on more food, fuel, ice, water, oil, or bait during a dockage mid-trip (when fish are not offloaded), add each amount to the appropriate field's total for the trip.

**NOTE:** If no costs are incurred, record a zero "0" in the appropriate field(s).

18. **ICE USED:** Record, to the nearest (to the nearest hundredth of a ton), the estimated amount of ice used during this trip. Include purchased ice and ice made by the vessel. This information should be obtained from the captain at the end of the trip. If this value is unknown check the box UNKNOWN and comment.

**NOTE:** This value may include remaining ice from a previous trip.

19. **ICE/TON:** Record (in dollars and cents), the price paid **per ton** of ice purchased for this trip. If this value is unknown check the box UNKNOWN and comment.

**NOTE:** If the vessel makes its own ice, or if no money is paid for ice, record "0".

20. **FUEL USED:** Record (in whole gallons) the estimated amount of fuel consumed during this trip. This information should be obtained from the captain at the end of the trip. If this value is unknown check the box UNKNOWN and comment.

21. **FUEL/GALLON:** Record (in dollars and cents) the price paid per gallon for fuel purchased for this trip. This information may be obtained from the captain or owner before the vessel leaves port. If this value is unknown check the box UNKNOWN and comment.

22. **DAMAGE:** Record (to the nearest whole dollar), the captain's estimate of the cost of gear and/or equipment lost or damaged during this trip. Provide a description of the damage or loss in COMMENTS. If this value is unknown check the box UNKNOWN and comment.

Example: Damaged net = \$300  
Lost highflyer = \$75

**NOTE:** All reported damage requires a description of the specific items damaged in the COMMENTS section. This does not include normal wear and tear. This information should be obtained from the captain at the end of the trip.

23. **SUPPLIES:** Record (to the nearest dollar) the price paid for commonly used supplies purchased for this trip. List the items included in this value in the COMMENTS section. This information may be obtained from the captain and/or a crew member. If this value is unknown check the box UNKNOWN and comment.

Examples: Gloves, boot liners, foul weather gear, knives, picks, hooks, boxes, bags, ties, lobster bands, rags, tape, links/rings, lines/twine/rope, etc.

24. **FOOD:** Record (to the nearest whole dollar), the cost to the crew and captain for food purchased for this trip, including the monitor's food. If this value is unknown check the box UNKNOWN and comment.

**NOTE:** Drinking water should be included in food costs.

25. **WATER:** Record (to the nearest whole dollar), the cost of fresh water purchased for this trip. If this value is unknown check the box UNKNOWN and comment. This value should not include drinking water.

**NOTE:** If the vessel makes its own fresh water, or if no money is paid for fresh water, record "0".

26. **OIL:** Record (to the nearest whole dollar), the cost of lubricating oil used for this trip. This should be obtained from the captain at the end of the trip. If this value is unknown check the box UNKNOWN and comment.

**NOTE:** This does not include hydraulic oil or any other specialty oil.

**NOTE:** Oil is used on all trips so this value should not be "0".

27. **BAIT:** Record (to the nearest whole dollar), the cost of bait purchased for this trip. If this value is unknown check the box UNKNOWN and comment.

28. **COST COMMENTS:** Record any additional information regarding the associated expenditures. Reference each comment with its corresponding field name.

### **TRIP END**

29. **TRIP EXTENSION:** Select the one character Trip Extension assigned to you for this trip by checking the corresponding box. See Table 1 (pg 190) to determine the correct trip extension.

30. **PORT LANDED:** Record the name of the port, including the state, where the vessel offloads its catch. This may be different from the PORT SAILED, or the port of registry on the vessel's stern.

**NOTE:** If the vessel sells its catch at more than one port, record the port where most of the catch is sold.

31. **DATE LANDED:** Record the month, day, and year that the vessel first arrives in port at the completion of your deployment (MMDDYY). This is the docking port where the captain intends to sell the majority of this trip's catch. Record this date whether or not the catch is sold.

Example: The vessel returns to a dock on 02/03/01, with catch, but does not sell any fish. The at-sea monitor remains on the vessel back to the fishing grounds. The vessel returns to the dock on 02/07/01 and arranges to sell its catch. DATE LANDED is 02/07/01.

32. **TIME LANDED:** Record the local time, using the 24 hour clock (0000-2359), that the vessel first arrives in port at the completion of your deployment. This is the docking port where the captain intends to sell the majority of this trip's catch. Record this time whether or not the catch is sold.

33. **VTR SERIAL NUMBER:** Record the serial number obtained from the captain's Fishing Vessel Trip Report (VTR).

**NOTE:** If more than one Vessel Trip Report (VTR) log is used during a trip, record the serial number of the first log used on the trip and all other numbers in the COMMENTS section. Obtain this information from the captain.



**NOTE:** Do not record a VTR SERIAL NUMBER for aborted trips or set only trips. Leave this field blank.

**NOTE:** If an eVTR number is recorded for this trip, leave this field blank.

34. **eVTR TRIP ID:** Record the serial number obtained from the captain's Electronic Fishing Vessel Trip Report (eVTR). If there is no eVTR TRIP ID leave this field blank.

**NOTE:** If a VTR number is recorded for this trip, leave this field blank.

35. **DEALER'S NAME:** Record the complete name of the dealer where the captain sold the majority of the trip's catch. If the catch is not sold immediately after arrival in port, obtain this information from the captain.

**NOTE:** See Appendix J. Dealer List for a complete list of dealer names and the city and state they are located in.

36. **TRIP END COMMENTS:** Record any additional information regarding the trip. Reference each comment with its corresponding field name.



**TRIP AND MORE TRIP LOG**

**NMFS FISHERIES AT-SEA MONITORING PROGRAM  
ASMTRP ASMTRG**

DATE RECEIVED	/ /
EDITED BY	

ASM/TRIPID <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <b>1</b>	PRIMARY GEAR (code & name) <input type="text"/> <input type="text"/> <input type="text"/> <b>9</b>	
FLEET ID (code & name) <input type="text"/> <input type="text"/> <input type="text"/> <b>2</b>	TARGET SPECIES 1 (For Overall Trip) <b>10</b>	
VESSEL NAME <b>3</b>	TARGET SPECIES 2 (For Overall Trip) <b>11</b>	
VESSEL NUMBER <b>4</b>	VENDOR ID <b>12</b>	PROGRAM CODE <input type="text"/> <input type="text"/> <input type="text"/> <b>13</b>
VESSEL PERMIT NUMBER <b>5</b>	INCIDENTAL TAKE? <input type="checkbox"/> NO <input type="checkbox"/> YES <b>14</b>	
PORT SAILED (CITY, STATE) <b>6</b>	PHOTOS? <input type="checkbox"/> NO <input type="checkbox"/> YES <b>15</b>	
DATE SAILED (mm/dd/yy) / / <b>7</b>	FIELD DIARY? <input type="checkbox"/> NO <input type="checkbox"/> YES <b>16</b>	
TIME SAILED (24 hr) : <b>8</b>		
COMMENTS <b>17</b>		
		FOR OFFICE USE ONLY

**COST AND END TRIP LOG**

NMFS FISHERIES AT-SEA MONITORING PROGRAM  
ASMTRP

ASM/TRIPID	
DATE LANDED mm/yy	/

COSTS		END TRIP	
ICE USED (ton) <b>18</b> ____ . ____ <input type="checkbox"/> UNKNOWN	FUEL USED (gal) <b>20</b> _____ <input type="checkbox"/> UNKNOWN	TRIP EXTENSION <b>29</b> ABORTED, NON-GILLNET (A) <input type="checkbox"/> (LONGLINE, HANDLINE, TRAWL)	
Price in DOLLARS and CENTS		GILLNET, COMPLETE (C) <input type="checkbox"/>	
ICE/TON <b>19</b> \$ ____ . ____ <input type="checkbox"/> UNKNOWN	FUEL/GAL <b>21</b> \$ ____ . ____ <input type="checkbox"/> UNKNOWN	ABORTED, GILLNET COMPLETE (D) <input type="checkbox"/>	
Costs in WHOLE DOLLARS		NON-GILLNET TRIP (-) <input type="checkbox"/> (LONGLINE, HANDLINE, TRAWL)	
DAMAGE <b>22</b> \$ ____ . 00 <input type="checkbox"/> UNKNOWN	SUPPLIES <b>23</b> \$ ____ . 00 <input type="checkbox"/> UNKNOWN	PORT LANDED (CITY, STATE) <b>30</b>	
FOOD <b>24</b> \$ ____ . 00 <input type="checkbox"/> UNKNOWN	WATER <b>25</b> \$ ____ . 00 <input type="checkbox"/> UNKNOWN	DATE LANDED (mm/dd/yy) □□ / □□ / □□ <b>31</b>	
OIL <b>26</b> \$ ____ . 00 <input type="checkbox"/> UNKNOWN	BAIT <b>27</b> \$ ____ . 00 <input type="checkbox"/> UNKNOWN	TIME LANDED (24 hr) <b>32</b> :	
COST COMMENTS <b>28</b>		VTR SERIAL # <b>33</b>	
		e VTR TRIPID <b>34</b>	
		DEALER'S NAME <b>35</b>	
		END TRIP COMMENTS <b>36</b>	

**TRIP AND MORE TRIP LOG**

**NMFS FISHERIES AT-SEA MONITORING PROGRAM  
ASMTRP ASMTRG**

DATE RECEIVED	/ /
EDITED BY	

ASM/TRIPID <input type="text" value="A"/> <input type="text" value="0"/> <input type="text" value="2"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="2"/> <input type="text" value="."/>	PRIMARY GEAR (code & name) <input type="text" value="0"/> <input type="text" value="5"/> <input type="text" value="0"/> <b>TRAWL, OTTER, BOTTOM, FISH</b>	
FLEET ID (code & name) <input type="text" value="0"/> <input type="text" value="1"/> <input type="text" value="6"/> <b>NORTHEAST FISHERIES SECTOR XIII</b>	TARGET SPECIES 1 (For Overall Trip) <b>HADDOCK</b>	
VESSEL NAME <b>FISHING BOAT</b>	TARGET SPECIES 2 (For Overall Trip) <b>WINTER FLOUNDER</b>	
VESSEL NUMBER <b>1234567</b>	VENDOR ID <b>PROVIDER NAME NMFS FUNDED</b>	PROGRAM CODE <input type="text" value="2"/> <input type="text" value="3"/> <input type="text" value="1"/>
VESSEL PERMIT NUMBER <b>123456</b>	INCIDENTAL TAKE? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	
PORT SAILED (CITY, STATE) <b>POINT JUDITH, RI</b>	PHOTOS? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES	
DATE SAILED (mm/dd/yy) <b>10 / 16 / 10</b>	FIELD DIARY? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	
TIME SAILED (24 hr) <b>03 : 43</b>		
COMMENTS <b>PHOTOS TAKEN = 12</b>		
		FOR OFFICE USE ONLY

**COST AND END TRIP LOG**

NMFS FISHERIES AT-SEA MONITORING PROGRAM  
ASMTRP

ASM/TRIPID	<b>A02002 -</b>
DATE LANDED mm/yy	<b>10 /10</b>

COSTS		END TRIP	
ICE USED (ton) <b>5 . 0 0</b> <input type="checkbox"/> UNKNOWN	FUEL USED (gal) <b>300</b> <input type="checkbox"/> UNKNOWN	TRIP EXTENSION	
Price in DOLLARS and CENTS		ABORTED, NON-GILLNET (A) <input type="checkbox"/>	
ICE/TON <b>\$ 55 . 0 0</b> <input type="checkbox"/> UNKNOWN	FUEL/GAL <b>\$ 3 . 4 3</b> <input type="checkbox"/> UNKNOWN	GILLNET, COMPLETE (C) <input type="checkbox"/>	
Costs in WHOLE DOLLARS		ABORTED, GILLNET COMPLETE (D) <input type="checkbox"/>	
DAMAGE <b>\$ 200 . 00</b> <input type="checkbox"/> UNKNOWN	SUPPLIES <b>\$ 75 . 00</b> <input type="checkbox"/> UNKNOWN	NON-GILLNET TRIP (-) <input checked="" type="checkbox"/>	
FOOD <b>\$ 500 . 00</b> <input type="checkbox"/> UNKNOWN	WATER <b>\$ 0 . 00</b> <input type="checkbox"/> UNKNOWN	PORT LANDED (CITY, STATE) <b>POINT JUDITH, RI</b>	
OIL <b>\$ 25 . 00</b> <input type="checkbox"/> UNKNOWN	BAIT <b>\$ 0 . 00</b> <input type="checkbox"/> UNKNOWN	DATE LANDED (mm/dd/yy) <b>10 / 18 / 10</b>	
COST COMMENTS		TIME LANDED (24 hr) <b>00 :42</b>	
<p><b>DAMAGE = 2 lost high flyers</b></p> <p><b>SUPPLIES = Gloves, knives, boots</b></p>		VTR SERIAL # <b>12345678</b>	
		e VTR TRIPID	
		DEALER'S NAME <b>SOUTH PIER SEAFOOD</b>	
		END TRIP COMMENTS	

**TRIP AND MORE TRIP LOG**

**NMFS FISHERIES AT-SEA MONITORING PROGRAM  
ASMTRP ASMTRG**

DATE RECEIVED	/ /
EDITED BY	

ASM/TRIPID <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	PRIMARY GEAR (code & name) <input type="text"/> <input type="text"/> <input type="text"/>	
FLEET ID (code & name) <input type="text"/> <input type="text"/> <input type="text"/>	TARGET SPECIES 1 (For Overall Trip)	
VESSEL NAME	TARGET SPECIES 2 (For Overall Trip)	
VESSEL NUMBER	VENDOR ID	PROGRAM CODE <input type="text"/> <input type="text"/> <input type="text"/>
VESSEL PERMIT NUMBER	INCIDENTAL TAKE? <input type="checkbox"/> NO <input type="checkbox"/> YES	
PORT SAILED (CITY, STATE)	PHOTOS? <input type="checkbox"/> NO <input type="checkbox"/> YES	
DATE SAILED (mm/dd/yy) / /	FIELD DIARY? <input type="checkbox"/> NO <input type="checkbox"/> YES	
TIME SAILED (24 hr) :		
COMMENTS		
		FOR OFFICE USE ONLY

**COST AND END TRIP LOG**

**NMFS FISHERIES AT-SEA MONITORING PROGRAM  
ASMTRP**

ASM/TRIPID	
DATE LANDED mm/yy	/

COSTS		END TRIP
ICE USED (ton) ____ . ____ <input type="checkbox"/> UNKNOWN	FUEL USED (gal) _____ <input type="checkbox"/> UNKNOWN	TRIP EXTENSION ABORTED, NON-GILLNET (A) <input type="checkbox"/> (LONGLINE, HANDLINE, TRAWL) GILLNET, COMPLETE (C) <input type="checkbox"/> ABORTED, GILLNET COMPLETE (D) <input type="checkbox"/> NON-GILLNET TRIP (-) <input type="checkbox"/> (LONGLINE, HANDLINE, TRAWL)
Price in DOLLARS and CENTS		PORT LANDED (CITY, STATE)
ICE/TON \$ ____ . ____ <input type="checkbox"/> UNKNOWN	FUEL/GAL \$ ____ . ____ <input type="checkbox"/> UNKNOWN	DATE LANDED (mm/dd/yy) □□ / □□ / □□
Costs in WHOLE DOLLARS		TIME LANDED (24 hr) :
DAMAGE \$ ____ . 00 <input type="checkbox"/> UNKNOWN	SUPPLIES \$ ____ . 00 <input type="checkbox"/> UNKNOWN	VTR SERIAL #
FOOD \$ ____ . 00 <input type="checkbox"/> UNKNOWN	WATER \$ ____ . 00 <input type="checkbox"/> UNKNOWN	e VTR TRIPID
OIL \$ ____ . 00 <input type="checkbox"/> UNKNOWN	BAIT \$ ____ . 00 <input type="checkbox"/> UNKNOWN	DEALER'S NAME
COST COMMENTS		END TRIP COMMENTS



## GILLNET INFORMATION and BACKGROUND

The gillnet fishery uses mesh nets which retains fish by becoming entangled or gilled in one or more of the meshes. The term “gilling” refers to the way the fish gill covers (opercula) act as barbs to prevent them from escaping. The effectiveness of this equipment is primarily due to its size selectivity, which is based on the net’s mesh size. The fish can be either too small or too large to be retained by the mesh. As the fish swim through the net their heads can enter, but they cannot pass beyond the dorsal fin and the largest circumference of their body and become wedged. When the fish try to free themselves by twisting they become entangled, the twine of the mesh hooks behind the operculae and the gills, making it virtually impossible for the fish to move forward or backward.

The gillnet fishery is managed by state and federal governments that are advised by marine mammal Take Reduction Teams (TRT). The response in management with marine mammal incidental takes has prompted a high awareness in the fisheries, management, and the community. The TRT’s establish plans which attempt to reduce or end marine mammal incidental takes. The Take Reduction Plans can include gear modifications, time closures, and area closures.

There are many types of gillnets used all over the world. The majority of gillnets observed by the NEFSC Fisheries At-sea Monitoring Program are separated into 3 major gear types: anchored sink, anchored float, or drift sink gillnets. The following characteristics describe these types of gillnets.

Gillnets are typically made of nylon monofilament meshes stretched between a weighted leadline on the bottom and a floatline on the top frame. The floatline is typically composed of either a polypropylene line with buoyant foam material in the center, or a standard polypropylene line with plastic floats attached every few feet. The positive buoyancy of the floatline counteracts the weighted leadline creating a vertical barrier of netting in the water column.

Gillnets can be suspended at the surface, in mid-water, or on the bottom with specialized gear. Examples of the use of specialized gears are: the number of droplines, the size and number of floats on the floatline, and the weight of the leadline and anchors. The gillnet fishery operates as passive fishing gear.

The gear is typically configured as a series of nets tied together (a “string” of nets) by the bridles, or lines trailing from the top and the bottom of each individual net. There may be spaces between each individual net in the “string”.

The surface system refers to the configuration of high flyers and/or buoys at the surface of the water. The high flyer identifies ownership and serves as a locator tool. The metal on the high flyer acts as a radar reflector and is captured on the vessels radar screen. The buoy is a device that can mark location and ownership of the gillnet gear. The surface system attaches to the gillnet gear with a line called a buoyline. The end of the buoyline connects to either an anchor or directly to the bridles of the net. Refer to Figure 1 for a diagram of the Gillnet Gear Configuration.

The process of setting a gillnet string begins as the boat moves slowly through the water and the first high flyer and/or buoy is deployed over the stern of the boat. The surface system and the buoyline are released overboard and may be followed by an anchor and groundline, and finally the string of nets. Nearing the end of deployment of the gear the end buoyline and surface system are released overboard. The surface system is typically released after a 'stretch' is exerted on the entire string of nets, making it taut. The length of the string of nets may vary, it is dependent upon the target species, area where they are fishing, and/or regulations set forth for gillnet gear.

If anchors are used on the gillnet gear a number of different objects can be used to hold the gear on the substrate. Common types of anchors are: the Danforth style anchor, dead weight style anchor, or other type of digging anchor. The Danforth style anchor brands are Danforth or Fortress, this style can also be custom made by the fishermen. The Atlantic Large Whale Take Reduction Plan has written the Danforth style anchor into regulations. This style anchor is a burying type of anchor. The dead weight style anchor sits on the sea floor surface and uses "dead weight" to anchor down the net. Examples are: railroad track, mushroom style anchor, pile of lead tied together, or a cement block.

Gillnets are then left in the water to "soak" from anywhere between a few minutes to several days or a week before the vessel returns to "haul in" the gear. Gillnet strings are typically hauled in with the aid of a hydraulic system. As the net comes onboard the fish are removed from the net by the crew. The net is then wound up back onto a net drum or pulled up by a sided hauler, then fed into net boxes (Mid-Atlantic style) or simply piled ("flaked") onto the deck of the vessel (Northeast style). Once the entire string is onboard, the captain may reset the string in the same place, move to a different location to set, or not set at all leaving the string onboard.

Gillnets are sometimes configured with Marine Mammal Deterrent Devices (MMDD). MMDD's are devices that allow marine mammals to detect gillnet gear and avoid entanglement. The two types of Marine Mammal Deterrent Devices (MMDD) are active and passive. An active MMDD is a device which emits a sound (e.g., pingers). A passive MMDD provides a reflection of marine mammal echolocation signals (e.g., reflective mesh).

The active MMDD pingers emit a sound detectable by marine mammals, specifically Harbor porpoise, to warn marine mammals of the nearly invisible gear. Common brands of pingers and frequency in kHz used for Harbor porpoises are: Dukane: red in color and 10 kHz, Airmar: yellow in color and 10 kHz, and Fumunda: white in color and 10 kHz. There are other active MMDDs being used in the marine environment that uses higher frequencies than the Harbor porpoise specific frequency. Some pingers are still being tested for experimental purposes to find how they affect marine mammal's behavior and overall health.

The 10 kHz pingers are detectable in air by the human ear, the range of human hearing is generally considered to be 20 Hz to 20 kHz. The pingers emit a beeping sound every few seconds. Currently pingers are regulated for use only in the Northeast to protect harbor porpoise.

Weak links are breakable components of the gear that will part when subjected to a certain tension load. The Large Whale Take Reduction Team plan mandates the use of weak links on the gillnet gear. Weak links are used on both the surface systems and on the string gillnets.

### **SINK GILLNET**

A sink gillnet is set on the sea floor and targets demersal and semi-pelagic fish species. Sink gillnets typically have one anchor attached to either end of the string that secures the gear to the sea floor. With current regulations set forth by the Atlantic Large Whale TRT anchor types are set as a Danforth style anchor for the sink anchored gillnet fishery. Occasionally sink gillnets are unanchored (drift), but because of the heavy leadline weight, they generally remain stationary on the sea floor. However, drift sink gillnets may shift and move around with water currents since they are not anchored to the sea floor.

When targeting flounders and monkfish with sink gillnets, "tie downs" are often used, refer to Figure 2 for a diagram of a tie down. Tie downs are vertical lines, typically a few feet in length, attached to the floatline and leadline creating a bowed slack in the net.

## **FLOAT GILLNET**

A float gillnet can be fished anywhere within the water column, including the water's surface. This type of gillnet typically uses more floats and/or a lighter leadline than sink gillnet gear in order to keep the net up off of the sea floor. Some configurations have the floats attached directly to the floatline which floats at the surface of the water. Other configurations use lengths of line, called droplines, to attach the floats to the floatline. The droplines purpose is to aid in support of the buoyancy of the net within the water column. In this configuration the top of the net can begin a few feet below the water surface.

Float gillnets may or may not be secured to the sea floor by anchors. Unanchored float gillnets move freely with the water currents, either attached between two surface systems or between a surface system and the fishing vessel. This type of gear type would be a float drift gillnet.

Float gillnets are used to target pelagic fish species that spend most of their time in the upper two-thirds of the water column.

## **GILLNET SAMPLING PROTOCOLS**

Priorities for collecting length frequencies in the gillnet fishery are listed in Table 1a. Length Frequency Sampling Priorities in the At-sea Monitoring Biological Sampling Manual.

The type of gillnet trip that monitors observe is a **Complete Fish Sampling Trip** (Trip Extension „C’). On these designated trips **every** haul should be observed, i.e. complete catch information for both kept and discarded species is recorded. Additionally, the kept and discarded catch of all hauls should be biologically sampled, with priority given to the discarded species. If it is not possible to biologically sample a particular haul, the reason(s) should be noted in the COMMENTS section of the corresponding Haul Tab/Log.

**NOTE:** The second type of trip sampling is a **Limited Fish Sampling Trip**. On this type of trip, the observer conducts a protected species watch during **every** haul and discarded catch is not recorded. Only NEFOP certified observers are deployed on these trips.

### **Complete Fish Sampling Procedures**

In the gillnet fishery the catch is typically brought onboard a few fish at a time. The species composition of the haul, as well as the vessel set up, will affect how the monitor will sample to achieve maximum sampling efficiency. The following situations detail some of the more common situations monitors face and describe proper sampling adaptations. In all situations it is imperative that the monitor sample the catch while maintaining awareness of what is going on around them. In many situations the crew may continue to throw over bycatch species if space aboard the vessel is limited and the monitor appears occupied. The monitor must observe and record everything brought up in the gear. Examples of situations are listed below with methods for monitors to appropriately handle the situation:

1. Small volume of discarded bycatch in haul: In a situation where the amount of discarded bycatch is low, the monitor should completely sample all discards and then proceed to sample the kept catch throughout the haul as time permits.
2. Discarded bycatch of various species: In this type of situation the monitor must focus on the discarded species, with sampling priority given to groundfish species and those with the highest priority species followed by the subsequent priority species as detailed in the At-sea Monitoring Biological Sampling Manual. The monitor should attempt to obtain actual weights for all discards as well as complete sample

information for species according to priority level, as time permits. Once the haul has ended the monitor should make an effort to sample the kept catch according to level of species priority.

3. Large volume of uniform discarded bycatch: In the situation where there is high volume discarded bycatch of uniform species, and it would not be possible to obtain actual weights for all individuals (i.e. spiny dogfish), the monitor must employ the Stroke Tally (03) method to obtain an approximate estimated total weight. In this situation the monitor will obtain actual weights of about 20% of the fish species and obtain an average weight per individual. Once an average individual weight has been established, the monitor should proceed to stroke tally individuals as they are discarded, and extrapolate the **estimated** total catch weight for applicable species after the haul has ended.

These situations describe ways to manage variable gillnet hauls. As with all fisheries, the monitor should always attempt to collect actual weights for all species, as well as collect length frequencies according to species priority and sampling targets detailed in the Biological Sampling Manual.

### **Sampling Station**

A sampling station is extremely important in the gillnet fishery. On a complete fish sampling trip the focus of the trip is to sample all of the catch brought onboard. An appropriate and ideal sampling station on this type of trip will include the following attributes:

- ability to view the catch as it is brought onboard
- access to discarded species
- area for length board to rest on
- access to personal bucket or basket for weighing purposes

Figure 1. Typical Anchored, Sink Gillnet Gear Configuration

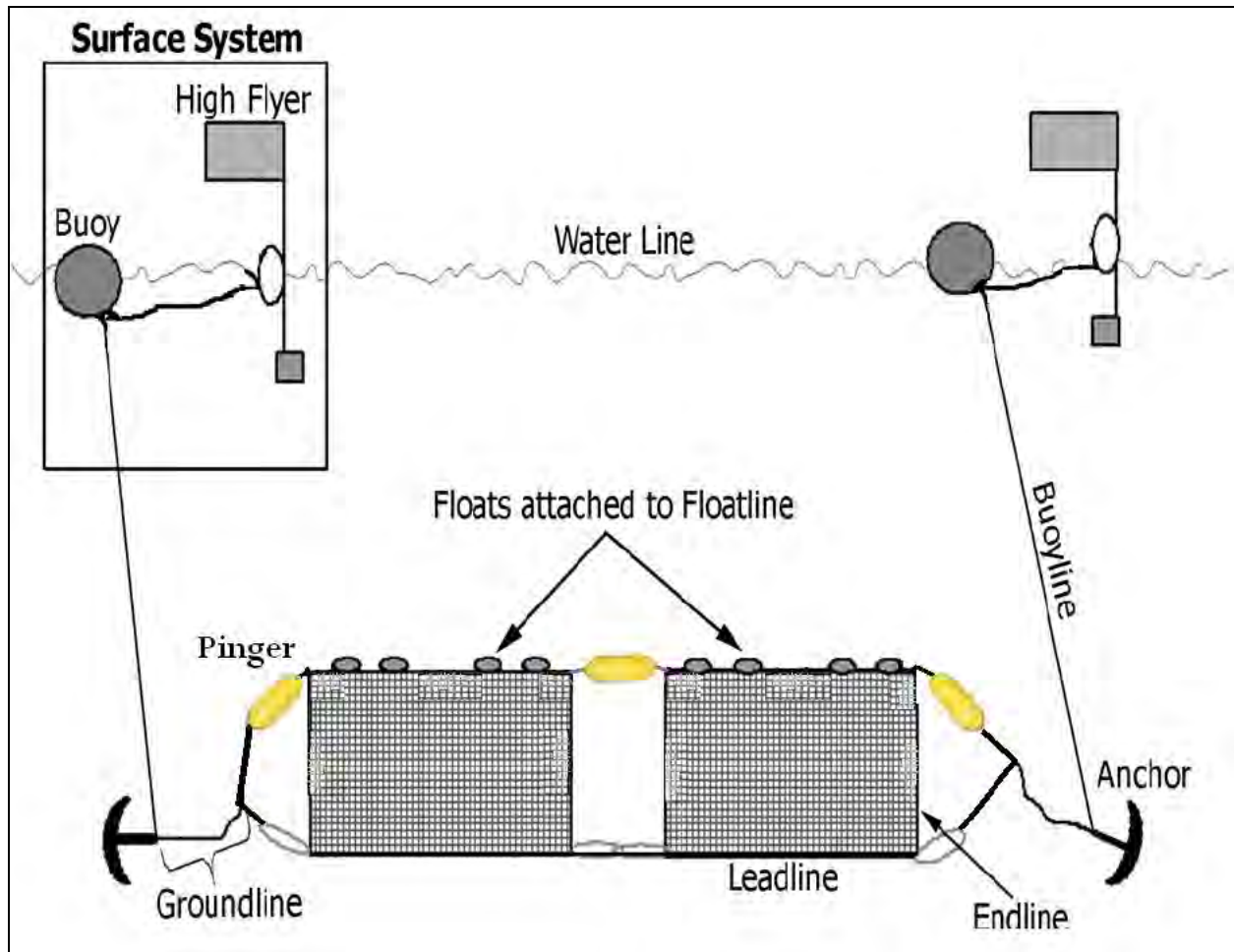
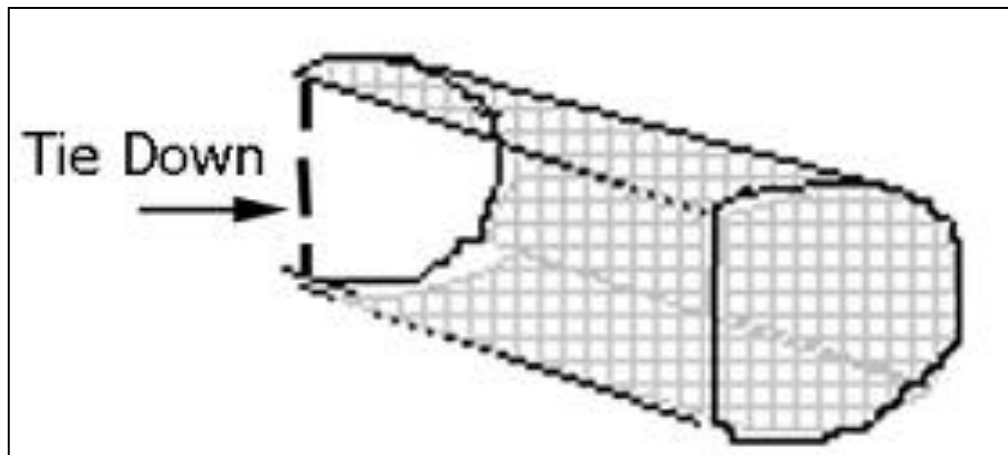


Figure 2. Tie Down Diagram



## GILLNET GEAR LOG

This log contains detailed questions about the gear fished. Complete a new log for each uniquely configured gear (as defined below) **hailed** during a trip. These unique configurations may be based on variables such as number of nets per gear, tie downs, etc. Any changes in these fields will require completion of a new Gillnet Gear Log. Number each gear configuration sequentially.

If the gear is set out and hauled more than once during a trip, do not complete a new Gillnet Gear Log for the multiple hauls. Rather, record on the Gillnet Haul Log which gear number(s) are being hauled. In addition, record any other information necessary to understand the manner in which the gear was hauled in COMMENTS.

If the vessel has two or more identical gears which are hauled separately, complete a separate Gillnet Gear Log for each individual gear.

This log should be used to describe all types of gillnet gear.

## DEFINITIONS

**Gillnet:** A vertical wall of netting, typically stretched between a weighted leadline on the bottom and a floatline, with or without floats, on the top to support it vertically in the water column.

**Bridles:** The trailing ends of the floatline and leadline on an individual net.

**Gear:** A gillnet, or series of gillnets connected by bridles, with or without spaces in between, commonly referred to as “the string”.

**Dropline:** A line that connects the floats on the water's surface to the mainline/floatline. Droplines are used along the entire string to suspend the gear in the water column.

**Tie down:** A line used between the floatline and the leadline as a way to create a pocket or bag of netting. It is the working height of the net, not to be confused with net height.

**Buoyline:** A line that connects the buoy(s) or high flyer(s) at the surface to the gear (anchor or net) fishing in the water below. A line that connects the gear to the vessel is not considered a buoyline.

**Groundline:** A line that connects a gillnet or gillnet bridle to an anchor. If no anchor is used, there is no groundline.

## HEADER INFORMATION

Fill out all Header information for all Gillnet Gear Logs. Gillnet Gear Logs are numbered independently of all other logs.

Please Note: The Gillnet Gear Log is a two-sided log that allows up to four (4) individual gears to be recorded. For a single trip, record all gear numbers in the spaces provided before using a second paper log.

### INSTRUCTIONS

Record in COMMENTS any calculations used to answer any of the following questions.

1. **GEAR CODE:** Indicate the type of gear fished by recording the appropriate three (3) digit code:
  - 100: Gillnet, Anchored, Sink
  - 105: Gillnet, Anchored, Float
  - 117: Gillnet, Drift, Sink
2. **GEAR NUMBER:** Record the number assigned to each uniquely configured gear hauled and for which characteristics are described. See the definition of gear in the introduction.
3. **NUMBER (#) OF NETS:** Record the **total** number of individual nets used in this gear.

The questions asked in this section describe a **single, average net**, from the many that may be put together to make up this gear. Since each gear is not always made up of uniform nets, provide an **average**, when necessary.

4. **NET LENGTH:** Record (in whole feet) the **average** horizontal distance of a single net on this gear, as measured along the floatline. This information should be obtained from the captain.

**NOTE:** If there is a space between two nets, **do not** include this distance in the net length.

5. **NET HEIGHT (endline):** Record (to the nearest tenth of a foot) the **average** height of a net in this gear. This value is the length of the endline on the end of a net where the meshes are attached. This information should be obtained from the captain.

**NOTE:** This value should reflect the fishing height of the net as it sits in the water. This value is not the tie down length.

**NOTE:** This value should not be a calculated height and is not a fully stretched measurement.

6. **TIE DOWN USED?:** Record whether tie downs are used in this gear by marking either the Y=Yes or N=No box.

7. **TIE DOWN LENGTH:** Record (to the nearest tenth of a foot) the average length of the tie downs used in this gear. This information should be obtained from the captain

### MESH SIZES

Complete either Mesh Size Range (field #8) OR Number of Nets at Each Mesh Size (fields #9 & #10). Do not complete both fields.

8. **MESH SIZE RANGE:** Record (to the nearest hundredth of an inch) the minimum and maximum mesh sizes used in this gear. This information should be obtained from the captain.

**NOTE:** Do not complete this field if you have completed fields #9 & #10.

9. **NUMBER OF NETS AT EACH MESH SIZE:** Complete the table by recording the number of nets, and their corresponding mesh size (to the nearest hundredth of an inch). This information should be obtained from the captain and recorded as an estimate.

**NOTE:** If this information is unavailable, complete MESH SIZE RANGE instead.

**NOTE:** If this information is obtained from the captain, make sure the value given is stretched length, not bar length. Stretched length is approximately twice the bar length.

Example 1: 1.25 in. mesh bar length, would equal approximately 2.50 in. mesh stretched.

Example 2: 3 nets at 6.25 inch mesh, 3 nets at 6.50 inch mesh.

10. **ACTUAL/ESTIMATED:** Indicate whether the net mesh size(s) recorded in NUMBER OF NETS AT EACH MESH SIZE (#9) is (are) an actual or estimated measurement(s) by marking the A=Actual or E=Estimated box.

**NOTE:** **Actual** mesh size measurements are obtained using calipers. Due to the fragile nature of gillnet meshes, monitors should not measure gillnet meshes with calipers. **Estimated** mesh size measurements should be obtained from the captain.

Example: If the at-sea monitor asks the captain the mesh size and he responds ‚6.25 inches,‘ the at-sea monitor would record 6.25 and check the ESTIMATED box.

11. **COMMENTS:** Record any additional information about this gear. Reference each comment with its corresponding field name.



**GILLNET GEAR LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMGGG**

ASM/TRIPID	
DATE LANDED mm/yy	/
PAGE #	__ of __

GEAR CODE <b>1</b>	GEAR # <b>2</b>	# OF NETS <b>3</b>	NET LENGTH <b>4</b> ft	NET HEIGHT <b>5</b> ft	TIE DOWN? Y <input type="checkbox"/> N <input type="checkbox"/> <b>6</b>	TIE DOWN LENGTH <b>7</b> ft
-----------------------	--------------------	-----------------------	---------------------------	---------------------------	--	--------------------------------

**MESH SIZES** (Fill out mesh RANGE **OR** MEASUREMENTS)

<b>RANGE (in.)</b>	<b>OR</b>	<b>MEASUREMENTS (in.)</b>			
MINIMUM <b>8</b> . ____		# NETS @	MESH SIZE	ACTUAL EST	
MAXIMUM ____ . ____		____ . ____	<b>9</b>	<b>10</b>	<input type="checkbox"/> <input type="checkbox"/>
		____ . ____		<input type="checkbox"/> <input type="checkbox"/>	
		____ . ____		<input type="checkbox"/> <input type="checkbox"/>	

COMMENTS  
**11**

GEAR CODE	GEAR #	# OF NETS	NET LENGTH	NET HEIGHT	TIE DOWN?	TIE DOWN LENGTH
<input type="text"/>	<input type="text"/>		ft	ft	Y <input type="checkbox"/> N <input type="checkbox"/>	ft

**MESH SIZES** (Fill out mesh RANGE **OR** MEASUREMENTS)

<b>RANGE (in.)</b>	<b>OR</b>	<b>MEASUREMENTS (in.)</b>			
MINIMUM		# NETS @	MESH SIZE	ACTUAL EST	
MAXIMUM		____ . ____			<input type="checkbox"/> <input type="checkbox"/>
		____ . ____		<input type="checkbox"/> <input type="checkbox"/>	
		____ . ____		<input type="checkbox"/> <input type="checkbox"/>	

COMMENTS

**GILLNET GEAR LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMGGG**

ASM/TRIPID	<b>A02002C</b>
DATE LANDED mm/yy	<b>10 / 10</b>
PAGE #	<b>1</b> of <b>1</b>

GEAR CODE <b>1 0 0</b>	GEAR # <b>0 1</b>	# OF NETS <b>10</b>	NET LENGTH <b>300</b> ft	NET HEIGHT <b>10 . 0</b> ft	TIE DOWN? Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	TIE DOWN LENGTH <b>3 . 0</b> ft
---------------------------	----------------------	------------------------	-----------------------------	--------------------------------	--	------------------------------------

**MESH SIZES** (Fill out mesh RANGE **OR** MEASUREMENTS)

<b>RANGE (in.)</b>	<b>OR</b>	<b>MEASUREMENTS (in.)</b>			
MINIMUM		# NETS	@	MESH SIZE	ACTUAL EST
_____ . _____		<b>10</b>		<b>10 . 0 0</b>	<input type="checkbox"/> <input checked="" type="checkbox"/>
MAXIMUM			_____ . _____	<input type="checkbox"/> <input type="checkbox"/>	
_____ . _____			_____ . _____	<input type="checkbox"/> <input type="checkbox"/>	

COMMENTS

GEAR CODE <b>1 0 0</b>	GEAR # <b>0 2</b>	# OF NETS <b>10</b>	NET LENGTH <b>300</b> ft	NET HEIGHT <b>10 . 0</b> ft	TIE DOWN? Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	TIE DOWN LENGTH _____ . _____ ft
---------------------------	----------------------	------------------------	-----------------------------	--------------------------------	--	-------------------------------------

**MESH SIZES** (Fill out mesh RANGE **OR** MEASUREMENTS)

<b>RANGE (in.)</b>	<b>OR</b>	<b>MEASUREMENTS (in.)</b>			
MINIMUM		# NETS	@	MESH SIZE	ACTUAL EST
<b>6 . 2 5</b>				_____ . _____	<input type="checkbox"/> <input type="checkbox"/>
MAXIMUM			_____ . _____	<input type="checkbox"/> <input type="checkbox"/>	
<b>10 . 0 0</b>			_____ . _____	<input type="checkbox"/> <input type="checkbox"/>	

COMMENTS

**GILLNET GEAR LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMGGG**

ASM/TRIPID	
DATE LANDED mm/yy	/
PAGE #	__ of __

GEAR CODE □ □ □	GEAR # □ □	# OF NETS	NET LENGTH ft	NET HEIGHT ____ . ____ ft	TIE DOWN? Y <input type="checkbox"/> N <input type="checkbox"/>	TIE DOWN LENGTH ____ . ____ ft
--------------------	---------------	-----------	------------------	------------------------------	---	-----------------------------------

**MESH SIZES** (Fill out mesh RANGE **OR** MEASUREMENTS)

<b>RANGE (in.)</b>	<b>OR</b>	<b>MEASUREMENTS (in.)</b>			
MINIMUM ____ . ____		# NETS @	MESH SIZE	ACTUAL EST	
MAXIMUM ____ . ____		____ . ____	____ . ____	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS



GEAR CODE □ □ □	GEAR # □ □	# OF NETS	NET LENGTH ft	NET HEIGHT ____ . ____ ft	TIE DOWN? Y <input type="checkbox"/> N <input type="checkbox"/>	TIE DOWN LENGTH ____ . ____ ft
--------------------	---------------	-----------	------------------	------------------------------	---	-----------------------------------

**MESH SIZES** (Fill out mesh RANGE **OR** MEASUREMENTS)

<b>RANGE (in.)</b>	<b>OR</b>	<b>MEASUREMENTS (in.)</b>			
MINIMUM ____ . ____		# NETS @	MESH SIZE	ACTUAL EST	
MAXIMUM ____ . ____		____ . ____	____ . ____	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS

## GILLNET HAUL LOG

This log contains detailed questions about the setting and hauling of gear, and the haul's catch. Complete a new log after each hauling of gear. If you feel that you cannot go on deck for weather related safety reasons, record as much information on this log as possible (i.e. header information, weather, times, positions, etc.).

The Species Information section of this log should be used to record catches of all species, debris and shells according to the sampling protocol being followed on that particular trip.

Complete Fish Sampling Trips: The monitor will record complete catch data, i.e. both kept and discarded information, for all hauls on "complete fish sampling" gillnet trips. All hauls on these trips will be recorded as observed, and all kept and discarded catch recorded. In addition, biological sampling of the entire catch will occur after **every haul**, with an emphasis placed on sampling discarded species.

Limited Fish Sampling Trips: At-sea monitors do not cover these types of gillnet trips.

Set Only Trips: Trips in which only the setting of gear occurs (Trip Extension „E”). No gear is hauled, therefore no catch is retained. These trips should be recorded as „Set Only” trips and are not considered to be an „Aborted Trip”.

If any pelagic species (i.e. swordfish, billfish, large tuna species, sharks, etc.), sturgeons, rays or tagged fish are caught by the gear, an Individual Animal Log must be completed to provide information on each animal. The Gillnet Haul Log will serve as a cover sheet for any Individual Animal Log(s) corresponding to this haul. All marine mammals, sea turtles and sea birds caught by the gear must be recorded on an Incidental Take Log. See Appendix A: Species Names Corresponding Logs for a list of species and the log(s) on which to record them.

If there are insufficient lines on one log for all species caught in this haul, continue listing species on an additional Gillnet Haul Log, making sure to complete all of the Header Information and HAUL NUMBER on each log.

### DEFINITIONS

**Haul Begin:** Hauling equipment put into gear or retrieval of gear commences, i.e. first piece of gillnet gear comes onboard (usually the high flyer or buoy).

**Haul End:** The last of gear is completely retrieved and onboard the vessel (i.e., the last highflyer is brought onboard the vessel).

**Observed Haul:** A haul where all of the catch is recorded, regardless of whether it is kept or discarded.

**Unobserved Haul:** A haul where complete kept and discard information from the haul is not collected. Discard data is collected only for incidental takes and those species that are recorded on the Individual Animal Log. A haul may be unobserved because a monitor is below deck for weather related safety reasons, illness, etc. **Do not record any other discard information for unobserved hauls.** Record all kept catch information. This should be obtained by the captain.

### **HEADER INFORMATION**

Fill out all Header information for all Gillnet Haul Logs. Gillnet Haul Logs are used as a cover page to all haul related information on the haul level. Number all logs per haul as follows:

1. Gillnet Haul Log
2. Individual Animal Log (when present)
3. Length Frequency Log
4. Discard Log (when present)

### **INSTRUCTIONS**

1. **GEAR CODE:** Indicate the type of gear fished by recording the appropriate three (3) digit code as listed in Appendix D: Gear Codes and Gear Names.
2. **HAUL NUMBER:** Record the haul number each time gear is hauled on this trip. Start with "001" for the first haul, and continue numbering sequentially for the following hauls.
3. **GEAR NUMBER:** Record the gear number used for this haul as uniquely identified on the appropriate Gillnet Gear Log(s).
4. **HAUL OBSERVED?:** Record whether this haul is observed by marking either the Y=Yes or N=No box.

**NOTE:** Do not record any discard information for unobserved hauls.

5. **INCIDENTAL TAKE?:** Record whether a marine mammal, sea turtle, or sea bird is caught by the gear on this haul by marking either the Y=Yes or N=No box.
6. **WEATHER CONDITION:** Indicate the weather at the beginning of the haul by recording the most appropriate weather condition as listed in Appendix K: Weather Conditions.
7. **WAVE HEIGHT:** Record, in whole feet, the wave height at the beginning of this haul. If the wave height is less than six inches, record "0".

**NOTE:** This is **not** a range.

Example: If the wave height at the beginning of the haul is 6-8 feet, record an average height of 7 feet.

8. **GEAR CONDITION CODE:** Indicate the condition of the gear at haul back, even if this was the condition of the gear when set, by recording the most appropriate three digit code listed below, and in Appendix E: Gear Condition Codes and Gear Description. See Table 1.

**Table 1: Gillnet Gear Condition Codes and Gear Description**

GEAR CONDITION CODE	DESCRIPTION
000	Unknown.
210	No gear damage, or very few small, scattered holes
220	Small number of torn meshes, not exceeding 25% of any one net, each net may be torn slightly
230	Less than 50% of the nets have less than 50% of the meshes torn
240	50% or more of the nets have less than 50% of the meshes torn
250	Less than 50% of the nets are obstructed by a large object
260	50% or more of the nets are obstructed by a large object
270	Less than 50% of the nets have 50% or more of the meshes torn
280	50% or more of the nets have 50% or more of the meshes torn
290	Nets in the string totally balled up
990	Other, specify in COMMENTS

9. **TARGET SPECIES 1:** Indicate the principal species, or species group sought in this haul by recording the most appropriate and specific species name possible as listed in Appendix A: Species Names and Corresponding Tabs/Logs. This information must be obtained from the captain before the gear is hauled, and **not** based on the results of this haul's catch.

Examples: Atlantic cod  
Monkfish  
Summer Flounder

10. **TARGET SPECIES 2:** If a secondary species is targeted in this haul, record the most appropriate and specific species name possible as listed in Appendix A: Species Names and Corresponding Tabs/Logs. This information must be obtained from the captain before the gear is hauled, and **not** based on the results of this haul's catch. If no secondary species is targeted leave this field blank.

**HAUL BEGIN**

11. **HAUL BEGIN DATE:** Record the month, day, and year that the haul begins based on local time (MMDDYY).
12. **HAUL BEGIN TIME:** Record the local time, using the 24 hour clock (0000-2359), that this haul begins, i.e. when the first component of the gear is retrieved (usually when the highflyer comes onboard).
13. **BEGIN LATITUDE/ LONGITUDE:** Record the latitude and longitude location, to the **tenth of a minute**, where the haul begins. If the latitude and longitude location is given in seconds, convert them to tenths of minutes. If latitude and longitude positions are not available, record the Statistical Area. See Appendix F: Charts.

**NOTE:** LORAN stations and bearings are not acceptable.

**NOTE:** The CalPos Program on the iPAQ should be used to convert LORAN stations to latitude/longitude locations.

**NOTE:** See Appendix M: Conversion Tables for a list of second ranges and corresponding conversions to tenths of minutes.

14. **STATISTICAL AREA:** If the begin latitude and/or longitude cannot be obtained, record the Statistical Area. This field should be filled out only when latitude/longitude cannot be obtained.

**NOTE:** See Appendix F: Charts to determine the Statistical Area.

**NOTE:** You may also use the CalPos program on the iPAQ to determine the Statistical Area.

### **HAUL END**

15. **HAUL END DATE:** Record the month, day, and year that the haul ends based on local time (MMDDYY).

16. **HAUL END TIME:** Record the local time, using the 24 hour clock (0000-2359), that this haul ends, i.e. when the gear is completely retrieved and onboard the vessel.

17. **END LATITUDE/ LONGITUDE:** Record the latitude and longitude location, to the **tenth of a minute**, where the haul ended. If the latitude and longitude location is given in seconds, convert them to tenths of minutes. If latitude and longitude positions are not available, record the Statistical Area. See Appendix F: Charts.

**NOTE:** LORAN stations and bearings are not acceptable.

**NOTE:** The CalPos Program on the iPAQ should be used to convert LORAN stations to latitude/longitude locations.

**NOTE:** See Appendix M: Conversion Tables for a list of second ranges and corresponding conversions to tenths of minutes.

18. **STATISTICAL AREA:** If the end latitude and/or longitude cannot be obtained, record the Statistical Area. This field should be filled out only when latitude/longitude cannot be obtained.

**NOTE:** See Appendix F: Charts to determine the Statistical Area.

**NOTE:** You may also use the CalPos program on the iPAQ to determine the Statistical Area.

**MORE GILLNET**

19. **NUMBER NETS HAULED:** Record the **total** number of nets that are hauled back from this string, regardless of how many nets were originally set. If a net is partially hauled, round this number to the nearest whole net.

Example: If 200 ft of a 300 ft net is hauled, record one net hauled.

**NOTE:** Record a zero (0) if less than half of one net of a string is hauled and there is NO catch. Record a one (1) if less than half of one net of a string is hauled and there is catch.

20. **NUMBER (#) PINGERS HAULED:** Record the **total number** of pingers hauled on the gear, regardless of how many pingers were originally set.

**NOTE:** If pingers were placed on the gear during the set, and no pingers are hauled on the gear record a zero „0”. Do not leave this field blank.

If no pingers were placed on the gear during the set, leave this field blank.

**NOTE:** If gear is partially hauled, record the number of pingers only on the portion of gear hauled.

**NOTE:** This number should reflect the number of these devices on the gear regardless of whether or not it is believed these devices are actually working. Information of this nature should be recorded in the COMMENTS.

21. **SOAK DURATION:** Record (to the nearest tenth of an hour) the amount of time that the gear for this haul is in the water fishing. This is the amount of time from when the string is secured to an anchoring device, until the retrieval of gear commences (Haul Begin). If the gear set was not witnessed, obtain this time from the captain. If the set is witnessed, calculate the soak duration.

22. **SPECIES NAME:** Record the **complete** common name of each species or debris item caught in this haul as listed in Appendix A. Species Names and Corresponding Tabs/Logs. Species should be separated by fish disposition code and by dressed vs. round.

Examples: Atlantic Cod, Kept (100) round weight  
Atlantic Cod, Kept (100) dressed weight  
Atlantic Cod, Discarded (012)  
Summer flounder  
Debris, Fish Gear

23. **POUNDS:** Record the dressed or round, actual or estimated weight for each caught species listed in SPECIES NAME. Record this weight in the most accurate form possible, i.e. if a species is gutted prior to weighing, record a dressed weight for this species. Actual weights should be recorded whenever possible.

**NOTE:** Actual weights are recorded to the nearest tenth of a pound.



Estimated weights greater than one pound are recorded to the nearest whole pound. Estimated weights less than one pound are recorded to the nearest tenth of a pound.

**NOTE:** Kept is defined as brought on board the vessel and retained for market or consumptive purposes.

**NOTE:** If a fish is "upgraded" or "high graded", and a previously kept fish is discarded and replaced with one that is larger (or of higher quality/value), record the discarded animal(s) and POUNDS discarded on the Haul Log corresponding to the haul in which the animal(s) was (were) originally caught, and code it 062 for FISH DISPOSITION. Be sure to subtract the weight of the animal(s) from the original POUNDS kept record. Upgrading may result in dressed discard weights. Upgrading is typically done with swordfish and tuna, but may also occur with other fish species.

**NOTE:** When a fish is discarded by the vessel, but retained whole by the observer, for scientific purposes, i.e. species identification, record the discarded fish weight next to the correct species name, and code it 007 for FISH DISPOSITION.

24. **DRESSED OR ROUND:** Indicate whether the weight recorded in POUNDS is a dressed or round weight by recording the appropriate letter code:

D = Dressed.

R = Round.

**NOTE:** Shark fins, skate wings, monkfish livers, and fish chunks should be coded "D" for dressed.

**NOTE:** Dressed and round weights for the same species and fish disposition reason should be recorded as separate species records.

Example: The monitor is unable to weigh all of the kept cod before the crew begins to dress them. The monitor obtains actual weights for all undressed cod and actual weights for the remaining dressed cod. The monitor will record the weight for the round/actual cod and dressed/actual cod separately.

**NOTE:** For species coded ,poor quality, previously discarded fish' (039), record the species as ,Fish, nk' in the SPECIES field, record the weight in the POUNDS field, ,U' in the DRESSED/ROUND field, and record the species name in the COMMENTS field (i.e., Fish, nk = monkfish head).

25. **FISH DISPOSITION CODE:** Indicate the disposition of each species listed in SPECIES NAME by recording the most appropriate three digit code listed in Appendix B: Fish Disposition Codes.

**NOTE:** Kept is defined as brought onboard the vessel and retained for market or consumptive purposes.

**NOTE:** When a fish is discarded by the vessel, but retained whole by the monitor, for scientific purposes (e.g., species identification) record the discarded fish weight separately next to the correct species name, and select "007" as the fish disposition.

**NOTE:** If more than one fish disposition applies to a species, separate the species into two or more lines, and record the appropriate weights and fish disposition for each. However, if there is one overriding fish disposition code for all animals of a species group, do not attempt to break this group into smaller discard reason groups.

**Exception:** American lobster should be categorized into specific disposition codes, i.e. (022) v-notch; (023) soft-shelled; (024) with eggs, etc.

Examples:

- a. All Atlantic wolffish caught is discarded because "Regulations prohibit any retention, including no permit" (025). Therefore, any „undersized’ wolffish are still recorded as (025).
- b. Of the 500 lbs of Summer Flounder discarded
  - 400 lbs are discarded because they are of poor quality due to hagfish damage (036)
  - 100 lbs are discarded because regulations prohibit their retention because they are too small (012)

26. **ESTIMATION METHOD:** Record the method used to estimate the catch weight of each species (including debris) by recording the appropriate number code: See Table 2.

**Table 2:** Estimation Method Codes

<b>ESTIMATION METHOD CODE</b>	<b>DESCRIPTION</b>
01	Actual
02	Volume to Volume
03	Basket or Tote Count
04	Captain’s Estimate
05	Tally
06	Visually Estimated (by the monitor)
07	Cumulative Sum
98	Combination (Comment on methods used)
99	Other (Comment)

**NOTE:** Actual Weight: Species weighed with the NMFS issued scale.

**NOTE:** If the haul is unobserved but kept information is obtained from the captain, then CAPTAIN’S ESTIMATE (04) should be recorded.

**NOTE:** Visual estimates (06) should rarely be used except when estimating very large objects or when accounting for objects such as seaweed attached to fishing gear or very fine and unevenly distributed items such as clay and sand.

27. **COMMENTS:** Record any additional information regarding this haul, i.e. unusual species, levels of bycatch, reasons for unobserving a haul, etc.

**GILLNET HAUL LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMGGH ASMHAU ASMSPP**

ASM/TRIPID	
DATE LANDED mm/yy	/ /
PAGE #	of

GEAR CODE			HAUL #		GEAR NUMBER			HAUL BEGIN			HAUL END		
1			2		3			HAUL DATE (mm/dd/yy)			HAUL DATE (mm/dd/yy)		
/ 11 /								/ 15 /					
HAUL OBSERVED?				INC TAKE?				BEGIN HAUL TIME			END HAUL TIME		
YES <input type="checkbox"/> NO <input type="checkbox"/>				YES <input type="checkbox"/> NO <input type="checkbox"/>				12			16		
4			5										
WEATHER CONDITION					WAVE HEIGHT (ft)			LATITUDE/LONGITUDE (DD MM.M)					
6					7			BEGIN LATITUDE		END LATITUDE			
8								13		17			
GEAR CONDITION CODE													
TARGET SPECIES 1 (This Haul)								BEGIN LONGITUDE		END LONGITUDE			
9													
TARGET SPECIES 2 (This Haul)								(STAT AREA)*		(STAT AREA)*			
10								14		18			
COMMENTS							* Enter only if latitude/longitude coordinates are not available			MORE GILLNET			
27										# NETS HAULED			
										19			
										# PINGERS HAULED			
										20			
										SOAK DURATION (hrs)			
										21			
SPECIES NAME		POUNDS	D/R	DISP CODE	EST. METH.	SPECIES NAME		POUNDS	D/R	DISP CODE	EST. METH.		
22		23	24	25	26								

**GILLNET HAUL LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMGGH ASMHAU ASMSPP**

ASM/TRIPID	<b>A02002C</b>
DATE LANDED mm/yy	<b>10 / 10</b>
PAGE #	<b>1</b> of <b>2</b>

GEAR CODE			HAUL #			GEAR NUMBER			HAUL BEGIN					HAUL END										
1 0 0			0 0 1			0 1			HAUL DATE (mm/dd/yy)					HAUL DATE (mm/dd/yy)										
									10 / 04 / 10					10 / 04 / 10										
HAUL OBSERVED?						INC TAKE?						BEGIN HAUL TIME					END HAUL TIME							
YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>						YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>						13 : 50					15 : 30							
WEATHER CONDITION						WAVE HEIGHT (ft)						LATITUDE/LONGITUDE (DD MM.M)												
PARTLY CLOUDY						5						BEGIN LATITUDE					END LATITUDE							
GEAR CONDITION CODE												41 25.5					41 27.3							
210												BEGIN LONGITUDE					END LONGITUDE							
TARGET SPECIES 1 (This Haul)												71 26.4					71 27.3							
MONKFISH												(STAT AREA)*					(STAT AREA)*							
TARGET SPECIES 2 (This Haul)																								
WINTER SKATE																								
COMMENTS										* Enter only if latitude/longitude coordinates are not available										MORE GILLNET				
																				# NETS HAULED				
																				15				
																				# PINGERS HAULED				
																				14				
																				SOAK DURATION (hrs)				
																				24 . 0				
SPECIES NAME		POUNDS	D/R	DISP CODE	EST. METH.	SPECIES NAME		POUNDS	D/R	DISP CODE	EST. METH.	SPECIES NAME		POUNDS	D/R	DISP CODE	EST. METH.							
MONKFISH (TAILS)		59	D	100	01																			
MONKFISH (LIVERS)		12	D	100	01																			
MONKFISH		350	R	100	03																			
WINTER SKATE (WINGS)		35	D	100	04																			
LITTLE SKATE		100	R	001	03																			
JONAH CRAB		50	R	001	05																			
AMERICAN LOBSTER		7	R	100	01																			
SPONGE, NK		3	R	001	06																			
MONKFISH		24	R	012	01																			

**GILLNET HAUL LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMGGH ASMHAU ASMSPP**

ASM/TRIPID	
DATE LANDED mm/yy	/ /
PAGE #	of

GEAR CODE			HAUL #			GEAR NUMBER			HAUL BEGIN				HAUL END						
[ ][ ][ ]			[ ][ ][ ]			[ ][ ]			HAUL DATE (mm/dd/yy)				HAUL DATE (mm/dd/yy)						
/ /			/ /			/ /			/ /				/ /						
HAUL OBSERVED?						INC TAKE?						BEGIN HAUL TIME				END HAUL TIME			
YES <input type="checkbox"/> NO <input type="checkbox"/>						YES <input type="checkbox"/> NO <input type="checkbox"/>						:				:			
WEATHER CONDITION						WAVE HEIGHT (ft)						LATITUDE/LONGITUDE (DD MM.M)							
GEAR CONDITION CODE						BEGIN LATITUDE				END LATITUDE									
TARGET SPECIES 1 (This Haul)						BEGIN LONGITUDE				END LONGITUDE									
TARGET SPECIES 2 (This Haul)						(STAT AREA)*				(STAT AREA)*									
COMMENTS												* Enter only if latitude/longitude coordinates are not available				MORE GILLNET			
												# NETS HAULED							
												# PINGERS HAULED							
												SOAK DURATION (hrs)							
SPECIES NAME					POUNDS	D/R	DISP CODE	EST. METH.	SPECIES NAME					POUNDS	D/R	DISP CODE	EST. METH.		

## TRAWL FISHERY INFORMATION and BACKGROUND

### OTTER TRAWL

The otter trawl is an active fishing gear that is towed through the water column targeting bottom and pelagic species. It is constructed of twine webbing so that when fully assembled and rigged, it will take the shape of a funnel while towed along the bottom of the ocean. Floats on the headrope and a weighted footrope are used to keep the lead opening, or the mouth, of the net opened vertically. To spread the mouth horizontally so that it will cover the largest possible area, each wing is fastened to an “otter” board or trawl “door”, via ground cables. Each door is fitted with chains to attach the ground cables, which come from the net. The doors are also attached to the towing vessel with steel cables referred to as wires or warps. The resistance of the water to the forward motion of the doors forces them to pull in opposite directions according to their orientation, thus keeping the mouth of the net opened. The codend is the bag at the terminus of the net comprised of heavy twine. The fish collect in the codend as the net is towed along the bottom at a typical speed of 2 – 5 knots. After a period of time, the net is ‘hauled back’ using hydraulic winches. The length of the tow depends on vessel size, fishery and area fished, but is usually a few hours. After the net is hauled on to the fishing vessel, the catch is dumped on deck by releasing the codend or pucker clip which holds the codend closed while towing.

## TRAWL SAMPLING PROTOCOLS

### BIOLOGICAL SAMPLING

Biological sampling involves collecting data from the catch to determine the effect of fishing effort on catch size and species distribution. These data are also useful in establishing length-weight relationships, aging, migration patterns, food habits and other valuable biological information.

Biological sampling consists of collecting the following information from both the kept and discarded catch:

- Actual weights
- Length frequencies

Priorities for collecting length frequencies in the otter trawl fishery are listed in [Table 1b: Length frequency Sampling Priorities in the At-sea Monitoring Biological Sampling Manual](#) (pg. 13). It is preferred to obtain complete samples of higher priority species than to get small samples from a variety of species. If it is not possible to biologically sample on a particular haul the reason(s) should be documented in the COMMENTS section of the corresponding Haul Tab/Log.

The sampling of all incidentally taken protected species as well as the species listed under the category of “Individual Animal” should be sampled according to protocol in the event they are caught in the gear and/or brought onboard and the appropriate tabs/logs completed.

### SPECIES IDENTIFICATION

It is necessary for the monitor to identify all organisms when sorting through the entire catch or the subsample. If the identification of a species is difficult the monitor should take multiple pictures of the specimen; record the size and distinguishing characteristics. The monitor should send in a note with their trip data including the photo and ID characters for species ID verification. Whenever possible the monitor

should try to send in the entire specimen, if the animal is dead. Damaged and decomposed fish should be identified, weighed, and recorded as part of the catch but length frequencies should not be taken from these fish.

### **SAMPLING STATION**

The establishment of a proper sampling station is the foundation for effective and accurate sampling. An excellent sampling station is safe and reasonably out of the way of the crew's operations. Since a monitor is not required for every trip, being out of the way will often require some compromise between the crew and monitor. For new monitors only, it is recommended on multi-day trips that for the first haul the monitor watch how operations pan out on the vessel. This will facilitate the process of choosing an appropriate sampling station. The monitor must have access to the catch (kept and discarded species) as well as have a clear and unobstructed view of the crew's operations.

Before sampling the monitor must determine:

- What are this haul's sampling priorities
- Where to collect the samples
- What sampling biases could occur during collection and how to minimize them
- How to collect the samples
- How to work up the samples

Sampling of all species is required with the order of sampling subject to the priorities for the fishery, statistical area and specific program as defined in Table 1b in the At-sea Monitoring Biological Sampling Manual.

The monitor must be present during the sorting of catch to ensure sampling is unbiased. In some fisheries it may be in the vessels interest to discard species prior to the monitor examining or sampling them especially when dealing with protected species or species with strict regulations. This behavior introduces bias within the monitor's data and does not accurately represent the fishing operations the monitor is there to observe. It is the monitor's responsibility to inform the captain and crew of their duties before fishing operations commence. If interference of a monitor's work occurs by the captain or crew this activity must be documented in the monitor's field diary and by filling out the online Incident Report form, which can be found at:

[http://www.nefsc.noaa.gov/fsb/Misc/FSB\\_Incident\\_Form.pdf](http://www.nefsc.noaa.gov/fsb/Misc/FSB_Incident_Form.pdf)

### **OTTER TRAWL SAMPLING**

In the bottom trawl fisheries the entire catch is typically available all at once after the codend is released and dumped on deck (the catch is available temporally when sorted with a conveyor belt). The monitor's sampling begins once the catch is on deck.

In the otter trawl fishery every haul should be observed (i.e. complete catch information for kept and discarded species is recorded) while on day trips. When fishing is conducted around the clock with short haul periods (i.e., <1-2 hrs.), monitors should observe as many hauls as possible, however, it is required to observe a minimum of 75% of the hauls. Biological sampling (e.g. length frequencies) should occur at least after every other observed haul. Time and catch size permitting, every haul should be observed.

**TWO TYPES OF SAMPLING:**

1. **Complete sampling:** when the catch size, time between hauls, weather, and crew activity enable the monitor to collect actual weights for all species as well as length frequencies according to priority targets.
2. **Partial haul sampling:** occurs when the above conditions require the monitor to subsample the catch or use other catch estimation tools in order to provide an accurate estimation of species composition for the entire catch. Other catch estimation tools might include basket or tote counts in addition to stroke tally methods to provide accurate estimations.

**OBSERVED vs. UNOBSERVED HAULS**

The traditional definition of an **observed haul** is one where all of the catch is recorded by species, weight, and fish disposition code, regardless of whether it is kept or discarded. An **unobserved haul** is defined as one where complete discard and kept information from the haul is not collected. The traditional definition of “observed” also has an associated meaning that the monitor was on duty and fulfilled their duties.

**NOTE:** Only kept species are recorded for unobserved hauls. Kept information should be obtained from the captain. Discards are not recorded for unobserved hauls.

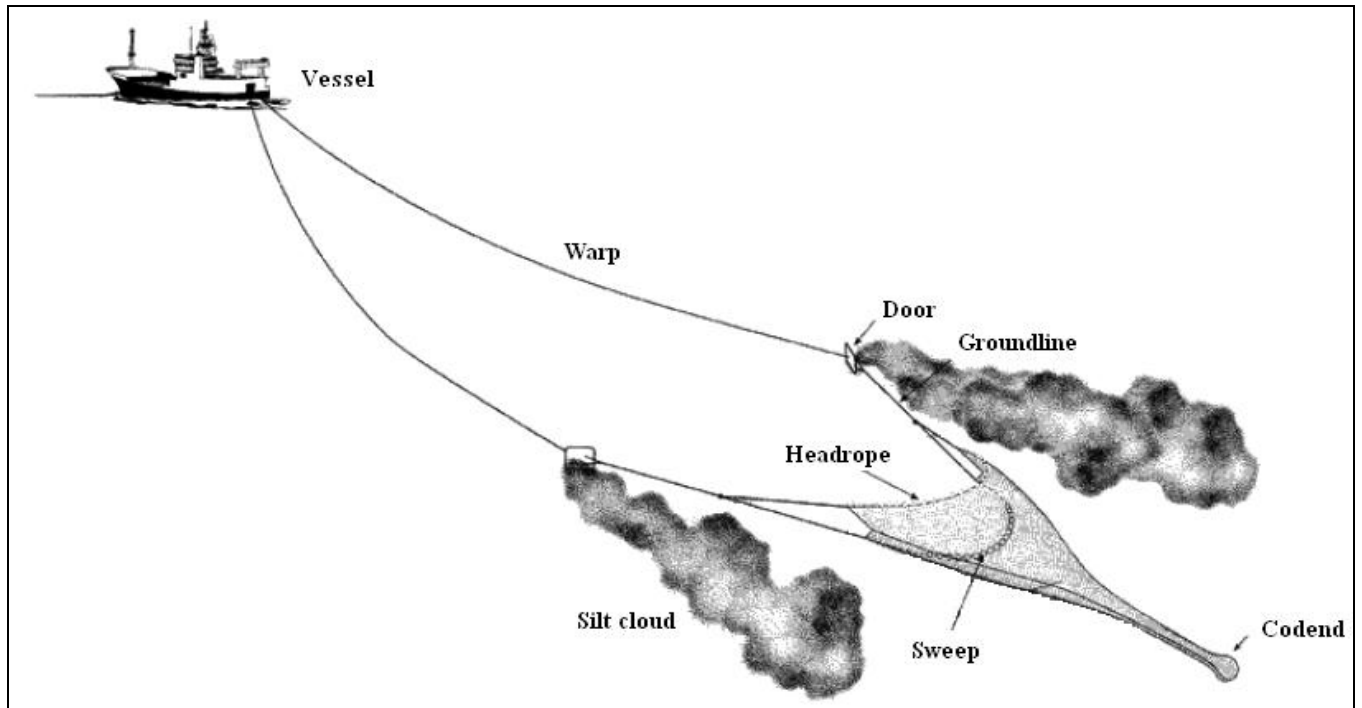
**NOTE:** Discard information for incidental takes and IAL species should be recorded on unobserved hauls.

**INCIDENTAL TAKES:**

Monitors should follow regular priorities for incidental takes if they occur. Photos are required and detailed comments on the situation should be documented. Sampling protocols listed in the Biological Sampling Manual should be followed.



**Figure 1:** Bottom Otter Trawl Configuration



## TRAWL GEAR LOG

This log contains detailed questions about the gear fished. Complete a new log for each gear **hailed** during a trip. These unique configurations may be based on changes made to the mesh size in the codend, etc. Any changes in these fields require the completion of another Trawl Gear Log. Do not solely use the COMMENTS section to explain these differences among gears. Number each gear configuration sequentially in the order hauled.

If the gear is set out and hauled more than once during a trip, do not complete a new Trawl Gear Log for the multiple hauls. Rather, record on the Trawl Haul Log the gear number for the gear being hauled. In addition, record any other information necessary to understand the manner in which the gear was set/hauled in COMMENTS.

If two or more identical gears are used, assign each gear its own gear number and record them as separate gears on the Trawl Gear Log with 10 random codend mesh size measurements and 10 random liner mesh measurements (if present) collected for each codend/liner. See the trawl definitions below and GEAR NUMBER(S) (#1) for more information on defining and numbering gears.

## DEFINITIONS

**Otter Trawl:** A device constructed of twine webbing so that when fully assembled and rigged, it will take the shape of a huge funnel while being towed. To spread the mouth so that it will cover the largest possible area, each wing is fastened to a trawl “door”. Each door is fitted with chains to be attached to a towing cable from the trawling vessel. The resistance of the water to the forward motion of the doors, as they are towed at different angles, forces them to pull in opposite directions and thus keep the mouth of the net open.

**Codend:** Two trapezoidal pieces of netting made with heavy twine. The top edges are joined to the narrow end of the bellies, the selvages are laced together and a codline or codend clip is woven through the lower meshes for securing the section into a bag where the fish are held until released onboard the trawler. The codend is the section of a trawl net most often affected by mesh size regulations. The size of the codend may depend on the captain’s preference, species being targeted and regulations.

**Codend Liner:** A section of small mesh net sewn into the inside of the codend bag. The purpose of which is to restrict the escapement of smaller species, i.e. squid.

**Escape Outlet:** An opening in the net to facilitate escape of fish, sea turtles, marine mammals, etc.

**Gear:** A trawl commonly referred to as “the net”. This includes ground cables, headrope, footrope, floats, weights, netting and any attached equipment.

**New Gear:** Anytime a field on the gear log changes, a new gear number is assigned.

Example 1: A captain decides to change out the codend. The monitor must then assign a new gear number to the new gear, complete a new gear log, and collect 10 random codend measurements from the new codend. This new gear number must correspond to all hauls using this new gear.

Example 2: A captain is using a net with an escape outlet (Escape Outlet=Y). He has the crew sew the escape outlet shut (Escape Outlet=N). The monitor must then assign a new gear number,

and complete a new gear log. This new gear number must correspond to all hauls using this new gear.

**NOTE:** If no other changes have been made and the escape outlet is later reopened, the monitor would use the original gear number assigned to that gear when the escape outlet was in use.

### HEADER INFORMATION

Fill out all Header information for all Trawl Gear Logs used. Trawl Gear Logs are numbered independently from all other logs.

Please Note: The Trawl Gear Log is a two-sided log that allows up to four (4) individual gears to be recorded. For a single trip, record all gear numbers in the spaces provided before using a second paper log.

### INSTRUCTIONS

1. **GEAR CODE:** Indicate the type of gear fished by recording the appropriate three (3) digit code as listed in Appendix D: Gear Codes and Gear Names.
  
2. **GEAR NUMBER:** Record the number assigned to *each* uniquely configured gear hauled and for which characteristics are described. See the definition of gear in the introduction. Anytime a field on the gear log changes, a new gear number is assigned. See examples of this under New Gear in the definitions section of this section.
  
3. **NET NAME:** Record the most specific name of the net. If the captain does not know the net name, record UNKNOWN and record information on characteristics (e.g.; short vertical opening, sweep gear not heavy) that help to identify the net in the COMMENTS section. See Appendix I: Net Name and Net Type. See also Table 1.

Example: Bottom Otter Trawl.

**Table 1:** Net Names for Otter Trawls

NET NAME	ADDITIONAL INFORMATION
Beam Trawl	Consists of a cone-shaped body ending in a bag or codend. The horizontal opening of the net is provided by a beam, made of wood or metal. The vertical opening is provided by two hoop-like trawl heads ("shoes") that are mostly made from steel. No hydrodynamic forces are needed. Typically targets flatfish or shrimp. Often equipped with tickler chains to disturb the fish from the seabed.
Bottom Trawl	Net fishes directly on the bottom. Trouser, Beam and Twin Trawl should take precedence over Bottom Trawl.
Other	A net that can be considered to be completely different than other nets listed. Must provide descriptive information concerning the gear in the COMMENTS section.
Pelagic Trawl	Net that fishes in the water column, and does not come in contact with the ocean bottom.

NET NAME	ADDITIONAL INFORMATION
Semi-Pelagic Trawl	Net that fishes in the water column just above the bottom, but may come in contact with the ocean bottom occasionally.
Trouser Trawl	A research trawl net with a pair of codends (each constructed from a different size mesh and/or shape of mesh) used in mesh selectivity experiments. The vertical separator panel is intended to separate the flow of fish at the trawl mouth before the fish can detect the difference between the two codends.
Twin Trawl	A combination of 2 distinct trawl nets (port and starboard) deployed and fished at the same time. In order to be considered a twin trawl, both nets must be fishing at the same time. These nets typically fish on the bottom.
Unknown	A net without a common name. Must provide descriptive information concerning the gear in the COMMENTS section.

4. **NET TYPE:** Record the name of the net type used. This information may be obtained from the captain. If the net has multiple names, select the most specific net type. See Table 2.

Examples: Ruhle Trawl  
Haddock Separator Trawl, 4 seam  
Flatfish net, 2 seam

**Table 2:** Net Types for Otter Trawls

NET TYPE	ADDITIONAL INFORMATION
Unknown	Must provide descriptive information concerning the gear in the COMMENTS section.
2-Seam Trawl	<ul style="list-style-type: none"> <li>Made of two panels and mesh, a top and a bottom, which are laced along the two sides this is known as the gore line or seam</li> <li>Will maintain geometric shape</li> <li>Less material to make, therefore less expensive</li> </ul>
4-Seam Trawl	<ul style="list-style-type: none"> <li>Made of four panels of twine (top, bottom and two sides) that are placed together to form four gore lines or seams</li> <li>Maintains a geometric shape</li> <li>Generally has a high vertical lift</li> </ul>
Balloon Trawl Balloon Trawl, 2-Seam Balloon Trawl, 4-Seam	<ul style="list-style-type: none"> <li>Made of a lighter net material</li> <li>Has a high mouth</li> <li>Has floats attached to the headrope so that the sweep floats just above the rocky bottom</li> <li>2-Seam or 4-Seam</li> </ul>
Box Trawl, 4-Seam	<ul style="list-style-type: none"> <li>Used to target squid and silver hake and is always a 4-Seam trawl</li> <li>Typically a high rise net, in the shape of a box</li> </ul>
Eliminator Trawl 2-Seam 4-Seam	<ul style="list-style-type: none"> <li>Similar to a Ruhle trawl, however, it does not meet the regulatory specifications that constitute a Ruhle trawl</li> <li>2-Seam or 4-Seam</li> </ul>
Flatfish Trawl	<ul style="list-style-type: none"> <li>A low-rise constructed bottom trawl</li> <li>The trawl, depending on the location and time of year, may (in compliance with 50 C.F.R. 684.80(a)(4)) contain a section of mesh at least 10 feet long and stretching from selvedge to selvedge (which joins the upper and lower panels of the trawl), composed of at least 12-inch mesh that is inserted no farther than 4.5</li> </ul>

NET TYPE	ADDITIONAL INFORMATION
Flatfish Trawl, 2-Seam Flatfish Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• meshes behind the headrope</li> <li>• 2-Seam or 4-Seam</li> </ul>
Flynet  Flynet, 2-Seam Flynet, 4-Seam	<ul style="list-style-type: none"> <li>• Headrope length is typically 80-120 ft across with a wing mesh size of 16-64 inches that will slowly taper to smaller mesh sizes in the body extension and codend</li> <li>• Headrope will also be slightly larger than the footrope</li> <li>• Codend mesh size is about 3.5-3.75 inches</li> <li>• Uses a large number of floats to keep the net slightly off the bottom</li> <li>• Typically use bottom otter trawl gear (negrar = 050)</li> <li>• 2-Seam or 4 Seam</li> </ul>
Groundfish Trawl  Groundfish Trawl, 2-Seam Groundfish Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• A trawl that can really use any of the above designs. For example, can use a flatfish trawl to target groundfish</li> <li>• 2-Seam or 4-Seam</li> </ul>
Haddock Separator Trawl  Haddock Separator, 2-Seam Haddock Separator, 4-Seam	<ul style="list-style-type: none"> <li>• A groundfish trawl with 2 extensions arranged one over the other.</li> <li>• Codend is attached only to the upper extension, and the bottom extension is left open with no codend attached</li> <li>• In addition, a horizontal separating panel constructed with a minimum of 6.0 inch diamond mesh must be installed laterally between the seams joining the upper and lower panels, extending forward from the front of the trouser junction to the aft edge of the first belly behind the fishing circle</li> <li>• Horizontal mesh panel dividing net body in half</li> <li>• Top half leads back to a closed codend</li> <li>• Bottom half leads to a semi-circle opening near the rear of the net</li> <li>• Escape outlet present</li> <li>• 2-Seam or 4-Seam</li> </ul>
Millionaire Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• Always 4-Seam</li> <li>• Very large openings in mouth and large mesh in the wings becoming small meshes in belly leading to the codend</li> </ul>
Monkfish Trawl  Monkfish Trawl, 2-Seam Monkfish Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• Typically uses a flatfish trawl, however, since Monkfish are not a herding species, large wing extensions are used which increases the area swept by the gear</li> <li>• Have 1 leg (a.k.a OLAK)</li> <li>• 2-Seam or 4-Seam</li> </ul>
Other	Must provide descriptive information concerning the gear in the COMMENTS section.

NET TYPE	ADDITIONAL INFORMATION
Pelagic Pair Trawl Pelagic Pair, 2-Seam Pelagic Pair, 4-Seam	<ul style="list-style-type: none"> <li>• Pair trawl that typically does not use doors and targets herring and mackerel</li> <li>• 2 vessels are used to deploy and fish this type of net</li> <li>• 2-Seam or 4-Seam</li> </ul>
Raised Footrope Trawl  Raised Footrope, 2-Seam Raised Footrope, 4-Seam	<ul style="list-style-type: none"> <li>• Small mesh trawl required in some whiting management areas (e.g. Gulf of Maine)</li> <li>• If this trawl is "sweepless" it is a separate net type (see description below)</li> <li>• Typically fished 1-2 feet off the bottom</li> <li>• Has a chain sweep connected with drop chains</li> <li>• 2-Seam or 4-Seam</li> </ul>
Rope Separator, 4-Seam	<ul style="list-style-type: none"> <li>• 4-Seam bottom trawl net</li> <li>• Separator panel made only of ropes</li> <li>• Escape opening in the bottom belly of the net below the separator panel</li> </ul>
Ruhle Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• Characterized by the large meshes (8ft) at the front of the net</li> <li>• Escape outlet</li> <li>• Three bridle configuration</li> <li>• Kite Panels</li> <li>• Rockhopper sweep gear</li> </ul>
Separator Trawl  Separator Trawl, 2-Seam Separator Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• A trawl net that has either a horizontal or vertical separator panel that runs from trouser junction to the aft edge of the first belly behind the fishing circle</li> <li>• 2-Seam or 4-Seam</li> </ul>
Shrimp Trawl  Shrimp Trawl, 2-Seam Shrimp Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• Small mesh, used to target shrimp</li> <li>• Often have T.E.D.s</li> <li>• 2-Seam or 4- seam</li> </ul>
Shuman Trawl  Shuman Trawl, 2-Seam Shuman Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• A trawl net used mainly by squid fishermen</li> <li>• Typically used when targeting squid and butterfish</li> <li>• Contains very large meshes in the mouth and has a high-opening net that may have canvas kites on headline to keep the mouth open</li> <li>• 2-Seam or 4-Seam</li> </ul>
Sweepless Trawl  Sweepless Trawl, 2-Seam Sweepless Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• Identical to the raised footrope trawl except there is no chain sweep and the dropper chains are heavier</li> <li>• Required to target whiting in some management areas and may also be used by common pool vessels to fish for haddock when using BDAS</li> <li>• 2-Seam or 4-Seam</li> </ul>
Unknown	No net type could be determined. Must provide descriptive information concerning the gear in the COMMENTS section.

5. **ESCAPE OUTLET USED?** Record whether an escape outlet is used on this gear by marking either the Y=Yes or N=No box. This information may be obtained from the captain.
6. **EXCLUDER/SEPARATOR USED?** Record whether an excluder or separator device is used on this gear by marking either the Y=Yes or N=No box. This information may be obtained from the captain.
7. **CODEND LINER USED?:** Record whether a liner is used inside the net's codend by marking either the Y=Yes or N=No box.

**NOTE:** See the gear definitions in the introduction.

### **CODEND/LINER**

8. **CODEND:** Record the hanging configuration of the codend by marking the appropriate configuration:
  - Unknown
  - Diamond
  - Square
  - Square, Wrapped
  - Combination, record the hanging configuration in COMMENTS
9. **LINER:** Record the hanging configuration of the liner by marking the appropriate configuration:
  - Unknown
  - Diamond
  - Square
  - Square, Wrapped
  - Combination, record the hanging configuration in COMMENTS

**NOTE:** If no liner is used on this gear, leave the liner hanging configuration blank.

### **TWINE TYPE**

10. **CODEND:** Record whether the twine used in the codend is single or double stranded by marking the appropriate twine type:
  - Single
  - Double
  - Single on Top/Double on Bottom
  - Other, record the twine type in the COMMENTS

11. **LINER:** Record whether the twine used in the codend and liner are single or double stranded by marking the appropriate twine type:

- Single
- Double
- Single on Top/Double on Bottom
- Other, record the twine type in the COMMENTS

**NOTE:** If no liner is used on this gear, leave the liner twine type blank.

12. **CODEND MESH SIZE:** Record, in whole millimeters, ten randomly selected meshes from the codend. These measurements should be stretched inside knot to knot taken in the direction in which the mesh is hung. Use NMFS issued calipers for these measurements. See Appendix H: Vernier Caliper Instructions for further information.

**NOTE:** These measurements are **not** bar lengths.

**Mesh Measurement Criteria:**

1. Use only NMFS issued Vernier calipers.
2. Select a portion of the net that is relatively free of mends. Do not measure mended or broken meshes.
3. Must be at least 5 meshes up from the terminus of the codend and 5 meshes in from a seam.
4. The codend is empty.
5. The net is wet. To ensure the net is "wet" or "soaked," it is measured after being fished or used at least once.
6. Measurements should not be taken when the codend is frozen.
7. Inform the captain prior to measuring the codend.

**NOTE:** Do not measure mesh within the chaffing gear.

13. **LINER MESH SIZE:** Record, in whole millimeters, ten randomly selected meshes from the liner in the codend. These measurements should be stretched inside knot to knot taken in the direction in which the mesh is hung. Use calipers for this measurement. Appendix H: Vernier Caliper Instructions for further information.

**NOTE:** The liner mesh size is typically smaller than the codend mesh size.

**NOTE:** See the above Mesh Selection Guidelines.

**NOTE:** If no liner is used on this gear, leave the liner mesh size blank.



14. **COMMENTS:** Record any additional information about this gear, i.e., unusual arrangements of the gear, type of net, etc.

**TRAWL GEAR LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMOTG**

ASM/TRIPID	
DATE LANDED mm/yy	/
PAGE #	___ of ___

GEAR CODE [ ][ ] <b>1</b>	GEAR # <b>2</b>	NET NAME <b>3</b>	NET TYPE <b>4</b>
ESCAPE OUTLET? Y <input type="checkbox"/> <b>5</b> N <input type="checkbox"/>		EXCLUDER/ SEPARATOR? Y <input type="checkbox"/> <b>6</b> N <input type="checkbox"/>	CODEND LINER ? Y <input type="checkbox"/> <b>7</b> N <input type="checkbox"/>
<b>CODEND</b>		<b>LINER</b>	
<b>CODEND HUNG</b> COMBINATION <input type="checkbox"/> <b>8</b> DIAMOND <input type="checkbox"/> SQUARE <input type="checkbox"/> SQUARE WRAPPED <input type="checkbox"/> UNKNOWN <input type="checkbox"/>		<b>CODEND MESH MEASUREMENTS</b> _____mm _____mm _____mm _____mm _____mm	<b>LINER HUNG</b> COMBINATION <input type="checkbox"/> DIAMOND <input type="checkbox"/> <b>9</b> SQUARE <input type="checkbox"/> SQUARE WRAPPED <input type="checkbox"/> UNKNOWN <input type="checkbox"/>
<b>CODEND TWINE</b> DOUBLE <input type="checkbox"/> <b>10</b> OTHER (COMMENT) <input type="checkbox"/> SINGLE <input type="checkbox"/> TOP SINGLE/ BOTTOM DOUBLE <input type="checkbox"/> UNKNOWN <input type="checkbox"/>		<b>LINER TWINE</b> DOUBLE <input type="checkbox"/> OTHER <input type="checkbox"/> SINGLE <input type="checkbox"/> <b>11</b> TOP SINGLE/ BOTTOM DOUBLE <input type="checkbox"/> UNKNOWN <input type="checkbox"/>	<b>LINER MESH MEASUREMENTS</b> _____mm _____mm _____mm _____mm _____mm _____mm _____mm <b>12</b> _____mm <b>13</b> _____mm
<b>COMMENTS</b> <b>14</b>			

GEAR CODE [ ][ ]	GEAR # [ ][ ]	NET NAME	NET TYPE
ESCAPE OUTLET? Y <input type="checkbox"/> N <input type="checkbox"/>		EXCLUDER/ SEPARATOR? Y <input type="checkbox"/> N <input type="checkbox"/>	CODEND LINER? Y <input type="checkbox"/> N <input type="checkbox"/>
<b>CODEND</b>		<b>LINER</b>	
<b>CODEND HUNG</b> COMBINATION <input type="checkbox"/> DIAMOND <input type="checkbox"/> SQUARE <input type="checkbox"/> SQUARE WRAPPED <input type="checkbox"/> UNKNOWN <input type="checkbox"/>		<b>CODEND MESH MEASUREMENTS</b> _____mm _____mm _____mm _____mm _____mm	<b>LINER HUNG</b> COMBINATION <input type="checkbox"/> DIAMOND <input type="checkbox"/> SQUARE <input type="checkbox"/> SQUARE WRAPPED <input type="checkbox"/> UNKNOWN <input type="checkbox"/>
<b>CODEND TWINE</b> DOUBLE <input type="checkbox"/> OTHER (COMMENT) <input type="checkbox"/> SINGLE <input type="checkbox"/> TOP SINGLE/ BOTTOM DOUBLE <input type="checkbox"/> UNKNOWN <input type="checkbox"/>		<b>LINER TWINE</b> DOUBLE <input type="checkbox"/> OTHER <input type="checkbox"/> SINGLE <input type="checkbox"/> TOP SINGLE/ BOTTOM DOUBLE <input type="checkbox"/> UNKNOWN <input type="checkbox"/>	<b>LINER MESH MEASUREMENTS</b> _____mm _____mm _____mm _____mm _____mm _____mm _____mm _____mm
<b>COMMENTS</b>			

**TRAWL GEAR LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMOTG**

ASM/TRIPID	<b>A02002-</b>
DATE LANDED mm/yy	<b>10 / 10</b>
PAGE #	<b>1</b> of <b>1</b>

GEAR CODE <b>0 5 0</b>	GEAR # <b>01</b>	NET NAME <b>BOTTOM TRAWL</b>	NET TYPE <b>2 SEAM TRAWL</b>
ESCAPE OUTLET? Y <input type="checkbox"/> N <input checked="" type="checkbox"/>		EXCLUDER/ SEPARATOR? Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	
CODEND LINER ? Y <input type="checkbox"/> N <input checked="" type="checkbox"/>			
<b>CODEND</b>		<b>LINER</b>	
<b>CODEND HUNG</b> COMBINATION <input type="checkbox"/> DIAMOND <input checked="" type="checkbox"/> <b>156</b> __mm SQUARE <input type="checkbox"/> <b>154</b> __mm SQUARE WRAPPED <input type="checkbox"/> <b>149</b> __mm UNKNOWN <input type="checkbox"/> <b>161</b> __mm		<b>CODEND MESH MEASUREMENTS</b> <b>168</b> __mm <b>155</b> __mm <b>157</b> __mm <b>160</b> __mm <b>158</b> __mm <b>165</b> __mm	
<b>CODEND TWINE</b> DOUBLE <input type="checkbox"/> OTHER (COMMENT) <input type="checkbox"/> SINGLE <input checked="" type="checkbox"/> <b>160</b> __mm TOP SINGLE/ BOTTOM DOUBLE <input type="checkbox"/> <b>158</b> __mm UNKNOWN <input type="checkbox"/> <b>165</b> __mm		<b>LINER HUNG</b> COMBINATION <input type="checkbox"/> DIAMOND <input type="checkbox"/> _____mm SQUARE <input type="checkbox"/> _____mm SQUARE WRAPPED <input type="checkbox"/> _____mm UNKNOWN <input type="checkbox"/> _____mm	
		<b>LINER TWINE</b> DOUBLE <input type="checkbox"/> _____mm OTHER <input type="checkbox"/> _____mm SINGLE <input type="checkbox"/> _____mm TOP SINGLE/ BOTTOM DOUBLE <input type="checkbox"/> _____mm UNKNOWN <input type="checkbox"/> _____mm	

**COMMENTS**

GEAR CODE <input type="text"/>	GEAR # <input type="text"/>	NET NAME	NET TYPE
ESCAPE OUTLET? Y <input type="checkbox"/> N <input type="checkbox"/>		EXCLUDER/ SEPARATOR? Y <input type="checkbox"/> N <input type="checkbox"/>	
CODEND LINER? Y <input type="checkbox"/> N <input type="checkbox"/>			
<b>CODEND</b>		<b>LINER</b>	
<b>CODEND HUNG</b> COMBINATION <input type="checkbox"/> DIAMOND <input type="checkbox"/> _____mm SQUARE <input type="checkbox"/> _____mm SQUARE WRAPPED <input type="checkbox"/> _____mm UNKNOWN <input type="checkbox"/> _____mm		<b>CODEND MESH MEASUREMENTS</b> _____mm _____mm _____mm _____mm	
<b>CODEND TWINE</b> DOUBLE <input type="checkbox"/> _____mm OTHER (COMMENT) <input type="checkbox"/> _____mm SINGLE <input type="checkbox"/> _____mm TOP SINGLE/ BOTTOM DOUBLE <input type="checkbox"/> _____mm UNKNOWN <input type="checkbox"/> _____mm		<b>LINER HUNG</b> COMBINATION <input type="checkbox"/> DIAMOND <input type="checkbox"/> _____mm SQUARE <input type="checkbox"/> _____mm SQUARE WRAPPED <input type="checkbox"/> _____mm UNKNOWN <input type="checkbox"/> _____mm	
		<b>LINER TWINE</b> DOUBLE <input type="checkbox"/> _____mm OTHER <input type="checkbox"/> _____mm SINGLE <input type="checkbox"/> _____mm TOP SINGLE/ BOTTOM DOUBLE <input type="checkbox"/> _____mm UNKNOWN <input type="checkbox"/> _____mm	

**COMMENTS**

**TRAWL GEAR LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMOTG**

ASM/TRIPID	
DATE LANDED mm/yy	/
PAGE #	___ of ___

GEAR CODE □□□	GEAR # □□	NET NAME	NET TYPE
ESCAPE OUTLET? Y <input type="checkbox"/> N <input type="checkbox"/>		EXCLUDER/ SEPARATOR? Y <input type="checkbox"/> N <input type="checkbox"/>	CODEND LINER ? Y <input type="checkbox"/> N <input type="checkbox"/>
<b>CODEND</b>		<b>LINER</b>	
<b>CODEND HUNG</b> COMBINATION <input type="checkbox"/> DIAMOND <input type="checkbox"/> SQUARE <input type="checkbox"/> SQUARE WRAPPED <input type="checkbox"/> UNKNOWN <input type="checkbox"/>		<b>CODEND MESH MEASUREMENTS</b> _____mm _____mm _____mm _____mm	<b>LINER HUNG</b> COMBINATION <input type="checkbox"/> DIAMOND <input type="checkbox"/> SQUARE <input type="checkbox"/> SQUARE WRAPPED <input type="checkbox"/> UNKNOWN <input type="checkbox"/>
<b>CODEND TWINE</b> DOUBLE <input type="checkbox"/> OTHER (COMMENT) <input type="checkbox"/> SINGLE <input type="checkbox"/> TOP SINGLE/ BOTTOM DOUBLE <input type="checkbox"/> UNKNOWN <input type="checkbox"/>		_____mm _____mm _____mm _____mm _____mm	<b>LINER TWINE</b> DOUBLE <input type="checkbox"/> OTHER <input type="checkbox"/> SINGLE <input type="checkbox"/> TOP SINGLE/ BOTTOM DOUBLE <input type="checkbox"/> UNKNOWN <input type="checkbox"/>
		_____mm _____mm _____mm _____mm	_____mm _____mm _____mm _____mm

**COMMENTS**

GEAR CODE □□□	GEAR # □□	NET NAME	NET TYPE
ESCAPE OUTLET? Y <input type="checkbox"/> N <input type="checkbox"/>		EXCLUDER/ SEPARATOR? Y <input type="checkbox"/> N <input type="checkbox"/>	CODEND LINER? Y <input type="checkbox"/> N <input type="checkbox"/>
<b>CODEND</b>		<b>LINER</b>	
<b>CODEND HUNG</b> COMBINATION <input type="checkbox"/> DIAMOND <input type="checkbox"/> SQUARE <input type="checkbox"/> SQUARE WRAPPED <input type="checkbox"/> UNKNOWN <input type="checkbox"/>		<b>CODEND MESH MEASUREMENTS</b> _____mm _____mm _____mm _____mm	<b>LINER HUNG</b> COMBINATION <input type="checkbox"/> DIAMOND <input type="checkbox"/> SQUARE <input type="checkbox"/> SQUARE WRAPPED <input type="checkbox"/> UNKNOWN <input type="checkbox"/>
<b>CODEND TWINE</b> DOUBLE <input type="checkbox"/> OTHER (COMMENT) <input type="checkbox"/> SINGLE <input type="checkbox"/> TOP SINGLE/ BOTTOM DOUBLE <input type="checkbox"/> UNKNOWN <input type="checkbox"/>		_____mm _____mm _____mm _____mm _____mm	<b>LINER TWINE</b> DOUBLE <input type="checkbox"/> OTHER <input type="checkbox"/> SINGLE <input type="checkbox"/> TOP SINGLE/ BOTTOM DOUBLE <input type="checkbox"/> UNKNOWN <input type="checkbox"/>
		_____mm _____mm _____mm _____mm	_____mm _____mm _____mm _____mm

**COMMENTS**

## TRAWL HAUL LOG

This log contains detailed questions about the setting, hauling and fishing time of the gear, as well as the haul's catch. Complete a new log after each hauling of gear. If you feel that you cannot go on deck for weather related safety reasons, record as much information on this log as possible (i.e. Header Information, weather, times, positions, etc).

If the gear is set, and only partially hauled back, include the time spent hauling and resetting the net in this haul's time. Record HAUL END TIME when the hauling equipment (winches) is put into gear.

The species summary section of this log should be used to record catches of all species (some exceptions listed below), debris and shells. Species caught that should not be recorded on this particular log include: pelagic species (i.e. swordfish, billfish, tuna, bonito, sharks, etc.), sturgeons, rays or tagged fish. Those species must be recorded on an Individual Animal Log Tab/Log. All marine mammals, sea turtles, and sea birds caught in the gear must be recorded on an Incidental Take Log Tab/Log. See Appendix A: Species Names and Corresponding Tabs/Logs for a list of species and the Tab(s)/Log(s) on which to record them.

### DEFINITIONS

**The following Begin and End Haul definitions apply to trawl gear ONLY.**

**Haul Begin:** When the first component of the net is deployed (e.g., net hits the water).

**Haul End:** When the winches are first engaged with the intention of completely hauling back the gear. This does not include when the vessel makes turns.

**Observed Haul:** A haul where all of the catch is recorded, regardless of whether it is kept or discarded.

**Unobserved Haul:** A haul where complete kept and discard information from the haul is not collected. Discard data is collected only for incidental takes and those species that are recorded on the Individual Animal Log. A haul may be unobserved because a monitor is below deck for weather related safety reasons, illness, etc. **Do not record any other discard information for unobserved hauls.** Record all kept catch information. This should be obtained by the captain.

### HEADER INFORMATION

Fill out all Header information for all Trawl Haul Logs. Trawl Haul Logs are used as a cover page to all haul related information on the haul level. Number all logs per haul as follows:

1. Trawl Haul Log
2. Individual Animal Log (when present)
3. Length Frequency Log
4. Discard Log (when present)

### INSTRUCTIONS

1. **GEAR CODE:** Indicate the type of gear fished by recording the appropriate three (3) digit code as listed in Appendix D: Gear Codes and Gear Names.
2. **HAUL NUMBER:** Record the haul number each time gear is hauled on this trip. Start with “001” for the first haul, and continue numbering sequentially for the following hauls.
3. **GEAR NUMBER:** Record the gear number used for this haul as uniquely identified on the appropriate Trawl Gear Tab/Log.
4. **HAUL OBSERVED?** Record whether this haul is observed by marking either the Y=Yes or N=No box.
5. **INCIDENTAL TAKE?:** Record whether a marine mammal, sea turtle, or sea bird is caught by the gear on this haul by marking either the Y=Yes or N=No box.
6. **WEATHER CONDITION:** Indicate the weather at the beginning of the haul by recording the most appropriate weather condition as listed in Appendix K: Weather Conditions.
7. **WAVE HEIGHT:** Record, in whole feet, the wave height at the beginning of this haul. If the wave height is less than six inches, record “0”.  
  
**NOTE:** This is **not** a range.  
  
Example: If the wave height at the beginning of the haul is 6-8 feet, record an average height of 7 feet.
8. **GEAR CONDITION CODE:** Indicate the condition of the gear at haul back, even if this was the condition of the gear when set, by recording the most appropriate three digit code listed below, and in Appendix E: Gear Condition Codes and Gear Description. See Table 1.

**Table 1:** Trawl Gear Condition Codes and Gear Description

GEAR CONDITION CODE	DESCRIPTION
000	Unknown.
010	No gear damage, or very few small, scattered holes
020	Wings twisted or torn, not exceeding 50% of meshes
030	Wings twisted or torn, exceeding 50% of meshes
040	Square and/or bosom torn, not exceeding 50% of meshes
050	Square and/or bosom torn, exceeding 50% of meshes
060	Belly torn, not exceeding 25% of meshes
070	Belly torn, exceeding 25% of meshes
080	Codend and/or extension piece torn, not exceeding 10% of meshes
090	Codend and/or extension piece torn, exceeding 10% of meshes
100	Hang-up, causing gear to be hauled back before scheduled time; minor damage
110	Parted bridle (legs), sweep, or headrope
120	Tear up exceeding gear condition of code 020, but not total net destruction
130	Obstruction in the gear, such as a large amount of fixed gear, boulders, etc
140	Crossed doors
150	Open codend
160	Major hang-up, tear-up, or loss of gear
170	Grate clogged with fish or debris
990	Other, specify in COMMENTS

9. **TARGET SPECIES 1:** Indicate the principal species, or species group sought in this haul by recording the most appropriate and specific species name possible as listed in Appendix A: Species Names and Corresponding Tabs/Logs. This information must be obtained from the captain, but should be asked before the gear is hauled, and **not** based on the results of this haul's catch.

Examples: Atlantic cod  
 Monkfish  
 Summer Flounder

10. **TARGET SPECIES 2:** If a secondary species is targeted in this haul, record the most appropriate and specific species name possible as listed in Appendix A: Species Names and Corresponding Tabs/Logs. This information must be obtained from the captain, but should be asked before the gear is hauled, and **not** based on the results of this haul's catch. If no secondary species is targeted leave this field blank.

**HAUL BEGIN**

11. **HAUL BEGIN DATE:** Record the month, day, and year that the haul begins based on local time (MMDDYY).

12. **HAUL BEGIN TIME:** Record the local time, using the 24 hour clock (0000-2359), that this haul begins, i.e. when the first component of the net is deployed, or when the net hits the water.

13. **BEGIN LATITUDE/ LONGITUDE:** Record the latitude and longitude location, to the **tenth of a minute**, where the haul begins. If the latitude and longitude location is given in seconds, convert them to tenths of minutes. If latitude and longitude positions are not available, record the Statistical Area. See Appendix F: Charts.

**NOTE:** LORAN stations and bearings are not acceptable.

**NOTE:** The CalPos Program on the iPAQ should be used to convert LORAN stations to latitude/longitude locations.

**NOTE:** See Appendix M: Conversion Tables for a list of second ranges and corresponding conversions to tenths of minutes.

14. **STATISTICAL AREA:** If the begin latitude and/or longitude cannot be obtained, record the Statistical Area. This field should be filled out only when latitude/longitude cannot be obtained.

**NOTE:** See Appendix F: Charts to determine the Statistical Area.

**NOTE:** You may also use the CalPos program on the iPAQ to calculate the Statistical Area.

### **HAUL END**

15. **HAUL END DATE:** Record the month, day, and year that the haul ends based on local time (MMDDYY).

16. **HAUL END TIME:** Record the local time, using the 24 hour clock (0000-2359), that this haul ends, i.e. when the hauling equipment is put into gear with intention of hauling back the gear.

17. **END LATITUDE/ LONGITUDE:** Record the latitude and longitude location, to the **tenth of a minute**, where the haul ended. If the latitude and longitude location is given in seconds, convert them to tenths of minutes. If latitude and longitude positions are not available, record the Statistical Area. See Appendix F: Charts.

**NOTE:** LORAN stations and bearings are not acceptable.

**NOTE:** The CalPos Program on the iPAQ should be used to convert LORAN stations to latitude/longitude locations.

**NOTE:** See Appendix M: Conversion Tables for a list of second ranges and corresponding conversions to tenths of minutes.

18. **STATISTICAL AREA:** If the end latitude and/or longitude cannot be obtained, record the Statistical Area. This field should be filled out only when latitude/longitude cannot be obtained.

**NOTE:** See Appendix F: Charts to determine the Statistical Area.



**NOTE:** You may also use the CalPos program on the iPAQ to calculate the Statistical Area.

19. **SPECIES NAME:** Record the **complete** common name of each species or debris item caught in this haul as listed in Appendix A. Species Names and Corresponding Tabs/Logs. Species should be separated by fish disposition code and by dressed vs. round.

Examples: Atlantic Cod, Kept (100) round weight  
Atlantic Cod, Kept (100) dressed weight  
Atlantic Cod, Discarded (012)  
Summer flounder  
Debris, Fish Gear

20. **POUNDS:** Record the dressed or round, actual or estimated weight for each caught species listed in SPECIES NAME. Record this weight in the most accurate form possible, i.e. if a species is gutted prior to weighing, record a dressed weight for this species. Actual weights should be recorded whenever possible.

**NOTE:** Actual weights are recorded to the nearest tenth of a pound.

Estimated weights greater than one pound are recorded to the nearest whole pound.  
Estimated weights less than one pound are recorded to the nearest tenth of a pound.

**NOTE:** Kept is defined as brought on board the vessel and retained for market or consumptive purposes.

**NOTE:** If a fish is "upgraded" or "high graded", and a previously kept fish is discarded and replaced with one that is larger (or of higher quality/value), record the discarded animal(s) and POUNDS discarded on the Haul Log corresponding to the haul in which the animal(s) was (were) originally caught, and code it 062 for FISH DISPOSITION. Be sure to subtract the weight of the animal(s) from the original POUNDS kept record. Upgrading may result in dressed discard weights. Upgrading is typically done with swordfish and tuna, but may also occur with other fish species.

**NOTE:** When a fish is discarded by the vessel, but retained whole by the observer, for scientific purposes, i.e. species identification, record the discarded fish weight next to the correct species name, and code it 007 for FISH DISPOSITION.

21. **DRESSED OR ROUND:** Indicate whether the weight recorded in POUNDS is a dressed or round weight by recording the appropriate letter code:

D = Dressed.

R = Round.

**NOTE:** Shark fins, skate wings, monkfish livers, and fish chunks should be coded "D" for dressed.

**NOTE:** Dressed and round weights for the same species and fish disposition reason should be recorded as separate species records.

Example: The monitor is unable to weigh all of the kept cod before the crew begins to dress them. The monitor obtains actual weights for all undressed cod and actual weights for the

remaining dressed cod. The monitor will record the weight for the round/actual cod and dressed/actual cod separately.

**NOTE:** For species coded ‚poor quality, previously discarded fish’ (039), record the species as ‚Fish, nk’ in the SPECIES field, record the weight in the POUNDS field, ‚U’ in the DRESSED/ROUND field, and record the species name in the COMMENTS field (i.e., Fish, nk = monkfish head).

22. **FISH DISPOSITION CODE:** Indicate the disposition of each species listed in SPECIES NAME by recording the most appropriate three digit code listed in Appendix B: Fish Disposition Codes.

**NOTE:** Kept is defined as brought onboard the vessel and retained for market or consumptive purposes.

**NOTE:** When a fish is discarded by the vessel, but retained whole by the monitor, for scientific purposes (e.g., species identification) record the discarded fish weight next to the correct species name, and select “007” as the fish disposition.

**NOTE:** If more than one fish disposition applies to a species, separate the species onto two or more lines, and record the appropriate weights and fish disposition for each. However, if there is one overriding reason for the discard of all animals of a species group, do not attempt to break this group into smaller discard reason groups.

**Exception:** American lobster should be categorized into specific disposition codes, i.e. (022) v-notch; (023) soft-shelled; (024) with eggs, etc.

Examples:

- a. All Atlantic wolffish caught is discarded because "Regulations prohibit any retention, including no permit" (025). Therefore, any ‚undersized’ wolffish are still recorded as (025).
- b. Of the 500 lbs of Summer Flounder discarded
  - 400 lbs are discarded because they are of poor quality due to hagfish damage (036)
  - 100 lbs are discarded because regulations prohibit their retention because they are too small (012)

23. **ESTIMATION METHOD:** Record the method used to estimate the catch weight of each species (including debris) by recording the appropriate number code: See Table 2.

**Table 2:** Estimation Method Codes

ESTIMATION METHOD CODE	DESCRIPTION
01	Actual
02	Volume to Volume
03	Basket or Tote Count
04	Captain’s Estimate
05	Tally
06	Visually Estimated (by the monitor)
07	Cumulative Sum
98	Combination (Comment on methods used)
99	Other (Comment)

**NOTE:** Actual Weight: Species weighed with the NMFS issued scale.

**NOTE:** If the haul is unobserved but kept information is obtained from the captain, then CAPTAIN'S ESTIMATE (04) should be recorded.

**NOTE:** Visual estimates (06) should rarely be used except when estimating very large objects or for accounting for objects such as seaweed attached to fishing gear or very fine and unevenly distributed items such as clay and sand.

24. **COMMENTS:** Record any additional regarding this haul, i.e. unusual species, levels of bycatch, reasons for unobserving a haul, etc.

**TRAWL HAUL LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMOTH ASMHAU ASMSP**

ASM/TRIPID	
DATE LANDED mm/yy	/ /
PAGE #	of

<b>HAUL BEGIN</b>			<b>HAUL END</b>		
GEAR CODE		HAUL #	GEAR NUMBER		HAUL DATE (mm/dd/yy)
[ ] <b>1</b> [ ]		[ ] <b>2</b> [ ]	<b>3</b> [ ] [ ]		/ <b>11</b> /
HAUL OBSERVED?		INC?		BEGIN HAUL TIME	
YES <input type="checkbox"/> NO <input type="checkbox"/> <b>4</b>		YES <input type="checkbox"/> NO <input type="checkbox"/> <b>5</b>		<b>12</b> :	
WEATHER CONDITION <b>6</b>		WAVE HEIGHT (ft) <b>7</b>		<b>LATITUDE/LONGITUDE (DD MM.M)</b>	
GEAR CONDITION CODE <b>8</b>			BEGIN LATITUDE		
TARGET SPECIES 1 (This Haul) <b>9</b>			END LATITUDE		
TARGET SPECIES 2 (This Haul) <b>10</b>			BEGIN LONGITUDE		
			END LONGITUDE		
			(STAT AREA)* <b>14</b>		
			(STAT AREA)* <b>18</b>		

COMMENTS \* Enter only if latitude/longitude coordinates are not available

**24**

SPECIES NAME	POUNDS	D/R	DISP CODE	EST. METH.	SPECIES NAME	POUNDS	D/R	DISP CODE	EST. METH.
<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>					

**TRAWL HAUL LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMOTH ASMHAU ASMSP**

ASM/TRIPID	<b>A02002-</b>
DATE LANDED mm/yy	<b>10 / 10</b>
PAGE #	<b>1</b> of <b>2</b>

GEAR CODE		HAUL #		GEAR NUMBER		HAUL BEGIN		HAUL END	
050		001		01		HAUL DATE (mm/dd/yy)		HAUL DATE (mm/dd/yy)	
050		001		01		10 / 13 / 10		10 / 13 / 10	
HAUL OBSERVED?			INC?			BEGIN HAUL TIME		END HAUL TIME	
YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>			YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>			13 : 10		15 : 43	
WEATHER CONDITION				WAVE HEIGHT (ft)		LATITUDE/LONGITUDE (DD MM.M)			
CLEAR				3		BEGIN LATITUDE		END LATITUDE	
GEAR CONDITION CODE						41 38.3		41 40.1	
010						BEGIN LONGITUDE		END LONGITUDE	
TARGET SPECIES 1 (This Haul)						68 17.3		68 19.0	
COD, ATLANTIC						(STAT AREA)*		(STAT AREA)*	
TARGET SPECIES 2 (This Haul)									
WINTER FLOUNDER									

COMMENTS \* Enter only if latitude/longitude coordinates are not available

**DEBRIS FISHING GEAR = LOBSTER POT**

SPECIES NAME	POUNDS	D/R	DISP CODE	EST. METH.	SPECIES NAME	POUNDS	D/R	DISP CODE	EST. METH.
COD, ATLANTIC	789	R	100	01					
COD, ATLANTIC	212	R	012	01					
SUMMER FLOUNDER	153	R	100	01					
LITTLE SKATE	200	R	100	03					
LITTLE SKATE	55	R	002	01					
DEBRIS, FISHING GEAR	45	R	053	06					
STARFISH, SEA STAR, NK	6	R	001	01					

**TRAWL HAUL LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMOTH ASMHAU ASMSP**

ASM/TRIPID	
DATE LANDED mm/yy	/ /
PAGE #	of

GEAR CODE			HAUL #			GEAR NUMBER			<b>HAUL BEGIN</b>				<b>HAUL END</b>						
/ /			/ /			/ /			HAUL DATE (mm/dd/yy)				HAUL DATE (mm/dd/yy)						
/ /			/ /			/ /			/ /				/ /						
HAUL OBSERVED?						INC?						BEGIN HAUL TIME				END HAUL TIME			
YES <input type="checkbox"/> NO <input type="checkbox"/>						YES <input type="checkbox"/> NO <input type="checkbox"/>						:				:			
WEATHER CONDITION						WAVE HEIGHT (ft)						<b>LATITUDE/LONGITUDE (DD MM.M)</b>							
GEAR CONDITION CODE												BEGIN LATITUDE				END LATITUDE			
TARGET SPECIES 1 (This Haul)												BEGIN LONGITUDE				END LONGITUDE			
TARGET SPECIES 2 (This Haul)												(STAT AREA)*				(STAT AREA)*			

COMMENTS \* Enter only if latitude/longitude coordinates are not available

SPECIES NAME	POUNDS	D/R	DISP CODE	EST. METH.	SPECIES NAME	POUNDS	D/R	DISP CODE	EST. METH.

## **LONGLINE GEAR INFORMATION and BACKGROUND**

The French introduced the longline fishery in the Northwest Atlantic Ocean Grand Banks cod fisheries in 1789. However, it was not until the early 1840's that it came into attention of the local fishermen of Massachusetts who independently developed longline for halibut. Over the next few years longline gear was adopted by many New Englanders for both cod and halibut.

Except for the trolling fishery, hook and line gear is stationary and relies on fish attraction to bait and is considered to be a low impact fishery, having minimum effects on the environment and habitats. The hook and line gear is considered a „clean' fishery meaning that it can target a specific fish species by size based on several variables including: hook size and design, line test, season, diurnal cycle, and bait.

### **HOOK AND LINE GEAR DESCRIPTION**

#### Handline

Handline fishing is the oldest form of fishing and has changed significantly over the years. The first significant modern innovations:

- 17th and early 18th centuries including use of a reel, a rod with line guides, and a hook with an offset point. One of man's earliest tools was the predecessor of the fishhook, a gorge: a piece of wood, bone, or stone an inch or so in length pointed at both ends and secured off-center to the line.
- Horsehair was used as line in the mid 19th century
- 1930s line was replaced by textile materials; and eventually these in turn were replaced by nylon

A weight, leader, and at least one hook that may be baited are attached to a line. Handlines are not always held during fishing (e.g. Rod & Reel). Fishing vessels will sometimes use a rod and reel to supplement the primary gear's catch. Fishing vessels that use rod and reel are restricted depending on their permits for what they can catch and what they can sell.

#### Jig fishing

Another common Handline fishing method is Jig Fishing. These fishing vessels are usually day boats with a few crew members on board and typically fish for cod, haddock, and pollock.

A jig is a type of fishing lure designed to resemble a small prey species. The typical build of a jig consists of a heavy head with a ring to attach the line to, connected to the head is a hook with a barb.

An auto jig is an electronic mechanism that imparts a vertical motion in the water column (jigging) to a line with one or more artificial lures attached. The hooks on this gear are usually weighted and may vary in style, size, and shape. This gear should be distinguished from electronic reels that do not impart a regular up and down motion to the lure or bait.

#### Longline (Includes Pelagic and Bottom Longline)

A mainline (“the string”) with spaced gangion lines attached which have baited hooks on the free end. The mainline is divided into sections of hook and float arrangements distinguished by a high flyer/radar reflector, radio beacon, or beeper buoy. Longline gear consists of three basic components:

- the mainline
- the branch line
- the baited hook

All of these parts are adaptable for targeting specific species through changes in materials, lengths, and deployment strategies. For example, setting the mainline along the seafloor, a demersal set may target flatfish and cod. Using small buoys and float lines to suspend the gear below the surface results in a pelagic longline set that targets pelagic tunas, swordfish, billfish, and other free-swimming predators. In between these two extremes are a variety of different configurations that are adapted by local fisheries to target specific species (see *Pelagic Longline Fishing Gear: A Brief History and Review of Research Efforts to Improve Selectivity* by J. W. Watson and D.W. Kerstetter ).

Bottom longlines generally target cod, haddock, hake, and pollock, as well as many flatfish, such as halibut. Bottom lines are not as long as pelagic longlines. The hooks do not always lie on the bottom but may hang above it to protect the bait against unwanted bottom predators, such as starfish, snails, or crabs. A heavy mainline is divided into sections of approximately 300 ft. The gangion lines, each about 1 to 3 feet long, are tied at intervals of about 6 feet. The mainline is usually stored in tubs. These tubs are brought to shore for rebating between trips.

Fishing depth for bottom longline usually depends on the target species, fishing grounds, and season. The bottom longline is typically anchored on both ends, and marked by a float and high flyer.

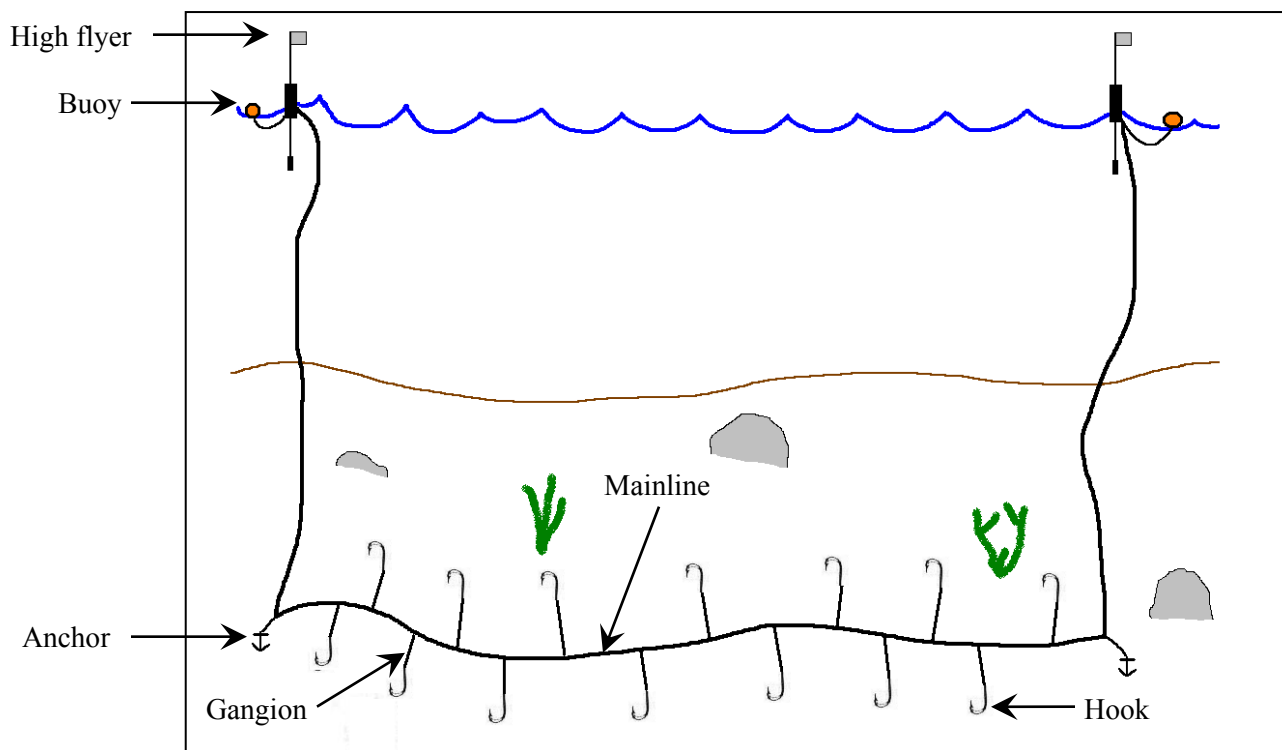
Setting gear is generally very fast, especially if gear is prebaited. This type of prebaited gear is a common gear used by Cape Cod fishermen. Haul Back time is also fast but dependent on the size of the catch. Line is brought onboard the vessel using a hydrolic hauler. Kept fish are gutted immediately and discarded fish are usually not even brought onboard. Good communication between the monitor and the captain/crew is imperative in order to accurately quantify discards.

The Bottom Longline gear consists of (See Figure 1):

- **Buoys and High Flyers:** used for gear identification and locator tool
- **Buoyline:** the line that connects the surface system to the anchor
- **Anchors:** placed on the end of the buoylines
- **Additional weights:** may be placed along the mainline to aid in maintaining the longline to the accurate depth (sometimes called sash weights)
- **Mainline:** The main component of the gear that is usually made up of a braided nylon line that could be miles in length.
- **Gangions:** line from the mainline to the hook. Usually made of multi-stranded nylon
- **Hook** every gangion should have one hook at the end. Hooks have a brand, model, and size to identify which type of hook is being used.
- **Crucifier** mechanical hook removal component made up of two vertical steel rods.



**Figure 1:** A typical configuration of bottom longline gear



Hooks

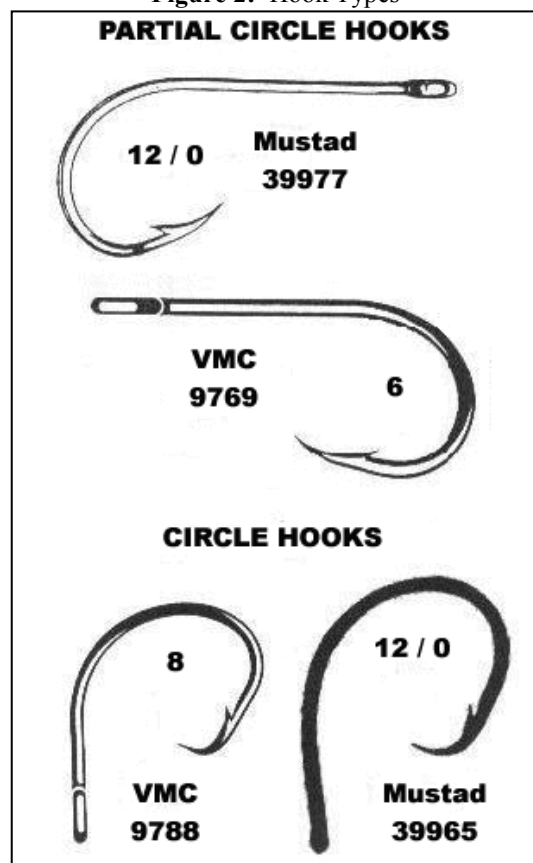
There is no world or industry standard method of measuring hooks. In the US, the measures go from the smallest size 32 (which is barely large enough to hold between two fingers) and count down (See Figure 3). As the number decreases, the size increases all the way down to a number 1 hook. At this point the number changes to a designation of “aughts” or zeroes. A 1/0 (pronounced “one aught”) hook is the next larger size to a number 1. A 2/0 is larger still, and this numbering scheme goes as high as 19/0.

The size breakdown from smallest to largest looks like this: 32, 30, 28, 26, ..., 8, 6, 4, 2, 1, 1/0, 2/0, 3/0, 4/0, 5/0, 6/0, 7/0, ..., 17/0, 18/0, and 19/0

J-Hook or O’SHAUGHNESSY: This hook is named for the specific design of the hook. It’s a standard hook, forged with a very strong bend. This hook is relatively thick, very strong, and not likely to bend out of shape. Generally designed for saltwater, it is good for general bottom fishing use. Sizes range from #3 to as large as 19/0.

Circle Hook (See Figure 2): Perhaps the best recent innovation in hooks is circle hooks, which promote healthy catch and release practices. The design of the hook itself, when used properly, prevents fish from being hooked in the gut. These hooks are

**Figure 2:** Hook Types



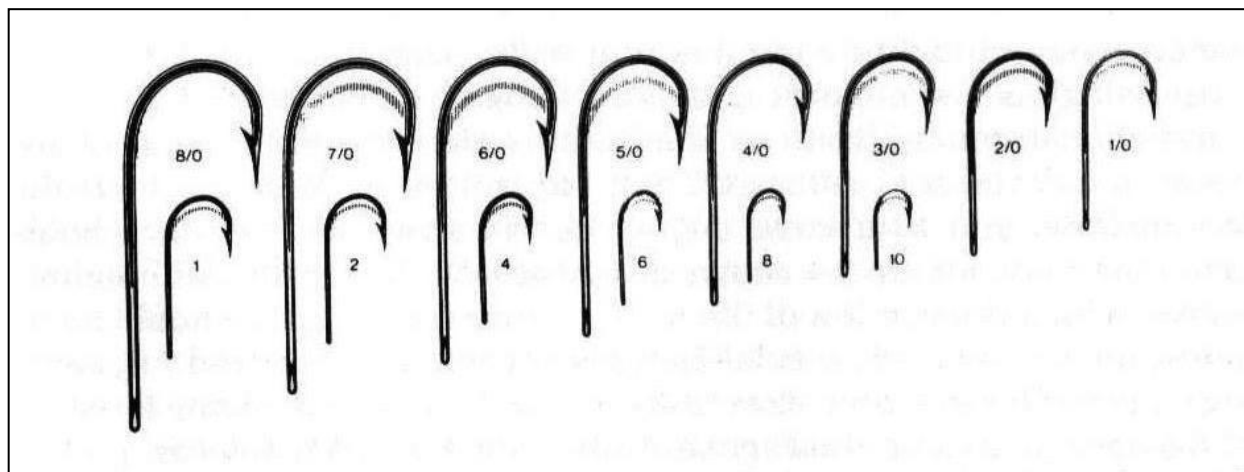
designed to move to the corner of the fish’s mouth and set themselves as the fish swims away from you. Anglers feel a bite and simply begin reeling, slowly at first, then faster as the hook gets set. Studies have shown that sea turtle bycatch has decreased with the use of circle hooks.

Partial Circle Hooks (See Figure 2): The curve on these hooks makes them ideal for live bait. These hooks will bend if hung on the bottom of some structure. However, once a fish is hooked, the design of the hook prevents it from being straightened.

Brands you will see most commonly are Mustad, VMC and Eagle Claw

- Mustad hooks are shiny
- VMC hooks are dull

**Figure 3:** Hook sizes



Hauling station

The hauling station is typically separated from the back deck (and the catch) by a door or board.

Safety issues of observing this fishery:

- Deck space is limited.
- fish hauling station is a small finite space which only allows 1 or 2 crew working.
- Communication is limited due to the high pace of the fishery and constant reminding of the crew and captain to retain discarded species.
- Hooks along the gear (never go near the gear being deployed or hauled it is very easy to get stuck with a hook).

The crucifier spacing is regulated to be 6 inches apart. This regulation is to reduce lip splitting of discarded species. Although, fishermen might not adhere to this rule due to safety reasons, there is less of a chance for the hauler operator to be caught by a hook. Be aware this might be a sensitive topic with the fishermen.

**SAMPLING PRIORITIES**

- Record Kept and Discard information for every haul (i.e. all hauls should be fully observed)
- Collect length frequencies and age structures at least every other haul
- If commercially important bycatch is caught in significant quantities, yet the species are not listed in Table 1f, refer to Table 2 in the At-sea Monitoring Biological Sampling Manual.
- Incidental Takes have priority for biological sampling

## LONGLINE GEAR LOG

This log contains detailed questions about the gear fished; use it to document the configuration of all hook and line gears. (e.g. rod and reel, handline, troll line).

If the vessel has two or more identical gears which are hauled separately, complete a separate Longline Gear Log for each individual gear.

If a gear is set out and hauled more than once during a trip, do not complete a new Longline Gear Log for the multiple hauls. Rather, record on the Longline Haul Tab/Log, which gear number is being hauled.

In addition, record any other information necessary to understand the manner in which the gear is hauled in COMMENTS.

This log should be used to describe all hook gear.

### DEFINITIONS

**Handline:** A weight, leader, and at least one hook that may be baited, attached to a line. Handlines are not always held during fishing (e.g. rod and reel).

**Troll line:** One or more lines with hooks and bait or lures attached, that are towed behind a moving boat.

**Longline:** A mainline ("the string") with spaced gangion lines attached which have baited hooks on the free end. The mainline is divided into sections of hook and float arrangements which are distinguished by a high flyer, radio beacon, or beeper buoy. **This may include multiple "tubs" of gear tied together.**

**Demersal Longline:** Bottom Longline or Tub Trawl.

**Mainline:** The main component of the gear that is usually made up of a braided nylon line that could be miles in length.

**Section:** Each portion of the entire longline string beginning with a high flyer, radio beacon, or beeper buoy and ending with the next high flyer, radio beacon, or beeper buoy.

**Gangion:** A line and hook attached to the mainline. Gangions may vary in length and have up to 2 swivels, one below a snap (if present) and possibly another one above the hook. Fishermen may sometimes refer to these as leaders.

**Leader:** A relatively short section of mono or steel wire placed between a swivel and the hook. It reduces bite offs, makes hook replacement easier and helps to maintain gangion length.

### Demersal Longline

**Gear:** A longline string composed of one or more "tubs" uniquely configured for a specific target species or a single mainline of steel cable with snap-on hooks.

### Rod and Reel and Troll Gears

**Gear:** An individual line with hook(s) and bait attached.

**Jig:** a type of fishing lure designed to resemble prey species. The typical build up of a jig consists of a heavy head with a ring to attach the line to, connected to the head is a hook with a barb.

**Auto Jig:** An electronic mechanism that creates a vertical bobbing motion in the water column (jigging) to one or more artificial lures attached to a line. The hooks on this gear may vary in style, size, and shape. This gear should be distinguished from electronic reels that do not impart a regular up and down jigging motion to the line.

### HEADER INFORMATION

Fill out all Header information for all Longline Gear Logs. Longline Gear Logs are numbered independently of all other logs.

Please Note: The Longline Gear Log is a two-sided log that allows up to eight (8) individual gears to be recorded. For a single trip, record all gear numbers sequentially in the spaces provided before using a second paper log.

### INSTRUCTIONS

1. **GEAR CODE:** Indicate the type of gear fished by recording the appropriate three (3) digit code:
  - 010: Bottom Longline
  - 020: Handline
  - 021: Handline, Jig (Auto Jig only)
2. **GEAR NUMBER:** Record the consecutive number assigned to each uniquely configured gear hauled and for which characteristics are described. All „strings’ of gear are given a separate gear number and its gear characteristics are recorded as a separate gear record.
3. **NUMBER OF HOOKS:** Record the **total** number of individual hooks set on this gear. This information should be obtained from the captain.

**NOTE:** This should be independent hooks. If one piece is used that has 3 points is still considered „1 hook’.



= 1 hook

## **HOOKS**

4. **BRAND:** Record the brand names of the primary and secondary hooks used in this gear. This information may usually be found on the box in which the hooks were purchased, or obtained from the captain. If there is no secondary hook type used, leave this field blank. If there is a third hook type used, record its brand in the COMMENTS.

Example: Mustad®

**NOTE:** The primary hook describes the hook type used on the majority of the gear, and secondary describes the second most used hook type.

5. **MODEL/PATTERN NUMBER:** Record the model or pattern number of the primary and secondary hooks used in this gear. This information may usually be found on the box in which the hooks were purchased, or obtained from the captain. If there is no secondary hook type used, leave this field blank. If there is a third hook type used, record its model/pattern number in the COMMENTS.

Example: 39963WS.

**NOTE:** If possible record the hook type (circle hook, J-hook, etc.) in the COMMENTS.

6. **SIZE:** Record the size of the primary and secondary hooks used in this gear. This information may usually be found on the box in which the hooks were purchased, or obtained from the captain. If there is no secondary hook type used, leave this field blank. If there is a third hook type used, record its size in COMMENTS.

Example: 13/0.

7. **COMMENTS:** Record any additional information about this gear.

**LONGLINE GEAR LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMLLG**

ASM/TRIPID	
DATE LANDED mm/yy	/
PAGE #	of

GEAR CODE <input type="text" value="1"/>	GEAR # <input type="text" value="2"/>	# OF HOOKS <b>3</b>	COMMENTS
<b>HOOKS</b>	BRAND	MODEL/PATTERN	SIZE
HOOK #1	<b>4</b>	<b>5</b>	<b>6</b>
HOOK #2			

GEAR CODE <input type="text"/>	GEAR # <input type="text"/>	# OF HOOKS	COMMENTS
<b>HOOKS</b>	BRAND	MODEL/PATTERN	SIZE
HOOK #1			
HOOK #2			

GEAR CODE <input type="text"/>	GEAR # <input type="text"/>	# OF HOOKS	COMMENTS
<b>HOOKS</b>	BRAND	MODEL/PATTERN	SIZE
HOOK #1			
HOOK #2			

GEAR CODE <input type="text"/>	GEAR # <input type="text"/>	# OF HOOKS	COMMENTS
<b>HOOKS</b>	BRAND	MODEL/PATTERN	SIZE
HOOK #1			
HOOK #2			

ADDITIONAL COMMENTS

261

**LONGLINE GEAR LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMLLG**

ASM/TRIPID	<b>A02001-</b>
DATE LANDED mm/yy	<b>10 / 10</b>
PAGE #	<b>1</b> of <b>1</b>

GEAR CODE	GEAR #	# OF HOOKS	COMMENTS
<input type="text" value="0"/> <input type="text" value="1"/> <input type="text" value="0"/>	<input type="text" value="0"/> <input type="text" value="1"/>	<b>900</b>	
<b>HOOKS</b>	BRAND	MODEL/PATTERN	SIZE
HOOK #1	<b>EAGLE CLAW</b>	<b>L9014</b>	<b>12/0</b>
HOOK #2			

GEAR CODE	GEAR #	# OF HOOKS	COMMENTS
<input type="text" value="0"/> <input type="text" value="1"/> <input type="text" value="0"/>	<input type="text" value="0"/> <input type="text" value="2"/>	<b>1200</b>	
<b>HOOKS</b>	BRAND	MODEL/PATTERN	SIZE
HOOK #1	<b>MUSTAD</b>	<b>39960</b>	<b>11/0</b>
HOOK #2			

GEAR CODE	GEAR #	# OF HOOKS	COMMENTS
<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>		
<b>HOOKS</b>	BRAND	MODEL/PATTERN	SIZE
HOOK #1			
HOOK #2			

GEAR CODE	GEAR #	# OF HOOKS	COMMENTS
<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>		
<b>HOOKS</b>	BRAND	MODEL/PATTERN	SIZE
HOOK #1			
HOOK #2			

ADDITIONAL COMMENTS

262

**LONGLINE GEAR LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMLLG**

ASM/TRIPID	
DATE LANDED mm/yy	/
PAGE #	of

GEAR CODE □□□	GEAR # □□	# OF HOOKS	COMMENTS
<b>HOOKS</b>	BRAND	MODEL/PATTERN	SIZE
HOOK #1			
HOOK #2			

GEAR CODE □□□	GEAR # □□	# OF HOOKS	COMMENTS
<b>HOOKS</b>	BRAND	MODEL/PATTERN	SIZE
HOOK #1			
HOOK #2			

GEAR CODE □□□	GEAR # □□	# OF HOOKS	COMMENTS
<b>HOOKS</b>	BRAND	MODEL/PATTERN	SIZE
HOOK #1			
HOOK #2			

GEAR CODE □□□	GEAR # □□	# OF HOOKS	COMMENTS
<b>HOOKS</b>	BRAND	MODEL/PATTERN	SIZE
HOOK #1			
HOOK #2			

ADDITIONAL COMMENTS

263



## LONGLINE HAUL LOG

This log contains detailed questions about the hauling of gear, and the haul's catch. Complete a new log after each hauling of gear. If you feel that you cannot go on deck for weather related safety reasons, record as much information on this log as possible (i.e. Header Information, weather, times, positions, etc.).

If the gear is set, and only partially hauled, complete a Longline Haul Log with the Species Information section completed as fully as possible, and "Haul Aborted" recorded in the COMMENTS. An aborted haul should be recorded as observed, whenever it fits the definition of an observed haul.

Species caught that should not be recorded on this particular log include: pelagic species (i.e. swordfish, billfish, tuna, bonito, sharks, etc.), sturgeons, rays or tagged fish. Those species must be recorded on the Individual Animal Log Tab/Log. In the **demersal longline fishery** catches of groundfish species and debris will be recorded in the species section of this log. For all fisheries, incidental catches of marine mammals, sea turtles, and sea birds must be recorded on an Incidental Take Log. See Appendix A: Species Names and Corresponding Tabs/Logs for a list of species and the Tab(s)/Log(s) on which to record them.

**For handline gears**, the following fields on the Longline Haul Log are omitted: HAUL BEGIN DATE, HAUL BEGIN TIME, HAUL BEGIN LATITUDE/LONGITUDE, MAINLINE LENGTH, and SOAK DURATION. If there are insufficient lines on one form for all species caught in this haul, continue listing species on an additional Longline Haul Log, making sure to complete all of the Header Information.

### DEFINITIONS

**Haul Begin:** Hauling equipment put into gear or retrieval of gear commences, i.e. the first piece of longline gear comes onboard (usually the high flyer or buoy).

**Haul End:** The last of gear is completely retrieved and onboard the vessel (e.g., the last highflyer is brought onboard the vessel).

**Observed Haul:** A haul where all of the catch is recorded, regardless of whether it is kept or discarded.

**Unobserved Haul:** A haul where complete kept and discard information from the haul is not collected. Discard data is collected only for incidental takes and those species that are recorded on the Individual Animal Log. A haul may be unobserved because a monitor is below deck for weather related safety reasons, illness, etc. **Do not record any other discard information for unobserved hauls.** Record all kept catch information. This should be obtained by the captain.

### HEADER INFORMATION

Fill out all Header information for all Longline Haul Logs. Longline Haul Logs are used as a cover page to all haul related information on the haul level. Number all logs per haul as follows:

1. Longline Haul Log
2. Individual Animal Log (when present)
3. Length Frequency Log
4. Discard Log (when present)

**INSTRUCTIONS**

1. **GEAR CODE:** Indicate the type of gear fished by recording the appropriate three (3) digit code as listed in Appendix D: Gear Codes and Gear Names.
  
2. **HAUL NUMBER:** Record the haul number each time gear is hauled on this trip. Start with “001” for the first haul, and continue numbering sequentially for the following hauls.
  
3. **GEAR NUMBER:** Record the gear number used for this haul as uniquely identified on the appropriate Longline Gear Tab/Log.
  
4. **HAUL OBSERVED?** Record whether this haul is observed by marking either the Y=Yes or N=No box.
  
5. **INCIDENTAL TAKE?:** Record whether a marine mammal, sea turtle, or sea bird is caught by the gear by marking either the Y=Yes or N=No box.
  
6. **WEATHER CONDITION:** Indicate the weather at the beginning of the haul by recording the most appropriate weather condition as listed in Appendix K: Weather Conditions.
  
7. **WAVE HEIGHT:** Record, in whole feet, the wave height at the beginning of this haul. If the wave height is less than six inches, record “0”.
  
- NOTE:** This is **not** a range.
  
- Example: If the wave height at the beginning of the haul is 6-8 feet, record 7 feet.
  
8. **GEAR CONDITION CODE:** Indicate the condition of the gear at haul back, even if this was the condition of the gear when set, by recording the most appropriate three digit code listed below, and in Appendix E: Gear Condition Codes and Gear Description. See Table 1.

**Table 1:** Longline Gear Condition Codes

<b>GEAR CONDITION CODE</b>	<b>DESCRIPTION</b>
000	Unknown
610	No gear damage, or only a few hooks missing
620	Less than 50% of gear fouled due to weather/oceanic conditions. Gear tangled, spun up or otherwise impaired the fishability of the gear
630	Greater than 50% of gear fouled due to weather/oceanic conditions. Gear tangled, spun up or otherwise impaired the fishability of the gear
640	Less than 50% of hooks missing
650	Greater than 50% of hooks missing
660	Parted off, no damage

GEAR CONDITION CODE	DESCRIPTION
670	Parted off, less than 50% gear damaged
680	Gear completely damaged, or completely lost
990	Other, specify in COMMENTS

9. **TARGET SPECIES 1:** Indicate the principal species, or species group sought in this haul by recording the most appropriate and specific species name possible as listed in Appendix A: Species Names and Corresponding Tabs/Logs. This information must be obtained from the captain, but should be asked before the gear is hauled, and **not** based on the results of this haul's catch.

Examples: Atlantic cod  
 Monkfish  
 Summer Flounder

10. **TARGET SPECIES 2:** If a secondary species is targeted in this haul, record the most appropriate and specific species name possible as listed in Appendix A: Species Names and Corresponding Tabs. This information must be obtained from the captain, but should be asked before the gear is hauled, and **not** based on the results of this haul's catch. If no secondary species is targeted leave this field blank.

**HAUL BEGIN**

**NOTE:** HAUL BEGIN fields # 11 – 14 should be left blank for all Handline gears (020 & 021).

11. **HAUL BEGIN DATE:** Record the month, day, and year that the haul begins based on local time (MMDDYY).
12. **HAUL BEGIN TIME:** Record the local time, using the 24 hour clock (0000-2359), that this haul begins, i.e. when the first component of the gear is retrieved onboard the vessel (usually when the highflyer is brought onboard).
13. **BEGIN LATITUDE/ LONGITUDE:** Record the latitude and longitude location, to the **tenth of a minute**, where the haul begins. If the latitude and longitude location is given in seconds, convert them to tenths of minutes. If latitude and longitude positions are not available, record the Statistical Area. See Appendix F: Charts.

**NOTE:** LORAN stations and bearings are not acceptable.

**NOTE:** The CalPos Program on the iPAQ should be used to convert LORAN stations to latitude/longitude locations.

**NOTE:** See Appendix M: Conversion Tables for a list of second ranges and corresponding conversions to tenths of minutes.

14. **STATISTICAL AREA:** If the begin latitude and/or longitude cannot be obtained, record the Statistical Area. This field should be filled out only when latitude/longitude cannot be obtained.

**NOTE:** See Appendix F: Charts to determine the Statistical Area.

**NOTE:** You may also use the CalPos program on the iPAQ to calculate the Statistical Area.

### **HAUL END**

**NOTE:** If rod and reel or other handline gears are used, the haul end time should reflect when the gear is removed from the water and fishing activity ceases. The gear may periodically be removed from the water to remove a fish, rebait the line, check the line for presence of fish, etc. This would be considered one haul. The end of a haul would be noted when there is significant break in time and/or significant change in location.

15. **HAUL END DATE:** Record the month, day, and year that the haul ends based on local time (MMDDYY).

16. **HAUL END TIME:** Record the local time, using the 24 hour clock (0000-2359), that this haul ends, i.e. when all of the gear is completely retrieved and onboard the vessel (usually when the highflyer comes onboard).

17. **END LATITUDE/ LONGITUDE:** Record the latitude and longitude location, to the **tenth of a minute**, where the haul ends. If the latitude and longitude location is given in seconds, convert them to tenths of minutes. If latitude and longitude positions are not available, record the Statistical Area. See Appendix F: Charts.

**NOTE:** LORAN stations and bearings are not acceptable.

**NOTE:** The CalPos Program on the iPAQ should be used to convert LORAN stations to latitude/longitude locations.

**NOTE:** See Appendix M: Conversion Tables for a list of second ranges and corresponding conversions to tenths of minutes.

18. **STATISTICAL AREA:** If the end latitude and/or longitude cannot be obtained, record the Statistical Area. This field should be filled out only when latitude/longitude cannot be obtained.

**NOTE:** See Appendix F: Charts to determine the Statistical Area.

**NOTE:** You may also use the CalPos program on the iPAQ to calculate the Statistical Area.

**MORE LONGLINE**

**NOTE:** MORE LONGLINE fields # 19 and 20 should be left blank for all Handline gears (020 & 021).

19. **MAINLINE LENGTH:** Record (to the nearest tenth of a nautical mile) the length of the mainline for this gear. This should account for all of the tubs that are tied together on that particular "string" of gear. This information can be obtained from the captain or calculated by the monitor.

**NOTE:** One nautical mile = 6,080 feet.

**NOTE:** For rod and reel and other handline gears, leave this field blank.

20. **SOAK DURATION:** Record (to the nearest tenth of an hour) the amount of time that the gear for this haul is in the water fishing. This is the amount of time from when the string is secured to an anchoring device, or completely deployed, until the retrieval of gear commences (Haul Begin). If the gear set was not witnessed, obtain this time from the captain. If the set is witnessed, calculate the soak duration.

**NOTE:** For rod and reel and other handline gears, leave this field blank.

21. **SPECIES NAME:** Record the **complete** common name of each species or debris item caught in this haul as listed in Appendix A. Species Names and Corresponding Tabs/Logs. Species should be separated by fish disposition code and by dressed vs. round.

Examples: Atlantic Cod, Kept (100) round weight  
Atlantic Cod, Kept (100) dressed weight  
Atlantic Cod, Discarded (012)  
Summer flounder  
Debris, Fish Gear

22. **POUNDS:** Record the dressed or round, actual or estimated weight for each caught species listed in SPECIES NAME. Record this weight in the most accurate form possible, i.e. if a species is gutted prior to weighing, record a dressed weight for this species. Actual weights should be recorded whenever possible.

**NOTE:** Actual weights are recorded to the nearest tenth of a pound.

Estimated weights greater than one pound are recorded to the nearest whole pound.  
Estimated weights less than one pound are recorded to the nearest tenth of a pound.

**NOTE:** Kept is defined as brought on board the vessel and retained for market or consumptive purposes.

**NOTE:** If a fish is "upgraded" or "high graded", and a previously kept fish is discarded and replaced with one that is larger (or of higher quality/value), record the discarded animal(s) and POUNDS discarded on the Haul Log corresponding to the haul in which the animal(s) was (were) originally caught, and code it 062 for FISH DISPOSITION. Be

sure to subtract the weight of the animal(s) from the original POUNDS kept record. Upgrading may result in dressed discard weights. Upgrading is typically done with swordfish and tuna, but may also occur with other fish species.

**NOTE:** When a fish is discarded by the vessel, but retained whole by the observer, for scientific purposes, i.e. species identification, record the discarded fish weight next to the correct species name, and code it 007 for FISH DISPOSITION.

23. **DRESSED OR ROUND:** Indicate whether the weight recorded in POUNDS is a dressed or round weight by recording the appropriate letter code:

D = Dressed.

R = Round.

**NOTE:** Shark fins, skate wings, monkfish livers, and fish chunks should be coded “D” for dressed.

**NOTE:** Dressed and round weights for the same species and fish disposition reason should be recorded as separate species records.

**Example:** The monitor is unable to weigh all of the kept cod before the crew begins to dress them. The monitor obtains actual weights for all undressed cod and actual weights for the remaining dressed cod. The monitor will record the weight for the round/actual cod and dressed/actual cod separately.

**NOTE:** For species coded ‘poor quality, previously discarded fish’ (039), record the species as ‘Fish, nk’ in the SPECIES field, record the weight in the POUNDS field, ‘U’ in the DRESSED/ROUND field, and record the species name in the COMMENTS field (i.e., Fish, nk = monkfish head).

24. **FISH DISPOSITION CODE:** Indicate the disposition of each species listed in SPECIES NAME by recording the most appropriate three digit code listed in Appendix B: Fish Disposition Codes.

**NOTE:** Kept is defined as brought onboard the vessel and retained for market or consumptive purposes.

**NOTE:** When a fish is discarded by the vessel, but retained whole by the monitor, for scientific purposes (e.g., species identification) record the discarded fish weight next to the correct species name, and select “007” as the fish disposition.

**NOTE:** If more than one fish disposition applies to a species, separate the species into two or more lines, and record the appropriate weights and fish disposition for each. However, if there is one overriding fish disposition code for all animals of a species group, do not attempt to break this group into smaller discard reason groups.

**Exception:** American lobster should be categorized into specific disposition codes, i.e. (022) v-notch; (023) soft-shelled; (024) with eggs, etc.

Examples:

- a. All Atlantic wolfish caught is discarded because "Regulations prohibit any retention, including no permit" (025). Therefore, any „undersized’ wolfish are still recorded as (025).
- b. Of the 500 lbs of Summer Flounder discarded
  - 400 lbs are discarded because they are of poor quality due to hagfish damage (036)
  - 100 lbs are discarded because regulations prohibit their retention because they are too small (012)

25. **ESTIMATION METHOD:** Record the method used to estimate the catch weight of each species (including debris) by recording the appropriate number code: See Table 2.

**Table 2:** Estimation Method Codes

ESTIMATION METHOD CODE	DESCRIPTION
01	Actual
02	Volume to Volume
03	Basket or Tote Count
04	Captain’s Estimate
05	Tally
06	Visually Estimated (by the monitor)
07	Cumulative Sum
98	Combination (Comment on methods used)
99	Other (Comment)

**NOTE:** Actual Weight: Species weighed with the NMFS issued scale.

**NOTE:** If the haul is unobserved kept information should be obtained from the captain, with CAPTAIN’S ESTIMATE (04) recorded.

**NOTE:** Visual estimates (06) should rarely be used except when estimating very large objects or for accounting for objects such as seaweed attached to fishing gear or very fine and unevenly distributed items such as clay and sand.

26. **COMMENTS:** Record any additional information regarding this haul, i.e. unusual species, levels of bycatch, reasons for unobserving a haul, etc.

**LONGLINE HAUL LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMLLH ASMHAU ASMSPP**

ASM/TRIPID	
DATE LANDED mm/yy	/ /
PAGE #	of

HAUL BEGIN					HAUL END						
GEAR CODE		HAUL #		GEAR NUMBER		HAUL DATE (mm/dd/yy)		HAUL DATE (mm/dd/yy)			
1		2		3		11 / /		15 / /			
HAUL OBSERVED? YES <input type="checkbox"/> NO <input type="checkbox"/>			INC TAKE? YES <input type="checkbox"/> NO <input type="checkbox"/>			BEGIN HAUL TIME		END HAUL TIME			
4			5			12 :		16 :			
WEATHER CONDITION				WAVE HEIGHT (ft)		LATITUDE/LONGITUDE (DD MM.M)					
6				7		BEGIN LATITUDE		END LATITUDE			
GEAR CONDITION CODE					13		17				
TARGET SPECIES 1 (This Haul)					BEGIN LONGITUDE		END LONGITUDE				
9											
TARGET SPECIES 2 (This Haul)					(STAT AREA)*		(STAT AREA)*				
10					14		18				
COMMENTS							* Enter only if latitude/longitude coordinates are not available				<b>MORE LONGLINE</b>
26											MAINLINE LENGTH (nm)
											19
											SOAK DURATION (hrs)
											20
SPECIES NAME		POUNDS	D/R	DISP CODE	EST. METH.	SPECIES NAME		POUNDS	D/R	DISP CODE	EST. METH.
21		22	23	24	25						



**LONGLINE HAUL LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMLLH ASMHAU ASMSPP**

ASM/TRIPID	<b>A02002-</b>
DATE LANDED mm/yy	<b>10 /10</b>
PAGE #	<b>1</b> of <b>2</b>

HAUL BEGIN					HAUL END						
GEAR CODE		HAUL #		GEAR NUMBER		HAUL DATE (mm/dd/yy)		HAUL DATE (mm/dd/yy)			
0 1 0		0 0 1		0 2		10 / 23 / 10		10 / 23 / 10			
HAUL OBSERVED? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>			INC TAKE? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>			BEGIN HAUL TIME		END HAUL TIME			
						00 : 20		01 : 04			
WEATHER CONDITION				WAVE HEIGHT (ft)		LATITUDE/LONGITUDE (DD MM.M)					
DRIZZLE				4		BEGIN LATITUDE		END LATITUDE			
GEAR CONDITION CODE						41 25.4		41 29.0			
610						BEGIN LONGITUDE		END LONGITUDE			
TARGET SPECIES 1 (This Haul)						68 24.5		68 24.2			
Haddock						(STAT AREA)*		(STAT AREA)*			
TARGET SPECIES 2 (This Haul)											
COD, ATLANTIC											
COMMENTS						* Enter only if latitude/longitude coordinates are not available			MORE LONGLINE		
									MAINLINE		
									LENGTH (nm)		
									1 . 6		
									SOAK DURATION (hrs)		
									10 . 0		
SPECIES NAME		POUNDS	D/R	DISP CODE	EST. METH.	SPECIES NAME		POUNDS	D/R	DISP CODE	EST. METH.
Haddock		50	D	100	01						
WINTER SKATE		250	R	001	05						
SPINY DOGFISH		300	R	001	01						
MONKFISH		10	R	100	05						
Haddock		3	R	012	01						
ATLANTIC COD		12	R	100	01						
SPONGE, NK		3	R	001	06						

**LONGLINE HAUL LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMLLH ASMHAU ASMSPP**

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DATE LANDED mm/yy	/ /
PAGE #	of

HAUL BEGIN					HAUL END						
GEAR CODE		HAUL #		GEAR NUMBER	HAUL DATE (mm/dd/yy)		HAUL DATE (mm/dd/yy)				
[ ][ ]		[ ][ ]		[ ][ ]	/ /		/ /				
HAUL OBSERVED?			INC TAKE?		BEGIN HAUL TIME		END HAUL TIME				
YES <input type="checkbox"/> NO <input type="checkbox"/>			YES <input type="checkbox"/> NO <input type="checkbox"/>		:		:				
WEATHER CONDITION			WAVE HEIGHT (ft)		LATITUDE/LONGITUDE (DD MM.M)						
					BEGIN LATITUDE		END LATITUDE				
GEAR CONDITION CODE											
TARGET SPECIES 1 (This Haul)					BEGIN LONGITUDE		END LONGITUDE				
TARGET SPECIES 2 (This Haul)											
					(STAT AREA)*		(STAT AREA)*				
COMMENTS <span style="float: right;">* Enter only if latitude/longitude coordinates are not available</span>					MORE LONGLINE						
					MAINLINE LENGTH (nm)						
					SOAK DURATION (hrs)						
SPECIES NAME		POUNDS	D/R	DISP CODE	EST. METH.	SPECIES NAME		POUNDS	D/R	DISP CODE	EST. METH.

## INDIVIDUAL ANIMAL LOG

**This log should only be used under the following circumstances:**

- A. In gillnet fisheries, record all pelagic species, sturgeons, tagged fish and shellfish EXCEPT:
- bonito
  - skipjack tuna
  - false albacore
  - king mackerel

These species should be recorded on the Gillnet Haul Tab/Log.

- B. In all other fisheries, record only pelagics, sturgeons, and tagged fish caught in a particular haul. It is important to ensure that a weight or count is recorded for **every** animal (except chunked fish carcasses and only heads of animals).

- C. In all fisheries, record catches of **terrapins** on the Individual Animal Log/Tab.

**Any animal recorded on this log should NOT be recorded in the Haul Log Species section.**

**Pelagic Species:** include, but are not limited to: swordfish, billfish, sharks, Atlantic. needlefish, tuna, bonito, torpedo rays, cutlassfish, wahoo.

See Appendix A: Species Names and Corresponding Tabs/Logs for a list of species and the Tabs/Log(s) on which to record them.

### HEADER INFORMATION

Fill out all Header information for all IAL Logs. Haul Logs are used as a cover page to all haul related information on the haul level. Number all logs per haul as follows:

1. Haul Log
2. Individual Animal Log (when present)
3. Length Frequency Log
4. Discard Log (when present)

**NOTE:** Do not put animals from multiple hauls on the same IAL Log. All animals recorded on the IAL Log must be from the same haul.

Please Note: The IAL is a two-sided log that allows up to six (6) individual animals to be recorded. For a single haul, record all IALs in the spaces provided before using a second paper log.

## INSTRUCTIONS

**ALL animals listed on the Individual Animal Log require photographs.** If multiple animals of the same species are caught, photograph the first species, according to the IAL photographing protocols located in the Digital Camera Protocols section of this manual. Photographs of the same species are not required throughout the remainder of the trip.

1. **HAUL NUMBER:** Record the consecutive haul number assigned to the haul being sampled. This number must agree with the haul number recorded on the corresponding Haul Log.
2. **SEQUENCE NUMBER:** Consecutive numbers are assigned to each animal or debris item recorded on this log. If there are insufficient lines on one form, continue listing items on an additional Individual Animal Log, making sure to fill in the preceding number. Start with 01 and continue numbering consecutively within the same haul.
3. **SPECIES:** Record the **complete** common name of each species/animal or debris item to record on this log, as listed in Appendix A: Species Names and Corresponding Tabs/Logs.
4. **WEIGHT (POUNDS):** Record the dressed or round, actual or estimated weight for each species/animal listed in SPECIES NAME.

In general, the types of weights the monitor should be able to obtain are as follows:

**Kept Pelagic Species:** the dealer's actual dressed individual animal weight for those species tagged and carcass weights obtained dockside, i.e. swordfish, billfish, tuna, bonito, sharks, etc.

**Discarded Pelagic Species:** the monitor's estimated round individual animal weight for those species discarded, i.e. swordfish, billfish, tuna, bonito, sharks, etc.

**NOTE:** Actual weights may be recorded to the nearest tenth of a pound. Estimated weights greater than one pound should be recorded to the nearest whole pound.

**NOTE:** When a **shark is finned**, with the carcass discarded or kept, record the **carcass** and its corresponding length and dressed weight information on this log. Check Y=Yes for Dressed. Create a separate summary record, by species, on the corresponding Haul Log, for **kept fins**.

**NOTE:** When a **fish or shark is "upgraded" or "high graded"**, and a previously kept fish or shark is discarded and replaced with one that is larger (or of higher quality/value), record the discarded animal and its weight, and code it appropriately for FISH DISPOSITION. Upgrading may result in dressed discard weights. Upgrading is typically done with swordfish and tuna, but may also occur with sharks and other fish.

**NOTE:** When a **fish or shark is filleted** on the vessel, record the round weight for the animal before filleting.

**NOTE:** Do not record any weight information for chunked fish or only heads of animals. Create a separate summary record, by species, on the corresponding Haul Log, for kept fish chunks.

**NOTE:** Do not record any weight information for terrapins.

5. **DRESSED?:** Indicate whether the weight recorded in the WEIGHT field is a dressed weight by marking either the Y=Yes or N=No box.
6. **ESTIMATION METHOD:** Record the method used to estimate the catch weight of each species by recording the appropriate number code. See Table 1.

**Table 1:** Estimation Method Code & Description

ESTIMATION METHOD CODE	DESCRIPTION
01	Actual
02	Volume to Volume
03	Basket or Tote Count
04	Captain's Estimate
05	Tally
06	Visually Estimated (by the monitor)
07	Cumulative Sum
98	Combination (Comment)
99	Other (Comment)

7. **FISH DISPOSITION CODE:** Indicate the disposition of each animal or item listed in SPECIES NAME by recording the most appropriate three digit code listed in Appendix B: Fish Disposition Codes. The fish disposition reason should be obtained from the captain.

Example: A 47 lb swordfish is discarded because regulations prohibit its retention because it's too small (012).

**INDIVIDUAL ANIMAL MEASUREMENTS**

Do not try to piece animals together that have been cut up, but do try to record an ESTIMATED LENGTH for these animals.

Do not record any length information for only heads of animals.

8. **LENGTH:** Record the measured length of the animal according to these standards. All length measurements are recorded in whole centimeters.

Swordfish and Other Billfish (i.e. white marlin, blue marlin, sailfish, and spearfish):

**Lower Jaw to Fork length (LJFL)** - tip of lower jaw to caudal fork of the tail (**curvilinear**).

Tunas and Bonito: **Fork Length (FL)** - tip of upper jaw to caudal fork of the tail (**straight**).

Sharks: **Fork Length (FL)** - tip of snout to caudal fork of the tail (**straight**).

Rays: **Total length (TL)** - tip of upper snout to end of the tail (**straight**).

Tagged Fish: as listed in Table 2 in the Biological Sampling Manual.

Other Fish (i.e. sturgeon): **Fork length (FL)** - tip of upper snout to fork of the tail (**straight**).

Terrapins: **Total length (TL)** - nuchal notch to the posterior marginal **tip (curvilinear)**.

**NOTE:** If unable to obtain required length, dash field and comment reason in the corresponding comments section.

**NOTE:** Photograph all species that are recorded on the IAL. If a species is to be listed on the IAL and more than one specimen is taken on a particular trip, **fully photograph at least the first specimen of that SPECIES**. If time allows, photograph all (within reason) specimens recorded. Examples of species which photographs should be taken of are: sharks, rays, sturgeons, pelagic species, rare species, and all tagged fish.

9. **END STATUS:** Indicate the final status of each animal caught, whether it is brought onboard or not, by marking the box next to the appropriate status. See Table 2.

**Table 2:** End Status

ALIVE	<input type="checkbox"/>
DEAD	<input type="checkbox"/>
DEAD, DAMAGED	<input type="checkbox"/>
DEAD, HEAD ONLY	<input type="checkbox"/>
UNKNOWN	<input type="checkbox"/>

## **TAGS**

10. **TAG NUMBER #1:** Record the complete alphanumeric numbers, **with no spaces or hyphens**, from any tag attached to the animal. This number may be from:

- **A tag recaptured fish or shark.** If the animal is kept by the vessel, record the recaptured animal tag number in this field. If the tag is preceded by a letter, be sure to include that when recording the tag number.

Examples: M145697, R324061

11. **TAG CODE #1:** Indicate the origin of the tag number(s) recorded above, for each tag attached to the animal, by checking the appropriate TAG CODE box. See Table 3.

**Table 3:** Tag Code Types & Descriptions

TAG CODE TYPE		DESCRIPTION
TAG APPLIED BY OBSERVER	<input type="checkbox"/>	Check this box if the monitor physically tags the animal
NO TAG(S).	<input type="checkbox"/>	Check this box when there is no tag present
TAG PRESENT, LEFT ON	<input type="checkbox"/>	Check this box when the tag is left on the animal, regardless of whether it is kept or discarded
TAG PRESENT, REMOVED	<input type="checkbox"/>	Check this box when the tag is removed from animal, regardless of whether it is kept or discarded
UNKNOWN	<input type="checkbox"/>	Check this box and record the reason in the COMMENTS

12. **TAG NUMBER #2:** Record the complete alphanumeric numbers, with no spaces or hyphens, from the additional tag attached to the animal.

13. **TAG CODE #2:** Indicate the origin of the tag number recorded above, for each tag attached to the animal, by checking the appropriate TAG CODE box. See Table 3.

**NOTE:** If there is not a second tag, check NO TAG. Do not leave this field blank.

14. **COMMENTS:** Record any additional information regarding the animal(s), i.e. ID characteristics [particularly individual shark, ray and sturgeon], explanation for data that cannot be collected. If animals cannot be photographed, indicate why and give details, perhaps providing drawings of the characteristics for which photos would be requested (i.e. identifying species characteristics). Remember, **describe thoroughly** and **take multiple photos**.

**NOTE:** Also, be sure to include any tag recapture information, such as tagging program, tag description and location, phone number, etc. Reference each comment with its corresponding animal sequence number and field name.

**INDIVIDUAL ANIMAL LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMIAL**

ASM/TRIPID	
DATE LANDED mm/yy	/ /
PAGE #	of

HAUL #	SEQUENCE #	HAUL #	SEQUENCE #	HAUL #	SEQUENCE #
<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
SPECIES <input type="text" value="3"/>		SPECIES		SPECIES	
WEIGHT (POUNDS) <input type="text" value="4"/>	DRESSED? Y <input type="checkbox"/> <input type="checkbox"/> N <input type="checkbox"/> <input type="checkbox"/> <input type="text" value="5"/>	WEIGHT (POUNDS)	DRESSED? Y <input type="checkbox"/> N <input type="checkbox"/>	WEIGHT (POUNDS)	DRESSED? Y <input type="checkbox"/> N <input type="checkbox"/>
EST. METHOD <input type="text" value="6"/>	DISP. CODE <input type="text" value="7"/>	EST. METHOD	DISP. CODE	EST. METHOD	DISP. CODE
LENGTH (cm) <input type="text" value="8"/>		LENGTH (cm)		LENGTH (cm)	
END STATUS ALIVE <input type="checkbox"/> <input type="checkbox"/> <input type="text" value="9"/> DEAD <input type="checkbox"/> DEAD, DAMAGED <input type="checkbox"/> DEAD, HEAD ONLY <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>		END STATUS ALIVE <input type="checkbox"/> DEAD <input type="checkbox"/> DEAD, DAMAGED <input type="checkbox"/> DEAD, HEAD ONLY <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>		END STATUS ALIVE <input type="checkbox"/> DEAD <input type="checkbox"/> DEAD, DAMAGED <input type="checkbox"/> DEAD, HEAD ONLY <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>	
<b>TAGS</b>		<b>TAGS</b>		<b>TAGS</b>	
TAG #1 <input type="text" value="10"/>		TAG #1		TAG #1	
TAG #1 CODE APPLIED BY OBSERVER <input type="checkbox"/> <input type="checkbox"/> <input type="text" value="11"/> NO TAG(S) <input type="checkbox"/> TAG PRESENT, LEFT ON <input type="checkbox"/> TAG PRESENT, REMOVED <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>		TAG #1 CODE APPLIED BY OBSERVER <input type="checkbox"/> NO TAG(S) <input type="checkbox"/> TAG PRESENT, LEFT ON <input type="checkbox"/> TAG PRESENT, REMOVED <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>		TAG #1 CODE APPLIED BY OBSERVER <input type="checkbox"/> NO TAG(S) <input type="checkbox"/> TAG PRESENT, LEFT ON <input type="checkbox"/> TAG PRESENT, REMOVED <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>	
TAG #2 <input type="text" value="12"/>		TAG #2		TAG #2	
TAG #2 CODE APPLIED BY OBSERVER <input type="checkbox"/> <input type="checkbox"/> <input type="text" value="13"/> NO TAG(S) <input type="checkbox"/> TAG PRESENT, LEFT ON <input type="checkbox"/> TAG PRESENT, REMOVED <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>		TAG #2 CODE APPLIED BY OBSERVER <input type="checkbox"/> NO TAG(S) <input type="checkbox"/> TAG PRESENT, LEFT ON <input type="checkbox"/> TAG PRESENT, REMOVED <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>		TAG #2 CODE APPLIED BY OBSERVER <input type="checkbox"/> NO TAG(S) <input type="checkbox"/> TAG PRESENT, LEFT ON <input type="checkbox"/> TAG PRESENT, REMOVED <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>	
COMMENTS <input type="text" value="14"/>					



**INDIVIDUAL ANIMAL LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMIAL**

ASM/TRIPID	<b>A02002-</b>
DATE LANDED mm/yy	<b>10 /10</b>
PAGE #	<b>2</b> of <b>2</b>

HAUL #	SEQUENCE #	HAUL #	SEQUENCE #	HAUL #	SEQUENCE #
<b>002</b>	<b>01</b>	<b>002</b>	<b>02</b>	<b>002</b>	<b>03</b>
SPECIES <b>TORPEDO RAY</b>		SPECIES <b>PORBEAGLE SHARK</b>		SPECIES <b>SPINY DOGFISH</b>	
WEIGHT (POUNDS) <b>40</b>	DRESSED? Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	WEIGHT (POUNDS) <b>95</b>	DRESSED? Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	WEIGHT (POUNDS) <b>5</b>	DRESSED? Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
EST. METHOD <b>01</b>	DISP. CODE <b>001</b>	EST. METHOD <b>06</b>	DISP. CODE <b>001</b>	EST. METHOD <b>01</b>	DISP. CODE <b>001</b>
LENGTH (cm) <b>82</b>		LENGTH (cm) <b>176</b>		LENGTH (cm) <b>67</b>	
END STATUS ALIVE <input checked="" type="checkbox"/> DEAD <input type="checkbox"/> DEAD, DAMAGED <input type="checkbox"/> DEAD, HEAD ONLY <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>		END STATUS ALIVE <input type="checkbox"/> DEAD <input checked="" type="checkbox"/> DEAD, DAMAGED <input type="checkbox"/> DEAD, HEAD ONLY <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>		END STATUS ALIVE <input checked="" type="checkbox"/> DEAD <input type="checkbox"/> DEAD, DAMAGED <input type="checkbox"/> DEAD, HEAD ONLY <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>	
<b>TAGS</b>		<b>TAGS</b>		<b>TAGS</b>	
TAG #1 <b>-----</b>		TAG #1 <b>-----</b>		TAG #1 <b>RI22345</b>	
TAG #1 CODE APPLIED BY OBSERVER <input type="checkbox"/> NO TAG(S) <input checked="" type="checkbox"/> TAG PRESENT, LEFT ON <input type="checkbox"/> TAG PRESENT, REMOVED <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>		TAG #1 CODE APPLIED BY OBSERVER <input type="checkbox"/> NO TAG(S) <input checked="" type="checkbox"/> TAG PRESENT, LEFT ON <input type="checkbox"/> TAG PRESENT, REMOVED <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>		TAG #1 CODE APPLIED BY OBSERVER <input type="checkbox"/> NO TAG(S) <input type="checkbox"/> TAG PRESENT, LEFT ON <input checked="" type="checkbox"/> TAG PRESENT, REMOVED <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>	
TAG #2 <b>-----</b>		TAG #2 <b>-----</b>		TAG #2 <b>-----</b>	
TAG #2 CODE APPLIED BY OBSERVER <input type="checkbox"/> NO TAG(S) <input checked="" type="checkbox"/> TAG PRESENT, LEFT ON <input type="checkbox"/> TAG PRESENT, REMOVED <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>		TAG #2 CODE APPLIED BY OBSERVER <input type="checkbox"/> NO TAG(S) <input checked="" type="checkbox"/> TAG PRESENT, LEFT ON <input type="checkbox"/> TAG PRESENT, REMOVED <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>		TAG #2 CODE APPLIED BY OBSERVER <input type="checkbox"/> NO TAG(S) <input checked="" type="checkbox"/> TAG PRESENT, LEFT ON <input type="checkbox"/> TAG PRESENT, REMOVED <input type="checkbox"/> UNKNOWN (COMMENT) <input type="checkbox"/>	
COMMENTS					
<b>01: ID CHARACTERISTICS: ROUND DISK; DARK GREY DORSAL; WHITE VENTRAL; RELATIVELY SMALL MOUTH</b>					
<b>02: ID CHARACTERISTICS: WHITE PATCH ON TRAILING EDGE OF 1ST DORSAL; CAUDAL FINS EQUAL IN SIZE; 2 CAUDAL KEELS; THICK BODIED; DORSAL COLOR DARK GREY</b>					
<b>03: TAG LOCATED ON DORSAL FIN; YELLOW LONG TUBE; DOGFISH GROUP PO BOX 123 WINTER STREET RODES RI 03426</b>					

**INDIVIDUAL ANIMAL LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMIAL**

ASM/TRIPID	
DATE LANDED mm/yy	/ /
PAGE #	___ of ___

HAUL #	SEQUENCE #	HAUL #	SEQUENCE #	HAUL #	SEQUENCE #
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
SPECIES		SPECIES		SPECIES	
WEIGHT (POUNDS)	DRESSED? Y <input type="checkbox"/> N <input type="checkbox"/>	WEIGHT (POUNDS)	DRESSED? Y <input type="checkbox"/> N <input type="checkbox"/>	WEIGHT (POUNDS)	DRESSED? Y <input type="checkbox"/> N <input type="checkbox"/>
EST. METHOD	DISP. CODE	EST. METHOD	DISP. CODE	EST. METHOD	DISP. CODE
LENGTH (cm)		LENGTH (cm)		LENGTH (cm)	
END STATUS		END STATUS		END STATUS	
ALIVE <input type="checkbox"/>		ALIVE <input type="checkbox"/>		ALIVE <input type="checkbox"/>	
DEAD <input type="checkbox"/>		DEAD <input type="checkbox"/>		DEAD <input type="checkbox"/>	
DEAD, DAMAGED <input type="checkbox"/>		DEAD, DAMAGED <input type="checkbox"/>		DEAD, DAMAGED <input type="checkbox"/>	
DEAD, HEAD ONLY <input type="checkbox"/>		DEAD, HEAD ONLY <input type="checkbox"/>		DEAD, HEAD ONLY <input type="checkbox"/>	
UNKNOWN (COMMENT) <input type="checkbox"/>		UNKNOWN (COMMENT) <input type="checkbox"/>		UNKNOWN (COMMENT) <input type="checkbox"/>	
<b>TAGS</b>		<b>TAGS</b>		<b>TAGS</b>	
TAG #1		TAG #1		TAG #1	
TAG #1 CODE		TAG #1 CODE		TAG #1 CODE	
APPLIED BY OBSERVER <input type="checkbox"/>		APPLIED BY OBSERVER <input type="checkbox"/>		APPLIED BY OBSERVER <input type="checkbox"/>	
NO TAG(S) <input type="checkbox"/>		NO TAG(S) <input type="checkbox"/>		NO TAG(S) <input type="checkbox"/>	
TAG PRESENT, LEFT ON <input type="checkbox"/>		TAG PRESENT, LEFT ON <input type="checkbox"/>		TAG PRESENT, LEFT ON <input type="checkbox"/>	
TAG PRESENT, REMOVED <input type="checkbox"/>		TAG PRESENT, REMOVED <input type="checkbox"/>		TAG PRESENT, REMOVED <input type="checkbox"/>	
UNKNOWN (COMMENT) <input type="checkbox"/>		UNKNOWN (COMMENT) <input type="checkbox"/>		UNKNOWN (COMMENT) <input type="checkbox"/>	
TAG #2		TAG #2		TAG #2	
TAG #2 CODE		TAG #2 CODE		TAG #2 CODE	
APPLIED BY OBSERVER <input type="checkbox"/>		APPLIED BY OBSERVER <input type="checkbox"/>		APPLIED BY OBSERVER <input type="checkbox"/>	
NO TAG(S) <input type="checkbox"/>		NO TAG(S) <input type="checkbox"/>		NO TAG(S) <input type="checkbox"/>	
TAG PRESENT, LEFT ON <input type="checkbox"/>		TAG PRESENT, LEFT ON <input type="checkbox"/>		TAG PRESENT, LEFT ON <input type="checkbox"/>	
TAG PRESENT, REMOVED <input type="checkbox"/>		TAG PRESENT, REMOVED <input type="checkbox"/>		TAG PRESENT, REMOVED <input type="checkbox"/>	
UNKNOWN (COMMENT) <input type="checkbox"/>		UNKNOWN (COMMENT) <input type="checkbox"/>		UNKNOWN (COMMENT) <input type="checkbox"/>	
COMMENTS					

## CATCH ESTIMATION INFORMATION & BACKGROUND

### Practical Knowledge for Fisheries At-sea Monitors

#### INTRODUCTION

Due to the nature of commercial fishing vessel practices, it can be difficult for fisheries at-sea monitors to obtain actual or estimated weights to illustrate the catch composition. Therefore, the purpose of this document is to share knowledge on how to obtain actual weights, the most approximate estimations possible and when necessary, how to extrapolate weights by using volumetric measurements. This document also provides guidance on how to manage the catch onboard commercial fishing vessels by conducting approved catch estimation techniques.

The information presented in this document was collected by reviewing and updating past Northeast Fisheries Observer Program (NEFOP) information on catch estimation in addition to implementing recommendations put forth by observers via an in-house workshop on catch estimation in addition to a literature review of journal articles and of other observer/monitor manuals. The catch estimation techniques discussed are implemented in a variety of fisheries including, gillnet, longline, and bottom otter trawl as appropriate.

In addition to estimating the catch, monitors must collect biological samples from the catch. Biological sampling includes collecting actual weights and length frequencies. It is crucial that the samples and weights collected and recorded by monitors are representative of the haul being observed. Any non-randomness or bias introduced when sampling influences the quality of data collected. Bias can easily arise from a sampling scheme not systematically executed.

To eliminate bias, all fish caught should be sampled. Sampling all species (as required) and/or taking all actual weights of everything occurring in a haul, known as **whole haul sampling**. However, due to the nature of commercial fishing practices and the environment that these practices occur, whole haul sampling can be impractical or impossible so obtaining a **subsample** is sometimes necessary to extrapolate total catch weights. According to Heales *et al* (2003), “with large trawl catches, subsampling is often the only cost effective or feasible way to describe the bycatch composition”. Contrary to whole haul sampling, partial haul sampling includes the sampling of some sea life (as required) and/or taking some actual weights of some things occurring in a haul.

By first collecting area and volumetric catch measurements in addition to a random subsample and using a simple mathematical method called **Volume to Volume**, total catch weights are extrapolated as an estimate. Since these estimates are extrapolated, the monitor must take accurate measurements and perform correct calculations in addition to working up a random and representative subsample. It is equally important for monitors to understand how to work successfully alongside fishing vessel operations and know how to manage special scenarios that may arise if they are to quantify and sample the catch accurately.

## DEFINITIONS

**Actual weight(s):** A weight taken of species and/or debris of a particular disposition code by NMFS issued scales. Record to the tenth of a pound.

**Area (A) (ft<sup>2</sup>):** The amount of space in a flat surface measured in square units. The At-sea Monitoring Program records units in square feet (ft<sup>2</sup>).

**Basket or Tote Count (A x B + C):** Estimates of kept catch can be calculated by basket or tote counts when the kept is separated by species and disposition into containers. If time allows, the monitor can estimate large amounts of discarded species such as little skates by using the basket or tote count method. [Note: Do not forget to tare or subtract the weight of container used to hold the catch.] To perform this method the monitor must take an average weight per container (A), multiply this average weight by the total number of containers filled to the same level (B) and add any container weight that may be different, i.e., ½ filled container (C).

**Captain's estimate:** Sometimes due to safety concerns, weather conditions, or large catch volumes, total catch weights can be obtained from the captain. This method should **rarely** be used. Comments must be made as to why this method was chosen. Monitors should record the captain's estimations in the comments section of this Catch Estimation Worksheet.

**Catch Depth (D):** An exact measurement of distance between the top and bottom of the catch from which the monitor intends to calculate a volume. If the catch is first sorted, the catch depth should be taken afterwards to obtain the actual depth in order to calculate an accurate volume. Record in feet.

**Diameter (d):** A straight line that passes from side to side through the center of a circular object. Record in feet.

**Fish Tote:** Commonly known as the 70 liter or 100 lb. fish tote, which is the standard for seafood handling in the North Atlantic. Equivalent to fish totes commonly seen in the gillnet fishery. Standard flush volume for a fish tote is 2.65 ft<sup>3</sup>.

**Flush:** means catch or subsampling material flush to the walls of a checker pen or subsampling containers as opposed to heaping.

**Heterogeneous:** means catch containing many different species and/or debris and fish or shellfish of different sizes.

**Homogeneous:** means catch that is composed of parts or elements that are all of the same kind.

**Identical groupings:** means of the same species weight code (dressed/round) and fish disposition code.

**Length (L):** Distance from one end to another.

**Long Radius (r<sub>2</sub>):** Long radius is measured when a circular shape is irregular (i.e., ellipse) to obtain an average radius. The long radius is defined as the distance from the center of a circle to the furthest point on the perimeter. Record in feet.

**Long Width (W<sub>2</sub>):** Long width is measured when an angular shape is irregular (i.e., trapezoid) to obtain an average width. This is the longest parallel line. Record in feet.

**Orange Basket:** Equivalent to orange bushel basket commonly seen on scallop and trawl fishing vessels. NEFOP standard flush volume of 1.47 ft<sup>3</sup>.

**Partial haul sampling:** A portion of the haul is sampled or actual weights are taken for a portion of the haul only. The rest of the haul is represented by estimated weights.

**Pi ( $\pi$ ):** The ratio of the circumference of a circle to its diameter. The value of  $\pi$  is 3.14 (rounded to the hundredths place).

**Radius (r):** The distance between the center of a circle and any point on the circle's perimeter. Record in feet. (Radius ( $r$  or  $r = d \div 2$ )).

**Sample:** A small part of something intended to represent the whole. The fishing vessel obtains the catch or sample. A subsample is used by the monitor to extrapolate total catch weights from the sample or catch.

**Sample Weight Multiplier:** is used to extrapolate the total catch weight for each species found in a subsample. Record to the hundredths.

**Short Radius ( $r_s$ ):** Short radius is measured when a circular shape is irregular (i.e., oval) to obtain an average radius. The short radius is defined as the distance from the center of a circle to the closest point on the perimeter. This is the shortest parallel line. Record in feet.

**Short Width ( $W_s$ ):** Short width is measured when an angular shape is irregular (i.e., trapezoid) to obtain an average width. Record in feet.

**Tally:** A method where the weight of a species (i.e., dogfish) is estimated by taking an average weight and multiplying by the collected tally. The number of individuals used to obtain an average weight should be  $\geq 20\%$  of the tally.

**Subsample:** A subsample is used in lieu of actual weights to determine catch composition and extrapolate the total catch weight of individual groupings of sea life and/or debris for a large catch. As a guideline, a subsample is random and must represent  $\geq 20\%$  of the total catch size. The subsample contains the typical composition of the overall catch (i.e., representative).

**Subsampling Container:** Any container used to hold a subsample.

**Total Subsample Volume:** The total volume of the subsample. This number is obtained by multiplying the total number of subsampling containers collected by the flush volume of the container used (i.e., 10.5 orange baskets x 1.47ft<sup>3</sup> flush). Record to the hundredths.

**Volume (V) (ft<sup>3</sup>):** The amount of three-dimensional space occupied by a substance or object.  
Volume (ft<sup>3</sup>) = Area (ft<sup>2</sup>) x Depth (ft)

**Volume-to-Volume Method:** Uses a subsample from the catch, the total catch volume, total subsample volume, a sample weight multiplier, and actual weights from sorted sea life and/or debris within the subsample to calculate total catch weights of individual grouping of sea life and/or debris. Can be combined with actual weights (i.e., partial haul sampling) or other catch estimation methods (i.e., basket or tote counts) to estimate total catch weights and catch composition on a haul log.

**Whole haul sampling:** The sample size is the entire haul or the haul log consists of all actual weights.

**Width (W):** The greatest dimension at right angles to length or depth (height). Record in feet.

## BASIC CALCULATIONS

### 1. CALCULATING SURFACE AREA & VOLUME

Monitors must routinely take measurements and perform calculations of the **surface area** and **volume** of containers where the catch is dumped (i.e., **checker pen**). In addition, the monitor must calculate the volume for the container or **subsampling container**, which they use to organize their subsample. Addendum II illustrates some examples on how to calculate the surface area and volume of some shapes and containers the monitor might encounter. Standard flush volumes are given for containers commonly encountered on commercial fishing vessels.

**NOTE:** Monitors must know the **order of operations** when completing a mathematical formula. It is required to first complete what is in brackets [ ] and/or parenthesis ( ); exponents first then multiplication and division from left to right, then addition and subtraction from left to right.

### 2. CALCULATING SURFACE AREA (ft<sup>2</sup>)

To calculate the surface area for angular objects two measurements must be taken, length and width. However, for circular objects the radius must be measured in addition to using Pi  $\pi$  (3.14) to complete the calculation. It is easier to measure the **diameter** and divide by 2 to find the radius.

Surface Area = Length x Width

### 3. CALCULATING VOLUME (ft<sup>3</sup>)

The surface area (two-dimensional) multiplied by **height** in feet (one dimension) gives the three dimensions needed to calculate volume. Therefore, to calculate the volume of catch within a checker pen, multiply the surface area by the **catch depth** or height. If the depth is inconsistent or multiple depths occur, the monitor must take an average depth.

Volume = Length x Width x Height (Depth)

**NOTE:** It is important to calculate the catch volume within the checker pen. Therefore, the catch depth is needed and not the checker pen height, when making volumetric calculations and estimating total catch weights, unless the catch evenly fills or flushes the checker pen completely.

### 4. EXAMPLES ILLUSTRATING SURFACE AREA AND VOLUMETRIC CALCULATIONS

Area Calculation Examples on page 310 illustrates some examples of surface area and volumetric calculations. To obtain the catch volume occupied within the shapes the monitor needs to measure the catch depth within the checker pen. To obtain the subsample volume, the monitor should measure the depth of the subsample within the subsampling container. Normally, the subsample volume will be

available as a flush volume. As a result, volumetric standards of flush containers commonly used (orange bushel baskets and fish totes) are given to save the monitor time.

**Orange bushel basket** = 1.47 ft<sup>3</sup>

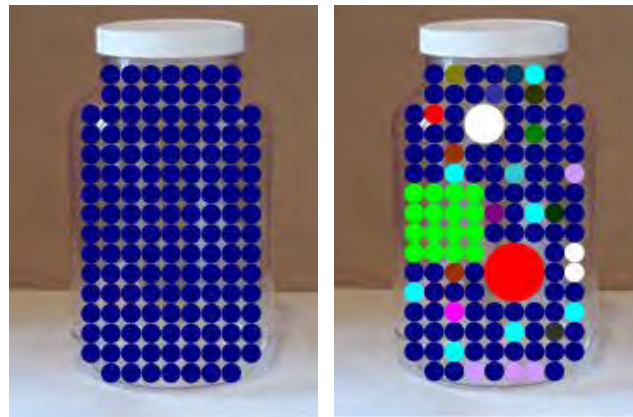
**Fish Tote** = 2.65 ft<sup>3</sup>

### CATCH ESTIMATION GUIDELINES and METHODS

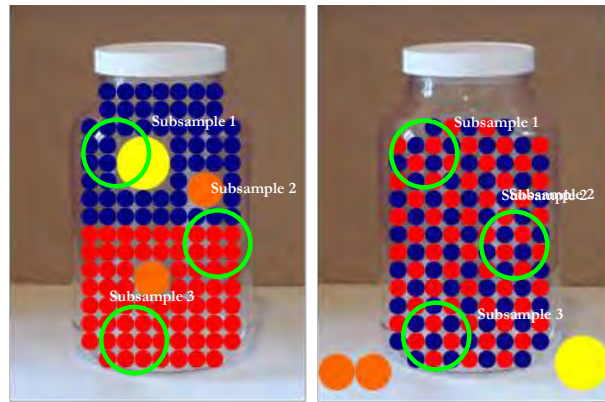
**NOTE:** The Northeast Fisheries Observer and At-sea Monitoring Program is an accountable and transparent program and must remain so through documentation of how monitors obtained their estimates. Therefore, the monitor must document how their estimates were obtained, whether extrapolating or obtaining approximate estimations using basket or tote counts or tallying or combining methods, documentation is very important in maintaining the quality of data collected and managed through NEFOP.

#### 1. THE CATCH

Fishermen process the catch by deciding which species to keep and which to discard. The monitor sorts the catch by species, then into a **catch disposition** (K/D) and **fish disposition code**. The monitor's priority is to obtain **actual weights** of the **discarded** portion of the catch, then obtain round actual weights of **kept** species. Sometimes the catch is too large so the monitor must estimate the **total catch weight** of sea life and/or debris through a subsample of the catch or by using other catch estimation methods (i.e., basket or tote counts). It is possible for the monitor to combine catch estimation methods to support their work.

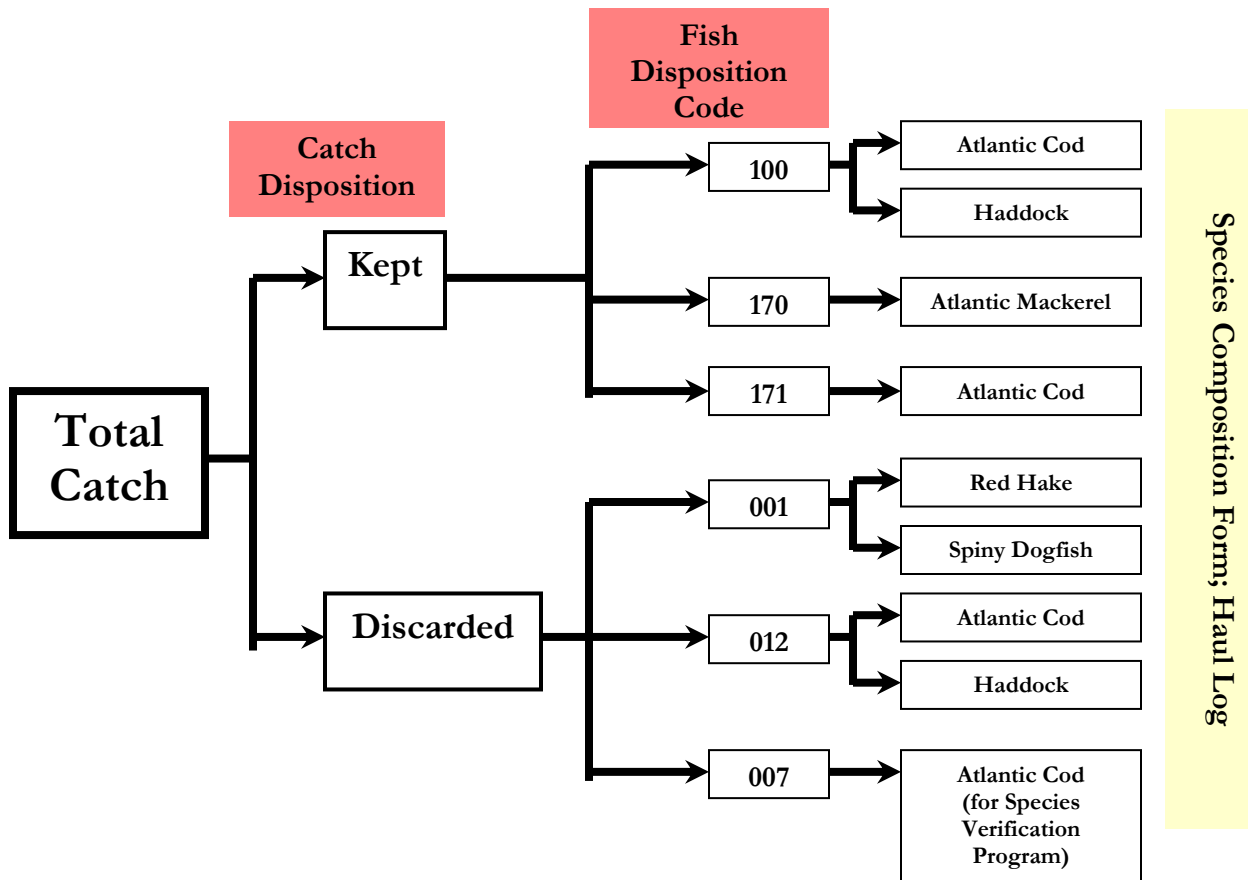


**Figure 1:** The figure illustrates homogeneity versus heterogeneity. The jar of marbles to the left is uniform or homogeneous while the jar of marbles to the right illustrates many diverse marble types in addition to stratification thus heterogeneity. The level of heterogeneity within the catch will influence how the monitor will manage the catch.



**Figure 2:** The figure illustrates the importance of being **random and representative** when taking a subsample. In this example, mixing the marbles and removing the few occurring marble types provides a better way to estimate the composition of marbles via actual measurements (removing the few and counting them) and then taking a subsample after mixing occurs. Removing few occurring species and mixing the catch before subsampling will help avoid over extrapolation and provide a more representative subsample to represent the actual total catch.

**Schematic diagram illustrating catch components**





## 2. THE MONITOR'S OPTIONS PRIORITIZED

The monitor's priority is actual weights of discards followed by round, actual weights of the kept catch. However, sometimes it is difficult to obtain actual weights because the catch is too large, time constraints, rough weather arises or other safety concerns occur. Monitors have the following methods or tools (listed by priority or preference) to help them record total catch weights (these methods may be combined):

- a. Actual weights
- b. Basket or tote counts estimations
- c. Stroke tally method estimations
- d. Volume-to-Volume Method (extrapolated estimations)
- e. Visual estimates (monitor's visual estimates based on previous experience of working with actual weights; should be used during special circumstances only)
- f. Captain's estimates (vessel estimate)

## 3. CATCH ESTIMATION METHODOLOGIES

- A. **Actual weights** are the monitor's number one priority. An actual weight means a complete weight account of an identical grouping of a particular species of sea life or debris occurring in a haul. One individual left out of an **identical grouping** (i.e., same species, catch disposition and fish disposition code), in a haul for any reason (i.e., tossed over by a fisherman), will make the total catch weight an estimate. If all individuals are accounted for in an identical grouping then the weight is actual. **The monitor can only use their NMFS issued scales to take weights of sea life and debris.** No other scales (i.e., boat scales) can be substituted.
- B. **Basket/Tote Count Method.** The monitor obtains an average basket weight by weighing at least three baskets (or more) and averaging the weight. The monitor then counts the number of total baskets and applies the average weight. Since the monitor did not actually weigh all the baskets, the weight is an estimate. This spatial basket sampling is very effective at producing weight estimations.

When using the basket or tote count method, the monitor should not forget to tare or subtract the container weight used to hold the catch. For the monitor to perform the basket or tote count method, they should take:

- average weight per container (A);
- multiply this average weight by the total number of containers filled to the same level (B)
- when necessary, the monitor should add a container weight (C) that is different (i.e., ½ filled container).

$$(A \times B + C)$$

The monitor can refer to the *Biological Sampling Manual* under “Catch Estimation Guidelines” for an illustration of this method.

**TOTAL ESTIMATED WEIGHT BASED ON  
BASKET OR TOTE COUNTS = Average  
Weight of Totes (lbs) x Number of Totes  
Filled to the Same Level and Same Species +  
Any Partially Filled Tote (lbs)**

- C. **Tally Method.** Sometimes it may be necessary for a monitor to use the tally method as a catch estimation tool. This method is commonly used in the gillnet and longline fisheries, however it may be employed in other fisheries when appropriate. As a guideline, 20% or more of the total stroke tally should be represented as actual weights, then an average weight can be calculated and multiplied by the total tally, thus a total estimated catch weight can be approximated. However, it is often impossible to know what quantity will be available to equal 20% or more. Therefore, as a further guideline, if the lengths and weights of an individual species to be tallied are very diverse then the monitor should try to obtain as many fish as possible or as time allows. However, if catch diversity is lower or the sizes are less diverse then less fish will be needed to obtain an approximate estimation but the monitor should still try and obtain as many fish to sample as time allows. The monitor should always try to obtain as many fish randomly to represent the average weight.

In the longline fishery, if the monitor knows the total number of hooks in a tote (i.e., 350) then the monitor can take 20% of the total number of hooks (i.e., 350) to calculate that 70 fish or more should be randomly sampled and used to obtain an average weight to calculate the total estimated catch weight of an identical grouping. Some bias may occur during stroke tallying. For example, while the monitor is sampling a fish, other fish may be processed quickly by the fishermen, thus not tallied or noticed by the monitor. The monitor can ask the captain and make notes in the comment section otherwise the monitor should position him or herself so the catch can be observed and be ready to multitask and be quick.

**TOTAL ESTIMATED WEIGHT BASED  
ON TALLY = Average Weight of  
Individual or Unit x Total Number of  
Individuals or Units Tallied**

- D. **Volume-To-Volume Method.** In some situations aboard commercial fishing vessels, it may not be possible to obtain actual weights or use the preferred basket/tote or tally estimation methods. In these situations, the monitor must subsample the catch in an effort to obtain catch composition estimations for the total catch. After obtaining a random subsample, the monitor calculates an **extrapolated estimate** by using the volume-to-volume method.
- E. **Captain’s Estimate.** The monitor can use captain’s estimates for specific situations. For example, if the haul is unobserved the monitor should only record kept catch information on the

Haul Tab/Log. On the reverse Catch Estimation Worksheet, “captain’s estimates” should be checked off as the catch estimation method used. Some examples of when a monitor may use the captain’s estimate includes when estimating weights for large objects or fish such as boulders or basking sharks. The use of the captain’s estimate should be a rare event in most fisheries.

- F. **Visual estimates** are the least preferred option for obtaining weights but are sometimes the only option available. Visually estimating should be used during special circumstances only. Such circumstances include accounting for seaweed, which may be attached to the fishing gear, very large items such as rocks, in addition to very fine or unevenly distributed items such as sand and clay. The monitor should not visually estimate species or debris, which can be weighed or estimated by employing one or more of the approved catch estimation methods.
- G. **Combination of Methods.** Most often, it is appropriate for the monitor to combine catch estimation methods. Combining catch estimation methods is very common but all methods must be recorded and detailed in the comments section or in the Catch Estimation Worksheet. If other method is used, the monitor must thoroughly document how the catch was estimated.

#### 4. WHAT IS A SUBSAMPLE?

The total catch taken by the fishing vessel from the ocean is synonymous to a sample. A subsample is used in lieu of actual weights or approximate estimates to determine catch composition and extrapolate the total catch weight of sea life. According to Heales *et al* (2003) “with large trawl catches, subsampling is often the only cost-effective or feasible way to describe the bycatch composition [but] how well these subsamples represent the total catch depends on how diverse the catch is, how well the catch is mixed before the subsamples are taken, and what proportion of the catch is taken as a subsample.”

Since the Northeast and Mid-Atlantic marine areas contain much lower marine diversity when compared to tropical regions, a **random** subsample of  $\geq 20\%$  of the total catch size is needed to get the most accurate extrapolated weight estimates as possible. The larger the subsample from the sample and the more care taken to facilitate randomness, the more accurate the estimations and representative the subsample will be to the total catch.

**NOTE:** When monitors take their subsamples, they should fill or flush the container(s) used to hold their subsamples with mixed species taken randomly throughout the catch. Afterwards, the monitor must sort each species and take an actual weight according to catch disposition and fish disposition code. Next, the monitor must use the actual weights from their subsample and the Volume-to-Volume method to estimate the total catch weights for the sea life found in their subsample. Monitors should not forget to tare or subtract the container weight, otherwise over-extrapolation will occur.



**Figure 3:** An example of an orange bushel basket flushed with fish and not heaped. Fishermen often heap the catch.

## 5. ADVICE ON HOW TO OBTAIN A RANDOM SUBSAMPLE

It is important for a monitor to take a random subsample to eliminate bias thus obtain the most accurate extrapolated weight estimates as possible. Therefore, each fish from the entire catch should have an equal chance of being selected for the subsample. No favoritism is given to exceptional fish (*i.e.*, particularly large or small fish) as it must be equally likely that these and the typical members will be chosen. Repeated random sampling over time will provide representative catch data. Here are a few tips to help the monitor take a random subsample:

- In order to achieve a random sample, the monitor should find a position that will enable them to reach all fish as opposed to only some. This is necessary since the catch can separate by size during trawling or within a pile.
- The monitor should collect subsamples throughout the pile. The greater the catch diversity or species composition or range of fish sizes, the greater the number of subsamples (or the larger the subsample) that will be needed to represent the total catch.
- When selecting individual fish, the monitor should choose them in a systematic and non-calculated manner, until an adequate subsample size is obtained.
- The monitor should **always** remove few large or small fish and/or debris of an identical grouping first and take actual weights. By taking as many actual weights as possible before subsampling, the monitor will reduce introducing bias into their weight calculations.
- If available, the number of subsampling containers used should be relative to fish size and catch volume. Consequently, catches with all or mostly small fish require less subsampling containers and catches with large fish require more subsampling containers.
- The monitor should take the largest subsample from the catch as possible (time and conditions permitting). As a rule, the monitor must obtain a subsample that represents at least 20% or more of the total catch size. If the monitor obtains less than 20%, they must comment on the circumstances.

**NOTE:** The monitor can calculate how many baskets or totes 20 percent or more equals. For example:

Total catch of 100 ft<sup>3</sup> x 20% = 20 ft<sup>3</sup>, which needs to be removed randomly to give an adequate subsample size. To figure out the number of orange bushel baskets needed to represent a 20 ft<sup>3</sup> subsample consider:

20 ft<sup>3</sup> ÷ 1.47 ft<sup>3</sup> = 13.61 or 14 orange flush bushel baskets will be needed to represent a little more than 20%.

**NUMBER OF SUBSAMPLING  
CONTAINERS NEEDED TO  
REPRESENT 20% = [Total Catch  
Volume x 20%] ÷ Flush Volume of  
Subsampling Container Used**

- The monitor should take their subsamples from the top, middle, and bottom layers of the pile since the catch can stratify.
- The monitor can collect their subsamples from multiple areas of the catch. They should try to collect many, small portions for their subsample. Collecting many small portions is superior to collecting portions that are few and large. The monitor can divide the catch into a mental grid and take many small portions throughout.
- The monitor can use a shovel if available to help them scoop up their subsample. A shovel is superior to hand collecting. For example, when a monitor collects scallops for length frequencies human nature tends to grab the largest or “best looking” scallops. Therefore, dividing the catch into a mental grid and shoveling throughout the catch pile and the catch depth is superior to hand collecting. To monitor stratification the catch should be mixed and all layers represented in the subsample (bottom, middle, and top).
- If estimated weights seem too large due to unintentional bias, the monitor should comment. The monitor can compare estimates with the captain and record the captain’s estimates as a note in the comment section of the Catch Estimation Worksheet or Haul Log.
- The monitor should always consider potential sources of bias and math errors before, during, and after their work.

## 6. HANDLING THE CATCH

The monitor will encounter five typical working scenarios when trying to estimate the catch or illustrate the catch composition:

- The monitor can **let fishermen sort the kept catch first then get actual weights of the discards**. Afterwards, the monitor can get as many actual weights of the kept catch as possible and/or estimates by using the basket or tote count method. (i.e., large volume of kept with a small volume of discarded species).
- The **monitor can get all actual weights** – the monitor’s priority (i.e., small to medium sized catches, time dependent).
- The **monitor can subsample from the entire catch**. Their subsample will contain both kept and discarded catch dispositions (i.e. large volume of kept and discards with time constraints occurring). For this option, the monitor will need the cooperation of the captain and crew, which will require good communication as the monitor will need to remove the subsample before the crew begins sorting. Otherwise, bias will be introduced into their weight estimates. Furthermore, the monitor should pay attention to the catch disposition of the species in their subsample. Sometimes if kept species are large, they can be hard to manage into a subsampling container. It can also be difficult for the monitor to obtain a representative subsample from larger catches. As a result, it is best to let the fishermen remove the kept first then ask the fishermen not to toss discards overboard.
- The **monitor can estimate the kept catch by the Basket or Tote Count Method** when kept is separated by species into containers. This provides an approximate estimation. (i.e., large volume of kept species, although in some circumstances, if baskets are available and time allows, this method can be used for discarded species such as dogfish or skates, which occur in large quantities)

- The **monitor can** let fishermen start sorting the kept catch first then begin getting actual weights (i.e. removing few occurring or large species first) and/or **subsample to extrapolate estimates of the discards**. Afterwards, the monitor can get actual weights of the kept catch (i.e., large volume of discarded species with a small volume of kept species)



**Figure 4:** This photo illustrates a very large volume of discards (skates and starfish) with very few kept species. Although, the catch is large, it is not very diverse when compared to other trawl catches of other areas. Leveling the catch in the checker pen once the net is on the reel or is fished again is necessary in this situation. In the above situation subsampling is probably the only cost effective means to describe the catch composition due to time and commercial fishing vessel practices. The fishermen may choose not to work the catch due to few or no kept catch being available. The monitor can obtain some actual weights (for few occurring species) if possible and/or subsample the catch to extrapolate estimates (depending on time). The monitor must show all of their work on the Catch Estimation Worksheet.



**Figure 5:** This photo illustrates a large volume of kept (haddock) but a small volume of discards (skates, longhorn sculpins) therefore it should be possible to obtain all actual weights of discards but depending on the kept volume and time, the kept catch may be estimated by using the basket or tote count method or actual weights collected. The fishermen will remove the kept portion of the catch for the monitor since the kept is the fishermen's priority. The monitor must show all their work on the Catch Estimation Worksheet.

## 7. GUIDELINES FOR WORKING THE CATCH

Here are some basic guidelines the monitor must consider before working any catch:

- The monitor should determine how they will manage the catch and discuss with the crew their action plan. If the monitor waits to communicate their action plan when the catch is on deck, it is too late.



**Figure 6:** The monitor should allow the fishermen to remove the kept portion first as this will help them work both the discarded and kept portions of the catch more easily. After working the discards, the monitor can get actual weights of the kept and/or obtain estimates by using the Basket/Tote Count Method. Based on a monitor's actual measurements, they can subtract the total kept volume (after fishermen sort) from the total catch volume to obtain the total discarded volume. Monitors can use standard container flush volumes to help them calculate the total volume of kept. **The kept portion of the catch must be a round weight, otherwise volume will be lost.**

Example:

$(10 \text{ flush orange bushel baskets of haddock} \times 1.47 \text{ ft}^3) + (8 \text{ flush orange bushel baskets of winter flounder} \times 1.47 \text{ ft}^3) = (14.7 \text{ ft}^3) + (11.76 \text{ ft}^3) = 26.46 \text{ ft}^3 = \text{Total Kept Volume}$

Therefore:

$\text{Total Discard Volume} = 45 \text{ ft}^3 - 26.46 \text{ ft}^3$

$\text{Total Discard Volume} = 18.54 \text{ ft}^3$

**Total Discard Volume = Total Catch Volume – Total Kept Volume**

- The monitor should determine their appropriate formulas and obtain all relevant measurements before the first haul begins (i.e., subsampling container, checker pen, and deck area measurements or dimensions...etc).
- If possible, the monitor should evenly spread the catch pile before measuring the catch depth in the checker pen or obtaining an average depth.
- The monitor should be in the pile and be mentally and physically flexible.

- Practicing good time management and multitasking skills is essential when observing (i.e., if haul back is consistent throughout the trip, the monitor should know this schedule and plan around it).
- The monitor needs to determine how they will handle the catch (i.e., separate it by catch disposition, obtain actual weights, extrapolate estimates through subsampling, combine catch estimation methods...etc).
- The monitor should always remember to subtract or tare the container weight with which they collect their subsample before making calculations. Not doing so will inflate their weight estimates.
- The monitor should carry a tool to measure the catch depth.
- The monitor must do their calculations and illustrate their methodology on the Catch Estimation Worksheet located on the back of their Haul Log. Monitors cannot substitute another worksheet, such as a spreadsheet, to show their work.
- Due to the nature of commercial fishing practices and the need to obtain unbiased data the monitors must work hard. When the crew is working, the monitor should be working but they should minimize interference with the crew.
- The monitor should adapt his/her methods based on the situation to meet protocols. All methodology should be listed on the Catch Estimation Worksheet

## 8. DETERMINING KEPT vs. DISCARDED

The monitor's subsample might contain both catch dispositions (i.e. kept and discard). To determine kept versus discards the monitor should consider:

- The monitor can put their subsample in a separate area and have the captain and/or crew sort the kept and discards for them.
- The monitor can show questionable species to the captain or a crewmember and ask if the species in question will be kept or discarded.
- If possible, the monitor can use one of the crew's measuring boards or paddles, which have tick marks to illustrate catch disposition based on regulations for a particular species. The monitor should take great care as not to get confused when using this tool. In addition, the monitor should record what the captain and crew are doing thus not introduce subjectivity into the data collection. For example, if a monitor knows that the crew is keeping undersized fish and the monitor has taken measurements, they should not question the crew's intentions but record the data as is.
- If the disposition code is unclear for certain species (i.e. 012 versus 002) the monitor should ask the captain or crew additional questions as to why they are discarding or keeping the species in question.

## 9. SCALES



For management purposes, it is important for the monitor to get real actual weights and the approximate estimates as possible. Therefore, it is important to use scales that work properly. Fishermen may check a monitor's scales or ask if the scales are calibrated. To help maintain their scales monitors must consider this advice:

- For every haul the monitor should make sure their scales sit at zero, if not the monitor should make adjustments so it reads at zero.
- Scales can be tested with a known weight like a bushel basket.
- The monitor should consistently oil their scales and keep them wrapped in a somewhat oily rag thus away from the corrosive ocean air.
- The monitor must send their NMFS issues scales to the Fisheries Sampling Branch every six months for replacement or recalibration.
- If possible, the monitor should carry and properly store an extra set of scales for emergencies.

#### 10. CALCULATING CATCH WEIGHTS USING THE VOLUME-TO-VOLUME METHOD

**NOTE:** The monitor should never use an estimated weight to calculate an estimate. **The monitor must use an actual weight via subsampling to extrapolate an estimate.**

To estimate a total catch weight for a particular species using a subsample and the Volume-to-Volume Method the monitor must calculate the total catch volume within the checker pen, total subsample volume collected, and a **sample weight multiplier**.

Consider this example of the Volume-to-Volume Method:

- **Checker pen = 6.2 ft (L) x 4 ft (W) x 2 ft (D)**
- **Average catch depth = 1.5 ft**
- **Number of subsampling containers flushed with random catch material = 6 orange baskets**
- **Volume of the subsampling container = 1.47ft<sup>3</sup> (the NEFOP standard volume of an orange basket flush with subsampling material)**
- **For this example, the 6 sorted orange baskets resulted in the following actual weights (container weight already subtracted):**

5 lbs	Redfish	kept (100)	1 lb	Sea Raven	discarded (001)
11 lbs	Pollock	kept (100)	14 lbs	Little Skate	discarded (001)
42 lbs	Witch FLD	kept (100)	200 lbs	ATL Cod	kept (100)
38 lbs	Am. Plaice	kept (100)	90 lbs	Haddock	kept (100)
27 lbs	White Hake	kept (100)	10 lbs	Haddock	discarded (012)
8 lbs	Am. Lobster	kept (171)	35 lbs	Sea Scallops	kept (100)
1 lb	Jonah Crab	discarded (001)			

**NOTE:** The monitor should round to a whole number **after** making all calculations when performing the Volume-to-Volume Method. **During the calculations, the monitor must keep their numbers to the hundredths place following proper rounding technique.** To round a number, the monitor must find the rounding digit and look at the digit to the right. If the digit is less than 5, they should not change the rounding digit but drop all digits to the right of it. If the digit is greater than or equal to 5, the monitor should add one to the rounding digit and drop all digits to the right of it. This rule was created to "break the tie" when rounding a number that is exactly between two other numbers. These kinds of rules are called "conventions" and are important to obtain the same answer when doing the same problems. The monitor may also have to round the final number. The total estimated catch weight must be a whole number since estimated haul log weights must be whole unless the number is less than one.

- A. **FIRST**, the monitor must calculate the *total catch volume within the checker pen*. This means the monitor will need the catch depth within the checker pen not the total checker pen height unless the catch is completely flush within the checker pen.

Depth measurements must be precise. For example, if the kept catch is removed first and then few small and/or large fish and/or debris are further removed from the discarded portion (to take actual weights of); the monitor must take the catch depth afterwards to obtain an actual catch depth. Otherwise, estimated catch weights will be inflated when extrapolated.

$$\text{TOTAL CATCH VOLUME (ft}^3\text{)} = \text{Total Catch Area (ft}^2\text{)} \times \text{Average Catch Depth (ft)}$$

Example:

$$\text{L} \times \text{W} \times \text{D} = 6.2 \text{ ft} \times 4 \text{ ft} \times 1.5 \text{ ft} = 37.2 \text{ ft}^3$$

**NOTE:** Once the kept catch is arranged in baskets and/or totes the monitor can use the given flush volumes for orange bushel baskets or fish totes (1.47 ft<sup>3</sup> or 2.65 ft<sup>3</sup> as necessary) to obtain a total kept volume. The actual total kept volume can be subtracted from the total catch volume (kept and discards included) to calculate the total discarded volume if the monitor is doing the Volume-to-Volume Method based on separating the catch by fish disposition. The monitor should keep in mind fishermen often heap the catch in bushel baskets thus the volume will not be the standard flush volume given for orange bushel baskets or fish totes. Furthermore, the fishermen may not use baskets or totes at all. The monitor must take note of the situation and make the necessary adjustments to their calculations. The monitor can take the heaped portions of a container and place them in another container to make their calculations easier. The monitor must show all calculations and measurements on the Catch Estimation Worksheet. If the monitor removes any discards to take actual weights, then the method of subtracting volumes described above cannot be used since the total discard volume will change from the action of removing sea life and/or debris first, unless what was removed can be expressed as a volume. However, large fish and debris can be difficult to manage in containers. See figure 10.

- B. **SECOND**, the monitor must calculate the total subsample volume. The total subsample volume is equal to the number of subsampling containers taken to organize your subsample multiplied by the volume of the subsampling container used. The monitor must make sure all subsampling containers are flush and contain the same amounts of material or volume, if not the monitor must make the proper adjustments in their calculations

$$\text{TOTAL SUBSAMPLE VOLUME} = \text{Number of Subsampling Containers Used} \times \text{Subsampling Container Volume}$$

Example:

$$6 \text{ baskets} \times 1.47 \text{ ft}^3 = 8.82 \text{ ft}^3$$

**NOTE:** The monitor can divide their total subsample volume by the total catch volume to get a percentage of how their subsample compares to the total catch volume. For example:

$$8.82 \text{ ft}^3 \div 37.2 \text{ ft}^3 = 0.2371 \times 100 = 23.71\% \text{ of the total catch volume is represented by the subsample.}$$

- C. **THIRD**, the monitor needs to calculate the sample weight multiplier. The sample weight multiplier is used to extrapolate the total catch weight for each species. To obtain the sample weight multiplier, the monitor must divide the total catch volume within the checker pen by the total subsample volume taken.

$$\text{SAMPLE WEIGHT MULTIPLIER} = \text{Total Catch Volume} \div \text{Total Subsample Volume}$$

Example:

$$37.2 \text{ ft}^3 \div 8.82 \text{ ft}^3 = 4.22$$

**NOTE:** The lower the sample weight multiplier the higher the percentage the monitor's subsample volume represents to the total catch volume. A large sample weight multiplier indicates a subsample that is comparatively small to the total catch volume. Therefore, inaccurate catch estimations are likely to occur when a comparatively small subsample is used to extrapolate weights, especially if species diversity is great. Bias estimations will cause the monitor to inaccurately represent the catch composition. The sample weight multiplier also illustrates the volumetric percentage the subsample compares to the catch. For example, a multiplier of 2 indicates that 50% of the catch was subsampled

$$\text{PERCENTAGE OF TOTAL CATCH} \\ \text{SUBSAMPLED} = \frac{\text{TOTAL CATCH}}{\text{TOTAL SUBSAMPLE}} \\ \text{VOLUME} \div \text{VOLUME} \times 100$$

Example:  $37.2\text{ft}^3 \div 18.6\text{ft}^3 = 2$  (multiplier)  
 $18.6\text{ft}^3 \div 37.2\text{ft}^3 = 0.5 \times 100 = 50\%$

- D. **LAST**, the monitor needs to calculate the total catch weight of each species. To do this, the monitor must multiply the actual weight of each species in their subsample by the sample weight multiplier. The monitor must remember to always subtract or tare the container weight used to organize their subsample.

The monitor needs to round the final calculation for two reasons. First, it is standard to round the final calculation. Second, since the monitor is estimating, they need a whole number to represent the weight for the haul log so they must round the final total estimated catch weight as necessary. The example below is already rounded.

$$\text{MONITOR'S TOTAL CATCH ESTIMATES} = \\ \text{Actual Weights by Species (per disposition)} \times \\ \text{Sample Weight Multiplier}$$

Example:

Weight (lb)	Species	x	Multiplier	=	Extrapolated Weight (lb)
5	Redfish, nk	x	4.21	=	21
11	Pollock	x	4.21	=	46
42	Witch Fld.	x	4.21	=	177
38	Am. Plaice Fld.	x	4.21	=	160
27	White hake	x	4.21	=	114
8	Am. Lobster	x	4.21	=	34
1	Jonah crab	x	4.21	=	4
1	Sea raven	x	4.21	=	4
14	Little skate	x	4.21	=	59
200	Atlantic cod	x	4.21	=	842
90	Haddock	x	4.21	=	379
10	Haddock (012)	x	4.21	=	42
35	Sea scallop	x	4.21	=	147

**NOTE:** It is important to note that the Volume-to-Volume Method should be used to estimate large trawl catches or when other catch estimation tools are not feasible to employ. The larger and more representative the subsample, the more accurate the monitor's extrapolated estimations will be. Therefore, the Volume-to-Volume Method should be reserved for large catches when many estimated weights are expected, otherwise the monitor should get actual weights or use other methods and comment. The monitor can separate the catch by fish disposition (kept versus discarded) and combine catch estimation methods or, before subsampling, take actual weights of a few big and/or small fish before subsampling...etc.



**Figure 7:** If more than one checker pen is used then measurements can be taken of each beforehand, then catch depths after the catch is dumped. The resulting volumes can be added together to calculate catch estimates.

### **SPECIAL SCENARIOS: EXAMPLES OF POTENTIAL BIAS**

The monitor's work is often restricted by the nature of commercial fishing vessel practices and the monitor's sampling protocols and priorities. Below are some scenarios that require special discussion since bias can be easily introduced when monitor are sampling during these situations.

**NOTE:** On a trawl vessel the catch is either available spatially or temporally. Therefore, the subsample is obtained spatially or temporally as the catch is available. The monitor should use units of time (i.e., 5 minute increments) to obtain their subsample when the catch is not available in one place but passes at one point such as on a conveyor belt (temporally).

#### **1. CONVEYOR BELT SORTED CATCH**

When a conveyor belt is used to sort the catch, the monitor should first obtain the total catch volume before the conveyor sorts the catch.

By using units of time (e.g., 5 minute increments), the monitor can obtain a random subsample throughout the sorting process. The unit of time they decide to use will depend on the catch size and crew/conveyor work speed. The monitor can ask the captain the estimated time it will take to sort the catch via the conveyor belt. The monitor should record this time and other information in the comments section of the Catch Estimation Worksheet. For example:

60 minutes (the time it will take to sort the catch via the conveyor belt) ÷ 15 orange bushel baskets = every 4 minutes the monitor should fill up one subsampling container with catch material.

The number of baskets the monitor decides to use will depend on the catch size.

$$\text{WHEN TO TAKE THE SUBSAMPLE FROM THE CONVEYOR} = \frac{\text{Captain's Estimated Time to Sort the Catch by the Conveyor}}{\text{Number of Bushel Baskets Used to Sort the Subsample}}$$

To obtain a subsample from catch sorted on a conveyor the monitor has three options:

- The monitor can get the subsample from the checker pen before the conveyor is turned on as the catch sits in the checker pen. This requires cooperation from the captain and crew. Both catch dispositions will be in the subsample. The monitor should keep in mind the subsample in relation to catch size and species diversity.
- The monitor can obtain the subsample randomly throughout the sorting process (beginning, middle, and end). The subsample can either be taken from the beginning of the belt before any catch is sorted or discarded by the crew thus both catch dispositions will be in the subsample or at the end if discards are just subsampled (i.e., the crew picked out the kept only). The monitor must communicate to the crew not to toss over discards. The monitor should note that the conveyor belt would most likely run the discards directly into the ocean. However, the conveyor sometimes can be manipulated so the subsample is deposited directly in the basket. Alternatively, the monitor can pick out the subsample before it empties into the ocean (depending on conveyor work speed and catch size).
- If fishermen sort the kept catch only with the conveyor, the monitor can get actual weights or subsample the discards left in the pen (depending on discard volume). Afterwards, the monitor can get actual and/or estimated weights (depending on kept volume) of the kept portion of the catch, which the crew already sorted.



**Figure 8:** Fishermen may use a conveyor to sort the catch. The monitor must get the total catch volume before the catch is sorted. If the monitor only subsamples the discards from the total catch, they can use the baskets and totes used to sort the kept catch as seen above to calculate the total kept volume. They may subtract the total kept volume (**fish must not be processed**) from the total catch volume to obtain the total discard volume. The total catch volume must be obtained before the conveyor starts sorting the catch. The monitor can sort/combine baskets together which

are not flush (i.e., when the fishermen heap the catch in baskets) to use the given flush volumes. The monitor can subtract flush container volumes by  $\frac{1}{2}$  if they are only half-full.

## 2. DECKLOADING

Finfish deckloading is rare. Even when the weather is cool, the crew must get the fish into the hold as quickly as possible to preserve the catch on ice and prevent drying. The captain has control over haul set and haul back so normally s/he would not choose to deck load finfish. However, it can occur if large schools of fish are discovered (e.g., haddock). If finfish deck loading occurs, consider the following:

- If a tow is dumped onto a previous catch, the monitor must make sure they have taken their subsample beforehand and noted the remaining depth or volume of the catch. Next, the monitor should work their subsample for the subsequent haul, keeping in mind the remnants of the prior catch. The monitor must remember to subtract the catch depth or volume from the previous haul to get accurate calculations for the total catch volume of the haul, which they are working.



**Figure 9:** Deckloading usually occurs when a vessel discovers a large number of target species. As a result, fishing time will be quicker, because the catch cleaner with fewer discards. When a vessel discovers an abundance of catch and deckloads, normally catch diversity is very low but the volume very large. If the diversity is low and the catch is largely homogenous, then it is more important for the monitor to take the correct catch volume rather than trying to obtain 20% of a very large catch. If catch diversity is low, the monitor will be able to get by with a smaller subsample than if the catch diversity was higher. Refer to Heales *et al* (2003) for discussion on subsample size and species diversity within a trawl vessel's catch.

## 3. FLOODING THE CHECKER PEN

The checker pen is commonly pumped with seawater to wash the catch. Two scenarios will occur with the first being more common:

- Water will accumulate and leak out of the checker pen or checkerboards and will level the catch. The monitor can facilitate leveling and mixing of the catch by going into the checker pen and moving the catch around. It should be possible for the monitor to note when collecting water does not affect the catch depth if it is leaking out quickly. This is an easy observation to make.
- If water accumulates in a checker pen and does not leak out, the volume of water in the checker pen may be significant enough to inflate the monitor's total catch estimates. Therefore, the monitor

should take the subsample before the crew starts pumping water into the catch. If obtaining the subsample is not possible then the monitor should let the crew remove the kept first. However, a large discard volume can cause problems for the monitor since fishermen may want to toss the discards over. The monitor must communicate with the crew not to toss the discards overboard.

- If the monitor lets the crew sort the kept catch first, the monitor can manage the discards and seawater afterwards. This is an easier method to do if the discard volume is small since fishermen may want to remove discards of a larger volume to get to the kept catch. The monitor must ask the crew to set aside the discards for them and not throw them overboard. Normally, the crew will not throw discards over maliciously but out of habit. The monitor should be polite and ask fishermen not to throw the discards overboard.

#### **4. LARGE CATCHES OVERFLOWING FROM CHECKER PEN**

Sometimes when the catch is dumped into a checker pen the catch is so big it overflows out onto or covers the entire aft deck area. Usually the catch will be clean and uniform if the fishing vessel located a school of fish (e.g., haddock). The monitor should be practical, work hard, and comment. For these larger catches, the monitor can compare their estimates with the captain. If their estimates are drastically different from the estimates of the captain, the monitor should not be controversial but simply make notes on their logs and make sure their calculations are correct. The monitor should always keep their estimate and not replace it with a vessel's estimate unless the vessel's estimate was used first for other reasons. If the captain disagrees with the monitor's catch estimation methods, the monitor should provide the captain a Fishermen's Comment Log to fully describe the situation. The monitor should consider:

- First measuring the deck area that could potentially hold catch (i.e., the aft region of the boat) to obtain area and depth measurements throughout the vessel. Monitor should ask the captain about likely scenarios.
- Splitting larger heaping catches into another checker pen or into multiple checker pens or containers.
- If only a few fish overflow, these can be placed back into the checker pen. Afterwards, the average height of the catch should be obtained within the checker pen since leveling might be difficult and result in more fish falling out. The monitor can also place the catch into smaller containers and add given volumes together to get the total catch volume.
- Fishermen removing the kept catch first then the monitor can organize all the discards in the checker pen. Next, the monitor can either subsample or get actual weights of the discards, depending on the discard volume and time available. For discards thrown overboard, the monitor should employ the tally or census method. Afterwards, the monitor can get the kept catch information – actual and/or estimated weights depending on time and kept catch volume.

#### **5. HANDLING LARGE FISH, FEW LARGE FISH, AND FEW SMALL FISH**

Monitors should not deliberately choose particularly large or small fish and add these fish to their subsample because monitors are biasing their sampling efforts. The monitor's subsample must be random and representative of the total catch.

If all species are accounted for of an identical grouping (few large or small fish), the monitor can set these aside first and take an actual weight before subsampling. This can make subsampling easier since large



fish can be difficult to manage in subsampling containers. Therefore, the monitor is separating the actual weight of few occurring sea life and/or debris by catch disposition and disposition code before subsampling. If the monitor does remove anything before subsampling, they must remember to take the catch depth afterwards and before subsampling to obtain a precise catch depth to use in their calculations. Removing large fish and/or debris can significantly influence the catch depth.

Alternatively, if actual weights cannot be obtained from species or debris that are difficult to manage in subsampling containers (e.g., a single halibut, a few large barndoor skates), the monitor can dump the entire subsample into a smaller pen if one is available or on deck as a separate pile (keep in mind where the crew work). Next, the monitor can take angular (i.e., if a smaller checker pen is available) or circular area measurements (i.e., no checker pen and containers available) according to catch shape and obtain a depth to calculate the volume.



**Figure 10:** Remove large sea life and debris first or few occurring sea life and debris will make subsampling easier and reduce bias. When removing sea life and/or debris before subsampling, all sea life and debris of an identical grouping must be removed.

## 6. CATCH NOT DUMPED INTO CHECKER PEN OR NO SUBSAMPLING CONTAINERS AVAILABLE

Sometimes fishermen dump the catch directly on deck and not into a checker pen. Most of the time tow duration is long enough so actual weights can be obtained from larger catches or estimations can be obtained by using the Basket/tote Count Method. However, it is still possible to use the Volume-to-Volume Method.

Although the catch is not dumped into a checker pen, the volume can be calculated by determining the type of shape formed by the dumping action (usually a circle or oval). Then by determining the appropriate formula, the monitor can calculate the surface area. The monitor should leave the dumped catch as is or somewhat level. If the catch is too deep to manage, obtain the catch depth by calculating an average depth measurement of the catch. The monitor should be careful not to spread the catch too much. Then the monitor can use the calculated surface area and average catch depth to calculate the volume.

**NOTE:** The monitor can take the average depth by finding the maximum or greatest depth (highest point) and minimum depth (zero). The monitor should obtain a depth measurement from the highest point (which may or may not be the center) lengthwise every foot in either direction until reaching the perimeter of both ends or zero. A minimum of 10 depths should be obtained.

Likewise, if no subsampling containers or a small empty checker pen is available to manage the subsample, the monitor can arrange their subsample on deck as a circular shape and follow the previous

methods. The monitor should make detailed notes on their calculations and methods employed on their Catch Estimation Worksheet. This includes a diagram of the catch shape.

Trawl catches are sometimes small and relatively easy to manage so actual weights can be obtained or combined with other approximate catch estimation methods such as the basket or tote count and tally count methods. Subsampling is not always needed nor is the best method to use when estimating total catch weights.



**Figure 11:** The catch is not always dumped in a bin. In the picture above the catch is very clean and looks like all kept catch. Therefore, the monitor can use the basket or tote count method to obtain an approximate estimation if actual weights cannot be obtained.

## 7. MANAGING A VERY LARGE CATCH DUMPED IN SECTIONS

When observing trawl vessels that pump the catch, the monitor should pay attention to critically important species, such as haddock and dogfish, in addition to certain anadromous herrings like alewife, American shad, and blueback herring that can be overlooked and misidentified. These anadromous herrings have similarities to other herring species so pay attention to detail. The monitor should refer to their herring ID cheat sheet.

As necessary, the monitor can deliberately pick these critically important species to sample but **should not** add the sample weight into their catch composition log calculations when extrapolating total catch weights because their final estimated weight will be inflated. However, the monitor can add their sample weight to the final extrapolated total catch weight. The monitor can add sample weights to a final calculated weight when using the catch composition sampling method or log. If a trawl vessel is dumping a very large catch in sections onto the vessel then the monitor can use the basket method for this circumstance.

## 8. US/CANADA AREA & SPECIAL MANAGEMENT PROGRAMS (SMPs)

When documenting total catch weights in the US/CA Area or a SMP the monitor's priority is to record actual weights for the discarded and kept critically important species. The critically important species are defined by the Area or SMP.

For these managed areas, it is best to let the fishermen separate the kept catch first. Therefore, the monitor can easily prioritize the critically important species easier by determining if they can get actual weights for the discards and kept or one or the other, depending on the discard and kept volumes of each. Monitors should **always** keep in mind the critically important species. For example, when fishermen separate the kept first, the monitor should obtain actual weights of the critically important discard species first and if necessary subsample the leftover discards afterwards which should contain all non-critically important discards. As soon as critically important kept species are available, the monitor should obtain

the actual weights of these before other species, which are not listed as a priority. Monitors should manage their time and priorities wisely.

Monitors should always show their work even when taking actual weights (i.e., list the actual basket weights that were taken in the comment section of the Catch Estimation Worksheet).

## 9. DAY TRAWL VESSELS

The catch of day trawlers is normally small and these day trawlers typically carry one, two, or three crew members, including the captain (with one or two crew being most common). Therefore, larger catches on these one, two, or three day trips may take a long time to process because the person-power to process the catch can be limited. As a result, the monitor should have plenty of time to get actual weights of the discards and/or the kept catch. Subsampling small catches will produce bias and error in estimating. Working cooperatively with the fishermen is key to obtaining proper data.



**Figure 14:** Day boats are normally small, thus catches are usually small. The number of hauls will typically be no more than 12 on a long day with 1 to 6 hauls being the norm. Even if large catches occur, the captain may be the sole crewmember so the monitor has a lot of time to take actual weights. As a result, these trips should consist primarily of actual weights.

## 10. POTENTIAL BIASES SCENARIOS: PROBLEMS & SOLUTIONS

- **Problem:** checker pen volume bias because the pen may hold fish and indeterminate amounts of water.  
**Solution:** get subsample before water is pumped into the catch or remove water and manage discards after kept catch is sorted by crew first.
- **Problem:** the catch depth may be too shallow to obtain an accurate volume because the catch is too small.  
**Solution:** take actual weights.
- **Problem:** few occurring fish are subsampled too often and the estimated weight is inflated.  
**Solution:** few big and small fish should be removed first and actual weights taken before subsampling.
- **Problem:** purposeful presorting or accidental discarding of discards by a crewmember is occurring.

Solution: the monitor should communicate with the captain and crew. The monitor can let the crew remove kept first, as it will make the monitor's job easier. The monitor must make sure the crew knows to leave discards onboard so that the monitor can get those actual weights and/or estimates later.

### RANDOM SAMPLING GUIDELINES

In addition to subsampling, monitors must pay attention to their biological sampling priorities (e.g., length frequencies). When taking length frequencies from the subsampled portion of the catch, a monitor is creating a random approximation of the actual length frequency of the total catch. Ideally, at least one fish per length in the total catch should be represented in a length frequency subsample. For these reasons, selecting fish for measurement collection must be random.

In situations where there is a small amount of large fish mixed into a large catch of small fish, the large fish should be removed prior to taking random subsamples of the rest of the catch. Conversely, if there are only a few small fish in a large catch of large size fish, those few small fish should be removed prior to subsampling the large catch. If the catch is mixed with fish of all sizes, a random subsample of the entire catch must be taken. If after the random sample is taken, the monitor notes a species in the catch that was not represented in the subsample, that species should be counted individually and not as part of the subsample. In many situations on trawl vessels, the monitor will be shoveling or kicking all discarded species overboard. In these situations, the monitor is able to view the entire catch and is often able to pick out individual species that may only number 2, 3, or so individuals in the entire catch. If the monitor sees this and feels confident that those individuals can be accurately quantified separately from the subsample, it is appropriate to do so. However, by intentionally hand picking individuals for the subsample, the monitor will introduce bias. Hand-selecting individuals should only occur for the species occurring in small, manageable numbers therefore actual weights can be obtained. It is always best to get actual weights or approximate estimations over extrapolated estimations if possible.

The only time that fish should be selected in a non-random fashion is when biological information is being collected from tagged fish. Tagged fish may be taken from either inside or outside of a species composition sample or subsample. Tagged fish and/or shellfish must be recorded separately on the Individual Animal Log.

It is also important to be aware that vessels will often create a subsample/stratum in their sorting procedures. The monitor must work with the crew to ensure that his/her sampling does not become biased by the vessel sorting their catch into size or market categories **before** the monitor conducts biological sampling.

The monitor's random and representative subsample is not only used to extrapolate weights for the total catch but must represent the catch composition for the total catch as well. Monitors can take biological samples from outside the subsample (i.e. other portions of the catch, sorted and/or unsorted by them or the crew) if an insufficient number of priority species occur within their subsample. **However**, in order to be representative of the total catch the monitor should select **all** individuals that occurred within the entire haul. As a result, the total catch weight for those individuals would no longer be an extrapolated estimated weight via the subsample but a complete weight account for that species thus represented as an actual weight for the haul.

It is important to sample from within a species composition sample or subsample because if individuals are selected from outside the species composition sample or subsample, bias can occur unless all

individuals are picked. Therefore, the round actual weight of sampled individual(s) on the Length Frequency Log might be represented from the subsample or randomly from a portion of all individuals taken from a haul. When biological sampling is done from a portion of a total population (i.e., where an actual weight was obtained for the total population or an approximate estimation via basket or tote counts or tallying but the entire population was not subsampled), the monitor must still take a random and representative sample. For example, the monitor must randomly pick baskets to sample systematically to avoid biasing the samples according to the sorting practices of the crew who may sort according to size or market categories. Otherwise, the monitor should sample all individuals.

It should be noted that the weight recorded on the Length Frequency Log should be a round actual weight and **not rounded** (i.e., 43.5 lbs **should not be rounded** to 44).

In conclusion, likewise when the monitor is obtaining a subsample, the monitor's sampling must be representative of the total catch if all individuals cannot be weighed or sampled. No favoritism should be given to particularly large or small species. Repeated random sampling over time will provide representative catch data.

**FREE ADVICE**

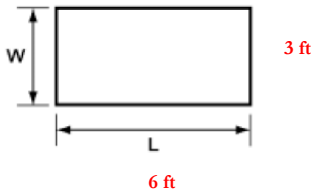
Be good to the fishing crew and they will be good to you. Communicate with the fishing crew and they will communicate with you. Help the fishing crew and they will help you!

Area & Volume Cheat Sheets

AREA CALCULATION EXAMPLES

Area of a Rectangle or Square

Area = L x W



Example: L = 6 ft    W = 3 ft

Area = 6 ft x 3 ft  
= 18 ft<sup>2</sup>

Area of a Trapezoid

Area = [(W<sub>1</sub> + W<sub>2</sub>) ÷ 2] x L

Note: For a trapezoid the short and long widths are equal to the parallel sides

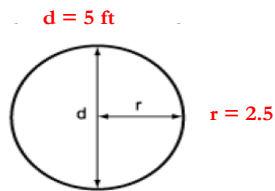


Example: W<sub>1</sub> (short width) = 3 ft  
W<sub>2</sub> (long width) = 4 ft  
L = 7.5 ft

Area = [(3 ft + 4 ft) ÷ 2] x 7.5 ft  
= [7 ft ÷ 2] x 7.5 ft  
= 26.25 ft<sup>2</sup>

Area of a Circle

Area = πr<sup>2</sup> or 3.14 x r x r  
(Remember: r = d ÷ 2)

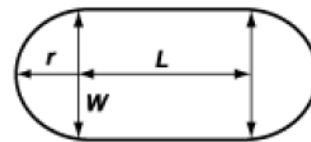


Example: d (diameter) = 5 ft.  
r = 5 ft ÷ 2 ft = 2.5 ft

Area = 3.14 x 2.5 ft x 2.5 ft  
= 19.63 ft<sup>2</sup>

Area of an Oblong- Shaped Oval

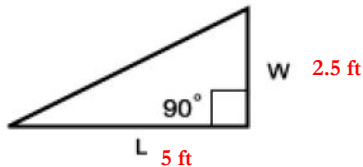
Area = (L x W) + (πr<sup>2</sup>)  
or  
(L x W) + (3.14 x r x r)



Example: L = 5 ft    W = 4 ft    r = 2 ft  
Area = (5 ft x 4 ft) + (3.14 x 2 ft x 2 ft)  
= 20 ft + 12.56 ft  
= 32.56 ft<sup>2</sup>

Area of a Triangle

Area = [L x W] ÷ 2

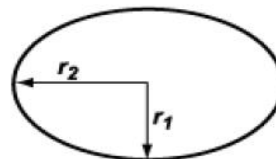


Example: L = 5 ft    W = 2.5 ft

Area = (5 ft x 2.5 ft) ÷ 2  
= 12.5 ft<sup>2</sup> ÷ 2  
= 6.25 ft<sup>2</sup>

Area of an Ellipse (Oval)

Area = r<sub>1</sub> x r<sub>2</sub> x π  
or  
= r<sub>1</sub> x r<sub>2</sub> x 3.14



Example: r<sub>1</sub> (short radius) = 4ft  
r<sub>2</sub> (long radius) = 6 ft

Area = 4ft x 6ft x 3.14  
= 75.36 ft<sup>2</sup>

Converting inches to decimal form & feet to inches

For example: 6 in. ÷ 12 = 0.5 ft  
X inches ÷ 12 = feet  
X feet x 12 = inches

Standard volumes of containers flush to the top with a subsample:

orange bushel basket = 1.47 ft<sup>3</sup>  
fish tote = 2.65 ft<sup>3</sup>

VOLUME CALCULATION EXAMPLES

Volume of a Standard Orange Bushel Basket

$$V = \pi [ R^2 + Rr + r^2 ] H/3$$

R = Top radius  
r = Bottom radius



(Remember to convert inches into feet)

Volume =  $3.14 [ 0.71^2 + (0.71)(0.56) + 0.56^2 ] 1.17/3$   
 =  $3.14 [ 0.5 + 0.39 + 0.31 ] 1.17/3$   
 =  $3.14 [ 1.2 ] 1.17/3$   
 =  $[3.77] 1.17/3$   
 $1.4695 \text{ ft}^3 = 1.47 \text{ ft}^3 = \text{NEFOP Standard}$

Volume of a Standard Trapezoidal Fish Tote

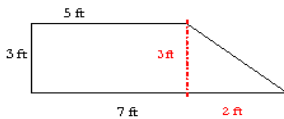
$$V = [(W_1 + W_2) \div 2] \times L \times D$$



Volume =  $(15.75 \text{ in} + 16.75 \text{ in}) \div 2 \times 26 \text{ in} \times 11 \text{ in}$   
 =  $(1.31 \text{ ft} + 1.39 \text{ ft}) \div 2 \times 2.16 \text{ ft} \times 0.91 \text{ ft}$   
 =  $2.70 \text{ ft} \div 2 \times 2.16 \text{ ft} \times 0.91 \text{ ft}$   
 =  $1.35 \text{ ft} \times 2.16 \text{ ft} \times 0.91 \text{ ft}$   
 =  $2.65 \text{ ft}^3 = \text{NEFOP Standard}$

Volume of Irregular Shapes

Example 1  
Irregular shaped fish bin (2 ft deep)



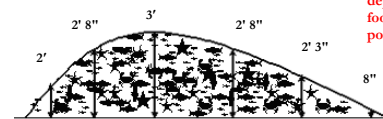
**Rectangle**  
 L = 5 ft W = 3 ft D = 2 ft  
 V = L x W x D (5 x 3 x 2) = 30 ft<sup>3</sup>

**Triangle**  
 A = [L x W] ÷ 2  
 3 ft x 2 ft ÷ 2 = 3 ft<sup>2</sup>

V = A x D  
 3 ft<sup>2</sup> x 2 ft = 6 ft<sup>3</sup>

**Total volume of irregular shape**  
 30 ft<sup>3</sup> + 6 ft<sup>3</sup> = 36 ft<sup>3</sup>

Volume of Irregular Shapes



Find the highest point of the catch (sometimes the center). Take a depth lengthwise every foot from the highest point in either direction

First, obtain an average catch depth

$$\frac{\text{depth}_1 + \text{depth}_2 + \text{depth}_3 \dots + \text{depth}_n}{n + 1}$$

n = number of depth measurements taken

Add feet and inches

$$\frac{2' + 2' 8'' + 3' + 2' 8'' + 2' 3'' + 8''}{6 + 1}$$

11' 27" = 13' 3"

13' 3" / 7

NOTE!  
 Convert feet into a decimal by dividing the inches by 12

$$\frac{13.25 \text{ ft}}{7} = 1.89 \text{ ft} = \text{average catch depth}$$

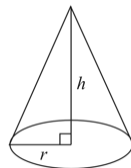
Second, determine the catch shape (angular, circular, ellipsoidal...) and calculate the area. Next, multiply the area by the average catch depth to calculate the total catch volume

Area (ft<sup>2</sup>) x Depth (ft) = Volume (ft<sup>3</sup>)

Applicable when catch not dumped in checker pen or uneven depths occur

Volume of a Circular Cone

$$V = \frac{1}{3} \pi r^2 h$$

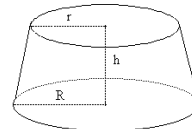


Applicable in the pot & trap fisheries but not limited to

Volume of a Frustum of a Right Circular Cone

A frustum is the part of a conical solid left after cutting off a top portion with a plane parallel to the base. The volume of a frustum of a right circular cone is given by:

r = radius of upper base  
 R = radius of lower base  
 h = height



$$V = \frac{1}{3} \pi h (r^2 + rR + R^2)$$

Applicable in the pot & trap fisheries but not limited to

Schematic Diagram Illustrating Catch Estimation and Management

## CATCH ESTIMATION WORKSHEET

This worksheet contains detailed information about obtaining and recording catch weight information for sea life and/or debris taken by a fishing vessel. The worksheet also aids in the organization and illustration of monitor's catch estimation methodology and work. The worksheet must be used for **every** haul to illustrate a monitor's work or catch estimation methods. Actual weights are the monitor's priority but may not always be possible to obtain. Critically important and managed species of Closed Areas and Special Management Programs have the highest priorities and the monitor must take actual weights of these when possible. Therefore, if actual weights cannot be obtained this worksheet is used to organize catch estimation methods.

If actual weights are not possible, the monitor should attempt a Tally or Basket/Tote Count. The monitor should count the number of animals, baskets, or totes of a particular species and disposition code, then multiply by the average weight per animal, basket, or tote. If the catch is too large, then the Volume to Volume method can be used to extrapolate the total catch weight.

As part of their required work, monitors must first develop an action plan and share this action plan with the captain and crew. For example, if the catch is to be dumped into a checker pen, the monitor should measure the area of this pen before sorting operations begin. Standard measurements for some containers are given (1.47 ft<sup>3</sup> for orange baskets and 2.65 ft<sup>3</sup> for fish totes).

Once the catch is dumped on deck the monitor should gauge the size of kept versus discards within the pile. Then if possible to facilitate catch management, the monitor should first allow the crew to remove the kept catch. Working with the fishermen to separate the catch to catch disposition will make catch estimation work easier. Next, the monitor should judge the volume of discards. For example, if discard volume is large and many estimations are expected the monitor should estimate total catch weights through a subsample, and/or by using other catch estimation methods including taking actual weights (according to priority of species). Before sub-sampling the monitor should try to remove few or manageable large and/or small sea life and debris and obtain actual weights. Taking as many actual weights as possible (before subsampling) will address priorities (actual weights), make subsampling easier (especially when removing larger species first) and reduce bias in weight estimations caused by choosing fish that occur at a low frequency.

Because of stratification of sea life and debris, it is pertinent that a random and representative subsample of the pile is collected. The subsampling volume obtained should be  $\geq 20\%$  of the total catch volume. Dividing the catch into a mental grid will facilitate random removal of subsampling material. The subsampling portion taken should come from the top, middle, and bottom layers of the pile. To aid randomness, a shovel can be used to sort subsample materials into containers. The goal is to take many random small portions from numerous areas of the catch instead of large portions from few areas. Taking catch materials from few areas will skew weight estimates since the catch may stratify. Additionally, if a subsample is too small or not randomly picked, total weight estimates may result in being too large or small when visually compared to the catch, therefore not representing the catch composition accurately.

If the Tally or Basket/Tote Count methods are used then complete fields 4-7. If the Volume to Volume method is used then complete fields 4-12. Multiply the subsample weight by the sample weight multiplier to obtain the total estimated catch weight for the Haul Log. The weight recorded on the Haul Log is always an estimate.

If there are insufficient lines on one form for all species subsampled in this haul, continue listing species on an additional Catch Estimation Worksheet.



### HEADER INFORMATION

Fill out all Header information for all Catch Estimation Worksheets. The Catch Estimation Worksheet is located on the back of all Haul Logs and do not require a page number.

### DEFINITIONS

**Area (ft<sup>2</sup>):** The amount of space in a flat surface measured in square units. Record in square feet.

**Basket or Tote Count (A x B + C):** Estimates of catch can be calculated by basket or tote counts when the catch is separated by species into containers. [Note: Do not forget to tare or subtract the weight of container used to hold the catch.] To perform this method, take an average weight per container (A), multiply this average weight by the total number of containers filled to the same level (**B**) and add any container weight that may be different, i.e.,  $\frac{1}{2}$  filled container (**C**).

**Captain's Estimates:** Sometimes due to safety concerns, weather conditions or large catch volumes, the total catch weights can be obtained from the captain. This method should **rarely** be used. Comments must be made as to why this method was chosen.

**Catch Depth:** The actual depth of the catch from which the monitor intends to calculate a volume. If the catch is first sorted by catch disposition and/or if species and/or debris are removed in order to take actual weights before subsampling, the catch depth should be taken afterwards to obtain the actual depth in order to calculate an accurate volume. Record in feet.

**Fish Tote:** Commonly known as the 70 liter or 100 lb. fish tote which is the standard for seafood handling in the North Atlantic. Equivalent to fish totes commonly seen in the gillnet fishery. NEFOP standard flush volume of 2.65 ft<sup>3</sup>.

**Length:** Distance from one end to another. For a trapezoid, the length is the straight line (perpendicular) distance between the two parallel widths. For an oval, the length is the longer of the two diameters.

**Orange Basket:** Equivalent to orange bushel basket commonly seen on scallop and trawl trips. NEFOP standard flush volume of 1.47ft<sup>3</sup>.

**Pi ( $\pi$ ):** The ratio of the circumference of a circle to its diameter. For simplicity, the value of  $\pi$  is rounded to 3.14.

**Sample Weight Multiplier:** Illustrates a comparative numeric proportion that is used to extrapolate total catch weights. Recorded to the hundredths.

**Subsample:** A subsample is used in lieu of actual weights to determine catch composition and extrapolate the total catch weight of individual sea life and/or debris for a large catch. As a guideline, a subsample is random and must represent  $\geq 20\%$  of the total catch size.

**Subsampling Containers:** Any container used to hold a subsample.

**Tally:** Stroke tally is a method where animals of similar size (i.e., dogfish) are accounted for by taking an average weight and multiplying by the total number of animals.

**Total Subsample Volume:** The total volume of the subsample. This number is obtained by multiplying the total number of subsampling containers collected by the flush volume of the container used (i.e., 10 orange baskets x 1.47ft<sup>3</sup> flush). Record to the hundredths.

**Volume (ft<sup>3</sup>):** The amount of three dimensional space occupied by an object. Record in cubic feet.  
Area (ft<sup>2</sup>) x Depth (ft) = Volume (ft<sup>3</sup>)

**Volume to Volume:** Uses a subsample from the catch, two comparative volumes, a sample weight multiplier and actual weights from sorted sea life and/or debris. Can be combined with actual weights or other catch estimation methods (i.e., basket or tote counts) to illustrate total catch weights and catch composition on a haul log.

**Weighed (Actual):** An actual weight taken of sea life and/or debris of a particular catch disposition and fish disposition code and catch disposition by NMFS issued scales.

**Width (W):** The greatest dimension at right angles to length. For a trapezoid, the two parallel sides are called width 1 and width 2, and averaged before multiplying by the length and depth. For an oval, the width is the shorter of the two diameters. Record in feet.

### INSTRUCTIONS

- 1. SORTING METHOD:** Record the method the fishermen used to sort through the catch by placing an "X" next to the appropriate code:

SORTING METHOD	SORTING CODE
Picked	1
Shoveled	2
Deckloaded	3
Conveyor System	4
Combination, record all fishing methods on line 1A	8
Other, record the other fishing method(s) on line 1A	9

- 2. HAUL NUMBERS WHERE DECKLOADING OCCURRED:** Record the haul numbers in which the deckloading period took place.
- 3. ESTIMATION METHOD(S):** Record the method used to estimate total catch weights of sea life and/or debris for this haul by placing an "X" next to the appropriate code:

ESTIMATION METHOD CODE	ESTIMATION METHOD
01	Weighed (Actual)
02	Volume to Volume
03	Basket or Tote Count
04	Captain
05	Tally
06	Visually Estimated
07	Cumulative Sum Method (NEFOP only)

ESTIMATION METHOD CODE	ESTIMATION METHOD
98	Combination, record all catch estimation methods on line 3A
99	Other, record the catch estimation method on line 3A. Illustrate why and how this method was used in the comment section of this worksheet

**NOTE:** If the haul is unobserved but kept information is obtained from the captain, then CAPTAIN'S ESTIMATE (04) must be recorded as the Catch Estimation Method.

**NOTE:** Visual estimates should rarely be used except when estimating very large objects or when accounting for objects such as seaweed attached to fishing gear or very fine and unevenly distributed items such as clay and sand. Comments must be provided when using this method.

**TALLY/BASKET/TOTE COUNT METHOD**

This section should be filled out when using the Tally or Basket/Tote Count methods.

- SPECIES:** Record the name of the species being sampled. If the species has more than one catch disposition, record the disposition code as well.
- UNIT TYPE:** Record the type of sampling unit used for this species/disposition using the appropriate code:

UNIT CODE	UNIT TYPE
B	Standard orange bushel basket
T	Standard fish tote
I	Individual (used for tally method)

**NOTE:** If a different sampling unit is used (i.e., milk crates) then record that in the comment section.

- AVERAGE WEIGHT PER UNIT:** Record the average weight of the sampling unit for this species/disposition. The average should be determined from actual weights from  $\geq 20\%$  of the species or a minimum of 3 baskets or totes.
  - Calculations are recorded to the hundredths place.
  - Final weight estimations  $\geq 1$  are rounded to the whole pound and recorded on the Haul Log.
- NUMBER OF UNITS:** Record the number of sampling units counted for this species/disposition. This should represent the total number of units observed in the catch.

**NOTE:** If a portion of catch for this species is actually weighed (e.g., a partially full basket), record that weight in the comment section. Add the actual weight and the estimated weight together and record the total on the Haul Log as an estimated weight with a combination estimation method code (98).

## **VOLUME TO VOLUME METHOD**

This section should be filled out when using the Volume to Volume method.

8. **CATCH SHAPE, MEASUREMENTS & VOLUME:** Record the catch measurements for this haul next to the appropriate shape. Record each measurement in decimal feet (to the nearest tenth) and calculate the total catch volume as cubic feet (round to the nearest hundredth). Use the appropriate equation to calculate the volume.

- Round all measurements (e.g., length, width, depth) to the nearest tenths place.
- Round the calculated volume to the nearest hundredths place.

**Oval:** The catch is dumped on deck in an irregular pile with roughly rounded edges. The edges are not bounded by the deck or other vertical surface.

**Half-Oval:** The catch is dumped on deck against the side of the vessel (or another vertical surface). The edge that is not against the vessel has roughly rounded edges.

**Rectangle:** The lengths along the top and bottom of the checker pen or fish bin are equal, and the widths along the sides are equal.

**Trapezoid:** Two sides of the checker pen or fish bin are parallel but unequal in length; the other two sides may be straight or angled and may or may not be equal in length.

**NOTE:** A monitor might encounter a combination of shapes. Irregular shapes can be divided into similar shapes to make calculations easier. Record all calculations, measurements, and draw shapes used in the comment section of this worksheet. Add all shape volumes to obtain the total catch volume. Record all measurements and calculations in the comment section.

9. **DEPTHS:** Record the 10 individual depths measured from throughout the catch pile (round to the nearest tenth of a foot). The average depth should be recorded in the appropriate field. Round to the nearest tenths place.

**NOTE:** If the pile is dumped on deck (not within a checker pen), then a single depth of 0.0ft should be included.

**NOTE:** The depth should be the catch depth, not the height of the checker pen or fish bin. Likewise, if species and/or debris are removed before subsampling, take the catch depth measurement afterwards.

10. **NUMBER OF SUBSAMPLING CONTAINERS USED:** Record the number of subsampling containers used.

11. **VOLUME OF ONE SUBSAMPLE CONTAINER:** Record, to the nearest hundredths place in cubic feet (ft<sup>3</sup>), the volume of the subsampling container used to organize the subsample by placing an "X" next to the appropriate container type.

CONTAINER	VOLUME (ft <sup>3</sup> )
Basket	1.47 ft <sup>3</sup>
Tote	2.65 ft <sup>3</sup>
Other	Record the volume of any other subsampling container in cubic feet (e.g., milk crate). Record how the volume of this container was calculated in the comment section.

**NOTE:** The volume of the subsampling container is equal to the volume of the subsample flush to the wall of the container.

12. **TOTAL SUBSAMPLE VOLUME:** Calculate, to the nearest hundredths place in cubic feet (ft<sup>3</sup>), the subsample volume used for this haul.
13. **SAMPLE WEIGHT MULTIPLIER:** Calculate, to the nearest hundredths place, the sample weight multiplier used to estimate total catch weights.
14. **PERCENT SUBSAMPLED:** Calculate, to the nearest hundredths place, the percent of catch subsampled for this haul.
15. **SPECIES:** Record all species and/or debris of a particular disposition code within the subsample.
16. **SUBSAMPLE WEIGHTS (LBS):** Record the actual weight of each species or debris sorted from the subsample by disposition code.


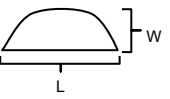
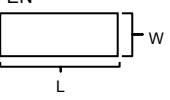
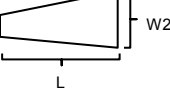
**NOTE:** Remember to subtract or tare the container weight used to collect the subsample.

17. **COMMENTS:** Record any detailed additional information associated with this log (i.e., description of irregular shapes or other shapes, other catch estimation methods, safety concerns, or time constraints).

**CATCH ESTIMATION WORKSHEET**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**05/01/10**

ASM/TRIP ID	
DATE LANDED mm/yy	/
HAUL #	

SORTING METHOD		ESTIMATION METHOD(S)	
Picked	1	Weighed (Actual)	01
Shoveled	2	Volume-to-Volume	02
Deckloaded	3	Basket or Tote Count	03
Conveyor System	4	Captain	04
Combination (comment)	8	Tally	05
Other (comment)	9	Visually Estimated	06
	<b>1</b>	Cumulative Sum	07
HAUL NUMBERS WHERE DECKLOADING OCCURRED	<b>2</b>	Combination (comment)	98
		Other (comment)	99
			<b>3A</b>

VOLUME TO VOLUME METHOD		8	
VOLUME MEASUREMENTS			
PILE ON DECK - as seen from above			
Oval		_____ ft X _____ ft X _____ ft X 3.14 / 4	= _____ ft <sup>3</sup>
		Length      Width      Depth**      π	
Half-Oval		_____ ft X _____ ft X _____ ft X 3.14 / 4	= _____ ft <sup>3</sup>
		Length      Width      Depth**      π	
CHECKER PEN			
Rectangle		_____ ft X _____ ft X _____ ft	= _____ ft <sup>3</sup>
		Length      Width      Depth**	
Trapezoid		_____ ft X $\left( \frac{\text{_____ ft} + \text{_____ ft}}{2} \right)$ X _____ ft	= _____ ft <sup>3</sup>
		Length      Width1      Width2      Depth**	
OTHER SHAPE or COMBINATION - draw and show all dimensions below      Volume = _____ ft <sup>3</sup>			

TALLY/BASKET/TOTE COUNTS			
Unit Types: B = basket, T = tote, I = individual (tally)			
Species	Unit Type	Avg Weight/Unit	# of Units
<b>4</b>	<b>5</b>	<b>6</b> lbs	<b>7</b>
_____	_____	_____ lbs	_____
_____	_____	_____ lbs	_____
_____	_____	_____ lbs	_____
_____	_____	_____ lbs	_____
_____	_____	_____ lbs	_____
_____	_____	_____ lbs	_____
_____	_____	_____ lbs	_____
_____	_____	_____ lbs	_____

**10 random depths from throughout pile: (Pile on deck: include one depth of 0.0ft)									
<b>9</b>	_____	_____	_____	_____	_____	_____	_____	_____	_____
ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
A) # of Subsampling Containers Used	B) Volume of One Container	C) Total Subsample Volume (A x B)	D) Sample Weight Multiplier (Tot. Vol / C)	E) Percent Subsampled (C / Tot. Vol) x 100					
<b>10</b>	Basket _____ 1.47 ft <sup>3</sup> Tote _____ 2.65 ft <sup>3</sup> Other: _____ ft <sup>3</sup>	<b>12</b> _____ ft <sup>3</sup>	<b>13</b> _____	<b>14</b> _____ %					

COMMENTS

SPECIES	SUBSAMP WGT (lbs)
<b>15</b>	<b>16</b>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**CATCH ESTIMATION WORKSHEET**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**05/01/10**

ASM/TRIP ID	<b>A02001-</b>
DATE LANDED mm/yy	<b>01 / 10</b>
HAUL #	<b>001</b>

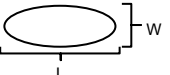
SORTING METHOD		ESTIMATION METHOD(S)	
Picked	1 <input checked="" type="checkbox"/>	Weighed (Actual)	01
Shoveled	2	Volume-to-Volume	02
Deckloaded	3	Basket or Tote Count	03
Conveyor System	4	Captain	04
Combination (comment)	8	Tally	05
Other (comment)	9	Visually Estimated	06
		Cumulative Sum	07
HAUL NUMBERS WHERE DECKLOADING OCCURRED		Combination (comment)	98 <input checked="" type="checkbox"/>
		Other (comment)	99

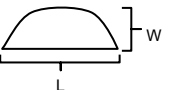
TALLY/BASKET/TOTE COUNTS			
Unit Types: B = basket, T = tote, I = individual (tally)			
Species:	Unit Type	Avg Weight/Unit	# of Units
<b>Winter Fld</b>	<b>B</b>	<b>71</b> lbs	<b>9</b>
<b>Spiny Dogfish</b>	<b>I</b>	<b>7</b> lbs	<b>60</b>
		lbs	
		lbs	
		lbs	
		lbs	
		lbs	
		lbs	

**VOLUME TO VOLUME METHOD**

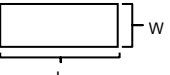
**VOLUME MEASUREMENTS**

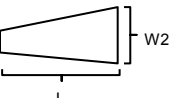
PILE ON DECK - as seen from above

Oval   $\text{Length} \times \text{Width} \times \text{Depth}^{**} \times \frac{3.14}{4} = \text{Volume (ft}^3\text{)}$

Half-Oval   $\text{Length} \times \text{Width} \times \text{Depth}^{**} \times \frac{3.14}{4} = \text{Volume (ft}^3\text{)}$

CHECKER PEN

Rectangle   $10.5 \text{ ft} \times 3.5 \text{ ft} \times 1.3 \text{ ft} = 47.78 \text{ ft}^3$

Trapezoid   $\text{Length} \times \left( \frac{\text{Width1} + \text{Width2}}{2} \right) \times \text{Depth}^{**} = \text{Volume (ft}^3\text{)}$

OTHER SHAPE or COMBINATION - draw and show all dimensions below Volume = \_\_\_\_\_ ft<sup>3</sup>

\*\*10 random depths from throughout pile: (Pile on deck: include one depth of 0.0ft)

1.0 ft	1.2 ft	1.5 ft	1.0 ft	2.0 ft	1.1 ft	1.5 ft	1.0 ft	1.5 ft	1.0 ft	<b>=1.28 ft</b>
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	-----------------

A) # of Subsampling Containers Used	B) Volume of One Container	C) Total Subsample Volume (A x B)	D) Sample Weight Multiplier (Tot. Vol / C)	E) Percent Subsampled (C / Tot. Vol) x 100
<b>7</b>	Basket <input checked="" type="checkbox"/> 1.47 ft <sup>3</sup> Tote ___ 2.65 ft <sup>3</sup> Other: ___ ft <sup>3</sup>	<b>10.29</b> ft <sup>3</sup>	<b>4.64</b>	<b>21.54</b> %

SPECIES	SUBSAMP WGT (lbs)
<b>Skate, Little</b>	<b>400</b>
<b>Skate, Thorny</b>	<b>82</b>
<b>Skate, Winter</b>	<b>164</b>
<b>Ocean Pout</b>	<b>75</b>
<b>Crab, Jonah</b>	<b>45</b>
<b>Am. Lobster</b>	<b>38</b>
<b>Shell, NK</b>	<b>20</b>
<b>Atl. Mackerel</b>	<b>31</b>
<b>Atl. Herring</b>	<b>49</b>

COMMENTS

**Average weight of Dogfish:**  
**(6+6+7+6.5+7+7+8.5+8+8+7+5+8)/12= 7 lbs**

**Average basket weight of Winter Fld:**  
**(70+71+72+71)/4 = 71 lbs**





## PHOTOGRAPHING CATCH ESTIMATION WORKSHEETS

All At-sea Monitoring (ASM) trips will be uploaded within 48 hours from when the monitor lands. Portions of the data, including the catch data, will be available to various users within that same 48 hour period. Since the data will be used to estimate discard rates for various sectors, it is critical that the data are corrected and confirmed as soon as possible.

Catch Estimation Worksheets are mandatory for every haul and are used to document the monitor's methods in estimating catch weights. Due to calculation or estimation errors, mistakes can occur on these worksheets which can affect the uploaded extrapolated weights. It is critical that NMFS receive the Catch Estimation Worksheets as soon as possible to ensure the monitor used the proper subsampling methods and extrapolated their weights correctly. According to the monitor contract, all Catch Estimation Worksheets will be received within 5 days of when the trip lands. This is 3 days later than when the catch data are available to various users. NMFS is requesting that monitor's take photos of the Catch Estimation Worksheets under special circumstances to ensure they understand catch estimation procedures and so the editors can confirm that proper procedures are used and the proper weights are uploaded.

### INSTRUCTIONS

1. **PHOTOGRAPH:** Using the digital camera provided, the monitor should **photograph** Catch Estimation Worksheets (details on when to do so are below).
2. **UPLOAD:** Upload the photos at the same time the corresponding trip is uploaded. This will allow for immediate review of subsampling procedures and will ensure the monitor is not making significant errors which may affect the catch weights. See the UPLOADING PHOTOS section of this manual (pg. 116) for detailed instructions on renaming photo files and uploading procedures.

**NOTE:** Hauls in which all actual weights were obtained do not need to upload Catch Estimation Worksheet photos.

### WHEN TO UPLOAD PHOTOS OF CATCH ESTIMATION WORKSHEETS

Catch Estimation Worksheets should be photographed and uploaded at the time of the trip upload if any of the below situations occur:

#### Training Trips

- a. Photos of every Catch Estimation Worksheet from every haul should be submitted if your trip is less than 4 days in duration. If the trip is more than 4 days in duration, upload a photo of at least 3 Catch Estimation Worksheets from each day.

Example: On a 10 day training trip, the monitor should take a photo of 3 Catch Estimation Worksheets from each day so at the end of the trip, the monitor should upload 30 Catch Estimation Worksheets with their data.

- b. Photos of every Catch Estimation Worksheet that have a corresponding Discard Log.

**Non-Training Trips:** Catch Estimation Worksheet photos are required for:

- a. First haul that the volume to volume method is used.
- b. Any haul the shape of the checker pen changes when the volume to volume method is used.
- c. First haul the basket/tote/tally count method is/are used.
- d. Anytime a Discarding Event Log is filled out for a haul, the corresponding Catch Estimation Worksheet photo should be sent in.
- e. Any haul in the trawl fishery that has a total weight for any discarded species over 1,000 lbs.

### **TAKING PHOTOGRAPHS**

1. When taking a photo of the Catch Estimation Worksheet make sure the entire worksheet is visible in the screen of the camera.
2. Make sure the lighting is appropriate (use flash when necessary).
3. Check the image on the camera's screen to make sure it came out clearly. If the monitor is unsure of the quality of the photo, multiple photos should be taken and all should be uploaded.
4. At upload the monitor must enter Y to PAPERWRKSHT to portray that worksheets were actually filled in for this trip.
5. At upload the monitor must enter Y to PHOTO TAKEN to portray that photos were uploaded with trip.

### Observer/ASM Data Upload

Enter **TRIPID** for the trip being uploaded,  
Browse for the zip file below,  
Click the 'UPLOAD' button.

**TRIPID:**

EMS Used?

Electronic trip with paper worksheet?

Vessel Boarded by Enforcement?

Photos Taken?

Whole Fish?

**Zip Filename:**

**NOTE:** The Catch Estimation Worksheet will be scanned in house as an addition to the trip record.

**NAMING CONVENTION**

Catch Estimation Worksheet photos should be named by the following naming convention:

10\_year\_tripid\_haulnum

All photos of the Catch Estimation Worksheet(s) must:

- a. Lead off with the subject code of 10
- b. Followed by the year of the trip
- c. Monitor Trip Id
- d. Haul Number of the Catch Estimation Worksheet sent in for this haul.

Example: 10\_2010\_A01034\_05

Upon review of the monitor's Catch Estimation Worksheets, the monitor's editor may request the monitor take photos of additional worksheets for future trips. This will be dealt with on a case by case basis.

### LENGTH FREQUENCY LOG

Length frequencies involve area-specific collection of lengths for a particular species. They are used in determining the composition of the catch for calculating length-weight relationships.

Complete this log on a per haul basis for the biological sampling of specified finfish and squid. Length frequencies should be collected in the priority order listed in Tables 1a-c Length Priorities in the Biological Sampling Manual (pg. 9-17).

Lengths must be collected from the same trip, haul, and fish disposition. While one log may be used for multiple species, if fish dispositions sampled from one haul differ, then separate columns on the log must be used for each of these fish dispositions (i.e. kept haddock must be separately lengthed and weighed from discarded haddock). Lengths from mixed fish dispositions are not usable.

### HEADER INFORMATION

Fill out all Header information for all Length Frequency Logs. Haul Logs are used as a cover page to all haul related information on the haul level. Number all logs per haul as follows:

1. Haul Log
2. Individual Animal Log (when present)
3. Length Frequency Log
4. Discard Log (when present)

### INSTRUCTIONS

Please Note: The Length Frequency Log is a two-sided log that allows up to ten (10) individual species lengths to be recorded. For a single haul, record all length frequency information in the spaces provided before using a second paper log.

1. **SPECIES NAME:** Record the complete common name of the animals being sampled, as listed in Appendix A: Species Names and Corresponding Tabs/Logs. This name must agree with the species name and disposition recorded on the corresponding Haul Log.

**NOTE:** If this species requires multiple columns for length measurements, be sure to rewrite the same species name in each column needed, and carry the rest of the column header information over to the other column(s) with arrows.

SPECIES NAME		SPECIES NAME		SPECIES NAME							
SPINY DOGFISH		SPINY DOGFISH									
FISH DISP. CODE		FISH DISP. CODE		FISH DISP. CODE							
100		→									
SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)							
267		→									
6	0	8	0	10	0	1	0	0	0	0	0
1		1		1	1	1		1		1	1
2	2	2	2	2		2		2		2	2
3		3		3		3		3		3	3
4		4	5	4		4		4		4	4
5		5		5		5		5		5	5
6	3	6		6		6		6		6	6
7		7	2	7		7		7		7	7
8		8		8		8		8		8	8
9		9		9		9		9		9	9
7	0	9	0	0		0		0		0	0
1		1		1		1		1		1	1
2	2	2		2		2		2		2	2
3	1	3	3	3		3		3		3	3
4	1	4		4		4		4		4	4
5		5		5		5		5		5	5
6		6	5	6		6		6		6	6
7		7		7		7		7		7	7
8		8		8		8		8		8	8
9		9		9		9		9		9	9

2. **FISH DISPOSITION CODE:** Indicate the disposition of each species listed in SPECIES NAME by recording the most appropriate three digit code listed in Appendix B: Fish Disposition Codes. The code must agree with the code recorded for this species on the corresponding Haul Log.

3. **SAMPLE WEIGHT:** Record (to the nearest tenth of a pound) the actual weight of all of the animals measured for the species being sampled. This value should not include weights for fish not lengthed.

**NOTE:** All species with associated lengths should be ROUND ACTUAL weights.

**NOTE:** Do not take length frequencies for dressed or damaged fish.

4. **LENGTHS:** Precede the 0's (zeros) in each interval with the appropriate digit(s) to indicate the centimeter range being used for this sample.

**NOTE:** Lengths should be recorded consecutively from shortest to longest.

**NOTE:** Finfish and squid are measured in whole centimeters.

5. **NUMBERS-AT-LENGTH:** Record the total number of animals measured at each centimeter. Do not stroke tally in this field.

6. **COMMENTS:** Record information regarding fish lengthed on this haul. Reference each comment with its corresponding field name.

**NOTE:** IAL species are not recorded on the Length Frequency Log. Record weight and length measurements of IAL species on the Individual Animal Log.

**LENGTH FREQUENCY LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMLNH ASMLND**

ASM/TRIPID	
DATE LANDED mm/yy	/
PAGE #	___ of ___
HAUL #	

SPECIES NAME		SPECIES NAME		SPECIES NAME		SPECIES NAME		SPECIES NAME	
<b>1</b>									
FISH DISP. CODE		FISH DISP. CODE		FISH DISP. CODE		FISH DISP. CODE		FISH DISP. CODE	
<b>2</b>									
SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)	
<b>3</b>									
<b>4</b>	<b>0</b>	<b>5</b>	0	0	0	0	0	0	0
1		1	1	1	1	1	1	1	1
2		2	2	2	2	2	2	2	2
3		3	3	3	3	3	3	3	3
4		4	4	4	4	4	4	4	4
5		5	5	5	5	5	5	5	5
6		6	6	6	6	6	6	6	6
7		7	7	7	7	7	7	7	7
8		8	8	8	8	8	8	8	8
9		9	9	9	9	9	9	9	9
0		0	0	0	0	0	0	0	0
1		1	1	1	1	1	1	1	1
2		2	2	2	2	2	2	2	2
3		3	3	3	3	3	3	3	3
4		4	4	4	4	4	4	4	4
5		5	5	5	5	5	5	5	5
6		6	6	6	6	6	6	6	6
7		7	7	7	7	7	7	7	7
8		8	8	8	8	8	8	8	8
9		9	9	9	9	9	9	9	9
0		0	0	0	0	0	0	0	0
1		1	1	1	1	1	1	1	1
2		2	2	2	2	2	2	2	2
3		3	3	3	3	3	3	3	3
4		4	4	4	4	4	4	4	4
5		5	5	5	5	5	5	5	5
6		6	6	6	6	6	6	6	6
7		7	7	7	7	7	7	7	7
8		8	8	8	8	8	8	8	8
9		9	9	9	9	9	9	9	9
0		0	0	0	0	0	0	0	0
1		1	1	1	1	1	1	1	1
2		2	2	2	2	2	2	2	2
3		3	3	3	3	3	3	3	3
4		4	4	4	4	4	4	4	4
5		5	5	5	5	5	5	5	5
6		6	6	6	6	6	6	6	6
7		7	7	7	7	7	7	7	7
8		8	8	8	8	8	8	8	8
9		9	9	9	9	9	9	9	9
<b>COMMENTS</b>									
<b>6</b>									

**LENGTH FREQUENCY LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
 ASMLNH ASMLND

ASM/TRIPID	<b>A02002-</b>
DATE LANDED mm/yy	<b>10 / 10</b>
PAGE #	<b>2</b> of <b>2</b>
HAUL #	<b>003</b>

SPECIES NAME		SPECIES NAME		SPECIES NAME		SPECIES NAME		SPECIES NAME							
<b>SPINY DOGFISH</b>		<b>SPINY DOGFISH</b>		<b>HADDOCK</b>		<b>ATLANTIC COD</b>		<b>WINTER FLOUNDER</b>							
FISH DISP. CODE		FISH DISP. CODE		FISH DISP. CODE		FISH DISP. CODE		FISH DISP. CODE							
<b>100</b>		<b>100</b>		<b>100</b>		<b>100</b>		<b>012</b>							
SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)							
<b>267</b>		<b>25</b>		<b>61</b>		<b>2.3</b>									
5	0	8	0	11	0	1	0	5	0	0	0	1	0	0	0
1		1		1	<b>1</b>	1		1		1		1		1	
2	<b>2</b>	2	<b>2</b>	2		2		2	<b>2</b>	2		2		2	
3		3		3		3		3		3		3		3	
4		4	<b>5</b>	4		4		4		4		4		4	
5		5		5		5		5		5		5	<b>1</b>	5	
6	<b>3</b>	6		6		6	<b>6</b>	6	<b>3</b>	6		6		6	
7		7	<b>2</b>	7		7		7		7		7		7	
8		8		8		8		8		8		8		8	
9		9		9		9		9		9		9		9	
<b>6</b>	0	<b>9</b>	0	0	0	0	0	<b>7</b>	0	0	0	<b>2</b>	0	0	0
1		1		1		1		1	<b>2</b>	1		1	<b>1</b>	1	
2	<b>2</b>	2		2		2		2	<b>1</b>	2		2		2	
3	<b>1</b>	3	<b>3</b>	3		3		3	<b>1</b>	3		3		3	
4	<b>1</b>	4		4		4		4		4		4		4	
5		5		5		5		5		5		5		5	
6		6	<b>5</b>	6		6		6		6		6		6	
7		7		7		7		7		7		7		7	
8		8		8		8		8		8		8		8	
9		9		9		9		9		9		9		9	
<b>7</b>	0	<b>10</b>	0	0	0	0	0	<b>8</b>	0	0	0	0	0	0	0
1		1		1		1		1		1		1		1	
2		2		2		2		2	<b>2</b>	2		2		2	
3	<b>1</b>	3		3		3		3		3		3		3	
4		4		4		4		4		4		4		4	
5		5	<b>1</b>	5		5		5		5		5		5	
6		6		6		6		6		6		6		6	
7		7		7		7		7		7		7		7	
8		8		8		8		8		8		8		8	
9		9		9		9		9		9		9		9	
COMMENTS															

**LENGTH FREQUENCY LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMLNH ASMLND**

ASM/TRIPID	
DATE LANDED mm/yy	/
PAGE #	___ of ___
HAUL #	

SPECIES NAME		SPECIES NAME		SPECIES NAME		SPECIES NAME		SPECIES NAME	
FISH DISP. CODE		FISH DISP. CODE		FISH DISP. CODE		FISH DISP. CODE		FISH DISP. CODE	
SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)		SAMPLE WEIGHT (R/A)	
0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9
0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9
0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9
COMMENTS									



## INCIDENTAL TAKE LOG

The purpose of this log is to document incidentally taken marine mammals, sea turtles, and sea birds. Complete a record on this log for each incidental take. If more than one animal is taken at a time, record each animal on a separate log. Do not record information for terrapins on this log. These animals should be recorded on an Individual Animal Log Tab/Log.

If a dead or injured marine mammal, sea turtle, or sea bird is seen in the water during or immediately after a haulback, the monitor must decide if the animal was once entangled in the gear of the vessel (i.e. whether the animal(s) is (are) determined to be an incidental take).

### DEFINITIONS

**Incidental Take:** If at any time during an observed trip a marine mammal, sea turtle, or sea bird directly contacts the vessel, or the vessel's fishing gear AND any part of the animal is entangled, snagged, ensnared, caught, hooked, collided with, hit, injured or killed by the vessel or its gear, regardless of the final condition and release of the animal, it should be documented on the Incidental Take Log.

Single bones or disarticulated marine mammal, sea turtle, or sea bird skeletons are recorded in the species section of the Haul Log as bone, nk. Articulated ( $\geq 75\%$  of skeleton) marine mammal, sea turtle, or sea bird skeletons are recorded on the Incidental Take Log and the INC TAKE? field on the Trip Log and corresponding Haul Log should be checked as 'YES'. Comments and photos MUST be provided in both instances.

### HEADER INFORMATION

Fill out all Header information for all Incidental Take Logs. Incidental Take Logs are numbered independently of all other logs.

Please Note: The Incidental Take Log is a double sided log. However, only one (1) animal should be recorded on a single log. Use all available space for detailed comments and descriptions.

### INSTRUCTIONS

1. **PSID#:** A consecutive identification number (Protected Species ID) is assigned to each animal that is incidentally taken on this trip. The sequences of numbers assigned for each animal should correspond to the sequence of the take event. They are numbered in order of time taken. Start with „01’ and number consecutively over the course of the entire trip.
2. **HAUL NUMBER:** Record the haul number assigned to the haul in which the take occurred.
3. **TAG NUMBER (#):** Record the complete alphanumeric numbers, with no spaces or hyphens, from the tag that you attach, or that was already attached, to the animal. This number may be from:
  - a. The yellow marine mammal carcass tag supplied to monitor by NMFS. See Figure 1.
  - b. A tag already present on the animal (i.e. Inconel tags used for sea turtles).
  - c. A metal band attached to the leg of a sea bird.

**Figure 1:** NMFS issued marine mammal tag.



**NOTE:** The first two characters of the NMFS issued marine mammal tag are ‘D’ ‘, zero’.

**NOTE:** **If the animal is dead** and a tag or band is present, remove the tag (when possible) and send it in with your trip data. If you are unable to send the tag in with your trip information, take a photo of the tag or band. Record details (e.g., color, tagging program) of the tag or band in the COMMENTS section.

**NOTE:** **If the animal is alive**, do not attempt to remove the tag or band. Take a photograph of the tag or band and describe the details in the COMMENTS section

- SPECIES NAME:** Record the complete common name of the animal incidentally taken on this trip, as listed in Appendix A: Species Names and Corresponding Tabs/Logs.

**NOTE:** If it is not possible to make a positive species identification, identify the animal to the most specific generic group of which you are positive (e.g., baleen whale nk, dolphin nk, seal nk, hard-shelled sea turtle, etc).

**DO NOT GUESS AT SPECIES IDENTIFICATION!!**

- ANIMAL CONDITION:** Indicate the condition of the animal **when released** by recording the most appropriate animal condition. See Table 1.

**Table 1:** Animal Conditions & Summary

ANIMAL CONDITION	SUMMARY
<b>Alive-Captain/Crew Saw</b>	Seen by captain/crew ONLY; Provide detailed comments.
<b>Alive-Hook/Gear + 1 Part</b>	Hook/gear in or around another single body part(e.g., hook in neck or plastron); Provide detailed comments.
<b>Alive-Hook/Gear + Flipper</b>	Hook/gear in or around flipper (e.g., Hook in the flipper or gear around the flipper); Provide detailed comments.
<b>Alive-Hook/Gear &gt; 1 Part</b>	Hook/gear in or around several body parts; Provide detailed comments.
<b>Alive-Hook/Gear + Mouth</b>	Attempt to determine where in the mouth the hook/gear is located; Provide detailed comments.

<b>ANIMAL CONDITION</b>	<b>SUMMARY</b>
<b>Alive-Resuscitated Sea Turtle</b>	Provide detailed comments.
<b>Alive</b>	Provide detailed comments.
<b>Dead-Capt/Crew Saw</b>	Seen by captain/crew ONLY; Provide detailed comments.
<b>Dead- Condition Unknown</b>	Provide detailed comments.
<b>Dead-Fresh</b>	Provide detailed comments. (see pg. 161)
<b>Dead-Moderately Decomposed</b>	Provide detailed comments. (see pg. 165)
<b>Dead-Severely Decomposed</b>	Provide detailed comments. (see pg. 168)
<b>Other</b>	Provide detailed comments.
<b>Unknown</b>	Provide detailed comments.

**ALL Animal Conditions require COMMENTS**

**NOTE:** For more descriptive details on dead animal condition codes, specifically, dead fresh, dead moderately decomposed and dead severely decomposed, see pages 161-170 of this manual.

**NOTE:** If more than one code applies, choose the code that describes the most specific condition of the animal (e.g. a turtle is alive and released with gear around the left front flipper - chose „Alive-Hook/Gear + Flipper’ as it is the most specific).

**NOTE:** Per ESA Permit requirements and Northeast Fisheries At-sea Monitor Program protocols, monitors are required to make every effort to revive all sea turtles incidentally taken during commercial fishing operations that come onboard, and are comatose (unconscious) or inactive. A resuscitated turtle is any turtle that was comatose (e.g., no signs of life; unconscious; non-responsive) and later became active, possibly as a result of placing the turtle into a recovery position.

**NOTE:** Additional comments about the condition of the animal must be recorded in the COMMENTS as these data are needed for obtaining better information on the condition at the time of capture. Document how much of the animal was examined (i.e. only dorsal and lateral sides seen). Thoroughly describe new and/or healed wounds, the amount, size, color, and location of scavenger damage and/or decomposition, the firmness and coloration of tissues, condition of the skin (i.e. cracked, sloughing, dull, glossy, color), the presence or absence of blood (record if bleeding, the amount of bleeding, and color of blood), and any missing parts. Include descriptive comments about the animal's behavior on deck and upon release (lethargic, active, calm, vocalizing, struggling, swam away, sank, floated at surface, righted itself, dove, breathing patterns, etc.). Also record the amount and location of gear remaining on the animal, and for sea turtles, the time required for resuscitation.

6. **ENTANGLEMENT SITUATION:** Indicate the initial entanglement situation of the animal by recording the most appropriate entanglement situation. See Table 2.

**Table 2:** Incidental Take Entanglement Situations

<b>ENTANGLEMENT</b>	<b>SUMMARY</b>
<b>Bird- Gangion- Mainline</b>	Sea Bird caught, gangion attached to mainline.
<b>Caught- Trawl Wings</b>	Caught in wings of trawl net.
<b>Contact Vessel/Equip</b>	Contact with vessel or vessel equipment
<b>Entg- Bridle/Cable/Warp</b>	Entangled in the bridle, cable, or warp of the gear
<b>Entg- Gear Other Vessel</b>	Entangled in gear other than vessel's fishing gear, i.e. ghost gear caught by vessel
<b>Entg- Sweep/Footrope</b>	Caught in sweep or footrope of trawl net.
<b>Entg- Sweep/Tlkr/Chain</b>	Caught on sweep, tickler, or chains of the trawl gear
<b>Fell Out, B/C Rollers</b>	Fell from gear due to force of roller (e.g., the animal reached the haul back roller and the roller's force caused it to fall from the gear).
<b>Fell Out, In Water</b>	Fell from gear before exiting water (e.g., the animal was still under water when it fell from the gear).
<b>Fell Out, Out Of Water</b>	Fell from gear once hauled out of the water (e.g., the animal was mostly/completely out of the water when it fell from the gear because the weight of the animal and pulling action of the net caused the animal to fall from the gear).
<b>Fell Out, Point Unk</b>	Fell from gear at a point unknown. Describe situation in the COMMENTS
<b>Hooked, Beak</b>	Hook attached to the beak of a sea turtle or sea bird.
<b>Hooked, Carapace</b>	Hook attached to the carapace of a sea turtle.
<b>Hooked, Flipper</b>	Hook attached to the flipper of a sea turtle or marine mammal.
<b>Hooked, Head</b>	Hook attached to the head of a sea turtle, sea bird, or marine mammal.
<b>Hooked, Ingested</b>	Hook swallowed by a sea turtle, sea bird, or marine mammal.
<b>Hooked, Other Unk</b>	Hooked, other/unknown, describe the hooked entanglement situation in the COMMENTS.
<b>In Trawl Net Belly</b>	Inside belly of trawl net.
<b>In Trawl Net Codend</b>	Inside codend of trawl net.
<b>In Trawl Net Mouth</b>	Inside mouth of trawl net.
<b>Other (Comment)</b>	Describe the entanglement situation in the COMMENTS.
<b>Removal- Must Cut</b>	Removal requires cutting of gear/animal, i.e. the gear and/or the animal is cut in order to remove the animal from the gear.
<b>Removal- No Cutting</b>	Removal does NOT require cutting of gear/animal, i.e. pulling, unwrapping, unrolling, and/or detangling the gear allows the animal to be removed from the gear, without cutting the gear and/or the animal.
<b>Unknown</b>	Describe situation in the COMMENTS.

**NOTE:** If more than one entanglement applies to a situation choose the entanglement that describes the primary entanglement or interaction (e.g. a turtle is observed inside the

codend of a trawl and falls from the gear as it is hauled up: choose IN TRAWL NET CODEND as it best describes the primary interaction.

7. **PHOTO(S) TAKEN?:** Indicate whether any photographs are taken of the animal by marking either the Y=Yes or N=No box.

**NOTE:** All marine mammals, sea turtles, and sea birds incidentally taken **must be photographed** as photos are necessary to assist in species identification. Only under extreme conditions should no photos be taken and the reason should be recorded in the COMMENTS section.

8. **COMMENTS:** Record any additional information regarding the incidental take, especially when data are unable to be collected. The COMMENTS section should include:

- a. Identifying characteristics.
- b. Details on the entanglement situation.
- c. Detailed description of the overall condition of the animal.

If more room is needed, use the back of this log, making sure to indicate "See Back" on the front. Also, include any other relevant information regarding the incidental take (e.g., the animal was seen in the net prior to dumping on deck).

**NOTE:** If a monitor sees an animal fall from the gear (alive or dead), after completing this log, record additional comments regarding the "fallout," (i.e. the specifics of how the animal was entangled, whether the animal sank or floated away, etc.)

**NOTE:** For sea turtle takes, comment on whether the animal slid out or escaped from the gear. Comment on if and how the turtle was hooked and/or entangled. If any gear was left on the animal when released, thoroughly describe the amount of gear, including the dimensions of the gear (recorded in linear feet).

**NOTE:** For marine mammals, comment on whether the animal was released with gear. Include a description of the gear (type, material, any buoys/floats, color, etc.), how the animal was entangled and how much gear remained upon release.

**NOTE:** For sea birds, comment on when animals are seen diving near gear (setting/hauling), if chasing bait, offal (entrails and internal organs of processed species), or fallouts near gear, or any details relative to how the animal(s) became entangled.



**INCIDENTAL TAKE LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMINC**

ASM/TRIPID	
DATE LANDED mm/yy	/ /
PAGE #	___ of ___

PSID # <b>1</b>	HAUL # <b>2</b>	TAG # <b>3</b>
SPECIES NAME <b>4</b>		
ANIMAL CONDITION (see back) <b>5</b>		
ENTANGLEMENT (see back) <b>6</b>		
PHOTO TAKEN? Y <input type="checkbox"/> N <input type="checkbox"/> (COMMENT) <b>7</b>		

COMMENTS  
**8**

List identifying characteristics, describe in detail the entanglement situation, include a description of the overall body condition of the animal, behavior on deck and upon release and any other related information. Use back of log if more room is needed.

**INCIDENTAL TAKE LOG (BACK)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMINC**

ASM/TRIPID	
DATE LANDED mm/yy	/
PAGE #	of

**ANIMAL CONDITION**  
 Alive- Captain/crew saw  
 Alive- Hook/Gear + 1 part (in or around a single body part)  
 Alive/Hook + Flipper  
 Alive- Hook/Gear > 1 part (in or around several body parts)  
 Alive- Hook/Gear in or around mouth  
 Alive- Resuscitated sea turtle  
 Alive  
 Dead- Captain/crew saw  
 Dead- Condition unknown  
 Dead- Fresh  
 Dead- Moderately decomposed  
 Dead- Severely decomposed  
 Other  
 Unknown

**ADDITIONAL COMMENTS**

**ENTANGLEMENT**  
 Bird- Gangion attached to mainline  
 Caught- Trawl wings  
 Contact with vessel/equipment  
 Entangled in bridle/cable/warp  
 Entangled in gear from another vessel (i.e. ghost gear)  
 Entangled in sweep/footrope  
 Entangled in sweep/tickler/chain  
 Fell out due to force of rollers  
 Fell out while in the water  
 Fell out when out of the water  
 Fell out, point unknown  
 Hooked in the beak  
 Hooked in the carapace  
 Hooked in the flipper  
 Hooked in the head  
 Hooked, ingested  
 Hooked, other, unknown  
 In trawl net belly  
 In trawl net codend  
 In trawl net mouth  
 Other  
 Removal requires cutting of the gear/animal  
 Removal does not require cutting gear/animal  
 Unknown

**FOR OFFICE USE ONLY**



**INCIDENTAL TAKE LOG (FRONT)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMINC**

ASM/TRIPID	<b>A02002C</b>
DATE LANDED mm/yy	<b>10 / 10</b>
PAGE #	<b>1</b> of <b>1</b>

PSID # <b>01</b>	HAUL # <b>0 1 1</b>	TAG # <b>D O 7 9 8 2</b>
SPECIES NAME <b>HARBOR SEAL</b>		
ANIMAL CONDITION (see back) <b>Dead- Fresh</b>		
ENTANGLEMENT (see back) <b>Removal, No cutting</b>		
PHOTO TAKEN? Y <input checked="" type="checkbox"/> N <input type="checkbox"/> (COMMENT)		

**PSID 01 brought on board entangled in gillnet meshes. Several meshes encompassed the head & neck; entanglement did not extend down past the fore flippers. (ie, meshes were around front of body) Seal was motionless & its eyes were open. On first viewing, seal was completely intact with no blood, abrasions, cuts or anything of that nature. Crew disentangled seal from net- they did not have to cut either the net or the seal, just pulled the meshes down the body. Seal was motionless throughout this process. Overall condition of the seal was intact & fresh. There were no cuts or bleeding, no evidence of rotting flesh or scavenger damage. There was an indent in the flesh around the head which did not break the skin - resembled an impression. It was about 1mm wide & 1mm deep. Opened mouth to examine gums/ teeth for ID. Gums were pink & firm. The seal's skin & fur were intact; fur was smooth & stayed attached to body during handling. Did not smell any foul odors from seal. Seal was cold to the touch. Eyes were black& glossy with no fluids leaking from them.**

**ID Characteristics:**

- Multi cusped teeth, overlapping each other**
- V-shaped nostrils**
- Rounded head w/dog-like snout**
- Gray coat with circular patterns "halos"**

**Tag # DO7982**  
**Applied to right rear flipper**

**12 photos taken**

COMMENTS

List identifying characteristics, describe in detail the entanglement situation, include a description of the overall body condition of the animal, behavior on deck and upon release and any other related information. Use back of log if more room is needed.





**INCIDENTAL TAKE LOG (BACK)**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**ASMINC**

ASM/TRIPID	
DATE LANDED mm/yy	/
PAGE #	of

<p><b>ANIMAL CONDITION</b></p> <p>Alive- Captain/crew saw</p> <p>Alive- Hook/Gear + 1 part (in or around a single body part)</p> <p>Alive/Hook + Flipper</p> <p>Alive- Hook/Gear &gt; 1 part (in or around several body parts)</p> <p>Alive- Hook/Gear in or around mouth</p> <p>Alive- Resuscitated sea turtle</p> <p>Alive</p> <p>Dead- Captain/crew saw</p> <p>Dead- Condition unknown</p> <p>Dead- Fresh</p> <p>Dead- Moderately decomposed</p> <p>Dead- Severely decomposed</p> <p>Other</p> <p>Unknown</p>	<p><b>ENTANGLEMENT</b></p> <p>Bird- Gangion attached to mainline</p> <p>Caught- Trawl wings</p> <p>Contact with vessel/equipment</p> <p>Entangled in bridle/cable/warp</p> <p>Entangled in gear from another vessel (i.e. ghost gear)</p> <p>Entangled in sweep/footrope</p> <p>Entangled in sweep/tickler/chain</p> <p>Fell out due to force of rollers</p> <p>Fell out while in the water</p> <p>Fell out when out of the water</p> <p>Fell out, point unknown</p> <p>Hooked in the beak</p> <p>Hooked in the carapace</p> <p>Hooked in the flipper</p> <p>Hooked in the head</p> <p>Hooked, ingested</p> <p>Hooked, other, unknown</p> <p>In trawl net belly</p> <p>In trawl net codend</p> <p>In trawl net mouth</p> <p>Other</p> <p>Removal requires cutting of the gear/animal</p> <p>Removal does not require cutting gear/animal</p> <p>Unknown</p>
<p><b>ADDITIONAL COMMENTS</b></p>	<p><b>FOR OFFICE USE ONLY</b></p>

### FISHERMEN'S COMMENT LOG

The purpose of this log is to provide fishermen an opportunity to document and record any significant information as it relates to an observed haul and/or trip. This log will become part of the trip record.

Monitors are required to present this log to the Captain at the beginning of every trip. This log is completely voluntary and should not be presented as an additional requirement. This log is not meant to be used for past trips, it should only pertain to the current trip.

#### HEADER INFORMATION

If a captain chooses to fill out a Fishermen's Comment Log, the monitor should fill out all Header information. This log is numbered independently of all other logs.

Captains may either mail in the log separately or give to the monitor to be included as part of the trip file. If the log is returned to the monitor for submittal with the trip, it should be incited on the Trip Information Log in the COMMENTS. Monitors are also required to ask the Captain if he would like a copy of the log.

#### INSTRUCTIONS

Please note if the back of the log is utilized, the standard trip header information should be filled out on both sides of the log.

1. **EVENT DATE:** Record the two digit month, day, and year of the date the documented event occurred (MMDDYY).

Example: 08/26/09.

2. **VESSEL NAME:** Record the name of the vessel **to which you are deployed**. Care should be taken to record the correct spelling of the vessel's name.

Example: Jo Jo

3. **VESSEL OR HULL NUMBER:** Record the number written on the hull of this vessel to which you are deployed. This number will be either the U.S. Coast Guard Documentation Number or the state registration number. This number may have up to eight characters. This is not the same as the NMFS or state fishing permit number.

Example:

USCG Documentation Number	State Registration Number
123456	ME1234AB

4. **COMMENTS CONTINUED ON BACK?:** Indicate whether there are additional comments recorded on the back side of the log by marking either the Y=Yes or N=No box.

5. **COMMENTS:** Record comments related to gear particulars, unusual species caught, abnormal levels of bycatch, extrapolated weights, uncommon catches, reasons gear was not fishing properly, etc. Please include all relevant information if notes pertain to a specific tow, time, or gear. If more room is needed, use the back of this log.

**FISHERMEN'S COMMENT LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**05/01/10**

ASM/ TRIPID	
DATE LAND (mm/yy)	/ /
PAGE #	OF
EVENT DATE (mm/dd/yy)	/ <b>1</b> /

*Record notes or details on observed tows, such as species composition, estimated or extrapolated weights, gear or fishing conditions that may be out of the ordinary. If notes pertain to a specific tow, or times, please include that information below.*

VESSEL NAME  <b>2</b>	HULL NUMBER  <b>3</b>	COMMENTS CONTINUED ON BACK? NO <input type="checkbox"/> YES <input type="checkbox"/> <b>4</b>
-----------------------------	-----------------------------	--

COMMENTS  <b>5</b>
--------------------------

PAPERWORK REDUCTION ACT STATEMENT: The information provided on this form will be used by the National Marine Fisheries Service (NMFS) to improve observer training under section 403(b) of the Magnuson-Stevens Act (16 U.S.C. 1801, et seq.), which will assist NMFS to collect information that is used in analyses that support the conservation and management of living marine resources and that are required under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act (RFA), Executive Order 12866 (EO 12866), and other applicable law. The public reporting burden for this form is estimated to average 15 minutes per response, including the time for completing, reviewing, and transmitting the information on the form. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to: Amy Van Atten, National Marine Fisheries Service, Northeast Fisheries Science Center, Northeast Fisheries Observer Program, 166 Water Street, Woods Hole MA 02543-1026.

Providing the requested information is voluntary. All identifying data submitted will be handled as confidential material in accordance with NOAA Administrative Order 216-100, Protection of Confidential Fishery Statistics. Other information collected on this form may be subject to public release under various statutes. Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number. This is an approved information collection under OMB Control No. 0648-0593 through 09/30/2012.

**FISHERMEN'S COMMENT LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**  
**05/01/10**

ASM/ TRIP ID	<b>E03715-</b>
DATE LAND (mm/yy)	<b>11 / 05</b>
PAGE #	<b>1 OF 1</b>
EVENT DATE (mm/dd/yy)	<b>11 / 12 / 05</b>

*Record notes or details on observed tows, such as species composition, estimated or extrapolated weights, gear or fishing conditions that may be out of the ordinary. If notes pertain to a specific tow, or times, please include that information below.*

VESSEL NAME	HULL NUMBER	COMMENTS CONTINUED ON BACK?
<b>Cormorant</b>	<b>123456</b>	NO 0 <input checked="" type="checkbox"/> YES 1

COMMENTS

**Caught 700lbs of river herring on haul #4. All other hauls included 100lbs or less and were primarily Atlantic herring. I believe this was because of faulty gear.**

PAPERWORK REDUCTION ACT STATEMENT: The information provided on this form will be used by the National Marine Fisheries Service (NMFS) to improve observer training under section 403(b) of the Magnuson-Stevens Act (16 U.S.C. 1801, et seq.), which will assist NMFS to collect information that is used in analyses that support the conservation and management of living marine resources and that are required under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act (RFA), Executive Order 12866 (EO 12866), and other applicable law. The public reporting burden for this form is estimated to average 15 minutes per response, including the time for completing, reviewing, and transmitting the information on the form. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to: Amy Van Atten, National Marine Fisheries Service, Northeast Fisheries Science Center, Northeast Fisheries Observer Program, 166 Water Street, Woods Hole MA 02543-1026.

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## **DISCARD LOG**

This log has been designed to systematically capture discarding events and the associated data describing the event. This log should be used for all hauls in which:

- Pumping occurs, regardless of target species or gear type observed
- A significant amount of catch is released, regardless of the intention
- A significant amount of catch is discarded, whether it came onboard or not

This log should be completed in addition to the Haul Log for each particular gear type. Be familiar with the following definition:

### **DEFINITIONS**

**Operational Discards:** Fish that cannot be suctioned by the pump, and remain in the net at completion of pumping. This also pertains to fish that remain in the net that are not brought onboard (i.e. catch is not fully dumped on the vessel).

### **FISH PUMPING**

For vessels that are pumping fish onboard, subsamples must be collected prior to the fish entering the fish hold. Subsamples should be spaced out evenly throughout the pumping process to account for any stratification that may occur while the net is alongside the vessel. Monitors must obtain samples from each of the chutes that lead to the fish holds on those vessels with multiple chutes.

The monitor should notify the Captain that the codend needs to be viewed by the monitor regardless of whether it is brought onboard the vessel or not. This will allow the monitor the opportunity to comment on species remaining in the codend at the end of the pumping process and to observe for the presence of any marine mammals that have been entangled or caught in the gear.

### **DISCARD AT COMPLETION OF PUMPING:**

At the completion of the pumping process occasionally there may be some catch left in the net. This catch is generally referred to as operational discards. Monitors should be documenting the weight of this discard by species, as accurately as possible. Record this weight on the species section of the Haul Log as "Fish, nk" if accurate speciation of the catch is not possible. If the catch is identified the monitor must document methods for identifying the fish to species.

### **PARTIAL OR FULLY-DISCARDED TOWS:**

At times, there may be situations where partial or entire catch is released from the net. Reasons for release of catches may include catch that consists of non-target species or gear related problems.

Any catch that is discarded, regardless of the weight or reason, must be recorded in the species section of the Haul Log as "Fish, nk" if the monitor cannot accurately speciate the catch. If the catch is identified, the monitor must document methods for identifying the fish to species.

**HEADER INFORMATION**

Fill out all Header information for all Discard Logs. Haul Logs are used as a cover page to all haul related information on the haul level. Number all logs per haul as follows:

1. Haul Log
2. Individual Animal Log (when present)
3. Length Frequency Log
4. Discard Log (when present)

1. **GEAR CODE:** Indicate the type of gear fished by recording the appropriate three (3) digit code as listed in Appendix D: Gear Codes and Gear Names.
2. **GEAR NUMBER (#):** Record the gear number used for this haul as uniquely identified on the associated Haul Log(s).
3. **HAUL NUMBER (#):** Record the consecutive haul number assigned to the haul requiring a Discard Log. This number must agree with the haul number recorded on the corresponding Haul Log.
4. **WHO ESTIMATED THE WEIGHT OF THE DISCARDED CATCH?:** Record who estimated the weight of the catch by placing an "X" in the appropriate box:

Monitor	<input type="checkbox"/>
Captain	<input type="checkbox"/>
Combination	<input type="checkbox"/>

5. **WHY WAS THE CATCH DISCARDED ON THIS HAUL?:** Record the reason why the catch was discarded on this haul by placing an "X" in the box of all reason(s) that apply:

REASON		EXAMPLE
Unknown	<input type="checkbox"/>	Not seen by monitor due to safety reasons
Non-desired species	<input type="checkbox"/>	Large amount of spiny dogfish
Gear problems (i.e., mechanical failure)	<input type="checkbox"/>	Net reel or crane failure
Vessel capacity filled	<input type="checkbox"/>	Contents of net exceeds that of which the vessel can hold
Quality of fish (feedy, spawning)	<input type="checkbox"/>	Fish are beat up from a long tow
Operational discards	<input type="checkbox"/>	Fish are dumped on deck, however, the net is not fully released on deck
Not enough fish to haul	<input type="checkbox"/>	
Other, specify in COMMENTS	<input type="checkbox"/>	

**NOTE:** Check off all that apply.

6. **DISCARD EVENT:** Record what the discard event was by placing an "X" in the box of all reasons that apply: This information should be obtained from the captain.

Tow was partially discarded (released)	<input type="checkbox"/>
Tow was fully discarded (released)	<input type="checkbox"/>
Other, specify in COMMENTS	<input type="checkbox"/>

**NOTE:** Partial release would be for fish not pumped or brought onboard.

7. **WERE YOU ABLE TO SEE THE CONTENTS OF THE CODEND WHEN THE CATCH WAS RELEASED?:** Record whether you saw the contents of the codend when the pumping process or the releasing of catch was completed by placing an "X" next to the appropriate box:

No	<input type="checkbox"/>	Contents of codend not seen. Describe the reason in the COMMENTS section
Yes, contents seen on deck	<input type="checkbox"/>	Catch was dumped on deck then quickly discarded (sorting of catch did not occur)
Yes, contents seen in water	<input type="checkbox"/>	Catch was released in the water and not brought onboard the vessel

**NOTE:** Check YES if partial or full contents were seen.

8. **IF CATCH WAS UNABLE TO BE BROUGHT ONBOARD?:** If the catch was unable to be brought onboard the vessel describe the reason.
9. **CATCH COMPOSITION OF DISCARDED CATCH:** Describe the catch composition of the discarded catch and how those determinations were made. Discards that cannot be speciated should be recorded as "Fish, nk" on the Haul Log, however, it is still important for monitors to document what they saw discarded and to record on the Haul Log any discards that can be properly identified and estimated.
10. **CHALLENGES OBSERVING THIS HAUL?:** Describe any challenges that occurred while observing this haul. This might include, but is not limited to, weather related reasons, and viewing of codend and/or gear related issues.

**DISCARD LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**

ASM/ TRIP ID	
DATE LAND (mm/yy)	/ /
PAGE #	of

GEAR CODE <b>1</b>	GEAR # <b>2</b>	HAUL # <b>3</b>	Who estimated the weight of the discarded catch? Monitor <b>4</b> <input type="checkbox"/> Captain <input type="checkbox"/> Combination <input type="checkbox"/>		
<b>CHECK ALL THAT APPLY</b>			If catch was unable to be brought onboard then describe reason here: <b>8</b>		
Why was the catch discarded on this haul? <b>5</b>		Check off the discard event. <b>6</b>			
Unknown <input type="checkbox"/>		Tow was partially discarded (released) <input type="checkbox"/>			
Non-desired species <input type="checkbox"/>		Tow was fully discarded (released) <input type="checkbox"/>			
Gear problems <input type="checkbox"/>		Other (comment) <input type="checkbox"/>			
Vessel capacity filled <input type="checkbox"/>		Were you able to see the contents of the codend when the catch was released? <b>7</b>			
Operational discards (leftover fish) <input type="checkbox"/>		No <input type="checkbox"/>			
Not enough fish to haul <input type="checkbox"/>		Yes, contents seen on deck <input type="checkbox"/>			
Other (comment) <input type="checkbox"/>		Yes, contents seen in water <input type="checkbox"/>			
CATCH COMPOSITION OF DISCARDED CATCH: Describe the catch composition of the discarded catch and how those determinations were made. <b>9</b>					
CHALLENGES OBSERVING THIS HAUL: Describe any challenges that occurred with observing this haul. <b>10</b>					

**DISCARD LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**

ASM/ TRIP ID	<b>A02002-</b>
DATE LAND (mm/yy)	<b>10 / 10</b>
PAGE #	<b>4</b> of <b>4</b>

GEAR CODE <b>0 5 0</b>	GEAR # <b>0 2</b>	HAUL # <b>0 0 4</b>	Who estimated the weight of the discarded catch? Monitor <input type="checkbox"/> Captain <input type="checkbox"/> Combination <input checked="" type="checkbox"/>		
<b>CHECK ALL THAT APPLY</b>			If catch was unable to be brought onboard then describe reason here:		
Why was the catch discarded on this haul?		Check off the discard event.		<b>The codend was not brought onboard due to a large amount of spiny dogfish.</b>	
Unknown	<input type="checkbox"/>	Tow was partially discarded (released)	<input type="checkbox"/>		
Non-desired species	<input checked="" type="checkbox"/>	Tow was fully discarded (released)	<input checked="" type="checkbox"/>		
Gear problems	<input type="checkbox"/>	Other (comment)	<input type="checkbox"/>		
Vessel capacity filled	<input type="checkbox"/>	Were you able to see the contents of the codend when the catch was released?			
Operational discards (leftover fish)	<input type="checkbox"/>	No	<input type="checkbox"/>		
Not enough fish to haul	<input type="checkbox"/>	Yes, contents seen on deck	<input type="checkbox"/>		
Other (comment)	<input type="checkbox"/>	Yes, contents seen in water	<input checked="" type="checkbox"/>		
CATCH COMPOSITION OF DISCARDED CATCH: Describe the catch composition of the discarded catch and how those determinations were made.					
<b>The majority of the catch was spiny dogfish. There were a few skates (skate, nk); I did not see any other species</b>					
CHALLENGES OBSERVING THIS HAUL: Describe any challenges that occurred with observing this haul.					
<b>Due to the size of the bag, the captain did not want me on deck due to safety. I was able to go out on deck moments after the codend was released into the water.</b>					

**DISCARD LOG**  
**NMFS FISHERIES AT-SEA MONITORING PROGRAM**

ASM/ TRIP ID	
DATE LAND (mm/yy)	/ /
PAGE #	of

GEAR CODE <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	GEAR # <input type="text"/> <input type="text"/>	HAUL # <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Who estimated the weight of the discarded catch?				
			Monitor <input type="checkbox"/>	Captain <input type="checkbox"/>	Combination <input type="checkbox"/>		
<b>CHECK ALL THAT APPLY</b>				If catch was unable to be brought onboard then describe reason here:			
Why was the catch discarded on this haul?		Check off the discard event.					
Unknown	<input type="checkbox"/>	Tow was partially discarded (released)	<input type="checkbox"/>				
Non-desired species	<input type="checkbox"/>	Tow was fully discarded (released)	<input type="checkbox"/>				
Gear problems	<input type="checkbox"/>	Other (comment)	<input type="checkbox"/>				
Vessel capacity filled	<input type="checkbox"/>	Were you able to see the contents of the codend when the catch was released?					
Quality of fish	<input type="checkbox"/>	No				<input type="checkbox"/>	
Operational discards (leftover fish)	<input type="checkbox"/>	Yes, contents seen on deck		<input type="checkbox"/>			
Not enough fish to haul	<input type="checkbox"/>	Yes, contents seen in water		<input type="checkbox"/>			
Other (comment)	<input type="checkbox"/>						
CATCH COMPOSITION OF DISCARDED CATCH: Describe the catch composition of the discarded catch and how those determinations were made.							
CHALLENGES OBSERVING THIS HAUL: Describe any challenges that occurred with observing this haul.							

**APPENDIX A: SPECIES NAMES AND CORRESPONDING TABS/LOGS**

<b>SPECIES CODE</b>	<b>COMMON NAME</b>	<b>MARKET CATEGORY</b>	<b>SCIENTIFIC NAME</b>	<b>TAB/LOG</b>
0010	ALEWIFE		<i>Alosa pseudoharengus</i>	SPP
6632	ALLIGATORFISH		<i>Aspidophoroides monopterygius</i>	SPP
0030	AMBERJACK, NK		<i>Seriola sp</i>	IAL
0060	ANCHOVY, BAY		<i>Anchoa mitchilli</i>	SPP
6860	ANCHOVY, NK		Engraulidae	SPP
6645	ANCHOVY, STRIPED		<i>Anchoa hepsetus</i>	SPP
6878	ANEMONE, NK		Anthozoa	SPP
1710	ARGENTINE, ATLANTIC		<i>Argentina silus</i>	SPP
0180	BARRACUDA, NK		Sphyraenidae sp	IAL
6627	BARRELFISH		<i>Hyperoglyphe perciformis</i>	SPP
4180	BASS, STRIPED		<i>Morone saxatilis</i>	SPP
6611	BATFISH, ATLANTIC		<i>Dibranchus atlanticus</i>	SPP
6610	BATFISH, NK		Ogcocephalidae	SPP
6626	BEARDFISH		<i>Polymixia lowei</i>	SPP
6100	BIRD, NK		Aves	INC
6629	BLENNY, NK (FISH)		Blenniidae	SPP
0230	BLUEFISH		<i>Pomatomus saltatrix</i>	SPP
6625	BLUESPOTTED CORNETFISH		<i>Fistularia tabacaria</i>	SPP
6623	BOARFISH, DEEPBODY		<i>Antigonia capros</i>	SPP
6607	BOARFISH, NK		Caproidae	SPP
6883	BONE, NK		Bones	SPP
0330	BONITO, ATLANTIC		<i>Sarda sarda</i>	SPP, IAL
6101	BOOBY, BROWN		<i>Sula leucogaster</i>	INC
6102	BOOBY, MASKED		<i>Sula dactylatra</i>	INC
6136	BUFFLEHEAD		<i>Bucephala albeola</i>	INC
6648	BULLET MACKEREL		<i>Auxis rochei</i>	SPP
0511	BUTTERFISH		<i>Peprilus triacanthus</i>	SPP
3610	CAPELIN		<i>Mallotus villosus</i>	SPP
0630	CARP		<i>Cyprinus carpio</i>	SPP
7430	CLAM, BLOODARC		<i>Anadara ovalis</i>	SPP
7640	CLAM, NK		Bivalvia	SPP
7600	CLAM, RAZOR		<i>Ensis directus</i>	SPP
7630	CLAM, SOFT-SHELLED		<i>Mya arenaria</i>	SPP
7650	CLAM, STIMPSONS SURF (ARTIC)		<i>Spisula polynyma</i>	SPP
7690	CLAM, SURF		<i>Spisula solidissima</i>	SPP
6896	CLAPPER, CLAM			SPP
6894	CLAPPER, NK			SPP
6895	CLAPPER, SCALLOP			SPP
0570	COBIA		<i>Rachycentron canadum</i>	IAL
0818	COD, ATLANTIC		<i>Gadus morhua</i>	SPP
0812	COD, ATLANTIC	CHEEKS	<i>Gadus morhua</i>	SPP



SPECIES CODE	COMMON NAME	MARKET CATEGORY	SCIENTIFIC NAME	TAB/ LOG
6605	CODLING, METALLIC		<i>Physiculus fulvus (hakeling)</i>	SPP
6880	CORAL, STONY, NK		Astrangiidae	SPP
6111	CORMORANT, DBL CREST		<i>Phalacrocorax auritus</i>	INC
6112	CORMORANT, GREAT		<i>Phalacrocorax carbo</i>	INC
6113	CORMORANT, NK		<i>Phalacrocorax sp</i>	INC
7000	CRAB, BLUE		<i>Callinectes sapidus</i>	SPP
7140	CRAB, CANCER, NK		<i>Cancer sp</i>	SPP
7100	CRAB, DEEPSEA, RED		<i>Chaceon (geryon) quinquedens</i>	SPP
7101	CRAB, DEEPSEA, RED	BUTCHERED	<i>Chaceon (geryon) quinquedens</i>	SPP
7102	CRAB, DEEPSEA, RED	PROCESSED	<i>Chaceon (geryon) quinquedens</i>	SPP
7080	CRAB, GREEN		<i>Carcinus maenas</i>	SPP
6868	CRAB, HERMIT, NK		Paguroidea sp	SPP
7240	CRAB, HORSESHOE		<i>Limulus polyphemus</i>	SPP, IAL
7110	CRAB, JONAH		<i>Cancer borealis</i>	SPP
7010	CRAB, LADY		<i>Ovalipes ocellatus</i>	SPP
6866	CRAB, NORTHERN STONE		<i>Lithodes maja</i>	SPP
7120	CRAB, ROCK		<i>Cancer irroratus</i>	SPP
7185	CRAB, SNOW		<i>Chionoecetes opilio</i>	SPP
6865	CRAB, SPECKLED, NK		<i>Arenaeus cribrarius</i>	SPP
7150	CRAB, SPIDER, NK		<i>Libinia pelia sp</i>	SPP
7151	CRAB, SPIDER, PORTLY		<i>Libinia emarginata</i>	SPP
7130	CRAB, TRUE, NK		Brachyura	SPP
0840	CRAPPIE, NK		<i>Pomoxis sp</i>	SPP
0900	CROAKER, ATLANTIC		<i>Micropogonias undulatus</i>	SPP
0930	CUNNER (YELLOW PERCH)		<i>Tautoglabrus adspersus</i>	SPP
0960	CUSK		<i>Brosme brosme</i>	SPP
6861	CUSK-EEL, NK		Ophidiidae	SPP
6640	CUTLASSFISH, ATL		<i>Trichiurus lepturus</i>	IAL
0985	DEALFISH (RIBBONFISH)		<i>Trachipterus arcticus</i>	SPP
6810	DEBRIS, FISHING GEAR		Fishing gear debris	SPP
6802	DEBRIS, GLASS		Glass debris	SPP
6801	DEBRIS, METAL		Metal debris	SPP
6800	DEBRIS, NK		Unknown debris	SPP
6830	DEBRIS, PLASTIC		Plastic debris	SPP
6805	DEBRIS, ROCK		Rock debris	SPP
6820	DEBRIS, WOOD		Wood debris	SPP
3460	DOGFISH, CHAIN		<i>Soyliorhinus retifer</i>	SPP
3501	DOGFISH, NK		<i>Mustelus, squalus sp</i>	SPP
3508	DOGFISH, NK	FINS	<i>Mustelus, squalus sp</i>	SPP
3502	DOGFISH, NK	TAILS	<i>Mustelus, squalus sp</i>	SPP
3511	DOGFISH, SMOOTH		<i>Mustelus canis</i>	SPP
3512	DOGFISH, SMOOTH	TAILS	<i>Mustelus canis</i>	SPP

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3518	DOGFISH, SMOOTH	FINS	<i>Mustelus canis</i>	SPP
3521	DOGFISH, SPINY		<i>Squalus acanthias</i>	SPP
3522	DOGFISH, SPINY	BELLYFLAPS	<i>Squalus acanthias</i>	SPP
3524	DOGFISH, SPINY	TAILS	<i>Squalus acanthias</i>	SPP
3528	DOGFISH, SPINY	FINS	<i>Squalus acanthias</i>	SPP
6941	DOLPHIN, BOTTLENOSE		<i>Tursiops truncatus</i>	INC
6961	DOLPHIN, CLYMENE		<i>Stenella clymene</i>	INC
6962	DOLPHIN, FRASERS		<i>Lagenodelphis hosei</i>	INC
6997	DOLPHIN, NK (MAMMAL)		Delphinidae	INC
6963	DOLPHIN, PANTROPICAL SPOTD		<i>Stenella attenuata</i>	INC
6942	DOLPHIN, RISSOS		<i>Grampus griseus</i>	INC
6957	DOLPHIN, ROUGH TOOTH		<i>Steno bredanensis</i>	INC
6944	DOLPHIN, SPINNER		<i>Stenella longirostris</i>	INC
6901	DOLPHIN, SPOTD, ATL		<i>Stenella plagiodon</i>	INC
6902	DOLPHIN, SPOTD, BRID		<i>Stenella frontalis</i>	INC
6943	DOLPHIN, SPOTD, NK		Spotted stenella <i>sp</i>	INC
6952	DOLPHIN, STRIPED		<i>Stenella coeruleoalba</i>	INC
6951	DOLPHIN, WHITEBEAKED		<i>Lagenorhynchus albirostris</i>	INC
6936	DOLPHIN, WHITESIDED		<i>Lagenorhynchus acutus</i>	INC
6940	DOLPHIN, COMMON (OLD SADDLEBACK)		<i>Delphinus delphis (common)</i>	INC
1050	DOLPHINFISH (MAHI MAHI)		<i>Coryphaena hippurus</i>	IAL
1880	DORY, BUCKLER (JOHN)		<i>Zenopsis conchifera</i>	SPP
1890	DORY, NK		Zeidae	SPP
6131	DOVEKIE		<i>Alle alle</i>	INC
6609	DRAGONFISH, BOA		<i>Stomias boa</i>	SPP
1060	DRUM, BLACK		<i>Pogonias cromis</i>	SPP
6797	DRUM, NK		Sciaenidae	SPP
1070	DRUM, RED		<i>Sciaenops ocellatus</i>	SPP
6892	ECHINODERM, NK		Echinodermata	SPP
1150	EEL, AMERICAN		<i>Anguilla rostrata</i>	SPP
1160	EEL, CONGER		<i>Conger oceanicus</i>	SPP
6862	EEL, GARDEN, NK		Heteroconger <i>sp</i>	SPP
1170	EEL, NK		<i>Anguilliformes</i>	SPP
6863	EEL, ROCK (GUNNEL)		<i>Pholis gunnellus</i>	SPP
2060	EEL, SAND LANCE, NK		Ammodytidae	SPP
6859	EEL, SLENDER SNIPE		<i>Nemichthys scolopaceus</i>	SPP
6875	EELGRASS		<i>Zostera marina</i>	SPP
6613	EELPOUT, NK		<i>Lycenchelys, lycodes sp</i>	SPP
6855	EGGS, NK			SPP
6135	EIDER, COMMON			INC
3850	ESCOLAR		<i>Lepidocybium flavobrunneum</i>	IAL
6796	FILEFISH, NK		Balistidae	SPP
6856	FISH EGGS, NK			SPP
5260	FISH, NK		Osteichthyes	SPP, IAL
1240	FLOUNDER, AMERICAN PLAICE		<i>Hippoglossoides platessoides</i>	SPP

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1270	FLOUNDER, FOURSPOT		<i>Paralichthys oblongus</i>	SPP
1290	FLOUNDER, GULFSTREAM		<i>Citharichthys arctifrons</i>	SPP
6886	FLOUNDER, LEFTEYE, NK		Bothidae	SPP
1260	FLOUNDER, NK		<i>Pleuronectiformes</i>	SPP
1250	FLOUNDER, SAND DAB (WINDOWPANE)		<i>Scophthalmus aquosus</i>	SPP
1300	FLOUNDER, SOUTHERN		<i>Paralichthys lethostigma</i>	SPP
1219	FLOUNDER, SUMMER (FLUKE)		<i>Paralichthys dentatus</i>	SPP
1200	FLOUNDER, WINTER (BLACKBACK)		<i>Pleuronectes americanus</i>	SPP
1220	FLOUNDER, WITCH (GREY SOLE)		<i>Glyptocephalus cynoglossus</i>	SPP
1230	FLOUNDER, YELLOWTAIL		<i>Pleuronectes ferrugineus</i>	SPP
6141	FRIGATEBIRD, MAGNIF		<i>Fregata magnificens</i>	INC
6161	FULMAR, NORTHERN		<i>Fulmarus glacialis</i>	INC
6171	GANNET, NORTHERN		<i>Sula bassanus</i>	INC
6660	GAPER, RED EYE		<i>Chaunax stigmaeus</i>	SPP
1330	GARFISH (NEEDLEFISH)		Belonidae	SPP
6152	GREBE, HORNED		<i>Podiceps auritus</i>	INC
6150	GREBE, NK		Podicipedidae	INC
6153	GREBE, PIED BILLED		<i>Podilymbus podiceps</i>	INC
6154	GREBE, RED NECKED		<i>Podiceps grisegena</i>	INC
6671	GRENADIER, COMMON (MARLINSPIKE)		<i>Nezumia bairdii</i>	SPP
6672	GRENADIER, LONG-NOSED		<i>Caelorinchus carminatus</i>	SPP
1380	GRENADIER, NK		Macrouridae	SPP
6673	GRENADIER, ROUGHHEAD		<i>Macrourus berglax</i>	SPP
5240	GROUND FISH, NK			SPP
1410	GROUPE R, NK		<i>Epinephelus, mycteroperca sp</i>	IAL
1414	GROUPE R, SNOWY			IAL
1440	GRUNT, NK		<i>Haemulon, anisotremus sp</i>	SPP
6181	GUILLEMOT, BLACK		<i>Cephus grylle</i>	INC
6201	GULL, BLACK-HEADED		<i>Larus ridibundus</i>	INC
6202	GULL, BONAPARTES		<i>Larus philadelphia</i>	INC
6203	GULL, FRANKLINS		<i>Larus pipixcan</i>	INC
6204	GULL, GLAUCOUS		<i>Larus hyperboreus</i>	INC
6205	GULL, GREAT BLK-BACK		<i>Larus marinus</i>	INC
6206	GULL, HERRING		<i>Larus argentatus</i>	INC
6207	GULL, ICELAND		<i>Larus glaucoides</i>	INC
6215	GULL, IVORY		<i>Pagophila eburnea</i>	INC
6208	GULL, LAUGHING		<i>Larus autricilla</i>	INC
6209	GULL, LESS BLK-BACK		<i>Larus fuscus</i>	INC
6210	GULL, LITTLE		<i>Larus minutus</i>	INC
6211	GULL, MEW		<i>Larus canus</i>	INC
6200	GULL, NK		Larinae	INC
6212	GULL, RING BILLED		<i>Larus delawarensis</i>	INC
6216	GULL, ROSS		<i>Rhodostethia rosea</i>	INC
6213	GULL, SABINES		<i>Xema sabini</i>	INC

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6214	GULL, THAYERS		<i>Larus thayeri</i>	INC
1477	HADDOCK		<i>Melanogrammus aeglefinus</i>	SPP
1500	HAGFISH, ATLANTIC		<i>Myxine glutinosa</i>	SPP
6604	HAKE, BLUE		<i>Antimora rostrata</i>	SPP
6603	HAKE, LONGFIN		<i>Urophycis chesteri</i>	SPP
6600	HAKE, NK		<i>Urophycis, merluccius, Physicis sp</i>	SPP
1520	HAKE, RED (LING)		<i>Urophycis chuss</i>	SPP
1551	HAKE, RED/WHITE MIX		<i>Urophycis sp</i>	SPP
5090	HAKE, SILVER (WHITING)		<i>Merluccius bilinearis</i>	SPP
6615	HAKE, SOUTHERN		<i>Urophycis floridana</i>	SPP
6602	HAKE, SPOTTED		<i>Urophycis regia</i>	SPP
1539	HAKE, WHITE		<i>Urophycis tenuis</i>	SPP
1590	HALIBUT, ATLANTIC		<i>Hippoglossus hippoglossus</i>	SPP
1580	HALIBUT, GREENLAND		<i>Reinhardtius hippoglossoides</i>	SPP
1656	HARVESTFISH		<i>Peprilus alepidotus</i>	SPP
1685	HERRING, ATLANTIC		<i>Clupea harengus</i>	SPP
1120	HERRING, BLUEBACK		<i>Alosa aestivalis</i>	SPP
1670	HERRING, NK		Clupeidae	SPP
1280	HOGCHOCKER		<i>Trinectes maculatus</i>	SPP
1790	HOGFISH		<i>Lachnolaimus maximus</i>	SPP
6690	HOUNDFISH		<i>Tylosurus crocodilus</i>	IAL
8990	INVERTEBRATE, NK		<i>Invertebrata</i>	SPP
0870	JACK, CREVALLE		<i>Caranx hippos</i>	SPP
6780	JACK, NK		Carangidae	SPP
6301	JAEGER, LONG TAILED		<i>Stercorarius longicaudus</i>	INC
6300	JAEGER, NK		Stercorariidae	INC
6302	JAEGER, PARASITIC		<i>Stercorarius parasiticus</i>	INC
6303	JAEGER, POMARINE		<i>Stercorarius pomarinus</i>	INC
6305	JAEGER, SOUTH POLAR		<i>Carharacta maccormicki</i>	INC
6871	JELLYFISH, NK		<i>Scyphozoa</i>	SPP
6618	KINGFISH, GULF		<i>Menticirrhus littoralis</i>	SPP
1970	KINGFISH, NK		<i>Menticirrhus sp</i>	SPP
6616	KINGFISH, NORTHERN		<i>Menticirrhus saxatilis</i>	SPP
6617	KINGFISH, SOUTHERN		<i>Menticirrhus americanus</i>	SPP
6311	KITTIWAKE, BLK-LEGGD		<i>Rissa tridactyla</i>	INC
2680	LADYFISH			SPP
6631	LAMPREY, NK		Petromyzontidae	SPP
6872	LAMPSHELL, NK		Brachiopoda	SPP
6774	LANCETFISH, NK		Alepisauridae	IAL
6608	LANTERNFISH, NK		Myctophidae	SPP
6787	LEATHERJACKET		<i>Oligoplites saurus</i>	SPP
6647	LIZARDFISH		Synodontidae sp	SPP
7270	LOBSTER, AMERICAN		<i>Homarus americanus</i>	SPP
6786	LOOKDOWN		<i>Selene vomer</i>	SPP
6322	LOON, ARCTICA		<i>Gavia arctica</i>	INC

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6323	LOON, COMMON		<i>Gavia immer</i>	INC
6321	LOON, NK		Gaviidae	INC
6324	LOON, RED-THROATED		<i>Gavia stellata</i>	INC
6760	LOUVAR		<i>Louvarus imperialis</i>	IAL
2100	LUMPFISH		<i>Cyclopterus lumpus</i>	SPP
6635	LUMPSUCKER, ATL SPNY		<i>Eumicrotremus spinosus</i>	SPP
2120	MACKEREL, ATLANTIC		<i>Scomber scombrus</i>	SPP
2150	MACKEREL, CHUB		<i>Scomber japonicus</i>	SPP
1320	MACKEREL, FRIGATE		<i>Auxis thazard</i>	IAL
1940	MACKEREL, KING		<i>Scomberomorus cavalla</i>	SPP, IAL
6649	MACKEREL, NK		<i>Scomber scombrus</i>	SPP
6638	MACKEREL, SNAKE, NK		Gempylidae	SPP
3840	MACKEREL, SPANISH		<i>Scomberomorus maculatus</i>	SPP
6964	MANATEE, WEST INDIAN		<i>Trichechus manatus</i>	INC
6991	MARINE MAMMAL, NK		<i>Cetacea/pinnipedia</i>	INC
2171	MARLIN, BLUE		<i>Makaira nigricans</i>	IAL
2181	MARLIN, NK		Istiophoridae	IAL
2161	MARLIN, WHITE		<i>Tetrapturus albidus</i>	IAL
2210	MENHADEN, ATLANTIC		<i>Brevoortia tyrannus</i>	SPP
6103	MERGANSER, NK		Anatidae sp	INC
6770	MOLA, NK		Molidae	IAL
6772	MOLA, OCEAN SUNFISH		<i>Mola mola</i>	IAL
6771	MOLA, SHARPTAIL		<i>Mola lanceolata</i>	IAL
6773	MOLA, SLENDER		<i>Ranzania laevis</i>	IAL
6857	MOLLUSCA EGGS, NK			SPP
8040	MOLLUSK, NK		<i>Mollusca</i>	SPP
0120	MONKFISH (ANGLER, GOOSEFISH)	TAILS	<i>Lophius americanus</i>	SPP
0123	MONKFISH (ANGLER, GOOSEFISH)	LIVERS	<i>Lophius americanus</i>	SPP
0124	MONKFISH (ANGLER, GOOSEFISH)		<i>Lophius americanus</i>	SPP
6785	MOONFISH, ATLANTIC		<i>Selene setapinnis</i>	SPP
2341	MULLET, NK		Mugilidae	SPP
2350	MULLET, STRIPED		<i>Mugil cephalus</i>	SPP
6636	MUMMICHOG		<i>Fundulus heteroclitus</i>	SPP
6330	MURRE, NK		<i>Uria sp</i>	INC
6332	MURRE, THICK-BILLED		<i>Uria lomvia</i>	INC
6331	MURRE, THIN-BILLED		<i>Uria aalge</i>	INC
7810	MUSSEL, NK		<i>Mytilus modiolus sp</i>	SPP
6966	NARWHAL		<i>Monodon monoceros</i>	INC
0190	NEEDLEFISH, ATLANTIC		<i>Strongylura marina</i>	IAL
6341	NODDY, BROWN		<i>Anous stolidus</i>	INC
2500	OCEAN POUT		<i>Macrozoarces americanus</i>	SPP
7860	OCTOPUS, NK		Octopus sp	SPP
6639	OILFISH		<i>Ruvettus pretiosus</i>	IAL
6579	OLD SQUAW		<i>Clangula hyemalis</i>	INC

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2490	OPAH		<i>Lampris guttatus</i>	IAL
7898	OYSTER, COMMON		<i>Crassostrea virginica</i>	SPP
7921	OYSTER, EUROPEAN FLAT		<i>Ostrea edulis</i>	SPP
5250	PELAGIC FISH, NK		Perciformes	IAL
6351	PELICAN, BROWN		<i>Pelecanus occidentalis</i>	INC
3110	PERCH, SAND		<i>Diplectrum formosum</i>	SPP
5060	PERCH, WHITE		<i>Morone americana</i>	SPP
5170	PERCH, YELLOW		<i>Perca flavescens</i>	SPP
7980	PERIWINKLE, COMMON		<i>Littorina littorea</i>	SPP
6791	PERMIT		<i>Trachinotus falcatus</i>	SPP
6362	PETREL, BERMUDA			INC
6363	PETREL, BLACK-CAPPED			INC
6364	PETREL, FEAS			INC
6361	PETREL, SO-TRINIDAD		<i>Pterodroma arminjoniana</i>	INC
6371	PHALAROPE, RED		<i>Phalaropus fulicarius</i>	INC
6372	PHALAROPE, RED-NECKED			INC
2580	PIGFISH		<i>Orthopristis chrysoptera</i>	SPP
6781	PILOTFISH		<i>Naucrates ductor</i>	SPP
2670	PINFISH		<i>Lagodon rhomboides</i>	SPP
6841	PINGER, ACTIVE			IAL
6842	PINGER, PASSIVE			IAL
6621	PIPEFISH/SEAHORSE,NK		Syngnathidae	SPP
2695	POLLOCK		<i>Pollachius virens</i>	SPP
6777	POMFRET, ATLANTIC		<i>Brama brama</i>	SPP
6776	POMFRET, BIGSCALE		<i>Taratichthys longipinnis</i>	SPP
6578	POMFRET, NK		Bramidae	SPP
6788	POMPANO, AFRICAN		<i>Alectis ciliaris</i>	SPP
2720	POMPANO, FLORIDA		<i>Trachinotus carolinus</i>	SPP
6646	PORCUPINE FISH		<i>Diodon hystrix</i>	SPP
3320	PORGY, NK		Sparidae	SPP
3300	PORGY, RED		<i>Pagrus pagrus</i>	SPP
6960	PORPOISE, HARBOR		<i>Phocoena phocoena</i>	INC
6998	PORPOISE/DOLPHIN, NK		Phocoenidae/delphinidae	INC
6379	PTERODROMA NK			INC
4300	PUFFER, NK (BURRFISH)		Tetraodontidae	SPP
4290	PUFFER, NORTHERN		<i>Sphoeroides maculatus</i>	SPP
6381	PUFFIN, ATLANTIC		<i>Fratercula arctica</i>	INC
7488	QUAHOG, HARD SHELL CLAM		<i>Mercenaria, m. campechiensis</i>	SPP
7540	QUAHOG, OCEAN (BLACK CLAM)		<i>Artica islandica</i>	SPP
3270	RAVEN, SEA		<i>Hemitripteris americanus</i>	SPP
6739	RAY, BULLNOSE		<i>Myliobatis freminvillei</i>	SPP
6741	RAY, BUTTERFLY, NK		<i>Gymnura sp</i>	IAL
6742	RAY, BUTTERFLY, SMOOTH		<i>Gymnura micrura</i>	IAL
6743	RAY, BUTTERFLY, SPINY		<i>Gymnura altavela</i>	IAL
6740	RAY, COWNOSE		<i>Rhinoptera bonasus</i>	SPP

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6745	RAY, DEVIL		<i>Mobula hypostoma</i>	IAL
6700	RAY, EAGLE, NK		Myliobatidae	IAL
6753	RAY, NK		Rajiformes	IAL
6730	RAY, TORPEDO		<i>Torpedo nobiliana</i>	IAL
6720	RAY, MANTA, ATLANTIC		<i>Manta birostris</i>	IAL
6715	RAY, MANTA, NK		Mobulidae	IAL
6391	RAZORBILL		<i>Alca torda</i>	INC
2400	REDFISH, NK (OCEAN PERCH)		<i>Sebastes sp</i>	SPP
6750	REMORA, NK		Echeneidae	SPP
6644	RIBBONFISH, NK		Trachipteridae	SPP
6643	RIBBONFISH, POLKA-DOT		<i>Desmodema polystictum</i>	SPP
6642	RIBBONFISH, SCALLOPED		<i>Zu cristatus</i>	SPP
6606	ROCKLING, FOURBEARD		<i>Enchelyopus cimbrius</i>	SPP
6876	ROCKWEED, NK		<i>Fucus sp</i>	SPP
2420	ROSEFISH, BLACK BELLY		<i>Helicolenus dactylopterus</i>	SPP
6778	ROUGHY, BIG		<i>Gephyroberyx darwini</i>	SPP
6779	ROUGHY, NK		Trachichthyidae	SPP
2130	RUNNER, BLUE		<i>Caranx crysos</i>	SPP
6630	SAILFISH		<i>Istiophorus platypterus</i>	IAL
3050	SALMON, ATLANTIC		<i>Salmo salar</i>	IAL
3080	SALMON, CHINOOK		<i>Oncorhynchus tshawytscha</i>	IAL
3070	SALMON, COHO		<i>Oncorhynchus kisutch</i>	IAL
3090	SALMON, NK		<i>Oncorhynchus sp</i>	IAL
3060	SALMON, PINK		<i>Oncorhynchus gorbusha</i>	IAL
6874	SAND DOLLAR		<i>Echinarachnius parma</i>	SPP
3196	SAURY, ATLANTIC		<i>Scomberesox saurus</i>	SPP
6784	SCAD, BIGEYE		<i>Selar crumenophthalmus</i>	SPP
6782	SCAD, MACKEREL		<i>Decapterus macarellus</i>	SPP
3310	SCAD, ROUGH		<i>Trachurus lathami</i>	SPP
7990	SCALLOP, BAY		<i>Argopecten irradians</i>	SPP
7970	SCALLOP, CALICO		<i>Aequipecten gibbus</i>	SPP
7950	SCALLOP, ICELANDIC		<i>Chlamys islandica</i>	SPP
7960	SCALLOP, NK		Pectinidae	SPP
8009	SCALLOP, SEA		<i>Patinopecten, placopecten sp</i>	SPP
6612	SCORPIONFISH, NK		Scorpaenidae	SPP
6521	SCOTER, BLACK		<i>Melanitta nigra</i>	INC
6520	SCOTER, NK		<i>Melanitta sp</i>	INC
6523	SCOTER, SURF		<i>Melanitta perspicillata</i>	INC
6522	SCOTER, WHITE-WINGED		<i>Melanitta deglandi</i>	INC
6678	SCULPIN, LONGHORN		<i>Myoxocephalus octodecimspinosus</i>	SPP
3260	SCULPIN, NK		Cottidae	SPP
3295	SCUP		<i>Stenotomus chrysops</i>	SPP
3350	SEA BASS, BLACK		<i>Centropristis striata</i>	SPP
3330	SEA BASS, NK		<i>Centropristis anthias sp</i>	SPP
8060	SEA CUCUMBER, NK		Holothuroidea	SPP

SPECIES CODE	COMMON NAME	MARKET CATEGORY	SCIENTIFIC NAME	TAB/ LOG
6873	SEA PANSY		<i>Renilla reniformis</i>	SPP
6884	SEA PEN		<i>Pennatula aculeata</i>	SPP
6869	SEA POTATO		<i>Leathesia difformis</i>	SPP
3430	SEA ROBIN, ARMORED		<i>Peristedion miniatum</i>	SPP
3410	SEA ROBIN, NK		Triglidae sp	SPP
3400	SEA ROBIN, NORTHERN		<i>Prionotus carolinus</i>	SPP
3420	SEA ROBIN, STRIPED		<i>Prionotus evolans</i>	SPP
6879	SEA SQUIRT, NK		Ascidacea	SPP
8050	SEA URCHIN, NK		Strongylocentrotus sp	SPP
6984	SEAL, BEARDED		<i>Erignathus barbatus</i>	INC
6996	SEAL, GRAY		<i>Halichoerus grypus</i>	INC
6995	SEAL, HARBOR		<i>Phoca vitulina concolor</i>	INC
6981	SEAL, HARP		<i>Phoca groenlandica</i>	INC
6982	SEAL, HOODED		<i>Cystophora cristata</i>	INC
6985	SEAL, LARGA (SPOTD)		<i>Phoca largha</i>	INC
6994	SEAL, NK		Phocidae	INC
6986	SEAL, RIBBON		<i>Phoca fasciata</i>	INC
6983	SEAL, RINGED		<i>Phoca hispida</i>	INC
3450	SEATROUT (WEAKFISH), SPOTD		<i>Cynoscion nebulosus</i>	SPP
3340	SEATROUT, NK		<i>Cynoscion sp</i>	SPP
8171	SEAWEED, NK		Phaeophyta	SPP
3474	SHAD, AMERICAN		<i>Alosa sapidissima</i>	SPP
1340	SHAD, GIZZARD		<i>Dorosoma cepedianum</i>	SPP
1730	SHAD, HICKORY		<i>Alosa mediocris</i>	SPP
6864	SHANNY, NK		<i>Lumpenus, stichaeus, ulivaria sp</i>	SPP
4771	SHARK, ATL ANGEL		<i>Squatina dumerili</i>	IAL
4941	SHARK, ATL SHARPNOSE	ROUND	<i>Rhizoprionodon terraenova</i>	IAL
4948	SHARK, ATL SHARPNOSE	FINS	<i>Rhizoprionodon terraenova</i>	SPP
4961	SHARK, BASKING	ROUND	<i>Cetorhinus maximus</i>	IAL
4968	SHARK, BASKING	FINS	<i>Cetorhinus maximus</i>	SPP
4831	SHARK, BIGNOSE	ROUND	<i>Carcharhinus altima</i>	IAL
4838	SHARK, BIGNOSE	FINS	<i>Carcharhinus altima</i>	SPP
4871	SHARK, BLACK TIP	ROUND	<i>Carcharhinus limbatus</i>	IAL
4878	SHARK, BLACK TIP	FINS	<i>Carcharhinus limbatus</i>	SPP
5030	SHARK, BLACKNOSE	ROUND	<i>Carcharhinus acronotus</i>	IAL
4931	SHARK, BLUE (BLUE DOG)	ROUND	<i>Prionace glauca</i>	IAL
4938	SHARK, BLUE (BLUE DOG)	FINS	<i>Prionace glauca</i>	SPP
6758	SHARK, BLUNTNOSE SIXGILL		<i>Hexanchus griseus</i>	IAL
4760	SHARK, BONNETHEAD		<i>Sphyrna tiburo</i>	IAL
4891	SHARK, BULL	ROUND	<i>Carcharhinus leucas</i>	IAL
4898	SHARK, BULL	FINS	<i>Carcharhinus leucas</i>	SPP
4971	SHARK, CARCHARHINID,NK	ROUND	<i>Carcharhinus sp</i>	IAL
4978	SHARK, CARCHARHINID,NK	FINS	<i>Carcharhinus sp</i>	SPP
4841	SHARK, DUSKY	ROUND	<i>Carcharhinus obscurus</i>	IAL
4848	SHARK, DUSKY	FINS	<i>Carcharhinus obscurus</i>	SPP



SPECIES CODE	COMMON NAME	MARKET CATEGORY	SCIENTIFIC NAME	TAB/ LOG
4990	SHARK, FINETOOTH	ROUND	<i>Aprionodon isodon</i>	IAL
4750	SHARK, GREENLAND		<i>Somniosus microcephalus</i>	IAL
3860	SHARK, HAMMERHEAD, GREAT	ROUND	<i>Sphyrna mokarran</i>	IAL
4781	SHARK, HAMMERHEAD, SCALLOPED	ROUND	<i>Sphyrna lewin</i>	IAL
4788	SHARK, HAMMERHEAD, SCALLOPED	FINS	<i>Sphyrna lewin</i>	SPP
4791	SHARK, HAMMERHEAD, SMOOTH	ROUND	<i>Sphyrna zygaena</i>	IAL
4798	SHARK, HAMMERHEAD, SMOOTH	FINS	<i>Sphyrna zygaena</i>	SPP
4951	SHARK, HAMMERHEAD,NK	ROUND	Sphyrnidae	IAL
4958	SHARK, HAMMERHEAD,NK	FINS	Sphyrnidae	SPP
4921	SHARK, LEMON	ROUND	<i>Negaprion brevirostris</i>	IAL
4928	SHARK, LEMON	FINS	<i>Negaprion brevirostris</i>	SPP
3581	SHARK, MAKO, LONGFIN	ROUND	<i>Isurus paucus</i>	IAL
3588	SHARK, MAKO, LONGFIN	FINS	<i>Isurus paucus</i>	SPP
3571	SHARK, MAKO, NK	ROUND	<i>Isurus sp</i>	IAL
3572	SHARK, MAKO, NK	CHUNKS	<i>Isurus sp</i>	SPP
3578	SHARK, MAKO, NK	FINS	<i>Isurus sp</i>	SPP
3551	SHARK, MAKO, SHORTFIN	ROUND	<i>Isurus oxyrinchus</i>	IAL
3558	SHARK, MAKO, SHORTFIN	FINS	<i>Isurus oxyrinchus</i>	SPP
4861	SHARK, NIGHT	ROUND	<i>Carcharhinus signatus</i>	IAL
4868	SHARK, NIGHT	FINS	<i>Carcharhinus signatus</i>	SPP
3591	SHARK, NK	ROUND	Squaliformes	IAL
3592	SHARK, NK	CHUNKS	Squaliformes	SPP
3597	SHARK, NK	FINS DRIED	Squaliformes	SPP
3598	SHARK, NK	FINS FRESH/FROZEN	Squaliformes	SPP
3481	SHARK, NURSE	ROUND	<i>Ginglymostoma cirratum</i>	IAL
3488	SHARK, NURSE	FINS	<i>Ginglymostoma cirratum</i>	SPP
4901	SHARK, OCEANIC WHITETIP	ROUND	<i>Carcharhinus longimanus</i>	IAL
4908	SHARK, OCEANIC WHITETIP	FINS	<i>Carcharhinus longimanus</i>	SPP
4981	SHARK, PELAGIC	ROUND		IAL
4988	SHARK, PELAGIC	FINS		SPP
4811	SHARK, PORBEAGLE (MACKEREL SHARK)	ROUND	<i>Lamna nasus</i>	IAL
4818	SHARK, PORBEAGLE (MACKEREL SHARK)	FINS	<i>Lamna nasus</i>	SPP
3491	SHARK, SAND TIGER	ROUND	<i>Odontaspis taurus</i>	IAL
3498	SHARK, SAND TIGER	FINS	<i>Odontaspis taurus</i>	SPP
4821	SHARK, SANDBAR (BROWN SHARK)	ROUND	<i>Carcharhinus plumbeus</i>	IAL
4828	SHARK, SANDBAR (BROWN SHARK)	FINS	<i>Carcharhinus plumbeus</i>	SPP
6756	SHARK, SEVENGILL SHARPNOSE		<i>Heptranchias perlo</i>	IAL
4851	SHARK, SILKY	ROUND	<i>Carcharhinus falciformis</i>	IAL
4858	SHARK, SILKY	FINS	<i>Carcharhinus falciformis</i>	SPP

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6755	SHARK, SMALLTOOTH SAND TIGER		<i>Odontaspis ferox</i>	IAL
4881	SHARK, SPINNER	ROUND	<i>Carcharhinus brevipinna</i>	IAL
4888	SHARK, SPINNER	FINS	<i>Carcharhinus brevipinna</i>	SPP
3531	SHARK, THRESHER	ROUND	<i>Alopias vulpinus</i>	IAL
3538	SHARK, THRESHER	FINS	<i>Alopias vulpinus</i>	SPP
3541	SHARK, THRESHER, BIGEYE	ROUND	<i>Alopias superciliosus</i>	IAL
3548	SHARK, THRESHER, BIGEYE	FINS	<i>Alopias superciliosus</i>	SPP
4911	SHARK, TIGER	ROUND	<i>Galeocerdo cuvier</i>	IAL
4918	SHARK, TIGER	FINS	<i>Galeocerdo cuvier</i>	SPP
4801	SHARK, WHITE	ROUND	<i>Carcharodon carcharias</i>	IAL
4808	SHARK, WHITE	FINS	<i>Carcharodon carcharias</i>	SPP
6401	SHEARWATER, AUDUBONS		<i>Puffinus lherminieri</i>	INC
6407	SHEARWATER, CORYS		<i>Puffinus diomedea</i>	INC
6402	SHEARWATER, GREATER		<i>Puffinus gravis</i>	INC
6403	SHEARWATER, LITTLE		<i>Puffinus assimilis</i>	INC
6405	SHEARWATER, MANX		<i>Puffinus puffinus</i>	INC
6400	SHEARWATER, NK		<i>Puffinus sp</i>	INC
6406	SHEARWATER, SOOTY		<i>Puffinus griseus</i>	INC
3560	SHEEPSHEAD		<i>Archosargus probatocephalus</i>	SPP
6882	SHELL, NK		Shell	SPP
6897	SHELL, SCALLOP			SPP
6893	SHELLFISH, NK		Bivalvia	SPP
6624	SHORTSPINE BOARFISH		<i>Antigonia combatia</i>	SPP
7370	SHRIMP, MANTIS		Haliotidae	SPP
7350	SHRIMP, NK		Caridae	SPP
7360	SHRIMP, PANDALID (NORTHERN)		<i>Pandalus borealis,sicyona sp</i>	SPP
7380	SHRIMP, PENAEID (SOUTHERN)		<i>Penaeus sp</i>	SPP
7330	SHRIMP, ROYAL RED		<i>Pleoticus robustus</i>	SPP
7340	SHRIMP, SCARLET		<i>Plesiopenaeus edwardsianus</i>	SPP
6881	SHRIMP, SHORE, NK		<i>Palaemonetes sp</i>	SPP
3620	SILVERSIDE, ATLANTIC		<i>Menidia menidia</i>	SPP
3630	SILVERSIDE, NK		Atherinidae	SPP
3681	SKATE, BARNDOR	WINGS	<i>Raja laevis</i>	SPP
3680	SKATE, BARNDOR		<i>Raja laevis</i>	SPP
3720	SKATE, CLEARNOSE		<i>Raja eglanteria</i>	SPP
3721	SKATE, CLEARNOSE	WINGS	<i>Raja eglanteria</i>	SPP
3660	SKATE, LITTLE		<i>Raja eriancea</i>	SPP
3661	SKATE, LITTLE	WINGS	<i>Raja eriancea</i>	SPP
3650	SKATE, NK		Rajidae	SPP
3651	SKATE, NK	WINGS	Rajidae	SPP
3640	SKATE, ROSETTE		<i>Raja garmani</i>	SPP
3641	SKATE, ROSETTE	WINGS	<i>Raja garmani</i>	SPP
3691	SKATE, SMOOTH	WINGS	<i>Raja senta</i>	SPP
3690	SKATE, SMOOTH		<i>Raja senta</i>	SPP
3700	SKATE, THORNY		<i>Raja radiata</i>	SPP

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3701	SKATE, THORNY	WINGS	<i>Raja radiata</i>	SPP
3670	SKATE, WINTER (BIG)		<i>Raja ocellata</i>	SPP
3671	SKATE, WINTER (BIG)	WINGS	<i>Raja ocellata</i>	SPP
6411	SKIMMER, BLACK		<i>Rynchops niger</i>	INC
6304	SKUA, GREAT		<i>Catharacta skua</i>	INC
6634	SLENDER SNIPEFISH		<i>Macrorhamphosus gracilis</i>	SPP
3710	SMELT, RAINBOW		<i>Osmerus mordax</i>	SPP
6870	SNAIL, MOONHELL, NK		Naticidae	SPP
6877	SNAIL, NK		Gastropoda	SPP
6628	SNAKEBLENNY		<i>Lumpenus lumpretaeformis</i>	SPP
3754	SNAPPER, DOG		<i>Lutjanus jocu</i>	SPP
3360	SNAPPER, NK		Lutjanidae	SPP
3764	SNAPPER, RED		<i>Lutjanus campechanus</i>	SPP
3740	SNAPPER, VERMILLION			SPP
6633	SNIPEFISH, LONGSPINE		<i>Macroramphosus scolopax</i>	SPP
6622	SNIPEFISH, NK		Centriscidae	SPP
3810	SPADEFISH		<i>Chaetodipterus faber</i>	SPP
6641	SPEARFISH, LONGBILL		<i>Tetrapturus pfluegeri</i>	IAL
6867	SPONGE, NK		Porifera	SPP
4060	SPOT		<i>Leiostomus xanthurus</i>	SPP
8018	SQUID EGGS, ATL LONG-FIN	EGG MOPS	<i>Loligo paelei</i> (eggs)	SPP
8010	SQUID, ATL LONG-FIN		<i>Loligo pealei</i>	SPP
8030	SQUID, NK		Squid	SPP
8020	SQUID, SHORT-FIN		<i>Illex illecebrosus</i>	SPP
0240	SQUIRRELFISH, NK		Holocentridae	SPP
6891	STARFISH, BRITTLE, NK		Ophiuroidae	SPP
8280	STARFISH, SEASTAR, NK		Asteroidae	SPP
6620	STARGAZER, NK		Uranoscopidae sp	SPP
6712	STINGRAY, ATLANTIC		<i>Dasyatis sabina</i>	IAL
6711	STINGRAY, BLUNTNOSE		<i>Dasyatis say</i>	IAL
6705	STINGRAY, NK		Dasyatidae	IAL
6775	STINGRAY, PELAGIC		<i>Dasyatis violacea</i>	IAL
6710	STINGRAY, ROUGHTAIL		<i>Dasyatis centroura</i>	IAL
6713	STINGRAY, SOUTHERN		<i>Dasyatis americana</i>	IAL
6853	STOMACH CONTENTS EMPTY		Food habits, empty	SPP
6852	STOMACH CONTENTS FISH, NK		Food habits, fish	SPP
6850	STOMACH CONTENTS UNID		Food habits, unidentified	SPP
6851	STOMACH CONTENTS, INVT, NK		Food habits, invertebrate	SPP
6431	STORM PETREL, BAND-R		<i>Oceanodroma castro</i>	INC
6432	STORM PETREL, LEACHS		<i>Oceanodroma leucorhoa</i>	INC
6430	STORM PETREL, NK		Hydrobatidae	INC
6433	STORM PETREL, WHITE-FACED		<i>Pelagodroma marina</i>	INC
6434	STORM PETREL, WILSON		<i>Oceanites oceanicus</i>	INC
4200	STURGEON, ATLANTIC		<i>Acipenser oxyrinchus</i>	IAL
4211	STURGEON, NK		Acipenseridae	IAL
4220	STURGEON, SHORT-NOSE		<i>Acipenser brevirostrum</i>	IAL

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4230	SUCKER, FRESHWATER, NK		Catostomidae	SPP
4260	SUNFISH, FRESHWATER, NK		Lepomis <i>sp</i>	SPP
4328	SWORDFISH		<i>Xiphias gladius</i>	IAL
4327	SWORDFISH	CHUNKS	<i>Xiphias gladius</i>	IAL
4350	TARPON		<i>Megalops atlanticus</i>	IAL
4380	TAUTOG (BLACKFISH)		<i>Tautoga onitis</i>	SPP
6501	TERN, ARCTIC		<i>Sterna paradisaea</i>	INC
6513	TERN, BLACK		<i>Chlidonias niger</i>	INC
6502	TERN, BRIDLED		<i>Sterna anaethetus</i>	INC
6503	TERN, CASPIAN		<i>Sterna caspia</i>	INC
6504	TERN, COMMIC			INC
6505	TERN, COMMON		<i>Sterna hirundo</i>	INC
6506	TERN, FORSTERS		<i>Sterna forsteri</i>	INC
6507	TERN, GULL-BILLED		<i>Gelochelidon nilotica</i>	INC
6508	TERN, LITTLE		<i>Sterna albifrons</i>	INC
6500	TERN, NK		Sterninae	INC
6509	TERN, ROSEATE		<i>Sterna dougallii</i>	INC
6510	TERN, ROYAL		<i>Sterna maxima</i>	INC
6511	TERN, SANDWICH		<i>Sterna sandvicensis</i>	INC
6512	TERN, SOOTY		<i>Sterna fuscata</i>	INC
4440	TILEFISH, BLUELINE		<i>Caulolatilus microps</i>	SPP
4460	TILEFISH, GOLDEN		<i>Lopholatilus chamaeleonticeps</i>	SPP
4470	TILEFISH, NK		Malacanthidae	SPP
6637	TOADFISH, NK		Batrachoididae	SPP
4510	TOADFISH, OYSTER		<i>Opsanus tau</i>	SPP
4530	TOMCOD, ATLANTIC		<i>Microgadus tomcod</i>	SPP
4560	TRIGGERFISH, NK (LEATHERJACKET)		Balistidae	SPP
4590	TRIPLETAIL		<i>Lobotes surinamensis</i>	IAL
6443	TROPICBIRD, NK			INC
6442	TROPICBIRD, RED-BILLED			INC
6441	TROPICBIRD, WH-TAILED		<i>Phaethon lepturus</i>	INC
4150	TROUT, STEELHEAD		<i>Salmo gairdneri</i>	IAL
4701	TUNA, ALBACORE		<i>Thunnus alalunga</i>	IAL
4702	TUNA, ALBACORE	CHUNKS	<i>Thunnus alalunga</i>	SPP
4691	TUNA, BIG EYE		<i>Thunnus obesus</i>	IAL
4692	TUNA, BIG EYE	CHUNKS	<i>Thunnus obesus</i>	SPP
4641	TUNA, BLACKFIN		<i>Thunnus atlanticus</i>	IAL
4642	TUNA, BLACKFIN	CHUNKS	<i>Thunnus atlanticus</i>	SPP
4670	TUNA, BLUEFIN		<i>Thunnus thynnus</i>	IAL
4676	TUNA, BLUEFIN	CHUNKS	<i>Thunnus thynnus</i>	SPP
4682	TUNA, LITTLE (FALSE ALBACORE)	CHUNKS	<i>Euthynnus alletteratus</i>	SPP
4681	TUNA, LITTLE (FALSE ALBACORE)		<i>Euthynnus alletteratus</i>	SPP, IAL
4657	TUNA, NK		<i>Euthynnus thynnus sp</i>	IAL

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4658	TUNA, NK	CHUNKS	<i>Euthynnus thunnus sp</i>	SPP
4662	TUNA, SKIPJACK	CHUNKS	<i>Katsuwonus pelamis</i>	SPP
4661	TUNA, SKIPJACK		<i>Katsuwonus pelamis</i>	SPP, IAL
4711	TUNA, YELLOWFIN		<i>Thunnus albacares</i>	IAL
4712	TUNA, YELLOWFIN	CHUNKS	<i>Thunnus albacares</i>	SPP
8090	TURTLE, GREEN		<i>Chelonia mydas</i>	INC
8140	TURTLE, HAWKSBILL		<i>Eretmochelys imbricata</i>	INC
8100	TURTLE, KEMPS RIDLEY		<i>Lepidochelys kemp</i>	INC
8120	TURTLE, LEATHERBACK		<i>Dermochelys coriacea</i>	INC
8130	TURTLE, LOGGERHEAD		<i>Caretta caretta</i>	INC
8160	TURTLE, NK		Chelonioidae	INC
8161	TURTLE, NK HARD-SHELL		Cheloniidae	INC
8180	TURTLE, OLIVE RIDLEY		<i>Lepidochelys olivacea</i>	INC
8110	TURTLE, SLIDER, POND		<i>Trachemys scripta</i>	IAL
8150	TURTLE, SNAPPER		<i>Chelydra serpentina</i>	IAL
8081	TURTLE, TERRAPIN		<i>Malaclemys terrapin</i>	IAL
6854	UNKOWN LIVING MATTER			SPP
4720	WAHOO		<i>Acanthocybium solandri</i>	IAL
6965	WALRUS		<i>Odobenus rosmarus</i>	INC
3446	WEAKFISH (SQUETEAGUE SEA TROUT)		<i>Cynoscion regalis</i>	SPP
6993	WHALE, BALEEN, NK		Mysticeti	INC
6958	WHALE, BELUGA		<i>Delphinapterus leucas</i>	INC
6911	WHALE, BK, BOTTLENOSE		<i>Hyperoodon ampullatus</i>	INC
6954	WHALE, BK, CUVIERS		<i>Ziphius cavirostris</i> (goosebeaked)	INC
6908	WHALE, BK, DENSE		<i>Mesoplodon densirostris</i> (blainville's)	INC
6907	WHALE, BK, GERVAIS		<i>Mesoplodon europaeus</i> (antillean)	INC
6953	WHALE, BK, MESOP, NK		<i>Mesoplodon sp</i>	INC
6909	WHALE, BK, SOWERBYS		<i>Mesoplodon bidens</i> (north sea)	INC
6910	WHALE, BK, TRUES		<i>Mesoplodon mirus</i>	INC
6947	WHALE, BLUE		<i>Balaenoptera musculus</i>	INC
6988	WHALE, BRYDES		<i>Balaenoptera edeni</i>	INC
6905	WHALE, DWARF SPERM		<i>Kogia simus</i>	INC
6930	WHALE, FALSE KILLER		<i>Pseudorca crassidens</i>	INC
6929	WHALE, FIN/SEI			INC
6931	WHALE, FINBACK		<i>Balaenoptera physalus</i>	INC
6933	WHALE, HUMPBACK		<i>Megaptera novaeangliae</i>	INC
6950	WHALE, KILLER		<i>Orcinus orca</i>	INC
6987	WHALE, MELON-HEADED		<i>Peponocephala electra</i>	INC
6945	WHALE, MINKE		<i>Balaenoptera acutorostrata</i>	INC
6999	WHALE, NK		Cetacea, whale	INC
6904	WHALE, PILOT, LONG-FIN		<i>Globicephala melaena</i>	INC
6992	WHALE, PILOT, NK		<i>Globicephala sp</i>	INC

<b>SPECIES CODE</b>	<b>COMMON NAME</b>	<b>MARKET CATEGORY</b>	<b>SCIENTIFIC NAME</b>	<b>TAB/ LOG</b>
6903	WHALE, PILOT, SHORT-FIN		<i>Globicephala macrorhynchus</i>	INC
6955	WHALE, PYGMY KILLER		<i>Feresa attenuata</i>	INC
6956	WHALE, PYGMY SPERM		<i>Kogia breviceps</i>	INC
6946	WHALE, RIGHT, NO		<i>Eubalaena glacialis</i>	INC
6932	WHALE, SEI		<i>Balaenoptera borealis</i>	INC
6948	WHALE, SPERM		<i>Physeter macro-cephalus</i>	INC
6980	WHALE, TOOTHED, NK		Odontoceti	INC
7760	WHELK, CHANNELED (SMOOTH)		<i>Busycon canaliculatum</i>	SPP
7770	WHELK, KNOBBED		<i>Busycon carica</i>	SPP
7780	WHELK, LIGHTNING		<i>Busycon sinistrum</i>	SPP
7750	WHELK, NK, CONCH		Melongenidae	SPP
5080	WHITING, BLACK (HAKE, OFFSHORE)		<i>Merluccius albidus</i>	SPP
5120	WOLFFISH, ATLANTIC		<i>Anarhichas lupus</i>	SPP
6681	WOLFFISH, NORTHERN		<i>Anarhichas denticulatus</i>	SPP
8230	WORM, BLOOD		<i>Glycera dibranchiata</i>	SPP
8250	WORM, NK		Annelida	SPP
5130	WRECKFISH		<i>Polyprion americanus</i>	IAL
6790	WRYMOUTH		<i>Cryptacanthodes maculatus</i>	SPP

**APPENDIX B: FISH DISPOSITION CODES**

Used on all Haul Tabs/Logs and the IAL Tab/Log.

**MARKET**

- 001 = No market, reason not specified.
- 002 = No market, too small.
- 003 = No market, too large.
- 004 = No market, quota filled.
- 005 = No market, won't keep until trip end.
- 006 = No market, but retained by vessel for alternate program.
- 007 = No market, but retained by observer for science purposes.

**REGULATIONS**

- 011 = Regulations prohibit retention, reason not specified.
- 012 = Regulations prohibit retention, too small.
- 013 = Regulations prohibit retention, too large.
- 014 = Regulations prohibit retention, quota filled.
- 015 = Regulations prohibit retention, no quota in area.
- 022 = Regulations prohibit retention, v-notched.
- 023 = Regulations prohibit retention, soft-shelled.
- 024 = Regulations prohibit retention, with eggs.
- 025 = Regulations prohibit any retention (including no permit).

**QUALITY**

- 031 = Poor quality, reason not specified.
- 032 = Poor quality, due to sand flea damage.
- 033 = Poor quality, due to seal damage.
- 034 = Poor quality, due to shark damage.
- 035 = Poor quality, due to cetacean damage.
- 036 = Poor quality, due to hagfish damage.
- 037 = Poor quality, due to shell disease.
- 038 = Poor quality, due to gear damage.
- 039 = Poor quality, previously discarded fish.

**NOT BROUGHT ONBOARD**

- 041 = Not brought onboard, reason not specified.
- 042 = Not brought onboard, gear damage prevented capture.
- 043 = Not brought onboard, fell out/off of gear.
- 044 = Not brought onboard, considered to have no market value.
- 048 = Not brought onboard, vessel capacity filled.
- 049 = Not brought onboard, not enough fish to pump.

**DEBRIS/SHELLS**

- 053 = Debris.
- 054 = Empty shells.

**NOTE:** All single or disarticulated bones should be given a disposition code of 053.

**UPGRADING/MARKET DRIVEN SELECTIVITY**

- 062 = Upgraded.
- 063 = Vessel retaining only certain size for best price due to trip quota in effect.

**KEPT**

- 100 = Kept.
- 110 = Kept, transferred to another vessel.
- 170 = Kept, used for bait.
- 171 = Kept, consumed by captain/crew.
- 172 = Kept, regulations prohibit discards at sea.

**GENERAL**

- 000 = Discarded, reason unknown.
- 099 = Discarded other, record the discard reason in COMMENTS.
- 900 = Unknown.



**APPENDIX C: PORT LIST (By State)****CONNECTICUT**

076209	BRANFORD	CT	NEW HAVEN
078201	BRIDGEPORT	CT	FAIRFIELD
073607	CHESTER	CT	MIDDLESEX
074107	CLINTON	CT	MIDDLESEX
071001	COS COB	CT	FAIRFIELD
073307	CROMWELL	CT	MIDDLESEX
078601	DARIEN	CT	FAIRFIELD
073707	DEEP RIVER	CT	MIDDLESEX
077009	DERBY	CT	NEW HAVEN
073007	EAST HADDAM	CT	MIDDLESEX
074207	EAST HAMPTON	CT	MIDDLESEX
076309	EAST HAVEN	CT	NEW HAVEN
071911	EAST LYME	CT	NEW LONDON
073807	ESSEX	CT	MIDDLESEX
078301	FAIRFIELD	CT	FAIRFIELD
075003	GLASTONBURY	CT	HARTFORD
078801	GREENWICH	CT	FAIRFIELD
071211	GROTON	CT	NEW LONDON
076109	GUILFORD	CT	NEW HAVEN
073507	HADDAM	CT	MIDDLESEX
075203	HARTFORD	CT	HARTFORD
072111	LYME	CT	NEW LONDON
076009	MADISON	CT	NEW HAVEN
073407	MIDDLETOWN	CT	MIDDLESEX
076809	MILFORD	CT	NEW HAVEN
071611	MONTVILLE	CT	NEW LONDON
072211	MYSTIC	CT	NEW LONDON
076409	NEW HAVEN	CT	NEW HAVEN
071811	NEW LONDON	CT	NEW LONDON
072311	NIANTIC	CT	NEW LONDON
071111	NOANK	CT	NEW LONDON
078501	NORWALK	CT	FAIRFIELD
071511	NORWICH	CT	NEW LONDON
072011	OLD LYME	CT	NEW LONDON
073907	OLD SAYBROOK	CT	MIDDLESEX
070999	OTHER CONNECTICUT	CT	NOT-SPECIFIED
070901	OTHER FAIRFIELD	CT	FAIRFIELD
070903	OTHER HARTFORD	CT	HARTFORD
070907	OTHER MIDDLESEX	CT	MIDDLESEX
070909	OTHER NEW HAVEN	CT	NEW HAVEN
070911	OTHER NEW LONDON	CT	NEW LONDON
073207	PORTLAND	CT	MIDDLESEX
075403	ROCKY HILL	CT	HARTFORD
078701	STAMFORD	CT	FAIRFIELD
071011	STONINGTON	CT	NEW LONDON
078101	STRATFORD	CT	FAIRFIELD
071711	WATERFORD	CT	NEW LONDON

076709	WEST HAVEN	CT	NEW HAVEN
074007	WESTBROOK	CT	MIDDLESEX
078401	WESTPORT	CT	FAIRFIELD
075303	WHETHERSFIELD	CT	HARTFORD
075503	WINDSOR LOCKS	CT	HARTFORD
090999	WASHINGTON	DC	CITY OF WASHINGTON
<b>DELAWARE</b>			
080401	BOWERS BEACH	DE	KENT
080305	INDIAN RIVER	DE	SUSSEX
080205	LEWES	DE	SUSSEX
080501	MISPILLION	DE	KENT
080999	OTHER DELAWARE	DE	NOT-SPECIFIED
080901	OTHER KENT	DE	KENT
080903	OTHER NEW CASTLE	DE	NEW CASTLE
080905	OTHER SUSSEX	DE	SUSSEX
080105	PORT MAHON	DE	SUSSEX
<b>FLORIDA</b>			
100905	GREEN COVE	FL	CLAY
110901	OTHER BAY	FL	BAY
100901	OTHER BREVARD	FL	BREVARD
100903	OTHER BROWARD	FL	BROWARD
110903	OTHER CHARLOTTE	FL	CHARLOTTE
110905	OTHER CITRUS	FL	CITRUS
110907	OTHER COLLIER	FL	COLLIER
100907	OTHER DADE	FL	DADE
110909	OTHER DIXIE	FL	DIXIE
100908	OTHER DUVAL	FL	DUVAL
110911	OTHER ESCAMBIA	FL	ESCAMBIA
110992	OTHER ESCAMBIA/SANTA ROSA	FL	ESCAMBIA/SANTA ROSA
100909	OTHER FLAGLER	FL	FLAGLER
110913	OTHER FRANKLIN	FL	FRANKLIN
110914	OTHER GADSDEN	FL	GADSDEN
100911	OTHER GLADES	FL	GLADES
110915	OTHER GULF	FL	GULF
100913	OTHER HENRY	FL	HENRY
110917	OTHER HERNANDO	FL	HERNANDO
110994	OTHER HERNANDO/PASCO	FL	HERNANDO/PASCO
110919	OTHER HILLSBOROUGH	FL	HILLSBOROUGH
100915	OTHER INDIAN RIVER	FL	INDIAN RIVER
110921	OTHER JEFFERSON	FL	JEFFERSON
100916	OTHER LAKE	FL	LAKE
100991	OTHER LAKE (INLAND)	FL	LAKE
110923	OTHER LEE	FL	LEE
110925	OTHER LEVY	FL	LEVY
110927	OTHER MANATEE	FL	MANATEE
100917	OTHER MARION	FL	MARION
100919	OTHER MARTIN	FL	MARTIN
110929	OTHER MONORE	FL	MONORE
100921	OTHER NASSAU	FL	NASSAU

100993	OTHER OCEOLA (INLAND)	FL	OCEOLA
110931	OTHER OKALOOSA	FL	OKALOOSA
110993	OTHER OKALOOSA/WALTON	FL	OKALOOSA/WALTON
100922	OTHER OKEECHOBEE	FL	OKEECHOBEE
100923	OTHER PALM BEACH	FL	PALM BEACH
110933	OTHER PASCO	FL	PASCO
110935	OTHER PINELLAS	FL	PINELLAS
100924	OTHER POLK	FL	POLK
100925	OTHER PUTHAM	FL	PUTHAM
110937	OTHER SANTA ROSA	FL	SANTA ROSA
110939	OTHER SARASOTA	FL	SARASOTA
100927	OTHER ST JOHNS	FL	ST JOHNS
100929	OTHER ST LUCIE	FL	ST LUCIE
110941	OTHER TAYLOR	FL	TAYLOR
100933	OTHER VOLUSIA	FL	VOLUSIA
110943	OTHER WAKULLA	FL	WAKULLA
110945	OTHER WALTON	FL	WALTON
970999	DOMESTIC JOINT VENTURE	JV	
980999	FOREIGN JOINT VENTURE	JV	

**MASSACHUSETTS**

240307	AMESBURY	MA	ESSEX
241201	BARNSTABLE	MA	BARNSTABLE
240407	BEVERLY	MA	ESSEX
241407	BEVERLY/SALEM	MA	ESSEX
240115	BOSTON	MA	SUFFOLK
240301	CHATHAM	MA	BARNSTABLE
240105	CHILMARK	MA	DUKES
242511	COHASSET	MA	NORFOLK
241401	COTUIT	MA	BARNSTABLE
242405	CUTTYHUNK	MA	DUKES
240507	DANVERS	MA	ESSEX
241803	DARTMOUTH	MA	BRISTOL
240101	DENNIS	MA	BARNSTABLE
242713	DUXBURY	MA	PLYMOUTH
241701	EASTHAM	MA	BARNSTABLE
240205	EDGARTOWN	MA	DUKES
243007	ESSEX	MA	ESSEX
242203	FAIRHAVEN	MA	BRISTOL
240903	FALL RIVER	MA	BRISTOL
241001	FALMOUTH	MA	BARNSTABLE
240103	FREETOWN	MA	BRISTOL
240207	GLOUCESTER	MA	ESSEX
242901	HARWICHPORT	MA	BARNSTABLE
240111	HINGHAM	MA	NORFOLK
244013	HULL	MA	PLYMOUTH
241507	IPSWICH	MA	ESSEX
241607	LYNN	MA	ESSEX
240607	MANCHESTER	MA	ESSEX
243107	MARBLEHEAD	MA	ESSEX
240113	MARION	MA	PLYMOUTH

240213	MARSHFIELD	MA	PLYMOUTH
240313	MATTAPOISETT	MA	PLYMOUTH
243207	NAHANT	MA	ESSEX
240909	NANTUCKET	MA	NANTUCKET
241501	NAUSET	MA	BARNSTABLE
240403	NEW BEDFORD	MA	BRISTOL
240707	NEWBURY	MA	ESSEX
241907	NEWBURYPORT	MA	ESSEX
240305	OAK BLUFFS	MA	DUKES
243913	ONSET	MA	PLYMOUTH
241601	ORLEANS	MA	BARNSTABLE
240901	OTHER BARNSTABLE	MA	BARNSTABLE
240905	OTHER DUKES	MA	DUKES
240907	OTHER ESSEX	MA	ESSEX
240999	OTHER MASS	MA	NOT-SPECIFIED
240911	OTHER NORFOLK	MA	NORFOLK
240913	OTHER PLYMOUTH	MA	PLYMOUTH
240915	OTHER SUFFOLK	MA	SUFFOLK
240513	PLYMOUTH	MA	PLYMOUTH
240601	PROVINCETOWN	MA	BARNSTABLE
240211	QUINCY	MA	NORFOLK
240415	REVERE	MA	SUFFOLK
241707	ROCKPORT	MA	ESSEX
240807	SALEM	MA	ESSEX
241007	SALISBURY	MA	ESSEX
240701	SANDWICH	MA	BARNSTABLE
241107	SAUGUS	MA	ESSEX
240813	SCITUATE	MA	PLYMOUTH
241207	SWAMPSCOTT	MA	ESSEX
240405	TISBURY	MA	DUKES
241101	WELLFLEET	MA	BARNSTABLE
241903	WESTPORT	MA	BRISTOL
240215	WEYMOUTH	MA	SUFFOLK
240315	WINTHROP	MA	SUFFOLK
241901	WOODS HOLE	MA	BARNSTABLE
241301	YARMOUTH	MA	BARNSTABLE
<b>MARYLAND</b>			
233011	AQUALAND	MD	CHARLES
235123	BLAKE CREEK	MD	ST. MARY'S
236023	BRETON BAY	MD	ST. MARY'S
233019	BROAD CREEK	MD	PRINCE GEORGE'S
237223	CANOE NECK CREEK	MD	ST. MARY'S
233223	CARTHEGENA CREEK	MD	ST. MARY'S
237011	CHICAMUXEN CREEK	MD	CHARLES
236123	COMBS CREEK	MD	ST. MARY'S
233323	COOPER CREEK	MD	ST. MARY'S
231511	CUCKOLDS CREEK	MD	CHARLES
237523	DUKEHART CREEK	MD	ST. MARY'S
235323	FLOOD CREEK	MD	ST. MARY'S
234111	GOOSE BAY	MD	CHARLES

235023	HERRING CREEK	MD	ST. MARY'S
234123	ISLAND CREEK	MD	ST. MARY'S
231023	LAKE CONOY	MD	ST. MARY'S
236011	MALLOWS BAY	MD	CHARLES
238511	MARSHALL HALL	MD	CHARLES
237511	MATTAWOMAN CREEK	MD	CHARLES
232511	MORGANTOWN	MD	CHARLES
234511	NANJEMOY CREEK	MD	CHARLES
231011	NEALE SOUND	MD	CHARLES
230131	OCEAN CITY	MD	WORCESTER
230905	OTHER CALVERT	MD	CALVERT
230911	OTHER CHARLES COUNTY	MD	CHARLES
230913	OTHER DORCHESTER	MD	DORCHESTER
230999	OTHER MARYLAND	MD	NOT-SPECIFIED
230919	OTHER PRINCE GEORGE'S	MD	PRINCE GEORGE'S
230925	OTHER SOMERSET	MD	SOMERSET
230923	OTHER ST. MARY'S	MD	ST. MARY'S
230931	OTHER WORCESTER	MD	WORCESTER
234019	OXON COVE	MD	PRINCE GEORGE'S
232011	PICCOWAXEN CREEK	MD	CHARLES
234223	PINEY POINT	MD	ST. MARY'S
231019	PISCATAWAY CREEK	MD	PRINCE GEORGE'S
238011	POMONKEY CREEK	MD	CHARLES
233511	POPES CREEK	MD	CHARLES
235223	POPLAR HILL CREEK	MD	ST. MARY'S
234011	PORT TOBBACO	MD	CHARLES
231111	POTOMAC VIEW	MD	CHARLES
235011	RIVERSIDE	MD	CHARLES
236511	SANDY POINT (MD)	MD	CHARLES
232023	SMITH CREEK	MD	ST. MARY'S
235511	SMITH POINT (MD)	MD	CHARLES
238023	ST. CATHERINE SOUND	MD	ST. MARY'S
237023	ST. CLEMENTS BAY	MD	ST. MARY'S
234023	ST. GEORGES CREEK	MD	ST. MARY'S
233123	ST. INIGOES CREEK	MD	ST. MARY'S
233023	ST. MARY'S RIVER	MD	ST. MARY'S
237123	ST. PATRICK'S CREEK	MD	ST. MARY'S
232019	SWANN CREEK	MD	PRINCE GEORGE'S
232111	WAVERLY CREEK	MD	CHARLES
238123	WHITE NECK CREEK	MD	ST. MARY'S
235423	WHITE POINT BEACH	MD	ST. MARY'S
230511	WICOMICO RIVER (C)	MD	CHARLES
239023	WICOMICO RIVER (S.M.)	MD	ST. MARY'S
<b>MAINE</b>			
226619	ADDISON	ME	WASHINGTON
225615	ARROWSIC	ME	SAGAHADOC
220301	BAILEY ISLAND	ME	CUMBERLAND
222403	BAR HARBOR	ME	HANCOCK
225715	BATH	ME	SAGAHADOC
225815	BAY POINT	ME	SAGAHADOC

225619	BEALS ISLAND	ME	WASHINGTON
221217	BELFAST	ME	KNOX
222603	BERNARD	ME	HANCOCK
226620	BIDDEFORD POOL	ME	YORK
225003	BIRCH HARBOR	ME	HANCOCK
225103	BLUE HILL	ME	HANCOCK
224109	BOOTHBAY HARBOR	ME	LINCOLN
224209	BREMEN	ME	LINCOLN
225009	BRISTOL	ME	LINCOLN
224203	BROOKLIN	ME	HANCOCK
225203	BROOKSVILLE	ME	HANCOCK
222001	BRUNSWICK	ME	CUMBERLAND
225719	BUCKS HARBOR	ME	WASHINGTON
222703	BUNKERS HARBOR	ME	HANCOCK
222407	CAMDEN	ME	KNOX
226720	CAMP ELLIS	ME	YORK
222101	CAPE ELIZABETH	ME	CUMBERLAND
226820	CAPE PORPOISE	ME	YORK
224403	CAPE ROSIER	ME	HANCOCK
220401	CHEBEAGUE ISLAND	ME	CUMBERLAND
222803	COREA	ME	HANCOCK
221201	CUMBERLAND	ME	CUMBERLAND
220501	CUNDYS HARBOR	ME	CUMBERLAND
221307	CUSHING	ME	KNOX
225819	CUTLER	ME	WASHINGTON
225919	DYERS BAY	ME	WASHINGTON
224309	EAST BOOTHBAY	ME	LINCOLN
220601	EAST HARPSWELL	ME	CUMBERLAND
226719	EASTERN HARBOR	ME	WASHINGTON
226819	EASTPORT	ME	WASHINGTON
227320	ELIOT	ME	YORK
221901	FALMOUTH	ME	CUMBERLAND
225015	FIVE ISLANDS	ME	SAGAHADOC
220701	FREEPORT	ME	CUMBERLAND
222903	FRENCHBORO	ME	HANCOCK
221407	FRIENDSHIP	ME	KNOX
221507	FRIENDSHIP HARBOR	ME	KNOX
225915	GEORGETOWN	ME	SAGAHADOC
221301	HARPSWELL	ME	CUMBERLAND
226919	HARRINGTON	ME	WASHINGTON
225115	HERMIT ISLAND	ME	SAGAHADOC
222507	ISLE AU HAUT	ME	KNOX
221017	ISLEBORO	ME	WALDO
223003	ISLESFORD	ME	HANCOCK
226019	JONESPORT	ME	WASHINGTON
226920	KENNEBUNKPORT	ME	YORK
227020	KITTERY	ME	YORK
221401	LONG ISLAND	ME	CUMBERLAND
227019	LUBEC	ME	WASHINGTON
227119	MACHIAS	ME	WASHINGTON
221607	MATINICUS	ME	KNOX

223103	MCKINLEY	ME	HANCOCK
224409	MEDOMAK	ME	LINCOLN
226119	MILBRIDGE	ME	WASHINGTON
225109	MONHEGAN	ME	LINCOLN
224509	NEW HARBOR	ME	LINCOLN
221707	NORTH HAVEN	ME	KNOX
224503	NORTHEAST HARBOR	ME	HANCOCK
224603	NORTHWEST HARBOR	ME	HANCOCK
227420	OGUNQUIT	ME	YORK
221501	ORRS ISLAND	ME	CUMBERLAND
220901	OTHER CUMBERLAND	ME	CUMBERLAND
220903	OTHER HANCOCK	ME	HANCOCK
220905	OTHER KENNEBEC	ME	KENNEBEC
220907	OTHER KNOX	ME	KNOX
220909	OTHER LINCOLN	ME	LINCOLN
220999	OTHER MAINE	ME	NOT-SPECIFIED
220911	OTHER OXFORD	ME	OXFORD
220913	OTHER PENOBSCOT	ME	PENOBSCOT
220915	OTHER SAGAHADOC	ME	SAGAHADOC
220917	OTHER WALDO	ME	WALDO
220919	OTHER WASHINGTON	ME	WASHINGTON
220920	OTHER YORK	ME	YORK
221807	OWLS HEAD	ME	KNOX
224609	PEMAQUID	ME	LINCOLN
221601	PERKINS COVE	ME	CUMBERLAND
225215	PHIPPSBURG	ME	SAGAHADOC
226219	PIGEON HILL	ME	WASHINGTON
220801	PINE POINT	ME	CUMBERLAND
226015	POPHAM	ME	SAGAHADOC
221907	PORT CLYDE	ME	KNOX
220101	PORTLAND	ME	CUMBERLAND
223203	PROSPECT HARBOR	ME	HANCOCK
220207	ROCKLAND	ME	KNOX
226319	ROGUE BLUFFS	ME	WASHINGTON
224709	ROUND POND	ME	LINCOLN
227520	SACO	ME	YORK
224703	SALISBURY COVE	ME	HANCOCK
221701	SCARBOROUGH	ME	CUMBERLAND
224803	SEAL HARBOR	ME	HANCOCK
221117	SEARSPORT	ME	WALDO
225315	SEBASCO ESTATES	ME	SAGAHADOC
225415	SMALL POINT	ME	SAGAHADOC
223303	SORRENTO	ME	HANCOCK
226419	SOUTH ADDISON	ME	WASHINGTON
224809	SOUTH BRISTOL	ME	LINCOLN
221801	SOUTH FREPORT	ME	CUMBERLAND
224903	SOUTH GOULDSBORO	ME	HANCOCK
221001	SOUTH HARPSWELL	ME	CUMBERLAND
224909	SOUTHPORT	ME	LINCOLN
223403	SOUTHWEST HARBOR	ME	HANCOCK
222007	SPRUCEHEAD	ME	KNOX

222107	ST. GEORGE	ME	KNOX
223503	STONINGTON	ME	HANCOCK
227319	STUEBEN	ME	WASHINGTON
223603	SUNSHINE/DEER ISLE	ME	HANCOCK
223803	SWANS ISLAND	ME	HANCOCK
222207	TENANTS HARBOR	ME	KNOX
222503	TREMONT	ME	HANCOCK
222307	VINALHAVEN	ME	KNOX
227620	WELLS	ME	YORK
223903	WEST GOULDSBORO	ME	HANCOCK
226519	WEST JONESPORT	ME	WASHINGTON
225515	WEST POINT	ME	SAGAHADOC
225209	WESTPORT	ME	LINCOLN
224003	WINTER HARBOR	ME	HANCOCK
225309	WISCASSET	ME	LINCOLN
221101	YARMOUTH	ME	CUMBERLAND
227120	YORK	ME	YORK
227220	YORK HARBOR	ME	YORK

**NORTH CAROLINA**

360109	ATLANTIC	NC	CARTERET
360119	AVON	NC	DARE
360137	BAYBORO	NC	PAMLICO
360209	BEAUFORT	NC	CARTERET
361001	BELHAVEN	NC	BEAUFORT
360127	ENGELHARD	NC	HYDE
360319	HATTERAS	NC	DARE
360237	HOBUCKEN	NC	PAMLICO
361005	HOLDEN BEACH	NC	BRUNSWICK
360337	LOWLAND	NC	PAMLICO
361119	MANTEO	NC	DARE
360309	MOREHEAD CITY	NC	CARTERET
360227	OCRACOKE	NC	HYDE
360419	OREGON INLET	NC	DARE
360437	ORIENTAL	NC	PAMLICO
360901	OTHER BEAUFORT	NC	BEAUFORT
360903	OTHER BERTIE	NC	BERTIE
360905	OTHER BRUNSWICK	NC	BRUNSWICK
360907	OTHER CAMDEN	NC	CAMDEN
360909	OTHER CARTERET	NC	CARTERET
360911	OTHER CHOWAN	NC	CHOWAN
360913	OTHER CRAVEN	NC	CRAVEN
360915	OTHER CUMBERLAND	NC	CUMBERLAND
360917	OTHER CURRITUCK	NC	CURRITUCK
360919	OTHER DARE	NC	DARE
360921	OTHER GATES	NC	GATES
360923	OTHER HALIFAX	NC	HALIFAX
360925	OTHER HERTFORD	NC	HERTFORD
360927	OTHER HYDE	NC	HYDE
360929	OTHER LENOIR	NC	LENOIR
360931	OTHER MARTIN	NC	MARTIN



360933	OTHER NEW HANOVER	NC	NEW HANOVER
360999	OTHER NORTH CAROLINA	NC	NOT-SPECIFIED
360935	OTHER ONSLOW	NC	ONSLow
360937	OTHER PAMLICO	NC	PAMLICO
360939	OTHER PASQUOTANK	NC	PASQUOTANK
360941	OTHER PENDER	NC	PENDER
360943	OTHER PERQUIMANS	NC	PERQUIMANS
360945	OTHER PITT	NC	PITT
360947	OTHER TYRRELL	NC	TYRRELL
360949	OTHER WASHINGTON	NC	WASHINGTON
360951	OTHER WAYNE	NC	WAYNE
361037	PAMLICO	NC	PAMLICO
360409	SALTER PATH	NC	CARTERET
361035	SNEADS FERRY	NC	ONSLow
361027	SWAN QUARTER	NC	HYDE
360135	SWANSBORO	NC	ONSLow
360537	VANDEMERE	NC	PAMLICO
360219	WANCHESE	NC	DARE
<b>NEW HAMPSHIRE</b>			
320102	DURHAM	NH	STRAFFORD
320501	GREAT BAY	NH	ROCKINGHAM
320801	HAMPTON	NH	ROCKINGHAM
320301	HAMPTON/SEABROOK	NH	ROCKINGHAM
320601	NEW CASTLE	NH	ROCKINGHAM
320101	NEW HAMPSHIRE	NH	ROCKINGHAM
320701	NEWINGTON	NH	ROCKINGHAM
320201	PORTSMOUTH	NH	ROCKINGHAM
320401	RYE	NH	ROCKINGHAM
320901	SEABROOK	NH	ROCKINGHAM
<b>NEW JERSEY</b>			
330201	ATLANTIC CITY	NJ	ATLANTIC
331009	AVALON	NJ	CAPE MAY
330227	BARNEGAT	NJ	OCEAN
331627	BARNEGAT LIGHT/LONG BEACH	NJ	OCEAN
330327	BAYVILLE	NJ	OCEAN
331125	BELFORD	NJ	MONMOUTH
331325	BELMAR	NJ	MONMOUTH
331011	BIVALVE	NJ	CUMBERLAND
330427	BRICK	NJ	OCEAN
331525	BRIELLE	NJ	MONMOUTH
331909	BURLEIGH	NJ	CAPE MAY
330309	CAPE MAY	NJ	CAPE MAY
331033	ELIZABETH	NJ	UNION
330527	FORKED RIVER	NJ	OCEAN
331225	HIGHLANDS	NJ	MONMOUTH
331017	JERSEY CITY	NJ	HUDSON
330125	KEYPORT	NJ	MONMOUTH
331001	LEEDS POINT	NJ	ATLANTIC
330225	MANASQUAN	NJ	MONMOUTH

330627	MANTALOKING	NJ	OCEAN
330325	MIDDLETOWN	NJ	MONMOUTH
330425	MONMOUTH	NJ	MONMOUTH
330727	MYSTIC ISLANDS	NJ	OCEAN
331425	NEPTUNE	NJ	MONMOUTH
331101	NORTHFIELD	NJ	ATLANTIC
331109	OCEAN CITY	NJ	CAPE MAY
331023	OLD BRIDGE	NJ	MIDDLESEX
330901	OTHER ATLANTIC	NJ	ATLANTIC
330903	OTHER BERGEN	NJ	BERGEN
330905	OTHER BURLINGTON	NJ	BURLINGTON
330907	OTHER CAMDEN	NJ	CAMDEN
330909	OTHER CAPE MAY	NJ	CAPE MAY
330911	OTHER CUMBERLAND	NJ	CUMBERLAND
330913	OTHER ESSEX	NJ	ESSEX
330915	OTHER GLOUCESTER	NJ	GLOUCESTER
330917	OTHER HUDSON	NJ	HUDSON
330919	OTHER HUNTERDON	NJ	HUNTERDON
330921	OTHER MERCER	NJ	MERCER
330923	OTHER MIDDLESEX	NJ	MIDDLESEX
330925	OTHER MONMOUTH	NJ	MONMOUTH
330999	OTHER NJ	NJ	NOT-SPECIFIED
330927	OTHER OCEAN	NJ	OCEAN
330929	OTHER PASSAIC	NJ	PASSAIC
330931	OTHER SALEM	NJ	SALEM
330933	OTHER UNION	NJ	UNION
330827	PINE BEACH	NJ	OCEAN
330127	POINT PLEASANT	NJ	OCEAN
331711	PORT NORRIS	NJ	CUMBERLAND
331201	PORT REPUBLIC	NJ	ATLANTIC
330525	RED BANK	NJ	MONMOUTH
331209	REEDS BEACH	NJ	CAPE MAY
331309	RUMSON	NJ	CAPE MAY
330625	SEA BRIGHT	NJ	MONMOUTH
330509	SEA ISLE CITY	NJ	CAPE MAY
330725	SHARK RIVER	NJ	MONMOUTH
331409	STONE HARBOR	NJ	CAPE MAY
331027	TOMS RIVER	NJ	OCEAN
331227	TUCKERTON	NJ	OCEAN
331811	VINELAND	NJ	CUMBERLAND
331127	WARETOWN	NJ	OCEAN
330409	WILDWOOD	NJ	CAPE MAY
331123	WOODBIDGE	NJ	MIDDLESEX
<b>NEW YORK</b>			
350835	AMMAGANSETT	NY	SUFFOLK
350211	BROOKLYN	NY	KINGS
350315	FREEPORT	NY	NASSAU
350535	GREENPORT	NY	SUFFOLK
350735	HAMPTON BAY	NY	SUFFOLK
350435	ISLIP	NY	SUFFOLK

351035	MATTITUCK	NY	SUFFOLK
350635	MONTAUK	NY	SUFFOLK
350117	NEW YORK CITY	NY	NEW YORK
350903	OTHER BRONX	NY	BRONX
350905	OTHER COLUMBIA	NY	COLUMBIA
350907	OTHER DUCHESS	NY	DUCHESS
350909	OTHER GREENE	NY	GREENE
350911	OTHER KINGS	NY	KINGS
350915	OTHER NASSAU	NY	NASSAU
350999	OTHER NY	NY	NOT-SPECIFIED
350923	OTHER QUEENS	NY	QUEENS
350927	OTHER RICHMOND	NY	RICHMOND
350929	OTHER ROCKLAND	NY	ROCKLAND
350935	OTHER SUFFOLK	NY	SUFFOLK
350937	OTHER ULSTER	NY	ULSTER
350939	OTHER WESTCHESTER	NY	WESTCHESTER
351215	POINT LOOKOUT	NY	NASSAU
351135	SHINNECOCK	NY	SUFFOLK
<b>PENNSYLVANIA</b>			
410107	CHESTER	PA	DELAWARE
410117	PHILADELPHIA	PA	PHILADELPHIA
<b>RHODE ISLAND</b>			
421001	BARINGTON	RI	BRISTOL
420601	BRISTOL	RI	BRISTOL
421209	CHARLESTOWN	RI	WASHINGTON
421605	JAMESTOWN	RI	NEWPORT
421805	LITTLE COMPTON	RI	NEWPORT
420705	MELVILLE	RI	NEWPORT
421705	MIDDLETOWN	RI	NEWPORT
421309	NEW SHOREHAM	RI	WASHINGTON
420105	NEWPORT	RI	NEWPORT
421509	NORTH KINGSTOWN	RI	WASHINGTON
420901	OTHER BRISTOL	RI	BRISTOL
420903	OTHER KENT	RI	KENT
420905	OTHER NEWPORT	RI	NEWPORT
420907	OTHER PROVIDENCE	RI	PROVIDENCE
420999	OTHER R.I.	RI	NOT-SPECIFIED
420909	OTHER WASHINGTON	RI	WASHINGTON
420209	POINT JUDITH	RI	WASHINGTON
420505	PORTSMOUTH	RI	NEWPORT
421007	PROVIDENCE	RI	PROVIDENCE
421409	SOUTH KINGSTOWN	RI	WASHINGTON
420405	TIVERTON	RI	NEWPORT
420301	WARREN	RI	BRISTOL
421003	WARWICK	RI	KENT
421109	WESTERLEY	RI	WASHINGTON
<b>SOUTH CAROLINA</b>			
430913	GEORGETOWN	SC	GEORGETOWN

**VIRGINIA**

490902	ALEXANDRIA	VA	CITY OF ALEXANDRIA
492061	AQUIA CREEK	VA	STAFFORD
499201	ATLANTIC	VA	ACCOMAC
493029	BARNESFIELD	VA	KING GEORGE
491117	BELMOUNT BAY	VA	FAIRFAX
498029	BELVEDERE BEACH	VA	KING GEORGE
492067	BONUMS CREEK	VA	WESTMORELAND
495167	BRANSON COVE	VA	WESTMORELAND
495367	CABIN POINT CREEK	VA	WESTMORELAND
490345	CAPE CHARLES	VA	NORTHAMPTON
492053	CHERRY HILL	VA	PRINCE WILLIAM
490701	CHINCOTEAGUE	VA	ACCOMAC
497047	COAN RIVER	VA	NORTHUMBERLAND
496047	COD CREEK	VA	NORTHUMBERLAND
493047	CUBITT CREEK	VA	NORTHUMBERLAND
496167	CURRIOMAN BAY	VA	WESTMORELAND
493017	DOUGE CREEK	VA	FAIRFAX
497029	FAIRVIEW BEACH	VA	KING GEORGE
493167	GARDNER CREEK	VA	WESTMORELAND
491001	GREENBACKVILLE	VA	ACCOMAC
492017	GUNSTON COVE	VA	FAIRFAX
492047	HACK CREEK	VA	NORTHUMBERLAND
490118	HAMPTON	VA	CITY OF HAMPTON
498347	HAMPTON HALL BRANCH	VA	NORTHUMBERLAND
496567	HORNER BEACH	VA	WESTMORELAND
494047	HULL CREEK	VA	NORTHUMBERLAND
495017	HUNTING CREEK	VA	FAIRFAX
493067	JACKSON CREEK	VA	WESTMORELAND
497347	KILLNECK CREEK	VA	NORTHUMBERLAND
497147	KINGSCOTE CREEK	VA	NORTHUMBERLAND
491267	KINSALE	VA	WESTMORELAND
494017	LITTLE HUNTING CREEK	VA	FAIRFAX
491047	LITTLE WICOMICO RIVER	VA	NORTHUMBERLAND
498247	LODGE CREEK	VA	NORTHUMBERLAND
495067	LOWER MACHODOC CREEK	VA	WESTMORELAND
499301	MAPPSVILLE	VA	ACCOMAC
494029	MATHAIS POINT	VA	KING GEORGE
497067	MATTOX CREEK	VA	WESTMORELAND
498067	MONROE BAY	VA	WESTMORELAND
498147	MUNDY POINT	VA	NORTHUMBERLAND
494053	NEABSCO CREEK	VA	PRINCE WILLIAM
490910	NEWPORT NEWS	VA	CITY OF NEWPORT NEWS
496067	NOMINI BAY	VA	WESTMORELAND
490213	NORFOLK	VA	CITY OF NORFOLK
491017	OCCOQUAN BAY (F)	VA	FAIRFAX
495053	OCCOQUAN BAY (P.W.)	VA	PRINCE WILLIAM
490901	OTHER ACCOMAC	VA	ACCOMAC
490905	OTHER CAROLINE	VA	CAROLINE
490907	OTHER CHARLES CITY	VA	CHARLES CITY
490909	OTHER CHESTERFIELD	VA	CHESTERFIELD

490903	OTHER CITY OF ARLINGTON	VA	CITY OF ARLINGTON
490916	OTHER CITY OF CHESAPEAKE	VA	CITY OF CHESAPEAKE
490918	OTHER CITY OF HAMPTON	VA	CITY OF HAMPTON
490913	OTHER CITY OF NORFOLK	VA	CITY OF NORFOLK
490914	OTHER CITY OF PORTSMOUTH	VA	CITY OF PORTSMOUTH
490912	OTHER CITY OF RICHMOND	VA	CITY OF RICHMOND
490939	OTHER CITY OF SUFFOLK	VA	CITY OF SUFFOLK
490911	OTHER DINWIDDIE	VA	DINWIDDIE
490915	OTHER ESSEX	VA	ESSEX
490917	OTHER FAIRFAX	VA	FAIRFAX
490919	OTHER GLOUCESTER	VA	GLOUCESTER
490920	OTHER HANOVER	VA	HANOVER
490921	OTHER HENRICO	VA	HENRICO
490923	OTHER ISLE OF WIGHT	VA	ISLE OF WIGHT
490925	OTHER JAMES CITY	VA	JAMES CITY
490927	OTHER KING & QUEEN	VA	KING & QUEEN
490929	OTHER KING GEORGE	VA	KING GEORGE
490931	OTHER KING WILLIAM	VA	KING WILLIAM
490933	OTHER LANCASTER	VA	LANCASTER
490935	OTHER MATHEWS	VA	MATHEWS
490937	OTHER MIDDLESEX	VA	MIDDLESEX
490941	OTHER NEW KENT	VA	NEW KENT
490945	OTHER NORTHAMPTON	VA	NORTHAMPTON
490947	OTHER NORTHUMBERLAND	VA	NORTHUMBERLAND
490949	OTHER PRINCE GEORGE	VA	PRINCE GEORGE
490953	OTHER PRINCE WILLIAM	VA	PRINCE WILLIAM
490955	OTHER RICHMOND	VA	RICHMOND
490957	OTHER SOUTHAMPTON	VA	SOUTHAMPTON
490959	OTHER SPOTSYLVANIA	VA	SPOTSYLVANIA
490961	OTHER STAFFORD	VA	STAFFORD
490963	OTHER SURRY	VA	SURRY
490999	OTHER VA	VA	NOT-SPECIFIED
490967	OTHER WESTMORELAND	VA	WESTMORELAND
490969	OTHER YORK	VA	YORK
490645	OYSTER	VA	NORTHAMPTON
499029	POTOMAC CREEK (K.G.)	VA	KING GEORGE
491061	POTOMAC CREEK (S)	VA	STAFFORD
493053	POWELLS CREEK	VA	PRINCE WILLIAM
495047	PRESELY CREEK	VA	NORTHUMBERLAND
491053	QUANTICO CREEK	VA	PRINCE WILLIAM
491101	QUINBY	VA	ACCOMAC
494067	RAGGED POINT HOLLOW	VA	WESTMORELAND
491029	ROSIERS CREEK (K.G.)	VA	KING GEORGE
499067	ROSIERS CREEK (W)	VA	WESTMORELAND
499101	SANFORD	VA	ACCOMAC
490869	SEAFORD	VA	YORK
491167	SHANNON BRANCH	VA	WESTMORELAND
496029	SOMERSET BEACH	VA	KING GEORGE
497247	THE GLEBE	VA	NORTHUMBERLAND
495267	TIDWELLS	VA	WESTMORELAND
493061	TOLSONS LANDING	VA	STAFFORD

492029	UPPER MACHODOC CREEK	VA	KING GEORGE
490951	VIRGINIA BEACH/LYNNHAVEN	VA	CITY OF VIRGINIA BEACH
490401	WACHAPREAGUE	VA	ACCOMAC
495029	WATERLOO	VA	KING GEORGE
494061	WIDEWATER	VA	STAFFORD
492129	WILLIAMS CREEK	VA	KING GEORGE
490845	WILLIS WHARF	VA	NORTHAMPTON
498047	YEOCOMICO RIVER (N)	VA	NORTHUMBERLAND
491067	YEOCOMICO RIVER (W)	VA	WESTMORELAND
990999	UNKNOWN	NK	UNKNOWN

**APPENDIX D: GEAR CODES AND GEAR NAMES**

<b>010</b>	LONGLINE, BOTTOM
<b>020</b>	HANDLINE (ROD & REEL)
<b>021</b>	HANDLINE, AUTO JIG
<b>050</b>	TRAWL, OTTER, BOTTOM, FISH
<b>054</b>	TRAWL, OTTER, BOTTOM, RUHLE
<b>057</b>	TRAWL, OTTER, BOTTOM, HADDOCK SEPARATOR
<b>100</b>	GILLNET, FIXED OR ANCHORED, SINK, OTHER/NK SPECIES <sup>1</sup>
<b>105</b>	GILLNET, ANCHORED-FLOATING, FISH <sup>2</sup>
<b>117</b>	GILLNET, DRIFT-SINK, FISH <sup>3</sup>

<sup>1</sup> An anchored or fixed sink gillnet is defined as a vertical wall of netting that is anchored or fixed to the substrate and is fished on the ocean bottom.

<sup>2</sup> An anchored-float gillnet is defined as a vertical wall of netting that is anchored or fixed to the substrate and is fished off the ocean bottom.

<sup>3</sup> A drift-sink gillnet is defined as a vertical wall of netting that is not anchored or fixed to the substrate and is fished on the ocean bottom.

**APPENDIX E: GEAR CONDITION CODES**

Used on all Haul Tabs/Logs, with specific codes for each fishery.

**ALL HAUL TABS/LOGS**

- 000 = Unknown.
- 990 = Other. Specify in COMMENTS.

**TRAWL HAUL TAB/LOG**

- 010 = No gear damage, or very few small, scattered holes.
- 020 = Wings twisted or torn, not exceeding 50% of meshes.
- 030 = Wings twisted or torn, exceeding 50% of meshes.
- 040 = Square and/or bosom torn, not exceeding 50% of meshes.
- 050 = Square and/or bosom torn, exceeding 50% of meshes.
- 060 = Belly torn, not exceeding 50% of meshes.
- 070 = Belly torn, exceeding 50% of meshes.
- 080 = Codend and/or extension piece torn, not exceeding 10% of meshes.
- 090 = Codend and/or extension piece torn, exceeding 10% of meshes.
- 100 = Hang-up, causing gear to be hauled back before scheduled time; minor damage.
- 110 = Parted legs, sweep or head rope.
- 120 = Tear up exceeding gear condition of code 02, but not total net destruction.
- 130 = Obstruction in the gear, such as a large amount of fixed gear, boulders, etc.
- 140 = Crossed doors.
- 150 = Open codend.
- 160 = Major hang-up or tear-up, or loss of gear.
- 170 = Grate clogged with fish or debris.



**GILLNET HAUL TAB/LOG**

- 210 = No gear damage, or very few small, scattered holes.
- 220 = Small number of torn meshes, not exceeding 25% of any one net, each net may be torn slightly.
- 230 = Less than 50% of the nets have less than 50% of the meshes torn.
- 240 = 50% or more of the nets have less than 50% of the meshes torn.
- 250 = Less than 50% of the nets are obstructed by a large object.
- 260 = 50% or more of the nets are obstructed by a large object.
- 270 = Less than 50% of the nets have 50% or more of the meshes torn.
- 280 = 50% or more of the nets have 50% or more of the meshes torn.
- 290 = Nets in the string totally balled up.

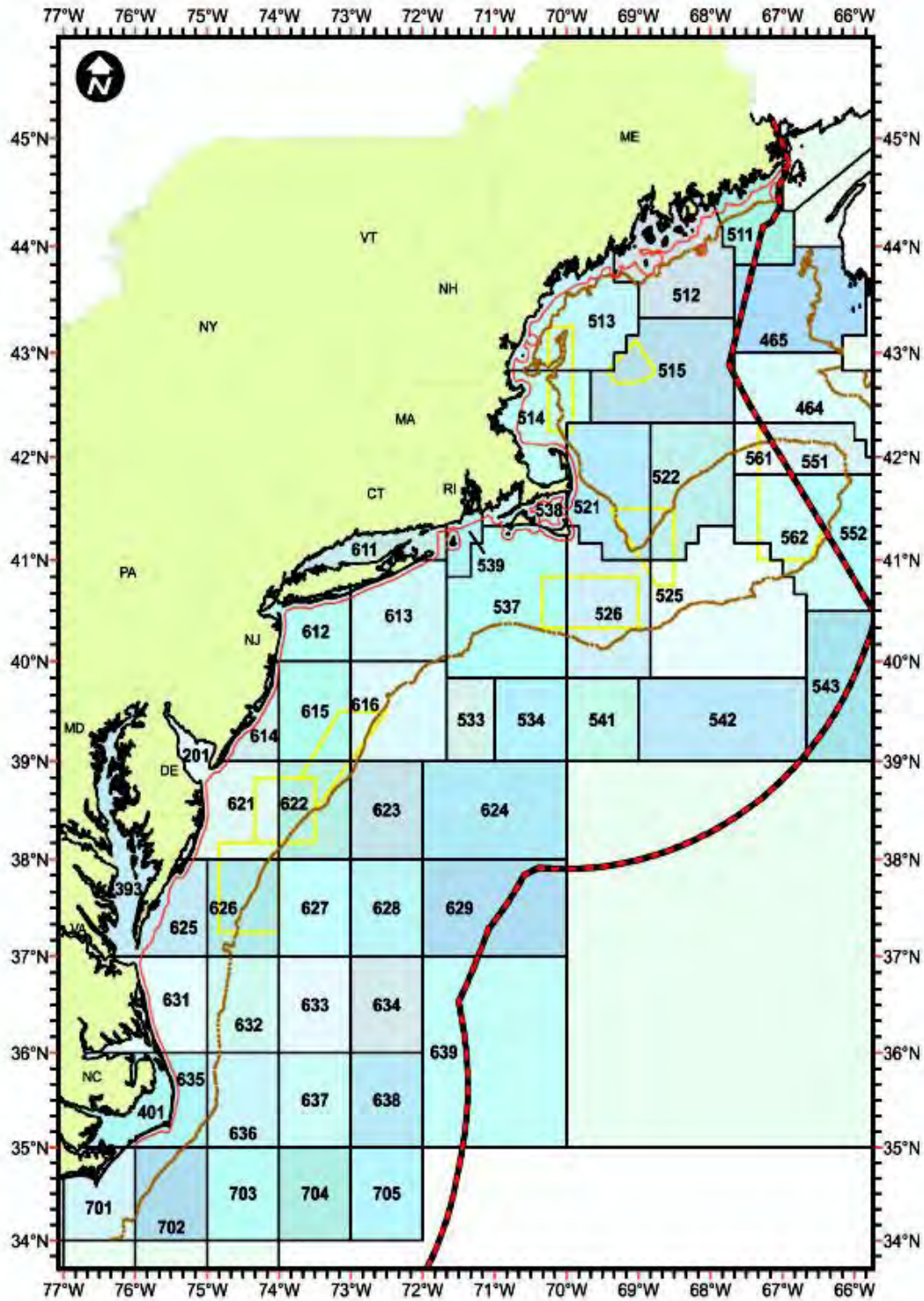
**LONGLINE HAUL TAB/LOG**

- 610 = No gear damage, or only a few hooks missing.
- 620 = Less than 50% of gear fouled, i.e., weather/oceanic conditions caused the gear to become tangled, or otherwise lowered the fishability of the gear.
- 630 = Greater than 50% of gear fouled, i.e., weather/oceanic conditions caused the gear to become tangled, or otherwise lowered the fishability of the gear.
- 640 = Less than 50% of hooks missing.
- 650 = Greater than 50% of hooks missing.
- 660 = Parted off, no damage.
- 670 = Parted off, less than 50% of gear damaged.
- 680 = Gear completely damaged, or completely lost.

APPENDIX F: CHARTS & STATISTICAL AREAS

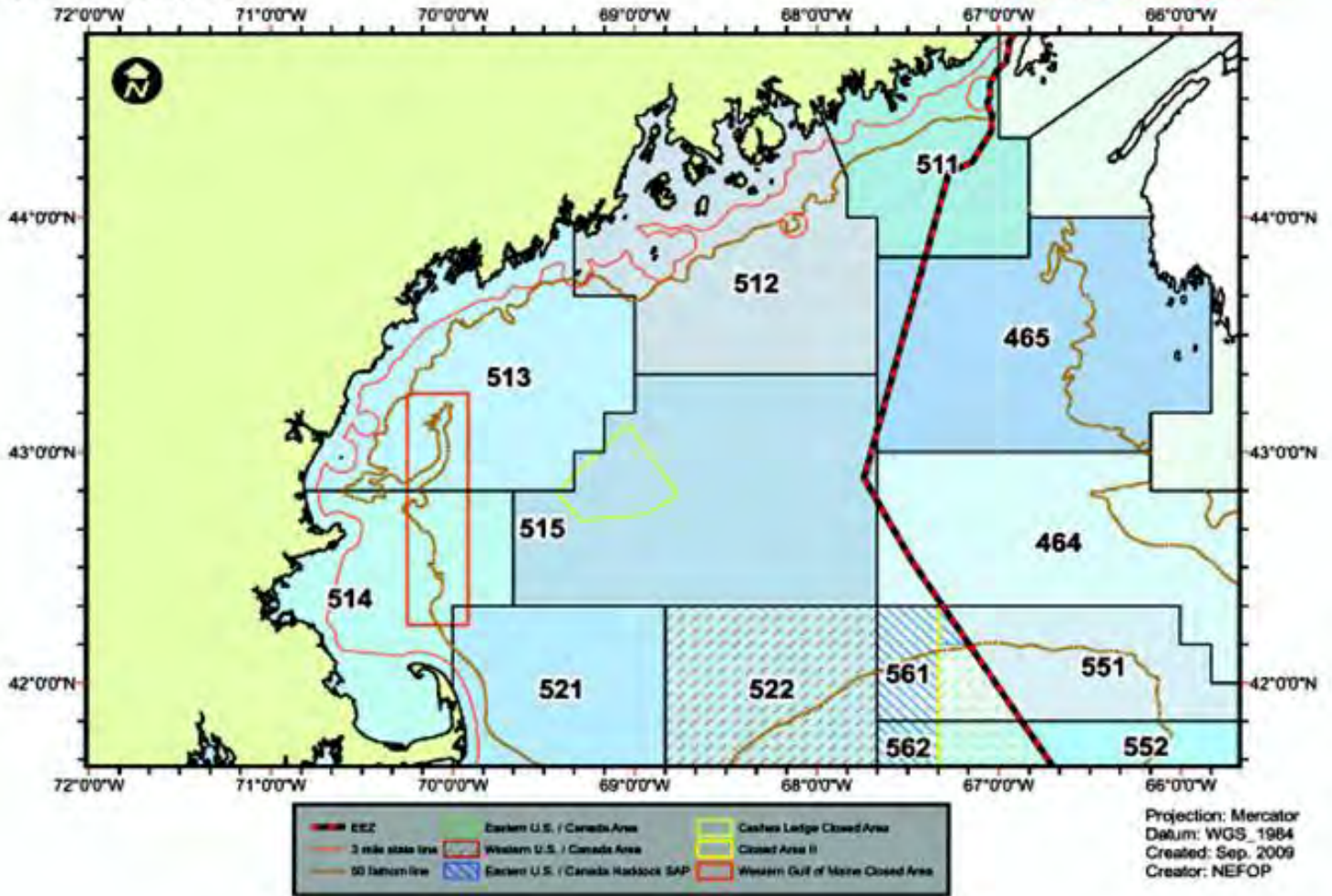
Chart 1. Overview of the Northeast Statistical Areas

*Do not use for navigation*



**Chart 2 Gulf of Maine**

*Do not use for navigation*



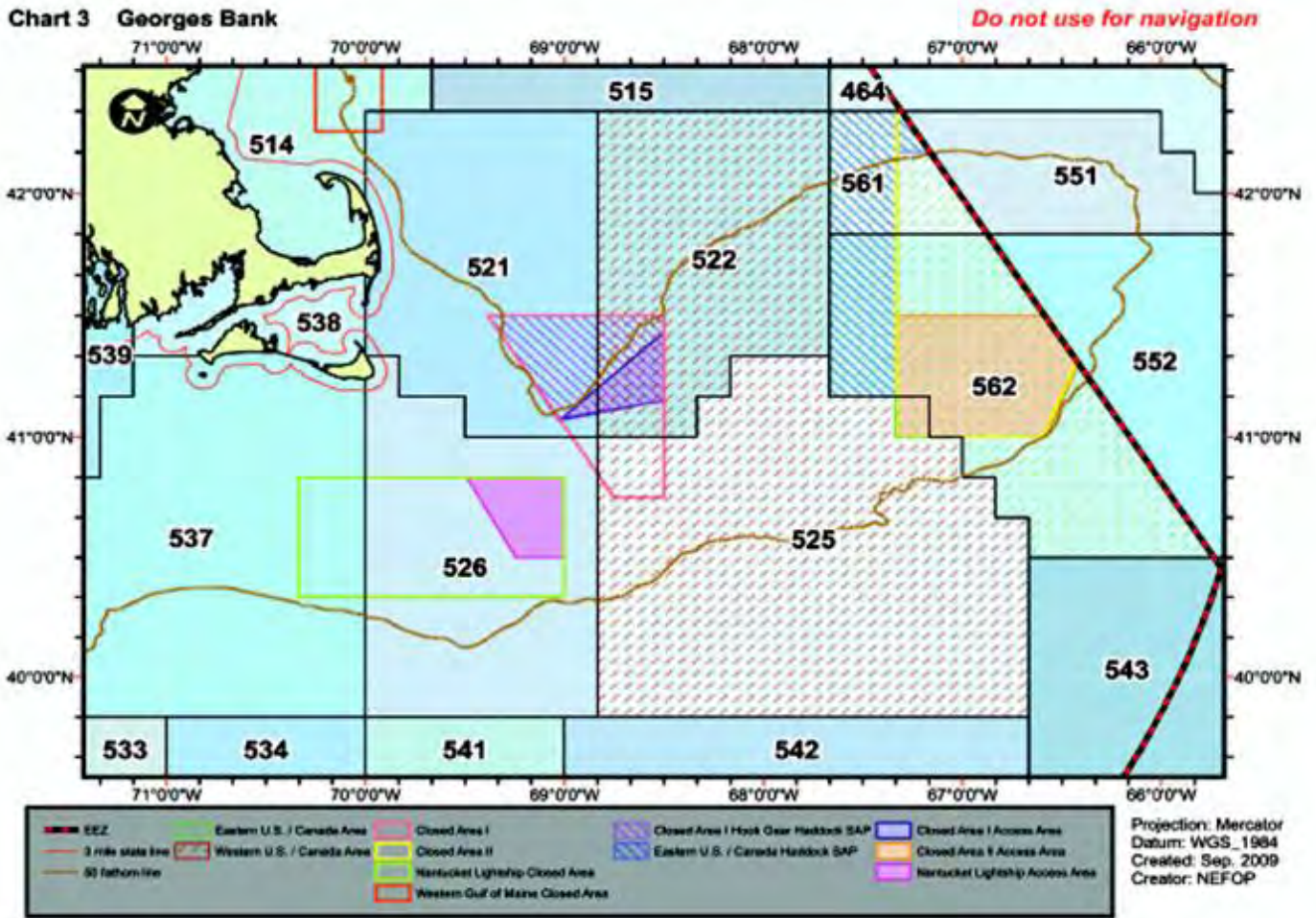


Chart 4. Detail of US/Canada Management Area and SAPs

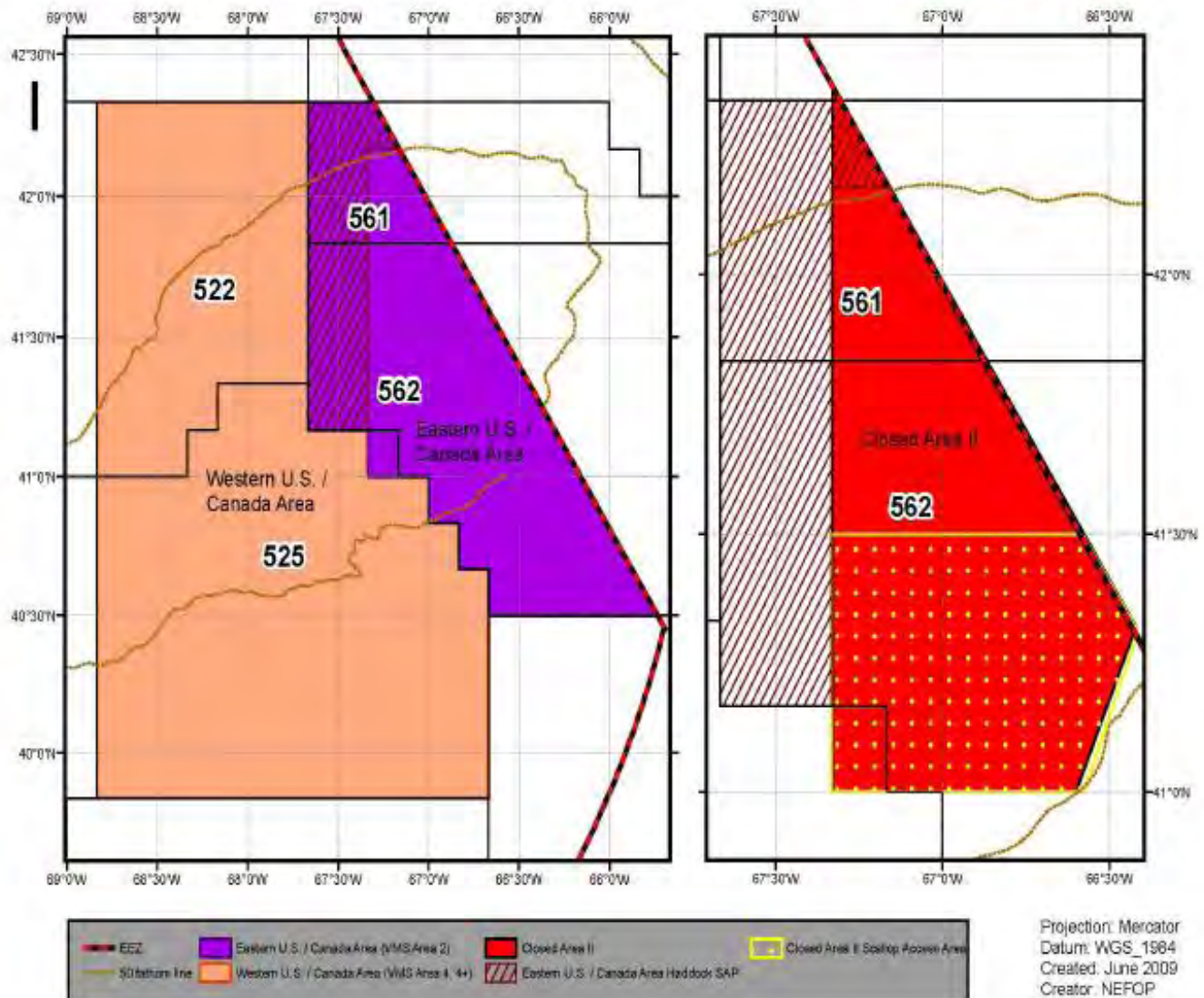
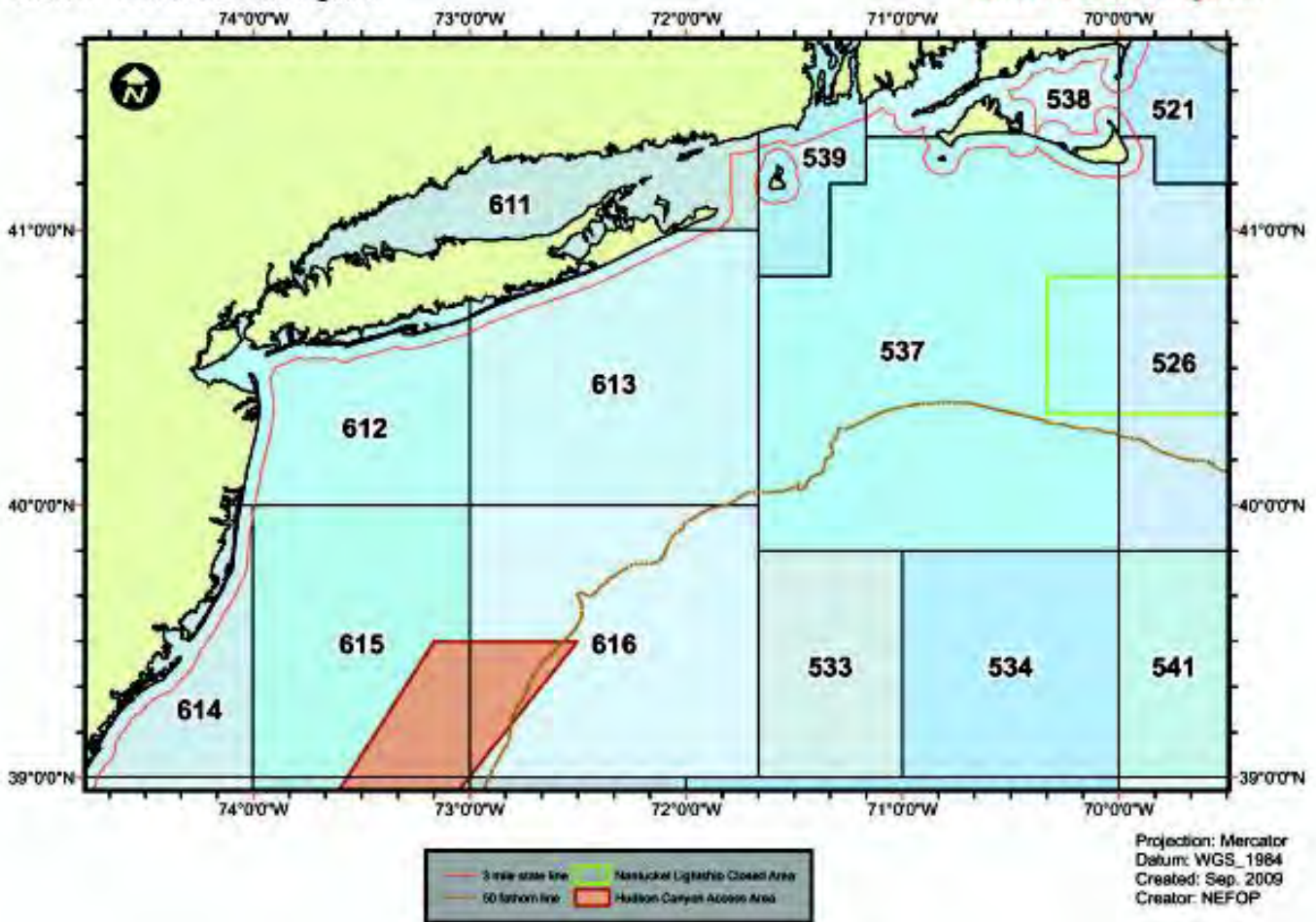


Chart 5 Southern New England

*Do not use for navigation*



## APPENDIX G: AT-SEA MONITOR/TRIP IDENTIFIER INSTRUCTIONS

At-sea Monitor/Trip Identifiers are used on every log and data item associated with a trip. They are used to uniquely identify all portions of a fishing trip.

Record your three character At-sea Monitor Identifier combined with a four character Trip Number assigned to you for each trip. Use the same At-sea Monitor/Trip Identifier on all forms for an individual trip.

The first three characters will always remain constant, as they are unique to each at-sea monitor (i.e. A02, see below for complete example). The fourth, fifth and sixth digits will reflect how many trips the at-sea monitor has been deployed on since the beginning of the calendar year (see below for complete example).

### iPAQ

When entering a Trip ID in the iPAQ, the 6-digit format will apply.

Example: A02002

### Paper Logs

The last character of the At-sea Monitor/Trip Identifier indicates what kind of deployment the at-sea monitor is on, with respect to fishery. Below are the possible endings to the At-sea Monitor/Trip Identifier:

TRIP EXTENSION	TRIP TYPE	ASSOCIATED GEAR
A	Aborted, Non-Gillnet	Aborted Trawl, Longline
C	Gillnet, Complete fish sampling	Gillnet
D	Gillnet, Complete fish sampling, Aborted	Aborted Gillnet
-	Non-Gillnet	Trawl, Longline
E	Gillnet, Complete fish sampling, Set Only	Gillnet, no gear hauled

**NOTE:** Set only trips are classified as a gillnet trip with a deployed monitor that does not haul any gear. Only setting of the gear occurs. The monitor will record set only trips using a unique Trip ID. Because there is no catch, no VTR number is collected.

Examples: **A02002C**

would indicate the second trip (002) of the calendar year for at-sea monitor Green, assigned identifier A02, which happens to be a complete gillnet trip

**A07026-**

would indicate the twenty sixth trip (026) of the calendar year for at-sea monitor White, assigned identifier A07, which happens to be a trawl trip (-).

**E60005D**

would indicate the fifth trip of the calendar year for at-sea monitor Brown, assigned identifier E60, which happens to be a complete gillnet trip that was aborted (D).

## APPENDIX H: VERNIER CALIPER INSTRUCTIONS

Calipers are used to collect the following measurements:

- Codend and codend liner inside mesh measurements recorded on the Trawl Gear Tab/Log.

### GENERAL INSTRUCTIONS

- Reference Figures 1 and 2.
- Only the NMFS issued Vernier Calipers should be used for obtaining required mesh measurements. Do not substitute measurements obtained from any other tool. If caliper measurements are not possible, measurements should be recorded in the COMMENTS section of the Gear Tab/Log, and the mesh measurement fields should be left blank.
- The calipers are used by grasping the main beam between the palm and fingers, while pushing or pulling the slide with the thumb on the knurled thumb rest.
- The thumb should exert approximately 5 pounds of force in either direction while the measurement is read. Do not apply excessive measurement force, as this will distort the measurements.
- The slider may be clamped with the clamp screw for easier reading of the scale.
- Measurements are read at the zero mark of the slider. Use the top of the main scale to obtain measurements to the nearest millimeter.
- Do not use the fine adjustment or the vernier scale. See Figures 1 and 2.

### OUTSIDE MEASUREMENTS

- Place item to be measured as close to the reference surface as possible, making its edges contact the outside jaws as perfectly as possible.

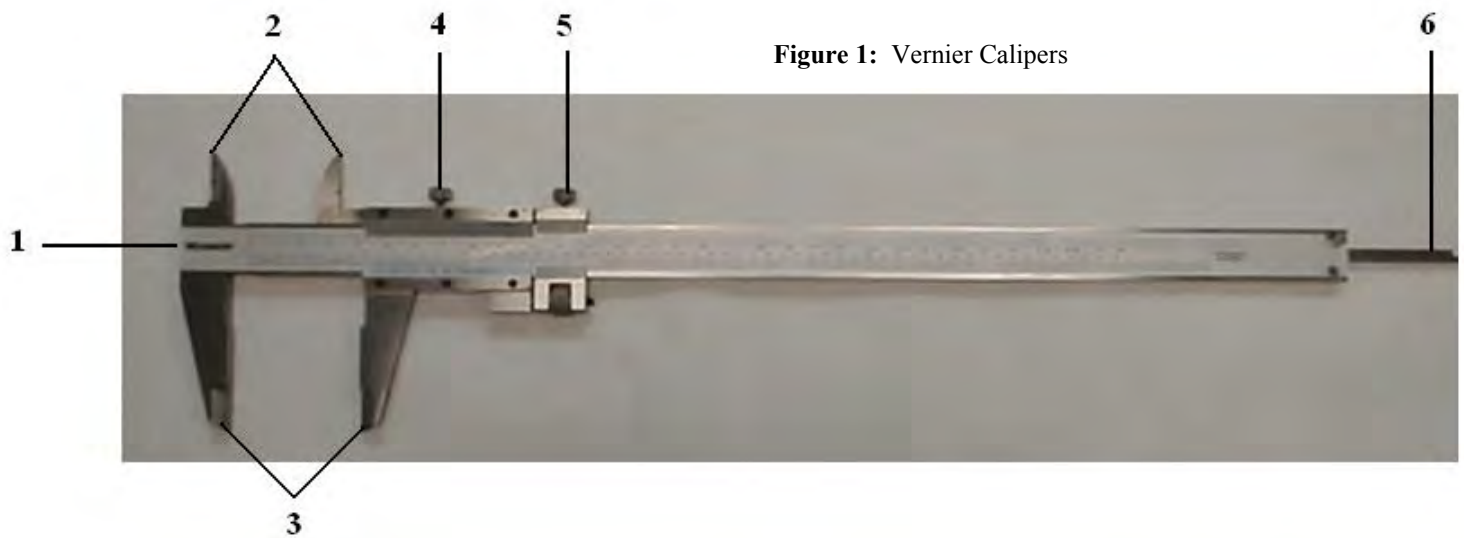
### INSIDE MEASUREMENTS

- Use for mesh measurements.
- Place the inside jaws as deep as possible into the item to be measured, making as perfect a contact as possible.
- Measure in a straight line. Do not allow the calipers to measure at an angle.
- When measuring mesh, do not apply excessive force to stretch the mesh too much beyond its normal hanging configuration.

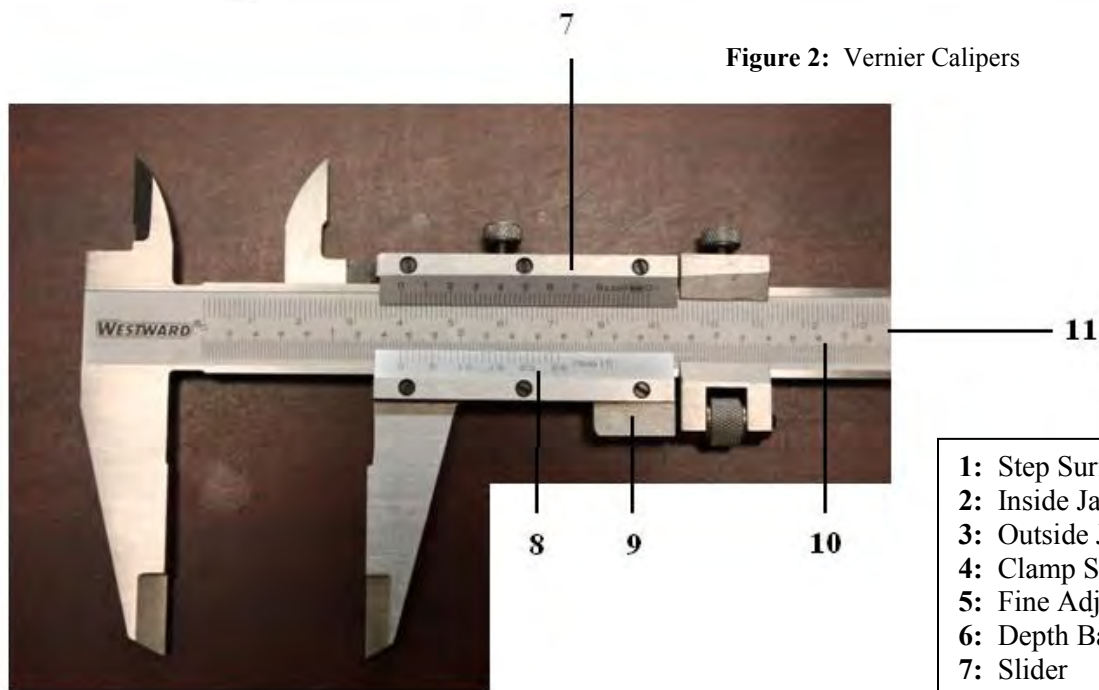


**PROPER VERNIER CALIPER MAINTENANCE**

- Wipe dust and dirt from all surfaces and rinse in fresh water after each use.
- Apply WD-40 to the sliding surfaces. Lack of lubrication may cause scratching on the sliding surfaces.
- Before storage, make sure the zero lines align when the jaws are closed, with no space observed between the jaws.
- Store calipers in their plastic sheath in a safe place when not in use.



**Figure 1: Vernier Calipers**



**Figure 2: Vernier Calipers**

- |                                 |
|---------------------------------|
| 1: Step Surface                 |
| 2: Inside Jaws                  |
| 3: Outside Jaws                 |
| 4: Clamp Screw                  |
| 5: Fine Adjustment (DO NOT USE) |
| 6: Depth Bar                    |
| 7: Slider                       |
| 8: Vernier Scale (DO NOT USE)   |
| 9: Thumb Rest                   |
| 10: Main Scale                  |
| 11: Main Beam                   |

**APPENDIX I: NET NAME AND NET TYPE****NET NAME**

<b>NET NAME</b>	<b>ADDITIONAL INFORMATION</b>
Beam Trawl	Consists of a cone-shaped body ending in a bag or codend. The horizontal opening of the net is provided by a beam, made of wood or metal. The vertical opening is provided by two hoop-like trawl heads ("shoes") that are mostly made from steel. No hydrodynamic forces are needed. Typically targets flatfish or shrimp. Often equipped with tickler chains to disturb the fish from the seabed.
Bottom Trawl	Net fishes directly on the bottom. Trouser, Beam and Twin Trawl should take precedence over Bottom Trawl.
Other	A net that can be considered to be completely different than other nets listed. Must provide descriptive information concerning the gear in the COMMENTS section
Pelagic Trawl	Net that fishes in the water column, and does not come in contact with the ocean bottom.
Semi-Pelagic Trawl	Net that fishes in the water column just above the bottom, but may come in contact with the ocean bottom occasionally.
Trouser Trawl	A research trawl net with a pair of codends (each constructed from a different size mesh and/or shape of mesh) used in mesh selectivity experiments. The vertical separator panel separates the flow of fish at the trawl mouth, hopefully before the fish can detect any difference between the two codends.
Twin Trawl	A distinct combination of 2 trawl nets (port and starboard) deployed and fished at the same time. In order to be considered a twin trawl, both nets must be fishing at the same time. These nets typically fish on the bottom.
Unknown	Must provide descriptive information concerning the gear in the COMMENTS section

**NET TYPE**

<b>NET TYPE</b>	<b>ADDITIONAL INFORMATION</b>
Unknown	Must provide descriptive information concerning the gear in the COMMENTS section
2-Seam Trawl	<ul style="list-style-type: none"> <li>Made of two panels and mesh, a top and a bottom, which are laced along the two sides this is known as the gore line or selvage</li> <li>Will maintain geometric shape</li> <li>Less material to make therefore less expensive</li> </ul>
4-Seam Trawl	<ul style="list-style-type: none"> <li>Made of four panels of twine (top, bottom and two sides) that are placed together to form four gore lines</li> <li>Maintains an advantageous geometric shape, however the panels can be somewhat confusing to fishermen on deck</li> <li>Generally has a high vertical lift</li> </ul>
Balloon Trawl	<ul style="list-style-type: none"> <li>Has a high mouth and lighter net material and has floats attached to the headrope so that the sweep floats just above the rocky bottom</li> </ul>
Balloon Trawl, 2-Seam Balloon Trawl, 4-Seam	<ul style="list-style-type: none"> <li>2-Seam or 4-Seam</li> </ul>

NET TYPE	ADDITIONAL INFORMATION
Box Trawl, 4-Seam	<ul style="list-style-type: none"> <li>Used to target squid and silver hake and is always a 4-Seam trawl</li> <li>Typically a high rise net in the essentially in the shape of a box</li> </ul>
Eliminator Trawl 2-Seam 4-Seam	<ul style="list-style-type: none"> <li>Similar to a Ruhle trawl, however, it does not meet the regulatory specifications of that constitute Ruhle trawl</li> <li>2-Seam or 4-Seam</li> </ul>
Flatfish Trawl  Flatfish Trawl, 2-Seam Flatfish Trawl, 4-Seam	<ul style="list-style-type: none"> <li>A low-rise constructed bottom trawl</li> <li>The trawl, depending on the location and time of year, may (in compliance with 50 C.F.R. 684.80(a)(4)) contain a section of mesh at least 10 feet long and stretching from selvedge to selvedge (which joins the upper and lower panels of the trawl), composed of at least 12-inch mesh that is inserted no farther than 4.5 meshes behind the headrope</li> <li>2-Seam or 4-Seam</li> </ul>
Flynet  Flynet, 2-Seam Flynet, 4-Seam	<ul style="list-style-type: none"> <li>Headrope length is typically 80-120 ft across with a wing mesh size of 16-64 inches that will slowly taper to smaller mesh sizes in the body extension and codend</li> <li>Headrope will also be slightly larger than the footrope</li> <li>Codend mesh size is about 3.5-3.75 inches</li> <li>Uses a large number of floats to keep the net slightly off the bottom</li> <li>Typically use bottom otter trawl gear (negear = 050)</li> <li>2-Seam or 4 Seam</li> </ul>
Groundfish Trawl  Groundfish Trawl, 2-Seam Groundfish Trawl, 4-Seam	<ul style="list-style-type: none"> <li>A trawl that can really use any of the above designs. For example, can use a flatfish trawl to target groundfish</li> <li>2-Seam or 4-Seam</li> </ul>
Haddock Separator Trawl  Haddock Separator, 2-Seam Haddock Separator, 4-Seam	<ul style="list-style-type: none"> <li>A groundfish trawl with 2 extensions arranged one over the other.</li> <li>Codend is attached only to the upper extension, and the bottom extension is left open with no codend attached</li> <li>In addition, a horizontal separating panel constructed with a minimum of 6.0 inch diamond mesh must be installed laterally between the selvedges joining the upper and lower panels, extending forward from the front of the trouser junction to the aft edge of the first belly behind the fishing circle</li> <li>Horizontal mesh panel dividing net body in half</li> <li>Top half leads back to a closed codend</li> <li>Bottom half leads to a semi-circle opening near the rear of the net</li> <li>Escape outlet present</li> <li>2-Seam or 4-Seam</li> </ul>
Millionaire Trawl, 4-Seam	<ul style="list-style-type: none"> <li>Always 4-Seam</li> <li>Very large openings in mouth and large mesh in the wings becoming small meshes in belly leading to the codend</li> </ul>

NET TYPE	ADDITIONAL INFORMATION
Monkfish Trawl  Monkfish Trawl, 2-Seam Monkfish Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• Typically uses a flatfish trawl, however, since Monkfish are not a herding species, large wing extensions are used which increases the area swept by the gear</li> <li>• Have 1 leg (a.k.a OLAK)</li> <li>• 2-Seam or 4-Seam</li> </ul>
Other	Must provide descriptive information concerning the gear in the COMMENTS section
Pelagic Pair Trawl  Pelagic Pair, 2-Seam Pelagic Pair, 4-Seam	<ul style="list-style-type: none"> <li>• Pair trawl that typically does not use doors and targets herring and mackerel</li> <li>• 2-Seam or 4-Seam</li> </ul>
Raised Footrope Trawl  Raised Footrope, 2-Seam Raised Footrope, 4-Seam	<ul style="list-style-type: none"> <li>• Small mesh trawl required in some whiting management areas (e.g. Gulf of Maine)</li> <li>• If this trawl is "sweepless" it is a separate net type (see description below)</li> <li>• Typically fished 1-2 feet off the bottom</li> <li>• 2-Seam or 4-Seam</li> </ul>
Rope Separator, 4-Seam	<ul style="list-style-type: none"> <li>• 4-Seam bottom trawl net</li> <li>• Separator panel made only of ropes</li> <li>• Escape opening in the bottom belly of the net below the separator panel</li> </ul>
Ruhle Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• Characterized by the large meshes (8ft) at the front of the net</li> <li>• Escape outlet</li> <li>• Three bridle configuration</li> <li>• Kite Panels</li> <li>• Rockhopper sweep gear</li> </ul>
Separator Trawl  Separator Trawl, 2-Seam Separator Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• A trawl net that has either a horizontal or vertical separator panel that runs from trouser junction to the aft edge of the first belly behind the fishing circle</li> <li>• 2-Seam or 4-Seam</li> </ul>
Shrimp Trawl  Shrimp Trawl, 2-Seam Shrimp Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• Small mesh, used to target shrimp</li> <li>• Often have T.E.D.s</li> <li>• 2-Seam or 4- seam</li> </ul>
Shuman Trawl  Shuman Trawl, 2-Seam Shuman Trawl, 4-Seam	<ul style="list-style-type: none"> <li>• A trawl net used mainly by squid fishermen</li> <li>• Typically fished as a semi-pelagic net (slightly off-bottom) for targeting squids and butterfish</li> <li>• Contains very large meshes in the mouth and has a high-opening net that may have canvas kites on headline to keep the mouth open</li> <li>• 2-Seam or 4-Seam</li> </ul>

<b>NET TYPE</b>	<b>ADDITIONAL INFORMATION</b>
Sweepless Trawl  Sweepless Trawl, 2-Seam Sweepless Trawl, 4-Seam	<ul style="list-style-type: none"><li>• Identical to the raised footrope trawl except there is no chain sweep and the dropper chains are heavier</li><li>• Required to target whiting in some management areas and may also be used by common pool vessels to fish for haddock when using BDAS</li><li>• 2-Seam or 4-Seam</li></ul>
Unknown	Must provide descriptive information concerning the gear in the COMMENTS section

**APPENDIX J: DEALER LIST (Sorted by State)****CONNECTICUT**

BRIDGEPORT LOBSTER & SHELLFISH	BRIDGEPORT
COVE FISH MARKET INC	MYSTIC
GAMBARDELLA WHLSL FISH	STONINGTON
GARBO LOBSTER CO	GROTON
GROSSMANS	WEST MYSTIC
LIVELY LOBSTER LLC	BRIDGEPORT
NEW LONDON SEAFOOD DIST	NEW LONDON
SEA WELL SEAFOOD	PAWCATUCK
STEVEN BURT SEAFOOD	NORWALK
STONINGTON FILLET CO INC	STONINGTON
STONINGTON FISH & LOBSTER	STONINGTON
STONINGTON FISHERIES	STONINGTON
STONINGTON FISHERMAN'S DOCK	STONINGTON
STONINGTON SEAF HARVESTER	STONINGTON

**DELAWARE**

LEWES FISHHOUSE & PRODUCE INC	LEWES
OCEAN FRESH SEAFOOD	HARRINGTON
THAT'S RIGHT SEAFOOD	UNKNOWN

**MAINE**

AC INC	BEALS
ALEWIVE'S BROOK FARM	CAPE ELIZABETH
ALFIERO BROS SEAFOOD	PORTLAND
ATLANTIC EDGE LOBSTER INC	BOOTHBAY HARBOR
ATLANTIC PELAGIC SEAF LLC	PORTLAND
ATLANTIC RAINBOW TRADING INC	PORTLAND
ATLANTIC SHELLFISH	JONESPORT
ATWOOD'S LOBSTER CO.	ST. GEORGE
BAR HARBOR MARINE	TRENT
BARNEY'S SEAFOOD	RAYMOND
BATH CANNING	BATH
BAYLEYS QUALITY SEAFOOD	SCARBOROUGH
BBS LOBSTER CO INC	MACHIASPORT
BEAL'S LOBSTER CO INC	JONESPORT
BEDROCK LOBSTER POUND	KITTERY
BOLD VENTURES INC	STONINGTON
BOOTHBAY REGION LOBSTER	BOOTHBAY HARBOR
BREMEN LOBSTER POUND COOP INC	BREMEN
BRISTOL SEAFOOD INC	PORTLAND
BROWN TRADING COMPANY	PORTLAND
CARVER SHELLFISH INC	BEALS
CH RICH CO INC	BASS HARBOR
CHRISSEY D LOBSTER CO	KITTERY

CNW SEAFOOD	BUCKS HARBOR
COASTAL BAIT COMPANY	PORTLAND
COD END MARKET	TENANTS HARBOR
COLWELL BROS INC	DEER ISLE
CONARY COVE LOBSTER CO	DEER ISLE
COOK'S LOBSTER HOUSE INC	BAILEY ISLAND
COREA LOBSTER COOP INC	COREA
COZY HARBOR SEAFOOD INC	PORTLAND
CRANBERRY ISLES FISHERMAN'S COOP	ISLESFORD
CUMMINGS LOBSTER CO INC	KENNEBUNK
CUNDY'S HBR. WHARF	SOUTH HARPSWELL
CUSTOM HOUSE SEAFOODS	PORTLAND
D & D SEAFOOD	DEER ISLE
D & S LOBSTER BAIT	BEALS
D C AIR & SEAFOOD INC	WINTER HARBOR
DAVID HORNER	BASS HARBOR
DICK'S LOBSTER	HARPSWELL
DOUTY BROS INC	PORTLAND
DYERS BAY LOBSTER CO INC	STEBEN
EMERY'S LOBSTER BAIT	KITTERY
EUGLEY'S WHARF INC	SOUTH BRISTOL
FARRIN'S WHARF	SOUTH BRISTOL
FEYLER'S FISHTAILS	CUSHING
FIFIELD LOBSTER CO	STONINGTON
FINESTKIND FISH MKT	YORK
FISHERMAN'S CATCH SFD MKT INC	DAMARISCOTTA
FISHERMAN'S NET	PORTLAND
FISHERMEN'S HERITAGE LOBSTER COOP	FRIENDSHIP
FISHERMEN'S LANDING INC	BAR HARBOR
FREE RANGE FISH	PORTLAND
FRESH PACK SEAFOOD	WISCASSET
FRIENDSHIP LOBSTER COOP	FRIENDSHIP
G.T. MANAGEMENT	SCARBOROUGH
GEORGETOWN FISH COOP	FIVE ISLANDS
GILLISON SEAFOOD	SOUTH BRISTOL
GLEN'S LOBSTERS	BAILEY ISLAND
GOBEIL'S BAIT	BIDDEFORD
GREAT ISLAND LOBSTER CO	DOVER
H. R. BEAL & SONS INC	SOUTHWEST HARBOR
HARBORSIDE LOBSTER	VINALHAVEN
HARRASEEKET LOBSTER CO	FREEMPORT
HATCHET COVE LOBSTER	FRIENDSHIP
HIXEY HEAD LOBSTER POUND INC	BEALS
ICEBRAND FOODS INC	PORTLAND
INGRID BENGIS SEAFOOD	STONINGTON
INLAND LOBSTER	VINALHAVEN
INLAND SEAFOOD	MILBRIDGE
INTERSTATE LOBSTER INC	HARPSWELL
ISF TRADING	PORTLAND
ISLAND SEAFOOD	DEER ISLE
J & J SONS LOBSTER BAIT	BEALS

J & K LOBSTER & BAIT	HARRINGTON
JESS' MARKET INC	ROCKLAND
JP SHELLFISH INC	ELIOT
JSSR ENTERPRISES	BOOTHBAY HARBOR
KALER'S CRAB & LOBSTER	BOOTHBAY HARBOR
KEN'S LOBSTER	HARPSWELL
KETTLE FISH	BOOTHBAY HARBOR
KIP'S SEAFOOD CO	CUSHING
L & L LOBSTER CO INC	ROCKLAND
LANGSFORD RD LOBSTER & FISH	KENNEBUNKPORT
LARRY KNAPP	BOOTHBAY HARBOR
LASH LOBSTER WHARF	FRIENDSHIP
LITTLE RIVER LOBSTER CO	BOOTHBAY HARBOR
LOBSTER OUTLET	WOOLWICH
LOOKS GOURMET FOOD COMPANY	BAR HARBOR
MAGGIE'S FISH MARKET	BAR HARBOR
MAINE COAST SEAFOOD	SPRUCE HEAD
MAINE LOBSTER OUTLET	YORK
MAINE SEAFOOD SPEC	SACO
MAINE SHELLFISH COMPANY INC	ELLSWORTH
MAINE'S BEST SEAFOOD INC	ROCKLAND
MARSH COVE LOBSTER CO INC	ADDISON
MCALENEY'S NEW MEADOWS LOBSTER	PORTLAND
MIDDLEBAY LOBSTER	HARPSWELL
MILL COVE LOBSTER POUND	BOOTHBAY HARBOR
MOOSABEC MUSSELS INC	JONESPORT
MORNINGSTAR SEAFOOD	STONINGTON
MORRISON'S LOBSTERS	KITTERY
MTS SEAFOOD TRADING CO LLC	PORTLAND
NANCY'S SEAFOOD	PORTLAND
NEW ERA FISH LLC	PORTLAND
NEW HARBOR COOP	NEW HARBOR
NORTH ATLANTIC LOBSTER SALES	ADDISON
NORTH ATLANTIC PRODUCTS INC	ROCKLAND
NORTH ATLANTIC SEAFOOD INC	PORTLAND
NORTH END LOBSTER COOP	WESTPORT
NOVA SEAFOODS LTD	PORTLAND
OAK ISLAND SEAFOOD INC	ROCKLAND
OCEAN HARVEST SEAFOOD	EDMUNDS
O'HARA CORPORATION	ROCKLAND
OLD SALT SEAFOOD CO INC	BEALS
PARSONS LOBSTERS	BAR HARBOR
PEMAQUID FISHERMAN'S COOP	PEMAQUID
PERIO POINT SEAFOOD	BEALS
PHILLBRICK BROS INC.	OWLS HEAD
PINE POINT FISHERMEN'S COOP	SCARBOROUGH
PORT CLYDE DRAGGERMAN'S	PORT CLYDE
PORT LOBSTER CO INC	KENNEBUNKPORT
PORTLAND FISH EXCH	PORTLAND
PORTLAND LOBSTER COMPANY	PORTLAND
PORTLAND LOBSTER POUND	PORTLAND



PURSE LINE BAIT  
 REILLY'S SEA PRODUCTS  
 RESOURCE TRADING CO  
 RIVER CATCH INC  
 ROBINSON'S WHARF INC  
 ROEBOAT ENTERPRISES  
 ROUND POND LOBSTER  
 S.BRISTOL FISH COOP  
 SAINT GEORGE MARINE  
 SEA FRESH USA INC  
 SEA PIER INC  
 SEAHORSE LOBSTER & FISH  
 SEAVIEW FISHERIES INC  
 SEBASCO WHARF INC  
 SHAW'S FISH & LOBSTER  
 SIMMONS LOBSTER WHARF  
 SMALL POINT FISHERIES  
 SMITH'S LOBSTER  
 SOLAR SEAFOOD INC  
 SORRENTO LOBSTER INC  
 SOUTH BRISTOL FISHERMEN'S COOP  
 SPRUCE HEAD FISHERMEN'S COOP  
 ST GEORGE MARINE  
 STEVE CANTRELL  
 STINSON SEAFOOD 2001 INC  
 STINSON'S MARINE LLC  
 STONINGTON LOBSTER COOP  
 STONINGTON SEA PRODUCTS INC  
 SUE'S SEAFOOD  
 SUNSHINE SEAFOOD INC  
 SUPERIOR BAIT  
 SWAN ISLAND FISHERMAN'S COOP  
 VINALHAVEN FISHERMEN COOP  
 WARD BAIT SHOP  
 WAYNE R PARRY INC  
 WEATHERVANE SEAFOODS INC  
 WEBER SEAFOOD INC  
 WINTER HARBOR COOP INC  
 WOTTON'S LOBSTER  
 YORK LOBSTER & SEAFOOD  
 YOUNG'S LOBSTER POUND

PHIPSBURG  
 BRISTOL  
 PORTLAND  
 PORTLAND  
 SOUTHPORT  
 BOOTHBAY HARBOR  
 ROUND POND  
 SOUTH BRISTOL  
 PORT CLYDE  
 PORTLAND  
 BOOTHBAY HARBOR  
 PHIPPSBURG  
 KITTERY  
 PORTLAND  
 NEW HARBOR  
 FRIENDSHIP  
 PHIPPSBURG  
 JONESPORT  
 WESTBROOK  
 SORRENTO  
 SOUTH BRISTOL  
 SOUTH THOMASTON  
 PORT CLYDE  
 TOPSHAM  
 WINTER HARBOR  
 WINTER HARBOR  
 STONINGTON  
 STONINGTON

STONINGTON  
 TENANTS HARBOR  
 SWAN ISLAND  
 VINALHAVEN  
 KENNEBUNKPORT  
 ARUNDEL  
 KITTERY  
 PORTLAND  
 WINTER HARBOR  
 BOOTHBAY HARBOR  
 YORK  
 BELFAST

## MARYLAND

CHINCOTEAGUE SEAFOOD  
 COLBOURNE SEAFOOD INC  
 CRABKNOCKERS SEAFOOD MARKET  
 E. GOODWIN SEAFOODS  
 HARBOR TACKLE  
 HARRIS SEAFOOD CO  
 J & J WHOLESALE

PARSONSBURG  
 SECRETARY  
 LEONARDTOWN  
 JESSUP/BALTIMORE  
 OCEAN CITY  
 GRASONVILLE  
 ROCK HALL

JIMMY CANTLER'S RIVERSIDE INN  
 KOOL ICE & SEAFOOD  
 MARTIN FISH CO INC  
 MID ATLANTIC FOODS INC  
 NAFCO WHOLESALE SEAFOOD  
 QUALITY SEAFOOD INC  
 SEA WATCH INTERNATIONAL  
 SOUTHERN CONNECTION

ANNAPOLIS  
 CAMBRIDGE  
 OCEAN CITY  
 POCOMOKE CITY  
 JESSUP  
 FORT WASHINGTON  
 EASTON  
 CRISFIELD

## MASSACHUSETTS

4TH CLIFF SEAFOOD  
 A & A SEAFOOD  
 AB SEAFOOD  
 ABRAMO FISH CO LTD  
 AFC TRADING CORP  
 ALIVE AND KICKING LOBSTERS  
 AMERICAN PRIDE SEAFOOD  
 AMERICAN SEAF PROCESS LLC  
 AMERICAN SEAFOOD GROUP  
 AMERICAN SFD INTERNATIONAL  
 AML INTERNATIONAL  
 ANGLER FISHERIES  
 ATL COAST SEAFOOD  
 ATL FISH/NORTHCOAST  
 ATLANTIC BANKS FISHERIES  
 ATLANTIC COAST FISH CORP  
 ATLANTIC FROST SEAFOOD  
 ATLANTIC GEM SEAFOOD  
 ATLANTIC SEA COVE INC  
 B & D BRAMANTE SFD BROKER  
 B & M SEAFOOD  
 BAIT LADY  
 BASIC FISHERIES  
 BAY SIDE SEAFOOD  
 BAYSIDE SEAFOOD CORP  
 BERGIE'S SEAFOOD  
 BIG G SEAFOOD INC  
 BLOUNT SEAFOOD CORP  
 BLUE C SEAFOOD  
 BOATHOUSE FISH MARKET  
 BOSTON CRAB CO INC  
 BOSTON SFD AUCTION GL  
 BOSTON WHOLESALE LOBSTER CORP  
 BRAMANTE SEAFOOD  
 BREAKWATER FISH & LOBSTER CO  
 BUZZARDS BAY SEAFOOD  
 BUZZARDS BAY TRADING  
 C & C SEAFOOD  
 CAHOON SEAFOOD  
 CANAL MARINE FISHERIES

MARSHFIELD  
 NEW BEDFORD  
 BOSTON  
 STOUGHTON  
 NEW BEDFORD  
 CAMBRIDGE  
 NEW BEDFORD  
 NEW BEDFORD  
 NEW BEDFORD  
 NEW BEDFORD  
 NEW BEDFORD  
 NEW BEDFORD  
 BOSTON  
 BOSTON/NBFD  
 GLOUCESTER  
 NEW BEDFORD  
 FALL RIVER  
 NEW BEDFORD  
 BOSTON  
 BOSTON  
 BOSTON  
 SANDWICH  
 MARION  
 BREWSTER  
 NEW BEDFORD  
 NEW BEDFORD  
 NEW BEDFORD  
 FALL RIVER  
 NEW BEDFORD  
 WELLFLEET  
  
 GLOUCESTER  
 LYNN  
 BOSTON  
 BREWSTER  
 FAIRHAVEN  
 NEW BEDFORD  
 SALEM  
 WEST YARMOUTH  
 SANDWICH

CANYON SEAFOOD	NEW BEDFORD
CAPE ANN SEAFOOD	GLOUCESTER
CAPE CODDER SEAFOOD MARKET	WEST YARMOUTH
CAPE FISH & LOBSTER CO	HYANNIS
CAPE QUALITY BLUEFIN	SOUTH DENNIS
CAPE QUALITY SEAFOOD	SOUTH DARTMOUTH
CAPE SEAFOODS INC	GLOUCESTER
CAPE SHARK FISHERIES	GLOUCESTER
CAPE SPRAY FISHERIES	HYANNIS
CAPE TIP SEAFOOD INC	PROVINCETOWN
CAPT JOE & SONS INC	GLOUCESTER
CAPT VINCE INC	GLOUCESTER
CARLOS SEAFOOD INC	NEW BEDFORD
CHANNEL FISH CO	EAST BOSTON
CHATHAM FISH&LOBSTER	CHATHAM
CHATHAM FISH&LOBSTER	SOUTH DENNIS
CHATHAM SEAFOOD COOP	CHATHAM
CHATHAM'S FINEST	CHATHAM
CHERRY ST FISH MARKET	DANVERS
CMLA INC	GLOUCESTER
COLD ATLANTIC SEAFOOD INC	NEW BEDFORD
COMMERCIAL LOBSTER CO INC	BOSTON
CONNELLY SEAFOOD	BOSTON
COTE FISHERIES	HYANNIS
COUGAR SEAFOOD CORP	NEW BEDFORD
DAVE'S SEAFOOD	TAUNTON
DAVIDS FISH MARKET INC	SALISBURY
DFC INTERNATIONAL	GLOUCESTER
D-FILLET CO INC	NEW BEDFORD
DIMARE SEAFOODS	REVERE
DJ SEAFOOD INC	MARION
DOCKSIDE FISHERIES INC	WESTPORT
EAST COAST SEAFOOD INC	LYNN
EASTERN FISHERIES	NEW BEDFORD
EASTERN SHORE SEAFOOD	ESSEX
EJ LIBBY & SONS SEAFOOD INC	FALMOUTH
F & B MUSSELLS	WEST WAREHAM
F. J. O'HARA & SONS	BOSTON
FAIR TIDE SHELLFISH LTD	NEW BEDFORD
FALMOUTH FISH MARKET	EAST FALMOUTH
FISH ON WHEELS	BOSTON
FLEET FISHERIES	NEW BEDFORD
FOLEY FISH	BOSTON/NEW BEDFORD
FUJI INVESTMENT	WILMINGTON
FULFORD FISH	GLOUCESTER
GEORGE'S SEAFOOD	UNKNOWN
GL SEAF DISPLAY AUCTION	GLOUCESTER
GLIDDEN ISLAND SEAFOOD	NANTUCKET
GLOUCESTER FISH EXCHANGE	GLOUCESTER
GREAT EASTERN SEAFOOD	BOSTON
GREG'S LOBSTER CO INC	HARWICH

H & M FISHERIES	WESTPORT
HANOVER LOBSTER & SEAFOOD	HANOVER
HAPPY WORLD AMERICA	GLOUCESTER
HARBOR BLUE SEAFOOD	FAIRHAVEN
HARVESTER SEAFOOD & SHELLFISH	BOURNE
HATCH'S FISH MARKET INC	WELLFLEET
HI HO SEAFOOD INC	EVERETT
HILTON'S FISHING DOCK	NEWBURYPORT
HYGRADE OCEAN PRODUCTS INC	NEW BEDFORD
IDEAL SEAFOOD INC	BOSTON
INTERNATIONAL C FOOD	NEW BEDFORD
INTERSHELL SEAFOOD CO	GLOUCESTER
IPSWICH SHELLFISH CO INC	IPSWICH
IRISH VENTURE INC	GLOUCESTER
J & J SEAFOOD	SAGAMORE BEACH
J T SEA PRODUCTS INC	NEW BEDFORD
JEWELS SEAFOOD	NEW BEDFORD
JOE'S LOBSTER MART	SANDWICH
JOE'S SEAFOOD INC	NEW BEDFORD
JOHN B WRIGHT FISH CO	GLOUCESTER
JOHN NAGLE INC	BOSTON
JO-JA SERVICE CORP	ACUSHNET
JOLIN LOBSTER INC	MANCHESTER
JORDANS SEAFOOD	BROCKTON
LARSEN'S FISH MARKET INC	MENEMSHA
LISBON SEAFOOD CO	FALL RIVER
LIVE LOBSTER COMPANY INC	CHELSEA
LOBSTER TRAP CO INC	BOURNE
LOTZZO'S FISH INC	WESTPORT
LOU - JOE'S FRESH SEAFOOD	NEW BEDFORD
LTC FISHERIES	CHATHAM
M & J SEAFOOD	NEW BEDFORD
M B SEA PRODUCTS	NEW BEDFORD
M F FOLEY INC OF NB	BOSTON/NEW BEDFORD
MACLEANS SEAFOOD	NEW BEDFORD
MAC'S SEAFOOD	WELLFLEET
MAGURO AMERICA INC	CHATHAM
MANCHESTER LOBSTER INC	MANCHESTER
MANOMET LOBSTER POUND	MANOMET
MARBLEHEAD LOBSTER	MARBLEHEAD
MARDER TRAWLING INC	NEW BEDFORD
MARINE BIO LAB	WOODS HOLE
MAR-LEES SEAFOOD LLC	NEW BEDFORD
MARR PELAGICS USA LLC	NEW BEDFORD
MARTHA'S VINEYARD SFD GRP INC	VINEYARD HAVEN
MENEMSHA FISH MARKET	CHILMARK
MET FISHERIES	NEW BEDFORD
MORTILLARO'S LOBSTER	GLOUCESTER
MULLANEY HRBR FISH	SCITUATE
NANTUCKET FISH CO INC	SOUTH DENNIS
NANTUCKET SEAFOODS	NANTUCKET

NANTUCKET SOUND FISH WEIRS INC	CHATHAM
NEBULA FOODS INC	NEW BEDFORD
NEW BEDFORD AUCTION	NEW BEDFORD
NEW ENGLAND CRAB CO	ROXBURY
NEW ENGLAND EEL CO	GLOUCESTER
NEW ENGLAND FISH CO (NEFCO)	BOSTON
NEW ENGLAND FISH EXCHANGE	BOSTON
NEW ENGLAND FRESH SEA PRODUCTS	GLOUCESTER
NEW ENGLAND MARINE RESOURCES INC	GLOUCESTER
NEW ENGLAND SEAFOOD	ROXBURY
NEW ENGLAND SHELLFIN INC	FALMOUTH
NEW HORIZON FISHERIES	PROVINCETOWN
NORDSTROM SEAFOOD TRADERS	ACUSHNET
NORTH ATLANTIC LOBSTER CO INC	DANVERS
NORTH ATLANTIC TRADERS LTD	MARBLEHEAD
NORTH COAST SEAFOOD	BOSTON/NEW BEDFORD
NORTHERN EDGE SEAFOOD	SOUTH DARTMOUTH
NORTHERN PELAGIC GROUP (NORPEL)	NEW BEDFORD
NORTHERN WIND	NEW BEDFORD
OCEAN CREST SEAFOOD	GLOUCESTER
OCEAN STAR SEAFOOD	SOUTH BOSTON
OCEANS ALIVE SCALLOP CORP	NEW BEDFORD
OFF THE BOAT SEAFOOD	BOSTON
PACIFIC TRADE INC	QUINCEY
PALMER ISLAND SEAF	SOUTH DARTMOUTH
PIER 7 INC	BOSTON
PIGEON COVE FISH COOP	ROCKPORT
PIGEON COVE WHOLE FOODS	GLOUCESTER
PORTLAND SHELLFISH SALES	MARBLEHEAD
PURITAN FISH CO INC	BOSTON
RAW SEAFOOD INC	FALL RIVER
RCC CORP	NEW BEDFORD
RED STAR SEAFOOD INC	NEW BEDFORD
RED'S BEST	CAPE COD
RELIABLE FISH CO INC	PLYMOUTH
ROCK BOTTOM SEAFOOD	PLYMOUTH
ROWAND FISHERIES INC	BEVERLY
S PARISI & SONS SEAFOODS INC	GLOUCESTER
SAM'S SEAFOOD	HINGHAM
SASHAMY SEAFOOD SPECIALTIES INC	BOSTON
SAYLE & HENRY INC	NANTUCKET
SAYLE'S SEAFOOD	NANTUCKET
SEA COAST SEAFOOD	NEW BEDFORD
SEA FRESH OF NEW BEDFORD	NEW BEDFORD
SEA TO YOU SUSHI	BOSTON
SEA WATCH INTERNATIONAL	NEW BEDFORD
SEAF CONSULT & ANALYSIS	NEW BEDFORD
SEAFOOD CONSULTING & ANALYSIS	NEW BEDFORD
SEAHORSE SEAFOOD SHOPPE	MARION
SEAQUEST	UNKNOWN
SECONDO FAMILY ENTR INC	PLYMOUTH

SHAMROCK SEAFOOD LLC  
 SIX PACK SEAFOODS  
 SNUG HARBOR FISH COMPANY  
 SOUSA SEAFOOD INC  
 SOUTH CAPE SEAFOODS INC  
 SOUTH SHORE LOBSTER  
 SOUZA SEAFOOD  
 STAR FISHERIES CORP  
 STAVIS SEAFOOD INC  
 STEVE CONNOLLY SFD CO INC  
 STEVE COUTO SEAFOOD  
 STEVE'S FILLET INC  
 STOP & SHOP SUPERMARKETS  
 SWAN RIVER SEAFOOD RESTAURANT  
 TASTY SEAFOOD COMPANY  
 TEMPEST FISHERIES LTD  
 THE CLAM MAN  
 THE FRESH CATCH INC  
 THE LOBSTER POT  
 THREE LANTERNS  
 TICHON SEA FOOD  
 TIMOTHY SHEA FISHERIES  
 TIRRELL SEAFOOD & SHELLFISH  
 TREBLOC SEAFOOD  
 TRIO ALGARVIO SEAFOOD  
 TURK'S SEAFOOD  
 VENTURE FISHERIES  
 VICTORY FISHERIES  
 W P MCCANN INC  
 WELLFLEET OYSTER & CLAM CO LTD  
 WESTPORT LOBSTER CO  
 WHALING CITY AUCTION  
 WHOLESAL SEAFOOD  
 WONG TRADING INC  
 WRIGHTS SEAFOOD  
 ZEUS PACKING INC

NEW BEDFORD  
 ACUSHNET  
 DUXBURY  
 BOSTON  
 CHATHAM  
 HINGHAM  
 NANTUCKET  
 GLOUCESTER  
 BOSTON  
 BOSTON  
 NEW BEDFORD  
 NEW BEDFORD  
 QUINCEY  
 DENNISPORT  
 MARION  
 NEW BEDFORD  
 FALMOUTH  
 MANSFIELD  
 NORWELL  
 GLOUCESTER  
 NEW BEDFORD  
 BOSTON  
 BOSTON  
 PLYMOUTH  
 NEW BEDFORD  
 MATTAPOISETT  
 CHATHAM  
 PROVINCETOWN  
 FAIRHAVEN  
 WELLFLEET  
 WESTPORT  
 NEW BEDFORD  
 FAIRHAVEN  
 BOSTON  
 GLOUCESTER  
 GLOUCESTER

## NEW HAMPSHIRE

BROWN'S SEABROOK LOBSTER POUND  
 DEFIANT LOBSTER COMPANY  
 GEORGE'S SEAFOOD  
 LITTLE BAY FISH CO  
 LITTLE BAY LOBSTER CO  
 LITTLE JOE'S SEAFOOD EXPRESS  
 NH SEACOAST CRUISES INC  
 PORTSMOUTH FISH COOP  
 SANDERS LOBSTER CO INC  
 SEATRADE INTERNATIONAL  
 TRI STATE SEAFOODS INC  
 TRICOASTAL FISH COOP

SEABROOK  
 HAMPTON  
 UNKNOWN  
 PORTSMOUTH  
 NEWINGTON  
 SANBORNVILLE  
 RYE  
 PORTSMOUTH  
 PORTSMOUTH  
 PORTSMOUTH  
 SOMERSWORTH  
 SEABROOK

## YANKEE FISHERMEN'S COOP

## SEABROOK

## NEW JERSEY

A & J SEAFOOD  
 AHEARN'S SEAFOOD MARKET  
 ATLANTIC CAPES FISHERIES  
 AXELSSON & JOHNSON FISH  
 BARNEGAT LT BAIT & TACKLE  
 BASIC FISHERIES  
 BCS PARTNERSHIP  
 BELFORD SEAFOOD COOP  
 BILLY'S RED ROOM INC  
 BLACK TIGER COMPANY INC  
 CAMBEX BIOLOGICAL SCIENCE  
 CAPE MAY FOODS INC  
 CAPE SEAPAK INC  
 CAPT BILL'S BAIT & TACKLE  
 CAPTAIN CHARLIE'S CLAMS  
 CARLSON'S SEAFOOD  
 CARMEN'S LOBSTER POOL  
 CASINO LOBSTER COMPANY  
 CHEFS INTERNATIONAL INC  
 COLD SPRING FISH & SUPPLY  
 COTTRELL'S LOBSTERS  
 DILL'S SEAFOOD  
 DOCK STREET SEAFOOD  
 EMERALD FISH  
 EXPORT INC  
 FISH QUEST INC  
 FISHERMAN'S HEADQUARTERS  
 FISHERMEN'S DOCK COOP  
 FROMETTA CONSIGN  
 IBERIA PENINSULA INC  
 IBERIA TAVERN & RESTAURANT  
 KASHIKO EXPORTS  
 KING KRAB RANCH  
 KLEIN'S FISH MARKET INC  
 LIGHTHOUSE DOCK  
 LIMULI LABS  
 LONZA AMERICA INC  
 LUND'S FISHERIES INC  
 MAX'S SEAFOOD  
 MY THREE SONS SEAFOOD & PRODUCE  
 NORTHEAST SHELLFISH CO  
 NU-WAVE SEAFOOD CONS LLC  
 PEACHES & CREAM INC  
 PHILLIPS SEAFOOD  
 PRIDE OF NEPTUNE  
 PT PLEASANT PACKING INC  
 RED'S LOBSTER DOCK

CARLSTADT  
 WARETOWN  
 CAPE MAY  
 CAPE MAY  
 BARNEGAT  
 PT. PLEASANT BEACH  
 BELFORD  
 BELFORD  
 WHIPPANY  
 EGG HARBOR CITY  
 EAST RUTHERFORD  
 CAPE MAY  
 CAPE MAY COURT HOUSE  
 NEPTUNE  
 CAPE MAY  
 WILDWOOD  
 SEA ISLE CITY  
 PLEASANTVILLE  
 POINT PLEASANT  
 CAPE MAY  
 HIGHLANDS  
 BRIDGETON  
 WILDWOOD  
 CHERRY HILL  
 BARNEGAT LIGHT  
 POINT PLEASANT BEACH  
 SHIP BOTTOM  
 POINT PLEASANT BEACH  
 NEWARK  
 NEWARK  
 NEWARK  
 PT. PLEASANT BEACH  
 PORT NORRIS  
 BELMAR  
 BARNEGAT LIGHT  
 CAPE MAY  
 ALLENDALE  
 CAPE MAY  
 GLOUCESTER CITY  
 TUCKERTON  
 ALLENWOOD  
 BARNEGAT LIGHT  
 BELLE MEAD  
 ATLANTIC CITY  
 NEPTUNE  
 POINT PLEASANT  
 POINT PLEASANT

RED'S LOBSTER POT  
 RIVER ROAD CLAM HOUSE LLC  
 RUGGIERO SEAFOOD INC  
 SALLY'S SHRIMP & SEAFOOD  
 SEACOAST OCEAN DIST  
 SHOAL HARBOR LOBSTER CO INC  
 SNOW'S DOXSEE INC  
 SPIKE'S FISH MARKET  
 SURFSIDE PRODUCTS INC  
 THE LOBSTER HOUSE  
 UNION LANDING RESTAURANT  
 VIKING VILLAGE INC  
 WILLOW HILL FISH CO  
 WOOLLEYS FISH MARKET INC  
 YAMA SEAFOOD INC

POINT PLEASANT  
 EGG HARBOR CITY  
 NEWARK  
 WARETOWN  
 HIGHLANDS  
 BELFORD  
 CAPE MAY  
 POINT PLEASANT  
 PORT NORRIS  
 CAPE MAY  
 BRIELLE  
 BARNEGAT LIGHT  
 BELLE MEAD  
 FREEHOLD  
 JERSEY CITY

## NEW YORK

AGGER FISH CORP  
 ARROW SEAFOOD INC  
 BABYLON FISHING STATION  
 BAY PARK FISHING STATION INC  
 BAY SIDE SEAFOOD  
 BLUE MOON FISH INC  
 BLUE RIBBON FISH CO  
 BLUE WATER FISHERIES INC  
 BOB GOSMAN CO INC  
 C G DINO'S INC  
 CALEB HALEY & CO INC  
 CAPT BEN'S FISH DOCK  
 CARL'S SEAFOOD, INC  
 CBSD (CAPTAIN BEN'S FISH DOCK)  
 CG DINO'S INC  
 CLAMMAN SEAFOOD MARKET INC  
 COR-J SEAFOOD  
 D & S SEAFOOD  
 DEEPWATER SEAFOODS  
 DINO'S See C G DINO'S  
 EMERALD SEAFOOD COMPANY INC  
 F & L FILLET  
 FAIR FISH CO INC  
 FATHER'S FISH CO INC  
 FRANK W. WILKISSON INC  
 FULL MOON FISHERIES  
 FULTON FISH MARKET  
 GEORGE BRAUN OYSTER  
 GLOUCESTER FISH CO  
 GOSMAN'S WHOLESALE SEAF  
 GOTHAM SEAFOOD CORP  
 HAPPY HOOKER FISH CO  
 HARBOR SEAFOODS INC

BROOKLYN  
 NEW YORK  
 BABYLON  
 OCEANSIDE  
 UNKNOWN  
 MATTITUCK  
 NEW YORK  
 MONTAUK  
 MONTAUK  
 BRONX  
 BRONX  
 FREEPORT  
 BRONX  
 FREEPORT  
 BRONX  
 SOUTHAMPTON  
 HAMPTON BAYS  
 HARTSDALE  
 MONTAUK  
 BRONX  
 BRONX  
 NEW YORK  
 BRONX  
 NEW YORK  
 BRONX  
 EAST HAMPTON  
 NEW YORK  
 CUTCHOGUE  
 NEW YORK  
 MONTAUK  
 NEW YORK  
 NEW YORK  
 NEW HYDE PARK



HART LOBSTER	WEST SAYVILLE
HUDSON POINT FISH STA	FREEPORT
HUNTS POINT COOP MRKT INC	BRONX
INLET SEAFOOD	MONTAUK
JEFFREY M. KRAUS	SOUTHAMPTON
JMS SEASONAL SEAFOOD CORP	NEW YORK
JOE IPPOLITTI	FREEPORT
JOE MONANI FISH CO	NEW YORK
JONES INLET PACKING CO LTD	POINT LOOKOUT
JOSEPH H. CARTER INC	NEW YORK
K & K SEAFOOD	NEW YORK
KYOTO FISH	NEW YORK
L J FISH INC	NEW YORK
LJ FISH INC	NEW YORK
LOCKWOOD & WINANT	NEW YORK
LONG ISLAND FISH EXCH	NEW YORK
LONG ISLAND SEAFOOD EXP	GREENPORT
LOU'S FISH MARKET	NEW YORK
M. SLAVIN & SONS LTD	NEW YORK
MARINO & SONS FISH MARKET	QUEENS
MILLIGAN SEAFOOD	SOUTHAMPTON
MOE BEHRENS SEAFOOD	WEST ISLIP
MONTAUK FISH DOCK	MONTAUK
MONTAUK MARINE BASIN	MONTAUK
MONTE'S SEAFOOD EMPORIUM	BRONX
MT SINAI FISH CO	BRONX
MULTI AQUACULTURE SYSTEMS INC	AMAGANSETT
PELLS FISH DOCK & MARINA	HAMPTON BAYS
PERRY B DURYEY & SONS INC	MONTAUK
PIERLESS FISH CORP	BROOKLYN
POINT LOBSTER & FISH	POINT LOOKOUT
POINT LOOKOUT SEAF	POINT LOOKOUT
PT LOOKOUT FISH DOCK INC	POINT LOOKOUT
RAINBOW CONNECTION	BROOKLYN
RAJ FISH CORP	GREENLAWN
RESTLESS FISHERIES	SEAFORD
S & R FISHERIES INC	HAMPTON BAYS
SHINNECOCK COOP	SHINNECOCK
SHINNECOCK FISH DOCK INC	HAMPTON BAYS
SHINNECOCK FISH PACKING INC	BAYSHORE
SOUTH SHORE FISH MARKET INC	ISLAND PARK
SPRINGVILLE FISHERIES	HAMPTON BAYS
ST PETER DOCK INC	FREEPORT
STUART'S SEAFOOD MARKET LTD	AMAGANSETT
SUNRISE LOBSTER CO	BROOKHAVEN
SUNRISE SEAFOOD INC	NEW YORK
SUSHI FISHING CHARTERS	BROAD CHANNEL
TCI FISHERIES LLC	UNKNOWN
TERRA TRADE COMPANY	JACKSON HEIGHTS
THE SEAFOOD SHOP	WAINSCOTT
THIRD GENERATION FISH CO	BRONX

TM FISH COMPANY  
 TONY CRAB KING INC  
 TOP CATCH INC  
 TWO COUSINS FISH MARKET INC  
 VALENCAMBO SUPERIOR SEAFOOD  
 VANDERBILT WHARF LTD  
 WESTBURY FISH CO  
 WHITECAP FISH  
 WILKINSON  
 WILLIAM W REED  
 WILLIAM W. REID  
 WOODCLEFT FISHING STATION  
 WORLD WIDE FISH CO  
 WORLDWIDE DIRECT SEAFOOD  
 YOUNG KWANG FISH CORP

MONTAUK  
 ISLIP  
 BROOKLYN  
 FREEPORT  
 PORT CHESTER  
 OAKDALE  
 WESTBURY  
 ISLIP  
 NEW YORK  
 HAMPTON BAYS  
 HAMPTON BAYS  
 FREEPORT  
 FLUSHING  
 BRONX  
 FLUSHING

### **NORTH CAROLINA**

AL'S SEAFOOD  
 AUSTIN FISH COMPANY  
 AVON SEAFOOD  
 B & J SEAFOOD  
 B + B INC / MALINSKI  
 BENNY'S SEAFOOD  
 BERESOFF FISHING  
 BILLS SEAFOOD  
 BILLY'S SEAFOOD  
 BLACKBURN BROS INC  
 BLUE CRAB SEAFOOD  
 BOWMANS SEAFOOD  
 BRUCE HENRY  
 BUXTON SEAFOOD  
 CANNON SEAFOOD  
 CAPE FEAR BIO SUPPLY CO  
 CAPE FEAR FISH MERCHANTS LLC  
 CAPE FEAR SEAFOOD  
 CAPE HATTERAS SEAFOOD  
 CAPE POINT BAIT CO INC  
 CAPT JIM'S SEAFOOD INC  
 CAPT PETE SEAFOOD  
 CAPTAIN CHARLIE'S SEAFOOD  
 CAROL VOLIVA  
 CAROLINA ATL SEAFOOD  
 CHANNEL BASS REST  
 CLAYTON FULCHER SEAF  
 CLYDE PHILLIPS SEAFOOD  
 COASTAL SEAFOOD  
 CRYSTAL COAST FISHERIES  
 DAVIS SEAFOOD  
 DIAMOND SEAFOOD  
 DIAMOND SHOAL SEAFOOD

LA GRANGE  
 NAGS HEAD  
 AVON  
 NEW BERN  
 BEAUFORT  
 MANNS HARBOR  
 BOLIVIA  
 SUNSET BEACH  
 KILL DEVIL HILLS  
 CAROLINA BEACH  
 CALABASH  
 SNEADS FERRY  
 SHALLOTTE  
 BUXTON  
 BEAUFORT  
 BEAUFORT  
 WILMINGTON  
 WILMINGTON  
 HATTERAS  
 BEAUFORT  
 MOREHEAD CITY  
 HOLDEN BEACH  
 ENGELHARD  
 UNKNOWN  
 MOREHEAD CITY  
 HATTERAS  
 ATLANTIC  
 SWANSBORO  
 LELAND  
 MOREHEAD CITY  
 SNEADS FERRY  
 BUXTON  
 BUXTON

DOUG'S SEAFOOD LLC	SHALLOTTE
ENGELHARD MATTAMUSKEET SEAFOOD LLC	ENGELHARD
FOLGER'S SEAFOOD	SEA LEVEL
FREDDY RESTAURANT	KURE BEACH
FROG ISLAND SEAFOOD INC	BARCO
FULCHER'S POINT PRIDE SFD	ORIENTAL
GARLAND/FULCHER SEAF	ORIENTAL
GASKILL SEAFOOD	BAYBORO
GRANTS OYSTER HOUSE	SNEADS FERRY
GRAYBEARD'S LLC	WANCHESE
HATTERAS BLUE	HATTERAS
HICKMAN SEAFOOD	CALABASH
HOBO SEAFOOD	SWANQUARTER
HOMER SMITH SEAFOOD INC	BEAUFORT
HOPKINS SEAFOOD	BELHAVEN
J H LEA & SONS	HAMPSTEAD
JAMES STYRON FISH CO	DAVIS
JAWS FISH CO	WANCHESE
JEFFREY'S SEAFOOD/JRA INC	HATTERAS
JS PACKING	WILMINGTON
KERRY & SON SEAFOOD INC	BEAUFORT
LINDSEY'S SEAFOOD	CURRITUCK
LOWLAND SEAFOOD INC	LOWLAND
LT EVERETT & SONS SEAF	SNEADS FERRY
LUCKY INTERNATIONAL	MOREHEAD CITY
LUTHER L SMITH & SON SEAF	ATLANTIC
MATTAMUSKEET SEAFOOD	SWANQUARTER
MOON TILLET FISH CO	WANCHESE
MORGAN HARVEST INC	NEWPORT
MOTTS CHANNEL SEAFOOD	WRIGHTSVILLE BEACH
MURRY L NIXON FISHERY INC	EDENTON
MY LORD HONEY SEAFOOD	BEAUFORT
NIXON SEAFOOD	WILMINGTON
OCEAN SEAFOOD	WILMINGTON
OCRACOCKE SEAFOOD	OCRACOCKE
ONEALS SEA HARVEST	WANCHESE
OSPREY FISHERIES INC	OCRACOCKE
OUTER BANKS SEAFOOD	UNKNOWN
PAMLICO PK CO INC	VANDMERE
PITTMAN SEAFOOD CO	BEAUFORT
QUALITY SEAFOOD	WANCHESE
RISKY BUSINESS SEAF	OUTER BANKS
ROSE SEAFOOD	BEAUFORT
RW JONES FISH CO INC	NEWPORT
SEAFOOD CENTER	JACKSONVILLE
SHELLFISH 2000	CEDAR POINT
SLIM PICKINS	OCRACOCKE
SMITH SEAFOOD CONTAINER INC	BEAUFORT
SNEADS FERRY SEAFOOD	SNEADS FERRY
SOUTHPOINT MARKET INC	OCRACOCKE
SUNSET HARBOR SEAFOOD	BOLIVIA

TATUM SEAFOOD  
 TA TAYLOR & SONS SEAFOOD INC  
 TEACH'S LAIR  
 TIMS SEAFOOD  
 TOP DOLLAR  
 TOP FIN LTD  
 WANCHESE FISH CO  
 WILLIAM SMITH SEAFOOD INC  
 WILLIAMS SEAFOOD INC  
 WILLIE R ETHERIDGE SEAF  
 YEOMANS SEAFOOD

SOUTHPORT  
 SEA LEVEL  
 HATTERAS  
 HAMPSTEAD  
 HATTERAS  
 WANCHESE  
 WANCHESE  
 BEAUFORT  
 ENGELHARD  
 WANCHESE  
 HARKERS ISLAND

## **RHODE ISLAND**

AMANDA MEL LOBSTER CO  
 ANTHONY'S SEAFOOD & RESTAURANT  
 AQUIDNECK LOBSTER CO  
 BAY STATE SEAFOOD INC  
 BAYSIDE SHELLFISH  
 BLACK POINT FISH TRAP CO  
 BLOCK ISLAND SEAFOOD  
 BLOUNT SEAFOOD CORP  
 BRICO INCORPORATED  
 BRIDGEPORT SEAFOOD  
 CAPEWAY SEAFOODS  
 CARTER SEAFOOD  
 CELESTIAL FOOD DIST. INC  
 CHAMPLIN ENTERPRISES  
 CHAMPLIN'S SEAFOOD INC  
 CHAMPLINS SFD OF WICKFORD  
 CHUBBY FISH INC  
 CLIPPER SEAFOOD  
 DEEP SEA FISH OF RI  
 ESTRELA SEAFOOD  
 FERRY WHARF FISH MARKET  
 FINN'S FISH MARKET  
 FRANCES FLEET  
 GALILEAN SEAFOOD INC  
 H. N. WILCOX FISHING  
 HANDRIGAN SEAFOODS  
 HENRY AVERY & CO  
 HMH INC/CHAMPLINS SFD  
 HN WILCOX FISHING INC  
 INTERNATIONAL MARINE IND  
 KENPORT MARINA  
 LABORE SEAFOOD LTD  
 LEES WHARF LOBSTER  
 M & M FISH AND LOBSTER  
 M. SLAVIN & SONS LTD  
 MC FRESH INC  
 N PARASCANDOLO & SONS INC

BLOCK ISLAND  
 MIDDLETOWN  
 NEWPORT  
 LITTLE COMPTON  
 TIVERTON  
 NARRAGANSETT  
 BLOCK ISLAND  
 WARREN  
 NARRAGANSETT  
 TIVERTON  
 PROVIDENCE  
 PORTSMOUTH  
 SAUNDERSTOWN  
 NARRAGANSETT  
 NARRAGANSETT  
 NARRAGANSETT  
 WAKEFIELD  
 NARRAGANSETT  
 WAKEFIELD  
 CRANSTON  
 NARRAGANSETT  
 BLOCK ISLAND  
 NARRAGANSETT  
 BRISTOL  
 ADAMSVILLE  
 NARRAGANSETT  
 NEWPORT  
 NARRAGANSETT  
 LITTLE COMPTON  
 NEWPORT  
 WAKEFIELD  
 NARRAGANSETT  
 WESTPORT POINT  
 BRISTOL  
 PT. JUDITH  
 PEACE DALE  
 NEWPORT

NANCY BETH FISHERIES  
 NARRAGANSETT BAY LOBSTERS INC  
 NONQUIT FISH CO  
 OCEAN STATE BAIT CO.  
 OCEAN STATE BAIT CO.  
 OCEAN STATE LOBSTER CO  
 OLD HARBOR SEAFOOD  
 OSPREY SEAFOOD  
 PAIVA'S SHELLFISH  
 PALUMBO FISHERIES  
 POINT JUDITH FISHERMAN'S COOP  
 POINT TRAP CO  
 RI RED SEAFOOD  
 SEA FREEZE LTD  
 SEA FRESH USA INC  
 SEA FRESH WORLD INC  
 SEAFOOD HAVEN  
 SEAFOOD UNLIMITED INC  
 SEAFREEZE LTD  
 SKIPS DOCK INC  
 SLACKER SEAFOODS  
 SNUG HARBOR MARINA INC  
 SOUTH PIER FISH  
 SOUTH PIER SEAFOOD  
 TALLMAN & MACK FISH  
 THE BAIT CO.  
 TONY'S SEAFOOD  
 TOWN DOCK  
 WB VAN DUZER CO

WAKEFIELD  
 NARRAGANSETT  
 TIVERTON  
 BRISTOL  
 PROVIDENCE  
 NARRAGANSETT  
 BLOCK ISLAND  
 NARRAGANSETT  
 CRANSTON  
 UNKNOWN  
 POINT JUDITH  
 LITTLE COMPTON  
 EXETER  
 NORTH KINGSTOWN  
 NARRAGANSETT  
 NORTH KINGSTOWN  
 WAKEFIELD  
 PAWCATUCK  
 NORTH KINGSTOWN  
 WAKEFIELD  
 NARRAGANSETT  
 WAKEFIELD  
 WAKEFIELD  
 WAKEFIELD  
 TIVERTON  
 WEST KINGSTON  
 WARREN  
 NARRAGANSETT  
 KINGSTON

### **SOUTH CAROLINA**

BARRY'S SEAFOOD  
 CHERRY GROVE FISHERY  
 KENYON SEAFOOD

CHERRY GROVE  
 MYRTLE BEACH  
 MURRELLS INLET

### **VIRGINIA**

ATLANTIC SHORE SEAFOOD  
 AVERY FISHERIES  
 B & C SEAFOOD (VA)  
 BALLARDS FISH  
 BERNIE'S CONCHS  
 C & T SEAFOOD  
 CAPE CHARLES SEAFOOD  
 CAPTAIN FISHES  
 CHES ATLANTIC SEAF  
 CHESAPEAKE BAY PACKING  
 CHINCOTEAGUE FISH COOP  
 CRAIG G NEFF  
 D & M SEAFOOD

VIRGINIA BEACH  
 HAMPTON  
 NEWPORT NEWS  
 EXMORE  
 CHERITON  
 TANGIER  
 CAPE CHARLES  
 CHINCOTEAGUE  
 PAINTER  
 NEWPORT NEWS  
 CHINCOTEAGUE  
 NORFOLK  
 VIRGINIA BEACH

D L EDGERTON FISH CO	CHINCOTEAGUE
DEMARIA SEAFOOD	NEWPORT NEWS
DYMER CREEK SEAFOOD	WHITESTONE
EASTERN SHORE SEAFOOD	MAPPSVILLE
FISH HOUSE	ONANCOCK
G & B SEAFOOD	RICHMOND
GEORGE'S SEAFOOD	UNKNOWN
GLENN, WILSON, & SONS SFD	SAXIS
HAMPTON ROADS SEAF	HAMPTON
J H WEST SEAFOOD	CAPE CHARLES
J H MILES & CO INC	NORFOLK
L. D. AMORY CO INC	HAMPTON
LILLISTON SEAFOOD	WACHAPREAGUE
LONG POINT FISH CO	GREENBACKVILLE
LYNNHAVEN SEAFOOD	VIRGINIA BEACH
OLD POINT PACKING	NEWPORT NEWS
OMEGA PROTEIN CORP	REEDVILLE
ONANCOCK COOP	ONANCOCK
PEABODY LLC	NEWPORT NEWS
PYA MONARCH INC	VIRGINIA BEACH
R & S SEAFOOD	WACHAPREAGUE
R STUBBS SEAFOOD CO	CHINCOTEAGUE
RUSSELL FISH COMPANY	CHINCOTEAGUE
S & S MARINE SUPPLY INC	HAMPTON
SEA FARMS INC	HUDGINS
SEA RICH SEAFOOD	NEWPORT NEWS
SEAFORD SCALLOP CO	SEAFORD
SEAFORD SEAFOOD	SEAFORD
SNELDER FISH	CHINCOTEAGUE
SOUTH MARKETING	UNKNOWN
SPOT'S FISH CO	VIRGINIA BEACH
VJ ONEAL & COMPANY INC	SEAFORD
WELLS ICE & COLD STORAGE	SEAFORD
WELLS SCALLOP CO	SEAFORD
WHITTAKER PHARMACEUTICAL	CHINCOTEAGUE
YORK RIVER SEAFOOD	HAYES

**APPENDIX K: WEATHER CONDITIONS & BEAUFORT WIND SCALE**

Used on all Haul Tabs/Logs.

**Blowing snow**

**Clear**

**Continuous layers of clouds**

**Drizzle**

**Fog or thick haze**

**Other. Describe in COMMENTS**

**Partly cloud**

**Rain**

**Rain and fog**

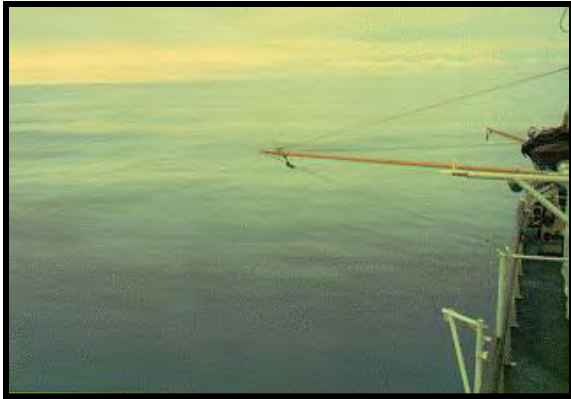
**Showers**

**Snow, or rain and snow mixed**

**Thunderstorms**

**Unknown**

**Wind Speed : >1 knot  
Wave Height : 0**



**Calm Conditions – Smoke from exhaust rises vertically; sea is glassy**

**Wind Speed : 1 – 3 knots  
Wave Height : >1 ft.**



**Wind direction can be seen by smoke drift, flag not extended; ripples w/ appearance of scales**

**Wind Speed : 4 - 6 knots  
Wave Height : ~1 ft.**



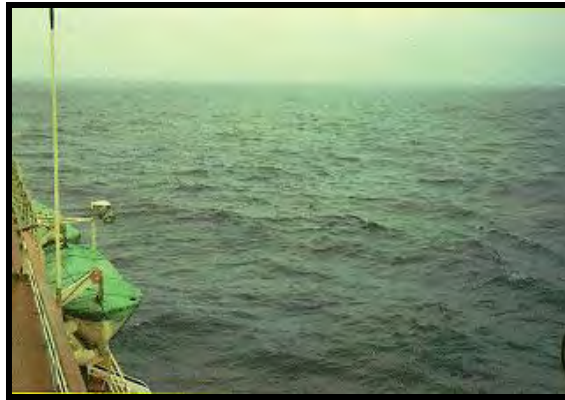
**Light Breeze - Wind felt on face; small wavelets; flag fluttering; crests Of glassy appearance, not breaking**

**Wind Speed : 7- 10 knots  
Wave Height : 2 – 3 ft.**



**Gentle Breeze- Wind extends light flag; large wavelets; crests begin to break; scattered white caps**

**Wind Speed : 11 - 17 knots  
Wave Height : 3 - 5 ft.**



**Moderate Breeze- small waves becoming longer; numerous white caps**

**Wind Speed : 17 - 21  
Wave Height : 6 - 8 ft.**



**Moderate waves; taking longer form; many white caps; some spray; crested wavelets form on inland waters**



**Wind Speed : 22 – 27 knots  
Wave Height : 8 – 13 ft.**



**Whistling heard in antennas; larger waves forming white caps everywhere; more spray**

**Wind Speed : 28 - 33 knots  
Wave Height : 13 - 18**



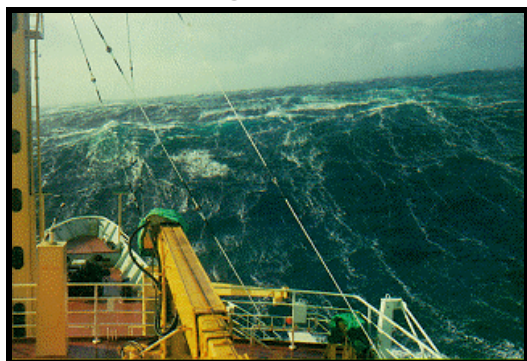
**Moderate Gale – large flags extended; sea heaps up; white foam from breaking waves begins to be blown in streaks in direction of wind**

**Wind Speed : 33 - 40 knots  
Wave Height : 18 - 25 ft.**



**Fresh Gale – edges of crests begin to break into spindrift, foam is blown in well marked streaks**

**Wind Speed : 41 - 47 knots  
Wave Height : 23 - 33 ft.**



**Moderate Gale – high waves; sea begins to roll; dense streaks of foam along wind Direction; spray may reduce visibility**

**Wind Speed : 47 - 55 knots  
Wave Height : 30 - 40 ft.**



**Strong Gale – very high waves with overhanging crests; sea takes white appearance; rolling heavy & shocklike**

**Wind Speed : 56 - 63 Knots  
Wave Height : 37 - 50 ft.**



**Whole Gale – exceptionally high waves, sea covered with white foam patches; visibility drastically reduced**

**APPENDIX L: OFFICIAL FIELD DIARY**

The purpose of the field diary is to provide documentation of activities and duty situations, either encountered or assigned. The field diary is official, and the exclusive property of the National Marine Fisheries Service (NMFS). It must be safeguarded and with the monitor at all times. It cannot be tampered with, destroyed, or discarded by the monitor or any other non-government employee. As property of the government, the field diary is not releasable by the monitor to anyone, including vessel captains/owners. If further questions arise on this topic, the person should be referred to Katherine McArdle (508) 495-2377.

The field diary also serves as a valuable supplement to log data. As such, it should be completed in a timely and chronological manner, in conjunction with the monitor's data. Completion of the field diary should not detract from the amount or quality of overall trip data. However, field diary documentation should never be completely foregone when other monitor duties take priority.

The monitor should use a field diary to document compliance situations, safety issues, gear conflicts and US Coast Guard boardings. **No more than 5 day trips should be recorded in one diary.**

noaa form 66-39  
(12-73)

U. S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC & ATMOSPHERIC  
ADMINISTRATION  
NATIONAL MARINE FISHERIES SERVICE  
OBSERVER PROGRAM

**FIELD DIARY**

OBSERVER NAME \_\_\_\_\_

VESSEL NAME(S)	TRIP ID(S)
(1) _____	_____
(2) _____	_____
(3) _____	_____
(4) _____	_____
(5) _____	_____

DATES	GEAR TYPE
(1) FROM _____ TO _____	_____
(2) FROM _____ TO _____	_____
(3) FROM _____ TO _____	_____
(4) FROM _____ TO _____	_____
(5) FROM _____ TO _____	_____

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NOAA/NMFS/NEFSC  
166 WATER ST  
WOODS HOLE, MA  
02543

★ U.S. GOV. PRINTING OFFICE: 1995-631-378

## INSTRUCTIONS

1. **LABELING THE DIARY:** Each field diary should be labeled on the cover, in permanent marker, to include the following information:
  - a. The monitor's name and corresponding At-sea Monitor/Trip ID number(s)
  - b. The vessel name(s) and USCG documentation number(s) (i.e. vessel Hull number).
  - c. The beginning and ending dates of documentation for each trip
  - d. Corresponding gear type (fishery/ fisheries).
  
2. **HEADER PAGE:** Each documented trip should have a header page. This page should include the above information specific to each trip.
  
3. **RECORDING DATES AND TIMES:** Dates and times should be recorded in the following manner, so that all diary documentation will be consistent and easy to read:
  - a. Record, in the center of the page, the date for each day of diary documentation. If a day's documentation continues beyond one page, record the date at the top of each subsequent page. If a new day's documentation occurs mid-page, skip a line or two between days, and be sure to record the new date.
  - b. Record the local time, using the 24 hour clock (0000 -2359), to the left side of the page. Each entry should have a time preceding it. The time should be separate and distinct from the actual documentation of text.
  
4. **RECORDING ENTRIES:** Each entry in the diary should be documented in the manner detailed below. All documentation should be objective in nature. Personal opinions, judgmental statements, and other comments do not belong in this official field diary. Record only factual information.
  - a. All diary documentation should be recorded in **pen**.
  - b. Each entry should be set off to the right of its corresponding time. Skip a line between each entry.
  - c. Entries should be concise, but provide all of the necessary details, facts, and observations.
  - d. Activities should be recorded using vocabulary consistent with the manual. Do not use monitor-specific jargon or abbreviations. Whenever possible, use action verbs to begin sentences (e.g. weigh, check, sample, speak, set, haul, observe, etc.) instead of personal pronouns (e.g. I, he, she).
  - e. Make sure any information which is "trip data" is also recorded on the appropriate tab(s)/log(s).
  - f. Write legibly. If a mistake is made, do not white-out, tear out, or otherwise obscure the original entry. Use a single line through an incorrect entry, and initial and date any changes made to the original text.

- g. Record entries in a chronological manner.
  - h. Record entries from the top of the page to the bottom. Do not turn the diary around when turning pages.
5. **SITUATIONS REQUIRING DOCUMENTATION:** Diary entries should be made to document the following situations:
- a. **Compliance Situation:** As soon as a compliance situation begins to occur (i.e. refusal to take a monitor, harassment of a monitor, impeding a monitor's duties, etc.), field diary documentation should commence. Be as specific and factual as possible. Present a clear picture of the development of the situation. The following guidelines are especially pertinent to documentation of a compliance situation:
    - Provide factual identification of the problem area, as soon as it is perceived, even if the perception is only slight. If the perception is mistaken, or the action corrected, no harm will occur from the additional documentation.
    - Provide the time, location, and listing of other individuals present at each incident.
    - Provide exact quotations of involved individuals, whenever possible.
    - If the situation is resolved, provide clear documentation as to when and how.
  - b. **Safety Issue:** Any relevant safety issue regarding a particular vessel, deployment, fishery, etc. should be recorded. If a captain ever states a safety issue as the reason for not allowing a monitor's sampling activities to occur, this should be clearly documented, and the conditions cited as unsafe described.
  - c. **Gear Conflict:** A gear conflict is when two or more vessels and/or the vessels' gear interact during fishing activities. All of the events surrounding the incident should be recorded in detail, including what happened to any foreign gear brought onboard the vessel. If the monitor was not present to witness the conflict, the monitor should record the captain's story, as told to him/her, along with any other information available. At the trip's end, a signed statement describing the gear conflict must be submitted by the monitor to NMFS.
  - d. **Coast Guard Boarding:** Occasionally, the vessel to which a monitor is deployed may be boarded by the Coast Guard. The following information is necessary to record:
    - Boarding and debarking times of the Coast Guard.
    - Coast Guard cutter name, and boarding officer(s) name(s).
    - The nature of the boarding.
    - Description of the monitor's involvement in the boarding, if any.
    - Description of any problems that occurred during the boarding, if any.
    - Any relevant safety issues surrounding the boarding incident.

**APPENDEX M: GENERAL CONVERSIONS**

<b>NAUTICAL UNITS</b>		<b>MASS</b>		
1 fathom = 6 feet		1 pound = 453.59 grams		12:00 Midnight = 0000
1 fathom = 1.83 meters		1 pound = 0.45 kilograms		1:00 a.m. = 0100
1 nautical mile = 6076 feet		1 kilogram = 2.20 pounds		2:00 a.m. = 0200
1 nautical mile = 1852 meters		1 standard ton = 2000 pounds		3:00 a.m. = 0300
1 nautical mile = 1.15 statue miles		1 metric ton = 2204.60		4:00 a.m. = 0400
1 knot = 1 nautical mile/hr		pounds		5:00 a.m. = 0500
		1 metric ton = 1000		6:00 a.m. = 0600
		kilograms		7:00 a.m. = 0700
				8:00 a.m. = 0800
<b>LENGTH</b>		<b>METRIC UNITS</b>		
1 inch = 2.54 centimeters		1 meter = 100 centimeters		9:00 a.m. = 0900
1 foot = 30.48 centimeters		1 kilogram = 1000 grams		10:00 a.m. = 1000
1 foot = 0.30 meters		1 liter = 1000 mililiters		11:00 a.m. = 1100
1 yard = 3 feet		mega = 1,000,000		12:00 noon = 1200
1 meter = 3.28 feet		kilo = 1,000		1:00 p.m. = 1300
1 meter = 39.37 inches		deca = 10		2:00 p.m. = 1400
1 statue mile = 5280 feet		deci = 0.1 (tenth)		3:00 p.m. = 1500
1 statue mile = 1.61 kilometers		centi = 0.01 (hundreth)		4:00 p.m. = 1600
1 kilometer = 0.62 statue mile		mili = 0.001		5:00 p.m. = 1700
		(thousandth)		6:00 p.m. = 1800
				7:00 p.m. = 1900
<b>SECONDS to TENTHS of MINUTES (Minutes to Tenths of Hours)</b>		<b>CIRCULAR MEASURE</b>		
0-2 seconds = 0.0 minutes		60 seconds = 1 minute		8:00 p.m. = 2000
3-8 seconds = 0.1 minutes		60 minutes = 1 degree		9:00 p.m. = 2100
9-14 seconds = 0.2 minutes		90 degrees = 1 quadrant		10:00 p.m. = 2200
15-20 seconds = 0.3 minutes				11:00 p.m. = 2300
21-26 seconds = 0.4 minutes				
27-32 seconds = 0.5 minutes				
33-38 seconds = 0.6 minutes				
39-44 seconds = 0.7 minutes				
45-50 seconds = 0.8 minutes				
51-56 seconds = 0.9 minutes				
57-60 seconds = 1.0 minutes				
		<b>VOLUME</b>		
		1 liter = 1.05 quarts		
		1 liter = 0.26 gallons		
		1 gallon = 3.78 liters		





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National Oceanic and Atmospheric Administration  
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Northeast Fisheries Science Center  
166 Water Street  
Woods Hole, MA 02543-1026

## **TRAINING STANDARDS FOR THE AT-SEA MONITORING PROGRAM**

### **Attendance and Conduct Standards for Trainees**

1. Attend all training classes and activities and be on time for all sessions
2. Participate in discussions and exercises
3. Be alert during training sessions
4. Complete all homework and readings as assigned
5. Communication with trainers, staff, classmates, and guest speakers in a respectful and professional manner
6. Will not take part in any illegal activities
7. Will not attend any part of training sessions under the influence of drugs or alcohol
8. Follow all house rules and rules established by the training program
9. Wear a seatbelt whenever a driver or passenger in a government or personal vehicle
10. Submit a signed copy of these STANDARDS the first day of training

### **Performance Standards**

1. Exams that require an individual minimum score of 85% :
  - Incidental Take
  - Fish ID Open Book Practical
  - Fish ID Closed Book Practical
  - Safety Exam
    - Part 1: Safety Written Exam
    - Part 2: Safety Practical (Pass/Fail)
2. Receive an overall grade of at least 85% :
  - Fish ID Exams (30%)
  - Incidental Take Exam (20%)
  - At-sea Monitoring Exam (20%)
  - Safety Exam (10%)
  - Homework/Quizzes (15%)
  - Performance, attitude, and participation (5%)

3. Turn in all homework completed and **on time**
  - 50% deduction on late assignments
  - NO credit given on assignments turned in > 24 hours late, but are still required to be turned in
4. Successfully complete all training sessions and workshops
5. Possess current Red Cross CPR and First Aid (certification must be obtained *prior to training*)
6. An at-sea monitor's first three (3) deployments and the resulting data shall be immediately edited and approved after each trip by NMFS prior to any further deployments by that at-sea monitor. If the data quality is considered acceptable, the at-sea monitor would become certified. If the data quality is not considered acceptable the at-sea monitor would not be certified by NMFS

I, \_\_\_\_\_ (Full Name), have fully read and understand the Training Standards for an at-sea monitor.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date





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## **PHYSICAL STANDARDS & ACKNOWLEDGEMENT OF RISK**

### **Physical Standards**

All at-sea monitor candidates must be certified by a physician to be physically fit to work as an at-sea monitor on a domestic commercial fishing vessel. The physician must understand the at-sea monitor's job and working conditions. Physical considerations include, but are not limited to:

1. Ability to swim 100 meters (tested during safety training)
2. Ability to swim 25 meters in an immersion suit (tested during safety training)
3. Ability to tread water for three (3) minutes (tested during safety training)
4. Ability to don an immersion suit in 60 seconds or less (tested during safety training)
5. Ability to perform various water survival skills (i.e., boarding life raft, cold water skills, etc. (tested during safety training)
6. Ability to climb a ladder
7. Ability to lift and carry 50 pounds correctly
8. Susceptibility to chronic motion sickness
9. Ability to live in confined quarters

A licensed physician must certify not more than 12 months prior to the end of the At-sea Monitor Training Program that the at-sea monitor candidate is physically capable of serving as an at-sea monitor. Documentation must be provided to the program *prior* to the at-sea monitor candidate's completion of training. Any physical condition that could limit an at-sea monitor's duties while at sea or ashore may be grounds for a failed medical certification. Though not limited to, some examples are: asthma, heart conditions, current pregnancy, diabetes, joint conditions, previous injuries that may affect work performance, inner ear injuries, head injuries, etc.

### **Disclosure of Existing Medical Conditions**

If there are any medical conditions that may affect your ability to perform your duties as an at-sea monitor, please inform the training staff immediately and list them in the provided space below. Though not limited to: asthma, heart conditions, current pregnancy, diabetes, joint conditions, previous injuries that may affect work performance (e.g. inner ear injuries, head injuries, etc).

List any medical conditions here OR write in 'NONE'.

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Emergency Contact Information:

**Primary Contact:** (Full Name) \_\_\_\_\_

Relationship (parent, spouse, etc.): \_\_\_\_\_

Contact Telephone Number: \_\_\_\_\_

**Secondary Contact:** (Full Name) \_\_\_\_\_

Relationship (parent, spouse, etc.): \_\_\_\_\_

Contact Telephone Number: \_\_\_\_\_

**At-sea Monitor Safety Training Acknowledgement of Risk**

I, \_\_\_\_\_ (Print Name) recognize the activity in which I desire to participate involves risk of injury, which may include but are not limited to: striking objects when entering the water, cardiac arrest, ventricular fibrillation, inadvertent gasping and inhalation of water, sudden drowning syndrome or drowning from other causes, hypothermia, falls from walking on slippery surfaces, and other injuries which may occur due to the use of safety and survival equipment such as distress flares, liferafts, personal floatation devices, dewatering pumps, fire extinguishers, etc.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



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### **STANDARDS of CONDUCT**

At-sea monitors work in a self-supervised capacity and must maintain high standards of conduct. At-sea monitors are required to follow the outlined Standards of Conduct at all times.

1. At-sea monitors must maintain a professional, objective demeanor at all times.
2. Be able to work independently, while following technical instructions.
3. Be able to get along well with others.
4. Be able to collect and record data in an unbiased manner.
5. Has never been decertified as an at-sea monitor, or an observer due to problems with data quality or standards of conduct, in any NMFS observer program. An at-sea monitor's references of previous employment as NMFS at-sea monitors or observers shall be verified by the contractor as qualifying for this requirement.
6. Any at-sea monitor, or at-sea monitor trainee, involved in falsification of data shall be removed from the At-Sea Monitoring Program.

Falsification of Data is defined as: *The act of deliberate or knowing fabrication data collected during observed fishing trips, this includes intentional recording of inaccurate data, intentional omission or deletion of data, intentional plagiarism, or, in general, the selective alteration of data.*

7. May not have a direct financial interest, other than the provision of observer services, in the fishery, including, but not limited to:
  - Any ownership, mortgage holder, or other secured interest in a vessel or processor involved in the catching, taking, harvesting or processing of fish.
  - Any business selling supplies or services to any vessel or processor in the fishery.
  - Any business purchasing raw or processed products from any vessel or processor in the fishery.
8. Demonstrate respect and the ability to follow confidentiality policies.
9. Must not solicit or accept, directly or indirectly, any gratuity, gift, favor, entertainment, loan, or anything of monetary value from anyone who conducts fishing or fishing related activities that are regulated by NMFS, or who has interests that may be substantially affected by the performance or nonperformance of the official duties of an at-sea monitor

- 10. Understand and sign the Training Standards for the At-sea Monitoring Program.
- 11. Understand and sign the Acknowledgement of Risk.
- 12. Understand and sign the Standards of Conduct (this form).
- 13. Understand and sign the Statement of Non- Conflict of Interest.
- 14. Understand and sign the Statement of No Fisheries Related Convictions.

I, \_\_\_\_\_ (Full Name), have fully read and understand the Standards of Conduct for an at-sea monitor.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



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### **STATEMENT OF NON-CONFLICT OF INTEREST**

I, the undersigned, of this document, declare under penalty of perjury, under the laws of the United States of America, that all statements contained in this application and any accompanying documents is true and correct, with full knowledge that all statements made in this application are subject to investigation and that any false or dishonest answer to any question may be grounds for denial as a NMFS at-sea monitor candidate and/or decertification of an at-sea monitor. The signer of this document is free from a conflict of interest as described in the following paragraph:

An at-sea monitor:

- (i) Must not have a direct or indirect interest (financial or otherwise) in the New England multispecies groundfish fishery, managed under Federal regulations, including, but not limited to:
  - a. any ownership, mortgage holder, or other secured interest in a vessel or processor involved in the catching, taking, harvesting or processing of groundfish,
  - b. any business selling supplies or services to any vessel or processor in the groundfish fishery,
  - c. any business purchasing raw or processed products from any vessel or processor in the groundfish fishery,
  - d. any groundfish sector or sector manager,
  - e. advocacy groups, or
  - f. research institutions.
- (ii) Must not have any immediate family members (i.e. spouse, parent, child, or siblings) with a direct or indirect interest in the New England multispecies groundfish fishery, as defined above (a-d);
- (iii) Must perform ones duties as an at-sea monitor without regard to any preference by representatives of vessels;
- (iv) Must not solicit or accept, directly or indirectly, any gratuity, gift, favor, entertainment, loan, or anything of monetary value from anyone who conducts fishing or fishing related activities regulated by NMFS, or who has interests that may be substantially affected by the performance or nonperformance of the official duties of an at-sea monitor; and

- (v) Must not, in any way, misuse his/her position, including, but not limited to improper use or disclosure of information, aiding in a known violation, or falsification of data or failure to report complete and accurate data.

I \_\_\_\_\_, hereby claim, to the

Enter Full Name

best of my knowledge, to be free from any conflict of interest, with regards to becoming a NMFS at-sea monitor.

\_\_\_\_\_

Signature

\_\_\_\_\_

Date

(Version: February, 2010)



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**STATEMENT OF NO FISHERIES RELATED CONVICTIONS**

I hereby attest that I, \_\_\_\_\_ have not

(Enter Full Name)

pleaded guilty or has been found guilty of any fisheries related offense against NOAA law, forfeited bond or collateral, or currently have any criminal charges pending against him or he in association with any Fisheries Program.

Print Name	Signature	Date



Jan. 01, 2011

Memorandum For: At Sea Monitors  
Subject: Species Identification Verification Program

It is extremely important for data quality to ensure monitors are correctly identifying fish. The Northeast Fisheries Observer Program (NEFOP) requires all monitors to comply with this verification process so that we can ensure data accuracy and maintain the integrity of the program.

To complete your obligations, please follow these steps:

1. Check the species list table below.
2. If the species listed has not yet been sent in for verification, send it at the first available time.
3. Store the specimen in a Ziploc bag accompanied with a waterproof tag. The tag should have your ASM ID, trip number and extension, as well as the haul number and species name.
4. Record the species on your Haul Tab/Log as fish disposition code 007 ("No market, but retained by observer for science purposes").
5. Freeze the samples solid prior to shipping. Ship samples as a priority in a cooler, with coldpack, at the same time as your trip data (don't send on Friday or over the weekend).
6. Please send in the actual fish or photographs listed below. **All Fish nk's should be photographed and sent in if possible.**

The first time you encounter a species listed in the table below, you should either be saving a specimen to send in or taking pictures if appropriate. We may also notify you that you have been selected to contribute fish on certain trips.

**Monitors are required to send in the 20 species listed below every 3 months. This is a program requirement. Failure to satisfy this requirement will result in additional testing and possible probationary status.**

Confirmation of species sent in will be emailed to you bi-weekly, indicating both correct and incorrect identifications. Notifications of incorrectly identified species will be sent out immediately and monitors should resend fish the next time they encounter them. We appreciate your cooperation with the Species Identification Verification Program. There are many species you will come across, some may be extremely rare and we will make full use of the samples to train monitors during certification classes and refresher debriefings. We understand how much work you have to do, however the program considers this an integral part of your job. If you have any questions about the program, please don't hesitate to call Kevin Meyer at 508-495-2005, or email [kmeyer@mercury.wh.who.edu](mailto:kmeyer@mercury.wh.who.edu) , or Pete Canavin at 508-495-2388, or email [pcanavin@mercury.wh.who.edu](mailto:pcanavin@mercury.wh.who.edu) .



Please send in actual specimens or photographs of the following species.

	Photo 1	Photo 2	Photo 3
<b>Misc.</b>			
Redfish	whole animal (side shot)	inside of mouth	
<b>Gadids</b>			
Cod	whole animal (side shot)		
Haddock	whole animal (side shot)		
Pollock	whole animal (side shot)		
Red Hake	whole animal (side shot)	pelvic and dorsal filaments	rakers above the flexion point
White Hake	whole animal (side shot)	pelvic and dorsal filaments	rakers above the flexion point
Silver Hake	whole animal (side shot)	rakers on first gill arch	
<b>Skates</b>			
Little	whole animal (Top of disk)	closeup of rough/smooth patch or claspers	
Winter	whole animal (Top of disk)	closeup of rough/smooth patch or claspers	
<b>Flounders</b>			
Am. Plaice	whole animal (eyed side)		
Sand Dab	whole animal (eyed side)		
Summer	whole animal (eyed side)		
Winter	whole animal (eyed side)	close-up of lateral line	
Witch	whole animal (eyed side)	whole animal (blind side)	
Yellowtail	whole animal (eyed side)	close-up of lateral line	
<b>Herrings</b>			
Alewife	whole animal (side shot)	gut lining	
Blueback	whole animal (side shot)	gut lining	
Am. Shad	whole animal (side shot)	rakers on first gill arch	
Hickory Shad	whole animal (side shot)	rakers on first gill arch	
Atl. Herring	whole animal (side shot)		

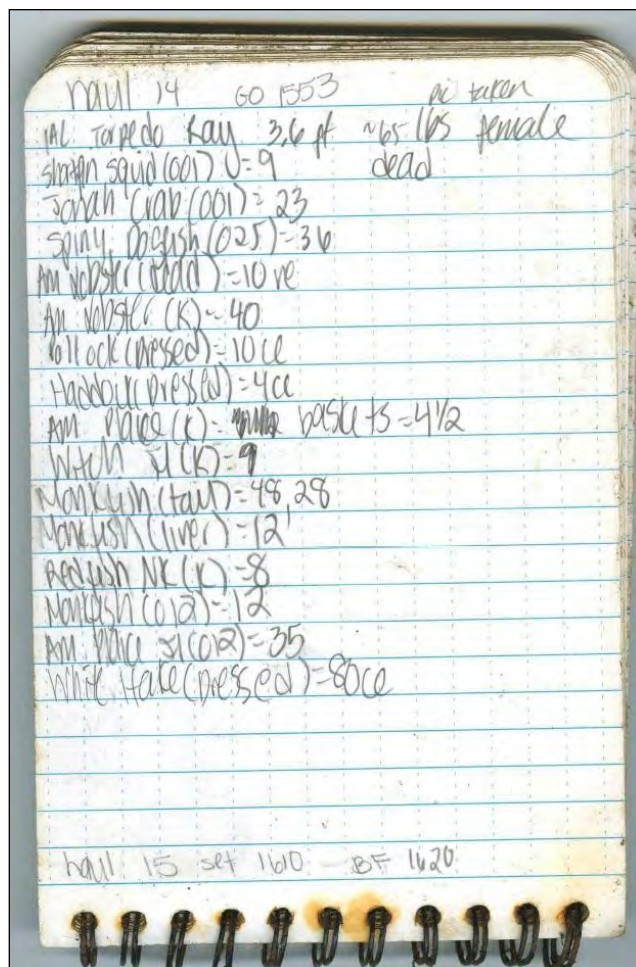
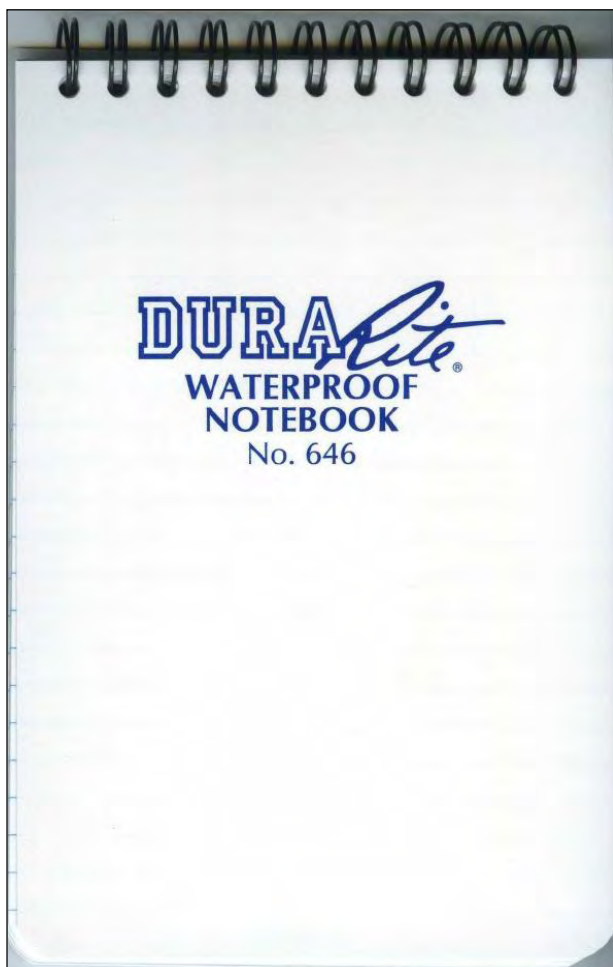
**\*\*\*Bag, tag, and send in all Fish NK's along with photographs of the specimen.\*\*\***  
**\*\*\*Make sure to include something in each picture for scale.\*\*\***

## APPENDIX P: MANDATORY GEAR REQUIREMENTS & MAINTENANCE

### I. WATERPROOF NOTEBOOKS:

To help in sampling tasks, waterproof notebooks are provided for use on deck. These notebooks may be used as an individual monitor feels appropriate. Data contained within these notebooks are confidential and should not be shared with any person outside of the Fisheries Sampling Branch. To ensure confidentiality all waterproof notebooks must be sent into the Fisheries Sampling Branch with trip data when it is full. On the front cover record (in permanent marker) the following:

1. ASM/ID
2. Trip ID numbers of the trips which the notebook was used
3. Corresponding Trip Land Dates



## II. FIELD DIARY

Field diaries are the exclusive property of the Fisheries Sampling Branch. All information contained within the field diary is confidential and should not be shared with anyone outside of the Fisheries Sampling Branch. Anytime monitor completes information within the field diary, it must be sent to the Fisheries Sampling Branch immediately. See [Appendix L: Field Diary](#) for complete instructions on how to properly fill out a field diary.

Form No. 88-38  
02-73

U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC & ATMOSPHERIC  
ADMINISTRATION  
NATIONAL MARINE FISHERIES SERVICE  
OBSERVER PROGRAM

FIELD DIARY

OBSERVER NAME \_\_\_\_\_

VESSEL NAME(S)		TRIP ID(S)
(1)		
(2)		
(3)		
(4)		
(5)		

DATES		GEAR TYPE
(1) FROM	TO	
(2) FROM	TO	
(3) FROM	TO	
(4) FROM	TO	
(5) FROM	TO	

FINDER OF THIS BOOK IS REQUESTED TO MAIL IT TO  
NOAA/NMFS/NAEFSC  
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02543

U.S. GOV. PRINTING OFFICE: 1995-631-378

## III. SCALES

The 2 spring scales issued to monitors are the only scales a monitor may use while deployed on commercial fishing vessels. These scales have been field tested for years and have proven to be the most effective and durable scale for use at sea in the Northeast. However, there are some limitations to these scales and they must be properly maintained to ensure accurate weight records. Observe the following guidelines to maintain performance:

### DAILY

1. Tare or zero your scale before each haul using the adjustment knob at the top of the scale
2. Spray down entire scale with WD-40 or other such lubricant

### PER TRIP

1. After each trip, wash scales with fresh water
2. Spray each scale inside and out with WD-40.
3. Stretch the spring out by hooking the scale to a stationary object and pulling several times while spraying directly onto the spring
4. Store your scales in a Ziploc bag coated with WD-40 until next use

### SIX (6) MONTHS

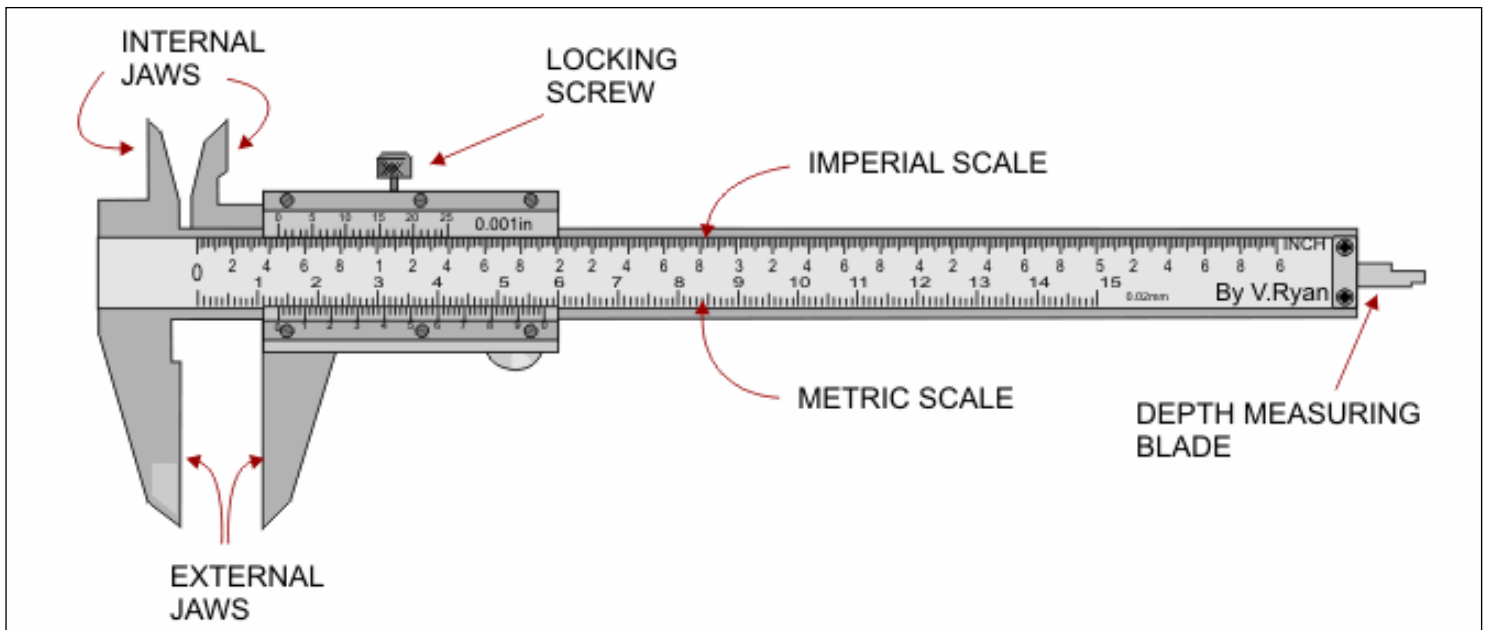
1. Contact your provider; Carl Lemire at (508) 495-2131; Jenna Christiansen at (508) 495-2189 for replacement scales
2. Send in your old or broken scales with trip data



#### IV. CALIPERS

Vernier calipers are issued to monitors for the purpose of obtaining specific gear measurements (i.e. codend measurements). These gear measurements are used for scientific purposes and are not collected with regulatory intentions. The issued calipers are the only tool monitors may use in order to obtain specified gear information. See [Appendix H: Vernier Caliper Instructions](#) for detailed information on how to properly use the NMFS issued calipers. Observe the following guidelines to maintain performance:

1. Wash with fresh water after each use
2. Spray with WD-40. Even if the calipers rust up, spraying with WD-40 should restore function
3. Store in a Ziploc bag or in the provided case, well lubricated
4. Contact your provider; Carl Lemire at (508) 495-2131; Jenna Christiansen at (508) 495-2189 for replacement calipers
5. Send in damaged calipers with trip data



## V. FOUL WEATHER GEAR

Foul weather gear (jacket and bib style pants) is provided to all monitors for use on deck. It is the monitor's responsibility to keep track of and care for their foul weather gear. It is suggested that monitors write their name and/or ASM ID on their foul weather gear. Observe the following guidelines for foul weather gear maintenance:

1. Hose off foul weather gear after each use
2. Use a sponge or scrub pad with a mild soap to remove excess dirt and debris
3. Foul Weather gear is not designed to be machine washed. However, if you choose to machine wash your foul weather gear, wash jacket and pants on the gentle cycle with soap and a capful of bleach.
4. Hang to dry. DO NOT MACHINE DRY.
5. Contact Carl Lemire at (508) 495-2131; Jenna Christiansen at (508) 495-2189 for replacement foul weather gear
6. Send in damaged jacket and/or pants with trip data



**APPENDIX Q: COMMON SPECIES NAME; SCIENTIFIC NAME; ALTERNATE NAMES**

## REFERENCE GUIDE ONLY

COMMON SPECIES NAMES	SCIENTIFIC NAME	OTHER NAMES
<b>ANCHOVIES</b>		
Striped Anchovy	<i>Anchova hepsetus</i>	
Bay Anchovy	<i>Anchoa mitchilli</i>	
<b>ANGLERFISH</b>		
Goosefish	<i>Lophius americanus</i>	<u>Monkfish</u> , Angler, Allmouth
<b>BARRACUDAS</b>		
Northern Sennet	<i>Sphyraena borealis</i>	Northern Barracuda
<b>BASSES</b>		
Black Sea Bass	<i>Centropristis striata</i>	Blackfish, Green Seabass
Striped Bass	<i>Morone saxatilis</i>	Striper, Rockfish, Linesides
White Perch	<i>Morone Americana</i>	Black Perch
Wreckfish	<i>Polyprion americanus</i>	
Yellowfin Bass	<i>Anthias nicholsi</i>	
<b>BILLFISHES</b>		
Blue Marlin	<i>Makaira nigricans</i>	
White Marlin	<i>Tetrapturus albidus</i>	
<b>BLUEFISH</b>	<i>Pomatomus saltarix</i>	
<b>BOARFISH</b>		
Deepbody Boarfish	<i>Antigonia capros</i>	
Shortspine Boarfish	<i>Antigonia combatia</i>	
<b>BUTTERFISHES</b>		

COMMON SPECIES NAMES	SCIENTIFIC NAME	OTHER NAMES
Butterfish	<i>Peprilus triacanthus</i>	
Harvestfish	<i>Peprilus paru</i>	
Cobia	<i>Rachycentron canadum</i>	Black Salmon, Crab-eater
<b>CODLIKE FISHES</b> (Order Gadiformes)		
Atlantic Cod	<i>Gadus morhua</i>	Cod
Cusk	<i>Brosme brosme</i>	
Haddock	<i>Melanogrammus aeglefinus</i>	
Pollock	<i>Pollachius virens</i>	
Longnose Grenadier	<i>Caelorinchus caelorhincus carminatus</i>	
Common Grenadier	<i>Nezumia bairdii</i>	Marlin-Spike
<b>HAKES</b>		
Hakeling	<i>Physiculus fulvus</i>	
Offshore Hake	<i>Merluccius albidus</i>	Black Whiting
Silver Hake	<i>Merluccius bilinearis</i>	Whiting, Frostfish
Fourbeard Rockling	<i>Enchelyopus cimbrius</i>	
Long fin Hake	<i>Phycis chesteri</i>	
Red Hake	<i>Urophycis chuss</i>	Mud Hake, Ling
Spotted Hake	<i>Urophycis regia</i>	Codlet, Ling
White Hake	<i>Urophycis tenuis</i>	Hake, Sow, Ling
<b>CROAKERS</b>		
Atlantic Croaker	<i>Micropogonias undulates</i>	Bull Croaker, Pinhead
Black Drum	<i>Pogonias cromis</i>	Sheepshead, Bar Drum, Channel
Blue Croaker	<i>Bairdiella batabana</i>	King Whiting, Whiting, Ground Mullet

COMMON SPECIES NAMES	SCIENTIFIC NAME	OTHER NAMES
Red Drum	<i>Sciaebops ocellatus</i>	Dog Bass
Spot	<i>Leiostomus xanthurus</i>	Golden Spot, Yellowfin
Weakfish	<i>Cynoscion regalis</i>	Yellowtrout, Squeteaque Sea Trout
<b>CUSK-EELS</b>		
Fawn Cusk eel	<i>Lepophidium profundorum</i>	
Striped Cusk eel	<i>Ophidion marginatum</i>	
<b>DOGFISHES</b>		
Chain Dogfish	<i>Scyliorhinus retifer</i>	Catshark
Smooth Dogfish	<i>Mustelus canis canis</i>	Smooth Dog, Smooth Hound
Spiny Dogfish	<i>Squalus acanthias</i>	Dogfish, Grayfish, Piked Dogfish, Spurdog, Greeneyes, Dogs
<b>DORIES</b>		
Buckler Dory	<i>Zenopsis conchifera</i>	American John Dory
Thorny Tinselfish	<i>Grammicolepsis brachiusculus</i>	
Spotted Tinselfish	<i>Xenolepidichthys dalgleishi</i>	
<b>EELPOUTS</b>		
Ocean Pout	<i>Zoarces americanus</i>	
<b>EELS</b>		
American Eel	<i>Anguilla rostrata</i>	Common Eel, Silver eel, Freshwater eel
Conger Eel	<i>Conger oceanicus</i>	American Conger, Sea Eel
<b>ELECTRIC RAYS</b>		
Lesser Electric Ray	<i>Narcine brasiliensis</i>	Electric Ray
Torpedo Ray	<i>Torpedo nobiliana</i>	
<b>FLATFISHES/ FLOUNDERS</b>		



COMMON SPECIES NAMES	SCIENTIFIC NAME	OTHER NAMES
Atlantic Halibut	<i>Hippoglossus hippoglossus</i>	
American Plaice	<i>Hippoglossoides platessoides</i>	Dab, Sea Dab, Plaice
Fourspot Flounder	<i>Paralichthys oblongus</i>	Stinkfish
Gulf Stream Flounder	<i>Citharichthys arctifrons</i>	
Summer Flounder	<i>Paralichthys dentatus</i>	Fluke, Doormat
Witch Flounder	<i>Glyptocephalus cynoglossus</i>	Gray Sole, Sole
Sand Dab Flounder	<i>Scophthalmus aquosus</i>	Windowpane, Spotted Flounder, Brill
Winter Flounder	<i>Pseudopleuronectes americanus</i>	Blackback, Lemon Sole, Flounder
Yellowtail Flounder	<i>Limanda ferruginea</i>	Rusty Dab
<b>HAGFISH</b>		
Atlantic Hagfish	<i>Myxine glutinosa</i>	Slime eel
<b>HERRINGS</b>		
Alewife	<i>Alosa pseudoharengus</i>	River Herring, Grayback, Freshwater Herring
American Shad	<i>Alosa sapidissima</i>	
Atlantic Herring	<i>Clupea harengus</i>	Herring, Sardine, Sea Herring
Atlantic Menhaden	<i>Brevoortia tyrannus</i>	Pogy, Bunker, Fat Back
Blueback Herring	<i>Alosa aestivalis</i>	Blackbelly, Glut Herring, Summer Herring, River Herring
Hickory Shad	<i>Alosa mediocris</i>	
Hogfish	<i>Lachnolaimus maximus</i>	Pigfish
<b>JACKS</b>		
Atlantic Bumper	<i>Chloroscombrus chrysurus</i>	
Atlantic Moonfish	<i>Selene setapinnis</i>	
Blue Runner	<i>Caranx crysos</i>	Yellow Jack, Hardtail

COMMON SPECIES NAMES	SCIENTIFIC NAME	OTHER NAMES
Crevalle Jack	<i>Caranx hippos</i>	Big Jack
Florida Pompano	<i>Trachinotus carolinus</i>	
Lookdown	<i>Selene vomer</i>	
Permit	<i>Trachinotus flacatus</i>	
<b>LAMPREY</b>		
Sea Lamprey	<i>Petromyzoan marinus</i>	
Lumpfish	<i>Cyclopterus lumpus</i>	
<b>MACKERELS</b>		
Atlantic Bluefin Tuna	<i>Thunnus Thynnus</i>	
Atlantic Bonito	<i>Sarda sarda</i>	
Atlantic Chub Mackerel	<i>Scomber colias</i>	Hardhead, Bullseye
Atlantic Mackerel	<i>Scomber scombrus</i>	Boston Mackerel
Bullet Tuna	<i>Auxis rochei</i>	Frigate Mackerel
King Mackerel	<i>Scomberomorus cavalla</i>	Cavalla, Kingfish
Little Tunny	<i>Euthynnus alletteratu</i>	False Albacore
Skipjack Tuna	<i>Katsuwonus pelamis</i>	
Spanish Mackerel,	<i>Scomberomorus maculatus</i>	Sierra
<b>PORGIES</b>		
Scup	<i>Stenotomus chrysops</i>	Fair Maid
Puffer, Northern	<i>Sphoeroides maculatus</i>	
<b>SCORPIONFISHES</b>		
Acadian Redfish	<i>Sebastes fasciatus</i>	Redfish, Ocean Perch
Blackbelly Rosefish	<i>Helicolenus dactylopterus</i>	

COMMON SPECIES NAMES	SCIENTIFIC NAME	OTHER NAMES
<b>SEA ROBINS</b>		
Armored Sea Robin	<i>Peristedion miniatum</i>	
Northern Sea Robin	<i>Prionotus carolinus</i>	Common Sea Robin, Sea Robin
Striped Sea Robin	<i>Prionotus evolans</i>	Hacklehead
<b>SCULPINS</b>		
Grubby	<i>Myoxocephalus aeneus</i>	Little sculpin
Longhorn Sculpin	<i>Myoxocephalus octodecemspinosus</i>	Horn Dog
Moustache Sculpin	<i>Triglops murrayi</i>	
Shorthorn Sculpin	<i>Myoxocephalus scorpius</i>	
<b>SEA RAVEN</b>	<i>Hemitripterus Americanus</i>	
<b>SHARKS</b>		
Atlantic Sharpnose Shark	<i>Rhizopriondon terraenovae</i>	
Basking Shark	<i>Cetothinus maximus</i>	
Blue Shark	<i>Prionace glauca</i>	Blue Dog
Dusky Shark	<i>Carcharhinus obscurus</i>	
Porbeagle	<i>Lamna nasus</i>	Mackerel Shark
Sandbar Shark	<i>Carcharhinus plumbeus</i>	
Shortfin Mako	<i>Isurus oxyrinchus</i>	
Tiger Shark	<i>Galeocerdo cuvier</i>	Leopard Shark, Pegtooth
<b>SKATES</b>		
Barndoor Skate	<i>Dipturus laevis</i>	
Clearnose Skate	<i>Raja eglanteria</i>	
Little Skate	<i>Leucoraja erinacea</i>	Common Skate
Rosette Skate	<i>Leucoraja garmani</i>	Leopard Skate

COMMON SPECIES NAMES	SCIENTIFIC NAME	OTHER NAMES
Smooth Skate	<i>Malacoraja senta</i>	
Thorny Skate	<i>Amblyraja radiata</i>	
Winter Skate	<i>Leocoraja ocellata</i>	Big Skate
<b>SQUID</b>		
Illex	<i>Illex illecebrosus</i>	Short-fin Squid
Loligo	<i>Loligo pealei</i>	Long-fin squid
<b>STURGEONS</b>		
Atlantic Sturgeon	<i>Acipenser oxyrinchus</i>	
Shortnose Sturgeon	<i>Acipenser brevirostrum</i>	
<b>WOLFFISHES</b>		
Atlantic Wolffish	<i>Anarhichas denticulatus</i>	Catfish
<b>WRASSES</b>		
Cunner	<i>Tautoglabrus adspersus</i>	Bergall, Blue Perch, Chaugi
Tautog	<i>Tautoga onitis</i>	Blackfish, Chub
<b>WRYMOUTHS</b>		
Wrymouth	<i>Cryptacanthodes maculatus</i>	

# A

**ABC**

Allowable Biological Catch. A term that refers to the range of allowable catch for a species or species group. It is set each year by a scientific group. The ABC estimates are used to set the annual total allowable catch (TAC).

**Abiotic**

A nonliving (physical or chemical) component of the environment.

**Aborted trip**

When gear is not used (set, hauled, or washed) regardless of the time on the water

**ACE**

Annual Catch Entitlement; Allocation of quota to sector and common pool groundfish vessels

**ACL**

Annual Catch Limit or yearly quota for a stock

**Actual Weight**

A weight measurement taken using the NMFS issued scale. Using any other scale (i.e., boat scale) will constitute an estimated weight.

**Acoustic survey**

A systematic method of gathering information on fish availability and abundance in a water body with the help of sophisticated instruments, such as echo sounders and sonar that employ ultrasonic sound for the detection of fish.

**Adipose fin**

A small fin on the fish's back near the tail, often removed on hatchery salmon in order to differentiate them from wild salmon.

**Age-Length Key**

One approach used to assign ages to fish, given length measurements. Used to convert catch-at-size data into catch-at-age data. The keys specify the probability that fish of a given size belong to one of several age groups.

**Air bladder**

AKA —Swim bladder”: an air-filled structure which can be used by fish to regulate buoyancy, generate sound, aid in acoustic reception, and, in some species, augment respiration.

**Allocation**

1. Distribution of the opportunity to fish among user groups or individuals. The share a user group gets is sometimes based on historic harvest amounts; 2. A quantity of catch, effort, or biomass attributed to a person, a vessel, and a fishing company. The allocation can be absolute (e.g. a number of tons) or relative (e.g. a percentage of the annual allowable catch).

**Anadromous**

Fishes that migrate as juveniles from freshwater to saltwater and then return as adults to spawn in freshwater; most Pacific salmon and striped bass are anadromous.

**Anal fin**

A single fin usually positioned behind the anus of a fish.

**Angler**

A person catching fish or shellfish with no intent to sell, including people releasing the catch.

**ASMFS**

Atlantic States Marine Fisheries Commission. A deliberative body of the Atlantic coastal states, coordinating the conservation and management of near shore fishery resources, including marine, shell and anadromous species.

**Area Closure**

The closure to fishing by particular gear(s) of an entire fishing ground, or a part of it, for the protection of a section of the population (e.g. spawners, juveniles), the whole population, or several populations. The closure is usually seasonal but it could be permanent.

**Assessment**

A judgment made by a scientist or scientific body on the state of a resource, such as a fish stock (e.g. size of the stock, potential yield, on whether it is over- or underexploited), usually for the purpose of passing advice to a management authority.

**Associated Species**

Those species that (a) prey upon the target species, (b) are preyed on by it, (c) compete with it for food, living space, etc., or (d) co-occur in the same fishing area and are exploited (or accidentally taken) in the same fishery or fisheries. These interactions can occur at any stage of the life cycle of one or other species and the range of species concerned can therefore be very large.

## B

**Bag Limit**

The number and/or size of a species that a person can legally take in a day or trip. This may or may not be the same as a possession limit.

**Barbel**

A fleshy, flap or whisker like appendage (very small and hard to see on some minnows) found near the mouth. Used as a sensory organ. Example on the shovelnose sturgeon.

**Benthic**

Refers to organisms that live or rest on the ocean floor.

**Benthic Invertebrate**

An animal, such as a mollusk, with no spinal column that lives on the ocean floor.

**Benthos**

Organisms that live on or in the sea bottom.

**Berried**

Female lobsters or crabs with eggs attached to the appendages of the underside of the abdomen. By law, they must be returned to sea.

**Bias**

A systematic difference between the expected value of a statistical estimate, and the quantity it estimates.

**Billfish**

A group of tuna-like fish species comprising marlins, sailfish, and spearfish, and which are characterized by a snout which extends into a bill or spear.

**Bioaccumulation**

The buildup over time, within animal tissues, of substance (e.g. heavy metals) that cannot be excreted by an organism.

**Biogeography**

The distribution of one or more species that is defined by abiotic factors (temperature, salinity, surface currents, etc.).

**Biological Assessment**

An assessment conducted as part of the Endangered Species Act (ESA).

**Biological Diversity (Biodiversity)**

1. The variety and variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems. Diversity indices are measures of richness (the number of species in a system) and may reflect ecosystem stresses (such as those due to high fishing intensity); 2. Includes genetic diversity (within species), species diversity (within ecosystems), and ecosystem diversity.

**Biomass**

1. Or standing stock. The total weight of a group (or stock) of living organisms (e.g. fish, plankton) or of some defined fraction of it (e.g. spawners) in an area, at a particular time; 2. Measure of the quantity, usually by weight in pounds or metric tons (2,205 pounds or 1 metric ton), of a stock at a given time.

**Biota**

The plant and animal life characteristic of a specific region or biosphere, or given time period.

**Biotic**

Pertaining to the living components of their environment.

**Bimodal Distribution**

Indicating two length groups within which individuals are most abundant, possibly with other less abundant length groups around them.<sup>1</sup>

**Bivalve**

A mollusk with two shells hinged together, such as the oyster, clam, or mussel.

**Bleeding**

Cutting an artery behind the gills of a fish to improve quality and shelf life.

**BMP**

Best Management Practice

**BMSY**

The biomass (weight) of a stock or species of fish necessary to support harvest of the maximum sustainable yield (MSY).

**Body Depth**

The greatest vertical distance between the midline of the back and the midline of the belly, the “height” of the fish.

**Body Width**

The greatest distance from one side of the body to the other.

**Bony Fishes**

Fishes with a calcified hard skeleton and belonging to Class Osteichthyes; includes most fish species except sharks, rays, skates, hagfish, and lampreys.

**Bridle**

The bridle connects the wings of the net to the ground cable, which eventually leads to the doors.

**Butterfly Fillets**

Fillets from each side of a fish left joined together (usually at the gut region) after removal from the backbone.

**Bycatch**

Fish other than the primary target species that are caught incidental to the harvest of the primary species. Bycatch may be retained or discarded. Discards may occur for regulatory or economic reasons.

**Bycatch Reduction (Excluder) Device**

A device inserted in a fishing gear (usually trawl nets, close to the codend) to allow escapement, alive, of unwanted (nontarget and prohibited) species (e.g. jellyfish), smaller fish (juveniles), and threatened or endangered species (e.g. sea turtles, marine mammals).

# C

**Capability**

The ability to do something with the capacity you have; the capacity to be used, treated, or developed for specific purpose.

**Capacity**

1. The ability to sustain, harvest, hold, or process; 2. The maximum amount that can be produced per unit of time with existing plant and equipment, provided the availability of variable factors of production is not restricted.

**Carapace**

The shield covering the upper surface of part of the body of various crustacean species (e.g. the broad shield forming the upper body cover of crabs and of the front portion of prawns and rock lobsters).

**Carrying Capacity**

1. The maximum population of a species that an area or specific ecosystem can support indefinitely without deterioration of the character and quality of the resource; 2. The level of use, at a given level of management, at which a natural or man-made resource can sustain itself over a long period of time. For example, the maximum level of recreational use, in terms of numbers of people and types of activity, which can be accommodated before the ecological value of the area declines.

**CAS**

Closed Area Scallop

**Catadromous**

Fishes that spend most of their life in freshwater and then migrate into saltwater to spawn.



**Catch**

1. To undertake any activity that results in taking fish out of its environment dead or alive. To bring fish on board a vessel dead or alive; 2. The total number (or weight) of fish caught by fishing operations. Catch should include all fish killed by the act of fishing, not just those landed; 3. The component of fish encountering fishing gear, which is retained by the gear.

Comment: The catch is usually expressed in terms of wet weight. It refers sometimes to the total amount caught, and sometimes only to the amount landed. The fish which are not landed, but returned to the sea, are called discards.

**Catchability**

In general, the extent to which a stock is susceptible to fishing.

Comment: Catchability often increases with developments in fishing technology, and so needs to be monitored. It depends on the habits of the fish as well as on the type and deployment of fishing gear. It may also depend on the abundance of the fish (e.g. less abundant fish may be more catchable due to less saturation of gear or to concentration in schools). Specific climatic conditions may result in increased or decreased availability of the fish. This would lead to increased (or decreased) catchability and, thus, increased (or decreased) fishing mortality rate with the same fishing effort.

**Catcher Vessel**

Vessel that harvests fish but does not have onboard processing capacity.

**Catcher-Processor Vessel**

Vessel that can both catch and process the catch onboard. Also referred to as factory trawlers.

**Caudal Fin**

Posterior most fin on a fish (i.e. tail).

**Cetaceans**

Marine mammals of the Order Cetacea. Includes whales, dolphins and porpoises.

**Chemosynthesis**

The process whereby chemical energy is used to make organic compounds from inorganic compounds. One example is the oxidation of ammonia to nitrite by nitrifying bacteria. Compare photosynthesis.

**Closed Season**

Seasonal closure. The banning of fishing activity (in an area or of an entire fishery) for a few weeks or months, usually to protect juveniles or spawners.

**Codend**

Two rectangular pieces of netting made with heavy twine. The top edges are joined to the narrow end of the bellies, the selvages are laced together and a codline or codend clip is woven through the lower meshes for securing the section into a bag where the fish are held until released onboard the trawler.

The codend is the section of a trawl net most often affected by mesh size regulations. The size of the codend depends on the species being targeted and regulations.

**Codend Liner**

A section of small mesh net sewn into the inside of the codend bag. The purpose of which is to restrict the escapement of smaller species, i.e. squid.

**Coded-Wire Tag** Miniature radio-frequency electronic tags, which are placed in fish and provide a means for researchers to track fish movements and study their behavior.

**Code of Federal Regulations (CFR)**

A codification of the regulations published in the Federal Register by the executive departments and agencies of the Federal government. The CFR is divided into 50 titles that represent broad areas subject to Federal regulation. Title 50 contains wildlife and fisheries regulations.

**Commercial Fishery**

A term related to the whole process of catching and marketing fish and shellfish for sale. It refers to and includes fisheries resources, fishermen, and related businesses.

**Common Pool**

Groundfish vessels not participating in a sector.

**Conservation and Management** refers to all of the rules, regulations, conditions, methods, and other measures (A) which are required to rebuild, restore, or maintain, and which are useful in rebuilding, restoring, or maintaining, any fishery resource and the marine environment; and (B) which are designed to assure that:

1. A regular supply of food and other products may be taken, and that recreational benefits may be obtained, on a continuing basis.
2. Irreversible or long-term adverse effects on fishery resources and the marine environment are avoided.
3. There will be a multiplicity of options available with respect to future uses of these resources.

**Contiguous Fishery Zone (CFZ)**

The 9-nautical mile (nm) seaward zone, from 3 to 12-nm offshore, and adjacent to the 3-nm territorial sea.

**Continental Margin**

The edge of a continent; the zone between a continent and the deep-sea floor of the abyssal plain.

**Continental Rise**

Part of the continental margin; the ocean floor from the continental slope to the abyssal plain. The continental rise generally has a gentle slope and smooth topography.

**Continental Shelf**

Underwater portion (shelf) of the continent, with moderate inclination, extending seaward from the shore to the edge of the continental slope where the inclination increases rapidly. Sometimes conventionally considered as the continent margin between 0 and 200 meters depths.

**Continental Slope**

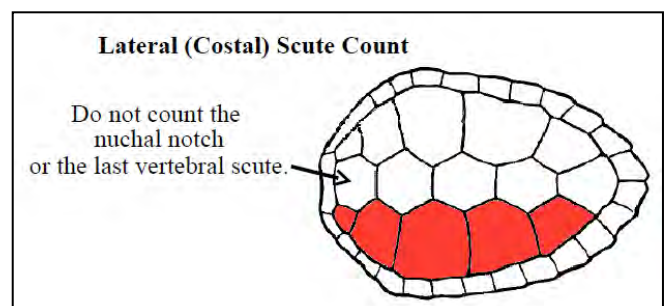
Part of the continental margin; the ocean floor from the continental shelf to the continental rise or oceanic trench. Usually to a depth of about 200 meters. The continental slope typically has a relatively steep grade from 3 to 6 degrees.

**Co-Occurring Stock**

Different stocks of fish that swim or school near one another, and may be caught together.

**Costal Scute(s)**

Lateral scutes located along the side of the carapace (turtle).



**Council**

A regional fisheries management council (FMC). The Fishery Conservation and Management Act of 1976 as amended created eight regional councils to prepare fishery management plans (FMPs) and FMP amendments for fisheries in the U.S. Exclusive Economic Zone (EEZ).

**CPUE**

Catch Per Unit Effort

The number of fish caught by a standard amount of effort. Typically, effort is a combination of gear type, gear size and length of time gear is used. Catch per unit effort is often used as a measurement of relative abundance.

**Creel Survey**

Catch assessment surveys undertaken to estimate the catches made by small scale or recreational fishermen, usually through a sampling program involving interviews and inspection of individual catches in the identified fishing and landing places

**Critical Areas**

Areas within a Marine Protected Area (MPA) that are crucial to achieving the objectives of the MPA; for example, spawning areas in an MPA established for fisheries purposes.

**Crustaceans**

A group of freshwater and saltwater invertebrates with jointed legs and a hard shell of chitin. Includes shrimps, crabs, lobsters, and crayfish.

**D****DAS**

Days at Sea.

**Demersal**

Living in close relation with the bottom and depending on it. Cods, groupers, crabs, and lobsters are demersal resources. The term usually refers to the living mode of the adult, i.e. demersal fish.

**Derby Fishery**

A fishery of brief duration during which fishers race to take as much catch as they can before the fishery closes.

**Detritus**

Dead organic matter of plant or animal. See also detrivore.

**DFO** Department of Fisheries and Oceans (Canada)

**Directed Fishery**

Fishing that is directed at a certain species or group of species. This applies to both sport and commercial fishing.

**Discard**

To release or return fish to the sea, dead or alive, whether or not such fish are brought fully on board a fishing vessel.

Comment: Estimates of discards can be made in a variety of ways, including samples from observers and logbook records. Fish (or parts of fish) can be discarded for a variety of reasons such as having physical damage, being a non target species for the trip, and compliance with management regulations like minimum size limits or quotas.

**DOC**

The Department of Commerce (DOC or DoC) promotes job creation, economic growth, and sustainable development and improved living standards for all Americans by working in partnership with business, universities, and communities. One of DOC's goals is: Provide effective management and stewardship of the nation's resources and assets to ensure sustainable economic opportunities. NOAA is one of the Department of Commerce's organizations.

**DOI**

United States Department of the Interior

**Dorsal**

Upper side of a fish's body (opposite of ventral)

**Dressed**

Fish that have been processed by removing parts, typically gutted and scaled with gills removed, for sale or use.

## E

**Ebb Tide**

A falling tide, the phase of the tide between high water and the succeeding low water.

**Economic Discards**

Fish which are the target of a fishery, but which are not retained because they are of an undesirable size, sex, or quality, or for other economic reasons.

**Economic Efficiency**

1. A measure of the size of consumer surplus and producer surplus. An increase in the combined surpluses is an increase in economic efficiency; 2. In commercial fishing, the point at which the added cost of producing a unit of fish is equal to what buyers pay. Producing fewer fish would bring the cost lower than what buyers are paying. Producing more fish would raise the cost higher than what buyers are paying. Harvesting at the point of economic efficiency produces the maximum economic yield (MEY).

**Economic Overfishing**

A level of fish harvesting that is higher than that of economic efficiency; harvesting more fish than necessary to have maximum profits for the fishery.

**Economic Rent**

The total amount of profit that could be earned from a fishery owned by an individual after subtracting input costs (usually capital and labor). Individual ownership maximizes economic rent, but an open-entry policy usually results in so many fishermen that profits higher than the opportunity cost are driven to zero.

**Economic Value**

The most people are willing to pay to use a given quantity of a good or service; or, the smallest amount people are willing to accept to forego the use of a given quantity of a good or service.

**Ecosystem**

A geographically specified system of organisms, the environment, and the processes that control its dynamics. Humans are an integral part of an ecosystem.

**Ecosystem Approach to Fisheries (EAF)**

An approach to fisheries management that strives to balance diverse societal objectives by taking into account the knowledge and uncertainties about biotic, abiotic, and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries. The purpose of EAF is to plan, develop, and manage fisheries in a manner that addresses the multiple needs and desires of society, without jeopardizing the options for future generations to benefit from the full range of goods and services provided by marine ecosystems.

**Ecosystem Approach to Management (EAM)**

Management that is adaptive, is specified geographically, takes into account ecosystem knowledge and uncertainties, considers multiple external influences, and strives to balance diverse social objectives.

**Ecosystem Assessment**

A social process through which the findings of science concerning the causes of ecosystem change, their consequences for human well-being, and management and policy options are brought to bear on the needs of decision makers.

**Ecosystem Function**

An intrinsic ecosystem characteristic related to the set of conditions and processes whereby an ecosystem maintains its integrity. Ecosystem functions include such processes as decomposition, production, nutrient cycling, and fluxes of nutrients and energy.

**Ecosystem Health**

A measure of the stability and sustainability of ecosystem function or ecosystem services that depends on an ecosystem being active and maintaining its organization, autonomy, and resilience over time. Ecosystem health contributes to human well-being through sustainable ecosystem services and conditions for human health.

**Ecosystem-Based Management**

An approach that takes major ecosystem components and services—both structural and functional—into account in managing fisheries. It values habitat, embraces a multispecies perspective, and is committed to understanding ecosystem processes. Its goal is to rebuild and sustain populations, species, biological communities, and marine ecosystems at high levels of productivity and biological diversity so as not to jeopardize a wide range of goods and services from marine ecosystems while providing food, revenue, and recreation for humans

**Effort**

The amount of time and fishing power used to harvest fish; includes gear size, boat size, and horsepower.

**EFH**

Essential Fish Habitat: means those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.

**EFH Assessment**

An EFH assessment is a written assessment of the effects of a proposed Federal action on EFH. Federal agencies must provide the National Marine Fisheries Service (NMFS) with an EFH assessment for any action that may adversely affect EFH, except for those activities covered by a general concurrence. An EFH assessment must contain 1) a description of the proposed action; 2) an analysis of the effects, including cumulative effects, of the proposed action on EFH and managed species; 3) the Federal agency's conclusions regarding the effects of the action on EFH; and 4) proposed mitigation, if applicable. If appropriate, the EFH assessment should also include the items listed at 50 CFR 600.920(e)(4). The level of detail in an EFH assessment should be commensurate with the potential impacts to EFH.

**EFH Consultation**

An EFH consultation refers to the process of satisfying the Federal agency consultation and response requirements of section 305(b) (2) and 305(b) (4) (B) of the Magnuson-Stevens Act, and the EFH conservation recommendation requirement of section 305(b)(4)(A) of that Act. When completed, an EFH consultation generally consists of: 1) notification to the National Marine Fisheries Service (NMFS) of a Federal action that may adversely affect EFH; 2) an EFH assessment provided to NMFS; 3) EFH conservation recommendations provided by NMFS to the Federal action agency; and 4) the Federal agency's response to NMFS EFH conservation recommendations.

**EFH Conservation Recommendation**

EFH conservation recommendations are recommendations provided by the National Marine Fisheries Service (NMFS) to a Federal or state agency pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act regarding measures that can be taken by that agency to conserve EFH. EFH conservation recommendations may be provided as part of an EFH consultation with a Federal agency, or may be provided by NMFS to any Federal or state agency whose actions would adversely affect EFH (50 CFR 600.925).

**Egg Mop**

A mass of squid eggs

**Elasmobranch**

Describes a group of fish without a hard bony skeleton, including sharks, skates, and rays.

**Emergency Action (EA)**

A fishery management council (FMC) may decide to propose an EA when a problem arises in a fishery that requires regulations sooner than a fishery management plan amendment can be proposed and implemented. Once implemented, an EA lasts for 90 days but can be extended by the Secretary of Commerce at the council's request.

**Endangered Species**

A species as defined in the Endangered Species Act, that is in danger of extinction through a significant portion of its range. A species classified as threatened is likely to become an endangered species.

**Endangered Species Act (ESA)**

The ESA is a statute which was enacted in 1973 to conserve species and ecosystems. Under its auspices, species facing possible extinction are listed as threatened or endangered, or as candidate species for such listings. When such a listing is made, recovery and conservation plans are drawn up to ensure the protection of the species and its habitat.

**Endangered**

A species or ecosystem that is so reduced or delicate that it is threatened with or on the verge of extinction. Compare extinct, extirpated, threatened, and vulnerable.

**Endemic**

An animal or plant species that naturally occurs in only one area.

**Environmental Assessment (EA)**

As part of the National Environmental Policy Act (NEPA) process, an EA is a concise public document that provides evidence and analysis for determining whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI).

**Environmental Impact Statement (EIS)**

As part of the National Environmental Policy Act (NEPA) process, an EIS is an analysis of the expected impacts resulting from a proposed Federal action (such as fisheries management or a development plan) on the

environment. An EIS is required for all fishery management plans as well as significant amendments to existing plans. The purpose of an EIS is to ensure that the proposed Federal action gives appropriate consideration to environmental values in order to prevent harm to the environment.

**Environmental Protection Agency (EPA)**

A Federal agency charged with enforcing numerous environmental laws (including the Clean Water Act, the Clean Air Act, and the State Drinking Water Act) and supporting state and local governments in establishing and enforcing environmental laws. In addition to enforcement, the EPA researches causes, effects, and remediation of environmental problems. All final environmental impact statements (EIS) are available from the EPA.

**Epibenthic Invertebrate**

A term for organisms that live attached to rocks.

**Epifauna**

Benthic fauna living on the substrate but not burrowing into it (as on a hard seafloor) or living on other organisms.

**EPR**

Eggs-Per-Recruit - the average number of eggs produced by an individual fish that has been recruited, i.e., that moved into a certain class, such as the spawning class or fishing-size class. Used as an index of abundance.

**Equilibrium Catch**

The catch (in numbers) taken from a fish stock when it is in equilibrium with fishing of a given intensity, and (apart from the effects of environmental variation) its abundance is not changing from one year to the next.

**Equilibrium Yield (EY)**

The yield in weight taken from a fish stock when it is in equilibrium with fishing of a given intensity, and (apart from effects of environmental variation) its biomass is not changing from one year to the next. Also called: sustainable yield, equivalent sustainable yield.

**ESA**

Endangered Species Act 1974

**Escape Outlet**

An opening in the net to facilitate escape of fish, sea turtles, marine mammals, etc.

**Escapement**

The number or proportion of fish surviving (escaping from) a given fishery at the end of the fishing season and reaching the spawning grounds.

**Essential Fish Habitat (EFH)**

Congress defined EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (16 U.S.C. 1802(10)). The EFH guidelines under 50 CFR 600.10 further interpret the EFH definition as follows: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species’ full life cycle.

**Estimated Discard Mortality**

Estimates of discards can be made in a variety of ways, including samples from observers and logbook records.

**ESU**

Evolutionarily Significant Unit: a population segment (e.g. —Redfish Lake sockeye”) equivalent to the —Distinct Population” referred to in the Endangered Species Act

**Eutrophication**

Generally, the natural or man-induced process by which a body of water becomes enriched in dissolved mineral nutrients (particularly phosphorus and nitrogen) that stimulate the growth of aquatic plants and enhances organic production of the water body. Excessive enrichment may result in the depletion of dissolved oxygen and eventually to species mortality.

**Exclusive Economic Zone (EEZ)**

The EEZ is the area that extends from the seaward boundaries of the coastal states (3 nautical miles (nm.) in most cases, the exceptions are Texas, Puerto Rico and the Gulf coast of Florida at 9 nm.) to 200 nm. Off the U.S. coast. Within this area the United States claims and exercises sovereign rights and exclusive fishery management authority over all fish and all continental shelf fishery resources.

**Exempted Fishing Permit**

A permit issued by NMFS that allows exemptions from some fishery regulations for testing, public display, data collection, exploratory fishing, health and safety, environmental cleanup, and/or hazard removal purposes. Previously known as an —experimental fishing permit

**eVTR**

Electronic Vessel Trip Report

**F****F<sub>ABC</sub>**

The level of fishing mortality that results in the allowable biological catch.

**Factory Trawler**

A large stern trawler equipped with plant for gutting, filleting, freezing and storing fish, and for processing fish oil and fishmeal. Such vessels usually have extensive superstructures.

**Fathom**

1.83 meters, equivalent to 6 feet.

**Federal Register (FR)**

The Federal Register is the official daily publication for rules, proposed rules, and notices of Federal agencies and organizations, as well as executive orders and other presidential documents. Fisheries regulations are not considered final until they are published in the Federal Register.

**Fillet**

A slice of meat without bones, cut out for human consumption.

**Finfish**

Vertebrate and cartilaginous fishery species, not including crustaceans, cephalopods, or other mollusks.

**Finning**

The practice of removing fins and discarding the carcass, usually pertaining to sharks.



**Fin Ray**

A slender, rod-shaped structure that supports the membranes of the fins. There are two types of rays, soft rays and spines. Soft rays are jointed, often branches, and flexible near their tips. Spines are unjointed, unbranched, and usually sharp at the tip and stiff along the shaft.

**Fish**

Used as a collective term, includes mollusks, crustaceans and any aquatic animal which is harvested.

**Fish Aggregating Device (FAD)**

Artificial or natural floating objects placed on the ocean surface, often anchored to the bottom, to attract several schooling fish species underneath, thus increasing their catchability.

**Fish Stock**

The living resources in the community or population from which catches are taken in a fishery. Use of the term fish stock usually implies that the particular population is more or less isolated from other stocks of the same species and hence self-sustaining. In a particular fishery, the fish stock may be one or several species of fish but here is also intended to include commercial invertebrates and plants.

**Fisher**

A gender-neutral name for a person (male or female) participating in a fishery.

**Fisheries Management**

The integrated process of information gathering, analysis, planning, decision making, allocation of resources, and formulation and enforcement of fishery regulations by which the fisheries management authority controls the present and future behaviors of the interested parties in the fishery in order to ensure the continued productivity of the living resources.

**Fisheries Management Authority**

The body which makes the decisions on how the fishery is carried out, and is responsible for all ancillary services, such as statistics gathering, assessment, monitoring, control and surveillance, consultation with fishers and other users of the sea, and resource allocation or determining the conditions of access to the fishery.

**Fisheries Management Organization**

Institution responsible for fisheries management, including the formulation of the rules that govern fishing activities. The fishery management organization, and its subsidiary bodies, may also be responsible for all ancillary services, such as the collection of information, its analysis, stock assessment, monitoring, control and surveillance, consultation with interested parties, application and/or determination of the rules of access to the fishery, and resource allocation. Also called: fishery management arrangement.

**Fishery**

1. Generally, a fishery is an activity leading to harvesting of fish. It may involve capture of wild fish or raising of fish through aquaculture; 2. A unit determined by an authority or other entity that is engaged in raising or harvesting fish. Typically, the unit is defined in terms of some or all of the following: people involved, species or type of fish, area of water or seabed, method of fishing, class of boats, and purpose of the activities; The combination of fish and fishers in a region, the latter fishing for similar or the same species with similar or the same gear types.

**Fishery Conservation and Management Act (FCMA)**

The Fishery Conservation and Management Act of 1976 is the Federal law that created the regional fishery management councils and is the Federal government's basis for fisheries management in the U.S. Exclusive Economic Zone (EEZ). It has been reauthorized a number of times and was renamed the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) in honor of the late Washington Senator, Warren G. Magnuson, in 1980, and in 1996, added Alaska Senator Ted Stevens.

**Fishery**

The combination of fish and fishers in a region, the later fishing for similar or the same species with similar or the same gear types.

**Fishery Conservation Zone (FCZ)**

The FCZ is the area from the seaward limit of state waters out to 200 nautical miles. Since 1981, it is referred to as the U.S. Exclusive Economic Zone (EEZ).

**Fishery-Dependent**

Data collected directly on a fish or fishery from commercial or sport fishermen and seafood dealers. Common methods include logbooks, trip tickets, port sampling, fishery observers, and phone surveys.

**Fishery Economic Assessment Model (FEAM)**

FEAM uses historical landings data, information on industry cost and margin structure (vessels and processors), and income multipliers generated by Impact analysis for PLANing (IMPLAN), a regional economic impact model, to produce estimates of “regionalized” local income impact after deducting for leakage of payments to nonresidents and to non-local suppliers, wholesalers, and manufacturers.

**Fishery-Independent**

Characteristic of information (e.g. stock abundance index) or an activity (e.g. research vessel survey) obtained or undertaken independently of the activity of the fishing sector. Intended to avoid the biases inherent to fishery-related data.

**Fishery Management Council (FMC)**

A regional fisheries management body established by the Magnuson-Stevens Act to manage fishery resources in eight designated regions of the United States.

Comment: —Council membership is a balance of commercial and recreational fisherman, marine scientists and state and Federal fisheries managers, who combine their knowledge to prepare fishery management plans (FMPs) for stocks of finfish, shellfish and crustaceans. In developing these FMPs the councils use the most recent scientific assessments of the ecosystems involved with special consideration of the requirements of marine mammals, sea turtles and other protected resources.” [Magnuson-Stevens Act]

**Fishery Management Plan (FMP)**

1. A document prepared under supervision of the appropriate fishery management council (FMC) for management of stocks of fish judged to be in need of management. The plan must generally be formally approved. An FMP includes data, analyses, and management measures; 2. A plan containing conservation and management measures for fishery resources, and other provisions required by the Magnuson-Stevens Act, developed by fishery management councils or the Secretary of Commerce.

**Fishery Management Unit (FMU)**

A fishery or a portion of a fishery identified in a fishery management plan (FMP) relevant to the FMP’s management objectives. The choice of stocks or species in an FMU depends upon the focus of FMP objectives, and may be organized around biological, geographic, economic, technical, social, or ecological perspectives.

**Fishery Models**

Simplified representations of the fisheries complex reality. May or may not be a mathematical representation.

**Fishery Policy**

Measures by which a national government, regional or state authority, attempts to influence or control the behavior of individuals, companies, and communities in the fisheries sector to achieve certain objectives. The measures can be of varied kinds including fiscal measures, (e.g. taxes, subsidies, public investments, etc.); trade

measures (e.g. import and export duties; quotas); social measures (health and education services); regulations (i.e. on food quality; means and types of fish harvesting; individual transferable quotas); and others.

**Fishery Reserve**

Zoning that precludes fishing activity on some or all species to protect critical habitat, rebuild stocks (long term, but not necessarily permanent closure), provide insurance against overfishing, or enhance fishery yield.

**Fishery Resource**

In general, refers to elements of a natural aquatic resource (e.g. strains, species, populations, stocks, assemblages that can be legally caught by fishing). May sometimes be taken as including also the habitat of such resources.

**Fishery Technology**

The equipment and practices for finding, harvesting, handling, processing, and distributing aquatic resources and their products.

**Fishing**

Any activity, other than scientific research conducted by a scientific research vessel, that involves the catching, taking, or harvesting of fish; or any attempt to do so; or any activity that can reasonably be expected to result in the catching, taking, or harvesting of fish and any operations at sea in support of it.

**Fishing Capacity**

1. The ability of a stock of inputs (capital) to produce output (measured as either effort or catch); 2. The maximum amount of fish over a period of time (year, season) that can be produced by a vessel or fleet of vessels if fully utilized, given the biomass and age structure of the fish stock and the present state of the technology. The “fishing fleet” is the stock of inputs (i.e. physical capital and human capital). The term “fully utilized” is used in a precautionary context in that it assumes that capacity utilization is 100 percent; 3. The quantity of fish that can be taken by a fishing unit, for example an individual, community, vessel, or fleet, assuming that there is no limitation on the yield from the stock, usually expressed in terms of some measure of vessel size, such as gross tonnage, hold capacity, horsepower. Reflects potential rather than nominal fishing effort.

**Fishing Community**

A community that is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs. Includes fishing vessel owners, fishing families, operators, crew, recreational fishers, fish processors, gear supplies, and others in the community who depend on fishing.

**Fishing Effort**

The amount of fishing gear of a specific type used on the fishing grounds over a given unit of time (e.g. hours trawled per day, number of hooks set per day, or number of hauls of a beach seine per day). When two or more kinds of gear are used, the respective efforts must be adjusted to some standard type before being added. Sometimes referred to as effective fishing effort.

Comment: The effort may be nominal, reflecting the simple total of effort units exerted on a stock in a given time period. It may also be standard or effective when corrected to take account of differences in fishing power and efficiency and ensure direct proportionality with fishing mortality. Relates usually to a specific fishery and gear. If more than one gear is considered, standardization in relation to one of them is necessary. For biologists, a good measure of fishing effort should be proportional to fishing mortality. For economists it should be proportional to the cost of fishing.

**Fishing Gear**

The equipment used for fishing (e.g. gillnet, hand line, harpoon, haul seine, long line, bottom and midwater trawls, purse seine, rod-and-reel, pots and traps). Each of these gears can have multiple configurations.

**Fishing Intensity**

1. In general, and mainly for trawling, the fishing effort exerted per unit of areas (e.g. in hours of trawling per 100 square miles).

**Fishing Mortality (F)**

1. F stands for the fishing mortality rate in a particular stock. It is roughly the proportion of the fishable stock that is caught in a year<sup>5</sup>; 2. A measurement of the rate of removal from a population by fishing. Fishing mortality can be reported as either annual or instantaneous. Annual mortality is the percentage of fish dying in one year. Instantaneous mortality is that percentage of fish dying at any one time.

**Fish**

Means finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds.

**Fish stock**

The part of a stock that is available to be fished. The fish must be big enough to be caught and must live in places where fishermen work, to be part of the “fishable stock”.

**Fishery**

One or more stocks of fish which can be treated as a unit for purposes of conservation and management and which are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics

**Fixed Gear**

Fishing gear that is stationary after it is deployed (unlike trawl or troll gear which is moving when it is actively fishing). Fixed gear includes gillnets, long lines, pots, traps, and any other gear that is anchored at least at one end.

 **$F_{MAX}$** 

The level of fishing mortality that results in the greatest yield from the fishery.

**FMP**

Fishery Management Plan: a plan to achieve specified management goals for a fishery prepared under the authority of the Magnuson-Stevens Fishery Conservation and Management Act.

 **$F_{MSY}$** 

The level of fishing mortality that results in the maximum sustainable yield.

**Food Chain**

The transfer of energy from the source in plants through a series of organisms with repeated eating and being eaten. At each transfer, a large proportion of the potential energy is lost as heat. The shorter the food chain (or the nearest the organism is from the beginning of the food chain), the greater the available energy which can be converted in biomass.

 **$F_{OF}$** 

The level of fishing mortality defined as overfishing.

**Footrope**

The rope along the bottom of a trawl net's opening. Small footropes can get caught or tangled in rocky reef areas, so regulations that require small footropes protect these rocky areas by encouraging fishermen to fish elsewhere.

**Forage Species**

Species used as prey by a larger predator for its food. Includes small schooling fishes such as anchovies, sardines, herrings, capelin, smelts, and menhaden, and invertebrates such as squid.

**Fork Length**

A measurement used frequently for fish length when the tail has a fork shape. Projected straight distance between the tip of the snout and the fork of the tail.

**G****Gastropods**

Snails and other mollusks (e.g. abalone, Queen conch, and cones) that typically possess a coiled dorsal shell and a ventral creeping foot.

**Gear**

A fishing gear is a tool used to catch fish, such as hook-and-line, trawl net, gillnet, pot, trap, spear, etc.

**Gear Conflict**

Conflicts between fishing gear on fishing grounds where one type of gear interferes with another type of gear. An example is where mobile trawling gear damages passive gear, such as lobster traps.

**Gear Restriction**

1. A type of input control used as a management tool whereby the amount and/or type of fishing gear used by fishers in a particular fishery is restricted by law; 2. Limits placed on the type, amount, number, or techniques allowed for a given type of fishing gear.

**Ghost Fishing**

The accidental capture of aquatic organisms by fishing gear (usually gillnets, or traps, pots, etc.) that has been lost or discarded into the sea and which continues to entangle or trap aquatic animals.

**Gill Arches**

The series of curved, bony structures lying beneath the gill cover that support the gill rakers and gill filaments.

**Gill Cover**

The large, flat bone on the side of the head, covering the gills.

**Gillnet**

With this type of gear, the fish are gilled, entangled or enmeshed in the netting. These nets can be used either alone or, as is more usual, in large numbers placed in line. According to their design, ballasting and buoyancy, these nets may be used to fish on the surface, in midwater or on the bottom.

**Gill Rakers**

Knob or comb like projections on the front edge of the gill arch. They serve to protect and clean the gill filaments.

**GPS**

Global Positioning System. A relatively low cost electronic receiving system for finding three-dimensional coordinates on the earth using satellites.

**GRA**

Gear Restricted Area

**Groundfish**

Collective term loosely applied to most commercially harvested marine fish other than salmonids, scombrids, and clupeids. Although many groundfish are demersal (e.g. yellowtail flounder), other species are semidemersal or pelagic (e.g. pollock, cod, haddock).

**Groundfish Species (Northeast)**

Atlantic Cod, haddock, pollock, white hake, sand dab flounder, winter flounder, yellowtail flounder, American plaice flounder, witch flounder, Atlantic halibut, redfish, ocean pout, Atlantic wolffish,

# H

**HAB**

Harmful Algal Blooms.

**Habitat**

1. The environment in which the fish live, including everything that surrounds and affects its life, e.g. water quality, bottom, vegetation, associated species (including food supplies); 2. The locality, site and particular type of local environment occupied by an organism

**Headrope**

The line, generally of fiber rope or steel wire rope, which fits along the top wings and center part of the square to form the upper lip of the otter trawl.

**Head Rope**

The length of rope or wire in a trawl to which the top wings and cover netting are attached.

**Highgrading**

Form of selective sorting of fish in which higher value, more marketable fish are retained and fish that could be legally retained, but are less marketable, are discarded.

**High Seas**

All waters beyond the Exclusive Economic Zone (EEZ) (>200 nautical miles) of the United States and beyond any foreign nation's EEZ.

**Highly Migratory Species**

Marine species whose life cycle includes lengthy migrations, usually through the exclusive economic zones of two or more countries as well as into international waters. This term usually is used to denote tuna and tuna-like species, sharks, swordfish, and billfish.

**HMS**

Highly Migratory Species Division - develops fishery policies designed to manage any highly migratory species (tuna species, marlin, oceanic sharks, sailfishes and swordfish) fishery that is within the geographical authority of more than one Council.

**Hook and Line**

A type of fishing gear consisting of a hook tied to a line. Fish are attracted by natural bait that is placed on the hook, and are impaled by the hook when biting the bait. Artificial bait (lures) with hooks are often used. Hook and-line units may be used singly or in large numbers.

# I

## **Incidental Catch**

Retained or discarded nontarget species caught when fishing for the primary purpose of catching a different species.

## **Incidental Take**

During an observed fishing trip, a marine mammal, sea turtle, or sea bird directly contacts the vessel or vessel's fishing gear AND any part of the animal is entangled, snagged, ensnared, caught, hooked, collided with, hit, injured, or killed by the vessel or the vessel's fishing gear, regardless of the final condition and release of the animal. This is  $\geq 75\%$  articulated skeleton.

## **Individual Fishing Quota**

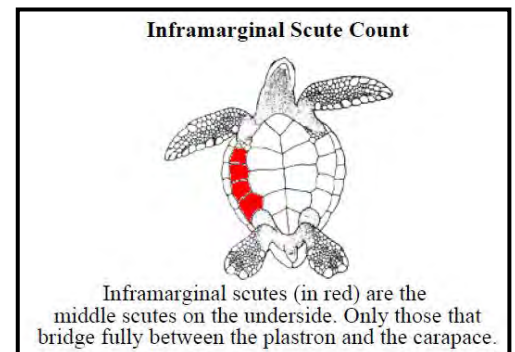
A Federal permit under a limited access system to harvest a quantity of fish, expressed by a unit or units representing a percentage of the total allowable catch of a fishery that may be received or held for exclusive use by a person.

## **Industrial Fishery**

A fishery for species not directly used for human food, e.g. Atlantic menhaden fishery.

## **Inframarginal Scute(s)**

A series of small scutes covering the bridge bones, between the carapacial marginal and the sides of the adjacent plastron scutes (connecting carapace to plastron).



## **Input Controls**

Management instruments used to control the time and place as well as type and/or amount of fishing with the view to limit yields and fishing mortality; for example, restrictions on type and quantity of gear, effort, and capacity; closed seasons.

## **Interorbital Scute(s)**

Scute(s) situated or extending between the orbits of the eyes.

## **Intertidal Zone**

The area on a seacoast between the highest and lowest tide.

## **Introduced Species**

With respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem. Introduced species often compete with and cause problems for native species. Introduced species are also called exotic, nonnative, and alien species.

## **Invasive species**

An introduced species that out-competes native species for space and resources.

**Invertebrate**

Animals without a backbone. In fishery management terms, refers to shellfish, including lobsters, clams, shrimps, oysters, crabs, and sea urchins.

**J****Jigging**

A method of fishing using lures on a vertical line that snag fish when they pass near. The line is moved up and down (jigged) by hand or mechanically. Extremely efficient for fishing oceanic squids at night.

**Juvenile**

A young fish or animal that has not reached sexual maturity.

**K****Keystone Predator**

The dominant predator or the top predator that has a major influence on community structure. For example, sea otters are a keystone predator in kelp beds. Sea otters eat urchins that feed on kelp which house a huge diversity of other organisms. If sea otter populations are lowered in an area the kelp beds are generally reduced and urchin barrens appear.

**Keystone Species**

A species that has a major influence on community structure.

**L****Landings**

1. The number or poundage of fish unloaded by commercial fishermen or brought to shore by recreational fishermen for personal use. Landings are reported at the locations at which fish are brought to shore; 2. The part of the catch that is selected and kept during the sorting procedures on board vessels and successively discharged at dockside.

**Landings Data**

Information on the amount of fish caught and landed per year.

**Latent Species**

A species of fish that has the potential to support a directed fishery.

**Lateral Line**

A series of sensory tubes and pores that extend from the head along the side of the body.

**Lateral Line Scales**

The scales that actually bear the pores and tubes of the lateral line.



**Length Frequency**

A length frequency distribution is an arrangement of recorded lengths (in a total catch, a stock, or a sample) which indicates the number of individuals encountered in each length interval.

**Length-Frequency Distribution**

The number of individuals of a catch or catch sample in each length interval. The modal size is the length group with the higher number of individuals. Distributions may be uni- or bimodal but are more generally multimodal, reflecting multiple age-groups.

**Length Requirement**

Specifies that permits may not be registered for use with vessels more than 5 feet longer (in overall length) than the length endorsed on the permit.

**Length-Weight Relationship**

A mathematical formula for calculating the weight of a fish in terms of its length. When only one is known, the formula can determine the other.

**Life Cycle**

Successive series of changes through which an organism passes in the course of its development.

**Lifespan**

The maximum expected age, on average, for a species, cohort, stock, or a population in the absence of fishing or human-induced mortality. Lifespan is inversely proportional to natural mortality.

**Littoral**

Living in near-shore water or the intertidal zone (between high and low tide).

**Longline**

Fishing method using a horizontal mainline to which weights and baited hooks are attached at regular intervals. The horizontal mainline is connected to the surface by floats. The mainline can extend from several hundred yards to several miles and may contain several hundred to several thousand baited hooks.

**Longliner**

Vessel specifically designed to catch fish using the longline fishing method.

# M

**MAFMC**

Middle-Atlantic Fishery Management Council.

**Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act)**

Federal legislation responsible for establishing the fishery management councils (FMCs) and the mandatory and discretionary guidelines for Federal fishery management plans (FMPs). This legislation was originally enacted in 1976 as the Fishery Management and Conservation Act; its name was changed to the Magnuson Fishery Conservation and Management Act in 1980, and in 1996 it was renamed the Magnuson-Stevens Fishery Conservation and Management Act.

**Marginal Scute(s)**

Scutes that are arranged around the edge of the carapace

**Marine Mammals**

Warm blooded animals that live in marine waters and breathe air directly. These include porpoises, dolphins, whales, seals, and sea lions.

**Marine Mammal Protection Act (MMPA)**

The MMPA prohibits the harvest or harassment of marine mammals, although permits for incidental take of marine mammals while commercial fishing may be issued subject to regulation.1 (see *Incidental Take*).

**Mark-Recapture**

The tagging and releasing of fish to be recaptured later in their life cycles. These studies are used to elucidate fish movement, migration, mortality, and growth to estimate population size.

**Mature Individuals**

The number of individuals known, estimated, or inferred to be capable of reproduction.

**Maturity**

Refers to the ability, on average, of fish of a given age or size to reproduce. Maturity information, in the form of percent mature by age or size, is often used to compute spawning potential.

**Mesh Size**

The size of holes in a fishing net. Minimum mesh sizes are often prescribed by regulations in order to avoid the capture of the young of valuable species before they have reached their optimal size for capture.

**Mesopelagic Zone**

Also called the 'twilight zone' of the ocean, this area from 200m to 1000m in depth, is bordered by the photic zone above and darkness below. It's in this zone where you start to see bioluminescence on all sorts of animals.

**Midwater**

Any part of the water column between the surface and the seafloor. Fish living at the surface or on the seafloor do not live in midwater.

**Migration**

1. Systematic (as opposed to random) movement of individuals of a stock from one place to another, often related to season. A knowledge of the migration patterns helps in targeting high concentrations of fish and managing shared stocks; 2. The movements of fish from feeding ground to spawning ground and back again, from nursery ground to feeding ground, and from spawning ground to nursery ground.

**Minimum Mesh Size**

The smallest size of mesh permitted in nets and traps; this allows smaller individuals than a defined mesh size to escape unharmed.

**Minimum Size**

The smallest individual size allowed in landings or markets. Established by fishery management councils (FMCs) and enforced through control at landing sites or markets, it is intended to minimize the catch of small (undersized) fish or juveniles giving them a better chance to grow before being vulnerable to fishing. Based on yield per recruit considerations and models, it aims at avoiding or correcting growth overfishing.

**MFMT**

Maximum Fishing Mortality Threshold - the level or rate of fishing mortality, that if exceeded, will result in overfishing and jeopardize the capacity of a stock or stock complex to produce maximum sustainable yield on a continuing basis.

**Migratory Range**

The maximum area at a given time of the year within which fish of an anadromous species or stock thereof can be expected to be found, as determined on the basis of scale pattern analysis, tagging studies, or other reliable scientific information, except that the term does not include any part of such area which is in the waters of a foreign nation

**Mollusk**

Invertebrates with a soft, unsegmented body, a muscular foot, and, with some exceptions, a calcareous shell. Includes the oyster, clam, mussel, snail, conch, scallop, squid, and octopus.

**Monitoring**

1. To observe and record changes; 2. The collection of information for the purpose of assessment of the progress and success of a plan. Monitoring is used for the purpose of assessing performance of a management plan or compliance scheme and revising them, or to gather experience for future plans.

**Moratorium**

A mandatory cessation of fishing activities on a species (e.g. the blue whale), in an area (e.g. a sanctuary), with a particular gear (e.g. large scale driftnets), and for a specified period of time (temporary, definitive, seasonal, or related to reopening criteria).

**Morphology**

The form and structure of an organism, in particular its outside features.

**Morphometrics**

The physical features of a fish (coloration for example); differences may be used to identify separate fish populations.

**Mortality**

Measures the rate of death of fish. Mortality occurs at all life stages of the population and tends to decrease with age. Death can be due to several factors such as pollution, starvation, and disease but the main source of death is predation (in unexploited stocks) and fishing (in exploited ones).

**Mortality Rate**

The rate at which the numbers in a population decrease with time due to various causes. Mortality rates are critical parameters in determining the effects of harvesting strategies on stocks, yields, revenues, etc. The proportion of the total stock (in numbers) dying each year is called the —annual mortality rate.

**MSP**

Maximum Spawning Potential - see SPR.

**MSST**

Minimum Stock Size Threshold - the minimum size of the stock or stock complex that is required to produce maximum sustainable yield (MSY), below which the stock would be considered overfished. The threshold should equal whichever of the following is greater: half the MSY stock size, or the minimum stock size at which rebuilding to the MSY level would be expected to occur within 10 years if the stock or stock were exploited at the maximum fishing mortality threshold.

**MSY**

Maximum Sustainable Yield - the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological and environmental conditions.

**Multispecies Fishery**

Fishery in which more than one species is caught at the same time. Because of the imperfect selectivity of most fishing gears, most fisheries are —multispecies.” The term is often used to refer to fisheries where more than one species is intentionally sought and retained.

**N****National Marine Fisheries Service (NMFS)**

Federal agency within the National Oceanic and Atmospheric Administration (NOAA) and responsible for overseeing fisheries science and regulation of the fisheries.

**National Oceanic and Atmospheric Administration (NOAA)**

A bureau within the Department of Commerce responsible for atmospheric, ocean, and coastal sciences and Federal management.

**National Research Council (NRC)**

Operating arm of the National Academy of Sciences (NAS).

**National Standards**

The Magnuson-Stevens Act requires that a fishery management plan and its regulations meet ten national standards.

**National Standard 1**

Requires that —onservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the U.S. industry;” where —optimum yield” is defined in terms of the amount of fish which will provide the greatest overall benefit to the Nation.

**National Standard 2**

Requires that —onservation and management measures shall be based upon the best scientific information available.”

**National Standard 3**

—T the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.”

**National Standard 4**

Requires that —onservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation shall be (a) fair and equitable to all such fishermen; (b) reasonably calculated to promote conservation; and (c) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.”

**National Standard 5**

Requires that —onservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.”

**National Standard 6**

—Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.”

**National Standard 7**

Requires that —onservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.”

**National Standard 8**

States that —onservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks) take into account the importance of fishery resources to fishing communities in order to (a) provide for the sustained participation of such communities, and (b) to the extent practicable, minimize adverse economic impacts on such communities.”

**National Standard 9**

Requires that —onservation and management measures shall, to the extent practicable, (a) minimize bycatch; and (b) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.” The National Marine Fisheries Service (NMFS) has defined the term —d the extent practicable” to include a consideration of the effects of reducing bycatch and bycatch mortality on the overall benefit t to the Nation.

**National Standard 10**

Requires that —onservation and management measures shall, to the extent practicable, promote the safety of human life at sea.”

**National Standard Guidelines**

Advisory guidelines issued by the National Marine Fisheries Service (NMFS) to provide comprehensive guidance for the development of fishery management plans and amendments that comply with the National Standards of the Magnuson-Stevens Act. These guidelines are found in Title 50, Code of Federal Regulations, Part 600.

**Native Species**

A local species that has not been introduced.

**Natural Mortality (M)**

1. Deaths of fish from all causes except fishing (e.g. ageing, predation, cannibalism, disease, and perhaps increasingly pollution). It is often expressed as a rate that indicates the percentage of fish dying in a year; e.g. a natural mortality rate of 0.2 implies that approximately 20 percent of the population will die in a year from causes other than fishing; 2. The loss in numbers in a year class from one age group to the subsequent one, due to natural death.

Comment: These many causes of death are usually lumped together for convenience, because they are difficult to separate quantitatively. Sometimes natural mortality is confounded with losses of fish from the stock due to emigration. M has proven very difficult to estimate directly, and is often assumed based on the general life history. M values is also often assumed to remain constant through time and by age, a very unlikely assumption.

**Nautical Mile**

International unit of distance equal to 1,852 meters or 6,067 feet.

**NEFMC**

New England Fishery Management Council.

**NEFOP**

Northeast Fisheries Observer Program.

**NEFSC**

Northeast Fisheries Science Center

**Nominal Catch**

The sum of the catches that are landed (expressed as live weight or equivalents). Nominal catches do not include unreported discards

**Non-Target Species**

Species not specifically targeted as a component of the catch; may be incidentally captured as part of the targeted catch.

**Nuchal Scute**

A single plate at the front of the shell directly behind the head

## O

**Observed Haul**

A haul for which the monitor collects weights for all species by fish disposition, both kept and discarded. Collection of discard information includes everything brought up in the gear; plants, vertebrate and invertebrate animals, rocks, and debris.

**Observer**

A certified person on board fishing vessels who collects scientific and technical information on the fishing operations and the catch. Observer programs can be used for monitoring fishing operations (e.g. areas fished, fishing effort deployed, gear characteristics, catches and species caught, discards, collecting tag returns, etc.).

**Open Access**

Condition in which access to a fishery is not restricted (i.e. no license limitation, quotas, or other measures that would limit the amount of fish that an individual fisher can harvest).

**Open Access Resource**

A good or service over which no property rights are recognized.

**Operculum**

Gill cover

**Otolith**

Ear ~~bone~~ of a fish; they often show seasonal or annual growth ~~lines~~ that can be used to determine age

**Otter Trawl**

A device constructed of twine webbing so that when fully assembled and rigged, it will take the shape of a huge funnel while being towed. To spread the mouth so that it will cover the largest possible area, each wing is fastened to a trawl ~~door~~. Each door is fitted with chains to be attached to a towing cable from the trawling vessel. The resistance of the water to the forward motion of the doors, as they are towed at different angles, forces them to pull in opposite directions and thus keep the mouth of the net open.

## P

**Paired Fins**

The pectoral and pelvic fins.

**Pathogens**

Disease producing organisms.

**Pectoral fins**

The farthest forward or uppermost of the paired fins.

**Pelagic** Refers to the plants and animals that live in the water column or in the open waters of the ocean rather than the ocean floor (see benthic). Life is found throughout the pelagic zone, however is more concentrated at shallower depths. Pelagic organisms can be further divided into the plankton and nekton.

**Pelagic Fish**

Fish that live in the open ocean at or near the water's surface and usually migrate long distances. Examples include swordfish, tunas, and many species of billfish and shark.

**Pelvic Fin**

The paired fin usually located beneath or behind the pectoral fin in a ventral position.

**Pharyngeal Arches**

The pair of curved bones located in the throat that bear the throat teeth.

**Photic Zone**

The surface layer of the ocean that is penetrated by sunlight. The photic zone is the layer of the ocean that has been explored the most as it is relatively easy to access with conventional diving equipment. In the photic zone phytoplankton flourish and it is where the fish, marine mammals, and marine invertebrates that most people are familiar with are found. Light can penetrate down to approximately 200m which marks the end of the photic zone. Also referred to as the Sunlight Zone or the Epipelagic Zone.

**Phytoplankton**

Literally —“wandering plant””: the plant and algae component of the plankton; the primary producers of almost all marine food webs. Compare zooplankton.

**Pinniped**

Of or belonging to the Pinnipedia, a suborder of carnivorous aquatic mammals that includes the seals, walruses, and similar animals having finlike flippers as organs of locomotion.

**PIT Tag**

Passive Integrated Transponder tag.

**Plankton**

Pelagic organisms that float through the water column, not attached to any substrate and unable to move against the currents and tides. Plankton can be further divided into phytoplankton and zooplankton, meroplankton and holoplankton. Compare nekton.

**Poaching**

Catching fish for which no quota is held. Illegally harvesting fish.

**Pop-Up Tag**

A tag that detaches itself from an animal after a predetermined period of time has elapsed since tagging. After detachment, the tag sends a signal via satellite, providing its position and downloading any other available information (if the pop-up tag is also an archival one). This technology does not rely on the recapturing/reporting of tagged individuals to recover the information.

**Population**

The number of individuals of a particular species that live within a defined area.

**Population Dynamics**

The study of fish populations and how fishing mortality, growth, recruitment, and natural mortality affect them.

**Possession Limit**

The number and/or size of a species that a person can legally have at any one time. Applies to commercial and recreational fishermen. A possession limit generally does not apply to the wholesale market level and beyond.

**Pots**

Traps, designed to catch fish or crustaceans, in the form of cages or baskets of various materials (wood, wicker, metal rods, wire netting, etc.) and having one or more openings or entrances. Usually set on the bottom, with or without bait, singly or in rows, connected by ropes (buoy-lines) to buoys on the surface showing their position.

**Predation**

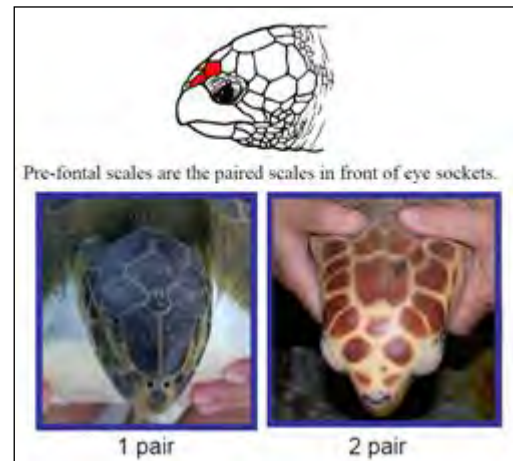
Relationship between two species of animals in which one (the predator) actively hunts and lives off the meat and other body parts of the other (the prey).

**Predator-Prey Relationship**

The interaction between a species (predator) that eats another species (prey). The stages of each species' life cycle and the degree of interaction are important factors.

**Pre-frontal Scales**

Scales between the eyes of a turtle. There should be either one or two pairs.

**Processing**

The preparation or packaging of fish to render it suitable for human consumption, retail sale, industrial uses, or long-term storage, including but not limited to cooking, canning, smoking, salting, drying, filleting, freezing, or rendering into meal or oil, but not heading and gutting unless additional preparation is done.

**Protected Area**

1. An area set aside for the preservation and protection of highly important natural and cultural features and for the regulation of the scientific, educational, and recreational use. Such areas include national parks, Nature reserves, wildlife sanctuaries, natural monuments, archaeological reserves, forest reserves, and marine reserves;
2. A geographically defined area which is designed and managed to achieve specific conservation objectives.

**Protected Species**

Refers to any species which is protected by either the Endangered Species Act (ESA) or the Marine Mammal Protection Act (MMPA), and which is under the jurisdiction of the National Marine Fisheries Service (NMFS). This includes all threatened, endangered, and candidate species, as well as all cetaceans and pinnipeds, excluding walruses.



**PSC**

Potential Sector Contribution or a permit's individual share of an ACE for sector purposes

**PSID**

Protected Species Identification. This is a number assigned to animals incidentally taken on a fishing trip

**Purse Seine**

Nets characterized by the use of a purse line at the bottom of the net. The purse line enables the net to be closed like a purse and thus retain all the fish caught. The purse seines, which may be very large, are operated by one or two boats. The most usual case is a purse seine operated by a single boat, with or without an auxiliary skiff.

## Q

**Quota**

A specified numerical harvest objective, the attainment (or expected attainment) of which causes closure of the fishery for that species or species group.

**Quota Shares**

A share of the total allowable catch (TAC) allocated to an operating unit such as a vessel, a company or an individual fisherman (individual fishing quota, IFQ) depending on the system of allocation. Quotas may or may not be transferable, inheritable, and tradable. While generally used to allocate total allowable catch, quotas could be used also to allocate fishing effort or biomass.

## R

**Recovery**

Improvement in the status of species often to the point at where special management actions are no longer required.

**Recreational Fishery**

Harvesting fish for personal use, sport, and challenge (e.g. as opposed to profit or research). Recreational fishing does not include sale, barter, or trade of all or part of the catch.

**Recruitment**

(1) Entry of new fish into a population, whether by reproduction or immigration; (2) Addition of new individuals to the fished component of a stock (because they have acquired the size, age, or location that makes them part of it.)

**Round Weight**

The weight of the whole fish before processing or removal of any part.

**Rulemaking**

The process of developing Federal regulations which occurs in several steps, including publishing proposed rules in the Federal Register, accepting comments on the proposed rule, and publishing the final rule. An "advanced notice of proposed rulemaking" is published when dealing with especially important or controversial rules.

# S

**SAFE**

Stock Assessment and Fishery Evaluation - a document or set of documents that provides Councils with a summary of the most recent biological condition of species in the fishery management unit, and the social and economic condition of the recreational and commercial fishing interests and the fish processing industries. It summarizes, on a periodic basis, the best available possible future condition of the stocks and fisheries being managed under federal regulation.

**Sampled Haul**

A haul for which the monitor collects detailed biological information; actual weights and length frequencies

**SAP**

Special Access Program

**SARC**

Stock Assessment Review Committee.

**Sashimi**

Japanese term for sliced fish (especially tuna) and shellfish (scallop, abalone, lobster, squid, octopus) served raw as a delicacy.

**Scales**

Thin, small, overlapping plates which protect the fish's body. Scales grow in regular concentric patterns and can be used to determine the age and life history of a fish

**School**

Aggregation of fish that move together as a group. It is usually considered that schooling reduces the impact of predation. Schools can be themselves aggregated in concentrations.

**Scientific Cruise**

The period of time during which a scientific research vessel is operated in furtherance of a scientific research project, beginning when the vessel leaves port to undertake the project and ending when the vessel completes the project as provided for in the applicable scientific research plan.

**Scute**

A horny, chitinous, or bony external plate or scale, as on the shell of a turtle

**Seasonal Closure**

Closed season. The banning of fishing activity (in an area or of an entire fishery) for a few weeks or months, to protect juveniles or spawners.

**Sector**

Voluntary agreement between a group of fishermen to aggregate their catch history and self-manage their quota

**Sedentary Species**

Organisms which, at the harvest stage, either are immobile on or under the seafloor or are unable to move except in constant physical contact with the seafloor or the subsoil.

**Seine Net**

Nets that are usually set from a boat, and can be operated either from the shore (beach seines) or from the boat itself (e.g. purse seines). The manner of capture is to surround an area of water with a very long net, with or without a bag at the center. The net is usually operated by two ropes fixed to its ends, used both for hauling it in and for herding the fish.

**Selective Gear**

A gear allowing fishers to capture few (if any) species other than the target species.

**Selectivity**

1. Ability to target and capture fish by size and species during harvesting operations, allowing bycatch of juvenile fish and nontarget species to escape unharmed; 2. In stock assessment, conventionally expressed as a relationship between retention and size (or age) with no reference to survival after escapement

**Selection Pressure**

A measure of the effectiveness of natural selection in altering the genetic composition of a population. See also natural selection.

**Selective Fishing**

Refers to a fishing method's ability to target and capture organisms by size and species during the fishing operation allowing non-targets to be released unharmed

**Sessile**

Attached to the substrate.

**Set Gillnet**

A gillnet fixed to the bottom, or at a certain distance above it, by means of anchors or ballast sufficiently heavy to neutralize the buoyancy of the floats.

**Set Longline**

Longlines consist of a main line, sometimes of considerable length, to which snoods with baited or unbaited hooks are fixed at regular intervals. The main line is set either horizontally on or near the bottom or less commonly near the surface.

**Shellfish**

Shellfish include both mollusks, such as clams, and crustaceans, such as lobsters.

**Shoal**

1. Species of relatively small (usually pelagic) fish that congregate in large schools, such as anchovies and sardines. 2. A shallow area in a body of water.

**Shoaling Fish**

Species of relatively small (usually pelagic) fish that congregate in large schools, such as anchovies and sardines.

**Single-Species Fishery**

A type of fishery in which fishers target only one species of fish, although it is usually impossible not to catch others incidentally.

**Size Limit**

A minimum or maximum limit on the size of fish that may be legally be caught.

**Size-at-Age**

Length or weight at a particular age.

**Slope Survey**

Bottom trawl surveys designed to provide information on distribution and abundance of demersal species, and other biological resource information.

**SMP**

Special Management Program

**Social Impacts**

The changes in people, families, and communities resulting from a fishery management decision.

**Social Impact Assessment**

An evaluation of the likely outcomes and impacts of a specific policy or regulation on a designated target group or groups, as well as likely ripple effects to other groups.

**Socio-Economic**

Pertaining to the combination or interaction of social and economic factors and involves topics such as distributional issues, labor market structure, social and opportunity costs, community dynamics, and decision making processes.

**Socio-Economic Benefits**

Benefits to humans gained through utilization of resources, including both economic and social benefits.

**Soft Dorsal**

A dorsal fin containing only soft rays, or the soft rayed hind part of the dorsal fin if both spines and soft rays are present (as in perches).

**Spatial (Area) Closures**

Permanent or seasonal ban of fishing activities in an area.

**Spawning**

Release of ova, fertilized or to be fertilized.

**Specialist**

A species with a very narrow range in habitat or food requirements. For example, the Marbled Murrelet nests in old-growth forests on thick branches high up in the forest canopy. Compare generalist.

**Speciation**

The evolution of one or more species from an existing species.

**Species**

A group of organisms that differ from all other groups of organisms and that are capable of breeding and producing fertile offspring. This is the smallest unit of classification for plants and animals. Compare phylum.

**Species Abundance**

The total number of individual of a species within a given area or community. Compare species richness.

**Species Diversity**

A measure of both species abundance and species richness. An area that has a large number of species and many representative individuals from each species is more diverse than an area that has only a single species. See also biodiversity; compare ecosystem diversity, genetic diversity.

**Species Richness**

The number of different species that exist within a given area or community. Compare species abundance.

**SPR**

Spawning Potential Ratio - the number of eggs that could be produced by an average recruit in a fished stock, divided by the number of eggs that could be produced by an average recruit in an unfished stock. SPR can also be expressed as the spawning stock biomass per recruit (SSBR)

**SSB**

Spawning Stock Biomass- the total weight of the fish in a stock that are old enough to spawn.

**SSBR**

Spawning Stock Biomass Per Recruit - the spawning stock biomass divided by the number of recruits to the stock, or how much spawning biomass an average recruit would be expected to produce.

**Stern Trawler**

A fishing vessel designed for trawling, in which the nets are hauled over the stern, up a ramp, or over a roller or the bulwark, with the aid of a derrick or gantry.

**Stock**

A part of a fish population usually with a particular migration pattern, specific spawning grounds, and subject to a distinct fishery. A fish stock may be treated as a total or a spawning stock. Total stock refers to both juveniles and adults, either in numbers or by weight, while spawning stock refers to the numbers or weight of individuals that are old enough to reproduce.

Comment: In theory, a unit stock is composed of all the individual fish in an area that are part of the same reproductive process. It is self-contained, with no emigration or immigration of individuals from or to the stock. On practical grounds, however, a fraction of the unit stock is considered a "stock" for management purposes (or a management unit); as long as the results of the assessments and management remain close enough to what they would be on the unit stock.

**Stock Assessment**

The process of collecting and analyzing biological and statistical information to determine the changes in the abundance of fishery stocks in response to fishing, and, to the extent possible, to predict future trends of stock abundance. Stock assessments are based on resource surveys; knowledge of the habitat requirements, life history, and behavior of the species; the use of environmental indices to determine impacts on stocks; and catch statistics. Stock assessments are used as a basis to assess and specify the present and probable future condition of a fishery.

**Stratification**

The separation of the water column into layers, with the densest at the bottom and the least dense at the surface, typically caused by temperature and/or salinity. A stratified water column is said to be stable.

**Subpopulations**

Subpopulations are defined as geographically or otherwise distinct groups in the population between which there is little exchange.

**Substrate**

The material upon or within which a plant or animal live or grows (e.g. rocky or sandy substrate). See also benthic.

**Sustainable Fishing**

Fishing activities that do not cause or lead to undesirable changes in the biological and economic productivity, biological diversity, or ecosystem structure and functioning from one human generation to the next.

Comment: Fishing is sustainable when it can be conducted over the long-term at an acceptable level of biological and economic productivity without leading to ecological changes that foreclose options for future generations

**Sustainable Fisheries Act (SFA)**

The SFA is a statute enacted in 1996 which amended the Magnuson-Stevens Act. Among its provisions were mandatory overfishing elimination and stock rebuilding, the establishment of a program to protect essential fish habitat, and the establishment of a new national standard for bycatch reduction.

**Swim Bladder**

See Air Bladder

**Symbiosis**

An interaction between two different species where either both, one or neither of the organisms benefit from the relationship. Many symbiotic relationships are obligatory (e.g. tropical reef building corals and their algal symbiont).

# T

**TAC**

Total Allowable Catch

The annual recommended or specified regulated catch for a species or species group. The regional fishery management council sets the TAC from the range of acceptable biological catch.

**Tagging**

Marking an individual or group of individuals (e.g. by clipping a fin, injecting a die, inserting a tag) in order to identify it when recaptured. Tagging allows the study of growth, mortality, and migration as well as the estimation of the stock size.

**Target Fishing**

Fishing for the primary purpose of catching a particular species or species group.

**Target Species**

Those species primarily sought by the fishermen in a particular fishery. The subject of directed fishing effort in a fishery. There may be primary as well as secondary target species.

**Thermocline**

A defined temperature boundary between water masses.

**Threatened**

A species likely to become endangered if limiting factors are not reversed. Compare endangered, extinct, extirpated, vulnerable.

**Total Catch**

Total catch (optimum yield, OY). The landed catch plus discard mortality.

**Transect**

A straight line placed on the ground along which ecological measurements are taken. If an ecologist wanted to sample the diversity of intertidal organisms in the intertidal, he/she would place a number of transects perpendicular to the shore and take samples at predetermined interval lengths. See also quadrat.

**Trap Fishing**

Fishing by means of devices able to trap fish in a confined environment (traps, pots) often designed and baited to catch a particular species—crab pot, lobster pot, tuna trap, fyke nets.

**Trawl Net**

Towed net consisting of a cone-shaped body closed by a bag or codend and extended at the opening by wings. It can be towed by one or two boats and, according to the type, used on the bottom or in midwater (pelagic). In certain cases, as in trawling for shrimp or flatfish, the trawler can be specially rigged with outriggers to tow up to four trawls at the same time (double rigging).

**Trawling**

Fishing technique in which a net is dragged behind the vessel and retrieved when full of fish. This technique is used extensively in the harvest of pollock, cod, and other flatfish in New England fisheries. It includes bottom- and midwater fishing activities.

**Trip Limits**

A quota that each fisher or vessel is allowed to catch per trip out to sea. Trip limits are the commercial equivalent of a recreational bag limit.

**Troller**

A vessel used for catching pelagic fish by towing a number of lines fitted with lures.

**Trolling**

A surface and subsurface fishing method in which lines with baits or lures are dragged by a vessel at a speed of 2–10 knots. Trolling is used to catch tuna and tuna-like fish.

**Trophic**

Concerning feeding habits, food chains, or nutrition

**Trophic Levels**

The energy levels or steps in a food chain or food web

## U

**Undersized**

Fish (caught) at a size smaller than the minimum size limit established by regulation.

**Unobserved Haul**

A haul for which complete discard and/or kept information is not obtained. Discard information, other than incidental take and IAL species, should not be recorded on unobserved hauls. Kept information should be recorded for all unobserved hauls. This information may be obtained by the captain.

**Usable Stock**

The number or weight of all fish in a stock that lie within the range of sizes customarily considered usable (or designated so by law).

**USCG**

United States Coast Guard

**USCG DOC**

Vessel Hull Number

**USDA**

United States Department of Agriculture

**USFWS**

United States Fish and Wildlife Service

**USOFR**

United States Office of Federal Regulations

**Utilized Stock**

The part, by number, of the fish alive at a given time, which will be caught in future.

**V**

**Ventral** Underside (opposite of dorsal)

**Vertebral Scute(s)**

The scutes along the top of the carapace. They are so named because directly underneath them on the inside of the shell is where the turtle's vertebrae, or skeletal structure, are attached.

**Vessel Catch Limits**

A limit on the quantity each individual vessel can land per trip or short period of time (e.g. day, week).

**Vessel Class**

Commercial fishing vessels are classified according to their gross registered tons (GRT) of displacement. Vessels displacing less than 5 GRT are not routinely monitored, and are referred to as under tonnage.

**Vessel Operator**

The master or other individual aboard and in charge of that vessel.

**Vessel Owner**

Any person who owns a vessel in whole or in part; any charter of the vessel, whether bare boat, time, or voyage; any person who acts in the capacity of a charterer, including, but not limited to, parties to a management agreement, operating agreement, or any similar agreement that bestows control over the destination, function, or operation of the vessel; or any agent designated as such by a person described in this definition.

**VMS**

Vessel Monitoring System

A satellite communications system used to monitor fishing activities—for example, to ensure that vessels stay out of prohibited areas. The system is based on electronic devices (transceivers), which are installed onboard vessels. These devices automatically send data to a shore-based “satellite” monitoring system.

**VTR**

Vessel Trip Report

**W****Weight-at-Age**

The average individual weight of the fish in each age class of a particular stock.



**Wings**

**Top Wings:** Two sections of netting usually shaped diagonally opposite to one another to form the upper mouth of the trawl. The HEADROPE is attached from one top wing end to the other, along the diagonal flymesh edges and across the bosom or center part of the square.

**Lower Wings:** Two narrow sections of netting fitted between the lower belly and the top wings to form the lower lip of the trawl net. The FOOTROPE is attached from one wing end to the other, along the flymesh edges and across the lower belly bosom meshes. The lower wings are subject to the most abrasion, and consequently they are the sections which have to be continually repaired or replaced when working rough ground.

**Y****Year Class**

Fish in a stock born in the same year. For example, the 1987 year class of cod includes all cod born in 1987. This year class would be age 1 in 1988, age 2 in 1989, and so on. Occasionally, a stock produces a very small or very large year class that can be pivotal in determining stock abundance in later years.

**Yolk sac**

An external pouch containing nutrients for the growing alevin. When the yolk sac is used up, the alevin is said to be "buttoned-up" and enters the fry stage

**Z**

**Zooplankton** Animal component of the plankton that feed on phytoplankton and other zooplankton (primary consumers). Compare phytoplankton.

**FISHING TERMINOLOGY****Berried (Egger)**

Refers to lobsters bearing eggs

**Birds**

Roll-damping device; typically metal forms that hang off the outriggers and are towed a few meters below water to aid in vessel stabilization

**Block**

A pulley system

**Braiding needle**

(Needle) tool used in mending trawl nets

**Can**

A float, typically the larger round floats attached to trawl gear

**Checker**

Box/ table/ or pen into which fish are dumped from the net and then sorted or cut

**Deckloading**

When the catch from multiple hauls is piled on the boat deck.

**Dragger**

An otter trawl vessel

**Dory**

Small rowboat type boat

**Fish pick**

(Pick) tool comprised of a thin metal spike on a handle (~12" long) used to pick fish from the deck without having to bend down and pick each fish by hand

**Flake**

Method of placing gillnet string neatly back into a pen after hauling so it won't be tangled when set back out

**Gaff**

Tool used to snag fish that fall from the net back into the water (typically used in gillnetting and longlining); long pole with a hook on the end

**Gallows**

Frame for supporting a boom or net reels

**Gangion**

Used on longline gear to attach the hooks to the mainline

**Gilson winch**

The winch typically used to hoist a large bag of fish onto the deck and/or raise it off the deck in order to open the codend

**Highflyer**

A buoy/marker tied to the end of static fishing gear to aid in the location of that gear as well as to warn other fishermen and vessels that gear is placed there

**Jonah**

A person bringing bad luck—you will most likely be called one at some point

**Lumper**

Refers to the people working at the docks that help offload fish from the vessels

**Outrigger**

Long booms, attached to the center of a vessel one on each side, which are lowered perpendicular to the vessel when the vessel is at sea to enhance stability. Also referred to as sticks.

**Pistol**

A lobster without any claws

**Scupper**

Openings on the port and starboard sides of the deck to allow water to flow off (and on) deck

**Shot**

An individual gillnet

**Skiff**

Small boat propelled by oars, sail, or small motor

**Snood**

A gangion.

**String**

A set of gillnets strung together

**V-notch**

A v-shaped notch cut out of the flipper just to the right of the middle flipper on egg-bearing female lobsters brought onboard before they are thrown over; it is unlawful to keep egg-bearing females





