Northeast Fisheries Science Center Reference Document 15-12

doi:10.7289/V53N21CP

Serious Injury Determinations for Small Cetaceans and Pinnipeds Caught in Commercial Fisheries off the Northeast US Coast, 2012

by Gordon T. Waring, Elizabeth Josephson,
Marjorie C. Lyssikatos, Frederick Wenzel

Northeast Fisheries Science Center Reference Document 15-12

doi:10.7289/V53N21CP

Serious Injury Determinations for Small Cetaceans and Pinnipeds Caught in Commercial Fisheries off the Northeast US Coast, 2012

by Gordon T. Waring, Elizabeth Josephson,
Marjorie C. Lyssikatos, Frederick Wenzel

NOAA Fisheries, Northeast Fisheries Science Center, 166 Water Street, Woods Hole, MA 02543

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Science Center
Woods Hole, Massachusetts
August 2015

Northeast Fisheries Science Center Reference Documents

This series is a secondary scientific series designed to assure the long-term documentation and to enable the timely transmission of research results by Center and/or non-Center researchers, where such results bear upon the research mission of the Center (see the outside back cover for the mission statement). These documents receive internal scientific review, and most receive copy editing. The National Marine Fisheries Service does not endorse any proprietary material, process, or product mentioned in these documents.

All documents issued in this series since April 2001, and several documents issued prior to that date, have been copublished in both paper and electronic versions. To access the electronic version of a document in this series, go to *http://www.nefsc.noaa.gov/publications/*. The electronic version is available in PDF format to permit printing of a paper copy directly from the Internet. If you do not have Internet access, or if a desired document is one of the pre-April 2001 documents available only in the paper version, you can obtain a paper copy by contacting the senior Center author of the desired document. Refer to the title page of the document for the senior Center author's name and mailing address. If there is no Center author, or if there is corporate (*i.e.*, non-individualized) authorship, then contact the Center's Woods Hole Labora-tory Library (166 Water St., Woods Hole, MA 02543-1026).

Information Quality Act Compliance: In accordance with section 515 of Public Law 106-554, the Northeast Fisheries Science Center completed both technical and policy reviews for this report. These predissemination reviews are on file at the NEFSC Editorial Office.

This document may be cited as:

Waring GT, Josephson E, Lyssikatos MC, Wenzel FW. 2015. Serious injury determinations for small cetaceans and pinnipeds caught in commercial fisheries off the northeast US coast, 2012. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 15-12; 19 p. doi:10.7289/V53N21CP Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at http://www.nefsc.noaa.gov/publications/

CONTENTS

INTRODUCTION

The Marine Mammal Protection Act (MMPA) requires the National Marine Fisheries Service (NMFS) to estimate annual levels of human-caused mortality and serious injury to marine mammal stocks (section 117) and to categorize commercial fisheries based on their level of incidental mortality and serious injury of marine mammals (section 118). A serious injury is defined as an injury that is more likely than not to result in mortality. Serious injury (SI) determinations were addressed at NMFS-convened workshops in 1997 and 2007 (Angliss and DeMaster 1998; Andersen et al. 2008), and in January 2012 the agency published new national guidelines for distinguishing serious from nonserious injuries of marine mammals (http://www.nmfs.noaa.gov/pr/pdfs/serious_injury_procedure.pdf). A major goal of the new guidelines was to establish national consistency and transparency in SI determinations. To implement the new guidelines, Science Center SI determination (SID) staff from each region review all documented marine mammal injury events on an annual basis. For the initial year of implementation, the records for 2007-2011 were evaluated (Waring et al. 2014; Cole and Henry 2013). For small cetaceans and pinniped injury determinations in the Northeast Region, fisheries observer (OBS) and At Sea Monitor (ASM) records were reviewed for incidentally-caught animals that were released alive. Observer comments on the condition of released animals and any associated photographs were compared to specific injury categories described in the new guidelines' procedure manual, and each event was assigned an injury determination. Once completed, the Northeast Fisheries Science Center (NEFSC) SI small cetacean and pinniped determination table was independently reviewed by the Southwest Fisheries Science Center's (SWFSC) SID staff, the Greater Atlantic Regional Fisheries Office (GARFO), and the Atlantic Scientific Review Group (SRG) before the SI determinations were finalized.

METHODS

Electronic records of all small cetacean and pinniped bycatch that were coded as "alive" or "condition unknown" for 2012 were extracted from the Northeast Fisheries Observer Program (NEFOP) database. These records included OBS/ASM notes that provided information on entanglement characteristics (e.g., animal in cod-end), crew handling (e.g., rope tied to keel and crane, animals lifted overboard), animal condition (e.g., cut on dorsal flank, some blood), and state of released animal (e.g., swam away quickly, swimming sluggishly at surface, immediately sank). These data were independently compared to small cetacean (S) and pinniped (P) criteria contained in the aforementioned SI guidance document by 2 marine mammal researchers in the NEFSC Protected Species Branch. The 2 evaluators compared their determinations and all differences were discussed to obtain agreement. In cases where a determination could not be made with the available data, the severity was prorated based on other determinations for that species or taxonomic group (Forney 2009). All observed interactions in 2012 were tabulated, and final injury determinations and mortality events were used to estimate the proportion of observed SI animals relative to the other observed determinations (e.g., uninjured [UI], nonserious injury [NSI], and dead) by gear type and species. All otter trawls, bottom trawls (OTB), and mid-water trawls (OTM) with observed takes of decomposed marine mammals were excluded from the proportion analysis. In trawl fisheries tow times are generally too short for decomposition to take place, so when a decomposed animal comes up in the net, death is presumed to have preceded the interaction. All decomposed marine mammals observed in sink gillnets (SGN) were included

in the proportion analysis because soak durations for gillnet gear can be long enough to produce significant decomposition.

Species codes and gear codes used in this report are contained in Tables 1 and 2 respectively. The statistical area designations are presented in Figure 1. The determination criteria for small cetaceans (S) and pinnipeds (P) are presented in the Appendix.

RESULTS AND DISCUSSION

Small cetaceans

For 2012, observer records of 3 pilot whales (*Globicephala* spp.), 2 short-beaked common dolphins (*Delphinus delphis*), and 1 unidentified dolphin were examined (Table 3). The animal condition for the 3 pilot whales, 1 common dolphin, and the unidentified dolphin was coded as "alive" (Tables 3-5). The second common dolphin was coded as "unknown." The 3 pilot whales were taken in February groundfish bottom trawl fisheries on the northwestern portion of Georges Bank. For each interaction, the ASM reported that the animals fell out of the net onto the deck. Bleeding (several cups) was only observed for the 01 February whale. Crew returned the whales to the water by tying a rope around the tail stock and dragging them off the stern. The 01 February animal resurfaced twice before diving, and no blood was seen in the water; the 02 February animal was not very active on deck, but swam away upon release with some loose rope attached; the 05 February whale swam alongside the boat upon release. Based on the fact that they had been brought on deck, the 3 whales were designated as SI. The 2 common dolphins were taken in the mid-Atlantic region longfin inshore squid (*Doryteuthis [Amerigo] pealeii*) bottom trawl fishery.

The January interaction was in mid-shelf waters north of Hudson Canyon and the interaction in December was within Hudson Canyon. The January animal was entangled in the belly of the trawl. During haul-back the crew released it from the cod-end, and the dolphin swam away. The December animal was brought onto the deck, and crew stated that it was alive when they released it down the stern ramp. The January animal was designated as NSI since the animal actively swam away with no visible injuries recorded, and the December animal was designated SI in category S4 as it had been brought on deck (Tables 3-4). The unidentified dolphin was also taken in bottom trawl gear in the mid-Atlantic region north of Hudson Canyon, where the target species were scup (*Stenotomus chrysops*) and summer flounder (*Paralichthys dentatus*). The dolphin came up in the trawl with gillnet gear wrapped around its fluke. It was alive when crew cut the net and the animal fell into the water (Tables 3-4). The crew stated that the dolphin swam away. This animal was designated as SI because the entanglement was likely to become constricting.

Summaries of determinations by category, gear type and species are provided in Tables 4 and 5. Similar to the prior 5-year period (2007-2011; Waring et al. 2014), small cetacean serious injury events were more common in bottom trawl than in other gear types (Tables 4-5). In 2012 trawl gear, 30% of all bycaught pilot whales (3 in a total of 10) and 2% of all bycaught common dolphins (1 in a total of 44) were seriously injured (Table 5).

Pinnipeds

Seals are the only pinnipeds normally found in waters off the northeast US coast. In 2012, at-sea monitors mistakenly recorded the condition of 1 unidentified seal and one gray seal (*Halichoerus grypus grypus*) taken in monkfish (*Lophius americanus*) sink gillnet gear as "alive" (Table 3). However, notes in the incidental take log state that the unidentified seal was "fresh dead" and the gray seal were dead, with carcass in moderate condition. Both animals were designated as dead (Tables 3-4).

Observers recorded 1 harbor seal (*Phoca vitulina concolor*) and 33 gray seals taken during summer in Gulf of Maine Atlantic herring (*Clupea harengus*) purse seine sets as alive. The vast majority (8/9) of the sets contained more than one seal, including a set that contained the 1 harbor seal and 2 gray seals (Table 3). The harbor seal was trapped under part of the purse seine, but was freed by the crew and actively swam away. The animal was designated as NSI. Of the 33 gray seals observed in purse seine interactions, 18 were temporarily trapped under part of the seine, but all were freed without gear attached and actively swam away. Those seals were designated as NSI (Tables 3-5). The other 15 were not observed to be trapped under the seine. These animals were deemed to be uninjured (UI). Gray seals exhibited a variety of behaviors prior to being released (e.g., swimming out when the float line was lowered following pumping; swimming in and out of the net during pumping; feeding on captured herring).

In summary, a total of 34 pinniped interactions were reviewed for serious injuries. The most common cases were gray seals interacting with purse seine gear (n=33), and all of those final determinations were either UI or NSI. No seals identified as harbor or gray seals were seriously injured from observed bycatch in purse seine gear (Tables 4-5).

ACKNOWLEDGEMENTS

We thank the on-board observers and at-sea monitors for collecting the data and staff in the Northeast Fisheries Science Center, Fisheries Sampling Branch for their assistance in obtaining electronic copies of data logs and pictures required for our SI determinations. An earlier version of this document was reviewed by the Atlantic Scientific Group in February 2014.

REFERENCES CITED

Andersen MS, Forney KA, Cole TVN, Eagle T, Angliss R, Long K, Barre L, Van Atta L, Borggaard D, Rowles T, Norberg B, Whaley J, Engleby L. 2008. Differentiating serious and non-serious injury of marine mammals: Report of the serious injury technical workshop , 10-13 September 2007, Seattle, Washington. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-OPR-39; 94 p.

Angliss RP, DeMaster DP. 1998. Differentiating serious and non-serious injury of marine mammals taken incidental to commercial fishing operations: report of the Serious Injury Workshop, 1-2 April 1997, Silver Spring, Maryland, US Dept. of Commerce, NOAA Tech Memo NMFS-OPR-13; 48 p.

Cole TVN, Henry AG. 2013. Serious injury determinations for baleen whale stocks along the Gulf of Mexico, United States East Coast and Atlantic Canadian Provinces, 2007-2011. Northeast Fish Sci Cent Ref Doc. 13-24; 14 p.

Forney KA. 2009. Serious injury determinations for cetaceans caught in Hawaii longline fisheries during 1994-2008. Draft document PSRG-2009-09 presented to the Pacific Scientific Review Group.

National Marine Fisheries Service [NMFS]. 2012 Federal Register 77:3233. National Policy for Distinguishing Serious from Non-Serious Injuries of Marine Mammals. http://www.nmfs.noaa.gov/op/pds/documents/02/238/02-238-01.pdf

Waring GT, Wenzel F, Josephson E, Lyssikatos MC. 2014. Serious injury determinations for small cetaceans and pinnipeds caught in commercial fisheries off the Northeast U.S. Coast, 2007-2011. Northeast Fish Sci Cent Ref Doc 14-213; 18 p.

Table 1. List of marine mammal codes, common names, and scientific names.

Code	Common Name	Scientific name
CODO	Short-beaked common dolphin	*Delphinus delphis delphis*
UNPW	Long-finned or short-finned pilot whale	*Globicephala* spp.
UNDO	Unidentified dolphin	
GRSE	Gray seal	*Halichoerus grypus grypus*
HASE	Harbor seal	*Phoca vitulina concolor*
UNSE	Unidentified seal	

Table 2. Northeast region commercial fishery gear descriptions and codes used to query data on observed fishery interactions.

Gear Abbreviation	Gear description and Northeast region gear codes
OTB	Otter trawl bottom (bottom trawl, fish = 050, twin trawl = 053, Rhule trawl = 054, haddock separator trawl = 057)
OTM	Mid-water trawls (single = 370 and paired = 170)
PSH	Purse seine = 121
SGN	Sink gillnet (anchored floating = 105, drift floating = 116, drift-sink = 117, and anchored-sink, fixed = 100)

Table 3. Comparison of fishery observer or at-sea monitor animal condition codes and Protected Species Branch (PSB) injury determinations (SI =serious injury, NSI = nonserious injury, CBD = cannot be determined) for the year 2012. Determinations are based on observer notes and small cetacean and pinniped criteria in the National Marine Fisheries Service Determination Directive (NMFS 2012). Gear codes are listed in Table 2, statistical areas are shown in Figure 1, and species codes are listed in Table 1.

GEAR Code	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition[1]	Determination	NMFS 2012 SI Determination Directive	Comments regarding determination
050	623	19-Jan-12	CODO	alive		NSI	S7b	Dolphin entangled in belly of trawl, released from codend and actively swam away
050	616	05-Dec-12	CODO	unknown		SI	S4	Dolphin brought on deck, crew stated that it was alive when they slid it down the ramp
050	522	01-Feb-12	UNPW	alive		SI	S3, S4, S9	Animal fell out of net onto deck, several cups of blood on deck. Crew tied rope around tail and dragged animal off stern, animal resurfaced twice before diving, no blood seen in water
050	522	02-Feb-12	UNPW	alive		SI	S4	Animal fell out of net onto deck, crew tied rope around tail and dragged animal off stern. It swam with boat after release. Whale not very active on deck.
050	522	05-Feb-12	UNPW	alive		SI	S4, S8a	Animal fell out of net onto deck, crew tied rope around tail and dragged animal off stern. It swam with boat after release.
050	616	10-Mar-12	UNDO	alive		SI	S8a	Dolphin came up in trawl with gillnet wrapped around fluke; it was still alive when deck hand cut net and fell into water. Deckhand said it swam away, but not mention of gillnet attachment.
100	537	06-Apr-12	UNSE	unknown	fresh dead	Dead		Fresh Dead, sank immediately when returned to water
100	537	19-May-12	GRSE	alive	moderately decomposed	Dead		Dead - moderate condition
121	512	18-Jul-12	HASE	alive		NSI	P7b	Released alive from purse seine

Table 3, continued. Comparison of fishery observer or at-sea monitor animal condition codes and Protected Species Branch (PSB) injury determinations (SI =serious injury, NSI = nonserious injury, CBD = cannot be determined) for the year 2012. Determinations are based on observer notes and small cetacean and pinniped criteria in the National Marine Fisheries Service Determination Directive (NMFS 2012). Gear codes are listed in Table 2, statistical areas are shown in Figure 1, and species codes are listed in Table 1.

GEAR Code	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition[1]	Determination	NMFS 2012 SI Determination Directive	Comments regarding determination
121	512	18-Jul-12	GRSE	alive		NSI	P7B	Released alive from purse seine
121	512	18-Jul-12	GRSE	alive		NSI	P7b	Released alive from purse seine
121	515	29-Jul-12	GRSE	alive		UI		Released alive when purse seine was reopened
121	515	29-Jul-12	GRSE	alive		UI		Released alive when purse seine was reopened
121	515	29-Jul-12	GRSE	alive		UI		Released alive when purse seine was reopened
121	512	30-Jul-12	GRSE	alive		UI		Animal swimming around net, escaped prior to pumping
121	512	30-Jul-12	GRSE	alive		UI		Animal swimming around net, escaped prior to pumping
121	512	30-Jul-12	GRSE	alive		UI		Animal swimming around net, escaped prior to pumping
121	512	30-Jul-12	GRSE	alive		UI		Animal swimming around net, escaped prior to pumping
121	512	30-Jul-12	GRSE	alive		UI		Animal swimming around net, escaped prior to pumping
121	512	30-Jul-12	GRSE	alive		NSI	P7b	Body in purse new w/head stuck in mesh, but above water, caught 10-15 min, seen eating fish while caught. Seal escaped and swam away.
121	512	30-Jul-12	GRSE	alive		UI		Seal swimming around net eating fish, trapped when floatline was raised for pumping. Seal swam out when float line was lowered
121	512	30-Jul-12	GRSE	alive		UI		Seal swimming around net eating fish, trapped when floatline was raised for pumping. Seal swam out when float line was lowered

Table 3, continued. Comparison of fishery observer or at-sea monitor animal condition codes and Protected Species Branch (PSB) injury determinations (SI =serious injury, NSI = nonserious injury, CBD = cannot be determined) for the year 2012. Determinations are based on observer notes and small cetacean and pinniped criteria in the National Marine Fisheries Service Determination Directive (NMFS 2012). Gear codes are listed in Table 2, statistical areas are shown in Figure 1, and species codes are listed in Table 1.

GEAR Code	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition[1]	Determination	NMFS 2012 SI Determination Directive	Comments regarding determination
121	512	31-Jul-12	GRSE	alive		NSI	P7b	Seal was wrapped in net during entire pumping process, seal was released after pumping and swam away- no time frame provided
121	512	01-Aug-12	GRSE	alive		NSI	P7b	Seal seen swimming in net, and swam out during pumping, no signs of injury
121	512	01-Aug-12	GRSE	alive		NSI	P7b	Seal caught under mesh of closed net, but remained active. When pumping was finished and float line lowered all four actively swam away
121	512	01-Aug-12	GRSE	alive		NSI	P7b	Seal caught under mesh of closed net, but remained active. When pumping was finished and float line lowered all four actively swam away
121	512	01-Aug-12	GRSE	alive		NSI	P7b	Seal caught under mesh of closed net, but remained active. When pumping was finished and float line lowered all four actively swam away
121	512	01-Aug-12	GRSE	alive		NSI	P7b	Seal caught under mesh of closed net, but remained active. When pumping was finished and float line lowered all four actively swam away
121	512	01-Aug-12	GRSE	alive		NSI	P7b	Seal seen swimming in net, and swam out during pumping, no signs of injury
121	512	01-Aug-12	GRSE	alive		NSI	P7b	Seal seen swimming in net, and swam out during pumping, no signs of injury
121	512	02-Aug-12	GRSE	alive		NSI	P7b	Seal caught under mesh of closed net, but remained active. When pumping was finished and float line lowered all four actively swam away

Table 3, continued. Comparison of fishery observer or at-sea monitor animal condition codes and Protected Species Branch (PSB) injury determinations (SI =serious injury, NSI = nonserious injury, CBD = cannot be determined) for the year 2012. Determinations are based on observer notes and small cetacean and pinniped criteria in the National Marine Fisheries Service Determination Directive (NMFS 2012). Gear codes are listed in Table 2, statistical areas are shown in Figure 1, and species codes are listed in Table 1.

GEAR Code	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition[1]	Determination	NMFS 2012 SI Determination Directive	Comments regarding determination
121	512	07-Aug-12	GRSE	alive		NSI	P7b	Seal did not escape net prior to folding for pumping, was released afterward w/o visible injuries
121	512	13-Aug-12	GRSE	alive		NSI	P7b	alive no injury
121	512	13-Aug-12	GRSE	alive		NSI	P7b	alive no injury
121	512	13-Aug-12	GRSE	alive		NSI	P9	Seal caught in net as it was closed for pumping, seal swam around in pocket and escaped when pumping was completed and float line lowered; abrasion on snout
121	512	13-Aug-12	GRSE	alive		UI		Seal caught in net as it was closed for pumping, seal swam around in pocket and escaped when pumping was completed and float line lowered
121	512	13-Aug-12	GRSE	alive		UI		Seal caught in net as it was closed for pumping, seal swam around in pocket and escaped when pumping was completed and float line lowered
121	512	13-Aug-12	GRSE	alive		UI		Seal caught in net as it was closed for pumping, seal swam around in pocket and escaped when pumping was completed and float line lowered
121	512	13-Aug-12	GRSE	alive		UI		Seal caught in net as it was closed for pumping, seal swam around in pocket and escaped when pumping was completed and float line lowered
121	512	13-Aug-12	GRSE	alive		UI		Seal caught in net as it was closed for pumping, seal swam around in pocket and escaped when pumping was completed and float line lowered

Table 3, continued. Comparison of fishery observer or at-sea monitor animal condition codes and Protected Species Branch (PSB) injury determinations (SI =serious injury, NSI = nonserious injury, CBD = cannot be determined) for the year 2012. Determinations are based on observer notes and small cetacean and pinniped criteria in the National Marine Fisheries Service Determination Directive (NMFS 2012). Gear codes are listed in Table 2, statistical areas are shown in Figure 1, and species codes are listed in Table 1.

GEAR Code	Statistical Area	Take Date	Species Code	Recorded Animal Condition	Revised Animal Condition[1]	Determination	NMFS 2012 SI Determination Directive	Comments regarding determination
121	512	14-Aug-12	GRSE	alive		NSI	P7b	Seal ID by observer, crew saw seal roll over floatline and swim away after pumping
121	512	14-Aug-12	GRSE	alive		NSI	P7b	This seal remained in net during pumping, animal was released alive afterwards and was seen swimming normally with no signs of an injury

Table 4. Summary of 2012 Northeastern US bycaught animal status (D=dead; DC=decomposed carcass; SI=serious injury; NSI=nonserious injury; UI=uninjured; CBD=could not be determined) by gear type and species.

		Dead		Alive			
Gear Type	Species	D[1]	DC[2]	SI	NSI	UI	CBD
Bottom Trawls	Bottlenose Dolphin (*Tursiops truncatus*)	1					
	Common Dolphin (*Delphinus delphis*)	42		1	1		
	Gray Seal (*Halichoerus grypus*)	9	3				
	Harbor Porpoise (*Phocoena phocoena*)		4				
	Harbor Seal (*Phoca vitulina*)	4					
	Pilot Whale (*Globicephala melas*)	7	6	3			
	Risso's Dolphin (*Grampus griseus*)	1	1				
	White-sided Dolphin (*Lagenorhynchus acutus*)	9	1				
Gillnets		Dead		Alive			
	Species	D	DC	SI	NSI	UI	CBD
	Common Dolphin (*Delphinus delphis*)	7					
	Gray Seal (*Halichoerus grypus*)	87	5				
	Harbor Porpoise (*Phocoena phocoena*)	31	5				
	Harbor Seal (*Phoca vitulina*)	35	2				
	Risso's Dolphin (*Grampus griseus*)	1					
	White-sided Dolphin (*Lagenorhynchus acutus*)	1					
Midwater Trawls		Dead		Alive			
	Species	D	DC	SI	NSI	UI	CBD
	Common Dolphin (*Delphinus delphis*)	1					
	Gray Seal (*Halichoerus grypus*)	1					
	Harbor Seal (*Phoca vitulina*)	1					
	Pilot Whale (*Globicephala melas*)	1					
Purse Seines		Dead		Alive			
	Species	D	DC	SI	NSI	UI	CBD
	Gray Seal (*Halichoerus grypus*)				18	15	
	Harbor Seal (*Phoca vitulina*)				1		

[1] Animals included under the dead category include the following animal conditions reported by NEFOP: 10 – dead, condition unknown; 11 – dead, fresh; 14 – dead, seen by captain/crew only.

[2] Animals included under the decomposed carcass category include the following animal conditions reported by NEFOP: 12 – dead, moderately decomposed; 13 – dead, severely decomposed.

Table 5. Animal determination frequencies and relative proportions by gear type and species in 2012. Gear types: OTB=bottom trawls; SGN=gillnets; OTM=mid-water trawls; PSH=purse seines. Assignment codes: D=dead; D*= Excludes decomposed animals; D= Includes decomposed animals; SI=serious injury; NSI=nonserious injury; UI=uninjured.**

Gear	Determination	Bottlenose Dolphin		Common Dolphin		Gray Seal		Harbor Porpoise		Harbor Seal		Pilot Whale		Risso's Dolphin		White-sided Dolphin	
OTB		Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop
	D*	1	1.00	42	0.95	9	1.00	0	0.00	4	1.00	7	0.70	1	1.00	9	1.00
	SI	0	0.00	1	0.02	0	0.00	0	0.00	0	0.00	3	0.30	0	0.00	0	0.00
	NSI	0	0.00	1	0.02	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	UI	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Total	1	1.00	44	1.00	9	1.00	0	0.00	4	1.00	10	1.00	1	1.00	9	1.00
SGN		Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop
	D**	0	0.00	7	1.00	92	1.00	36	1.00	37	1.00	0	0.00	1	1.00	1	1.00
	SI	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	NSI	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	UI	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Total	0	0.00	7	1.00	92	1.00	36	1.00	37	1.00	0	0.00	1	1.00	1	1.00
OTM		Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop
	D*	0	0.00	1	1	1	1.00	0	0.00	1	1.00	1	1.00	0	0.00	0	0.00
	SI	0	0.00	0	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	NSI	0	0.00	0	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	UI	0	0.00	0	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Total	0	0.00	1	1	1	1.00	0	0.00	1	1.00	1	1.00	0	0.00	0	0.00
PSH		Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop	Freq	Prop
	D*	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	SI	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	NSI	0	0.00	0	0.00	18	0.55	0	0.00	1	1.00	0	0.00	0	0.00	0	0.00
	UI	0	0.00	0	0.00	15	0.45	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Total	0	0.00	0	0.00	33	1.00	0	0.00	1	1.00	0	0.00	0	0.00	0	0.00

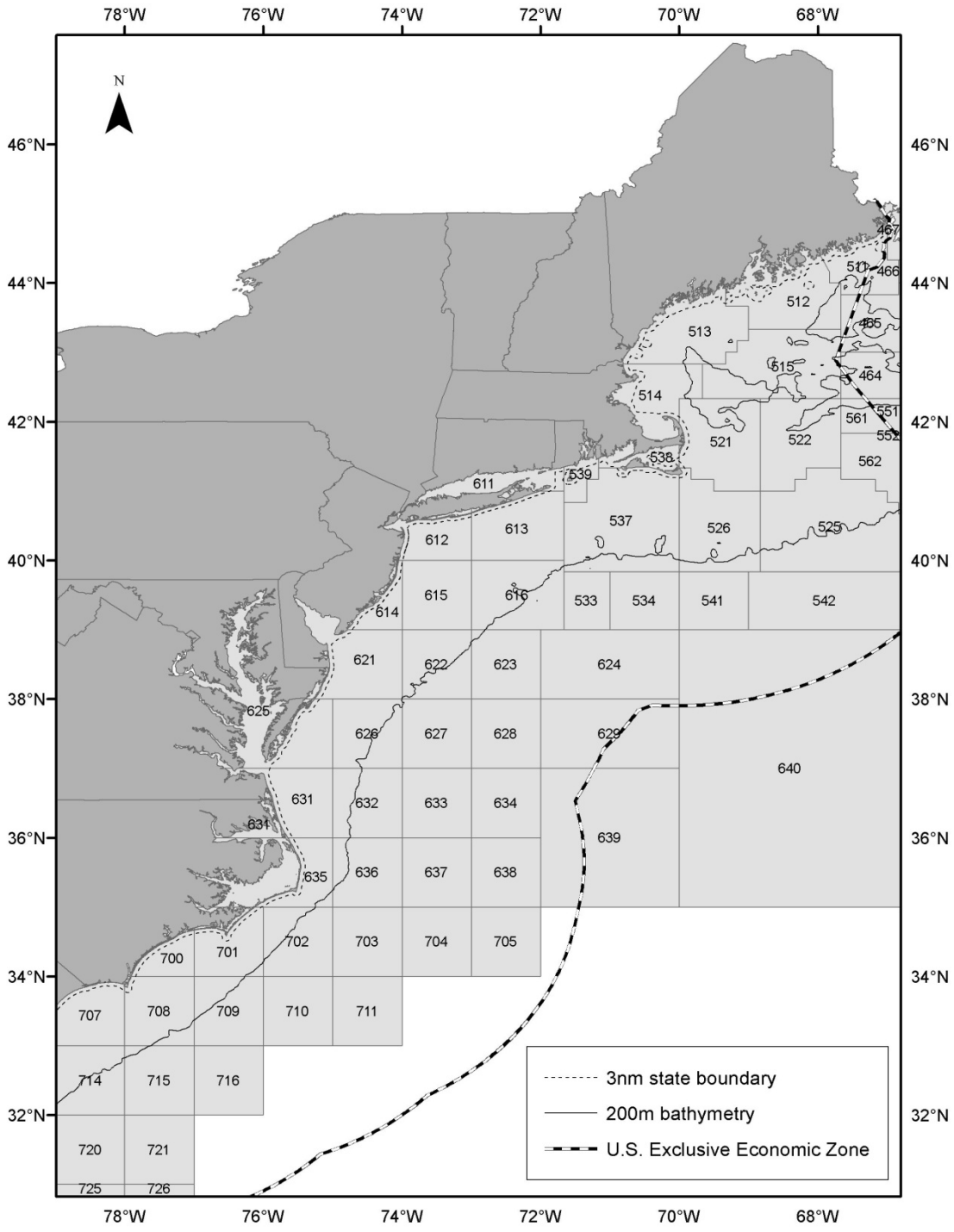

Figure 1. US Northwest Atlantic Fishery statistical areas.

Appendix. Tables 2 and 3 from NMFS Process for Distinguishing Serious from Nonserious Injury of Marine Mammals: http://www.nmfs.noaa.gov/pr/pdfs/serious_injury_procedure.pdf

TABLE 2: Summary of Small Cetacean[1] Injury Categories and Criteria

Instructions: Each small cetacean injury event is recorded to the appropriate injury/information category using all available information and scientific judgment, as described in the Procedural Directive. For a single injury event to which several categories apply, the injury determination with the highest level of severity is assigned. More detailed information or extended observation on an individual case/animal may justify a determination differing from the guidance of this table. Any injury leading to apparent significant health decline (e.g., skin discoloration, fat loss) is a serious injury.

Category	Injury/Information	Injury Determination[2]	Additional factors for evaluating whether "case specific" injuries are serious or non-serious (additional factors at end of table) *
S1	A free-swimming animal observed at a date later than its human interaction, exhibiting signs of declining health believed to be resulting from initial injury (e.g., a marked skin discoloration, fat loss)	SI[3]	
S2	Ingested gear[4] or hook(s)	SI	
S3	Visible blood loss	Case specific[5]	Amount of blood, location of the bleeding injury, duration of bleeding
S4	Animal brought on vessel deck following entanglement/entrapment (excluding scientific research targeting marine mammals and authorized as such under a NMFS scientific research permit, where the animal is brought on and placed on the vessel deck in a controlled manner)	SI	
S5a	Hook(s) in head (excluding criterion S5b), regardless of the presence of gear	SI	
S5b	Hook(s) confirmed in lip only, external tissue outside of teeth, no trailing gear	Case specific	Prolonged restraint or struggle that could lead to capture myopathy, size of hook, depth of hooking, impairing ability to feed, presence of other injuries
S5c	Hook(s) in any body part, but hook(s) is removed or pulls out	Case specific	Prolonged restraint or struggle that could lead to capture myopathy, depth of hook, hook pulls out cleanly vs. causes further injury during dehooking, method used to remove hook, length of time hooked
S5d	Hook(s) in appendage or body (excluding criterion S5a), without trailing gear or with trailing gear that does not have the potential[6] to: 1) become a constricting wrap on animal; 2) be ingested; 3) accumulate drag; or 4) become snagged on something in the environment, anchoring the animal	Case specific	Prolonged restraint or struggle that could lead to capture myopathy, depth and location of hook, type and amount of gear attached
S6	Gear attached to free-swimming animal with potential[7] to: 1) become a constricting wrap on animal; 2) be ingested; 3) accumulate drag; or 4) become snagged on something in the environment, anchoring the animal	SI	

S7a	Anchored, immobilized, or entrapped and not freed	SI	
S7b	Anchored, immobilized, entangled, or entrapped before being freed without gear attached	Case specific	Duration of entanglement/entrapment, prolonged restraint or struggle that could lead to capture myopathy, gear type, where/how gear is attached to animal, associated injury (i.e., where directly or indirectly caused by initial entanglement), response of individual animal, method used by human to remove gear from animal
S8a	Gear wrapped and constricting on any body part or is likely to become constricting as the animal moves or grows	SI	
S8b	Gear wrapped and loose on any body part	Case specific	Gear type, amount of gear, potential for snag, potential to lead to criterion S8a, animal body size relative to gear (e.g., because of species or age), effect on animal movement, species sensitivity (e.g., frightens easily)
S9	Body trauma[8] not covered by any other criteria	Case specific	Location of wound, depth (e.g., superficial or to the bone, penetrating muscle or organs), length, number of lacerations, cleanliness (i.e., compression vs. tearing)
S10	Visible fracture(s), excluding pectoral fins (see criterion S13d for pectoral fin fractures)	SI	
S11	Vertebral transection, including fully severed flukes	SI	
S12	Body cavity penetration[9] by foreign object or body cavity exposure	SI	
S13a	Loss or disfigurement of dorsal fin	Case specific	Cleanliness (i.e., compression vs. tearing), nature of injury causing the loss, extent of fin loss (i.e., full or partial), amount and duration of blood loss
S13b	Partially severed flukes, transecting midline	SI	
S13c	Partially severed flukes, not transecting midline	Case specific	Cleanliness (i.e., compression vs. tearing), nature of injury causing the loss, amount and duration of blood loss
S13d	Partially or completely severed or fractured pectoral fin(s)	Case specific	Cleanliness (i.e., compression vs. tearing), nature of injury causing the loss, extent of fin loss (i.e., full or partial), amount and duration of blood loss, opened or closed fracture
S14	Social animal separated from group and/or released alone post-interaction (excluding criterion S15)	Case specific	Species (e.g., sensitivity, offshore vs. inshore), location of release (e.g., likelihood of animal locating its conspecifics)

S15	Dependent animal (i.e., calf, juvenile) released alone post-interaction or dependent animal left with a seriously injured or dead mother	SI	
S16	Observed or reported collision with vessel	Case specific	Speed of vessel, size of vessel, hull shape, part of vessel to strike the animal, size of animal compared to size of vessel, behavior of animal after collision, extent and location of wound(s) on animal

* [1] For the purposes of this table, small cetaceans include all odontocetes except sperm whales.
* [2] This table includes on only those criteria determined to be serious injuries or case specific based on expert opinion at the 2007 Workshop
* (Andersen *et al.*, 2008) and by small cetacean experts on the NMFS Determination Staff working group. For the purposes of streamlining the information for the reader, criteria determined to be non-serious injuries are not included in this table.
* [3] SI = serious injury.
* [4] For the purposes of this table, gear is defined as any portion of fishing gear excluding the hook, which is considered separately. Lures are considered gear. Gear also generally refers to any type of debris entangling or attached to the animal.
* [5] Case specific = Could be a serious or non-serious injury, but either 1) there is insufficient information about the impact of a particular injury, or 2) additional factors must be considered on a case-by-case basis to determine the severity
* [6] For the purposes of this table, "potential" as it relates criterion S5d indicates that the trailing gear IS NOT capable of leading to any of the situations listed.
* [7] For the purposes of this table, potential as it relates criterion S6 indicates that the trailing gear IS capable of leading to any of the situations listed.
* [8] For the purposes of this table, "trauma" is defined as a wound or bodily harm caused by an extrinsic agent. Blunt trauma is an injury (abrasion, laceration, contusion or skeletal fracture) produced by a blunt object striking the body or impact of the body against a blunt object or surface. Sharp force trauma is an injury caused by a sharp or pointed object creating a penetrating (stab, chop or incision) wound.
* Laceration is defined as a ragged incision or a tearing of the skin. Lacerations are caused by blunt trauma that results in stretching, tearing, crushing, shearing, or avulsion of the tissue.
* [9] For the purposes of this table, "penetration" is defined as a wound occurring when a foreign object punctures the body. Penetrating wounds
* can be characterized as one of three types: stab (small external wound that is greater in length into the body than is apparent on the skin surface), incised (clean cuts into the skin which are longer on the skin surface than they are deep), or chop wounds (incised wounds that penetrate deep to the bone, leaving a groove or cut in the bone).

TABLE 3: Summary of Pinniped[1] Injury Categories and Criteria

Instructions: Each pinniped injury event is recorded to the appropriate injury/information category using all available information and scientific judgment, as described in the Procedural Directive. For a single injury event to which several categories apply, the injury determination with the highest level of severity is assigned. More detailed information or extended observation on an individual case/animal may justify a determination differing from the guidance of this table. Any injury leading to apparent significant health decline (e.g., skin discoloration, fat loss) is a serious injury.

Category	Injury/Information	Injury Determination[2]	Additional factors for evaluating whether "case specific" injuries are serious or non-serious (additional factors at end of table)
P1	A free-swimming animal observed at a date later than its human interaction, exhibiting signs of declining health believed to be resulting from initial injury (e.g., a marked change in body condition, tissue necrosis, emaciation, gangrene).	SI[3]	
P2	Ingested gear[4] or hook(s)	SI	
P3	Visible blood loss	Case specific[5]	Amount of blood, location of the bleeding injury, duration of bleeding
P4	Animal brought on vessel deck following entanglement/entrapment (excluding scientific research targeting marine mammals and authorized as such under a NMFS scientific research permit, where the animal is brought on and placed on the vessel deck in a controlled manner)	Case specific	Manner in which animal is brought on deck, length of time animal is on deck, environmental conditions (e.g., temperature)
P5a	Hook(s) in mouth (excluding criterion P5b), regardless of the presence of gear	SI	
P5b	Hook(s) confirmed in head (excluding criterion P5a), or in lip only (external tissue outside of teeth), no trailing gear	Case specific	Location on head (e.g., eye), depth of penetration, type of hook, prolonged restraint or struggle that could lead to capture myopathy, size of hook, impairing ability to feed
P5c	Hook(s) in any body part, but hook(s) is removed or pulls out	Case specific	Prolonged restraint or struggle that could lead to capture myopathy, location of hooking on the body, depth of hook, hook pulls out cleanly vs. causes further injury during dehooking, method used to remove hook, length of time hooked
P5d	Hook(s) in appendage or body (excluding criteria P5a-c and P12), without trailing gear or with trailing gear that does not have the potential[6] to: 1) become a constricting wrap on animal; 2) be ingested, 3) accumulate drag; or 4) become snagged on something in the environment, anchoring the animal	NSI[7]	

P6	Gear attached in any manner to free-swimming animal with potential[8] to: 1) become a constricting wrap on animal; 2) be ingested; 3) accumulate drag; or 4) become snagged on something in the environment, anchoring the animal	SI	
P7a	Anchored/immobilized and not freed	SI	
P7b	Anchored, immobilized, or entangled before being freed without gear attached	Case specific	Duration of entanglement, prolonged restraint or struggle that could lead to capture myopathy, type of fishing gear, where/how gear immobilized animal, associated injury (where directly or indirectly caused by initial entanglement), response of individual
P8a	Gear wrapped and constricting any body part or likely to become constricting as the animal moves or grows	SI	
P8b	Gear wrapped loosely on any body part	Case specific	Type and amount of fishing gear, animal body size relative to gear (species, age), effect on movement, species sensitivity
P9	Body trauma[9] not covered by any other criteria	Case specific	Location of trauma on body, depth (superficial or to the bone, penetrating muscle or organs) length of laceration(s), number of lacerations, cleanliness (compression vs. tearing), amount and duration of blood loss, risk of infection or disease transmission (e.g., dog bites)
P10	Visible fracture(s), excluding broken appendages (see criterion P13 for broken appendages)	SI	
P11	Vertebral transection or fully severed flipper(s)	SI	
P12	Body cavity penetration[10] by foreign object or body cavity exposure	SI	
P13	Partially severed or fractured flipper(s)	Case specific	Cleanliness (clean cut vs. tear), nature of injury causing the loss, extent of fin or flipper loss, opened or closed fracture, dislocation, amount/duration of blood loss
P14	Dependent animal (i.e., pup, juvenile) released alone post-interaction or dependent animal left with a seriously injured or dead mother	SI	
P15	Observed or reported collision with vessel	Case specific	Speed of vessel, size of vessel, hull shape, part of vessel to strike the animal (e.g., propeller, hull), size of animal compared to size of vessel, location of strike on animal's body, extent and location of wound(s) to animal

[1] For the purposes of this table, pinnipeds include all pinniped species except walrus.

[2] This table includes on only those criteria determined to be serious injuries or case specific based on expert opinion at the 2007 Workshop

(Andersen *et al.*, 2008) and by pinniped experts on the NMFS Determination Staff working group. For the purposes of streamlining the information for the reader, criteria determined to be non-serious injuries are not included in this table.

[3] SI = serious injury.

[4] For the purposes of this table, gear is defined as any portion of fishing gear excluding the hook, which is considered separately. Lures are considered gear. Gear also generally refers to any type of debris entangling or attached to the animal.

[5] Case specific = could be a serious or non-serious injury, but either 1) there insufficient information about the impact of a particular injury, or 2) additional factors must be considered on a case-by-case basis to determine the severity.

[6] For the purposes of this table, potential as it relates to criterion P5d indicates that the trailing gear IS NOT capable of leading to any of the situations listed.

[7] NSI = non-serious injury.

[8] For the purposes of this table, potential as it relates to criterion P6 indicates that the trailing gear IS capable of leading to any of the situations listed.

[9] For the purposes of this table, "trauma" is defined as a wound or bodily harm caused by an extrinsic agent. Blunt trauma is an injury (abrasion, laceration, contusion or skeletal fracture) produced by a blunt object striking the body or impact of the body against a blunt object or surface. Sharp force trauma is an injury caused by a sharp or pointed object or a bullet from a gunshot creating a penetrating (stab, chop or incision) wound. Laceration is defined as a ragged incision or a tearing of the skin. Lacerations are caused by blunt trauma that results in stretching, tearing, crushing, shearing, or avulsion of the tissue.

[10] For the purposes of this table, "penetration" is defined as a wound occurring when a foreign object punctures the body, such as a bullet from a gunshot. Penetrating wounds can be characterized as one of three types: stab (small external wound that is greater in length into the body than is apparent on the skin surface), incised (clean cuts into the skin which are longer on the skin surface than they are deep), or chop wounds (incised wounds that penetrate deep to the bone, leaving a groove or cut in the bone).

Procedures for Issuing Manuscripts in the *Northeast Fisheries Science Center Reference Document* (CRD) Series

Clearance

All manuscripts submitted for issuance as CRDs must have cleared the NEFSC's manuscript/abstract/webpage review process. If any author is not a federal employee, he/she will be required to sign an "NEFSC Release-of-Copyright Form." If your manuscript includes material from another work which has been copyrighted, then you will need to work with the NEFSC's Editorial Office to arrange for permission to use that material by securing release signatures on the "NEFSC Use-of-Copyrighted-Work Permission Form."

For more information, NEFSC authors should see the NEFSC's online publication policy manual, "Manuscript/abstract/webpage preparation, review, and dissemination: NEFSC author's guide to policy, process, and procedure," located in the Publications/Manuscript Review section of the NEFSC intranet page.

Organization

Manuscripts must have an abstract and table of contents, and (if applicable) lists of figures and tables. As much as possible, use traditional scientific manuscript organization for sections: "Introduction," "Study Area" and/or "Experimental Apparatus," "Methods," "Results," "Discussion," "Conclusions," "Acknowledgments," and "Literature/References Cited."

Style

The CRD series is obligated to conform with the style contained in the current edition of the United States Government Printing Office Style Manual. That style manual is silent on many aspects of scientific manuscripts. The CRD series relies more on the CSE Style Manual. Manuscripts should be prepared to conform with these style manuals.

The CRD series uses the American Fisheries Society's guides to names of fishes, mollusks, and decapod crustaceans, the Society for Marine Mammalogy's guide to names of marine mammals, the Biosciences Information Service's guide to serial title abbreviations, and the ISO's (International Standardization Organization) guide to statistical terms.

For in-text citation, use the name-date system. A special effort should be made to ensure that all necessary bibliographic information is included in the list of cited works. Personal communications must include date, full name, and full mailing address of the contact.

Preparation

Once your document has cleared the review process, the Editorial Office will contact you with publication needs – for example, revised text (if necessary) and separate digital figures and tables if they are embedded in the document. Materials may be submitted to the Editorial Office as files on zip disks or CDs, email attachments, or intranet downloads. Text files should be in Microsoft Word, tables may be in Word or Excel, and graphics files may be in a variety of formats (JPG, GIF, Excel, PowerPoint, etc.).

Production and Distribution

The Editorial Office will perform a copy-edit of the document and may request further revisions. The Editorial Office will develop the inside and outside front covers, the inside and outside back covers, and the title and bibliographic control pages of the document.

Once both the PDF (print) and Web versions of the CRD are ready, the Editorial Office will contact you to review both versions and submit corrections or changes before the document is posted online.

A number of organizations and individuals in the Northeast Region will be notified by e-mail of the availability of the document online.

Research Communications Branch
Northeast Fisheries Science Center
National Marine Fisheries Service, NOAA
166 Water St.
Woods Hole, MA 02543-1026

MEDIA MAIL

Publications and Reports of the Northeast Fisheries Science Center

The mission of NOAA's National Marine Fisheries Service (NMFS) is "stewardship of living marine resources for the benefit of the nation through their science-based conservation and management and promotion of the health of their environment." As the research arm of the NMFS's Northeast Region, the Northeast Fisheries Science Center (NEFSC) supports the NMFS mission by "conducting ecosystem-based research and assessments of living marine resources, with a focus on the Northeast Shelf, to promote the recovery and long-term sustainability of these resources and to generate social and economic opportunities and benefits from their use." Results of NEFSC research are largely reported in primary scientific media (*e.g.*, anonymously-peer-reviewed scientific journals). However, to assist itself in providing data, information, and advice to its constituents, the NEFSC occasionally releases its results in its own media. Currently, there are three such media:

NOAA Technical Memorandum NMFS-NE -- This series is issued irregularly. The series typically includes: data reports of long-term field or lab studies of important species or habitats; synthesis reports for important species or habitats; annual reports of overall assessment or monitoring programs; manuals describing program-wide surveying or experimental techniques; literature surveys of important species or habitat topics; proceedings and collected papers of scientific meetings; and indexed and/or annotated bibliographies. All issues receive internal scientific review and most issues receive technical and copy editing.

Northeast Fisheries Science Center Reference Document -- This series is issued irregularly. The series typically includes: data reports on field and lab studies; progress reports on experiments, monitoring, and assessments; background papers for, collected abstracts of, and/or summary reports of scientific meetings; and simple bibliographies. Issues receive internal scientific review and most issues receive copy editing.

Resource Survey Report (formerly *Fishermen's Report*) -- This information report is a regularly-issued, quick-turnaround report on the distribution and relative abundance of selected living marine resources as derived from each of the NEFSC's periodic research vessel surveys of the Northeast's continental shelf. This report undergoes internal review, but receives no technical or copy editing.

TO OBTAIN A COPY of a *NOAA Technical Memorandum NMFS-NE* or a *Northeast Fisheries Science Center Reference Document*, either contact the NEFSC Editorial Office (166 Water St., Woods Hole, MA 02543-1026; 508-495-2350) or consult the NEFSC webpage on "Reports and Publications" (http://www.nefsc.noaa.gov/nefsc/publications/). To access *Resource Survey Report*, consult the Ecosystem Surveys Branch webpage (http://www.nefsc.noaa.gov/femad/ecosurvey/mainpage/).

ANY USE OF TRADE OR BRAND NAMES IN ANY NEFSC PUBLICATION OR REPORT DOES NOT IMPLY ENDORSEMENT.