

NEW ENGLAND FISHERY MANAGEMENT COUNCIL

Amendment 1 to the Atlantic Herring Fishery Management Plan

**Catch and Bycatch in the Herring Fishery –
Summary of Available Data**

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1.0 INTRODUCTION

1.1 SOURCES OF INFORMATION

In addition to Interactive Voice Response (IVR) reporting and vessel trip reports (VTRs), four sources of information are available at this time to examine catch and bycatch in the herring fishery:

1. National Marine Fisheries Service (NMFS) Sea Sampling (Observer) Database 1994-2003 (Section 2.0, p. 2);
2. Catch Reports from Foreign Vessels Fishing Under Allocations for Total Allowable Level of Foreign Fishing (TALFF) in 2001 and Observer Reports (Raw Data) from Foreign Processing Vessels Engaged in Joint Venture (JV) Operations in 2001 (Section 3.0, p. 8);
3. ME DMR Observer Data 1997/1998, Collected in Cooperation with Manomet Center for Conservation Sciences (Section 4.0, p. 9); and
4. Results from a Herring Portside Bycatch Survey Conducted by ME DMR (Section 5.0, p. 13).

Relevant catch and bycatch information from these sources is summarized in this document.

1.2 DEFINITIONS

The following terms, as defined below, are used throughout this document:

Bycatch is defined in the Magnuson-Stevens Fishery Conservation and Management Act as “fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards. Such term does not include fish released alive under a recreational catch and release fishery management program.” Consistent with the Magnuson-Stevens Act, this document defines ***bycatch*** as any fish which are **discarded**.

Incidental catch is defined in this document as any non-targeted fish which are retained for sale or personal use. Incidental catch is different from bycatch in that it is **not** discarded.

Regulated species are defined in the Northeast Multispecies Fishery Management Plan to include: Atlantic cod, witch flounder, American plaice, yellowtail flounder, haddock, pollock, winter flounder, windowpane flounder, redfish, and white hake.

2.0 NMFS SEA SAMPLING (OBSERVER) DATABASE

2.1 1994-2002 OBSERVER DATA

The NMFS Sea Sampling Database was queried for catch and bycatch data on all observed trips using midwater trawl, pair trawl, and purse seine gear between 1994 and 2002. A total of 83 trip records were obtained from 1994-2002:

- 18 midwater trawl trips;
- 3 purse seine trips; and
- 62 pair trawl trips.

A few important points should be noted about these 83 observed trips:

- No trips were observed for any of these gear types during 1996, 1997, and 1998.
- All three of the purse seine trips were observed in 2000. This appears to have been the only year during which purse seine trips were observed from 1994-2002.
- Only one pair trawl trip was observed during 2001 and 2002. No midwater trawl trips were observed during 2001 and 2002.
- Of the 62 observed pair trawl trips, 55 were directed at an experimental tuna fishery in 1994 and 1995. On these 55 trips, few species other than tuna, wahoo, swordfish, and a small amount of sharks, rays, and mola (sunfish) were caught. No herring catch was recorded on any of these 55 trips. Information from these 55 pair trawl trips is **not** provided in this document.
- Of the seven remaining pair trawl trips, three trip records are incomplete, only recording total catch of 20 pounds or less per trip. Only four observed pair trawl trips appear to document catch on herring and/or mackerel pair trawl trips from 1994-2002.
- **Eliminating the tuna pair trawl trips and the incomplete trip records results in a total of 25 trips observed on vessels using pelagic gear and catching herring from 1994-2002: 18 midwater trawl trips, three purse seine trips, and four pair trawl trips.**
- While these data may provide some perspective on the nature and extent of catch and bycatch on vessels using pelagic gear and catching herring, they are not comprehensive enough to draw any conclusions about the herring fishery as a whole, or about any individual gear type. Additional information is required to draw such conclusions.

Table 1 summarizes the distribution of observed trips on vessels using midwater trawls, pair trawls, and purse seines from 1994-2002.

Table 1 Distribution of NMFS' Sea Sampling Trips by Gear Type and Year

	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total
Purse Seine	0	0	0	0	0	0	3	0	0	3
Pair Trawl	26	32	0	0	0	2	1	0	1	62
Midwater Trawl	0	5	0	0	0	1	12	0	0	18
Total	26	37	0	0	0	3	16	0	1	83

Source: NMFS Sea Sampling (Observer) Database.

Note: 55 of the 58 pair trawl trips observed in 1994 and 1995 occurred in an experimental tuna fishery and documented no catch of herring and/or mackerel. Information from these trips has not been included in this document. Trip records for three additional pair trawl trips were incomplete and are therefore not included in the table.

2.2 MIDWATER TRAWLS (SINGLE) 1994-2002

Table 2 summarizes catch and discards on 18 observed midwater trawl trips from 1994-2002. For these 18 observed trips, discards amounted to 5.5% of the total catch, and the vast majority of discards were Atlantic herring. Discards of all species other than Atlantic herring amounted to 0.27% of the total catch. Aside from Atlantic herring, spiny dogfish accounted for the most discards on these trips. Catch of regulated groundfish species on these 18 midwater trawl trips was minimal, totaling less than 50 pounds.

Table 2 Catch and Discards (Lbs.) of All Species on 18 Observed Midwater Trawl Trips from 1994-2002

SPECIES CAUGHT	DISCARD LBS.	KEPT LBS.	TOTAL LBS.
ALEWIFE	1	66,138	66,139
BLUEFISH	1	73	74
COD, ATLANTIC	7	11	18
DOGFISH, SMOOTH	40		40
DOGFISH, SPINY	8,777		8,777
FLOUNDER, SAND DAB (WINDOWPANE)	2		2
FLOUNDER, WINTER (BLACKBACK)	8	2	10
FLOUNDER, YELLOWTAIL	4	1	5
HADDOCK	1		1
HAKE, SILVER (WHITING)	459		459
HERRING, ATLANTIC	202,650	3,450,788	3,653,438
HERRING, BLUEBACK		3,600	3,600
HERRING, NK (SHAD)	700	10,700	11,400
LUMPFISH	5		5
MACKEREL, ATLANTIC	201	111,847	112,048
MONKFISH (ANGLER, GOOSEFISH)		9	9
OCEAN POUT	13		13
POLLOCK		4	4

Table 2 **continued**

SPECIES CAUGHT	DISCARD LBS.	KEPT LBS.	TOTAL LBS.
SCULPIN, LONGHORN	3		3
SCULPIN, NK	1		1
SHAD, AMERICAN	2		2
SQUID, ATL LONG-FIN	5		5
SQUID, NK	1		1
SQUID, SHORT-FIN	17		17
GRAND TOTAL	212,897	3,643,173	3,856,069

Source: NMFS Observer Database.

2.3 MIDWATER PAIR TRAWLS 1994-2002

Table 3 summarizes catch and discards for the four complete records of observed midwater pair trawl trips that documented catches of herring and/or mackerel from 1994-2002. On these four trips, discards amounted to 0.2% of the total catch; all discards were spiny dogfish. No regulated groundfish catch was observed on these four trips.

Table 3 Catch and Discards (Lbs.) of All Species on Four Observed Midwater Pair Trawl Trips that Documented Catches of Herring and/or Mackerel from 1994-2002

SPECIES CAUGHT	DISCARD LBS.	KEPT LBS.	TOTAL LBS.
ALEWIFE		2,678	2,678
DOGFISH, SPINY	3,100		3,100
HERRING, ATLANTIC		132,208	132,208
HERRING, BLUEBACK		727,526	727,526
HERRING, NK (SHAD)		1,000	1,000
MACKEREL, ATLANTIC		700,000	700,000
GRAND TOTAL	3,100	1,563,412	1,566,512

Source: NMFS Observer Database.

2.4 PURSE SEINES 1994-2002

Table 4 summarizes catch and discards on three observed purse seine trips in 2000. For these three observed trips, catch was limited to Atlantic herring and spiny dogfish. Spiny dogfish discards amounted to 0.13% of the total catch. Total discards, including Atlantic herring, amounted to about 1% of the total catch. No regulated groundfish catch was observed on these three trips.

Table 4 Catch and Discards (Lbs.) of All Species on Three Observed Purse Seine Trips in 2000

SPECIES CAUGHT	DISCARD LBS.	KEPT LBS.	TOTAL LBS.
DOGFISH, SPINY	700		700
HERRING, ATLANTIC	5,000	545,000	550,000
GRAND TOTAL	5,700	545,000	550,700

Source: NMFS Observer Database.

2.5 2003 OBSERVER DATA

Observer coverage in the herring fishery, particularly in the pair trawl sector, increased significantly in 2003. Table 5 below updates Table 1 on p. 3 and summarizes the distribution of observed trips on vessels using midwater trawls, pair trawls, and purse seines from 1994-2002. Twenty five pair trawl trips were observed during 2003, a 625% increase from 1994-2002 combined. Based on the number of herring trips that occurred during the 2002 fishing year, the level of observer coverage for 2003 represents about 7.7% of the pair trawl fishery (25 of approximately 326 trips) and less than 1% of the midwater trawl and purse seine fisheries.

Table 5 Distribution of NMFS' Sea Sampling Trips by Gear Type and Year

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total
Purse Seine	0	0	0	0	0	0	3	0	0	2	5
Pair Trawl	26	32	0	0	0	2	1	0	1	25	87
Midwater Trawl	0	5	0	0	0	1	12	0	0	2	20
Total	26	37	0	0	0	3	16	0	1	29	112

Source: NMFS Sea Sampling (Observer) Database.

Note: 55 of the 58 pair trawl trips observed in 1994 and 1995 occurred in an experimental tuna fishery and documented no catch of herring and/or mackerel. Information from these trips has not been included in this document. Trip records for three additional pair trawl trips were incomplete and are therefore not included in the table.

2.5.1 Midwater Trawls (Single) 2003

Table 6 summarizes catch and discards on two (2) observed midwater trawl trips (4 hauls) targeting herring during 2003. For these 2 observed trips, discards amounted to 0.42% of the total catch, and the vast majority of discards were Atlantic herring and spiny dogfish. Discards of all species other than Atlantic herring and spiny dogfish were negligible.

Table 6 Catch and Discards (Lbs.) of All Species on Two Observed Midwater Trawl Trips in 2003

SPECIES CAUGHT	DISCARD LBS.	KEPT LBS.	TOTAL LBS.
ATLANTIC HERRING	2,000	841,650	843,650
ATLANTIC MACKEREL		1,000	1,000
BLUEFISH	6		6
LONGHORN SCULPIN	1		1
SILVER HAKE (WHITING)		2	2
SMOOTH SKATE	5		5
SPINY DOGFISH	1,500		1,500
WITCH FLOUNDER	1		1
GRAND TOTAL	3,513	842,652	846,165

Source: NMFS Observer Database.

Note: In addition to the data presented above, 2 greater shearwater (seabirds) and one white-sided dolphin were observed as bycatch during these trips. The dolphin was reported to have been released alive.

2.5.2 Midwater Pair Trawls 2003

Table 7 summarizes catch and discards on 25 observed midwater pair trawl trips (46 hauls) targeting Atlantic herring during 2003. Total discards on these 25 observed pair trawl trips amounted to 1.6% of the total catch, with Atlantic herring accounting for the vast majority (95%) of discards. Regulated species (groundfish) bycatch amounted to 64 pounds and represented 0.001% of the total catch. In addition, takes of 16 northern gannet (seabirds) were observed.

Table 7 Catch and Discards (Lbs.) of All Species on 25 Observed Midwater Pair Trawl Trips in 2003

SPECIES CAUGHT	DISCARD LBS.	KEPT LBS.	TOTAL LBS.
ALEWIFE	80	14,500	14,580
AMERICAN PLAICE	6		6
ATLANTIC HERRING	91,902	6,021,000	6,112,902
ATLANTIC MACKEREL	75	49,200	49,275
ATLANTIC COD	39		39
HADDOCK	12	41	53
ILLEX SQUID	3	1,100	1,103
MONKFISH	7		7
PORBEAGLE SHARK	52		52
RED HAKE	2		2
REDFISH	1		1
SILVER HAKE (WHITING)	69	3,058	3,127
SPINY DOGFISH	4,023	600	4,623
STRIPED BASS	25		25
WHITE HAKE	3		3
WITCH FLOUNDER	2		2
SHRIMP	400		400
SQUID, NK		1,600	1,600
GRAND TOTAL	96,700	6,091,099	6,187,799

Source: NMFS Observer Database.

Note: In addition to the data presented above, 16 northern gannet (seabirds) and one severely decomposed toothed whale were observed as bycatch during these trips.

2.5.3 Purse Seines 2003

Table 8 summarizes catch and discards on two (2) observed purse seine trips (2 hauls) targeting Atlantic herring during 2003. Total discards on these two observed purse seine trips amounted to 0.2% of the total catch. No regulated groundfish species bycatch was observed on these two trips.

Table 8 Catch and Discards (Lbs.) of All Species on Two Observed Purse Seine Trips in 2003

SPECIES CAUGHT	DISCARD LBS.	KEPT LBS.	TOTAL LBS.
ATLANTIC HERRING		115,000	115,000
ILLEX SQUID	15		15
SPINY DOGFISH	9		9
GRAND TOTAL	24	115,000	115,024

Source: NMFS Observer Database.

2.6 2004 OBSERVER COVERAGE

NMFS has received additional funding to significantly increase observer coverage in the Atlantic herring fishery during the 2004 fishing year. An additional 200 observer days have been allocated for the herring fishery in 2004, which should increase coverage above 10% for this fishery. The information collected through 2004 will be more comprehensive and should be useful for developing a strategy and sampling design to ensure that coverage in future years is adequate to obtain an accurate estimate of catch and bycatch in this fishery.

3.0 INFORMATION FROM FOREIGN VESSELS ENGAGED IN JV OPERATIONS AND FISHING UNDER TALFF ALLOCATIONS

3.1 OBSERVER DATA FROM 2001 JV OPERATIONS (RAW DATA)

Foreign processing vessels engaged in JV operations are required by law to pay for and carry observers on-board to document catch and bycatch from codend transfers during the JV operations. Currently, raw data from observer reports during JV operations in 2001 are available in summary format (Table 9).

During JV operations in 2001, observers documented catch and bycatch of all species on 23 trips (443 hauls), 18 of which were single midwater trawl trips and five (5) of which were paired midwater trawl trips. Total catch of herring and other species was reported to be 10,704.7 mt, with additional bycatch of 170.8 mt. Total bycatch amounted to 1.57% of the total catch (excluding 14 marine mammals that were reported as bycatch – see note at bottom of Table 9). Silver hake (whiting) bycatch accounted for almost 70% of the total bycatch, and herring discards accounted for an additional 13.6% of the remaining bycatch. Regulated multispecies bycatch consisted of redfish and haddock and accounted for 0.01% of the total catch and 6.1% of the total bycatch.

Table 9 Catch and Bycatch (mt) of All Species Reported from Observers During JV Operations in 2001 (Raw Data)

23 OBSERVED TRIPS (443 HAULS)			
SPECIES CAUGHT	CATCH MT	BYCATCH MT	TOTAL MT
HERRING, ATLANTIC	10,694.6	23.3	10,717.9
HAKE, SILVER (WHITING)	8.2	119.5	127.7
REDFISH	0.6	2.8	3.4
HAKE, RED (LING)	0.0	12.0	12.0
HADDOCK	0.1	7.7	7.8
OTHER SPECIES	1.2	5.5	6.7
GRAND TOTAL	10,704.7	170.8	10,875.5

Note: In addition to the data presented above, 14 marine mammals were reported as bycatch during these JV operations – 2 Atlantic white-sided dolphins and 12 pilot whales. One of the pilot whales was reported to be badly decomposed when it was caught.

3.2 CATCH REPORTS FROM TALFF FISHING IN 2001

In 2001, foreign processing vessels engaged in JV operations also reported catches while fishing under an allocation for Total Allowable Level of Foreign Fishing (TALFF). A total of 60 codends were reported to have been received from vessels fishing under TALFF allocations in 2001; the catch/bycatch data for these 60 codends are summarized in Table 10. Total catch of herring and mackerel was reported to be 1,817.5 mt, with additional bycatch of 84 mt. Total bycatch amounted to 4.4% of the total catch (excluding one pilot whale that was reported as bycatch – see note at bottom of Table 10). Silver hake (whiting) accounted for the majority

(71%) of the total bycatch. A small amount of redfish and 7.8 mt of haddock were reported as regulated multispecies bycatch during the transfer of these 60 codends; no other bycatch of regulated multispecies was reported.

Table 10 Catch and Bycatch (mt) of All Species Reported from the Transfer of 60 Codends from TALFF Fishing to Foreign JV Operations in 2001

REPORTED TRANSFER OF 60 CODENDS			
SPECIES CAUGHT	CATCH MT	BYCATCH MT	TOTAL MT
HERRING, ATLANTIC	1,756.8	2.0	1,758.8
HERRING, ATLANTIC (MEAL)	60.5		60.5
MACKEREL, ATLANTIC	0.2		0.2
HADDOCK		7.8	7.8
REDFISH		2.5	2.5
SILVER HAKE (WHITING)		59.5	59.5
RED HAKE		4.7	4.7
FINFISH UNCL.		0.5	0.5
SHARKS		7.0	7.0
GRAND TOTAL	1,817.5	84.0	1,901.5

Note: In addition to the data presented above, one pilot whale was reported as bycatch during foreign fishing under the TALFF allocation in 2001.

4.0 ME DMR/MANOMET OBSERVER DATA

4.1 PROJECT SUMMARY

In May 1997, funds totaling \$71,220 were awarded by NOAA to the Maine Department of Marine Resources (ME DMR) to support a project entitled, *Using Observers to Monitor the Status of Atlantic Herring Spawning Stocks and Groundfish Bycatch in the Gulf of Maine*. The project was conducted from May 1, 1997 to July 31, 1998. Sea sampling services were provided by Manomet Center for Conservation Sciences using NMFS' protocols for sampling. The project was designed to achieve two goals:

1. Provide the information necessary to determine if there is a bycatch problem in the Gulf of Maine mobile gear fishery (herring); and
2. Evaluate the feasibility of collecting information from commercial herring fishermen that could be used to assess the status of individual spawning stocks.

Objectives under the first goal were to collect bycatch data and determine what percentage of the catch made by purse seiners and midwater trawlers was composed of groundfish and other species, and to analyze the data for spatial and temporal patterns. For the second goal, the information collected by observers was to be evaluated in terms of its usefulness for resource assessment and management purposes. This summary will focus on the first goal of documenting bycatch in the herring fishery.

A primary objective of the data collection effort was to place an observer aboard the same vessel for up to five consecutive trips within a week (or as many trips as the vessel made in a week) so as to minimize the possibility that fishing practices would be altered when the observer was aboard the vessel. This has been a perceived problem in other sea sampling projects when observers make only one trip on one boat, and then switch to another boat. Another objective of this project was to distribute sampling effort over a variety of fishing locations and seasons, making sure that both gear types involved in the study (purse seines and midwater trawls) received approximately the same amount of coverage. The contract with Manomet called for 80 days of sea sampling coverage, distributed over a year on inshore and offshore fishing grounds.

Sea sampling commenced in mid-August 1997 and continued, with some interruptions, until the end of June 1998. Observers were placed aboard five different purse seine vessels and three midwater trawl vessels (either single or paired). **Sampling was conducted during 23 purse seine trips and 27 midwater trawl trips, and data were collected for 50 individual purse seine sets and 54 midwater trawl tows.** Eleven of the midwater trawl trips were pair trawling operations. Fishing grounds represented in this study included most of the primary areas where herring boats fish in the GOM as well as other areas east of Cape Cod, on GB, and in Southern New England. Thirty six of the 50 trips were made in the summer and fall of 1997, with six additional trips in the winter and nine during the spring of 1998.

Important Note: This project did not differentiate between *bycatch* and *incidental catch*. The catch of all non-target species was reported as *bycatch* during this study; it is therefore not possible to differentiate between *bycatch* (discards) and *incidental catch* (retained non-target species) in the following data. Atlantic herring bycatch, however, is assumed to represent any Atlantic herring that were discarded at-sea.

4.2 PROJECT RESULTS (BYCATCH)

This summary focuses only on the bycatch-related results of this project. Sampling for biological information to achieve the goal of collecting information to assess the individual spawning stocks is not summarized below. The full report from this project should be referenced for additional information.

Important Note: This project did not differentiate between *bycatch* and *incidental catch*. The catch of all non-target species was reported as *bycatch* during this study; it is therefore not possible to differentiate between *bycatch* (discards) and *incidental catch* (retained non-target species). Atlantic herring bycatch, however, is assumed to represent any Atlantic herring that were discarded at-sea.

For the 50 observed trips on midwater trawlers and purse seiners, bycatch, including herring and mackerel bycatch, was documented on 42 of 54 trawl tows and 24 of 50 purse seine sets. Overall, bycatch accounted for 2.56% of the total midwater trawl catch and 1.9% of the total purse seine catch. Atlantic herring was the principal species recorded as bycatch. Aside from herring, the principal bycatch species on the midwater trawl trips was Atlantic mackerel, which accounted for 83% of the remaining bycatch. The principal bycatch species on purse seine trips

was spiny dogfish, which accounted for 97% of the remaining bycatch. Excluding herring, mackerel, and dogfish, bycatch of other species accounted for 0.4% of the total catch on midwater trawlers and 0.05% of the total catch on purse seiners.

A summary of catch and bycatch on the 50 observed purse seine and midwater trawl trips is presented Table 11. A species breakdown of observed bycatch other than herring on these trips is presented in Table 12.

Table 11 Summary of Catch and Bycatch Observed on 50 Sampled Trips 1997-1998

Gear Type	No. Sets/Tows	Herring Kept Lbs.	Herring Escaped Lbs.	Herring Discarded Lbs.	Other Bycatch Lbs.	TOTAL LBS.
Purse Seine	50	3,269,400	207,000	527,000	77,380	4,080,780
Midwater Trawl	54	4,439,918	100	49,880	117,910	4,607,808
GRAND TOTAL	104	7,709,318	207,100	576,880	195,290	8,688,588

Important Note: This project did not differentiate between bycatch and incidental catch. The catch of all non-target species was reported as bycatch during this study; it is therefore not possible to differentiate between bycatch (discards) and incidental catch (retained non-target species). Atlantic herring bycatch, however, is assumed to represent any Atlantic herring that were discarded at-sea.

**Table 12 Total Observed Bycatch (Lbs.) by Species and Gear on 50 Trips 1997-1998
(Excluding Herring Bycatch)**

SPECIES CAUGHT	PURSE SEINE	MIDWATER TRAWL	COMBINED
MACKEREL, ATLANTIC	1,052	98,171	99,223
DOGFISH, SPINY	75,050	3,837	78,887
HERRING, BLUEBACK		7,319	7,319
TUNA, BLUEFIN	700	2,770	3,470
SILVER HAKE (WHITING)		2,224	2,224
STRIPED BASS		850	850
SQUID	289	497	786
BLUEFISH	250	312	562
BUTTERFISH		427	427
BLUE SHARK		310	310
HARBOR SEAL		300	300
THRESHER SHARK		250	250
MAKO SHARK	25	199	224
POLLOCK		168	168
PORBEAGLE SHARK		70	70
MENHADEN, ATLANTIC		50	50
TORPEDO RAY		40	40
MONKFISH		37	37
LUMPFISH	10	17	27
COD, ATLANTIC		19	19
OCEAN POUT		16	16
WHITE HAKE		11	11
SCULPIN	2	8	10
SEA RAVEN		4	4
SEA ROBIN		3	3
SKATE	2	1	3
SCUP		1	1
WINTER FLOUNDER		1	1
GRAND TOTAL	77,380	117,910	195,290

Important Note: This project did not differentiate between bycatch and incidental catch. The catch of all non-target species was reported as bycatch during this study; it is therefore not possible to differentiate between bycatch (discards) and incidental catch (retained non-target species). Atlantic herring bycatch, however, is assumed to represent any Atlantic herring that were discarded at-sea.

This report concludes that results of bycatch monitoring indicate that the herring fishery is a clean fishery. The only two species caught as bycatch in significant quantities (excluding herring that were discarded for various reasons) were spiny dogfish and mackerel. In the 50 purse seine sets and 54 trawl tows that were monitored in this study, groundfish bycatch (the vast majority of which was silver hake/whiting) accounted for 0.05% of the total trawl catch and 0.0001% of the total purse seine catch.

The report notes that midwater trawlers made about 800 trips annually around 1997-1998, so the sample of 27 midwater trawl trips represents about 3.5% of all midwater trawl trips. It would therefore be a mistake to conclude from this study that there is no groundfish bycatch in pelagic herring gear. However, it is reasonable to conclude that whatever bycatch does occur in the herring fishery is the exception rather than the norm.

5.0 RESULTS OF EXPLORATORY PORTSIDE BYCATCH SURVEY CONDUCTED BY ME DMR

The Maine Department of Marine Resources (DMR) secured funding in 2003/04 to support an exploratory portside bycatch survey of the Atlantic herring fishery. This project was created in response to the lack of bycatch data available for the directed herring fishery. Aside from the National Marine Fisheries Service (NMFS) observer program and some joint venture data, bycatch information has not been collected in a systematic way since 1998 when the Manomet Center for Conservation Biology conducted an at-sea observer program. This was a rigorous study designed to quantify bycatch and discards in the herring fishery, however it was only funded for one year.

The portside bycatch survey was developed as an inexpensive but effective means of quantifying bycatch in the herring fishery. This survey focuses on quantifying bycatch from herring landings sold to processing facilities throughout the northeast. The survey takes place at a variety of processing locations and covers all sectors of the current herring fleet. The program centers around canneries and freezer plants, because all bycatch must be removed from the herring before processing a food grade product. It is also possible in several locations to incorporate bait dealers that sort and barrel fish before marketing. Currently five processors (including bait companies) are voluntarily involved in the survey.

5.1 PROJECT METHODOLOGY

A part-time technician was assigned in 2003 to coordinate and execute a port-side bycatch survey. Five processing sites from Maine to Massachusetts were identified and then visited to assess suitability. At each site the survey methods were explained in detail including what data are collected and how the data is processed and released. The target sampling level is three events each month.

A sampling event is arranged by the technician who contacts the participating sites and requests their processing schedule. The technician arrives at the facility at the same time the fish are delivered either by truck or boat. As the fish are sorted, the bycatch is removed and set aside on a lot by lot basis. Each lot is processed separately with the lot amount, gear type, general location and month of capture recorded. No information on the specific facility being sampled, the date of catch, the catch coordinates or vessel name is collected.

After the bycatch is sorted, the technician identifies and separates all species present. Each species is then weighted and a random sub-sample is taken if necessary. All individuals (of the entire sample or sub-sample) are measured and recorded on a length frequency log.

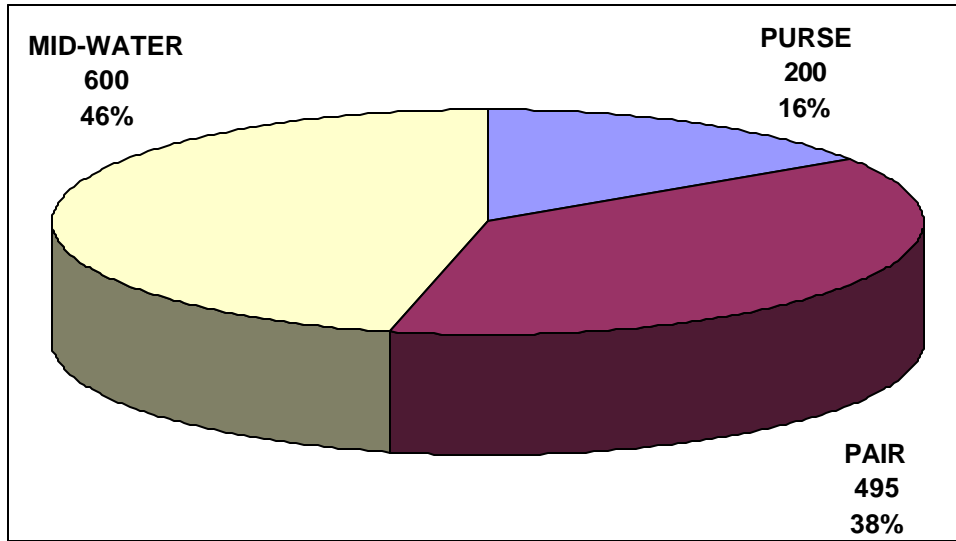
5.2 PROJECT RESULTS

Eighteen samples have been collected from four different processing facilities since the start of the survey in August 2003 (Table 13). Three gear types were sampled, including purse seine (3 samples), single mid-water trawl (5 samples) and pair trawl vessels (10 samples). A total of 1,295 mt (2,855,475 lbs) were sampled, representing about 2% of the total herring catch during that period.

Table 13 Summary of Bycatch Samples

SAMPLE NO.	MONTH	STAREA	GEAR	LOT WEIGHT (MT)
1	AUG 2003	513	PAIR	50
2	AUG	525	PAIR	50
3	AUG	512	SEINE	40
4	SEPT	513	MIDWATER	400
5	SEPT	525	PAIR	120
6	SEPT	513	MIDWATER	55
7	OCT	512	MIDWATER	40
8	NOV	512	SEINE	80
9	NOV	514	SEINE	80
10	NOV	513	MIDWATER	50
11	DEC	999	PAIR	10
12	DEC	539	PAIR	60
13	JAN 2004	538	PAIR	55
14	JAN	538	PAIR	40
15	JAN	999	PAIR	0
16	JAN	613	PAIR	55
17	FEB	613	PAIR	55
18	FEB	613	MIDWATER	55

Figure 1 Weight (mt) of Atlantic Herring Sampled by Gear Type



Fourteen different species were observed as bycatch, accounting for 5.83 mt (12,856 lbs) or 0.45% of the total landings inspected. Two samples had no bycatch (samples 7 and 17) and are not represented in Table 14.

Table 14 Observed Bycatch Weight (Lbs.) by Species and Gear Type

SPECIES	PURSE SEINE	PAIR TRAWL	MIDWATER TRAWL	TOTAL
ALEWIFE	259	39	9	306
AMERICAN SHAD		1		1
ATLANTIC MACKEREL	447	5,644	4,421	10,512
BUTTERFISH	1	1	<1	2
HADDOCK			19	19
LOBSTER	<1		1	1
LUMPFISH	1	6		7
POLLOCK		<1		<1
SCULPIN		3		3
SEA RAVEN		2		2
SILVER HAKE (WHITING)		397	7	404
SPINY DOGFISH	12	2	1,575	1,589
SQUID, LONG FINNED	<1	2	9	11
WHITE HAKE			<1	<1
TOTAL	720	6,097	6,040	12,856
% OF TOTAL BYCATCH	5.6	47.4	47.0	

Atlantic mackerel accounted for the largest percent (82%) of bycatch recorded during this survey period. It is important to note that Atlantic mackerel is an allowable take under the National Marine Fisheries Service small mesh exemption regulations. Spiny dogfish comprised 12% of the total bycatch and was largely the result of one sample that accounted for 1,200 of the 1,500 lbs recorded. All other species accounted for <6% of which regulated multispecies accounted for 3.3% of the total bycatch observed. When considered in the context of the total amount of herring observed, regulated multispecies bycatch accounted for only 0.01% (425 lbs of 2,855,475 lbs).

5.3 PROJECT CONCLUSIONS

The exploratory portside bycatch survey has proved very successful during its initial six months. A significant amount of the total herring catch in the northeast fishery was observed, amounting to about one-third of the herring inspected through the year-long Manomet study. The preliminary results of this survey have revealed insignificant levels of bycatch in the directed herring fishery for all gear types.

The results of this project are useful in quantifying and understanding the extent of retained bycatch in the Atlantic herring fishery. Atlantic herring are harvested as a volume fishery, which results in mass handling techniques like pumping the catch from the nets into the vessel holds and again into the processing facilities. Because of the nature of this fishery, there are limited opportunities to observe and/or remove bycatch at-sea. However, vessels can discard some or all of a catch at-sea and there are some methods of sorting out large bycatch before or during the pumping process. For these reasons, this study is not designed to quantify all bycatch in the herring fishery, but only retained and landed bycatch.

The strengths of the survey are in its “double blind” design, meaning that the vessels do not know when inspections occur and the plant operators do not see the fish before the sampler arrives. It is also an extremely inexpensive but effective means of quantifying retained bycatch. Continuation and expansion of this survey will help provide critical information on the herring fishery and will complement any future at-sea observer program.

6.0 SUMMARY

While these data provide some perspective on the nature and extent of catch and bycatch on vessels using pelagic gear and catching herring, they are not comprehensive enough to draw any specific conclusions about the herring fishery as a whole, or about any individual gear type. It therefore would be inappropriate to conclude from these data that groundfish bycatch is a problem in the herring fishery, just as it would be inappropriate to conclude that groundfish bycatch is nonexistent in the herring fishery. Additional information is required to draw such conclusions.

The ME DMR/Manomet data probably provide the best perspective on the nature of bycatch in the directed herring fishery. However, these data represent a snapshot of the fishery, as they were collected only in 1997 and 1998. No similar projects have been undertaken to investigate bycatch in the directed herring fishery since this time. The pilot project conducted by ME DMR that utilized portside bycatch sampling may be a cost-effective way to obtain a significant amount of information to complement the at-sea observer information.