

Project P.L. 99-659, 3-IJ-¹⁸³~~132~~

MARYLAND INTERJURISDICTIONAL
FISHERIES STATISTICS

Grant No: NA16FI1152

Completion Report

for the period

October 1, 2001 to September 30, 2002

Prepared By: Jian An Zhou

Jian An Zhou

Socio-economic Monitoring and Analysis
Program

Approved By: Philip W. Jones

Philip W. Jones, Director

Resource Management Division

FISHERIES SERVICE
MARYLAND DEPARTMENT OF NATURAL RESOURCES

December 2002



UNITED STATES
DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Region
Management Division
State-Federal Relations Branch

Completion Report

Grantee: Maryland Department of Natural Resources

Project No: 3-IJ-132

Grant No: NA16FI1152

Project Title: MD Interjurisdictional Fisheries Statistics

Period Covered: October 1, 2001 to September 30, 2002

Prepared By: Socio-economic Monitoring and Analysis Program

Approved By: Resource Management Division

Date: December, 2002

Statutory Funding Authority:

- ☐ Commercial Fisheries Research
and Development Act (P.L.88-309)
- ☐ Anadromous Fish Conservation
Act (P.L. 89-304)
- ☒ Interjurisdictional Fisheries Act
(Title III of P.L. 99-659)

Table of Contents

	Page
Executive Summary	V
Section	
1. Introduction.....	1
2. Purpose	1
3. Approach	1
4. Results	5
5. Evaluation of Non-reporting.....	7
6. Evaluation of Effort Data	8
7. Evaluation of Reporting Discrepancies	8
References	9
Tables	
Table 1. Maryland Commercial Harvest of Interjurisdictional Species, 1988-2002	10
Table 2. Number of Monthly Record Forms and Logbooks Issued in in 2002 for the Blue Crab Reporting System by Commercial Crab License Type.....	10
Table 3. Reported Maryland's Commercial Harvest of Interjurisdictional Species in 2002 (As of December 2002).....	11
Table 4. Maryland Charter/Head Boat Activities in 2002 (As of December 2002).....	12
Table 5. Major Species Harvested by Maryland's Charter/Head Boat Fisheries in 2002 (As of December 2002).....	12
Table 6. Fishing Effort Measures for Major Gears Used in Maryland's Commercial Harvest of Interjurisdictional Finfish Species in 2002 (As of December 2002).....	13
Table 7. Fishing Effort Measures for Major Gears Used in Maryland's Commercial Harvest of Blue Crabs in 2002 As of December 2002).....	14
Table 8. Scale of Operation of Maryland Sea Food Dealers, Reported Purchase of Finfish and Blue Crabs (As of December 2002)	15

Table 9.	Disposition of Maryland Commercial Blue Crabs Harvest (As of December 2002)	15
Table 10.	Maryland Sea Food Dealers' Reported Purchase of Finfish and Blue Crabs from Both Within and Outside Maryland as percent of total (As of December 2002).....	16
Table 11.	Trends of Maryland Blue Crab Ex-Vessel Prices, 1992-2002.....	17
Table 12.	Percent of Finfish Reports Received by Month (As of December 2002)	18
Table 13.	Percent of Blue Crab Reports Received by Month by License Type in 2002 (As of December 2002).....	19
Table 14.	Percent of Seafood Dealer Reports Received by Month (As of December 2002).....	19
Table 15.	Maryland's Blue Crabs Purchased by Maryland Sea Food Dealers: A Comparison Between Two Reporting Systems	20

Graphs

Graph 1.	Maryland's Commercial Harvest of Interjurisdictional Species: Trends of Landings and Ex-Vessel Value (Preliminary for 2002).....	21
Graph 2.	Maryland's Commercial Blue Crab Fishery: Trends of Landings and Ex-Vessel Value (Preliminary for 2002)	21
Graph 3.	Maryland's Commercial Striped Bass Fishery: Trends of Landings and Ex-Vessel Value (Preliminary for 2002)	22
Graph 4.	Maryland's Commercial Summer Flounder Fishery: Trends of Landings and Ex-Vessel Value (Preliminary for 2002)	22
Graph 5.	Maryland's Commercial Atlantic Croaker Fishery: Trends of Landings and Ex-Vessel Value (Preliminary for 2002)	23
Graph 6.	Maryland's Commercial Eel Fishery: Trends of Landings and Ex-Vessel Value (Preliminary for 2002)	23
Graph 7.	Maryland's Commercial Black Sea Bass Fishery: Trends of Landings and Ex-Vessel Value (Preliminary for 2002)	24

Graph 8 Maryland's Commercial Menhaden Fishery: Trends of Landings and Ex-Vessel Value (Preliminary for 2002)	24
--	----

Exhibits

Exhibit 1. Commercial Finfish Report Form.....	25
Exhibit 2. Commercial Blue Crab Daily Record Form.....	26
Exhibit 3. Commercial Blue Crab Monthly Record Form.....	27
Exhibit 4. Commercial Charter Boat Captain's Daily Log	28
Exhibit 5. Seafood Dealer Monthly Report Form.....	29

Executive Summary

The Fisheries Statistics Project under the Maryland Department of Natural Resources has successfully achieved the objectives of this project for the period of October 1, 2001 through September 30, 2002. It has carried out day-to-day operations of maintaining four existing data reporting systems for collecting commercial statistics of interjurisdictional species harvested in Maryland.

Maryland commercial fishermen harvested 30.4 million pounds of interjurisdictional species, down 8% from the previous year's 33.2 million pounds. This year's harvest is worth \$31.2 million at dockside, down \$7.4 million, or 19%, from last year's \$38.6 million.

The decline of state total ex-vessel value is mainly a result of changes in the blue crab fishery. Maryland's commercial fishermen harvested \$27.1 million worth of blue crabs in 2002, down \$6.5 million, or 19%, from last year's \$33.6 million. This fall in value is more due to a fall in price than a decrease in landings. On average in 2002, the fishermen received \$1.14 per pound for blue crabs, down 23 cents, or 17%, from last year's \$1.37 per pound. The decrease in price was compounded by a modest decrease in landings. Maryland's fishermen harvested 23.7 million pound of blue crabs in 2002, down 0.8 million pound, or 3%, from last years' 24.5 million pound.

Introduction

The Maryland Department of Natural Resources (MDNR), receives federal funding under the provisions of Title III of P.L. 99-659 the Interjurisdictional Fisheries Act of 1986 to facilitate interstate fisheries management through the collection and management of commercial catch and effort statistics for inter-jurisdictional species harvested in Maryland.

The Maryland portion of the Chesapeake Bay and near-shore Atlantic ocean waters supports several important species including blue crabs, striped bass, croaker, spot, black sea bass, summer flounder, and American eel. Since 1988, when P.L. 99-659 funds began to be used to support MDNR's fisheries dependent data collection, Maryland's commercial harvest of Interjurisdictional species has ranged from 30 to 64 million pounds a year, with total ex-vessel value ranging from \$24 to \$47 million in 1988 dollars a year (Table 1).

Purpose

The purpose of this project is to continue the collection and management of commercial catch and effort statistics of interjurisdictional species harvested in Maryland.

Approach

In order to achieve the objectives of this project, the Fisheries Statistics Project (FSP) carries out day-to-day operations of maintaining existing data collection systems. All of the fisheries catch and effort data are summarized in SAS (SAS 1987) data files and are rapidly retrievable to react to biological, economic, social, and political needs for various national, regional and local government agencies.

Data base management under this project has been upgraded continuously over the past few years. Originally, these data were maintained in SAS data files on an IBM mainframe computer at the Annapolis Data Center and retrievable via MDNR local area network (LAN). As desktop personal computers become more powerful, a shift from a mainframe environment to a client/server environment began. Currently, these data are transferred to MDNR LAN and accessible to all MDNR LAN users.

The FSP submits to the National Marine Fisheries Service (NMFS) Maryland commercial fishery catch and dockside value data organized by month and by NOAA Code (Chesapeake Bay, ocean side bays, up to 3 miles from the shore, and over 3 miles from the shore) several times a year.

The FSP operates four data collecting systems for the commercial catch and effort statistics of interjurisdictional species harvested in Maryland. They are: (1) finfish reporting system; (2) blue crab reporting system; (3) fishing guide reporting system; and (4) seafood dealer reporting system. These systems are of a self-reporting census type. FSP mails out reporting forms, annually or monthly, to respective persons involved. After completed reports are received by the FSP, they are checked and

corrected for logical errors first. Then they are key entered into a database. In the data entry process, a double entering technique is used to minimize key punching errors.

Finfish Reporting System

This system is based on monthly reports of approximately 2,600 fishermen licensed to harvest finfish in Maryland. Each month every licensed fisherman is sent a reporting form (Exhibit 1), on which he is asked to report his monthly catch by species, by gear, and by water area (NOAA Codes). Also, fishermen are required to report several measures of effort. These include four data elements: 1) number of days a gear is used each month (dij)¹; 2) average number of hours a gear is in the water per day when fishing (hij); 3) average amount of a gear used per day (gij); and 4) average number of persons fishing on a boat per day (pij).

The reported amount of gear used per day (gij) varies depending on what kind of gear is used. For example, for drift nets, gij is defined as the length (yard) of the net. For pound nets, gij is defined as the number of sets per day.

Completed forms are returned to the FSP each month. If reports are not received in approximately 50 days from the end of a month, delinquent notes are sent.

The finfish data base contains raw data from the returned reports. Data can be retrieved in the desired way, such as monthly catch by species, by gear, by NOAA Code, or by license type, with a SAS program.

Blue Crab Reporting System

Approximately 6,200 people are currently licensed to harvest blue crabs commercially in Maryland. Three major types of license allow an individual to catch blue crabs in Maryland waters commercially: 1) Limited Crab Harvester (LCC) allowing the use of trotlines and up to 50 crab pots; 2) Crab Harvester (CB3) allowing the use of trotlines and up to 300 crab pots²; and 3) Unlimited Tidal Fish (TFL) allowing the use of trotlines and up to 900 crab pots. About 3,900 people purchased a LCC, 2,000 a TFL, and 250 a CB3 (Table 2).

Two reporting forms are used to collect data for blue crabs: a daily record form (logbook, Exhibit 2) and a monthly record form (Exhibit 3). Watermen who harvested fewer than 20 bushes of crabs a year

¹. In notations throughout the report, 'i' denotes the ith licensee and 'j' denotes the jth month.

². People can upgrade the CB3 license to a CB6 license for using up to 600 crab pots and a CB9 license for using up to 900 crab pots. Since only a few people did so, we chose not to distinguish them from CB3 in this report.

for the last two consecutive years (about 47% of all licensees in 2001) get a monthly record form (Table 2). They are required to mail back their completed forms at the end of the crabbing season. All the other crabbers receive a daily form, or a logbook. They are required to mail back the completed forms every month. The purpose of using the monthly forms instead of the daily forms for those less active watermen is to reduce their burden of reporting and to simplify FSP's data processing as well.

The major difference between these two forms is that the daily record form requires more detailed catch information. With the daily record form, licensees are required to record their daily catch by market category (number 1 males, number 2 males, females, soft crabs, and peelers) on the form and indicate what type of gear is used to harvest most of the catch.

Both forms request the same information on three effort data elements by asking the following questions: 1) How many days did you crab this month (dij)? 2) How many hours per day did you spend on the water crabbing this month (hij)? 3) What was the average amount of gear you used per day this month (gij)? The reported measurement of gear amount used per day varies depending on what kind of gear is used. For trotline, it is defined as the average amount of gear (yards) crabbed per day in a particular month. For crab pots, the amount of gear used is defined as the average number of pots pulled per day in a particular month.

At the beginning of the season, each licensee is issued either a set of daily record forms (one for each month) or a monthly record form (one for the entire crabbing season). Completed daily record forms are returned to the FSP each month. If they are not received in approximately 50 days from the end of a month, delinquent notes are sent to those who haven't turned them in to remind them to do so. The monthly record forms are returned to the FSP at the end of the crabbing season. Delinquent notes are also sent to those who haven't turned in their annual reports in time to remind them to do so.

The management of the crab data consists of three steps. In the first step, the data on the daily record forms are key entered into a raw data base that contains all the original daily catch data and the three effort data elements (dij, hij, and gij). The raw data base is organized by month with each month as a separate data file (daily file).

In the second step, the raw data on daily catch is converted to monthly total catch per licensee. Monthly catch, together with the three effort data elements (dij, hij, and gij) is stored in a monthly file. It is into these monthly files that the data from the monthly record forms are key entered when they are returned to the FSP at the end of the crabbing season.

In the third step, the monthly total catch and effort for all licensees are computed from the monthly files and stored in one annual file for a particular year. We assume that an average non-reporter catches the same amount of crabs as an average reporter. Therefore, the monthly total catch by market category is obtained by computing the mean catch of reporters by license type first, then multiplying the mean catch by the total number of licensees in each license category.

Total monthly catch by gear and water area (NOAA Code) is computed by breaking down the

total monthly catch proportionally to the reported catch by gear and NOAA Code.

For crabbing effort, four monthly totals are computed from the three available effort data elements (d_{ij} , h_{ij} , and g_{ij}). These totals are: 1) the total person days crabbed in a month (TD_j)³; 2) total person hours crabbed in a month (TH_j)⁴; 3) total gear hours used (TG_j)⁵, and 4) total gear amount used per day in a month (Tg_j)⁶. Monthly totals are also broken down by gear type and NOAA Code

To summarize, the FSP maintains three kinds of data files for blue crabs for each year: 1) daily files containing each crabber's daily catch data, total days crabbed in a month (d_{ij}), and average daily effort (h_{ij} and g_{ij}); 2) monthly files containing each crabber's monthly totals of catch and the same effort data as in daily files (d_{ij} , h_{ij} , and g_{ij}), and 3) an annual file containing monthly totals of catch and effort of all crabbers. These totals are broken down by market categories, by license categories, by gear type, and by NOAA Code. The total effort measures available are TD_j , TH_j , TG_j , and Tg_j .

The crab data are organized in a manner which facilitates easy retrieval of relevant data. For example, if one wants to study daily activities of crabbers one can use the daily file. If one's interest is monthly variations in catch and effort among crabbers it's easier to use the monthly files. For computing the annual total of catch or effort, it's easier to use the annual file. If one's definition of effort should differ from what is available in the annual file one can use the raw effort data elements (d_{ij} , h_{ij} , and g_{ij}) in either the daily or monthly files to compute effort related statistics to suit one's specific needs.

Fishing Guide Reporting System

This is a mandatory reporting system for charter and head boats. Captains who operate a charter or a head boat in Maryland waters (including the Maryland portion of the Chesapeake Bay, ocean side bays, and the Atlantic Ocean) are required to record their fishing activities on a daily basis. Data reported to the FSP include the number of passengers, number of fishing trips, and number and weight of fish

$$^3. TD_j = \frac{N}{n} \sum_{i=1}^n d_{ij} ; \text{ where, and subsequently, } n = \text{number of reporters,}$$

$N = \text{number of licensees in a licensee category}$

$$^4. TH_j = \frac{N}{n} \sum_{i=1}^n (h_{ij} * d_{ij})$$

$$^5. TG_j = \frac{N}{n} \sum_{i=1}^n (g_{ij} * d_{ij} * h_{ij}) \text{ for trotline, } TG_j = \frac{N}{n} \sum_{i=1}^n (g_{ij} * d_{ij} * 24) \text{ for pots.}$$

$$^6. Tg_j = \frac{N}{n} \sum_{i=1}^n g_{ij}.$$

harvested by species.

The reporting form used for this purpose is the Commercial Charter Boat Captain's Log Book (Exhibit 4), which is composed of a set of daily recording forms. Each charter or head boat owner is issued a log book for each boat he/she owns (615 boats in 2002). The log book must stay with the boat and the captain on duty is required to record the fishing activity on the boat each day on the form, including number of trips, number of paying passengers, and their catch. The completed forms are forwarded to the FSP every week.

Seafood Dealer Reporting System

This system is based on monthly reports of licensed commercial buyers of blue crabs and finfish. Each dealer is asked to report total monthly purchases and average price by species and by market category on a form provided by the FSP (Exhibit 5). The main purpose of the this reporting system is to estimate monthly ex-vessel value of harvest. Other functions of this system are to provide a check on the total amount of catch reported by harvesters and an estimate of the proportion of the catch passing through dealers.

Results

Commercial Harvest of Interjurisdictional Species in 2002

Table 3 presents the reported commercial harvest and its ex-vessel value of interjurisdictional species landed in Maryland for the 2002 season as of December. Maryland commercial fishermen harvested about 30.4 million pounds of interjurisdictional species, down 8% from the previous year's 33.2 million pounds. This year's harvest is worth \$31.2 million at dockside, down \$7.4 million, or 19%, from last year's \$38.6 million. Recent trend (1988-2002) in the landings of interjurisdictional species harvested in Maryland is presented in Graph 1.

The decline of state total ex-vessel value is mainly a result of an decrease in that of blue crabs (Graph 2). This is simply because of the dominant position of the blue crabs in Maryland's commercial fishery in terms of ex-vessel value. In 2002, blue crabs accounted for the bunk 87% of the total value of interjurisdictional species, or \$27.1 million, close to 7 times of all interjurisdictional finfish species combined (\$4.2 million) . Striped bass ranked second with \$2.7 million, or 9% of the total value, followed by summer flounder with \$0.5 million, or 2% of the total.

Maryland's commercial fishermen harvested 23.7 million pounds of blue crabs in 2002, down by 3% from last year's 24.5 million pounds. Despite the modest decrease in landings, the ex-vessel value fell 20%, or \$6.5 million, from last year's \$33.6 million , due to a 17% fall in the blue crab price that was paid to Maryland fishermen.

Although annual blue crab landings went up one year and down the next in the past, the general trend was declining during the last ten yeas since 1993 (Graph 2). The 2002's landings was roughly 40% of

that 1993. The 5-year average landings from 1993 to 1997 was 44.8 million pounds. From 1998 to 2002, the 5-year average was down to 25.7 million pounds, or down by 43%. The ex-vessel value showed a stabler trend. The 5-year average was \$37.7 million for 1993-97, it was \$31.2 million for 1998-02, down 17%, due to increase of the price for blue crabs. However, the price increase was mainly due to inflation. Adjusted for inflation, the trend show a similar a pattern as that of landings. The real ex-vessel value was down by 41% from 1993-97 to 1998-02.

Blue crabs are harvested and marketed in two forms: hard shell crabs and soft shell crabs. During the past 10 years, hard crabs accounted for 96% of the total blue crab harvest in weight and soft crabs accounted for 4%. In 2002, hard crabs accounted for 95% in weight and soft crabs accounted for 5%. Apparently, the composition of hard and soft crabs in landings did not change much from year to year. In terms of value, however, the soft crabs' share of blue crabs' total value varied from 12% to 29% during the past 10 years. This was because that the price of soft crabs tended to vary more than that of hard crabs. In 2002, soft crabs contributed \$6.1 million, or 22% of the total blue crabs' value, close to \$1 million more than all interjurisdictional finfish species combined..

Among interjurisdictional finfish species in Maryland, striped bass ranked first. Its ex-vessel value counted for 64% of the total interjurisdictional finfish value, followed by summer flounder (11%), menhaden (7%), croaker (5%), black sea bass (4%), and American eel (4%). Recent trends (1992-2002) of commercial landings and ex-vessel value of these major inter-jurisdictional finfish species are presented in Graphs 3-8.

Charter/Head Boats Activities in 2002

Preliminary data show that Maryland's charter/head boat fishery made 16,302 fishing trips with 125,150 paid anglers on board in the 2002 (Table 4). These anglers harvested approximately 2 million pounds of interjurisdictional finfish. Six major species accounted for 96% of the total harvest (Table 5), with striped bass ranking first (29%), followed by croaker (26%), black sea bass (14%), spot (12%), bluefish (10%), and gray sea trout (5%).

Fishing Effort Measures

Definitions of effort depend on many factors including gear type and the specific objective of a study. For this report, the purpose is to show what kinds of effort data are available, how the data are collected, and what some possible uses of the data are.

As an example, Table 6 presents, for interjurisdictional finfish as a group in the 2002 season, some of the effort data collected. These data include the annual total person days fished, annual average hours fished per person per day, annual average number of persons per boat, and annual average gear amount used per person per day for four major gears: anchor gill net, drift gill net, hook and line, and pound net.

For blue crabs, some measures of use of two major gears by month--crab pots and trotline--are presented in Table 7. These two gears accounted for 98% of total catch in recent years, with crab pots accounting for 63% and trotline 35%.

Sea Food Dealer Activities

According to Maryland sea food dealers' reports, 44.7 million dollars worth of finfish and blue crabs were purchased in 2002, down 23% from the previous year (Table 8). The Maryland sea food wholesale industry is a diversified business in terms of economic scale with about 300 dealers. Based on the reports from 185 dealers, 10 dealers (6%) did 59% of the business, 105 dealers (57%) did the rest of the business (41%), while 70 dealers (38%), did not actually purchase any finfish or blue crabs for distribution in 2002.

Maryland sea food dealers are the major marketing channel for bringing sea food to the consumers. Data collected through the blue crabs reporting system show that, in 2002, Maryland watermen sold 82% of their blue crab harvest to sea food dealers, 7% to retailers and 6% to the public, and retained 5% for their own consumption (Table 9).

Maryland sea food dealers also imported finfish and blue crabs from other states to meet the demand in Maryland. From 1993 to 2002, imported finfish accounted for from 10% to 36% of the total finfish business handled by dealers, while imported blue crabs ranged from 16% to 41% (Table 10).

Data provided by sea food dealers' reports were used to compute weighted average ex-vessel prices for all species harvested by fishermen in Maryland waters. These prices were adjusted for inflation by using producer price index for unprocessed finfish and shellfish and were used to produce Tables 1, 3, 11 and Graphs 1 through 8.

In 2002, Maryland fishermen endured a dramatic fall in price for blue crabs. On average, the fishermen received \$1.14 per pound in 2002, down 23 cents, or 17%, from last year's \$1.37 per pound (Table 11). Adjusted for inflation, the fall in price was 14%. In terms the inflation adjusted price in 1992 dollar, price for blue crabs was \$0.77 per pound in 2002, down 12 cents from 2001's \$0.89 per pound.

The inflation adjusted price in 1992 dollar for hard crabs ranged from 50 cents to 74 cents over the period from 1992 to 2002, while for soft crabs, the price ranged from \$2.43 to \$3.93 during the same period. In 1992 dollar, the 6-year average price from 1992 to 1997 was 66 cents per pound for hard crabs and \$3.04 for soft crabs. The 5-year average price from 1998 to 2002 was 65 cents per pound, down 1 cents from the previous 6-year period, for hard crabs. For soft crabs, the 5-year average price was \$3.40 per pound, up 35 cents, or 12%, from the previous 6-year period.

Evaluation of Non-reporting

Since all of our four data collecting systems are of a census type, non-reporting may result in an underestimate of the actual catch and effort. However, whether adjustments are needed and how to make them depends on both the extent and the nature of non-reporting.

In recent years, the extent of non-reporting for finfish has been approximately 15%. In 2002, the percent of finfish reports received ranged from 68.1% to 88.4% a month, averaging 72.5% (Table 12). The reporting rate is expected to go up as late reports come in before the new fishing season begins.

The results of a previous survey of 165 non-reporters in 1992 (Zhou, 1994) indicated that the majority (82%) did not fish for finfish. On the average, non-reporters caught only 43 pounds of finfish per person per year, as compared to 2,724 pounds of finfish per reporter per year. Thus a rough estimate of unreported finfish harvest was 16,287 pounds in 1992, accounting for only 0.3% of the reported harvest. Based on this finding, it was decided not to adjust the reported finfish harvest for non-reporting.

A different approach is taken for the blue crab reporting system in terms of adjustments for non-reporting. We assume that, on average, non-reported catch per crabber is the same as the reported catch per crabber for each gear type. Reported blue crab harvest is adjusted to include harvest by non-reporters. It is noted that this assumption may be questionable and a survey may be needed to examine its validity.

It is important to note that the higher the return rate is, the smaller the non-reporting bias. A simple calculation indicates that, with a return rate of 89%, even if the mean catch for non-reporters differs from that of reporters by 30%, the bias is only about 3.2%. We believe that a cost effective way to improve the accuracy of our blue crab harvest data is to maintain a high return rate.

The overall monthly return rate for the blue crab reporting system ranges from 78.6% to 86.2% a month in 2002 (Table 13), averaging about 82.8%. The return rate will increase as late reports are received. A closer look at the crabbers' reporting behavior shows that LCC license holders have the highest reporting rate of 89.3% a month, followed by CB3 (78.3%) and TFL (71.0%). Also, a pattern presented itself that the earlier it is in the season, the higher the reporting rate is, for all three types of license holders.

For 2002, the return rate for charter and head boats ranged from 28.1% to 81.1% a month, averaging 68.4% a month (Table 4). The return rate for charter and head boats was computed by dividing the number of reports received each month by the total number of boats.

Similarly, for sea food dealers, the return rate was computed by dividing the number of reports received each month by the total number of dealer licenses sold. However, the actual number of dealers who get a report varies from month to month. This is because some dealers get their license late and some dealers only do business a few months a year. In 1999, the actual number of reports issued each month was not kept on record. Since 2000, we have kept track of the number of report forms issued each month. Table 14 shows that the reporting rate ranged from 54.9% to 72.8% a month in 2002.

Evaluation of Effort Data

Note that a fishing license is issued to an individual and each license holder is required to report his catch and effort. There is a potential for double counting if more than one licensee are working on a boat. While it's easy to separate catch when two or more license holders fish on the same boat, sometimes it is impossible to separate the amount of gear used. Thus the effort data element *gij* might be reported more than once. Also, the number of people fishing on the same boat, *p_{ij}*, might be reported twice if two license holders fish on the same boat. Currently, there is no way to tell how extensive the double accounting in

effort data is. The assumption is that it is not a significant problem.

Evaluation of Reporting Discrepancies

In addition to potential non-reporting bias, the accuracy of the self-reported data is subject to innocent memory errors and deliberate untruthfulness. Generally, there is no easy way to evaluate the extent of the problem.

However, since both the blue crab and the sea food dealer reporting systems produce the ex-vessel value of Maryland blue crabs marketed through Maryland sea food dealers, we can compare the results from these two systems. A comparison of the results from these two systems for the last 7 years from 1996 to 2002 shows that there is a discrepancy, which, in some years, is significant (Table 15).

Usually, the result reported by dealers is lower than that reported by waterman, except for 1997 and 2002. In 1996, dealers reportedly purchased \$14.02 million worth of blue crabs from Maryland watermen, which was \$13.58 million, or 49%, less than Maryland watermen's reported sales to the dealers. In 2000, the discrepancy was 30% less, while in 1998, 1999, and 2001, it was only 12%, 10%, and 4% less, respectively. However, dealers reported more purchases than watermen's sale in 1997 by 4% and in 2002 by 33%.

Though the discrepancy indicates that data from either system could be subject to errors, it does not pinpoint where the problem is. It could be simply that the data element on the watermen's disposal of their harvest (Table 9) in the blue crab system is subject to a non-reporting bias. It is an optional item on the reporting form (logbook) and a large number of people did not volunteer that information

The discrepancy could also suggest that the data from the dealer system suffer from non-reporting bias, memory error, or untruthfulness. Since the main objective of the dealer system is to collect price data, it may be safe to assume that price data is less likely to be subject to these problems.

References

SAS Institute Inc., "SAS/STAT Guide for Personal Computers, Version 6 Edition." Cary, NC: SAS Institute Inc., 1987.

Zhou, Jian An, "Annual Report: Maryland Interjurisdictional Fisheries Statistics, Project P.L.99-659, 3-IJ-56, 1992/93." Fisheries Division, Maryland Department of Natural Resources, 1994.

Table 1. Maryland Commercial Harvest of Interjurisdictional Species, 1988-2002

Year	Harvest (Million Pounds)	Ex-Vessel Value	
		Million Nominal \$	Million 1988 \$
1988	55.4	24.1	24.1
1989	55.5	28.9	36.8
1990	50.4	24.8	30.1
1991	62.1	25.9	32.8
1992	37.1	23.6	26.2
1993	63.5	39.5	40.2
1994	51.5	47.3	46.6
1995	50.1	44.8	44.8
1996	46.4	38.2	35.5
1997	50.7	43.5	45.3
1998	35.8	36.5	37.0
1999	42.4	41.0	37.0
2000	30.5	36.1	34.2
2001	33.2	38.6	36.4
2002*	30.4	31.2	27.6

* As of December 2002.

Table 2. Number of Monthly Record Forms and Logbooks Issued in 2002 for the Blue Crab Reporting System by Commercial Crab License Type

	CB3		LCC		TFL		Total	
	Number	%	Number	%	Number	%	Number	%
Monthly	85	34	2,412	61	747	37	2,927	47
Logbook	160	65	1,513	39	1,254	63	3,244	53
Total	245	100	3,925	100	2,001	100	6,171	100

Table 3. Reported Marine and Commercial Harvest of Interjurisdictional Species in 2002
(As of December 2002)

Species	Pounds	Ex-Vessel Value (dollar)
Finfish		
Bluefish	57,040	16,455
Butterfish	13,069	6,943
Croaker	740,980	215,276
Drum, black	146	55
Drum, red	1,078	587
Eel, American	186,112	145,780
Flounder, summer	269,996	457,251
Flounder, winter	958	1,928
Herring	70,970	12,652
Lingcod	238	
Menhaden	3,518,864	297,692
Monkfish	87,582	105,594
Porgy	12	6
Sea bass, black	115,522	180,316
Sea trout, gray	44,022	27,324
Sea trout, spotted	2,999	1,952
Shad, unclassified	8,342	2,087
Shark	8,948	5,763
Spanish mackerel	11,103	7,548
Spot	112,610	67,410
Squid	17,791	13,292
Striped bass	1,459,636	2,683,323
Tautog	1,918	1,900
Whiting	572	143
Finfish Subtotal	6,730,508	4,162,763
Blue crabs, hard	22,515,091	20,917,895
Blue crabs, soft	1,193,050	6,135,9979
Blue Crabs Subtotal	23,708,141	27,053,891
Grand Total	30,439,059	31,216,654

Table 4. Maryland Charter/Head Boat Activities in 2002 (As of December 2002)

Month	Number of Boats Reported	Response Rate (%)	Pounds of Fish Harvested	Number of Paid Anglers	Number of Boat Trips
April	499	81.1	97,999	7,047	1,167
May	499	81.1	227,456	16,321	2,366
June	495	80.5	450,315	27,655	3,491
July	488	79.3	438,943	24,422	2,776
August	481	78.2	351,205	21,107	2,447
September	436	70.9	193,397	14,354	1,854
October	388	63.1	130,880	10,093	1,538
November	325	52.9	56,201	4,147	662
December	173	28.1	25	4	1
Total		68.4	1,956,421	125,150	16,302

Table 5. Major Species Harvested by Maryland Charter/Head Boat Fisheries in 2002 (As of December 2002)

Species	Pounds	Share of Total Harvest (%)
Bluefish	192,975	10
Croaker	499,935	26
Sea trout, gray	95,651	5
Sea bass, black	276,229	14
Spot	227,120	12
Striped bass	572,336	29
Others	92,175	4
Total	1,956,421	100

Table 6. Fishing Effort Measures for Major Gears Used in Maryland's Commercial Harvest of Interjurisdictional Finfish Species in 2002 (As of December 2002)

Gear Type	Person Days Fished (TD) ¹	Hours per Person per Day ²	Number of Person per Boat ³	Gear Amount per Person per Day ⁴
Gill Net, Anchor	76	6.8	2.1	465.8 Yards
Gill Net, Drift	2,816	7.9	2.5	1,086.3 Yards
Hook & Line	2,038	6.4	2.4	4.4 Lines
Pound Net	3,881	24.0 *	2.6	2.6 Sets
Others	384		2.5	

* Pound nets are in the water 24 hours a day.

$$1. TD = \sum_j^{12} \sum_i^n dij$$

$$3. \sum_j^{12} \sum_i^n pijdij / TD$$

$$2. \sum_j^{12} \sum_i^n hijdij / TD$$

$$4. \sum_j^{12} \sum_i^n gijdij / TD \text{ (For gill net, it's the length of the net)}$$

Where

d = number of days fished by one individual in a month;

h = number of hours fished per day by one individual in a month;

P = number of persons fished on a boat per day by one individual in a month;

g = amount of gear used per day by one individual in a month;

$i = 1, \dots, n$ total number of reporters;

$j = 1$ (January), ..., 12 (December).

Table 7. Fishing Effort Measures for Major Gears Used in Maryland's Commercial Harvest of Blue Crabs in 2002 (As of December 2002)

Month	Trotline			Crab Pots		
	Person Days ¹	Hours per person per Day ²	Yards Per Person per Day ³	Person Days ¹	Hours per Person Per Day ²	Number per Person per Day ³
April	668	7.1	1,367	2,742	6.6	347.5
May	4,399	7.0	1,250	4,824	6.3	348.0
June	10,590	6.9	1,105	5,959	5.8	305.3
July	13,208	6.7	1,051	6,631	5.7	305.3
August	12,548	6.6	1,031	6,287	5.6	276.8
September	7,765	6.6	1,006	4,522	5.6	285.3
October	2,726	6.6	1,045	3,519	6.3	343.6
November	57	6.3	941	1,024	6.9	397.6

1. TD_j from the annual file as described in the text.

2. TH_j / TD_j computed from the annual file as described in the text.

3.
$$\frac{\sum_j \sum_i g_{ij} d_{ij}}{\sum_j \sum_i d_{ij}}$$
 computed from the daily files.

Where g = average amount of gear used per day by one individual in a month;

d = number of days fished by one individual in a month.

$i = 1, \dots, n$, total number of reporters;

$j = 4$ (April), ..., 11 (November), crabbing season.

Table 8. Scale of Operation of Maryland Sea Food Dealers
Reported Purchase of Finfish and Blue Crabs (As of December 2002)

Average Amount Of Purchase by One Dealer	2001		2002	
	Combined Purchase (% of Total)	Number of Dealers Reporting (% of Total)	Combined Purchase (% of Total)	Number of Dealers Reporting (% of Total)
\$0	\$0	85 (42)	\$0	70 (38)
\$1-50,000	\$685,171 (1)	44 (22)	\$697,203 (2)	49 (26)
\$50,001-300,000	\$5,085,824 (9)	36 (18)	\$5,243,457 (12)	34 (18)
\$300,001-1,000,000	\$13,710,441 (24)	24 (12)	\$12,326,082 (28)	22 (12)
\$1,000,001 and more	\$38,444,924 (66)	14 (7)	\$26,481,820 (59)	10 (5)
Total	\$57,926,360 (100)	203 (100)	\$44,748,562 (100)	185 (100)

Table 9. Disposition of Maryland Commercial Blue Crabs Harvest
(As of December 2002)

Year	Retailer (%)	Public (%)	Dealer (%)	Personal (%)
1996	2	5	84	8
1997	4	5	82	8
1998	5	6	80	9
1999	5	4	83	8
2000	5	7	82	6
2001	10	6	78	6
2002	7	6	82	5
Average (1996-02)	5	6	82	7

Table 10. Maryland Sea Food Dealers' Reported Purchase of Finfish and Blue Crabs from Both Within and Outside Maryland as Percent of Total (As of December 2002)

Year	Total Purchase (million \$)	Species Share		Blue Crabs Share		Finfish Share	
		Blue Crab (%)	Finfish (%)	Maryland (%)	Out-state (%)	Maryland (%)	Out-state (%)
1993	19.9	89	11	73	27	64	36
1994	46.6	92	8	84	16	67	31
1995	30.6	87	13	64	36	72	28
1996	29.1	81	18	59	41	76	24
1997	42.4	92	8	83	17	70	30
1998	38.4	87	13	64	36	77	23
1999	50.0	79	21	66	34	83	17
2000	42.5	66	34	59	41	88	12
2001	58.8	70	30	61	39	86	14
2002	44.7	72	28	73	27	90	10
Average (1993-02)	40.3	82	18	69	31	77	23

Table 11. Trends of Maryland Blue Crabs Ex-Vessel Prices (1992-2002)

Year	<u>Hard Crab (\$ / Pound)</u>		<u>Soft Crab (\$ / Pound)</u>		<u>All Crab (\$ / Pound)</u>	
	Nominal	1992 \$	Nominal	1992 \$	Nominal	1992 \$
1992	.55	.55	2.43	2.43	.62	.62
1993	.54	.50	2.76	2.53	.61	.56
1994	.84	.74	3.30	2.92	.93	.82
1995	.87	.78	2.84	2.56	.95	.86
1996	.70	.59	4.28	3.60	.87	.73
1997	.77	.73	4.59	4.33	.92	.87
1998	.99	.90	4.64	4.22	1.17	1.06
1999	.87	.70	5.22	4.24	1.07	.87
2000	1.13	.74	5.15	3.37	1.39	.91
2001	1.05	.68	5.69	3.70	1.37	.89
2002*	.93	.62	5.14	3.43	1.14	.76
Average (92-97)	.71	3.67	.82	.66	3.04	.75
Average (98-02)	.99	5.17	1.23	.65	3.40	.80

*: As of December 2002.

Table 12. Percent of Finfish Reports Received by Month (As of December 2002)

Month	1991 (%)	1998 (%)	1999 (%)	2000 (%)	2001 (%)	2002 (%)
January	79.6	87.1	87.4	86.2	84.5	88.4
February	80.9	87.7	86.9	86.6	84.5	87.1
March	77.7	85.5	87.1	84.4	81.3	85.0
April	80.6	86.9	84.9	85.4	78.7	85.1
May	80.9	86.9	84.4	82.9	77.5	83.1
June	78.9	88.1	85.7	79.9	77.8	84.5
July	79.3	87.7	85.0	79.3	77.8	82.0
August	78.3	89.2	83.7	77.0	76.3	79.5
September	97.8	87.1	83.5	77.1	75.7	68.1
October	99.1	88.1	84.1	83.6	75.6	
November	81.9	85.4	84.8	78.2	66.5	
December	74.5	84.1	83.2	84.1	56.4	
Over All	82.5	87.0	85.1	82.1	76.1	82.5

*: A blank indicates data are not available as of December 2002 .

Table 13. Percent of Blue Crab Reports Received by Month by License Type
In 2002 (As of December 2002)

Month	CB3	LCC	TFL	Overall
April	82.6	91.5	76.7	86.2
May	81.7	91.0	75.9	85.6
June	80.2	89.8	73.7	84.0
July	78.7	89.4	72.3	83.3
August	78.7	89.4	70.3	82.6
September	76.7	88.6	68.7	81.5
October	75.2	88.0	66.9	80.5
November	72.3	87.0	63.6	78.6
Over All	78.3	89.3	71.0	82.8

Table 14. Percent of Seafood Dealer Reports Received by Month (%)
(As of December 2002)

	2000	2001	2002
Month			
January	65.0	47.8	72.8
February	81.0	66.0	71.2
March	61.3	64.0	69.0
April	60.9	67.1	66.4
May	63.4	66.4	70.0
June	57.4	70.1	63.9
July	63.5	71.2	67.6
August	62.2	68.1	65.7
September	58.7	63.4	67.6
October	43.7	63.9	63.9
November	58.4	63.9	54.9
December	65.8	61.2	
Over All	61.8	64.4	66.6

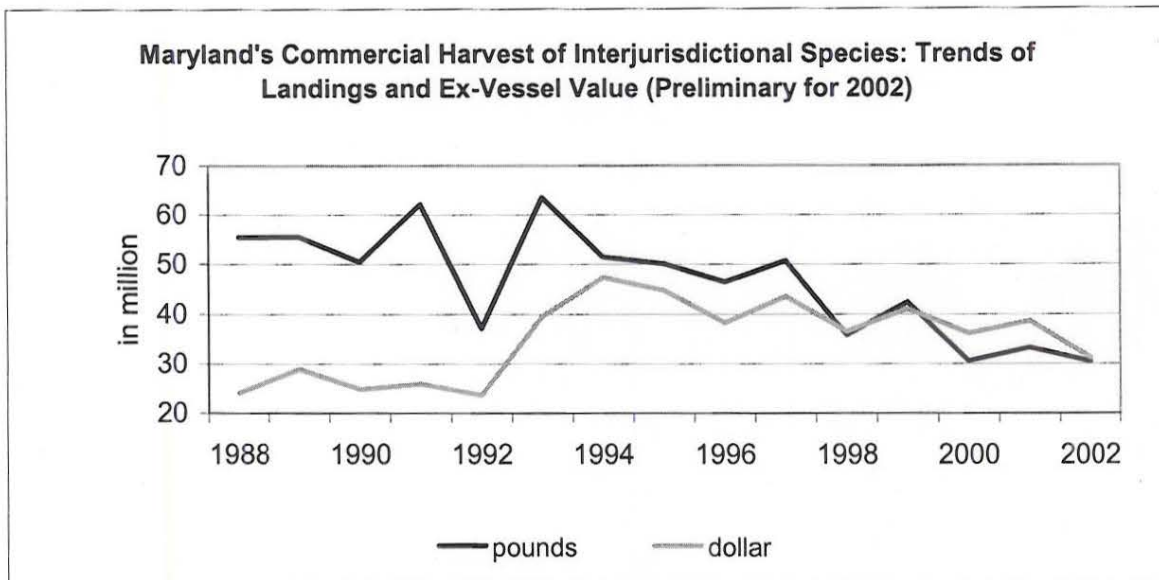
* A blank indicates data are not available as of December 2002.

Table 15. Maryland's Blue Crabs Purchased by Maryland Sea food Dealers
A Comparison Between Two Reporting Systems (As of December 2002)

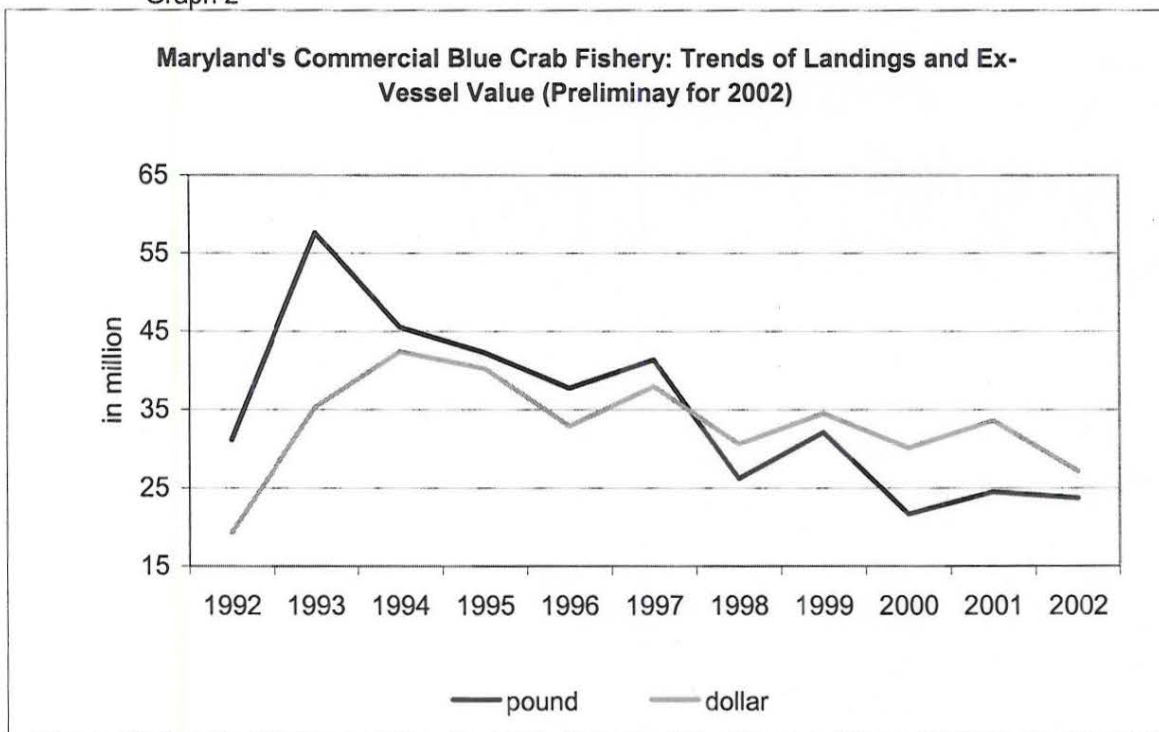
Year	Dealers' Reported Purchase from Watermen (Million \$)	Watermen's Reported Sale to Dealers (Million \$)	Discrepancy*	
			(Million \$)	%
1996	14.02	27.60	-13.58	-49
1997	32.37	31.05	1.32	4
1998	21.61	24.50	-2.89	-12
1999	25.89	28.64	-2.75	-10
2000	16.49	24.67	-8.18	-30
2001	25.15	26.23	-1.08	-4
2002	29.46	22.18	-7.28	33

* The dollar amount is computed by subtracting Column 3 from Column 2. The result is then divided by Column 3 to get the percentage.

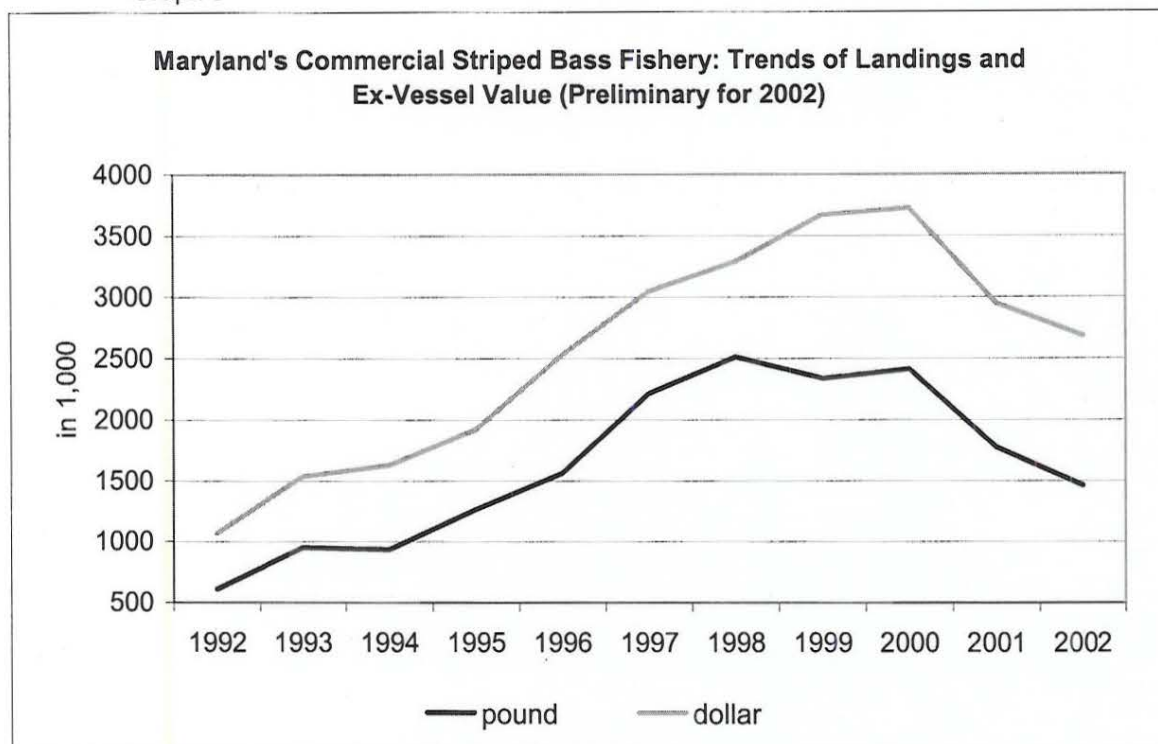
Graph 1



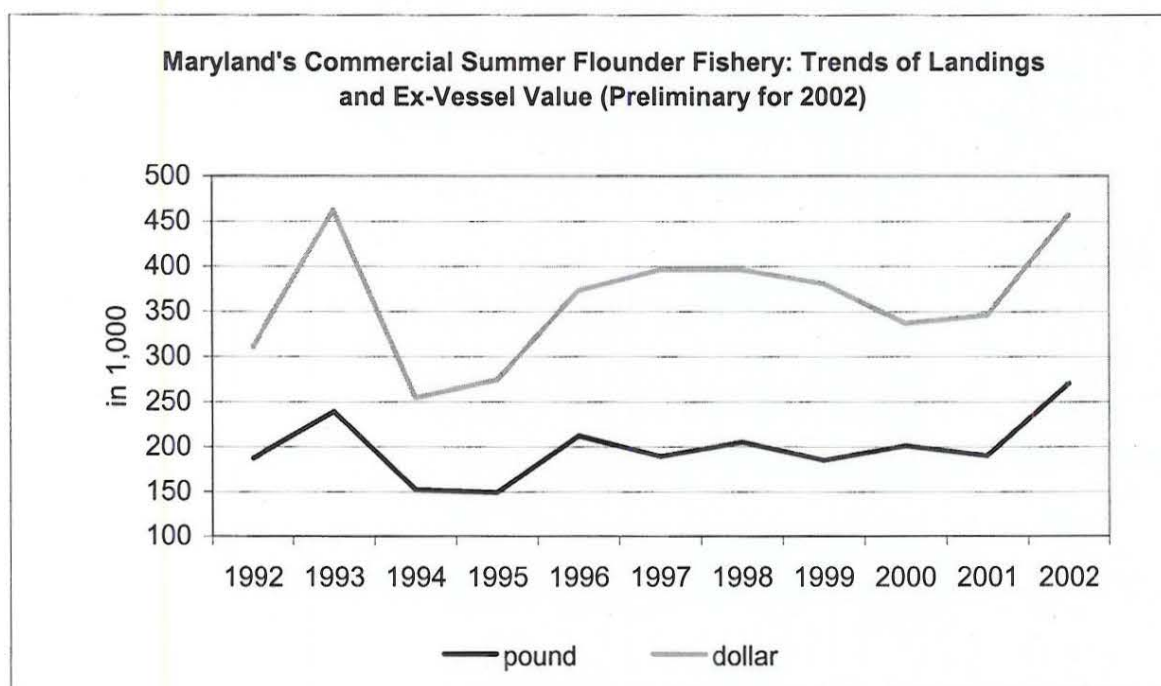
Graph 2



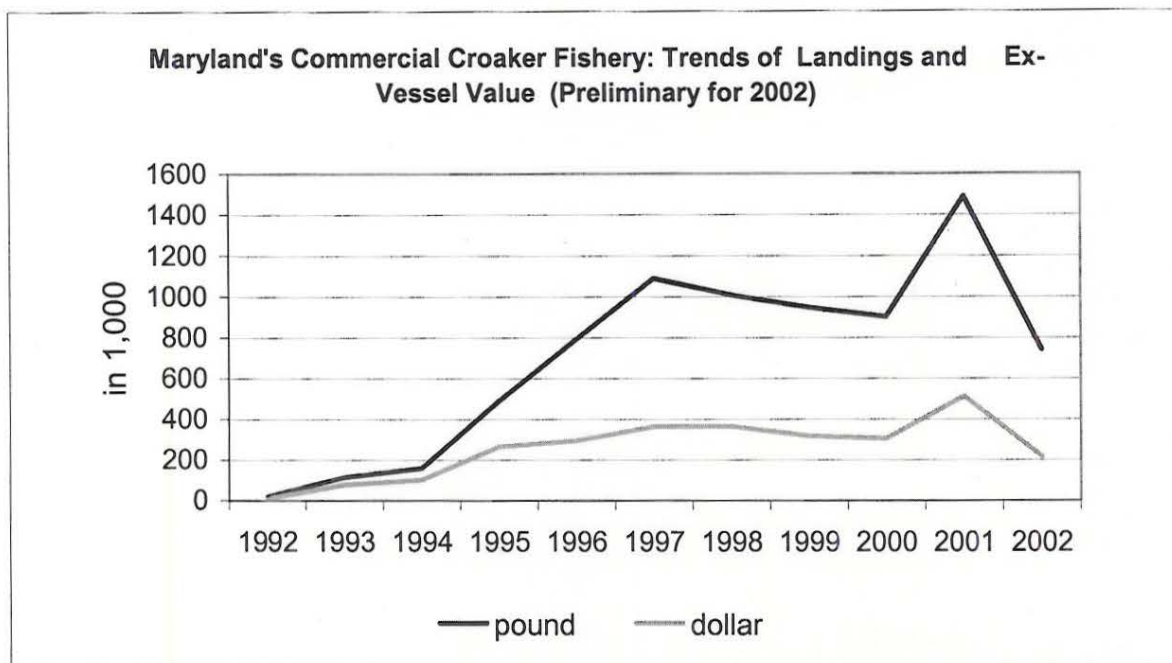
Graph 3



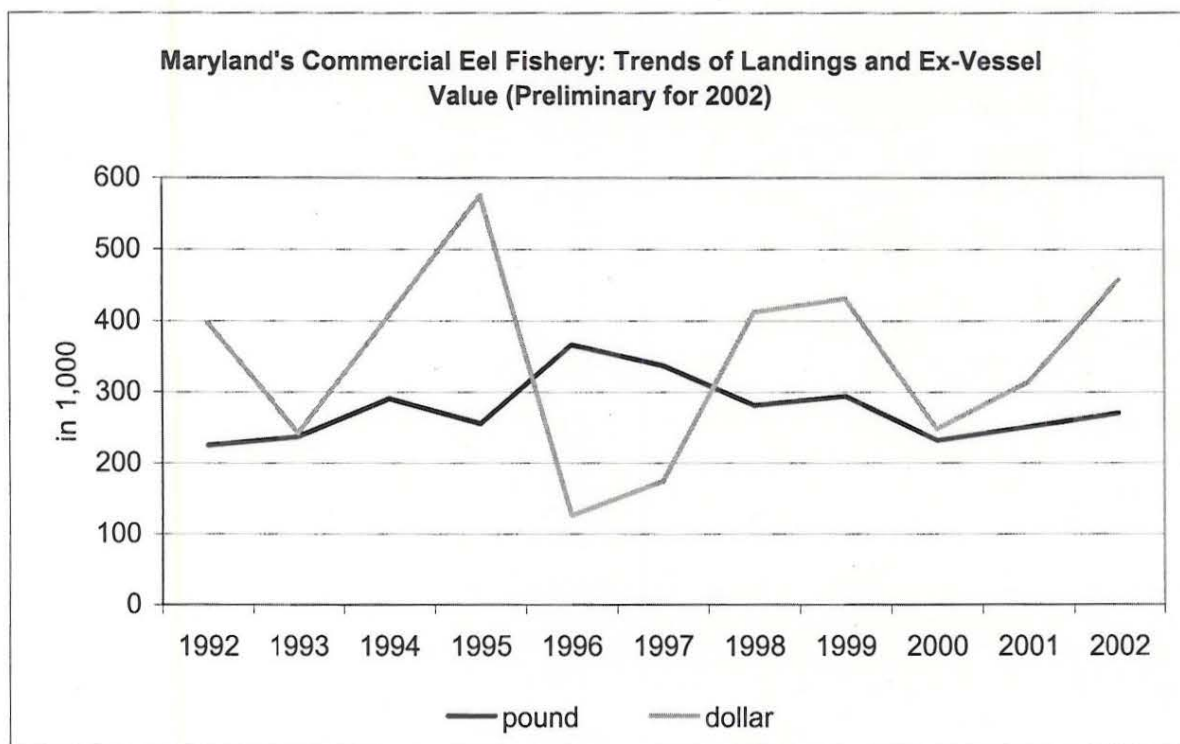
Graph 4



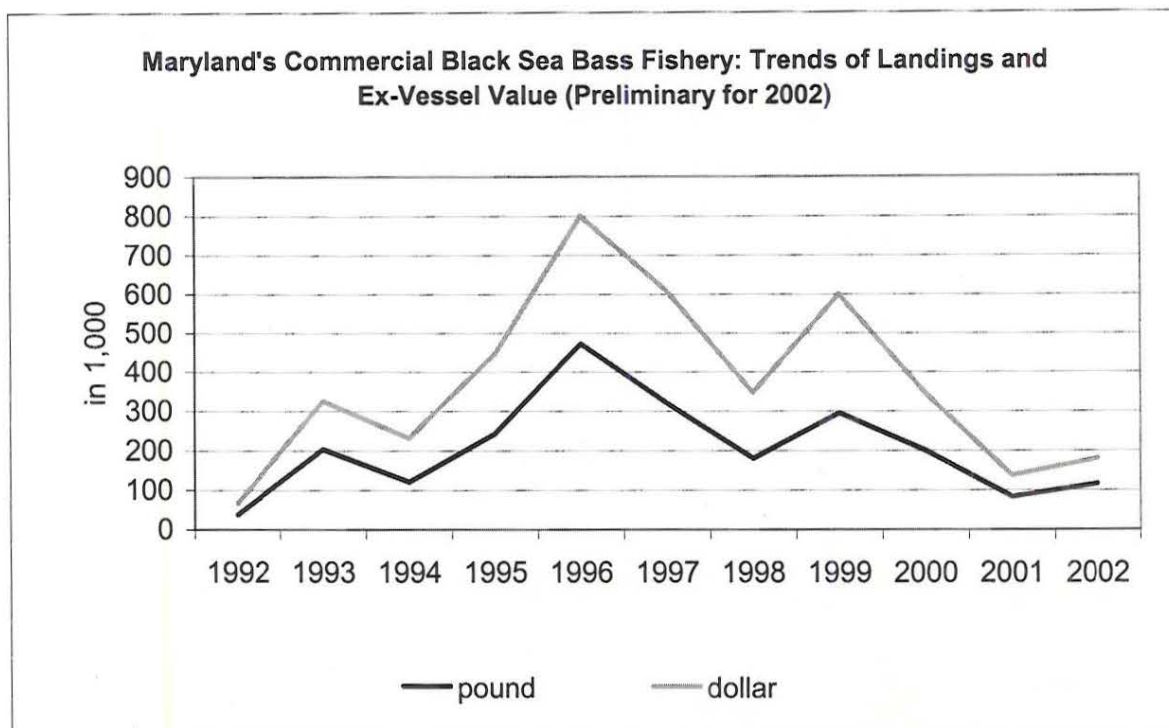
Graph 5



Graph 6



Graph 7



Graph 8

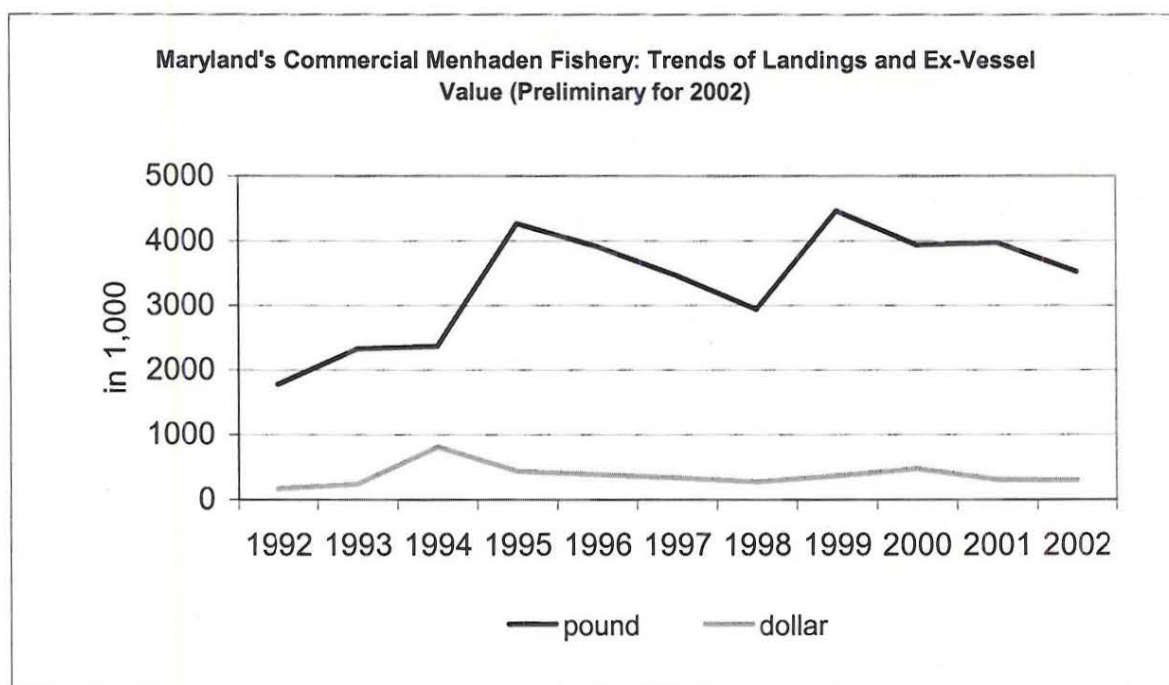


Exhibit 1



MONTHLY CONFIDENTIAL REPORT OF FINFISH CATCH FOR COMMERCIAL FISHERMEN

MARYLAND DEPARTMENT OF NATURAL RESOURCES – FISHERIES SERVICE

COMPLETE THIS SECTION FOR ONE GEAR TYPE ONLY

1. GEAR TYPE (See Codes front of part 3)

2. NUMBER OF DAYS THIS GEAR WAS FISHED DURING THIS MONTH.

3. ON THE DAYS THAT YOU FISHED, NUMBER OF HOURS PER DAY YOUR GEAR WAS IN THE WATER.

4. AVERAGE NUMBER OF PERSONS ACTIVELY FISHING PER DAY ON YOUR BOAT.

5. AVERAGE AMOUNT OF GEAR FISHED PER DAY (FILL IN ONE GEAR TYPE ONLY).

YARDS OF GILL NET

NUMBER OF POTS

NUMBER OF FYKE NETS

NUMBER OF POUND NETS

YARDS OF LONGLINE

YARDS OF HAUL SEINE

FEET AT TRAWL MOUTH

NUMBER OF LINES

6. AREA IN WHICH MOST OR ALL OF THE FISH WERE CAUGHT
(See Codes front of part 3).

7. TOTAL MONTHLY CATCH (IN POUNDS) FOR THIS GEAR. INCLUDE ALL SPECIES CAUGHT WITH THIS GEAR EXCEPT THOSE THROWN BACK ALIVE. (See Codes back of part 1)

SPECIES CODE

POUNDS LANDED

SPECIES CODE

POUNDS LANDED

COMPLETE THIS SECTION FOR ONE GEAR TYPE ONLY

1. GEAR TYPE (See Codes front of part 3)

2. NUMBER OF DAYS THIS GEAR WAS FISHED DURING THIS MONTH.

3. ON THE DAYS THAT YOU FISHED, NUMBER OF HOURS PER DAY YOUR GEAR WAS IN THE WATER.

4. AVERAGE NUMBER OF PERSONS ACTIVELY FISHING PER DAY ON YOUR BOAT.

5. AVERAGE AMOUNT OF GEAR FISHED PER DAY (FILL IN ONE GEAR TYPE ONLY).

YARDS OF GILL NET

NUMBER OF POTS

NUMBER OF FYKE NETS

NUMBER OF POUND NETS

YARDS OF LONGLINE

YARDS OF HAUL SEINE

FEET AT TRAWL MOUTH

NUMBER OF LINES

6. AREA IN WHICH MOST OR ALL OF THE FISH WERE CAUGHT
(See Codes front of part 3).

7. TOTAL MONTHLY CATCH (IN POUNDS) FOR THIS GEAR. INCLUDE ALL SPECIES CAUGHT WITH THIS GEAR EXCEPT THOSE THROWN BACK ALIVE. (See Codes back of part 1)

SPECIES CODE

POUNDS LANDED

SPECIES CODE

POUNDS LANDED



DAILY RECORD OF COMMERCIAL CRABBING

CIRCLE THE MONTH YOU ARE REPORTING FOR:

APRIL MAY JUNE JULY AUGUST
SEPTEMBER OCTOBER NOVEMBER DECEMBER

CIRCLE WHICH MEASURE YOU USE:

BUSHELS POUNDS DOZENS EACH

Please place one of the enclosed labels below.

THIS SPACE FOR LABEL OR ADDRESS CHANGE ONLY.

Name _____

Address _____

City/State/Zip _____

License Number _____

DAILY RECORDKEEPING IS MANDATORY

- Did you circle MONTH and MEASURE used? ☐
- I WILL NOT crab the rest of the season. ☐
If checked, please do not send any more reports.
- Enter GEAR type used.
(See Gear Codes on reverse side of front page.)
- Enter AMOUNT of gear used.
For trotline (TL) please circle LENGTH in yards (Y) or feet (F).
- Enter AREA where crabs were caught.
(See Water Area Codes on reverse side of front page.)
- Enter number of HOURS each day.
- Please indicate the MAXIMUM number of crab pots you had in the water THIS MONTH.

- How many pounds of EEL did you CATCH for YOUR USE as trotline bait THIS MONTH?

- What percentage of your catch did you sell or give to the following: *(Your response is optional.)*
 _____ % Restaurant
 _____ % Dealer
 _____ % Direct to Public
 _____ % Personal Use

I certify that the information provided on this form is true, complete, and correct to the best of my knowledge, and made in good faith. Making a false statement on this form is punishable by law (Article 27, Section 45A).

Signature _____

Date _____

DATE	GEAR	AMOUNT	LENGTH	AREA	HOURS	# 1'S	# 2'S	FEMALES	MIXED	DOZEN OF SOFT	# OF PEELERS
1			Y F								
2			Y F								
3			Y F								
4			Y F								
5			Y F								
6			Y F								
7			Y F								
8			Y F								
9			Y F								
10			Y F								
11			Y F								
12			Y F								
13			Y F								
14			Y F								
15			Y F								
16			Y F								
17			Y F								
18			Y F								
19			Y F								
20			Y F								
21			Y F								
22			Y F								
23			Y F								
24			Y F								
25			Y F								
26			Y F								
27			Y F								
28			Y F								
29			Y F								
30			Y F								
31			Y F								

Exhibit 3

MONTHLY RECORD OF COMMERCIAL CRABBING IN MARYLAND FOR 2002

I certify that the information provided in this report is true, complete and correct to the best of my knowledge and made in good faith. Making a false statement on this form is punishable by law (Article 27, Section 45A).

Signature _____

Date _____

DID YOU CRAB THIS YEAR?(circle) YES NO

IF NO, PLEASE DO NOT FILL IN THE REST OF THIS FORM.

CIRCLE MEASURE USED FOR HARD CRABS BUSHELS POUNDS DOZENS EACH

	DAYS ON WATER	AREA OF MOST CATCH	GEAR TYPE USED	AVG AMNT OF GEAR	FOR TROT: CIRCLE FT/YD	AVG HOURS ON THE WATER	# 1 MALES KEPT	# 2 MALES KEPT	FEMALE S KEPT	MIXED CRABS	DOZEN OF SOFT CRABS	NUMBER OF PEELER
APRIL					FT YD							
MAY					FT YD							
JUNE					FT YD							
JULY					FT YD							
AUG					FT YD							
SEPT					FT YD							
OCT					FT YD							
NOV					FT YD							
DEC					FT YD							



COMMERCIAL CHARTER BOAT CAPTAIN'S DAILY LOG

THIS LOG SHOULD BE CARRIED ON BOARD VESSEL
DURING ALL FISHING TRIPS

DATE

--	--	--	--	--	--	--	--

NO. 561

NUMBER OF PEOPLE
EXCLUDING CREW

--	--	--	--

NUMBER OF TRIPS

--	--	--	--

AREA WHERE FISH
WERE CAUGHT (SEE CODES)

--	--	--	--

SPECIES

TOTAL NUMBER OF FISH

TOTAL NUMBER OF POUNDS

008 BLUEFISH	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
013 CROAKER	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
014 DRUM/BLACK	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
017 FLOUNDER/SUMMER	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
033 SEABASS/BLACK	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
021 SPOT	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
111 SPOTTED SEATRUT	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
001 STRIPED BASS/ KEPT	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
078 STRIPED BASS/ RELEASED	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
025 GRAY SEATRUT	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
002 WHITE PERCH	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
WRITE IN CODE	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				
WRITE IN CODE	<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>					<table border="1"><tr><td></td><td></td><td></td><td></td></tr></table>				

NO FISHING THIS WEEK

--

FINISHED FISHING FOR THE YEAR

--

Exhibit 5

MARYLAND DEPARTMENT OF NATURAL RESOURCES
MONTHLY CONFIDENTIAL REPORT
OF SEAFOOD BUYING ACTIVITY
THIS REPORT IS FOR THE MONTH OF:



INSTRUCTIONS: This report is to be completed each month. Fill in the lines for the total monthly amount and average price for the species you have bought. Be sure to indicate the units applicable to each line, (i.e., pounds, bushels, dozens, etc.). If you have any questions, please call 410-260-8299. Thank You!

SPECIES	GRADE	CODE	AMOUNT BOUGHT FROM IN-STATE HARVESTERS	AVERAGE PRICE	AMOUNT BOUGHT FROM OUT-OF-STATE SOURCES	AVERAGE PRICE
STRIPED BASS		01				
WHITE PERCH		2				
ROE SHAD		3				
BUCK SHAD		4				
HERRING		5				
FLOUNDER	SUMMER	17				
FLOUNDER	WINTER	36				
CATFISH		7				
BLUEFISH		8				
MENHADEN		9				
CARP		10				
SEA TROUT	WEAKFISH	25				
SEA TROUT	SPOTTED	22				
YELLOW PERCH		26				
CROAKER		13				
SPOT		21				
EELS		16				
SHARK/DOG-FISH	SMOOTH	37				
SHARK/DOG-FISH	SPINEY	38				
HARD CRABS	MALE #1	192				
HARD CRABS	MALE #2	195				
HARD CRABS	FEMALE	194				
HARD CRABS	CULLS	195				
HARD CRABS	SOFT	196				
HARD CRABS	PEELER	197				
TERRAPIN		92				
SNAPPING TURTLE		93				
CONCH	WELK	99				

I certify that the information provided on this form is true, complete, and correct to the best of my knowledge, and made in good faith. Making a false statement on this form is punishable by law (Article 27, Section 45A).

Signature

Date