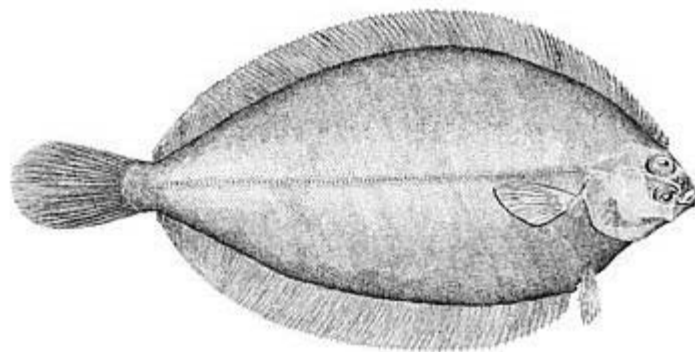


Final Report to the



NOAA Fisheries - Northeast Region Cooperative Research Partners Initiative



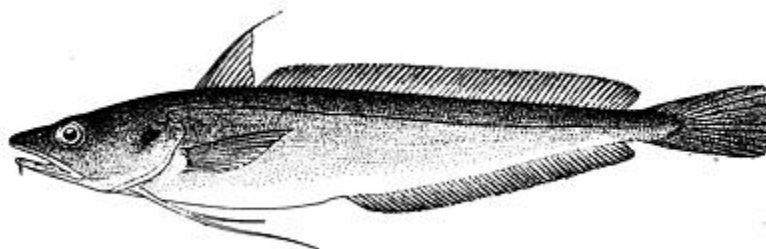
National
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U.S.
DEPARTMENT
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COMMERCE

on the

Maine - New Hampshire Inshore Groundfish Trawl Survey



July 2002 – June 2003

Final Report

**Fall 2002 and Spring 2003
Maine – New Hampshire
Inshore
Trawl Survey**

**Submitted to the NOAA Fisheries-Northeast Region,
Cooperative Research Partners Initiative
(Contract #NA16FL2259)**

By

Sally A. Sherman, Vincent Manfredi, Jeanne Brown, Keri Stepanek, and John Sowles
Maine Department of Marine Resources

Douglas E. Grout

New Hampshire Fish and Game Department

And

Robert Tetrault

T/R Fish Inc.

F/V Tara Lynn and F/V Robert Michael

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EXECUTIVE SUMMARY

This report summarizes the third year of a comprehensive bottom trawl survey of groundfish and other species for Maine-New Hampshire's inshore waters. This survey continues to establish the time series to be utilized for long term monitoring of inshore stocks of the Gulf of Maine. Funds set aside by Congress to assist groundfishermen were administered and distributed through the Cooperative Research Partners Initiative of the National Marine Fisheries Service with the goal of fostering research partnerships between commercial fishermen and scientists.

This survey is intended to compliment similar surveys conducted by the National Marine Fisheries Service in the outer waters of the Gulf of Maine and surveys conducted by other Atlantic coast states in their inshore waters. Prior to this survey, no fishery independent information has been available for approximately 80% of the U.S. Gulf of Maine's inshore waters. The survey utilizes newly designed research nets and two nearly identical commercial fishing vessels to complete approximately 100 trawls in spring and fall for a total of 50 days at sea.

This report highlights findings of the third year and discusses comparisons with the previous years. In-depth analysis of data is premature. In fact, it will be several years before a time series will be developed to use in stock assessment models.

Trawl survey data has a wide array of uses beyond groundfish stock assessments. In truth, this is a multispecies survey that provides broad information on finfish and invertebrate populations and communities that can contribute to how we manage our marine environments.

INTRODUCTION

The Maine-New Hampshire inshore trawl survey is a collaborative partnership between commercial fishermen and researchers to assess inshore fish stocks along the Maine and New Hampshire coasts. The project was funded through the National Marine Fisheries Service's Cooperative Research Partners Initiative. Collaborative research enables fishermen to contribute their knowledge and experience toward the process of scientific data collection and ultimately to resource management decisions. It also strengthens the trust between fisherman and scientists.

Fishery-independent trawl surveys are a well-established and accepted method of developing relative abundance indices for fishery resources (Gosslein, 1969). They reflect changes in true abundances of fish populations whereas commercial fishing practices change in response to market demand, fish availability, regulations and fishing power as technological improvements in commercial trawls and fish detection gear are made. Abundance indices derived from research trawl surveys that maintain consistent and standardized efforts are largely free of these biases. Trawl surveys are synoptic investigations that provide comprehensive information on distribution and abundance of all types and sizes of organisms within towable survey areas. Knowledge of distribution and abundance of juvenile (pre-commercial) fish is critical to the study of recruitment and for predicting future abundance.

Information about population sizes, instantaneous recruitment and mortality rates, trends, and distributions is essential for effective management of any resource. Such knowledge is critical to understanding both the dynamics and the condition of that resource. The lack of survey data from large areas of the Gulf of Maine has led to significant gaps in information needed to assess current stock conditions and develop effective management strategies. This project continues last year's effort to monitor inshore fish stocks and fill the inshore information gap.

Surveying the inshore waters of Maine and New Hampshire has been a long-standing challenge. The rough terrain that characterizes the bottom of the nearshore areas of northern Gulf of Maine along with the great quantity of fixed gear in inshore waters limits the number of tows that can be made. Even today, the National Marine Fisheries Service (NMFS), with its large survey vessels, surveys very few stations nearshore (< 50 fm), due in part to the nature of Maine's coast and proliferation of fixed gear. Past efforts to survey fish stocks in the Gulf of Maine focused heavily on offshore areas. Spring and fall bottom trawl surveys for finfish resources have been conducted along the inshore and offshore continental shelf waters from Cape Hatteras, NC to Cape Cod, MA, including the offshore Gulf of Maine, by the NMFS since 1963. In contrast, New Hampshire and Maine inshore waters, which comprise the bulk of the known spawning and nursery areas for the Gulf of Maine, (Rich, 1929; Bigelow and Schroeder, 1953) have not been continuously sampled. A comparable time series does not exist for these areas.

The coverage this survey provides promises to be very valuable to the understanding of marine ecosystems in the Gulf of Maine. We are confident that the northern inshore Gulf of Maine can be successfully and consistently sampled via trawl survey indefinitely, with sustained funding.

Objective

The overall goal of this project is to establish a solid foundation for a long-term fishery independent monitoring program in Maine and New Hampshire's inshore waters (5-80⁺ fathoms).

Specific objectives are:

- to document the distribution and relative abundance of marine resources in the nearshore Gulf of Maine
- to improve survey logistics to gain cooperation of the fixed gear fishermen
- to develop recruitment indices for assessments of target species
- to involve fishermen in scientific data collection
- to collect environmental data, including temperature and salinity, that affect fish distribution
- to collect ichthyoplankton samples along the coasts to identify timing of finfish spawning
- to gather information on biological parameters (growth rates and reproduction)

MATERIALS AND METHODS

Station Selection – Randomization

The ME/NH Inshore Trawl Survey is a stratified random survey with a fixed component. In the spring of 2003 a fourth stratum was added to the area sampled increasing it from ~3626 square nautical miles (NM²) to ~4665 NM². This new stratum overlaps the NMFS trawl survey area to provide some ability to compare the ME/NH Survey to that of NMFS. The area is now divided into 20 strata consisting of four depth strata: 5-20 fathoms, 21-35 fathoms, 36-55 fathoms, greater than 56 fathoms (its outer boundary roughly delineated by the 12-mile limit), and 5 regions based on oceanographic, geologic, and biological features. In order to keep the sampling density of the original strata roughly equivalent with previous surveys, an additional 15 stations were added. The number of stations per stratum is allocated in proportion to each stratum's area (Table 1.). The survey now targets 115 tows per season. Of those, 40 are fixed stations distributed evenly at two per strata and the remaining 75 allocated according to strata area and are selected randomly. Due to various problems, fixed gear interaction, untowable bottom, weather, and time constraints, we were never able to achieve the optimal sample size. The original goal of 100 stations per survey gives a sampling density of 1 station for every 36 NM²; on average we accomplished a density of 1 in 40 NM². By adding 15 stations to our goal, we strive for a density of 1 tow every 40 NM².

Random stations are selected from a NOAA nautical chart in Arc ViewTM GIS overlain with 1-NM² grids. Each grid within each region is assigned a unique identification number that serves as a call number. Grids are selected using an ExcelTM random number generator. Tows approximately 1 NM long are proposed in each grid and plotted in PC WindplotTM. From prior experience and local knowledge, some grids are classified as untowable during the plotting process. Due to the excessive fixed gear and the request of fishermen to cooperate with the survey by clearing the tows, having good tow locations is a priority. If no towable bottom can be found within a 2-mile radius, a new random number is chosen within the same stratum. GPS

latitude and longitude and Loran C co-ordinates for the tows are recorded from this program and plotted in Arc View™ GIS to check the coordinates and locations

Table 1. Area in square miles of the 20 strata of the ME/NH Trawl Survey

Region	5-20 fathoms	21-35 fathoms	36-55 fathoms	>56 fathoms	Total
1	253.27	214.22	227.35	225.65	920.50
2	279.63	191.23	211.66	263.49	946.02
3	259.62	262.90	280.03	183.69	986.25
4	205.30	206.12	310.49	170.72	892.63
5	138.54	220.49	365.04	196.11	920.19
Total	1136.37	1094.96	1394.59	1039.66	4665.58

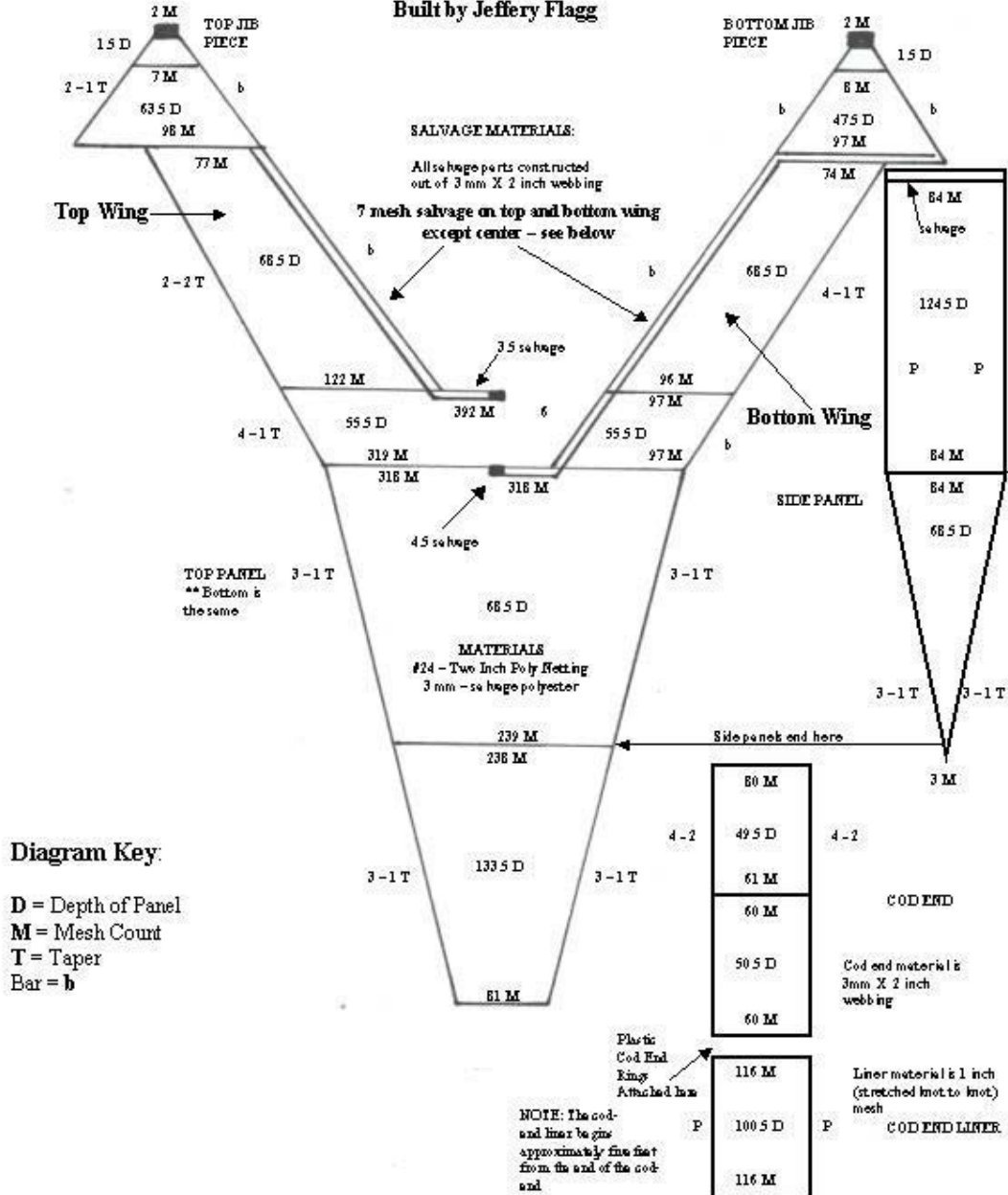
Vessels

Two virtually identical commercial fishing vessels, the F/V Tara Lynn and F/V Robert Michael, were used for the survey. Both vessels are Down East 54's constructed of solid fiberglass with full displacement hulls taken from the same mould. They are powered by 8-cylinder GMC diesel engines producing 325 H.P. Reverse gear is a twin disk and a 3-in. stainless steel shaft turns a 4-bladed power propeller housed in a nozzle. The vessel's hull displacement is 73-gross tons allowing it to perform well in sea states up to eight feet. While only one vessel at a time was planned for each survey, in the event of an equipment breakdown, the other could be made immediately available so that the survey could be completed on schedule.

Net

Design considerations for the survey included effectiveness of the gear for sampling the complex bottom in the nearshore areas of the Gulf of Maine and comparability with previous and ongoing surveys by NMFS and Massachusetts Division of Marine Fisheries. The net is a modified version of the shrimp net design used in Maine waters (Figure 1) and fishes effectively for a variety of near-bottom dwelling species, not targeting any specific component.

Maine – New Hampshire Inshore Trawl Survey Net Schematic
57 – 70 Modified Shrimp Trawl
 Designed by Robert Tetrault
 And Jeffery Flagg
 Built by Jeffery Flagg



Note: Previous annual reports contained incorrect net specifications. The actual net has remained consistent since the beginning of the survey in 2000.

Figure 1. Net Design for the Maine – New Hampshire Inshore Trawl

Net tapers permit the shape of the net to achieve maximum height while allowing the net to remain tight on the bottom. The net is shackled from the footrope to the frame using two 3/8-inch shackles to a banded wire that runs parallel with the footrope. Heavy rubber wing bobbins retard bottom wing lift. The top leg is 7/16th inch wire, 60 feet long with pipe thimbles at either end, and the bottom leg is 5/8th inch wire 58 feet long with two feet of 5/8th inch chain at the end where the leg attaches to the bottom wing. The bottom leg is covered with 2 3/8th inch cookies to prevent them from digging into mud. The net is constructed of 2 inch #24 polyethylene mesh overall with a 1-inch (stretched measure) mesh liner in the cod end. Doors are #7.5 Bison's. Attached to the 70 ft. 5/8" Rander's Combination Wire Rope footrope, is a roller frame strung onto 3/4" 6 x 19 round strand wire. Ten feet of 8 inch cookies @ 6" apart with eight toggles in the middle are in the bosom of this sweep with 29' of 6 inch cookies @ 4.5" apart with 12 toggles strung up each wing with 4" cookies in between each larger cookie on entire frame. On the headrope are twenty-eight, 8" center hole plastic floats attached to the 5/8" inch Rander's Combination Wire Rope headline with 5/8" yellow polyethylene float line. Between surveys, the net is sent back to the manufacturer where it is returned to specification. Before each survey, all nets are again measured for consistency and adjusted/repared as needed. Trawl wires on the vessel are also measured prior to each survey.

Prior to the initial fall 2000 survey, side-by-side comparison tows between the survey net and a commercial net resulted in comparable relative proportions of species caught. To advance knowledge of gear performance, in 2002 and 2003, Massachusetts Division of Marine Fisheries staff assisted for on two occasions using net mensuration sonar and cameras.

Public Notification

Due to the extensive fixed gear fisheries in the coastal waters of Maine and New Hampshire, an inshore trawl survey must coordinate with these fishermen. Prior to each survey, mailings containing the survey's daily schedule and tow locations were sent to about 6,500 Class I, II and III lobster license holders. MEDMR maintained a toll free hot line for commercial fishermen to request additional information or voice concerns, a web site with the daily schedule, tow coordinates, and chart of tows. In addition, NOAA's National Weather Service's offices in Gray and Caribou broadcast daily-recorded messages containing weekly schedule and contact information.

Sample Collection (Towing)

Before each tow, at least one pass, and often two passes, was made along each planned towline to survey for fixed gear and bottom conditions. The target for tow duration is 20 minutes at a speed of 2.2-2.3 knots to cover about 0.8 NM. Start and end location (Loran C co-ordinates, GPS latitude and longitude), time, depth, tow direction, and tow duration were recorded for each tow. Setting of the winch brakes identified the start of tow duration and the end was marked at the start of the winches to retrieve the net. Bottom temperatures and salinities were collected at each station for using a SeaBird Model SBE 19-plus CTD. Other environmental data including wind, sea state, and weather were also recorded at each station. All tows were conducted during

daylight hours. When a station is encountered that cannot be towed, an alternate tow is searched for while proceeding to the next site.

Handling Catch

After each tow, the net was brought aboard and emptied onto a sorting table. All individuals were identified and sorted by species. Lobsters were separated and processed as the rest of the catch was sorted. Total weights (by sex), carapace length (mm), shell condition, presence and stage of eggs, V-notch condition, and trawl damage were recorded. After processing, lobsters were carefully placed in baskets to minimize damage. Larger individuals were kept separate. Baskets were weighed and the lobsters were returned alive to the sea. Similarly, care was taken to immediately separate, measure, weigh and release alive any marine specimens.

Finfish lengths were measured as total central length to the nearest centimeter, except those with heterocercal caudal fins, such as dogfish and sturgeon. Dogfish and all sturgeon are consistently measured to the nearest centimeter at the terminus of the upper caudal lobe. Crabs were measured using carapace width (cm). Scallops were measured using the width (cm) of the shell. Other bivalves were measured using the length (cm) of the shell. Squid were measured using mantle length (cm). Shrimp species are weighed in aggregate. Mixed shrimp are separated by species, an aggregate weight and count is taken for each species during the sub-sample. A 1-kilogram sub-sample is sufficient. All other invertebrates were enumerated. Aggregate weights were taken for all species. When catches were large (i.e. > ~200 individuals) a sub-sample of at least 100 representative individuals was taken, measured and weighed. Total catch statistics were then expanded based on the total catch weight. Lobsters were not routinely sub-sampled but rather all individuals were measured.

In the spring 2003 survey, additional biological data were collected, including individual weights, sex, and maturity for selected groundfish species using the methods described in Burnett *et al*, 1989. Fish examined were designated as immature, developing, ripe, ripe/running, spent, or resting. When possible, all individuals selected were examined; a sub-sample was taken if the catch of a particular species was large. Otoliths were collected for winter flounder.

Ichthyoplankton Tows

Ichthyoplankton tows were conducted in the spring 2002 and spring 2003 surveys. All samples were collected with a 1-meter plankton net of 333 μm mesh. A General Oceanics flow meter was attached to the mouth of the plankton net to determine the amount of water filtered by the net for each tow. The net was towed for fifteen minutes in a stepped oblique fashion at a speed of less than 2 knots for five minutes below the surface, five minutes at 10 m below the surface, and five minutes at 20 m below the surface. Upon haul back, the contents of the net were emptied into a 1L container while rinsing the end of the net. Samples were preserved in 10% formalin for later identification by the Atlantic Reference Centre of the Huntsman Marine Lab.

Analysis and Presentation of Data

For the purposes of this report, which is to provide a very general overview, data from both the stratified random and fixed components of the survey were analyzed together. All data presented in bar graphs are arithmetic mean number of individuals caught per standard 20-minute tow. Error bars (when shown) are standard errors of that mean. All length frequency graphs are total number at length, expanded from sub-samples when necessary. Bubble plot distributions portray number of individuals caught per station. Stratified means and errors reported in Appendix B were calculated utilizing the same formulas reported for the NMFS' SURVAN formulas.

Release of Data

In response to concerns expressed by Maine's fishing communities, we have developed a policy on the release of raw data collected from individual tows (see Appendix D).

In summary,

- 1) provisional data will not be released to the public
- 2) tow specific lobster data will be held for one year before release
- 3) exceptions are permitted where management and regulatory decisions may benefit

RESULTS

ME/NH SURVEY-----The first 3 years

Catches for the survey were fairly consistent from year to year but more variable seasonally. Spiny dogfish, lobster, red, white, and silver hake are more abundant in the fall (Table 2). Occurrence of white hake increased two-fold in the fall (Table 3). Abundance of American plaice and the Pandalid shrimp species increased in the spring. Although sea cucumbers are relatively uncommon in catches (Table 3), they rank in the top 10 the spring surveys (Table 2).

Table 2. Ranking of the top 10 species by weight and number separated by season from fall 2000 through spring 2003

Fall 2000		Fall 2001		Fall 2002	
Wt. (kg)	Number	Wt. (kg)	Number	Wt. (kg)	Number
Silver hake	Herring	Silver hake	Silver hake	Lobster	Mixed shrimp
Lobster	Silver hake	Lobster	Herring	Dogfish	Herring
Herring	Mixed shrimp	Herring	Mixed shrimp	Silver hake	Silver hake
Dogfish	Alewife	Dogfish	Alewife	Herring	Alewife
Alewife	Lobster	Monkfish	Lobster	Alewife	Lobster
Winter flounder	Rainbow smelt	Alewife	Rainbow smelt	Longhorn sculpin	Longhorn sculpin
Red hake	Sea scallop	Red hake	Red hake	Monkfish	Butterfish
Longhorn sculpin	Winter flounder	White hake	Witch flounder	Red hake	Menhaden
Monkfish	Red hake	Witch flounder	Sea scallop	Winter flounder	Winter flounder
White hake	Longhorn sculpin	Jonah crab	American plaice	White hake	Rainbow smelt

Spring 2001		Spring 2002		Spring 2003	
Wt. (kg)	Number	Wt. (kg)	Number	Wt. (kg)	Number
Herring	Mixed shrimp	Herring	Euphausids	Herring	Herring
Lobster	Herring	Lobster	Herring	Lobster	Mixed shrimp
Longhorn sculpin	Alewife	Silver hake	Mixed shrimp	Silver hake	Silver hake
Sea cucumber	Silver hake	Longhorn sculpin	Silver hake	Mixed shrimp	Alewife
Silver hake	Blueback herring	American plaice	Alewife	Longhorn sculpin	American plaice
Winter flounder	Longhorn sculpin	Alewife	Lobster	American plaice	Euphausids
Alewife	Lobster	Atlantic cod	Longhorn sculpin	Alewife	Longhorn sculpin
Mixed shrimp	Sea scallop	Winter flounder	American plaice	Winter flounder	Lobster
American plaice	Winter flounder	Mixed shrimp	Winter flounder	Atlantic cod	Blueback herring
Sea scallop	American plaice	Sea cucumber	Sea scallop	Sea cucumber	Winter flounder

Table 3. Percent occurrence of selected commercially important species for accumulative spring and fall surveys

Species	Fall	Spring	Species	Fall	Spring
	%	%		%	%
Silver Hake	93.59	83.01	Sea Scallop	46.79	45.10
American Lobster	91.67	92.81	Witch Flounder	41.03	28.76
White Hake	89.10	41.18	Northern Shrimp	39.42	49.35
Winter Flounder	85.58	91.18	Atlantic Mackerel	38.78	0.65
Alewife	84.94	90.20	Rock Crab	38.78	48.37
Atlantic Herring	83.65	81.70	Acadian Redfish	37.18	34.31
Longhorn Sculpin	78.85	88.24	Little Skate	36.86	31.05
Red Hake	73.72	77.12	Haddock	36.22	19.61
Goosefish	65.38	54.25	Shortfin Squid	35.26	1.31
Jonah Crab	63.46	52.29	Pollock	27.24	23.86
Butterfish	60.58	1.63	Rainbow Smelt	26.92	18.30
American Plaice	58.01	68.63	Yellowtail Flounder	23.08	31.05
Windowpane flounder	58.01	51.63	American Shad	17.63	36.93
Atlantic Cod	55.77	50.00	Scup	17.31	
Spiny Dogfish	49.68	3.27	Ocean Pout	8.33	18.30
Longfin Squid	49.04	8.17	Sea Cucumber	6.41	9.15

FALL 2002 SUMMARY

Completing the survey in the fall season with the profusion of lobster gear continues to be a challenge. The fall survey began on October 14, 2002, two weeks later than the previous fall survey to gain cooperation from eastern fixed gear fishermen. Although this resulted in somewhat decreased cooperation in the mid-coast area, we were able to complete 81 out of 100 targeted tows. The volume of total mixed catch varied from a minimum of about 12 kg to a maximum of about 513 kg averaging about 140 kg. The total number of species caught was 90 with a low of 9 and a high of 34 in any particular tow with the average number of species 22. Top ten rankings by species density can be found in Table 2.

Average bottom temperatures by stratum ranged from 12.7 to 8.8 °C (Table 4.). The overall average temperature for 2002 was 10.5 °C, compared to 9.5 °C for 2000 and 10.2 °C for 2001.

Table 4. Average bottom temperatures (°C) for the Fall 2002 survey.

		Region				
		1	2	3	4	5
Stratum	1	12.7	11.8	11.4	8.8	9.4
	2	11.2	11.2	11.2	9.7	9.5
	3	9.0	10.3	11.1	10.6	9.7

Some similar species were encountered in the fall of 2002 as those seen in 2000, but not in the fall of 2001. Menhaden were present in the fall 2000 survey and not present at all in fall 2001. In the fall 2002 survey, menhaden were present in numbers approximately three times that of 2000 (Figure 2).

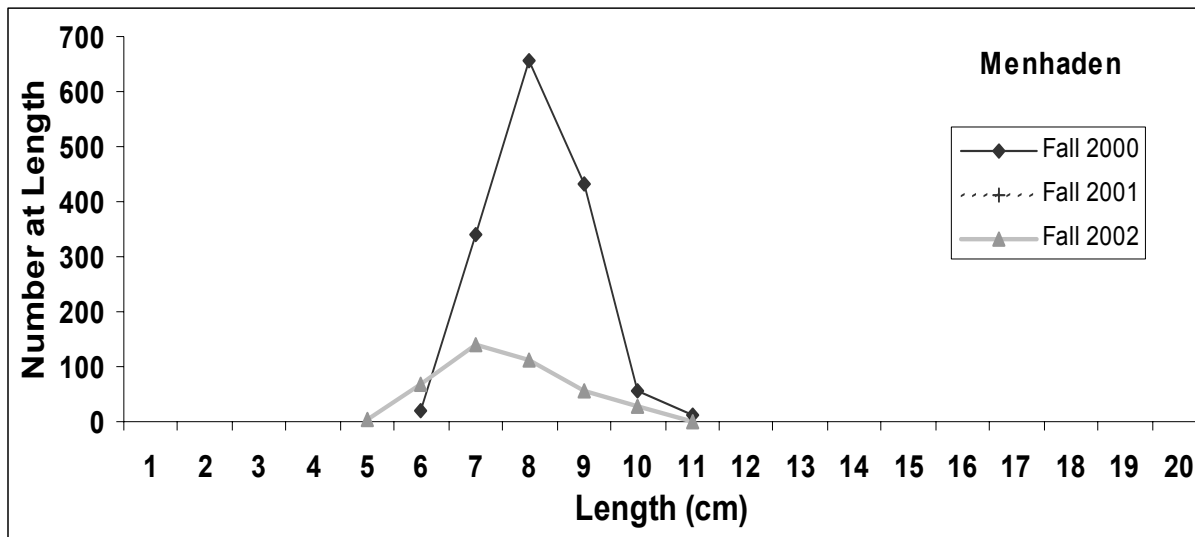


Figure 2. Length frequencies for menhaden measured in the fall surveys

Atlantic Moonfish, rarely seen in the Gulf of Maine, were found for the first time in the survey along southwestern Maine and New Hampshire. Thirty-five individuals were caught in one location in Casco Bay (see Appendix C).

Butterfish were considerably more abundant in the southern two regions, New Hampshire to Penobscot Bay, than the previous two fall surveys (Figure 3.).

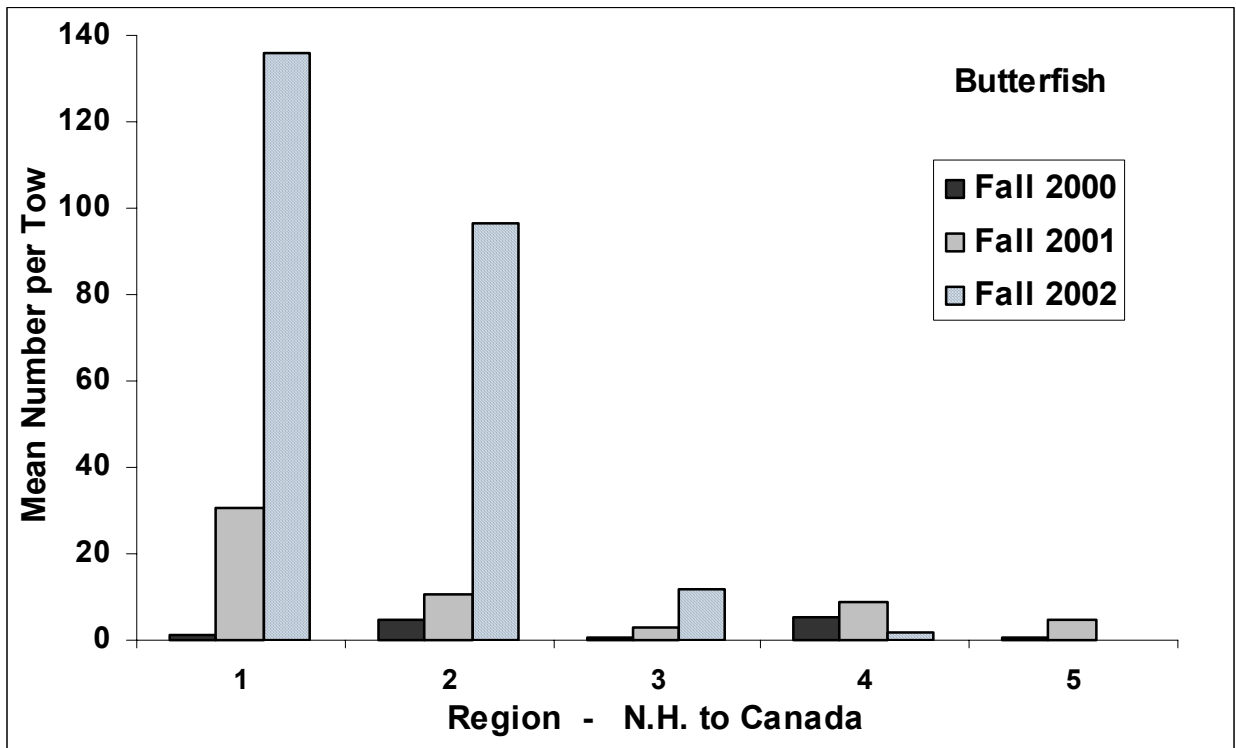


Figure 3. Mean number of butterfish per 20-minute tow for each region along the coasts of Maine and New Hampshire

Scup were also present in the fall of 2000 and 2002, but not 2001. Scup abundance was greater in 2000 and a larger number of adult fish were encountered (Figure 4.).

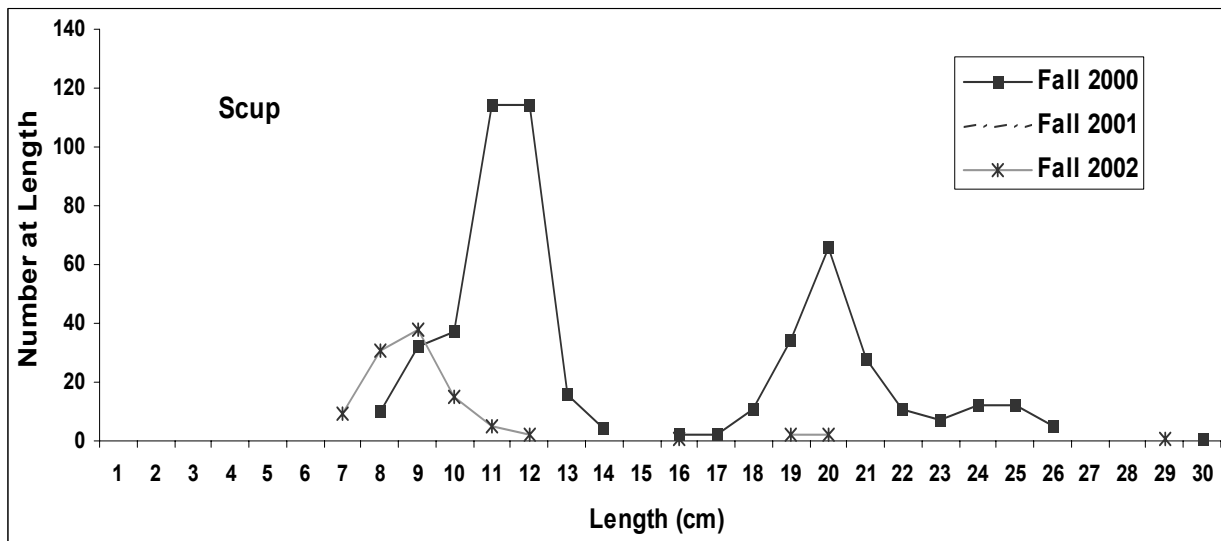


Figure 4. Length frequencies for total scup measured in the fall surveys.

Juvenile short bigeyes were seen in a tow inside Casco Bay and two more near Seal Is. in Penobscot Bay (see Appendix C.). Another live specimen was brought into the lab earlier in the summer of 2002. We believe this is the first occurrence of this species along the Maine coast

SPRING 2003 SUMMARY

The spring survey began on May 5, 2003 along the coast of New Hampshire. 101 out of a proposed 115 tows were completed in this survey. The weight of the total mixed catch varied from 549 kg to 13 kg with an average of 102 kg. Total number of species caught during the spring survey was 87. Species richness per tow ranged from 11 to 32 with an average richness of 21. The top ten species by number and weight can be found in Table 4.

Average bottom temperatures by stratum ranged from 6.6 to 3.3 °C (Table 5.). The overall average temperature for 2002 was 4.6 °C, compared to 4.1 °C for 2001 and 6.1 °C for 2002.

Table 5. Average bottom temperatures (°C) for the Spring 2003 survey.

		Region				
		1	2	3	4	5
Stratum	1	4.9	3.6	4.7	6.6	5.9
	2	3.4	4.6	4.3	5.2	5.4
	3	3.3	3.7	4.3	4.9	5.4
	4	3.5	3.5	3.9	5.5	6.5

Based on previous work conducted by the MEDMR, longhorn sculpin were generally thought to be more abundant in the spring. Results from the spring survey support this, but only in the southwestern portion of the coast (Figure 5).

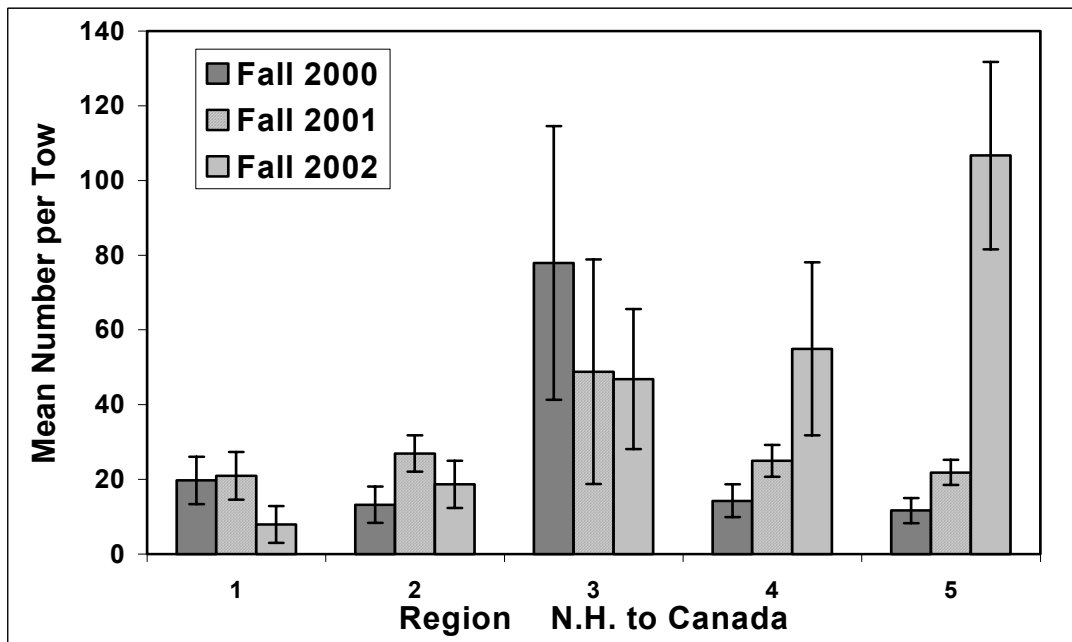
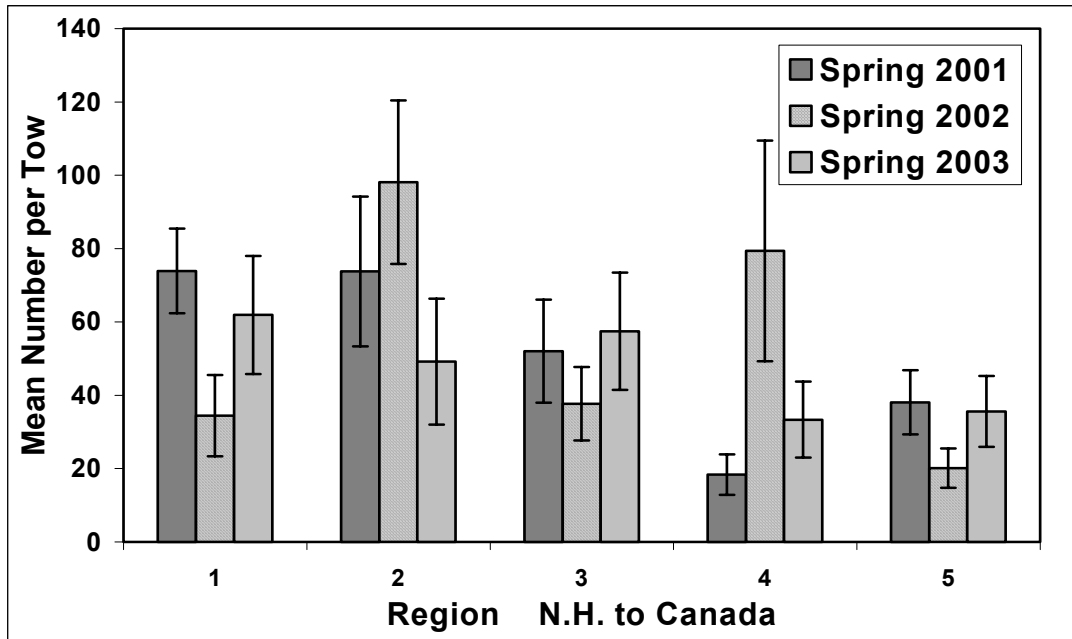


Figure 5. Distribution graphs for longhorn sculpin (*Myoxocephalus octodecemspinosus*) for the spring and fall seasons.

Ichthyoplankton

In the spring of 2002, 26 plankton tows were done, ranging along the coast from New Hampshire to the Canadian border. Thirty-one tows were completed in the spring of 2003. The goal was to complete two tows on each sampling day, but due to time constraints and fixed gear, that was not always obtained. In the last week of the spring 2003 survey, the plankton net was lost ending spring sample collection.

For 2002, a total of 13 different taxa of larvae were collected, identified, and measured (Table 6a). Eleven kinds of eggs were identified. Some of the more abundant larvae were winter flounder, American plaice, and radiated shanny. A large number of Atlantic seasnail larvae were found along the entire coast as well. American plaice, yellowtail flounder, cunner, and the cod/haddock/witch flounder complex were also well represented in the eggs identified.

For 2003, a total of 17 different taxa of larvae were collected (Table 6b). Ten varieties of eggs were seen although 2 were not identified. More sand lance larvae were seen along the southern part of the survey in 2003 and fewer larvae of winter flounder and plaice. Larvae of several *Liparis sp.* remained common in the samples. The eggs identified were fairly similar in abundance and distribution to the previous year.

Table 6a. Mean catch (100 m⁻³) of larvae (<28 mm SL) and eggs for each region in which ichthyoplankton tows were done during the Spring 2002 survey. Maximum values are shown in parenthesis. Classification of eggs was lumped if undistinguishable by species into the categories H4B (*Urophycis* sp., fourbeard rockling, windowpane, and butterfish), CYT (cunner, yellowtail), and CHW (cod, haddock, witch flounder).

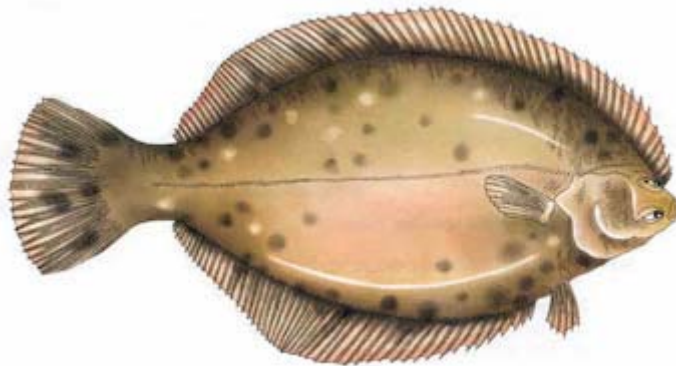
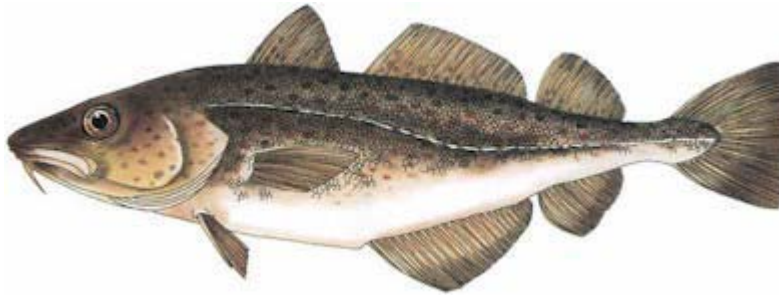
LARVAE					
	Region 1	Region 2	Region 3	Region 4	Region 5
Sand Lance	0.27 (1.08)				
Lumpfish	0.18 (0.55)			0.05 (0.25)	
Fourbeard Rockling			2.68 (14.47)		0.07 (0.29)
Cod	0.03 (0.21)				
Winter Flounder	3.35 (24.29)	1.65 (4.94)	0.19 (0.65)	1.04 (3.78)	2.03 (6.96)
American Plaice	6.73 (42.51)	1.28 (3.28)			
Atlantic Seasnail	1.03 (6.07)	2.93 (8.78)	0.21 (0.46)	2.80 (10.09)	0.25 (0.70)
<i>Liparis</i> sp.			0.05 (0.30)		
Radiated Shanny	1.78 (6.07)	2.54 (4.39)	3.06 (5.25)	6.25 (20.18)	0.92 (2.05)
Grubby	0.05 (0.24)			0.06 (0.28)	
Snakeblenny			0.03 (0.15)		
Alligatorfish			0.40 (2.41)		
Rock Gunnel				0.25 (1.26)	
EGGS					
	Region 1	Region 2	Region 3	Region 4	Region 5
CHW	55.61 (201.20)	13.13 (36.12)	3.21 (19.29)	4.04 (20.18)	
Fourbeard Rockling	2.85 (5.78)	31.32 (48.31)	124.58 (540.07)	114.02 (444.01)	5.08 (12.86)
Cod	1.86 (4.79)	1.09 (3.28)			
Haddock	0.58 (1.95)				
H4B	17.07 (44.02)	150.38 (223.98)	480.28 (1562.34)	436.73 (1654.94)	130.52 (325.48)
American Plaice	96.35 (205.99)	174.29 (394.03)	98.69 (385.76)	38.32 (181.64)	12.77 (24.55)
CYT	58.42 (153.29)			0.17 (0.84)	1.17 (4.68)
Yellowtail	29.46 (100.60)	1.46 (4.39)			
Atlantic Mackerel	3.70 (8.67)				
Windowpane	0.79 (6.34)				
Cusk		2.18 (4.39)	2.26 (13.56)	12.51 (60.55)	6.11 (10.67)
Unidentifiable	0.84 (4.79)	0.36 (1.08)			0.82 (2.34)

Table 6b. Mean catch (100 m⁻³) of larvae (<28 mm SL) and eggs for each region in which ichthyoplankton tows were done during the Spring 2003 survey. Maximum values are shown in parenthesis. Classification of eggs was lumped if undistinguishable by species into the categories H4B (*Urophycis* sp., fourbeard rockling, windowpane, and butterfish), CYT (cunner, yellowtail), and CHW (cod, haddock, witch flounder).

LARVAE					
	Region 1	Region 2	Region 3	Region 4	Region 5
Sand Lance	4.27 (23.40)	1.55 (7.24)	0.8 (2.38)		
Pollock		0.44 (1.81)	0.77 (2.38)		
Fourbeard Rockling				0.57 (1.27)	
Cod					0.53 (1.06)
Winter Flounder	0.98 (4.96)	1.26 (5.85)	0.94 (2.43)	8.67 (25.36)	9.65 (14.01)
American plaice	0.34 (2.48)		0.49 (2.43)	0.78 (3.17)	1.00 (2.00)
Atlantic seasnail	0.46 (4.10)	0.46 (1.73)	2.22 (9.51)	2.85 (4.00)	46.01 (74.06)
Inquiline snailfish			0.59 (2.93)		
<i>Liparis</i> sp.					0.53 (1.06)
Radiated Shanny	0.17 (0.98)	0.52 (1.81)	0.48 (2.38)	1.65 (3.00)	4.64 (5.28)
Grubby	0.09 (0.59)		2.67 (11.89)	0.25 (1.00)	1.06 (2.11)
Alligatorfish		0.34 (2.38)	0.48 (2.38)		
Rock Gunnel			0.48 (2.38)	0.25 (1.00)	1.58 (3.17)
Capelin				0.79 (3.17)	
Shorthorn sculpin				1.84 (6.34)	
Longhorn sculpin		0.60 (2.38)			
EGGS					
	Region 1	Region 2	Region 3	Region 4	Region 5
CHW	2.43 (7.38)	7.40 (31.78)	0.83 (7.38)		
Fourbeard Rockling	50.04 (213.99)	77.03 (205.96)	53.23 (196.36)	35.22 (116.39)	10.97 (19.61)
Cod	0.13 (1.17)	0.73 (5.11)		0.43 (2.14)	0.29 (0.58)
H4B	107.38 (273.02)	623.18 (1132.80)	290.28 (414.01)	233.26 (585.52)	117.23 (198.24)
American Plaice	92.31 (398.46)	256.92 (588.47)	18.46 (58.90)	19.04 (35.13)	8.15 (8.71)
CYT	2.18 (14.76)				
Cusk	0.33 (2.97)	0.66 (4.61)		2.34 (11.71)	2.18 (4.36)
Pollock	0.82 (7.38)				
Unknown demersal	0.04 (0.36)				
Unidentifiable	0.82 (7.38)		0.10 (0.68)		

Selected Species

The following pages contain distribution maps for some selected species followed by length frequency plots for those same species.



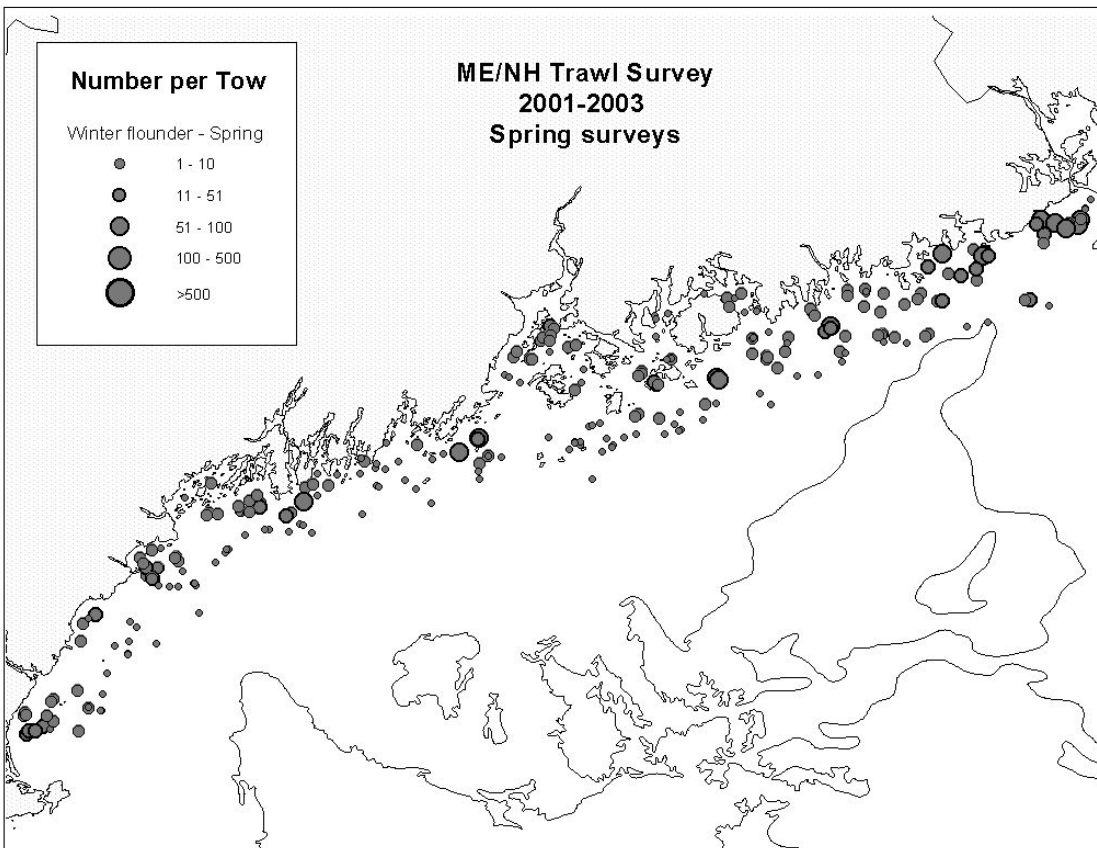
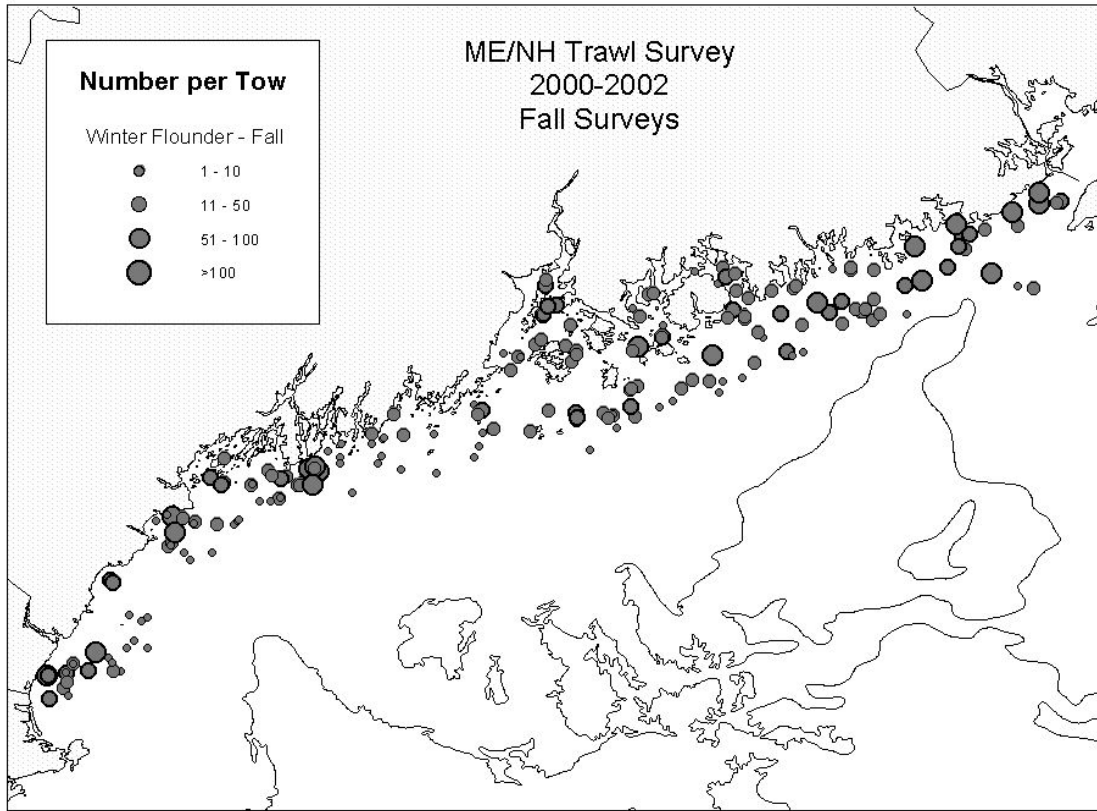


Figure 6. Winter flounder distribution

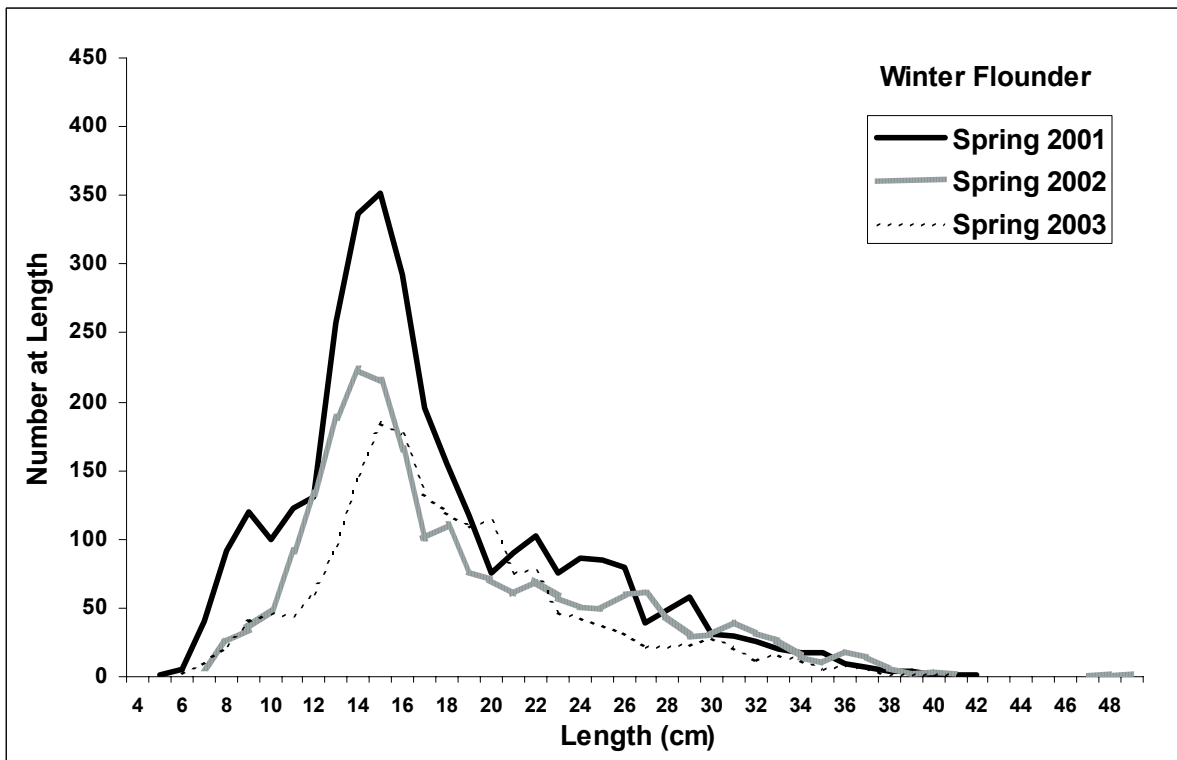
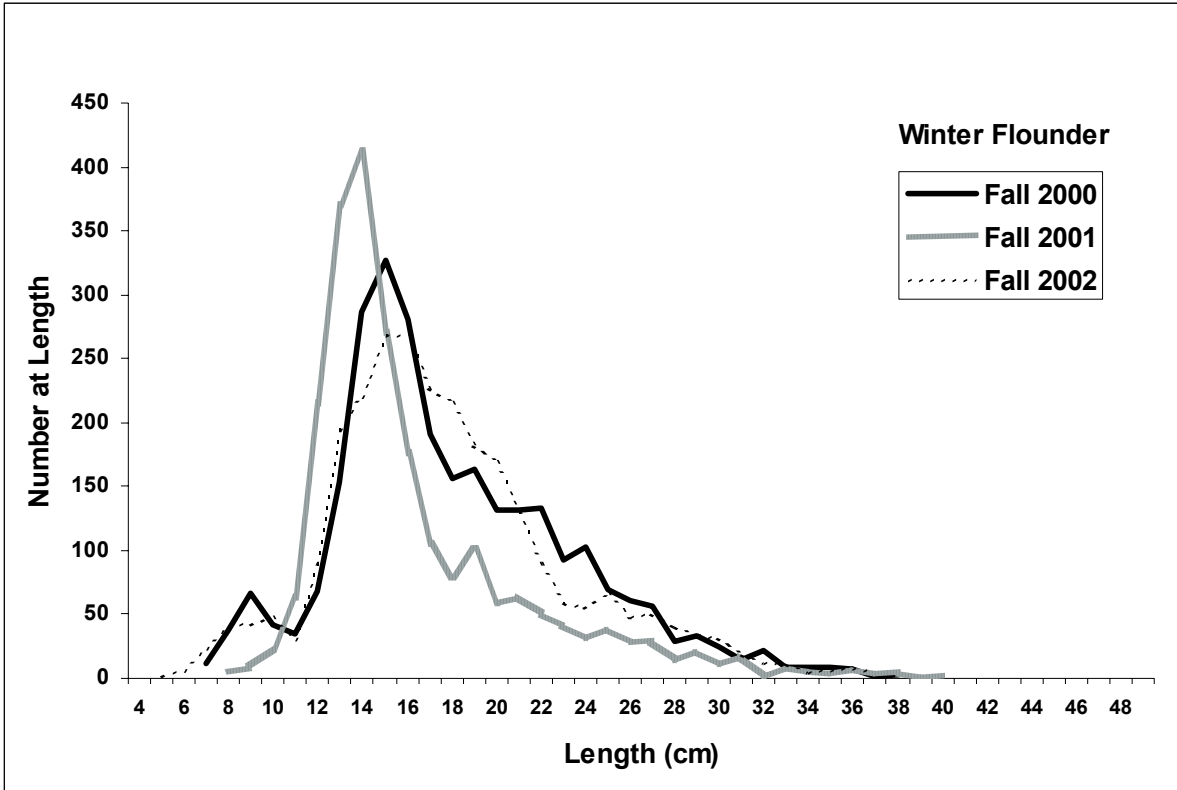


Figure 7. Length frequency plots for winter flounder by season and year.

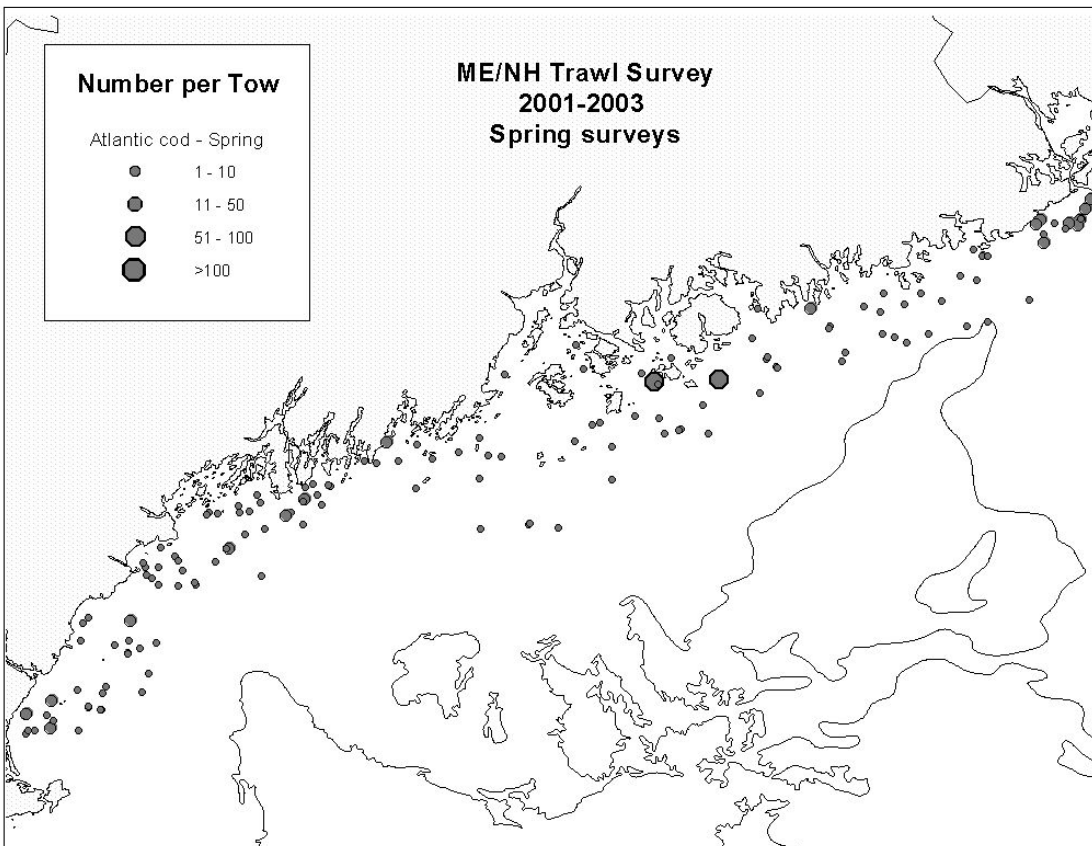
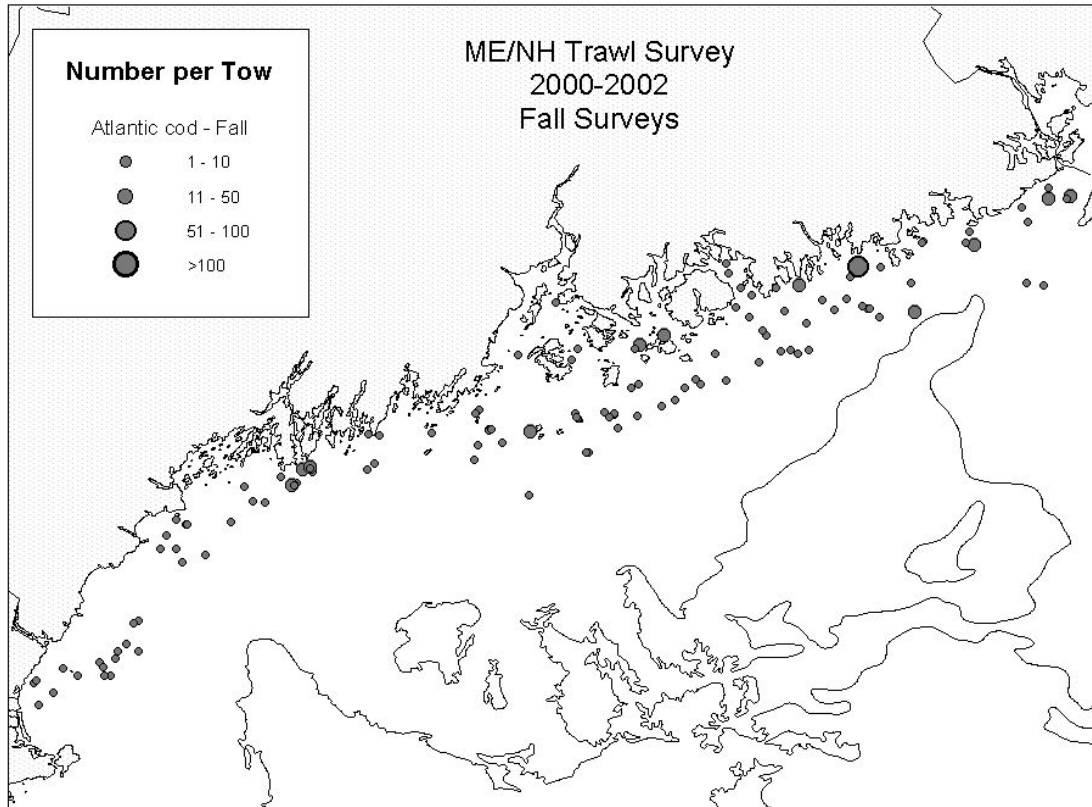


Figure 8. Atlantic cod distribution

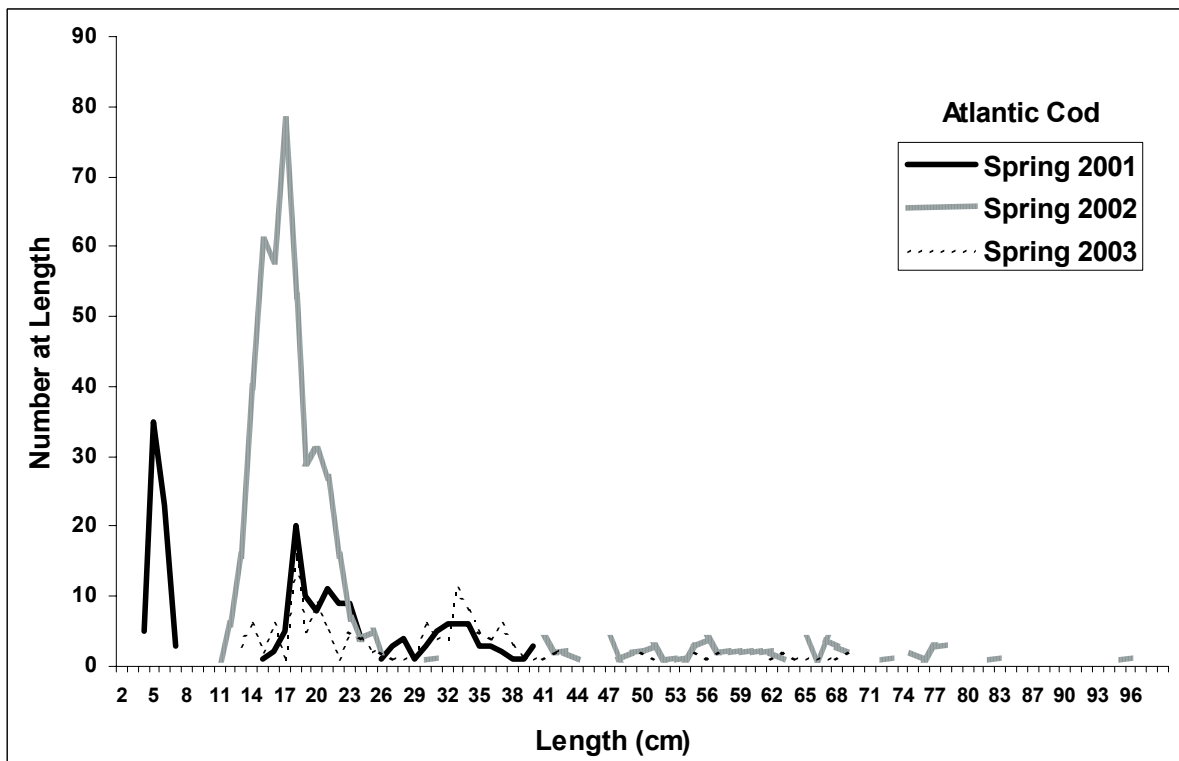
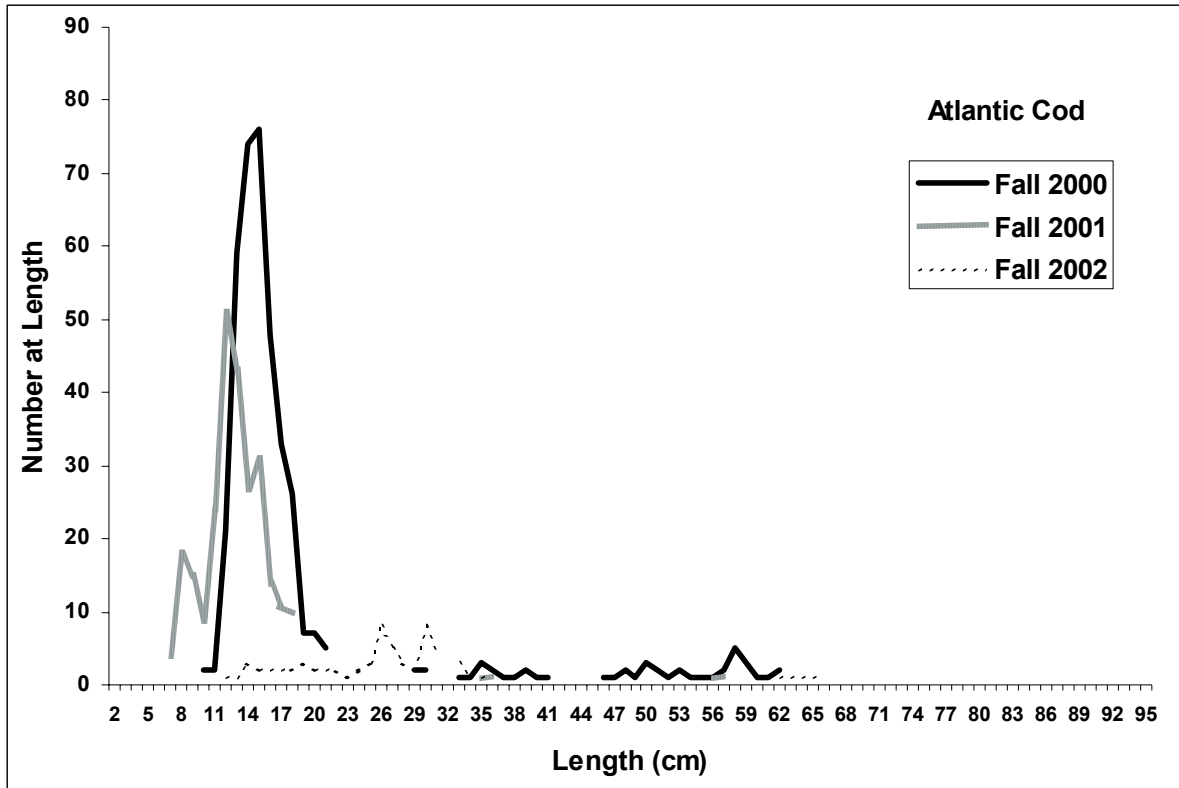


Figure 9. Length frequency plots for cod by season and year.

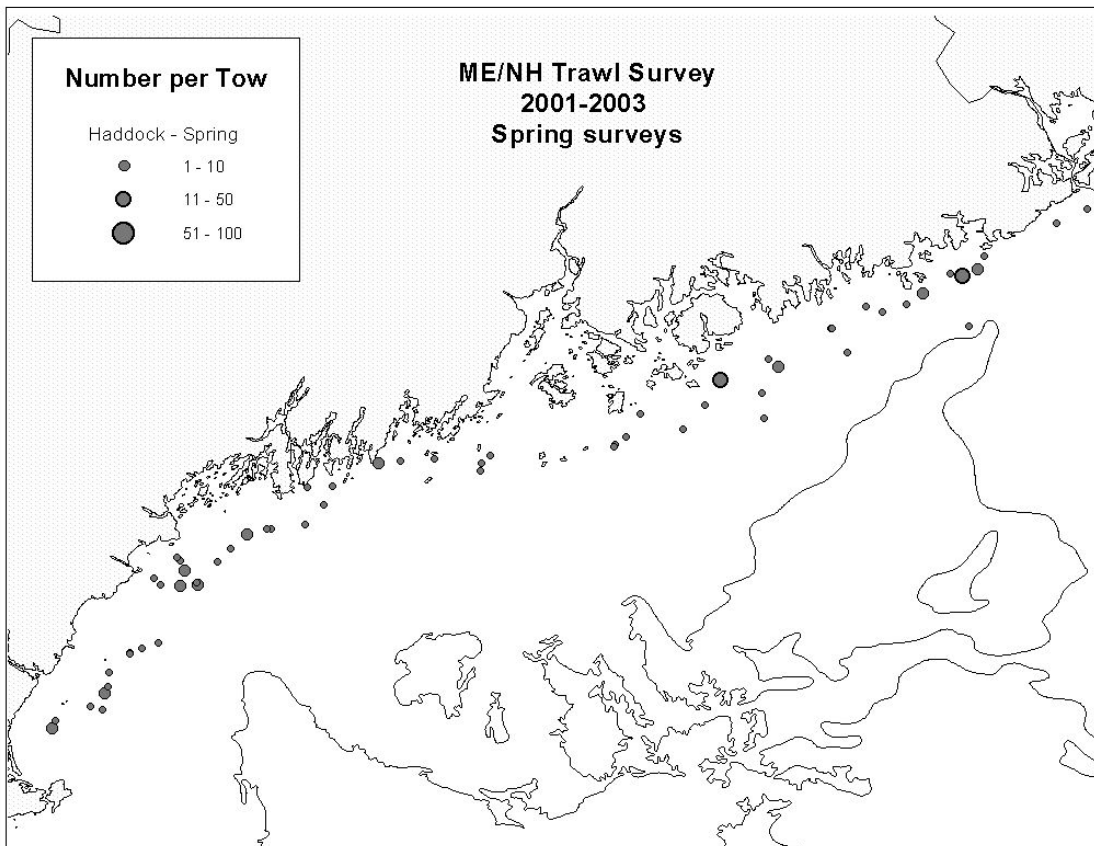
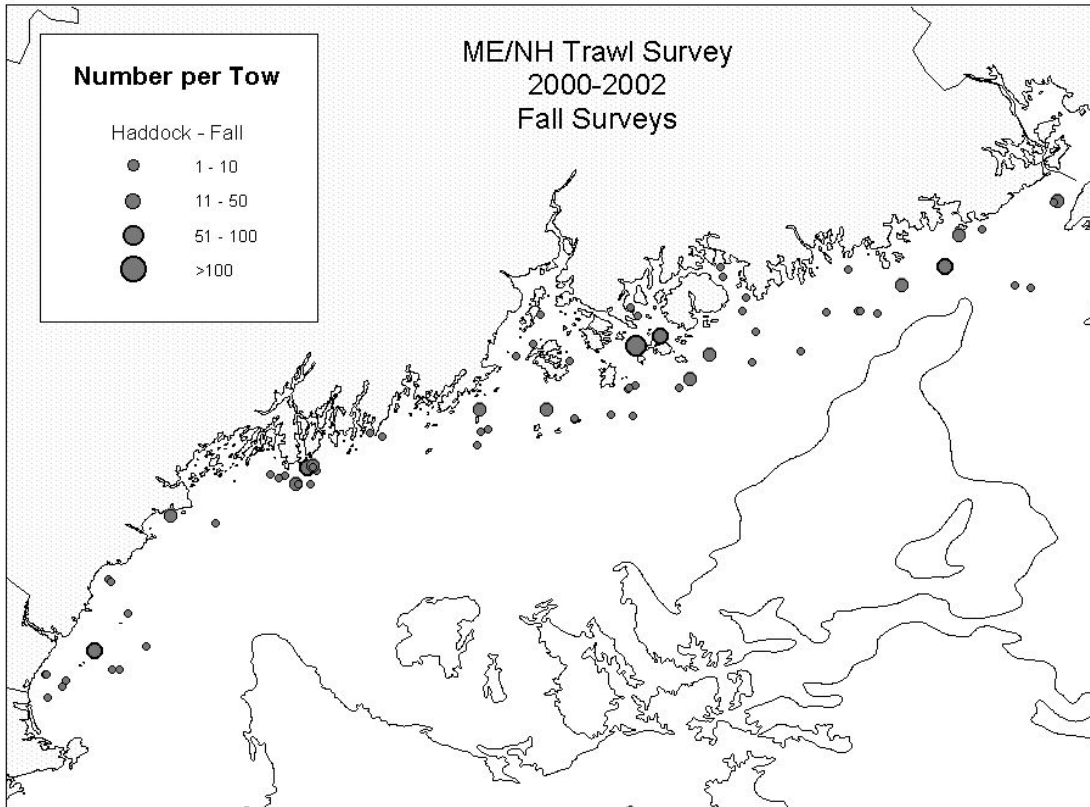


Figure 10. Haddock distribution

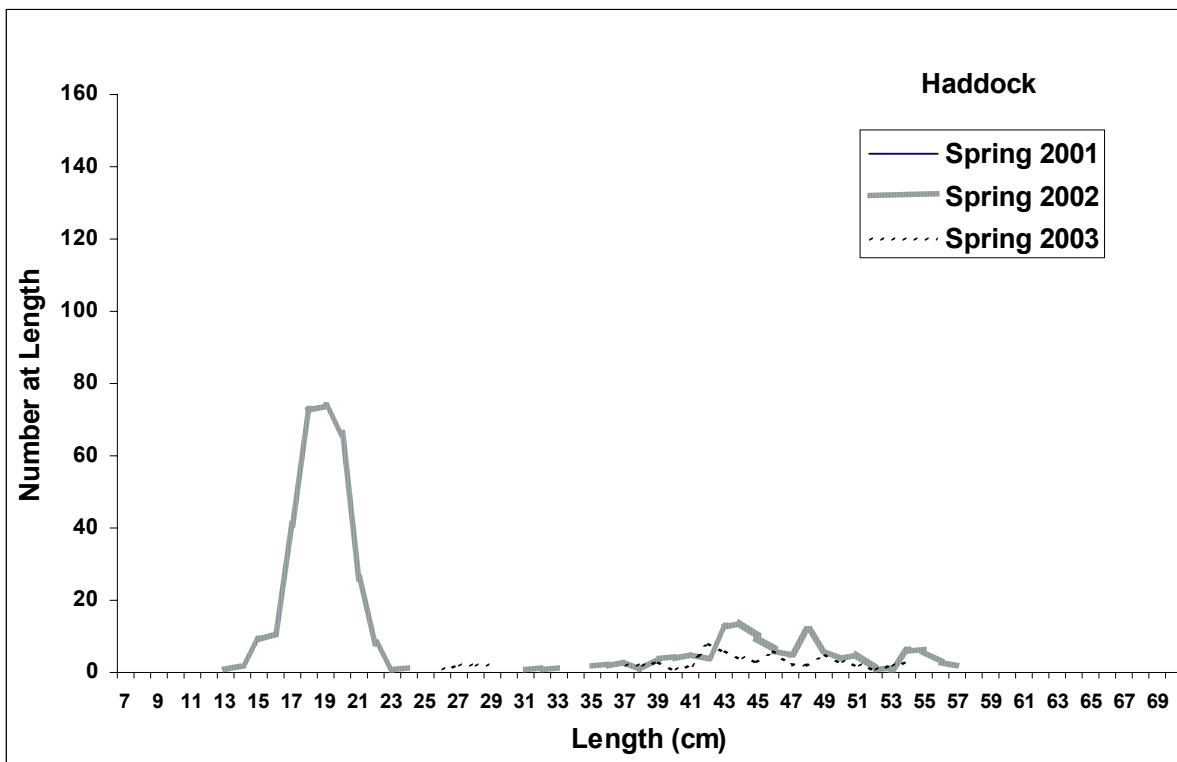
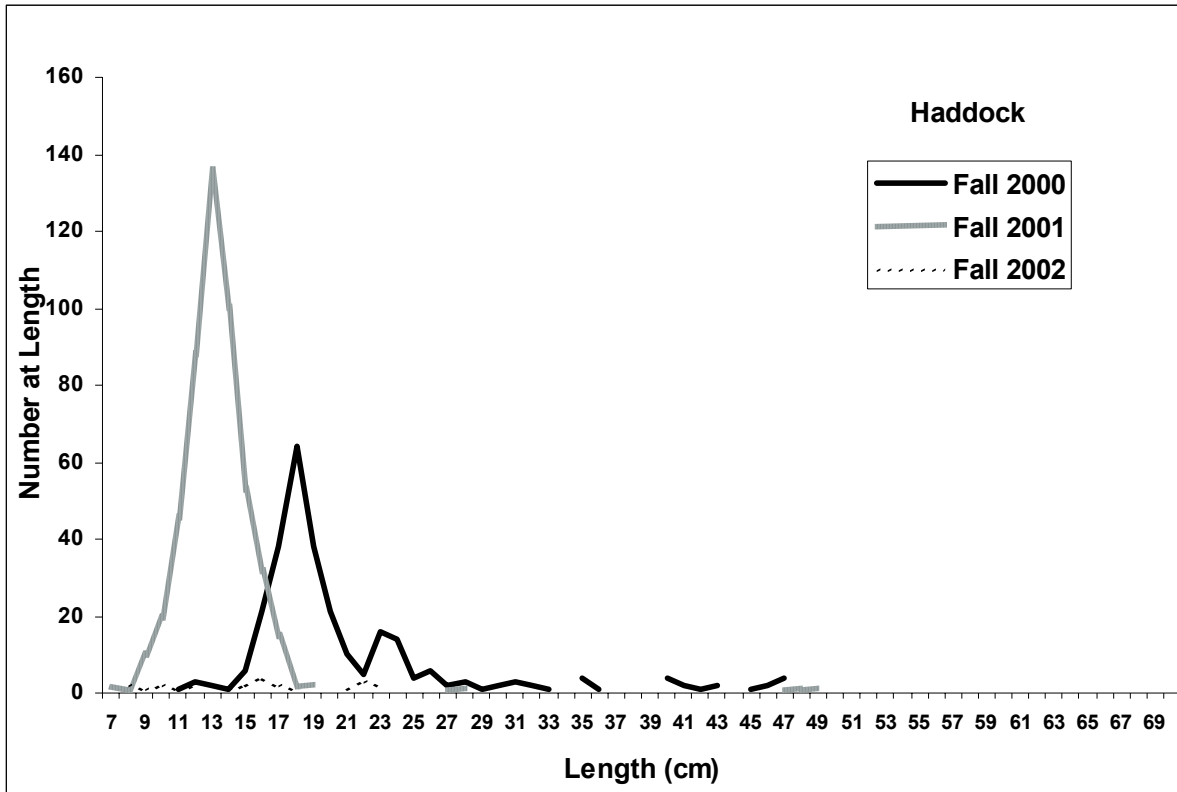


Figure 11. Length frequency plots for haddock by season and year.

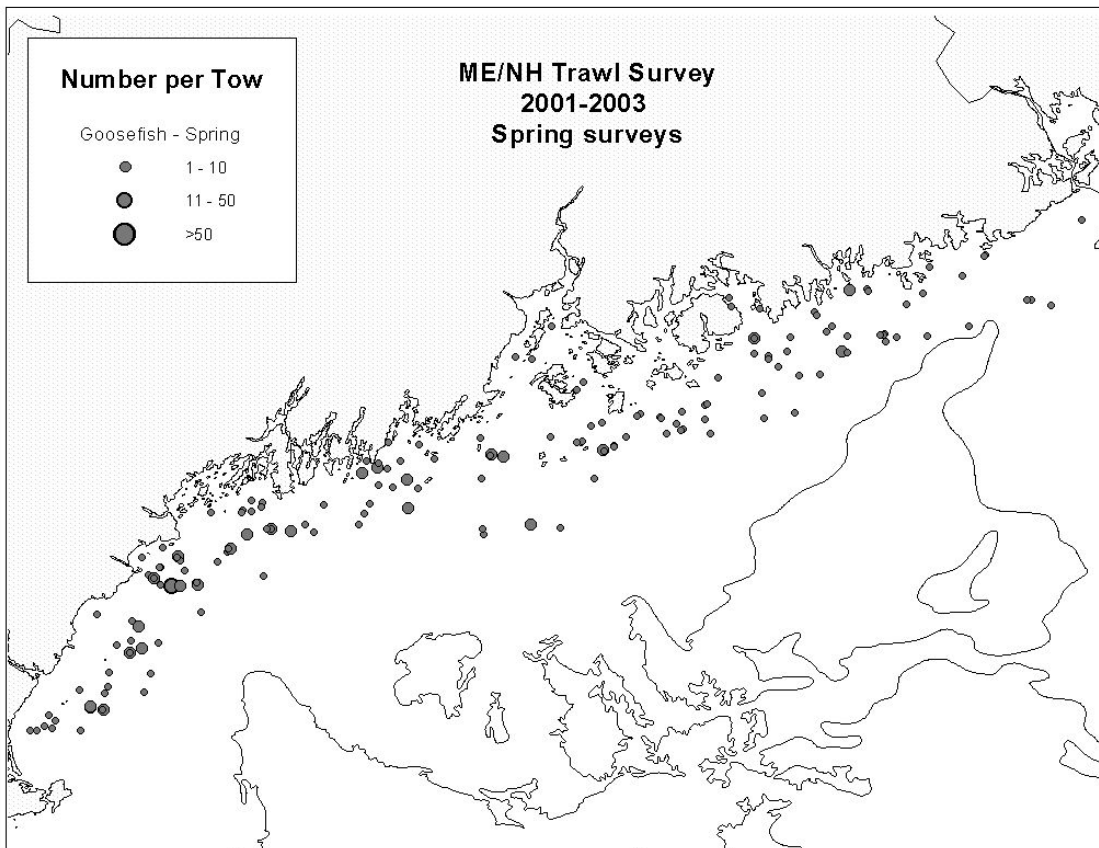
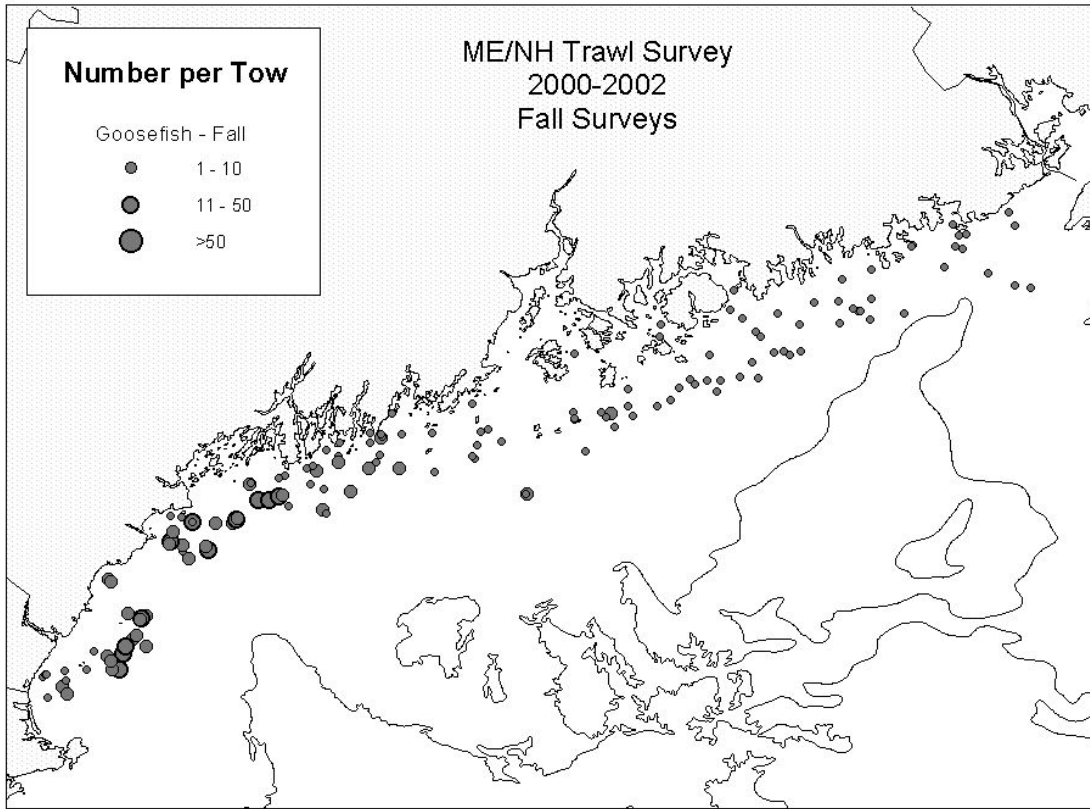


Figure 12. Goosefish distribution

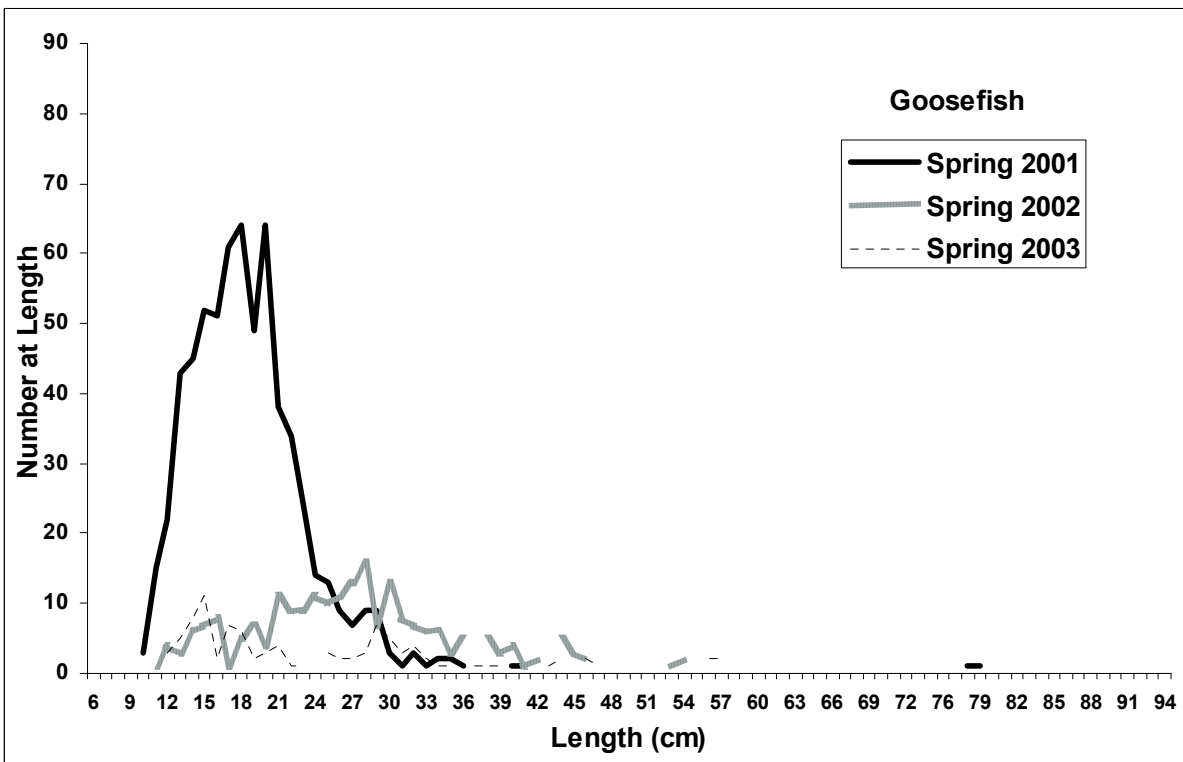
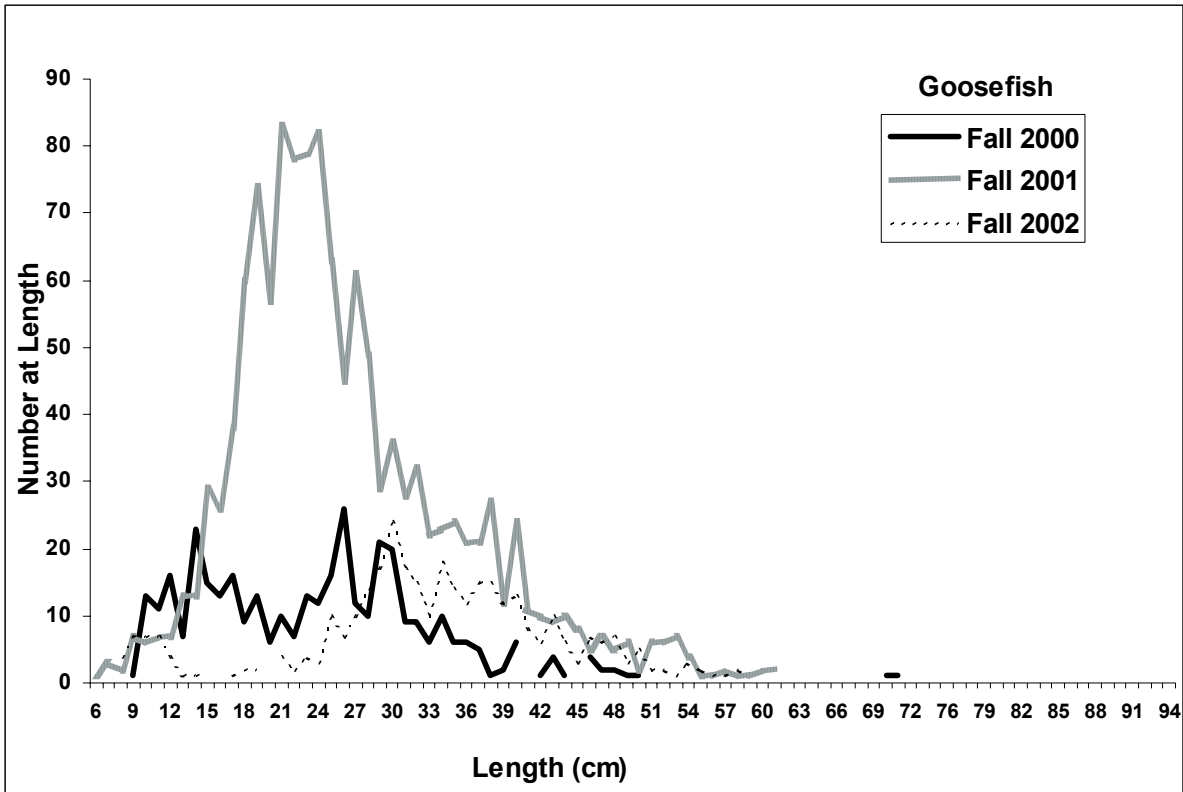


Figure 13. Length frequency plots for goosefish (monkfish) by season and year.

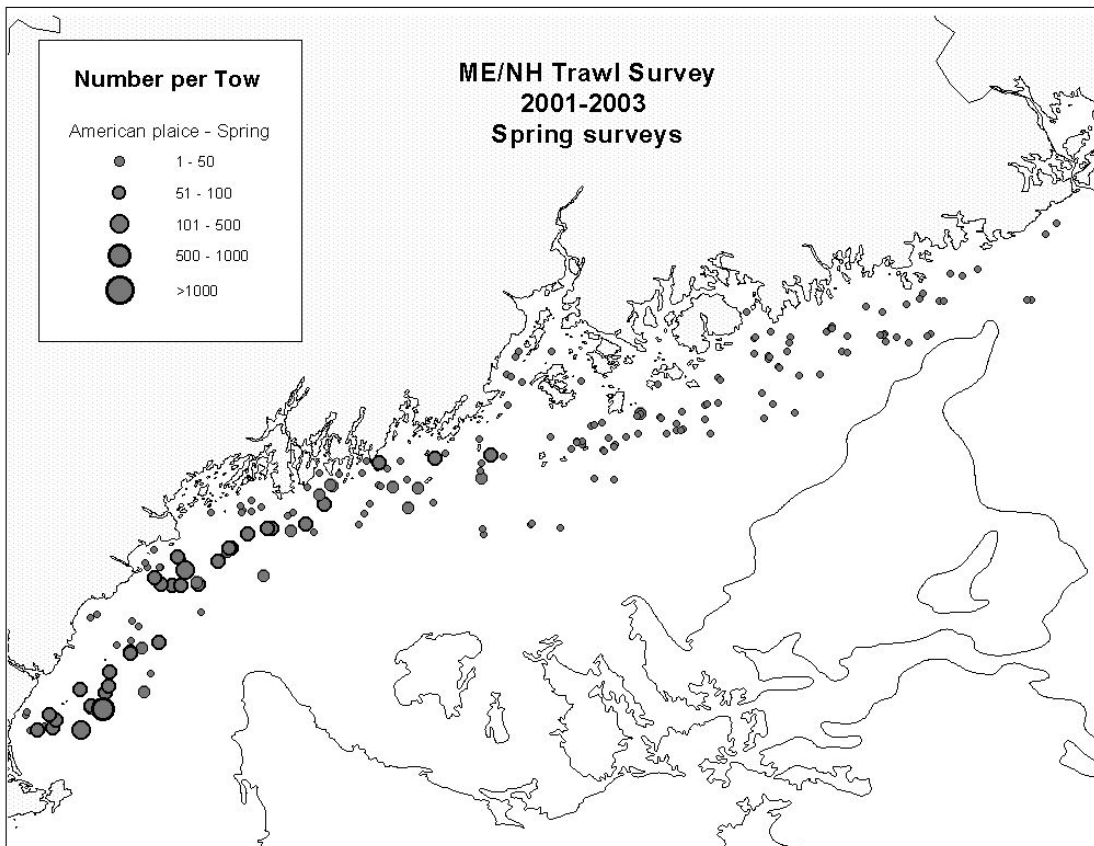
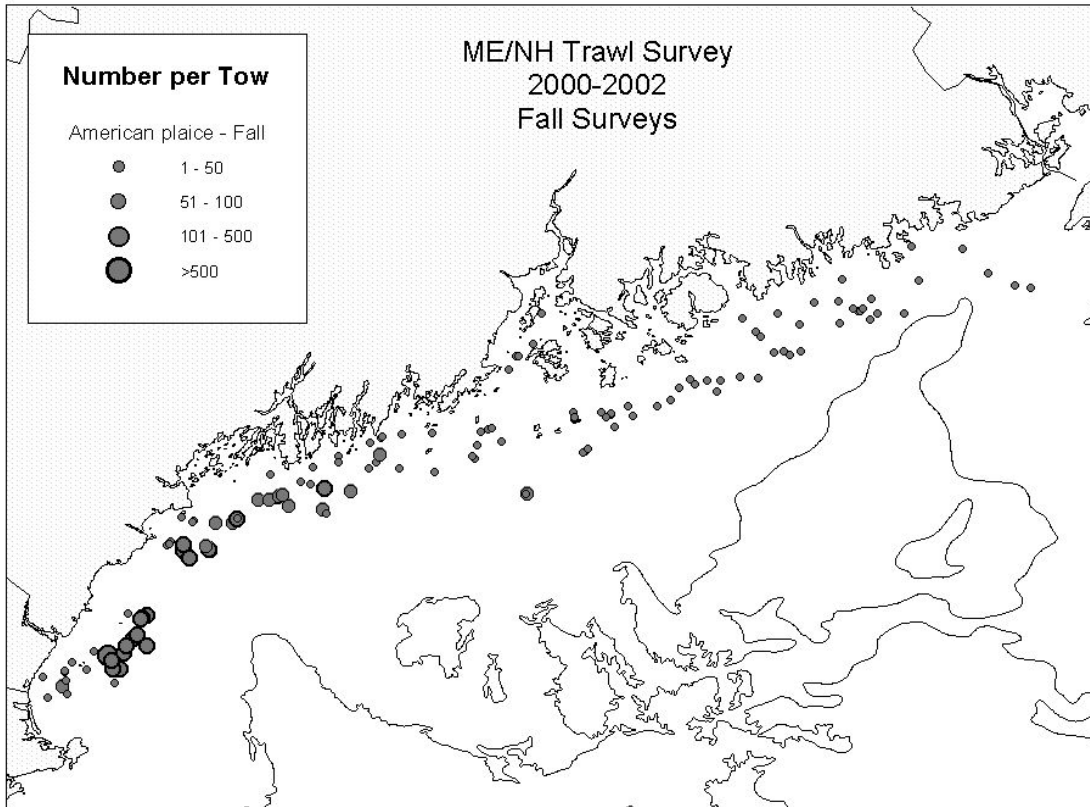


Figure 14. American plaice distribution

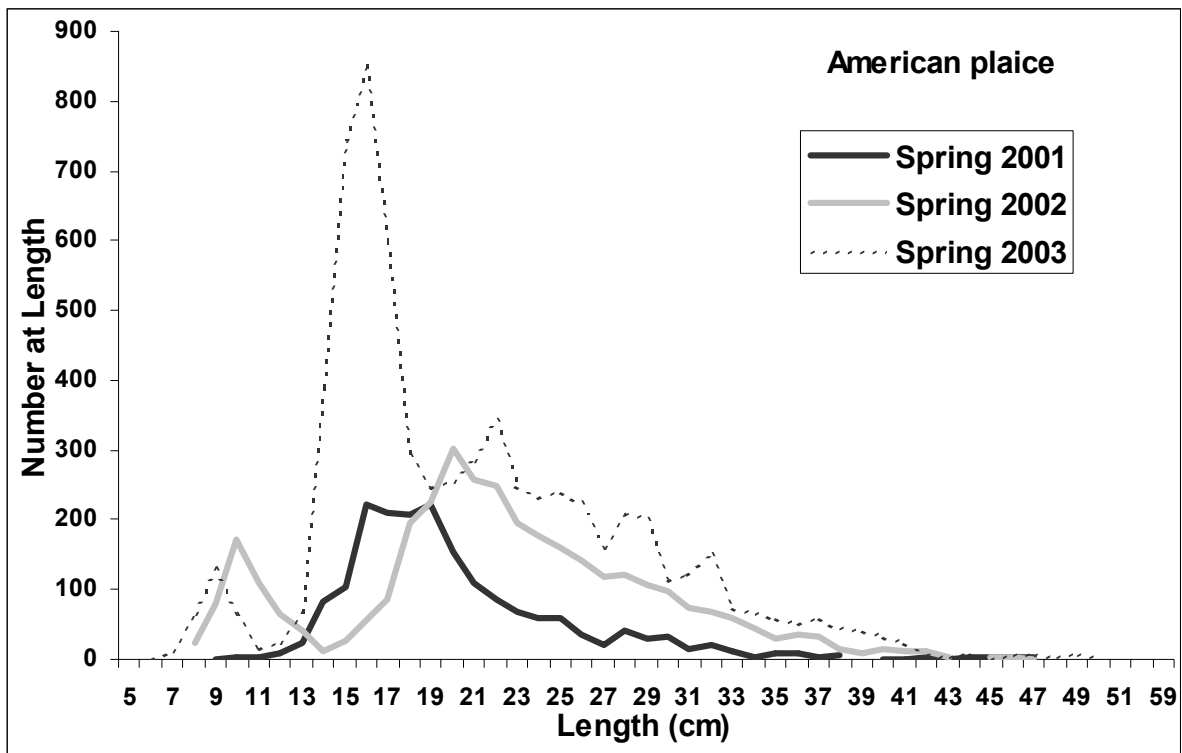
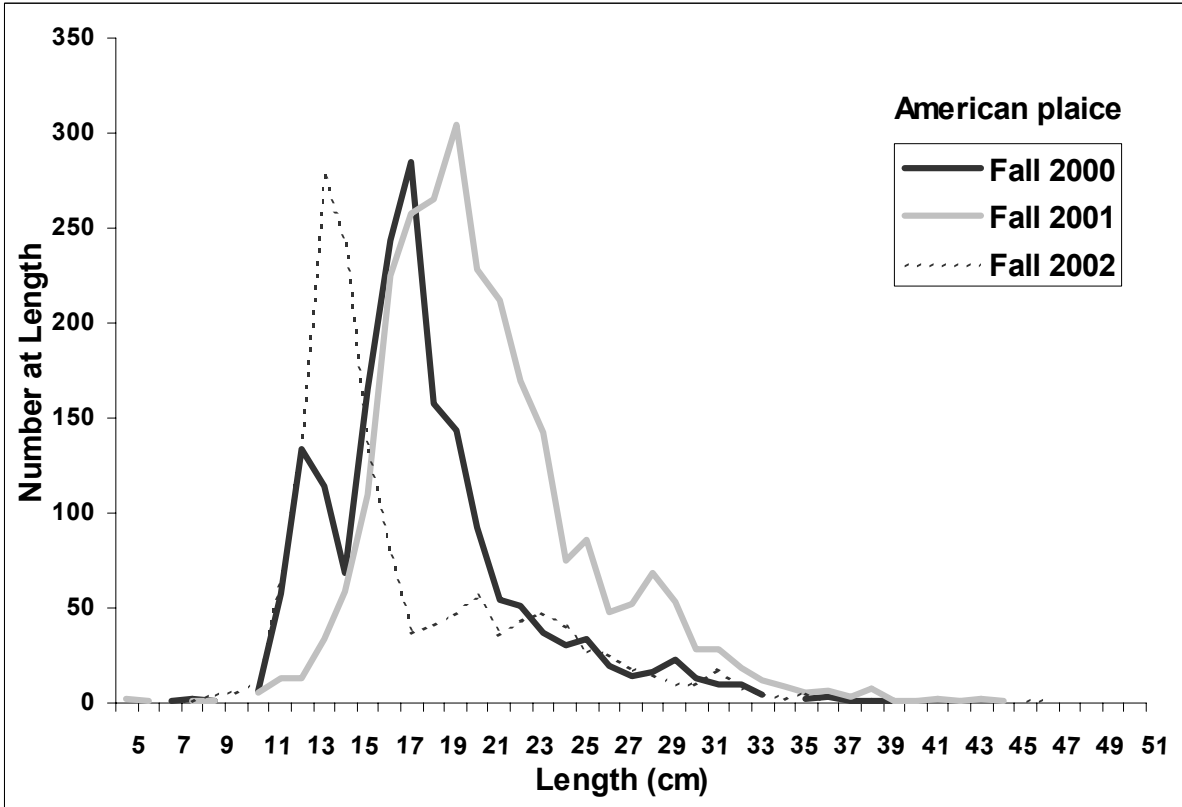


Figure 15. Length frequency plots for plaice by season and year.

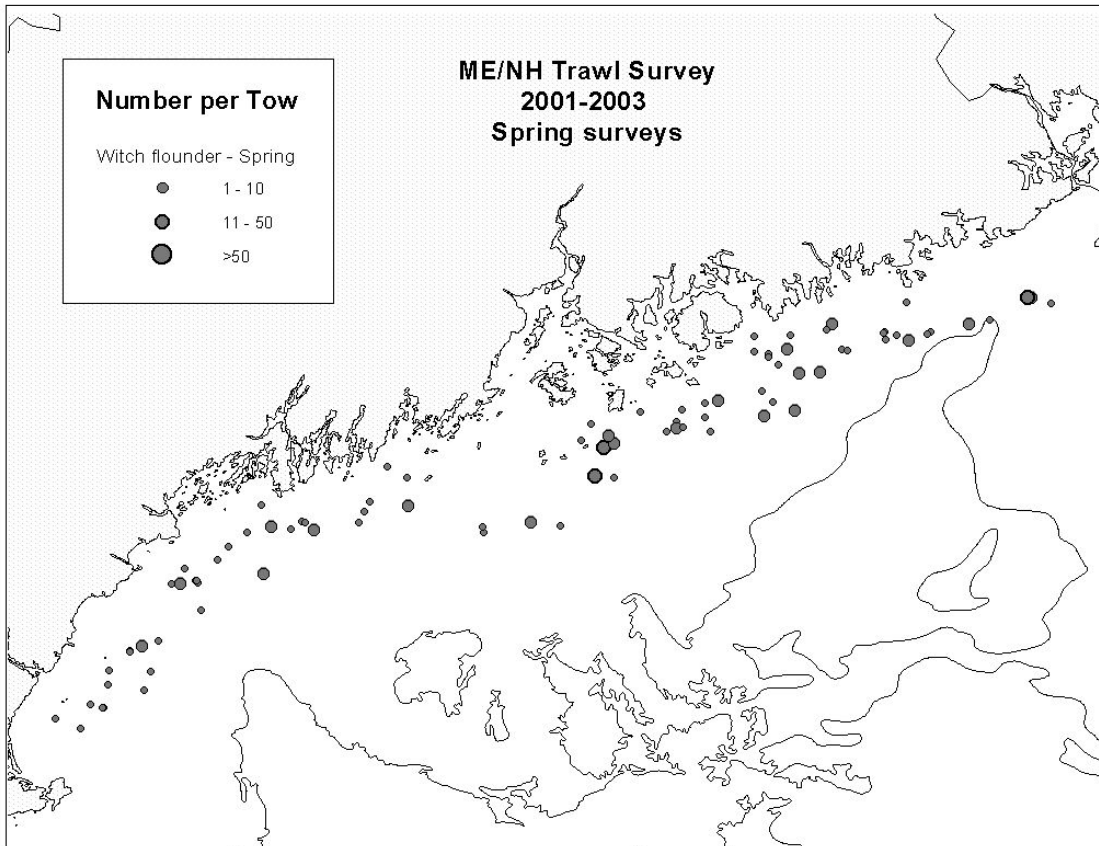
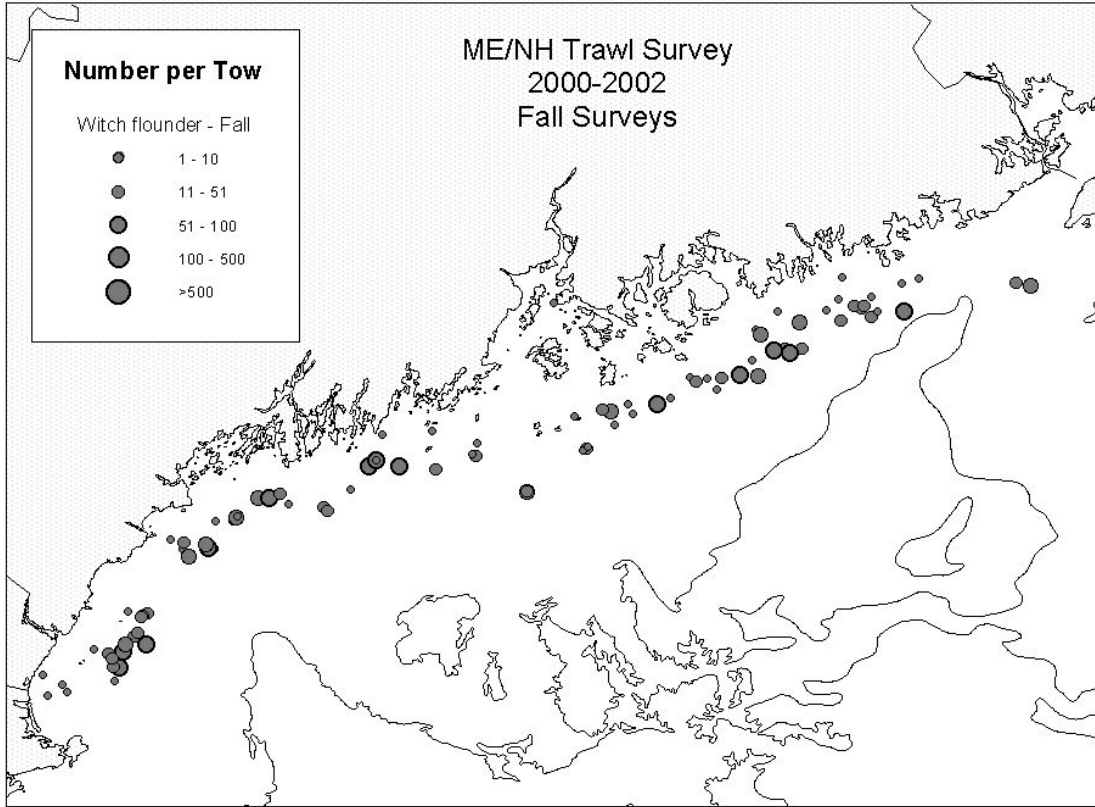


Figure 16. Witch flounder distribution

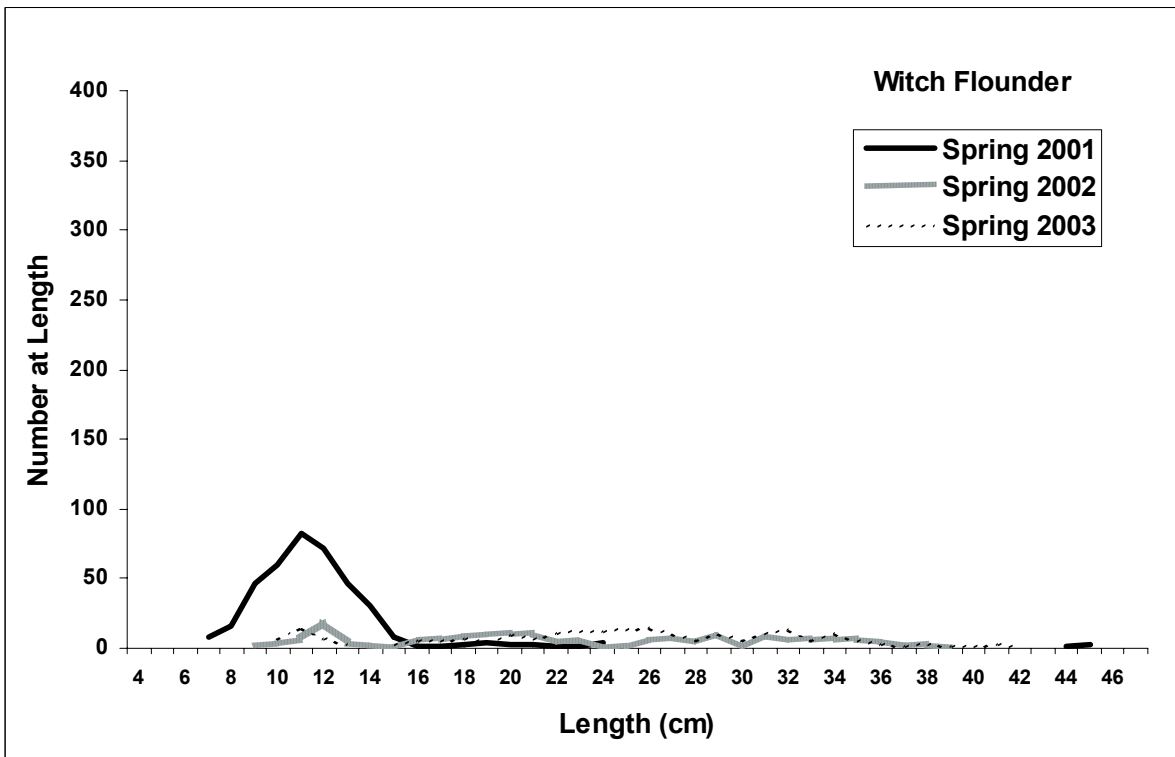
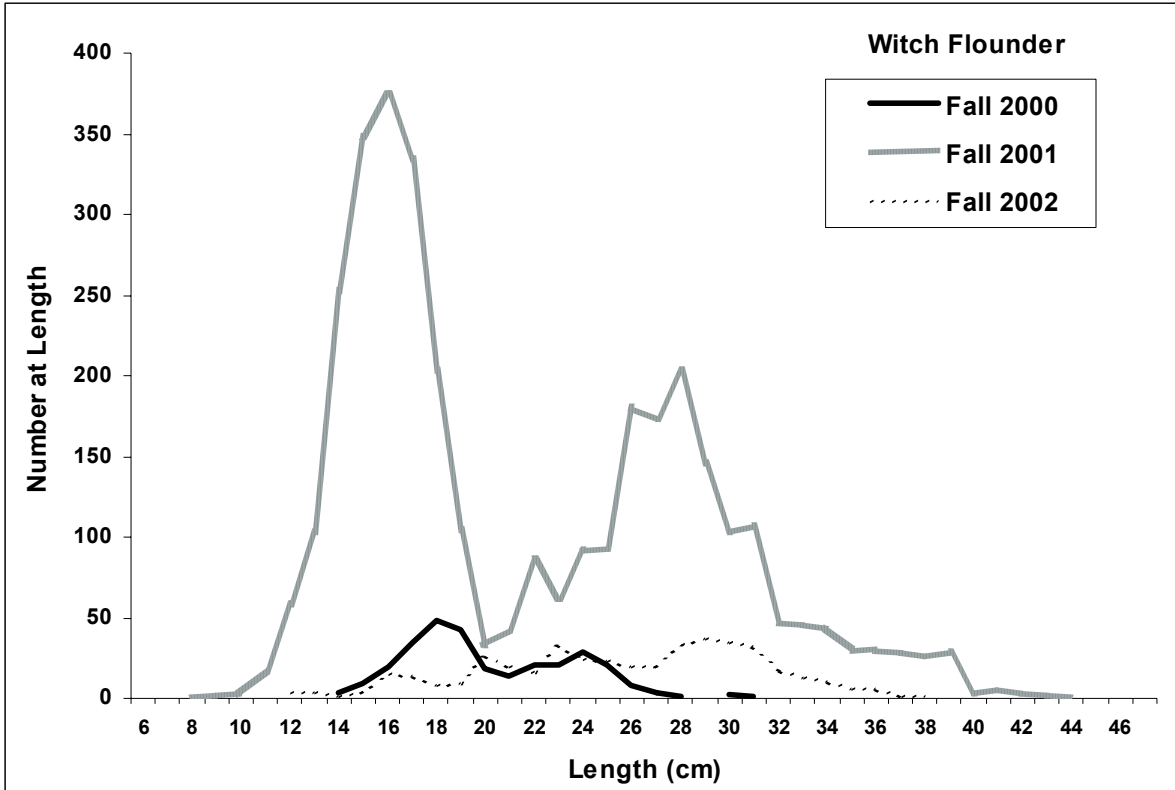


Figure 17. Length frequency plots for witch flounder by season and year

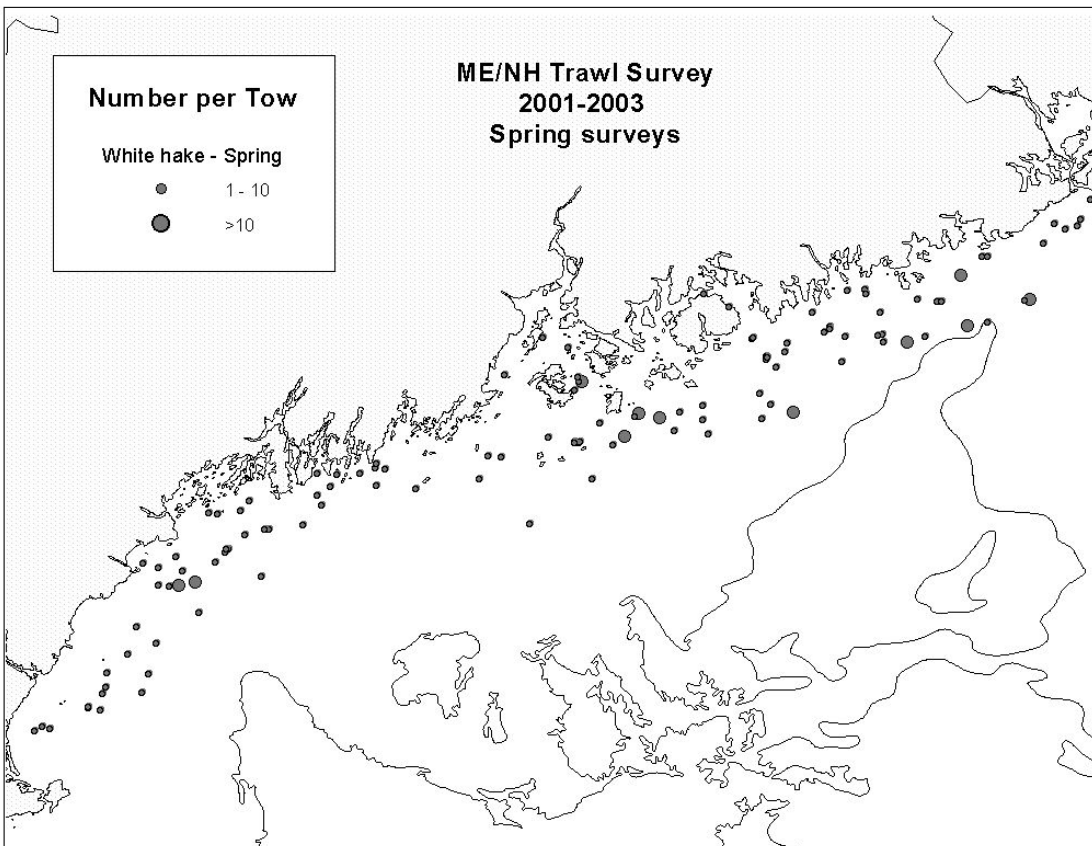
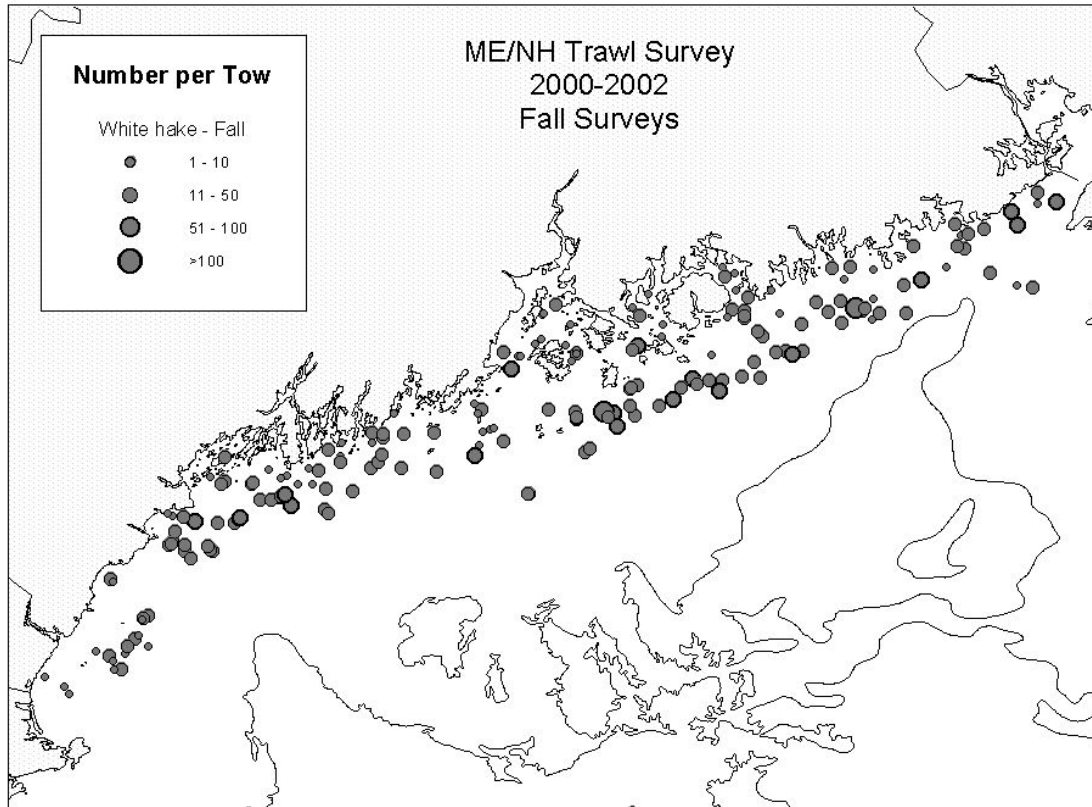


Figure 18. White hake distribution

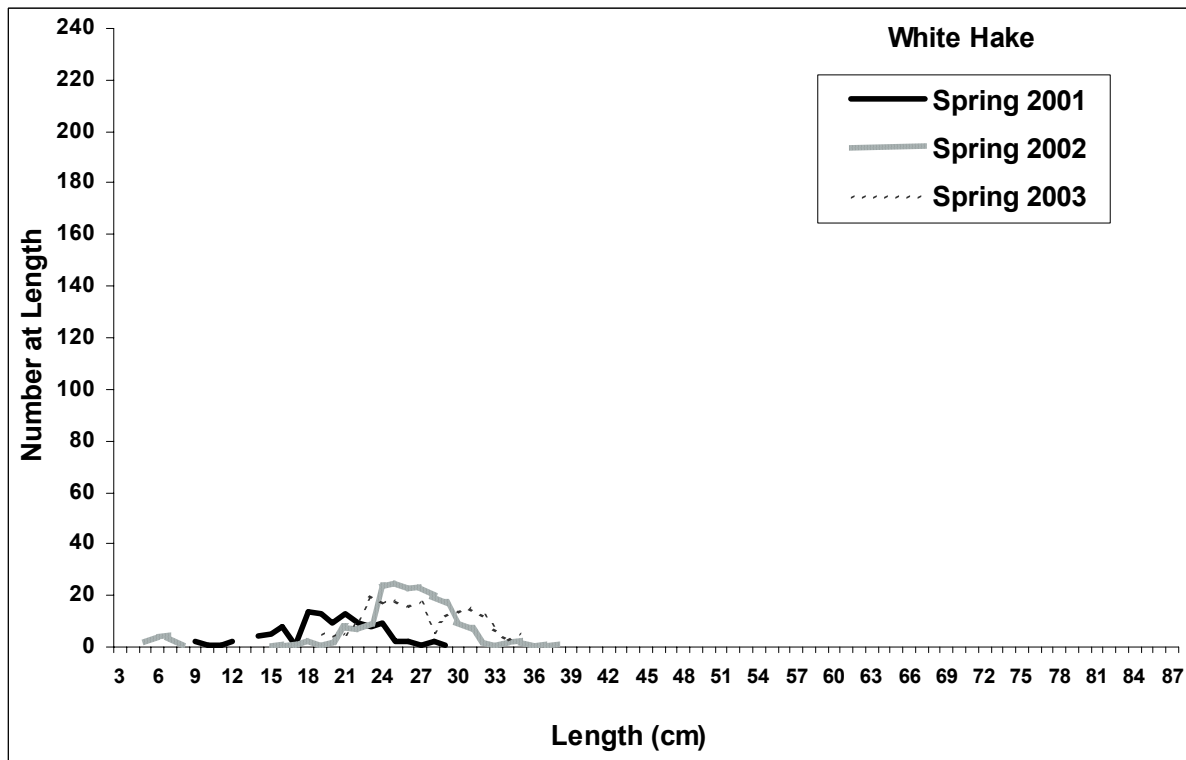
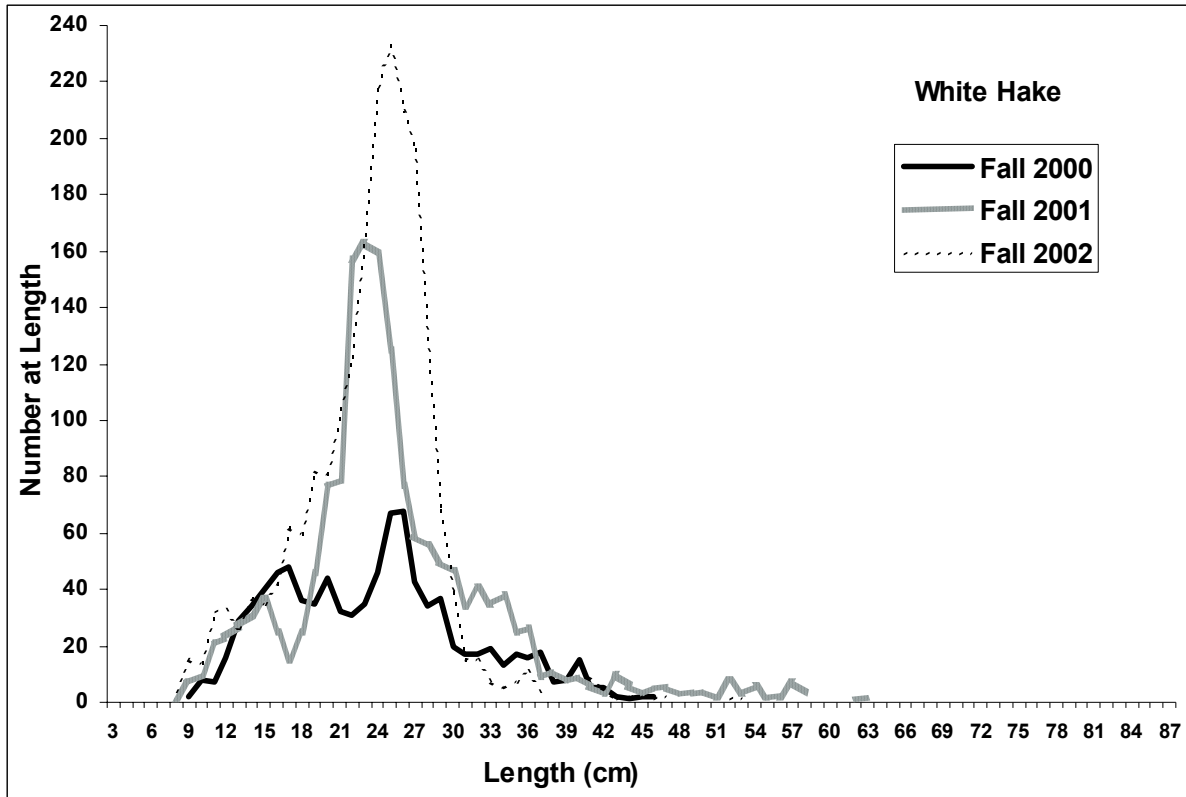


Figure 19. Length frequency plots for white hake by season and year.

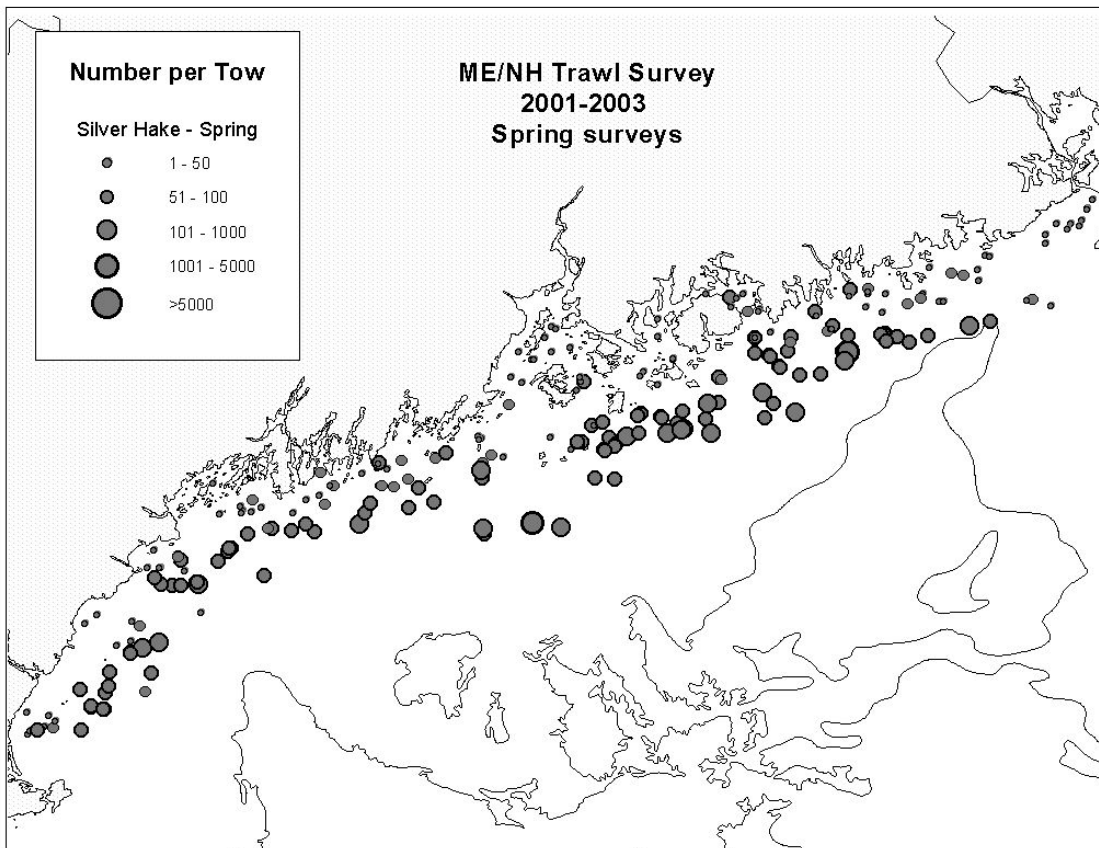
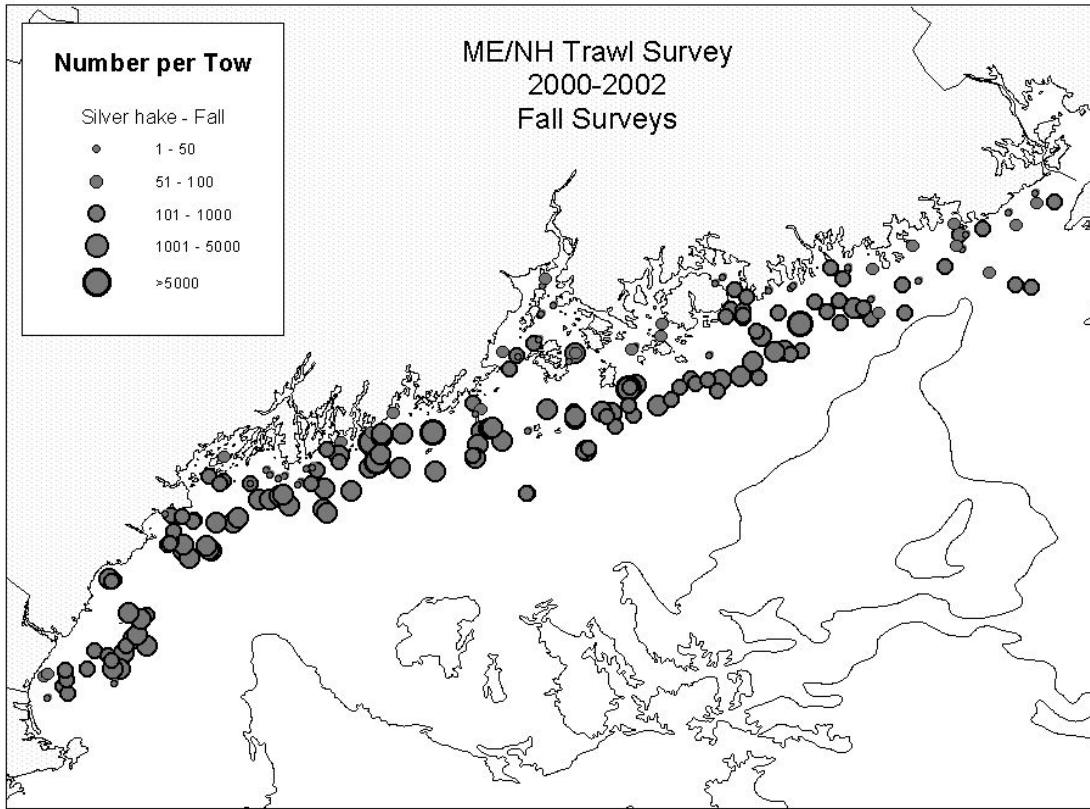


Figure 20. Silver hake (whiting) distribution

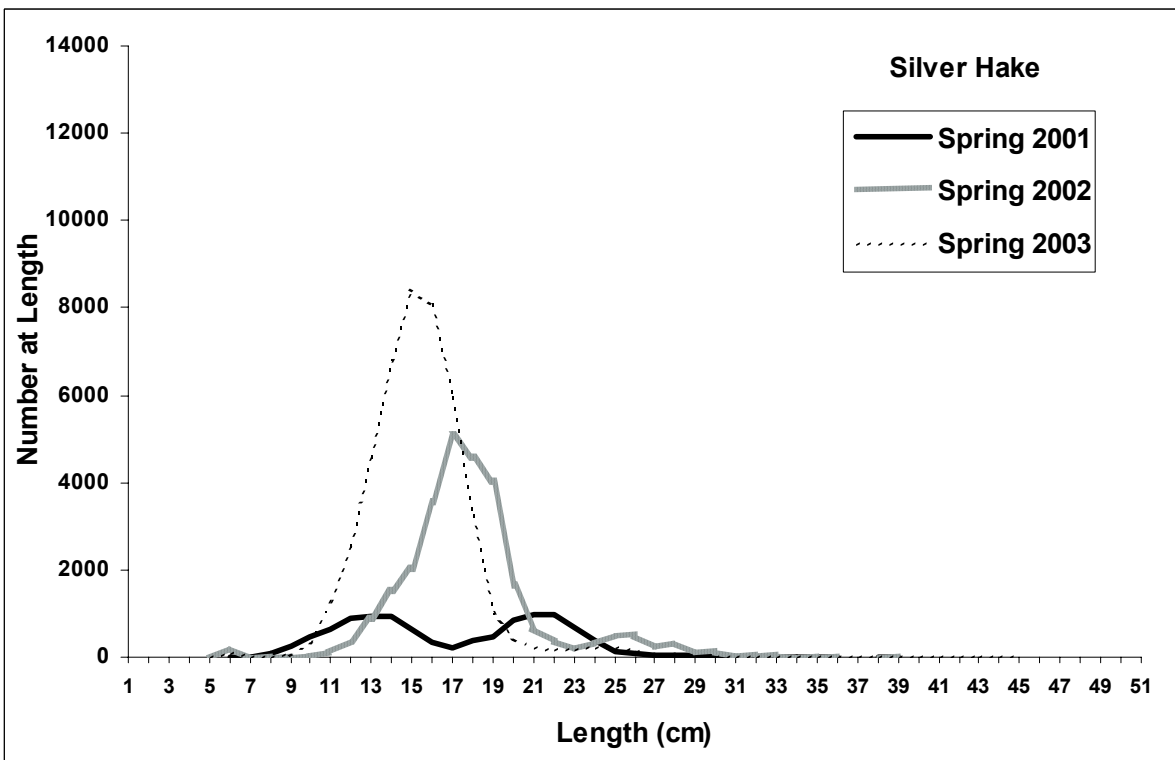
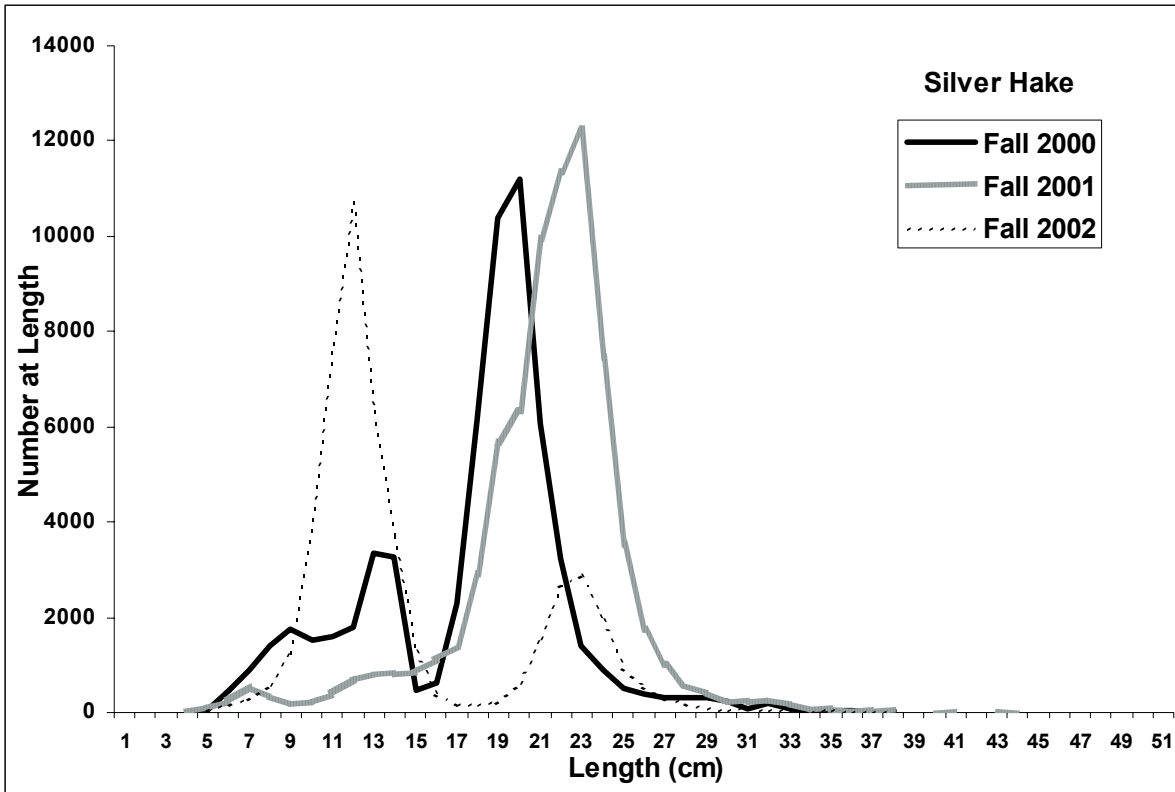


Figure 21. Length frequency plots for silver hake (whiting) by season and year.

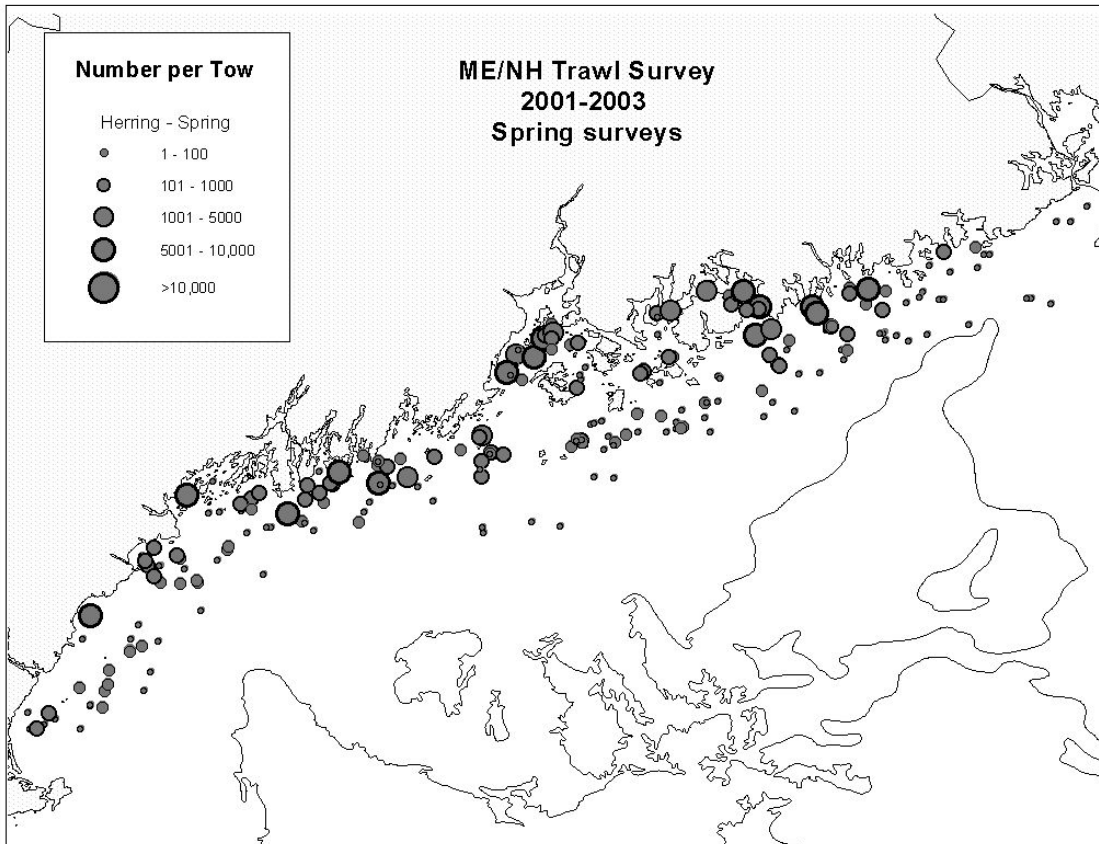
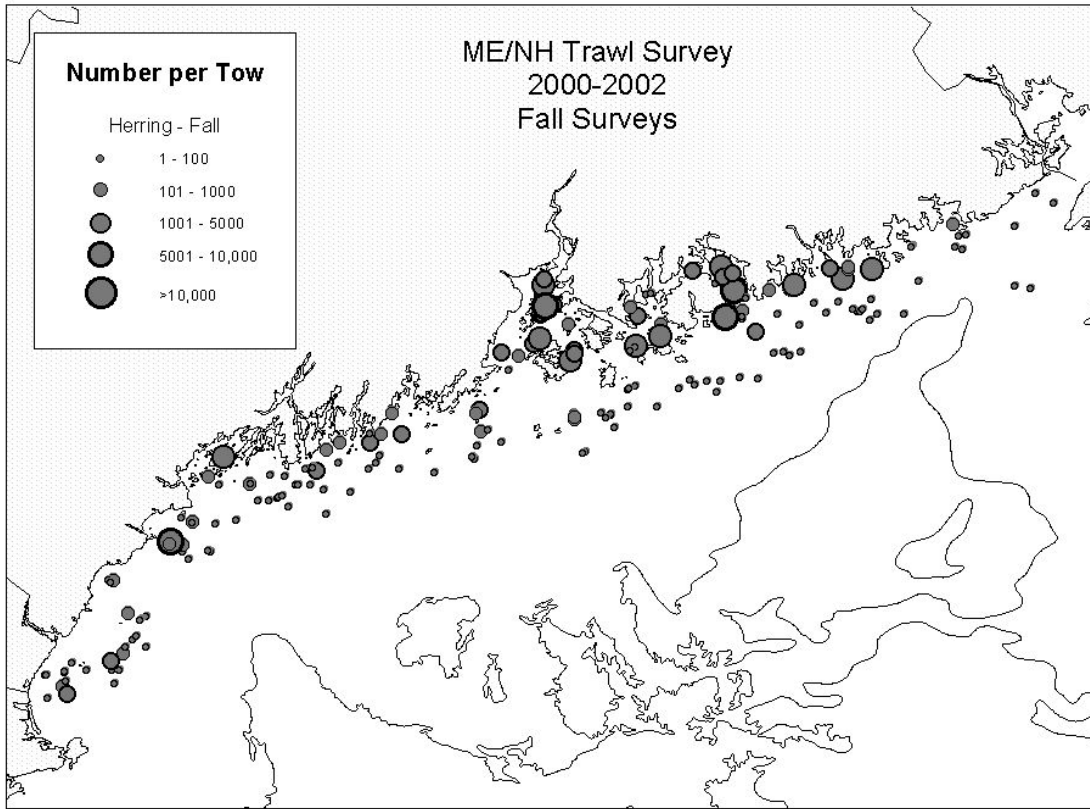


Figure 22. Atlantic herring distribution

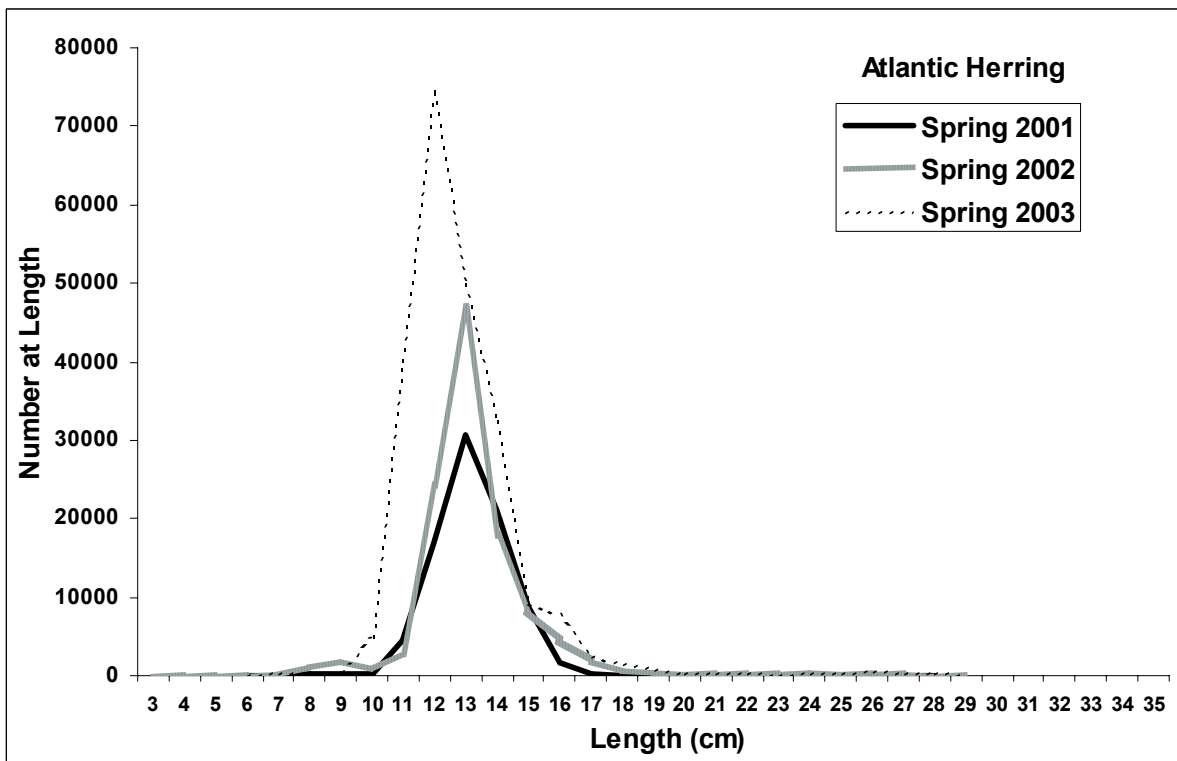
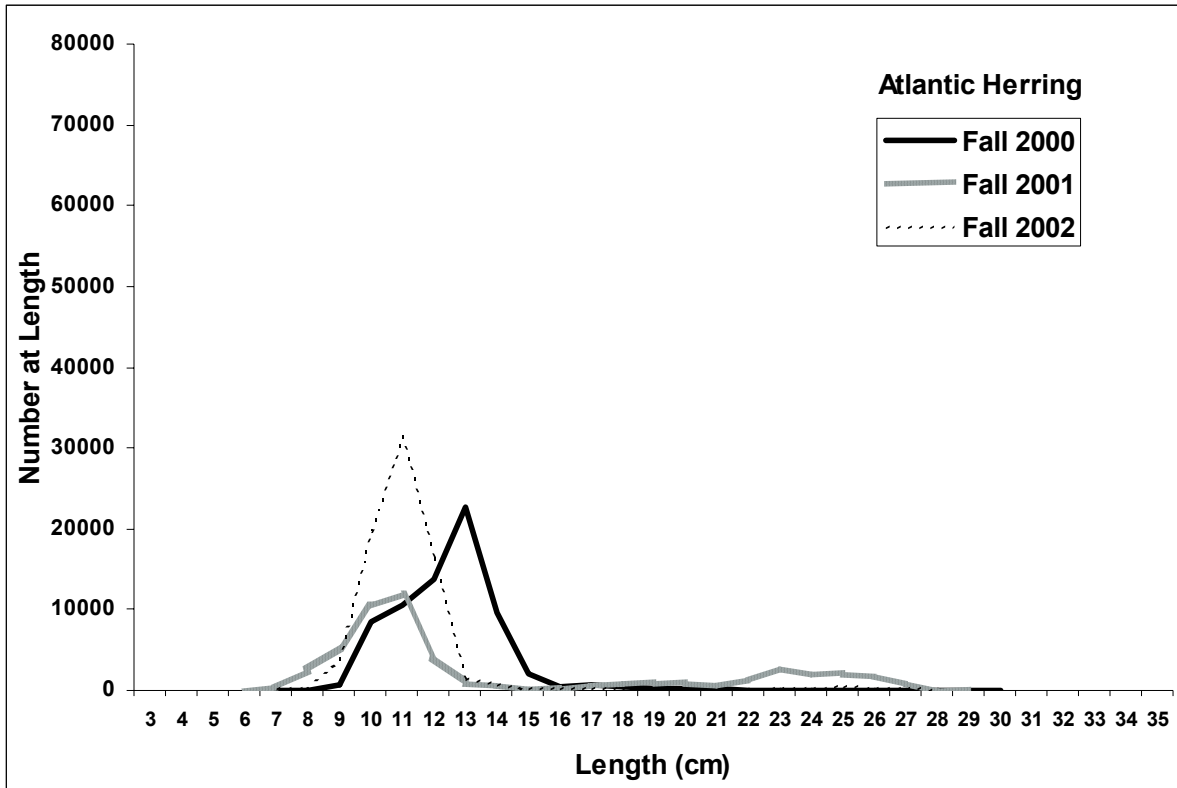


Figure 23. Length frequency plots for herring by season and year.

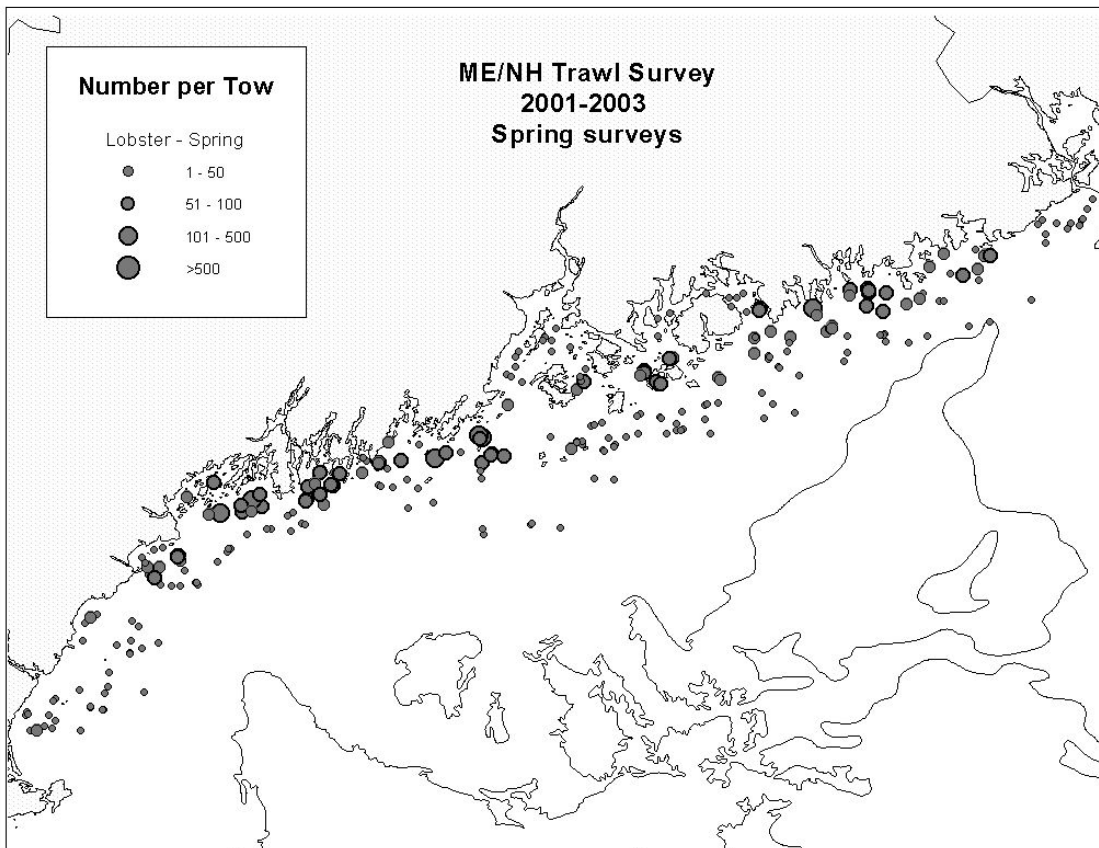
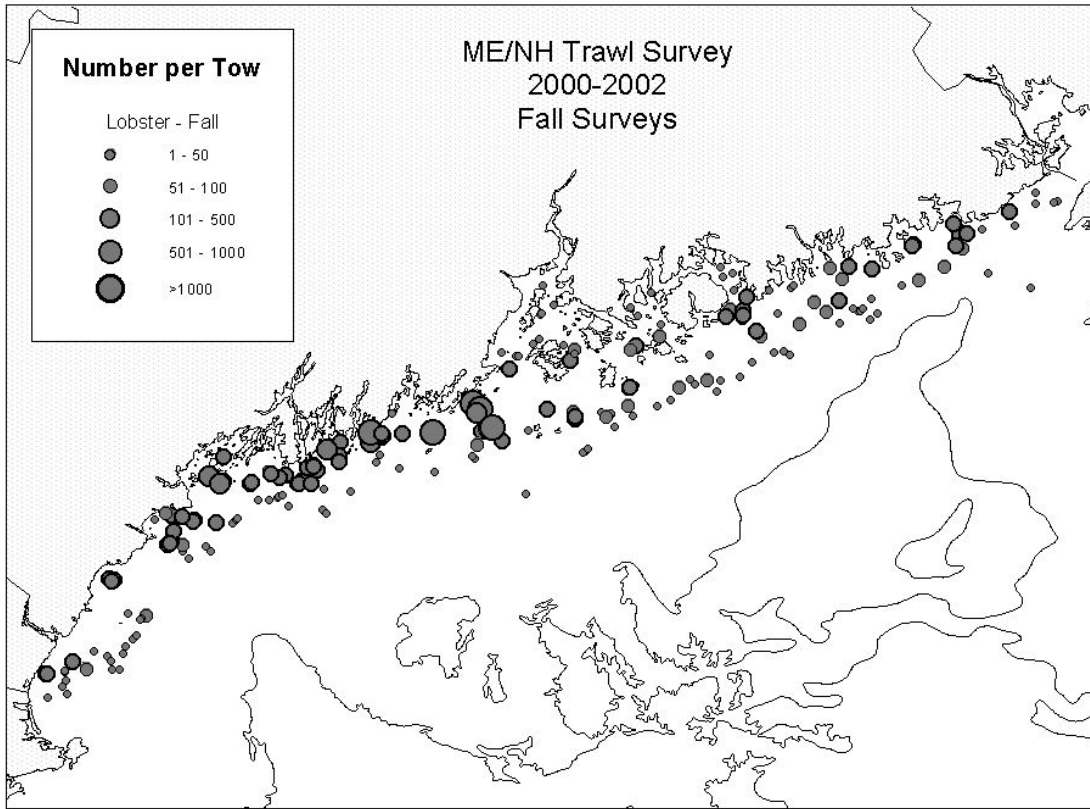


Figure 24. American lobster distribution

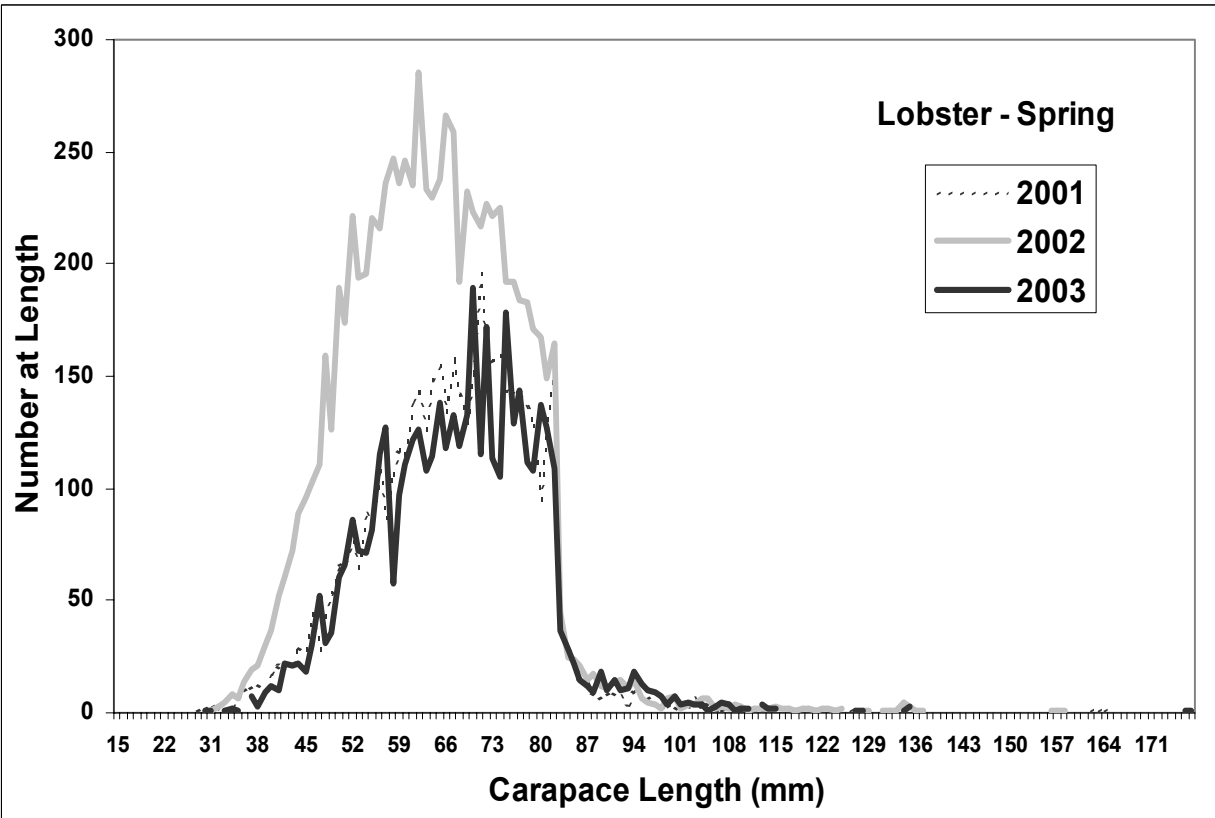
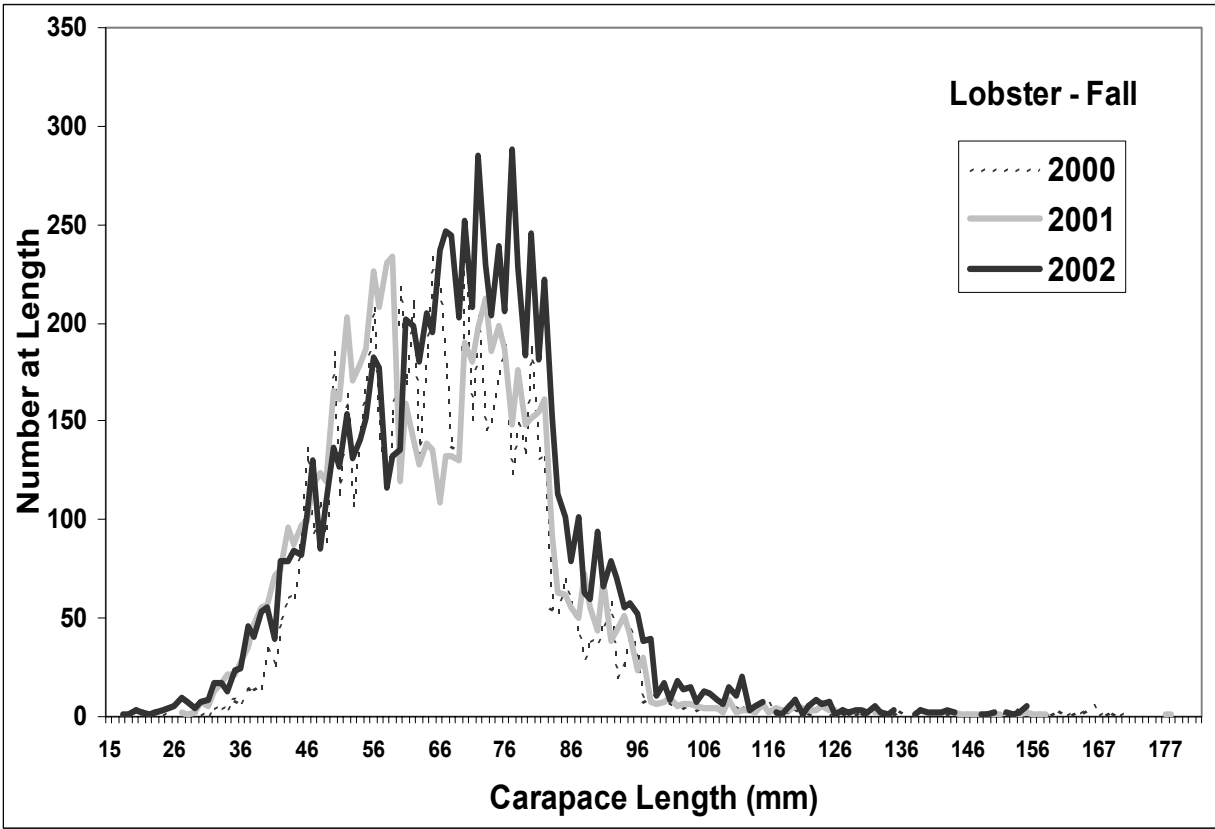


Figure 25. Length frequency plots for lobster by season and year.

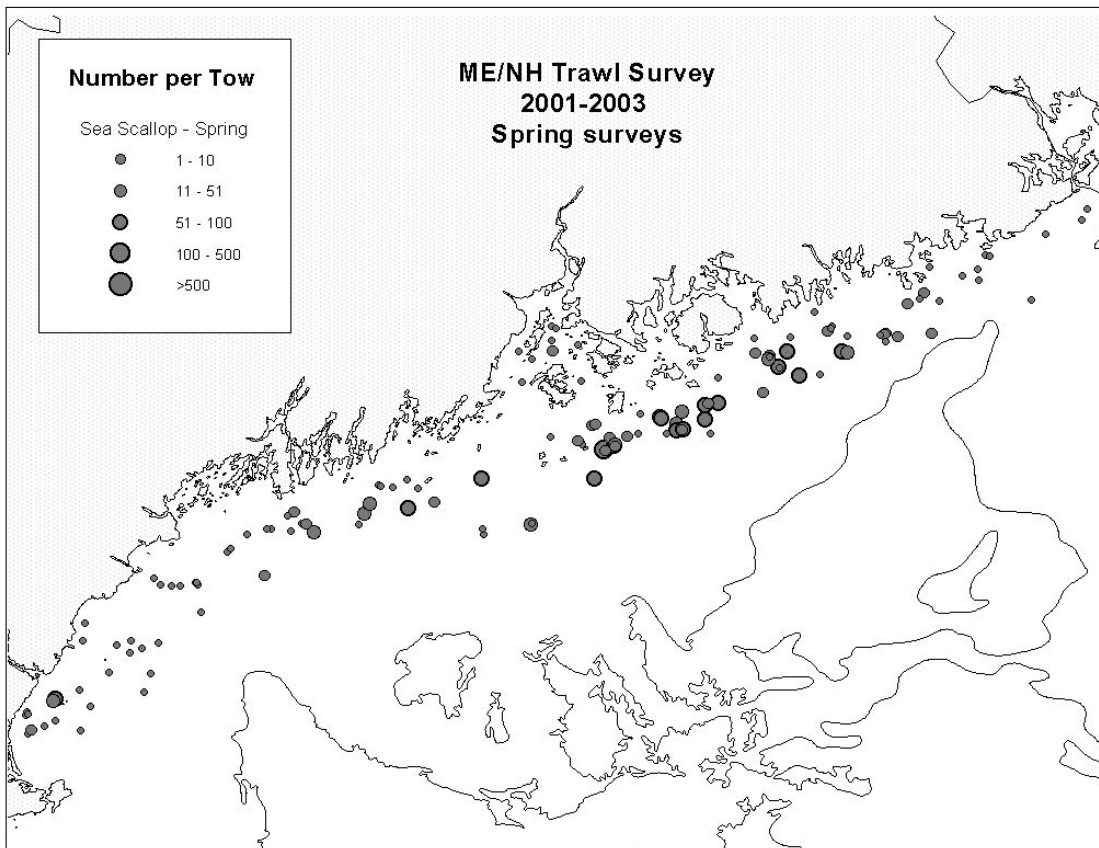
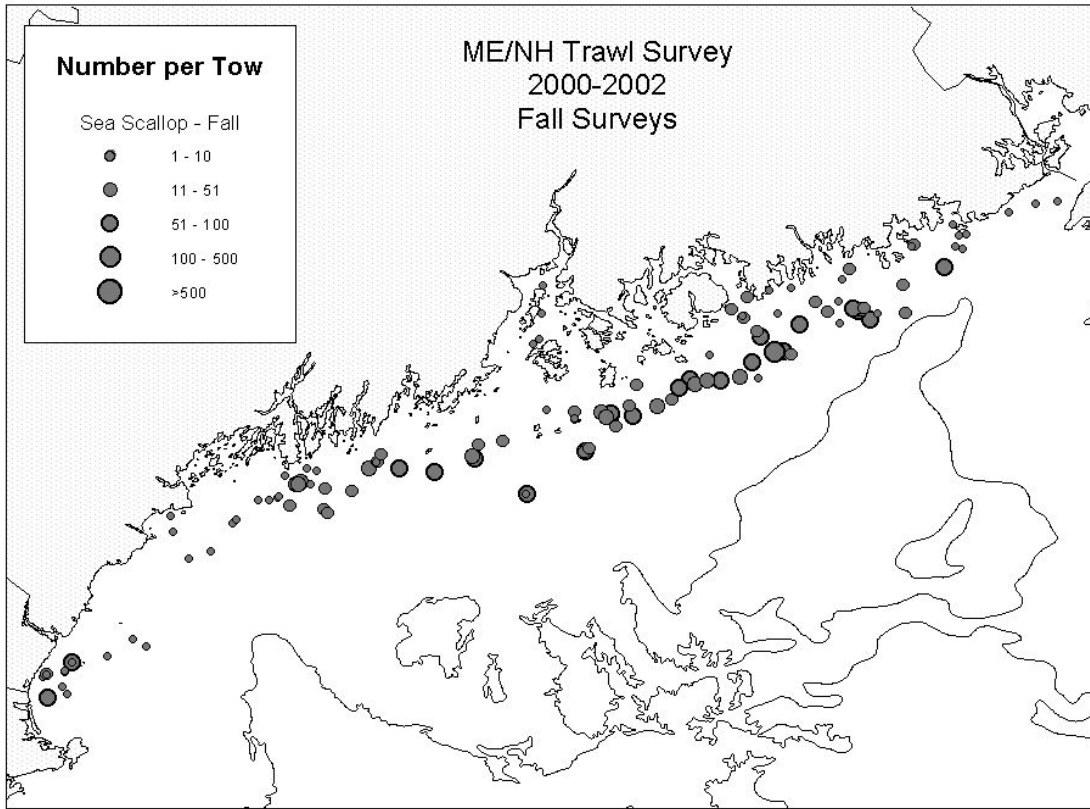


Figure 26. Sea scallop distribution

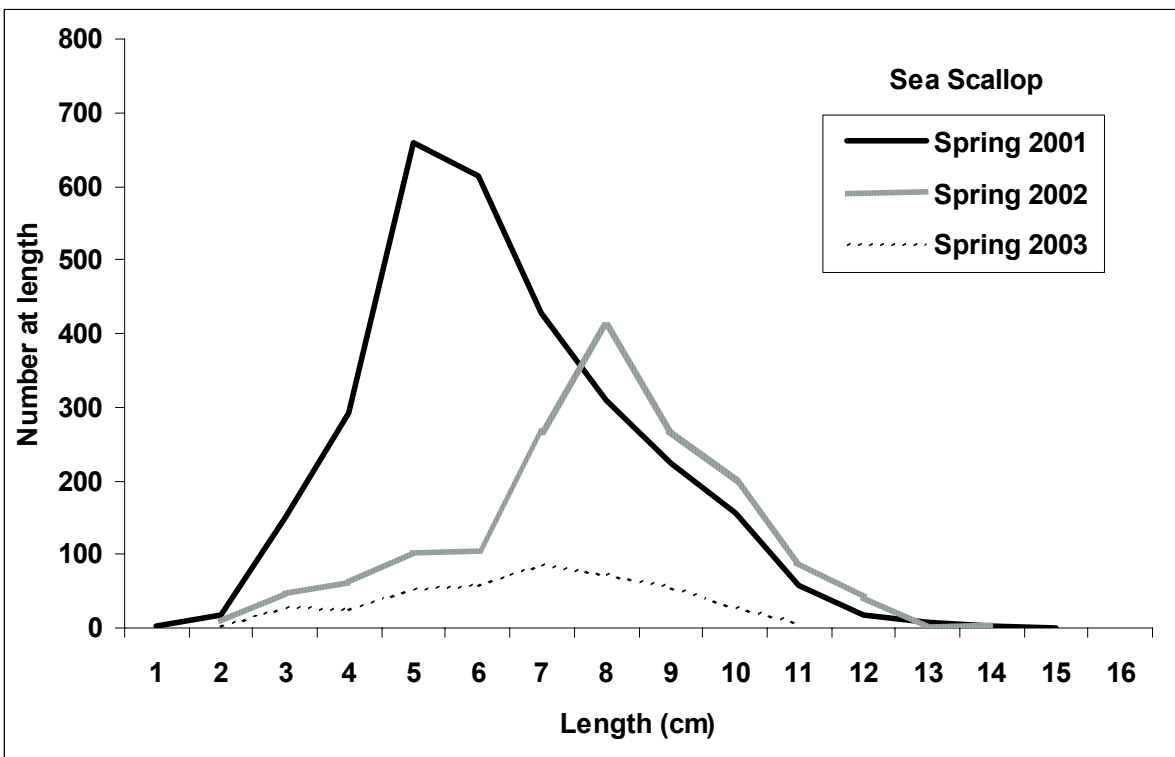
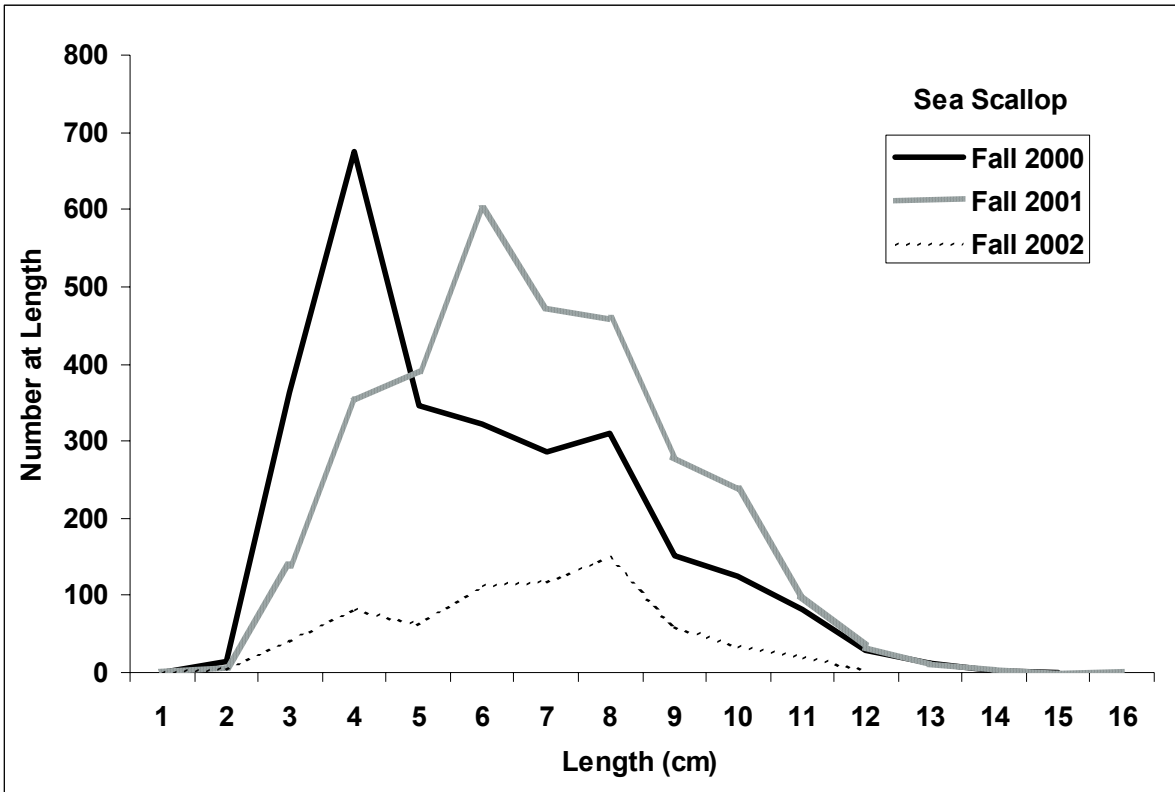


Figure 27. Length frequency plots for scallop by season and year.

Conclusions

With three years of the time series completed, trends are just beginning to emerge (Appendix B). Species such as lobster (Table 5, Figure 24), winter flounder (Table 5, Figure 6), silver hake (Table 5, Figure 20), and herring (Table 5, Figure 22), which have a high abundance and percent occurrence along the survey area, appear to be good candidates for analysis based on this survey. An analysis comparing the consistency of sampling of the lobster population in the Gulf of Maine by the ME/NH inshore survey and the NMFS survey concluded that the inshore survey samples a different portion of the population and advises both surveys should be utilized in future assessments to better represent the total population (Chen et al, in press). Inshore surveys tend to encounter larger numbers of juveniles. Data on species such as cod (Figure 9), white hake (Figure 19), haddock (Figure 11), and goosefish (Figure 13), could be used to supplement the NMFS database by providing trends on pre-recruitment populations.

Although some management groups have already expressed interest in the data collected by the survey, the usefulness of this dataset increases greatly over the long term. Resource assessment is based on years of survey and fisheries data. We remain committed to developing a time series sufficient for fish and shellfish assessment. We also seek to make use of new technology that will ensure the quality and consistency of our sampling techniques, thus warranting the long-term continuation of this project.

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Appendix A
Individual Station Descriptions

DATE	REGION	GRID	LORAN W	LORAN X	LAT deg/min	LON deg/min	Start Time	Tow Durati on	Average Depth (FA)	Temp C °	Salinity ppt
Fall 2002											
10/14/2002	1	472	13752.00	25965.30	4256.208	7044.772	0819	22	15.50	13.06	32.39
10/14/2002	1	472	13760.30	25965.50	4255.538	7045.434					
10/14/2002	1	494	13732.00	25930.40	4254.758	7040.338	1036	20	28.50	10.92	32.60
10/14/2002	1	494	13739.30	25930.80	4253.932	7041.372					
10/14/2002	1	445	13723.40	25944.90	4256.570	7040.882	1403	13	22.50	11.34	32.54
10/14/2002	1	445	13720.40	25946.40	4257.072	7040.758					
10/14/2002	1	432	13699.50	25947.40	4258.922	7039.086	1500	20	12.00	13.18	32.22
10/14/2002	1	432	13691.90	25948.00	4259.540	7038.606					
10/15/2002	1	501	13663.00	25873.60	4255.093	7030.122	0803	21	57.50	7.04	32.84
10/15/2002	1	501	13663.80	25865.20	4254.290	7029.525					
10/15/2002	1	424	13633.80	25897.00	4259.796	7029.348	0950	20	48.50	9.41	32.97
10/15/2002	1	424	13641.50	25897.70	4259.020	7030.165					
10/15/2002	1	382	13592.20	25900.50	4303.312	7026.172	1143	19	50.00	9.26	32.99
10/15/2002	1	382	13599.90	25900.20	4302.560	7026.986					
10/15/2002	1	355	13563.22	25899.70	4305.425	7023.734	1320	21	49.00	9.21	33.00
10/15/2002	1	355	13570.00	25899.70	4304.851	7024.329					
10/15/2002	1	305	13540.20	25917.60	4308.570	7023.576	1451	19	47.00	9.32	32.98
10/15/2002	1	305	13533.10	25918.00	4309.307	7022.928					
10/17/2002	1	290	13546.50	25942.60	4310.689	7026.135	1232	20	36.00	10.27	32.81
10/17/2002	1	290	13551.80	25939.10	4309.949	7026.273					
10/17/2002	1	100	13349.80	25929.50	4324.240	7008.301	1613	20	56.25	9.79	32.42
10/17/2002	1	100	13347.70	25935.60	4324.989	7008.712					
10/18/2002	1	1	13351.40	26019.20	4332.896	7017.120	1034	20	8.50	12.43	31.94
10/18/2002	1	1	13359.60	26019.70	4332.331	7017.834					
10/18/2002	1	27	13332.00	25980.30	4330.517	7011.737	1152	21	34.50	11.52	32.81
10/18/2002	1	27	13340.40	25980.10	4329.877	7012.417					
10/18/2002	1	68	13398.00	25975.30	4325.123	7016.745	1351	20	36.50	11.75	32.82
10/18/2002	1	68	13396.20	25978.70	4325.587	7016.917					
10/18/2002	1	15	13347.70	25999.60	4331.248	7014.916	1628	21	19.00	12.12	32.65
10/18/2002	1	15	13341.10	25997.20	4331.503	7014.139					
10/21/2002	2	150	13195.30	26025.70	4345.052	7005.040	0751	18	12.00	12.20	31.88
10/21/2002	2	150	13190.70	26029.30	4345.751	7005.042					
10/21/2002	2	324	13253.20	26017.10	4339.965	7008.902	1021	20	14.50	11.71	32.88
10/21/2002	2	324	13245.70	26017.80	4340.584	7008.358					
10/21/2002	2	362	13238.90	25997.80	4339.075	7005.750	1400	18	20.00	12.27	32.60
10/21/2002	2	362	13232.40	25998.10	4339.577	7005.241					
10/21/2002	2	556	13262.90	25937.20	4331.301	7001.601	1616	20	53.00	9.78	33.16
10/21/2002	2	556	13255.00	25936.90	4331.837	7000.891					
10/22/2002	2	511	13171.10	25901.50	4334.028	6950.090	0824	20	59.00	9.22	33.44
10/22/2002	2	511	13162.90	25899.50	4334.538	6948.871					
10/22/2002	2	463	13172.60	25922.00	4335.984	6952.271	0953	20	45.00	10.10	31.99
10/22/2002	2	463	13164.90	25922.00	4336.647	6951.497					

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Individual Station Descriptions

DATE	REGION	GRID	LORAN W	LORAN X	LAT deg/min	LON deg/min	Start Time	Tow Durati on	Average Depth (FA)	Temp C °	Salinity ppt
10/22/2002	2	297	13151.30	25957.40	4341.158	6954.275	1138	20	17.00	12.27	32.21
10/22/2002	2	297	13144.50	25953.70	4341.158	6954.275					
10/22/2002	2	331	13190.80	25966.70	4339.402	6958.485	1348	17	29.00	11.77	32.85
10/22/2002	2	331	13185.00	25968.30	4339.977	6958.161					
10/23/2002	2	533	13131.40	25857.50	4332.506	6941.463	0857	20	65.00	12.60	
10/23/2003	2	533	13133.60	25863.40	4332.955	6942.314					
10/23/2002	2	441	13102.00	25888.50	4337.800	6942.021	1039	19	51.00	10.08	33.34
10/23/2002	2	441	13109.40	25888.30	4337.146	6942.770					
10/23/2002	2	375	13121.30	25921.10	4339.684	6947.506	1223	20	21.00	10.61	33.11
10/23/2002	2	375	13128.50	25919.60	4339.003	6947.952					
10/23/2002	2	377	13103.80	25911.00	4340.019	6944.796	1352	20	31.50	10.57	33.21
10/23/2002	2	377	13110.40	25908.40	4339.110	6945.137					
10/23/2002	2	265	13087.20	25922.90	4342.017	6944.606	1541	20	17.50	11.44	33.01
10/23/2002	2	265	13082.10	25925.80	4342.856	6944.565					
10/24/2002	2	199	12987.80	25876.80	4344.025	6930.388	0815	20	60.00	9.97	33.44
10/24/2002	2	199	12981.50	25879.90	4344.943	6930.168					
10/25/2002	2	139	12963.00	25882.40	4346.547	6928.672	0738	20	47.00	10.48	33.37
10/25/2002	2	139	12971.30	25880.80	4345.722	6929.332					
10/25/2002	2	55	12945.30	25900.80	4349.566	6929.357	0936	20	36.55	10.98	33.14
10/25/2002	2	55	12938.80	25903.30	4350.274	6929.059					
10/25/2002	2	59	12911.50	25886.30	4350.186	6924.514	1123	18	31.50	11.42	32.91
10/25/2002	2	59	12906.10	25889.20	4350.992	6924.330					
10/28/2002	3	592	12862.00	25803.30	4344.674	6909.164	0914	20	54.00	11.52	33.11
10/28/2002	3	592	12854.90	25804.50	4345.267	6908.604					
10/28/2002	3	399	12787.50	25822.10	4351.561	6904.258	1131	17	35.50	11.55	32.24
10/28/2002	3	399	12784.10	25825.90	4352.177	6904.405					
10/28/2002	3	317	12782.90	25851.20	4354.962	6907.844	1455	20	17.00	11.45	32.86
10/28/2002	3	317	12775.30	25851.50	4355.484	6907.114					
10/29/2002	3	115	12648.60	25898.60	4409.157	6901.259	0851	15	23.00	11.54	32.74
10/29/2002	3	115	12654.40	25898.30	4408.608	6901.906					
10/29/2002	3	127	12632.60	25882.90	4408.439	6857.517	1019	19	37.00	11.51	32.63
10/29/2002	3	127	12639.90	25881.80	4407.778	6858.155					
10/29/2002	3	81	12592.40	25885.80	4411.210	6854.142	1228	20	24.50	11.42	32.74
10/29/2002	3	81	12583.90	25886.50	4411.882	6853.440					
10/29/2002	3	147	12670.70	25875.90	4404.916	6900.324	1435	20	48.25	11.48	32.72
10/29/2002	3	147	12664.50	25879.00	4405.762	6900.161					
10/30/2002	3	14	12540.70	25910.70	4417.477	6852.907	0722	20	23.00	11.24	32.40
10/30/2002	3	14	12547.80	25908.20	4416.687	6853.256					
10/30/2002	3	3	12515.10	25915.70	4419.710	6851.152	0857	20	15.00	11.56	32.67
10/30/2002	3	3	12522.40	25915.30	4419.197	6851.908					
10/30/2002	3	36	12524.90	25885.70	4415.740	6847.684	1024	20	17.00	11.21	32.57
10/30/2002	3	36	12525.60	25881.30	4415.107	6846.922					
10/30/2002	3	121	12562.30	25850.00	4409.247	6845.874	1310	20	26.00	10.22	33.66
10/30/2002	3	121	12565.70	25846.40	4408.525	6845.560					

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DATE	REGION	GRID	LORAN W	LORAN X	LAT deg/min	LON deg/min	Start Time	Tow Durati on	Average Depth (FA)	Temp C °	Salinity ppt
10/31/2002	3	994	12844.80	25720.90	4336.751	6856.363	0831	13	74.00	10.91	33.63
10/31/2002	3	994	12849.40	25719.40	4336.296	6856.649					
10/31/2002	3	563	12710.10	25732.00	4346.433	6843.431	1307	20	58.00	10.97	33.63
10/31/2002	3	563	12716.20	25729.30	4345.744	6843.691					
10/31/2002	3	539	12699.50	25732.10	4347.107	6842.290	1424	15	55.50	10.85	33.74
10/31/2002	3	539	12693.90	25733.40	4347.606	6841.876					
11/1/2002	3	416	12628.20	25739.10	4352.370	6835.548	0827	20	57.00	10.93	33.40
11/1/2002	3	416	12635.70	25739.00	4351.889	6836.359					
11/1/2002	3	364	12622.00	25755.60	4354.663	6837.467	0954	21	49.00	10.88	33.25
11/1/2002	3	364	12629.90	25755.30	4354.132	6838.279					
11/1/2002	3	359	12661.87	25778.50	4354.762	6845.261	1233	20	51.00	10.89	33.25
11/1/2002	3	359	12667.80	25776.10	4354.114	6845.524					
11/4/2002	4	570	12591.60	25750.30	4355.912	6833.222	0753	20	50.50	10.85	33.60
11/4/2002	4	570	12587.00	25754.30	4356.662	6833.372					
11/4/2002	4	492	12556.70	25772.60	4400.707	6832.997	0944	19	42.00	10.73	33.18
11/4/2002	4	492	12550.00	25773.30	4401.188	6832.403					
11/4/2002	4	250	12487.40	25813.10	4409.928	6832.096	1440	20	13.00	8.68	32.52
11/4/2002	4	250	12494.30	25811.80	4409.186	6832.716					
11/5/2002	4	562	12536.80	25734.30	4357.458	6824.502	0939	20	52.00	10.69	33.65
11/5/2002	4	562	12530.20	25734.50	4357.907	6823.757					
11/5/2002	4	476	12492.00	25742.10	4401.145	6820.832	1119	20	49.00	10.62	33.43
11/5/2002	4	476	12500.40	25742.20	4400.682	6821.698					
11/5/2002	4	506	12460.20	25715.30	4400.006	6812.300	1310	20	56.00	10.52	33.65
11/5/2002	4	506	12464.60	25718.10	4400.056	6813.321					
11/5/2002	4	432	12453.70	25737.50	4403.052	6815.544	1525	20	50.00	10.62	33.51
11/5/2002	4	432	12459.00	25734.10	4402.336	6815.544					
11/8/2002	4	32	12382.00	25858.00	4421.743	6828.743	0752	18	18.00	8.59	31.84
11/8/2002	4	32	12376.00	25858.30	4422.118	6828.232					
11/8/2002	4	119	12418.10	25819.70	4414.981	6825.935	1008	20	28.50	9.28	32.89
11/8/2002	4	119	12415.30	25824.10	4415.662	6826.392					
11/8/2002	4	175	12438.40	25808.20	4412.353	6826.160	1217	20	17.00	8.92	32.82
11/8/2002	4	175	12431.10	25808.20	4412.798	6825.382					
11/9/2002	4	8	12254.60	25828.80	4426.600	6809.814	0721	20	19.00	8.94	32.87
11/9/2002	4	8	12255.90	25824.50	4426.039	6809.198					
11/9/2002	4	91	12336.70	25792.70	4417.046	6812.231	1317	20	25.50	9.72	33.17
11/9/2002	4	91	12336.30	25788.70	4416.605	6811.464					
11/10/2002	4	94	12315.60	25780.80	4417.055	6807.363	0721	17	35.00	10.19	13.39
11/10/2002	4	94	12320.60	25781.90	4416.818	6808.377					
11/10/2002	4	165	12331.40	25753.20	4412.709	6804.187	0932	20	40.00	9.98	33.22
11/10/2002	4	165	12327.10	25756.80	4413.382	6804.372					
11/12/2002	5	427	12211.60	25782.20	4423.958	6755.895	0948	16	14.00	9.92	33.33
11/12/2002	5	427	12217.10	25782.60	4423.647	6756.625					
11/12/2002	5	514	12201.40	25744.00	4420.013	6746.719	1407	20	35.50	9.37	33.07
11/12/2002	5	514	12195.20	25743.70	4420.387	6745.875					

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11/13/2002	5	261	12146.20	25781.90	4428.236	6748.003	0918	15	16.00	9.66	32.91
11/13/2002	5	261	12148.10	25779.50	4427.822	6747.722					
11/14/2002	5	264	12130.50	25770.70	4427.948	6743.661	0832	19	18.00	8.65	32.98
11/14/2002	5	264	12134.60	25767.70	4427.314	6743.512					
11/14/2002	5	613	12232.20	25720.90	4415.190	6745.674	1125	21	59.00	8.84	33.01
11/14/2002	5	613	12239.40	25719.30	4414.526	6746.248					
11/14/2002	5	566	12186.10	25723.80	4418.561	6740.379	1329	20	47.50	10.12	33.43
11/14/2002	5	566	12192.10	25723.90	4418.179	6741.177					
11/14/2002	5	569	12174.80	25711.90	4417.832	6736.248	1506	20	48.00	10.07	33.32
11/14/2002	5	569	12181.20	25711.90	4417.412	6737.092					
11/15/2002	5	496	12161.70	25729.40	4420.856	6738.462	0740	20	39.00	10.01	33.29
11/15/2002	5	496	12168.20	25729.00	4420.378	6739.214					
11/15/2002	5	374	12083.40	25724.70	4425.495	6726.992	1039	21	43.50	10.03	33.33
11/15/2002	5	374	12090.40	25723.00	4424.814	6727.534					
11/19/2002	5	173	12044.10	25759.90	4432.459	6730.140	0701	20	18.00	9.32	33.01
11/19/2002	5	173	12038.60	25759.40	4432.774	6729.297					
11/19/2002	5	118	11980.40	25745.00	4435.060	6717.860	0922	20	34.00	9.46	33.05
11/19/2002	5	118	11975.20	25744.30	4435.340	6716.955					
11/19/2002	5	85	11969.60	25758.80	4437.484	6719.875	1050	20	14.00	9.28	32.97
11/19/2002	5	85	11976.10	25757.40	4436.859	6720.413					
11/19/2002	5	196	12000.40	25732.90	4432.189	6717.572	1243	20	35.00	9.63	33.13
11/19/2002	5	196	12002.90	25731.50	4431.843	6717.567					
11/19/2002	5	180	11999.60	25738.60	4432.940	6718.908	1406	15	29.00	9.54	33.09
11/19/2002	5	180	12004.60	25738.10	4432.531	6719.476					
11/20/2002	5	107	11931.10	25727.70	4436.466	6706.209	0727	20	47.50	9.78	33.16
11/20/2002	5	107	11923.80	25730.20	4437.298	6705.810					
11/20/2002	5	62	11912.60	25743.70	4439.742	6707.845	0924	20	44.00	9.64	33.09
11/20/2002	5	62	11905.80	25745.10	4440.405	6707.231					
11/20/2002	5	21	11855.30	25750.60	4444.786	6701.257	1103	22	41.00	9.48	33.00
11/20/2002	5	21	11861.90	25749.40	4444.151	6701.912					
11/20/2002	5	41	11859.90	25733.60	4442.412	6657.078	1230	20	57.00	9.68	33.06
11/20/2002	5	41	11868.40	25730.50	4441.403	6657.499					

Spring 2003

5/5/2003	1	472	13759.20	25964.50	4255.511	7045.288	0732	20	14.25	5.73	29.98
5/5/2003	1	472	13751.90	25965.30	4256.211	7044.777					
5/5/2003	1	530	13751.10	25932.60	4253.278	7042.150	0946	20	24.50	3.52	32.39
5/5/2003	1	530	13758.60	25932.30	4252.560	7042.724					
5/5/2003	1	476	13717.50	25937.10	4256.471	7039.748	1156	20	27.30	3.57	32.34
5/5/2003	1	476	13723.90	25936.60	4255.925	7040.213					
5/5/2003	1	537	13697.80	25876.80	4252.574	7033.347	1341	20	49.50	3.50	32.68
5/5/2003	1	537	13691.70	25871.30	4253.147	7032.884					
5/6/2003	1	454	13631.80	25873.60	4257.554	7027.517	0758	20	55.50	3.43	32.59

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5/6/2003	1	454	13639.80	25878.80	4257.421	7028.544					
5/6/2003	1	707	13563.30	25850.60	4300.728	7019.634	0948	20	74.85	3.50	32.98
5/6/2003	1	707	13572.00	25850.60	4300.110	7020.332					
5/6/2003	1	680	13524.70	25871.30	4305.583	7018.038	1137	20	77.60	3.57	33.09
5/6/2003	1	680	13530.30	25866.90	4304.798	7018.109					
5/6/2003	1	352	13585.60	25915.70	4305.048	7027.084	1325	20	45.00	3.48	32.45
5/6/2003	1	352	13593.20	25916.60	4304.539	7027.792					
5/6/2003	1	392	13650.20	25930.00	4301.390	7033.622	1542	17	32.60	3.55	32.33
5/6/2003	1	392	13645.50	25933.70	4301.999	7033.558					
5/7/2003	1	305	13541.60	25917.80	4308.741	7023.470	0812	20	48.25	3.22	32.39
5/7/2003	1	305	13532.80	25915.60	4309.163	7022.587					
5/7/2003	1	640	13481.20	25897.30	4311.392	7016.566	1031	20	64.00	3.34	32.71
5/7/2003	1	640	13472.50	25898.10	4312.189	7015.876					
5/7/2003	1	171	13542.10	26004.10	4316.810	7031.099	1400	20	20.05	3.84	32.18
5/7/2003	1	171	13534.10	26004.60	4317.480	7030.504					
5/8/2003	1	604	13381.80	25890.10	4318.046	7007.224	1003	20	75.45	3.75	32.99
5/8/2003	1	604	13373.80	25890.00	4318.592	7006.554					
5/8/2003	1	100	13348.30	25932.30	4324.528	7008.360	1127	19	56.25	3.47	32.53
5/8/2003	1	100	13349.00	25926.30	4323.947	7007.884					
5/8/2003	1	94	13400.50	25966.90	4324.024	7016.038	1315	20	44.70	3.17	32.24
5/8/2003	1	94	13399.80	25960.20	4323.478	7015.426					
5/8/2003	1	68	13402.30	25980.20	4325.344	7017.500	1450	20	32.55	3.27	32.28
5/8/2003	1	68	13397.20	25984.20	4326.000	7017.470					
5/9/2003	1	61	13348.90	25958.20	4327.068	7010.964	0748	20	46.75	3.22	32.42
5/9/2003	1	61	13347.60	25964.20	4327.729	7011.424					
5/9/2003	1	27	13340.90	25981.10	4329.902	7012.490	0953	21	34.40	3.25	32.30
5/9/2003	1	27	13332.60	25980.60	4330.437	7011.759					
5/9/2003	1	13	13363.60	26014.30	4331.467	7017.571	1150	20	11.70	3.25	32.30
5/9/2003	1	13	13371.00	26018.50	4331.302	7018.606					
5/9/2003	1	33	13392.50	26008.70	4328.726	7019.387	1321	20	17.45	6.80	30.63
5/9/2003	1	33	13393.10	26002.40	4328.114	7018.880					
5/12/2003	2	556	13263.80	25936.10	4331.087	7001.518	0915	23	53.90	5.18	31.25
5/12/2003	2	556	13258.60	25939.70	4331.786	7001.416					
5/12/2003	2	566	13290.90	25934.90	4329.064	7003.660	1048	20	59.30	3.36	32.57
5/12/2003	2	566	13282.00	25935.80	4329.666	7003.162					
5/12/2003	2	768	13248.80	25873.80	4325.972	6953.838	1316	20	80.20	3.41	32.40
5/12/2003	2	768	13242.50	25877.00	4326.714	6953.616					
5/13/2003	2	212	13237.60	26040.80	4343.428	7010.001	0722	20	8.15	3.81	33.02
5/13/2003	2	212	13245.10	26040.00	4342.816	7010.496					
5/13/2003	2	255	13183.10	25977.10	4340.973	6958.846	1032	20	25.50	7.57	29.89
5/13/2003	2	255	13175.60	25979.10	4341.693	6958.444					
5/13/2003	2	332	13183.00	25961.70	4339.419	6957.206	1207	20	27.40	3.48	31.90
5/13/2003	2	332	13174.90	25961.40	4339.940	6956.496					
5/13/2003	2	463	13178.10	25925.80	4336.110	6953.066	1340	20	44.80	3.52	31.93

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5/13/2003	2	463	13169.30	25925.60	4336.713	6952.212					
5/13/2003	2	375	13133.80	25922.70	4338.965	6948.736	1510	20	18.75	3.26	32.25
5/13/2003	2	375	13125.70	25922.80	4339.515	6948.057					
5/14/2003	2	265	13089.90	25923.20	4342.039	6944.945	0757	18	17.40	4.07	31.69
5/14/2003	2	265	13083.60	25925.60	4342.719	6944.637					
5/14/2003	2	130	13050.60	25933.20	4345.788	6942.612	1015	20	13.40	4.09	31.77
5/14/2003	2	130	13048.00	25938.60	4346.501	6942.976					
5/14/2003	2	192	13057.90	25921.50	4344.059	6941.925	1127	20	35.00	4.72	31.28
5/14/2003	2	192	13061.70	25916.60	4343.317	6941.708					
5/14/2003	2	194	13040.20	25914.10	4345.522	6939.510	1255	20	32.95	3.72	32.06
5/14/2003	2	194	13032.20	25915.80	4345.179	6939.006					
5/14/2003	2	86	13013.90	25924.40	4347.391	6938.332	1455	20	20.30	3.14	29.81
5/14/2003	2	86	13005.90	25924.00	4347.886	6937.585					
5/15/2003	2	284	12927.90	25819.10	4342.066	6917.612	0942	20	57.65	3.30	31.84
5/15/2003	2	284	12926.70	25816.50	4341.852	6917.184					
5/15/2003	2	620	13055.60	25844.60	4336.326	6932.951	1222	20	72.65	3.65	32.43
5/15/2003	2	620	13053.40	25849.70	4336.925	6933.302					
5/15/2003	2	583	13030.50	25857.80	4339.364	6932.043	1412	17	69.65	3.61	32.46
5/15/2003	2	583	13023.60	25857.20	4339.724	6931.404					
5/15/2003	2	573	13009.30	25864.70	4341.476	6930.928	1548	16	63.25	3.67	32.76
5/15/2003	2	573	13004.60	25866.10	4341.913	6930.655					
5/16/2003	2	55	12939.20	25902.70	4350.187	6929.007	0900	20	38.00	3.37	32.54
5/16/2003	2	55	12946.30	25900.20	4349.465	6929.336					
5/16/2003	2	171	12953.80	25870.10	4345.672	6926.342	1104	20	47.65	3.19	31.39
5/16/2003	2	171	12956.30	25864.90	4345.075	6926.024					
5/16/2003	2	201	12970.20	25845.90	4345.325	6928.651	1342	20	48.35	3.33	32.17
5/16/2003	2	201	12969.50	25881.50	4345.894	6929.223					
5/16/2003	2	41	12949.30	25922.20	4351.477	6932.348	1541	16	13.65	3.27	32.29
5/16/2003	2	41	12945.50	25925.90	4352.180	6932.392					
5/19/2003	3	497	12823.90	25816.60	4348.588	6907.092	0824	20	41.25	3.85	31.95
5/19/2003	3	497	12816.90	25819.00	4349.270	6906.756					
5/19/2003	3	392	12834.70	25861.60	4352.770	6914.074	1128	17	33.70	4.20	30.97
5/19/2003	3	392	12841.40	25861.20	4352.298	6914.668					
5/19/2003	3	399	12789.10	25825.90	4351.916	6904.933	1337	20	34.00	4.46	31.80
5/19/2003	3	399	12782.00	25831.10	4352.846	6904.945					
5/19/2003	3	317	12783.60	25852.80	4355.155	6908.021	1547	20	20.35	5.00	31.49
5/19/2003	3	317	12775.90	25851.70	4355.500	6907.162					
5/20/2003	3	157	12691.20	25867.60	4402.812	6901.115	0717	20	36.30	3.83	31.49
5/20/2003	3	157	12686.60	25871.60	4403.563	6901.231					
5/20/2003	3	116	12643.00	25895.70	4409.035	6900.514	0931	20	30.95	3.67	31.53
5/20/2003	3	116	12650.20	25893.70	4408.374	6900.874					
5/20/2003	3	14	12542.80	25911.20	4417.360	6853.195	1145	15	16.40	4.79	31.05
5/20/2003	3	14	12548.40	25909.50	4416.752	6853.406					
5/20/2003	3	9	12523.20	25910.10	4418.476	6851.186	1320	17	24.00	4.08	30.30

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Individual Station Descriptions

DATE	REGION	GRID	LORAN W	LORAN X	LAT deg/min	LON deg/min	Start Time	Tow Durati on	Average Depth (FA)	Temp C °	Salinity ppt
5/20/2003	3	9	12530.00	25909.20	4417.850	6851.495					
5/20/2003	3	23	12531.70	25903.30	4417.204	6850.840	1511	20	18.05	4.34	31.28
5/20/2003	3	23	12540.00	25903.10	4416.635	6851.673					
5/20/2003	3	58	12561.20	25889.80	4413.810	6851.664	1643	15	15.95	4.58	31.35
5/20/2003	3	58	12556.90	25892.30	4414.292	6851.678					
5/20/2003	3	836	12847.40	25720.60	4336.508	6856.528	0933	20	73.65	3.84	32.73
5/20/2003	3	836	12839.90	25722.30	4337.146	6855.985					
5/20/2003	3	830	12899.20	25747.60	4336.202	6905.646	1210	20	71.65	3.79	32.72
5/20/2003	3	830	12906.10	25749.70	4336.001	6906.601					
5/21/2003	3	838	12805.00	25898.90	4336.644	6849.001	1454	20	86.50	3.83	32.78
5/20/2003	3	838	12813.50	25699.00	4336.190	6849.799					
5/22/2003	3	364	12631.90	25753.90	4353.815	6838.138	0852	19	51.20	4.10	32.23
5/22/2003	3	364	12623.60	25754.70	4354.432	6837.426					
5/22/2003	3	388	12649.40	25755.90	4352.908	6840.392	1002	20	51.90	4.15	32.19
5/22/2003	3	388	12642.10	25758.70	4353.689	6840.060					
5/22/2003	3	761	12679.80	25719.40	4346.810	6838.095	1233	20	67.85	4.11	32.44
5/22/2003	3	761	12687.70	25718.70	4346.266	6838.854					
5/23/2003	3	359	12666.00	25778.80	4354.142	6845.195	0745	20	50.60	4.24	32.04
5/23/2003	3	359	12660.80	25779.50	4354.932	6845.113					
5/23/2003	3	333	12667.80	25782.60	4354.838	6846.316	0936	20	50.20	4.34	31.95
5/23/2003	3	333	12659.90	25782.50	4355.266	6845.577					
5/23/2003	3	239	12610.10	25791.50	4359.392	6841.592	1257	20	48.10	4.84	31.89
5/23/2003	3	239	12609.60	25786.30	4358.905	6840.816					
5/23/2003	3	121	12564.20	25847.90	4408.811	6845.630	1528	20	28.35	5.79	31.22
5/23/2003	3	121	12568.20	25848.30	4408.009	6845.340					
5/27/2003	4	250	12487.10	25813.90	4409.748	6832.339	0712	21	13.60	6.62	31.40
5/27/2003	4	250	12494.10	25811.00	4409.125	6832.549					
5/27/2003	4	309	12484.40	25797.10	4408.076	6829.200	0957	15	13.05	6.14	31.53
5/27/2003	4	309	12486.40	25793.40	4407.239	6828.325					
5/27/2003	4	492	12560.60	25771.90	4400.351	6833.304	1159	20	42.40	4.83	32.02
5/27/2003	4	492	12552.60	25772.70	4400.938	6832.586					
5/27/2003	4	571	12585.90	25752.90	4356.526	6833.017	1355	18	49.80	4.66	32.35
5/27/2003	4	571	12592.00	25750.00	4355.846	6833.220					
5/27/2003	4	575	12553.30	25736.90	4356.655	6826.764	1719	20	56.00	4.87	32.49
5/27/2003	4	575	12558.20	25733.10	4355.944	6826.661					
5/27/2003	4	562	12529.40	25734.80	4357.969	6823.710	1837	18	50.75	4.96	32.34
5/27/2003	4	562	12534.40	25731.40	4357.269	6823.694					
5/28/2003	4	648	12501.60	25713.60	4357.202	6816.846	0603	20	55.95	5.79	33.39
5/28/2003	4	648	12508.10	25711.80	4356.528	6817.382					
5/28/2003	4	430	12467.10	25743.50	4402.905	6818.202	0833	20	50.10	5.07	32.15
5/28/2003	4	430	12474.60	25743.80	4402.504	6819.010					
5/28/2003	4	165	12330.30	25752.10	4412.640	6803.888	1146	20	43.15	4.74	31.94
5/28/2003	4	165	12329.90	25756.50	4413.160	6804.621					
5/28/2003	4	94	12311.70	25783.40	4417.555	6807.676	1324	20	34.00	4.98	31.61

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DATE	REGION	GRID	LORAN W	LORAN X	LAT deg/min	LON deg/min	Start Time	Tow Durati on	Average Depth (FA)	Temp C °	Salinity ppt
5/28/2003	4	94	12305.30	25786.50	4418.328	6807.556					
5/29/2003	4	175	12436.90	25810.50	4412.686	6826.382	0819	20	17.00	7.83	30.97
5/29/2003	4	175	12435.00	25806.10	4412.328	6825.464					
5/29/2003	4	86	12411.60	25840.20	4417.685	6828.701	1001	20	27.25	6.07	31.41
5/29/2003	4	86	12414.60	25835.70	4417.065	6828.320					
5/29/2003	4	33	12370.20	25854.50	4422.045	6826.912	1122	20	15.75	6.18	31.39
5/29/2003	4	33	12362.00	25855.20	4422.694	6826.184					
5/29/2003	4	613	12400.40	25709.20	4403.017	6803.887	1524	20	62.15	5.74	32.87
5/29/2003	4	613	12393.00	25708.90	4403.416	6803.106					
5/29/2003	4	631	12391.70	25689.50	4401.128	6759.194	1658	20	86.35	5.76	33.16
5/29/2003	4	631	12390.50	25694.10	4401.724	6759.870					
5/30/2003	4	4	12254.60	25831.90	4426.916	6810.388	0736	20	17.50	6.40	31.47
5/30/2003	4	4	12255.00	25822.50	4426.428	6809.648					
5/30/2003	4	37	12280.90	25811.90	4422.803	6809.518	0926	20	34.45	5.24	31.54
5/30/2003	4	37	12282.80	25807.50	4422.254	6808.909					
5/30/2003	4	67	12287.60	25784.40	4419.169	6804.992	1136	20	32.35	4.93	31.60
5/30/2003	4	67	12288.80	25780.20	4418.658	6804.416					
5/30/2003	4	115	12295.20	25752.20	4415.543	6800.543	1316	21	38.05	4.90	31.93
5/30/2003	4	115	12288.00	25760.30	4416.294	6800.448					
5/30/2003	4	215	12338.40	25741.20	4410.812	6802.668	1425	20	46.90	4.98	31.99
5/30/2003	4	215	12330.90	25741.10	4411.234	6801.810					
6/2/2003	5	457	12215.80	25775.30	4422.794	6754.848	0859	20	20.45	5.60	31.58
6/2/2003	5	457	12219.00	25771.70	4422.186	6754.507					
6/2/2003	5	511	12222.30	25754.60	4419.827	6751.349	1054	20	31.80	5.33	31.74
6/2/2003	5	511	12226.80	25751.00	4419.212	6751.202					
6/2/2003	5	561	12222.80	25737.30	4417.751	6747.832	1283	18	38.35	5.09	32.03
6/2/2003	5	561	12229.80	25736.50	4417.244	6748.476					
6/2/2003	5	627	12266.70	25714.40	4412.161	6748.472	1400	20	61.60	5.95	33.20
6/2/2003	5	627	12259.30	25716.80	4412.902	6748.102					
6/3/2003	5	264	12133.60	25768.20	4427.409	6743.342	0813	18	17.95	5.67	31.57
6/3/2003	5	264	12129.10	25771.40	4428.058	6743.500					
6/3/2003	5	292	12151.60	25774.80	4426.950	6747.038	1004	16	21.25	5.47	31.62
6/3/2003	5	292	12156.70	25773.50	4426.495	6747.288					
6/3/2003	5	566	12183.90	25724.30	4418.682	6740.110	1206	20	48.35	5.57	32.31
6/3/2003	5	566	12191.50	25723.40	4418.000	6740.804					
6/3/2003	5	587	12191.40	25714.40	4416.986	6738.886	1346	20	55.80	5.64	32.63
6/3/2003	5	587	12198.40	25713.80	4416.468	6739.614					
6/3/2003	5	697	12178.70	25702.50	4416.269	6734.546	1520	20	69.20	6.39	32.53
6/3/2003	5	697	12186.10	25700.90	4415.673	6735.114					
6/4/2003	5	680	12154.10	25699.80	4417.635	6730.528	0830	20	59.85	5.80	32.78
6/4/2003	5	680	12147.40	25699.80	4418.051	6729.662					
6/4/2003	5	672	12105.40	25690.90	4419.737	6721.632	1045	20	86.95	7.11	33.98
6/4/2003	5	672	12099.20	25690.80	4420.149	6720.863					
6/4/2003	5	663	12087.50	25686.30	4420.392	6717.898	1218	20	80.00	7.10	33.97

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Individual Station Descriptions

DATE	REGION	GRID	LORAN W	LORAN X	LAT deg/min	LON deg/min	Start Time	Tow Durati on	Average Depth (FA)	Temp C °	Salinity ppt
6/4/2003	5	663	12081.80	25685.80	4420.687	6717.056					
6/4/2003	5	339	12092.40	25723.10	4424.656	6727.638	1552	20	45.15	5.61	32.14
6/4/2003	5	339	12084.80	25724.10	4425.240	6726.902					
6/5/2003	5	301	12102.20	25736.80	4425.677	6732.165	0814	20	42.15	5.61	32.01
6/5/2003	5	301	12094.80	25738.20	4426.286	6731.587					
6/5/2003	5	205	12032.60	25744.70	4431.291	6724.864	1017	17	33.05	5.43	31.74
6/5/2003	5	205	12038.00	25745.10	4431.042	6725.562					
6/5/2003	5	113	12010.40	25766.30	4435.478	6727.052	1328	20	9.75	6.89	31.86
6/5/2003	5	113	12002.90	25767.00	4436.084	6726.104					
6/6/2003	5	118	11978.70	25743.80	4434.977	6717.137	0836	20	35.20	5.30	31.79
6/6/2003	5	118	11973.00	25744.60	4435.468	6716.454					
6/6/2003	5	41	11855.90	25735.90	4442.914	6742.924	1218	16	56.75	5.14	31.74
6/6/2003	5	41	11861.60	25733.80	4442.255	6657.210					
6/6/2003	5	13	11819.30	25748.20	4447.126	6654.882	1316	21	53.45	5.32	31.75
6/6/2003	5	13	11826.50	25747.50	4446.540	6655.709					
6/6/2003	5	48	11875.70	25734.10	4441.203	6659.516	1536	20	47.00	5.30	31.75
6/6/2003	5	48	11881.20	25734.30	4440.835	6644.388					

Appendix B
Survey Catch Index

Selected species	Fall 2000		Fall 2001		Fall 2002	
	Stratified Mean	SE	Stratified Mean	SE	Stratified Mean	SE
	Number		Number		Number	
Acadian Redfish	0.60	0.19	7.53	2.31	2.54	0.94
Alewife	221.00	73.50	158.57	56.25	363.14	107.97
Alligatorfish	0.31	0.18	0.34	0.13	1.72	0.85
American Lobster	112.12	20.59	127.82	24.83	125.90	23.49
American Plaice	22.11	6.12	24.02	2.00	14.35	2.42
American Shad	0.56	0.18	0.24	0.11	1.15	0.40
Atlantic Cod	3.97	1.85	3.63	0.68	0.92	0.21
Atlantic Halibut	0.16	0.06	0.24	0.09	0.16	0.04
Atlantic Herring	881.56	295.72	787.25	193.55	1120.22	367.59
Atlantic Mackerel	2.12	0.92	12.73	6.75	14.32	6.20
Atlantic Menhaden	16.87	6.11			43.00	16.40
Atlantic Moonfish					0.48	0.41
Atlantic Silverside	4.47	1.29	0.21	0.13	1.36	0.35
Atlantic Sturgeon	0.05	0.05	0.21	0.21	0.13	0.10
Blueback Herring					4.16	1.50
Butterfish	2.19	0.75	13.02	3.49	50.76	14.58
Daubed Shanny			0.01	0.01		
Fourbeard Rockling	0.33	0.09	1.64	0.36	1.08	0.21
Fourspot Flounder	0.23	0.07	0.57	0.13	0.09	0.03
Goosefish	4.68	0.59	13.83	1.31	3.69	0.74
Haddock	3.85	1.20	6.65	2.07	0.35	0.12
Jonah Crab	1.75	0.35	16.42	1.75	5.79	1.54
Little Skate	2.41	1.12	2.09	0.38	2.87	1.66
Longfin Squid	4.54	1.15	16.81	2.99	23.86	4.00
Longhorn Sculpin	31.78	7.13	27.20	5.04	45.74	6.41
Lumpfish	0.04	0.02	0.15	0.05	0.16	0.05
Moustache Sculpin	0.12	0.04		0.00	0.94	0.31
Ocean Pout	0.07	0.03	0.40	0.13	0.02	0.01
Octopus (unclass.)	0.08	0.04	0.31	0.07	0.34	0.17
Pollock	2.17	1.18	0.35	0.08	4.85	2.86
Radiated Shanny					0.30	0.25
Rainbow Smelt	49.75	23.54	69.85	28.46	31.64	20.45
Red Hake	25.90	3.14	40.23	4.50	18.99	2.57
Rock Crab	2.78	1.06	7.25	1.94	1.69	0.48
Rough Scad	0.02	0.02			0.33	0.18
Round Scad			0.07	0.03	0.38	0.16
Scup	6.62	1.89			1.51	0.83
Sea Cucumber	0.80	0.35	3.89	3.72	2.78	2.62
Sea Raven	1.76	0.28	1.27	0.45	2.04	0.62
Sea Scallop	38.81	10.89	37.09	8.92	7.56	1.76
Shortfin Squid	1.24	0.74	1.38	0.21	0.94	0.19
Shorthorn Sculpin	0.30	0.12	0.10	0.08	0.40	0.23
Silver Hake	773.52	72.90	816.44	112.88	502.10	77.88
Smooth Skate	0.19	0.08	0.47	0.18	0.15	0.08

Appendix B
Survey Catch Index

Selected species	Fall 2000		Fall 2001		Fall 2002	
	Stratified Mean	SE	Stratified Mean	SE	Stratified Mean	SE
	Number		Number		Number	
Snakeblenny			0.03	0.02	0.09	0.05
Spiny Dogfish	3.87	0.51	9.71	2.21	14.00	2.02
Thorny Skate	0.26	0.07	0.25	0.11	0.36	0.16
White Hake	12.51	1.10	20.75	2.41	23.00	1.83
Windowpane	3.97	0.63	2.44	0.72	12.98	2.71
Winter Flounder	34.50	3.17	34.80	4.71	32.66	5.01
Winter Skate	0.25	0.09	0.12	0.06	0.38	0.13
Witch Flounder	3.74	0.68	35.70	4.90	4.42	0.87
Wrymouth	0.14	0.09	0.50	0.13	0.06	0.03
Yellowtail Flounder	2.49	1.25	1.57	0.53	0.82	0.27

Appendix B
Survey Catch Index

Selected species	Spring 2001		Spring 2002		Spring 2003	
	Stratified Mean	SE	Stratified Mean	SE	Stratified Mean	SE
	Number		Number		Number	
Acadian Redfish	1.83	0.46	1.63	0.30	6.87	2.58
Alewife	177.46	45.36	158.38	39.22	117.96	20.16
Alligatorfish	1.88	0.79	1.66	0.76	1.29	0.67
American Lobster	45.16	6.55	98.98	13.32	43.58	6.28
American Plaice	15.85	2.80	33.47	3.28	58.21	13.61
American Shad	0.96	0.26	2.72	0.52	1.49	0.27
Atlantic Cod	1.86	0.37	6.97	2.61	1.59	0.28
Atlantic Halibut	0.04	0.02	0.33	0.12	0.21	0.06
Atlantic Herring	747.12	230.70	1431.32	390.35	2161.53	417.15
Atlantic Mackerel			0.02	0.02	0.37	0.36
Atlantic Silverside	0.01	0.01				
Atlantic Sturgeon			0.02	0.02	0.02	0.01
Blueback Herring	46.76	17.08	9.78	4.56	42.38	14.46
Butterfish	0.04	0.03	0.03	0.02		
Daubed Shanny	0.57	0.13	0.08	0.03	0.04	0.02
Fourbeard Rockling	0.40	0.14	0.68	0.16	1.02	0.27
Fourspot Flounder	0.07	0.03	0.08	0.03	0.09	0.04
Goosefish	5.88	0.72	2.20	0.28	0.98	0.13
Haddock	0.01	0.01	4.85	1.42	0.63	0.24
Jonah Crab	4.20	1.15	3.83	0.92	4.66	0.58
Little Skate	0.70	0.16	0.48	0.10	0.56	0.12
Longfin Squid	0.06	0.02	0.20	0.07	0.12	0.04
Longhorn Sculpin	50.10	5.12	53.20	8.69	46.71	4.67
Lumpfish	0.10	0.03	0.09	0.03	0.32	0.11
Moustache Sculpin			0.03	0.02	0.01	0.01
Ocean Pout	0.48	0.13	0.40	0.14	0.30	0.08
Octopus unclass.	0.49	0.22	0.07	0.04	0.02	0.01
Pollock	0.38	0.11	1.16	0.33	0.75	0.38
Radiated Shanny	0.06	0.04			0.01	0.01
Rainbow Smelt	9.02	5.55	0.75	0.25	1.07	0.37
Red Hake	5.21	0.86	10.23	1.22	9.02	1.08
Rock Crab	10.08	1.83	1.29	0.25	5.28	1.67
Sea Cucumber	8.30	7.02	3.72	2.82	1.86	0.96
Sea Raven	2.94	0.67	2.42	0.56	2.04	0.46
Sea Scallop	30.37	6.32	16.36	4.07	4.34	0.99
Shortfin Squid	0.02	0.01	0.02	0.01		
Shorthorn Sculpin	0.17	0.06	0.04	0.03	0.14	0.06
Silver Hake	94.41	9.76	264.87	86.18	435.80	73.86
Smooth Skate	0.22	0.07	0.22	0.18	0.07	0.03
Snakeblenny	0.53	0.18	0.28	0.10	0.68	0.19
Spiny Dogfish			0.10	0.04	0.14	0.09
Thorny Skate			0.09	0.03	0.43	0.12
White Hake	0.99	0.21	2.11	0.36	1.81	0.35

Appendix B
Survey Catch Index

Selected species	Spring 2001		Spring 2002		Spring 2003	
	Stratified Mean	SE	Stratified Mean	SE	Stratified Mean	SE
	Number		Number		Number	
Windowpane	5.74	1.42	2.78	0.48	7.40	1.12
Winter Flounder	29.76	3.28	24.20	3.46	18.44	2.47
Winter Skate	0.02	0.01	0.01	0.01	0.07	0.04
Witch Flounder	4.21	0.99	1.85	0.74	1.98	0.49
Wrymouth	0.17	0.07	0.11	0.04	0.98	0.36
Yellowtail Flounder	2.59	1.46	3.18	0.62	1.83	0.34

Appendix C Survey Catch Summaries

Survey Results Fall 2002

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Region 1						
Stratum 1						
Alewife	0.275	0.249	5.500	4.839	16.000	0.632
American Plaice	0.010	0.006	0.500	0.289	13.500	0.500
Atlantic Cod	0.020	0.020	0.250	0.250	21.000	
Atlantic Herring	0.365	0.194	10.750	6.408	15.326	0.985
Atlantic Mackerel	0.845	0.558	14.000	9.487	18.571	1.095
Atlantic Moonfish	0.015	0.012	0.500	0.289	5.000	0.000
Bristled Longbeak	0.018	0.014	6.250	5.603		
Butterfish	3.228	1.863	158.250	106.687	8.986	2.541
Cunner	0.005	0.005	0.250	0.250	12.000	
Goosefish	0.663	0.447	2.000	1.414	28.000	2.852
Haddock	0.003	0.003	0.250	0.250	8.000	
Jonah Crab	0.120	0.073	1.250	0.946	7.000	2.309
Little Skate	9.843	9.843	24.000	24.000	38.510	2.741
Longfin Squid	0.875	0.317	21.250	9.223	8.988	1.128
Longhorn Sculpin	2.440	1.952	21.750	18.223	21.609	1.624
Northern Searobin	0.025	0.025	0.250	0.250	23.000	
Pollock	2.180	2.167	22.000	21.668	16.943	3.405
Rainbow Smelt	0.005	0.005	0.250	0.250	16.000	
Red Hake	1.610	1.185	16.750	13.338	23.284	1.704
Rough Scad	0.040	0.040	2.500	2.500	9.300	0.713
Round Scad	0.015	0.015	0.750	0.750	11.667	0.577
Scup	0.135	0.135	10.500	10.500	8.571	1.554
Sea Cucumber	0.070	0.070	0.250	0.250		
Sea Raven	0.350	0.350	0.750	0.750	25.333	5.175
Sea Scallop	0.035	0.029	2.000	1.683	4.500	0.548
Sea Urchin	0.010	0.010	0.250	0.250	6.000	
Sevenspine Bay Shrimp	0.010	0.010	2.000	2.000		
Silver hake	10.225	8.163	172.000	143.806	19.871	2.652
Spiny Dogfish	7.900	5.163	3.250	2.287	81.923	1.709
Starfish (unclass.)	0.013	0.013	1.250	1.250		
Toad Crab	0.025	0.019	1.000	0.707	3.000	0.408
White Hake	0.375	0.318	5.000	4.062	21.450	1.337
Windowpane	0.375	0.255	6.500	3.841	14.423	1.900
Winter Flounder	2.520	1.315	26.500	13.320	18.821	1.395
Winter Skate	1.230	1.230	0.500	0.500	62.000	20.000
Yellowtail Flounder	0.115	0.115	1.500	1.500	21.667	3.300
					CL (mm) (+/- mm)	
American Lobster	26.855	5.405	133.250	18.066	60.308	0.007

Region 1

Stratum 2

Appendix C
Survey Catch Summaries

Survey Results Fall 2002

	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
	Weight	(+/-)	Number	(+/-)	Length	(+/-)
	(kg)	(kg)			(cm)	(cm)
Acadian Redfish	0.188	0.178	4.000	3.755	14.300	1.128
Alewife	9.980	6.024	125.000	81.352	18.837	2.400
Alligatorfish	0.002	0.002	0.200	0.200	13.000	
American Plaice	1.054	0.491	24.400	9.928	16.730	1.237
American Shad	0.044	0.027	0.400	0.245	21.500	0.500
Atlantic Cod	0.010	0.010	0.200	0.200	17.000	
Atlantic Herring	5.028	1.824	76.800	24.571	18.768	1.206
Atlantic Mackerel	3.050	2.506	38.400	34.909	19.921	1.688
Black Sea Bass	0.176	0.176	0.400	0.400	31.500	4.500
Blueback Herring	0.824	0.680	10.800	8.726	19.556	0.838
Bristled Longbeak	0.238	0.140	97.400	60.987		
Butterfish	4.946	1.965	239.400	113.346	9.556	1.944
Cunner	0.172	0.172	1.200	1.200	19.333	1.835
Goosefish	5.882	2.681	7.800	3.007	35.128	1.657
Haddock	0.168	0.163	1.600	1.364	22.125	1.321
Little Skate	0.918	0.772	1.200	0.970	49.400	1.720
Longfin Squid	1.084	0.377	66.400	28.337	6.057	1.126
Longhorn Sculpin	1.124	0.457	5.600	1.568	22.000	1.258
Northern Pipefish	0.004	0.004	0.200	0.200	23.000	
Red Hake	3.518	1.227	31.400	9.584	25.445	0.899
Rock Crab	0.012	0.012	0.200	0.200	8.000	
Rough Scad	0.010	0.010	0.400	0.400	10.500	0.500
Round Scad	0.014	0.006	0.800	0.374	11.000	0.577
Sea Raven	0.004	0.004	0.200	0.200	11.000	
Sea Scallop	0.004	0.004	0.200	0.200	5.000	
Shortfin Squid	0.020	0.020	0.600	0.600	13.333	2.309
Silver hake	29.968	12.578	427.800	189.049	21.188	2.292
Spiny Dogfish	82.952	41.089	38.800	18.556	79.150	1.034
Spotted Hake	0.012	0.012	0.200	0.200	19.000	
Starfish (unclass.)	0.044	0.039	0.800	0.583		
Toad Crab	0.008	0.005	0.800	0.583	2.750	0.354
White Hake	1.920	1.543	19.200	15.108	23.906	1.098
Windowpane	0.012	0.012	0.400	0.400	13.500	0.500
Winter Flounder	1.066	0.376	5.400	1.965	24.111	1.198
Witch Flounder	0.404	0.404	2.000	2.000	31.800	1.108
Yellowtail Flounder	2.368	1.133	8.000	4.012	32.205	0.750
					CL (mm) (+/- mm)	
American Lobster	25.174	14.126	113.000	68.674	64.826	0.007
Region 1						
Stratum 3						
Acadian Redfish	0.140	0.068	2.500	0.922	12.400	1.176
Aesop Shrimp	0.010	0.003	2.167	0.601		

Appendix C Survey Catch Summaries

Survey Results Fall 2002

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Alewife	3.272	0.914	23.833	6.529	22.119	1.013
Alligatorfish	0.003	0.003	0.167	0.167	14.000	
American Plaice	6.673	1.612	127.000	35.611	17.577	1.331
Atlantic Cod	1.457	0.931	0.500	0.342	69.333	2.963
Atlantic Herring	24.802	21.811	201.833	178.411	25.039	1.359
Atlantic Mackerel	0.017	0.017	0.333	0.333	18.500	0.500
Blueback Herring	0.077	0.038	1.833	1.108	22.182	0.924
Bristled Longbeak	0.198	0.082	95.333	38.147		
Butterfish	1.525	0.850	35.000	16.593	11.829	1.562
Fourbeard Rockling	0.122	0.074	2.833	1.701	20.882	0.936
Fourspot Flounder	0.207	0.109	0.833	0.401	31.200	1.356
Goosefish	30.910	11.991	32.667	11.289	36.786	1.090
Jonah Crab	0.337	0.166	2.500	1.147	9.600	0.646
Longfin Squid	1.132	0.459	81.667	29.288	6.018	0.828
Longhorn Sculpin	0.083	0.058	0.667	0.494	23.750	1.109
Lumpfish	0.005	0.005	0.167	0.167	9.000	
Northern Shrimp	0.167	0.147	22.833	17.967		
Pollock	0.027	0.027	0.167	0.167	25.000	
Red Hake	22.880	4.313	139.000	31.476	29.441	1.201
Sea Raven	0.053	0.053	0.167	0.167	26.000	
Shortfin Squid	0.370	0.168	3.333	1.520	16.500	0.830
Silver hake	66.835	19.122	1141.000	292.384	18.869	4.397
Spiny Dogfish	155.668	26.741	88.167	14.650	75.444	0.964
Starfish (unclass.)	0.007	0.007	0.333	0.333		
Thorny Skate	0.540	0.419	0.500	0.342	47.000	7.095
White Hake	3.407	1.287	8.000	3.088	37.333	1.551
Winter Flounder	0.200	0.098	0.833	0.401	26.200	0.860
Witch Flounder	5.860	1.574	41.000	11.015	28.236	0.970
Wrymouth	0.013	0.013	0.167	0.167	33.000	
Yellowtail Flounder	0.217	0.119	0.667	0.333	34.000	0.408
					CL (mm) (+/- mm)	
American Lobster	3.683	1.444	9.667	4.580	79.448	0.062
Region 2						
Stratum 1						
Aesop Shrimp	0.005	0.003	1.000	0.816		
Alewife	6.140	2.371	252.500	100.924	12.623	2.060
Alligatorfish	0.002	0.002	0.167	0.167	12.000	
American Plaice	0.005	0.003	0.333	0.211	14.500	2.500
American Shad	0.233	0.095	12.333	5.213	11.986	0.488
Anemone	0.007	0.007	0.167	0.167		
Atlantic Cod	0.025	0.016	0.667	0.494	14.750	2.111
Atlantic Herring	15.573	14.493	1407.667	1371.171	10.530	2.884

Appendix C
Survey Catch Summaries

Survey Results Fall 2002

	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
	Weight	(+/-)	Number	(+/-)	Length	(+/-)
	(kg)	(kg)			(cm)	(cm)
Atlantic Mackerel	4.908	4.149	82.500	71.535	19.300	0.864
Atlantic Menhaden	0.337	0.306	48.500	44.808	7.629	2.216
Atlantic Moonfish	0.020	0.018	5.833	5.443	5.281	0.851
Atlantic Sturgeon	13.653	11.460	1.667	1.308	111.900	6.482
Blueback Herring	0.955	0.497	37.167	18.510	11.693	3.198
Bluefish	0.003	0.003	0.167	0.167	13.000	
Bristled Longbeak	0.062	0.043	25.833	19.783		
Butterfish	1.633	1.275	153.833	115.559	7.982	1.180
Cunner	0.745	0.721	14.000	13.209	14.618	1.772
Haddock	0.027	0.016	1.333	0.955	11.125	1.034
Jonah Crab	0.323	0.109	1.833	0.543	10.273	0.728
Little Skate	0.157	0.157	0.167	0.167	50.000	
Longfin Squid	1.395	0.456	63.500	17.341	6.524	1.164
Longhorn Sculpin	1.460	1.125	11.000	8.656	21.984	1.440
Rainbow Smelt	7.807	7.136	285.000	265.680	15.231	4.519
Red Hake	0.008	0.007	0.333	0.211	12.000	5.000
Rock Crab	0.050	0.035	0.667	0.333	7.250	1.652
Rough Scad	0.023	0.010	0.833	0.307	12.000	0.316
Round Scad	0.060	0.048	2.667	1.926	11.500	0.548
Scup	0.210	0.100	7.667	5.457	9.826	2.563
Sea Raven	0.083	0.083	0.167	0.167	31.000	
Sea Scallop	0.150	0.150	12.500	12.500	4.040	2.177
Sea Urchin	0.003	0.003	0.667	0.667		
Sevenspine Bay Shrimp	0.110	0.102	38.333	34.975		
Short Bigeye	0.003	0.003	0.333	0.333	7.000	1.000
Silver hake	1.523	0.690	104.000	48.372	12.469	1.182
Spiny Dogfish	0.623	0.623	0.333	0.333	80.000	4.000
White Hake	0.423	0.256	7.667	4.807	17.643	1.407
Windowpane	0.163	0.115	9.167	6.107	10.480	1.234
Winter Flounder	1.975	0.464	39.333	9.087	15.128	0.841
Yellowtail Flounder	0.067	0.067	0.500	0.500	27.333	3.844
					CL (mm) (+/- mm)	
American Lobster	78.550	14.154	347.667	89.937	63.901	0.002
Region 2						
Stratum 2						
Aesop Shrimp	0.950	0.545	264.750	154.384		
Alewife	36.008	19.341	2669.750	1909.493	10.432	6.335
Alligatorfish	0.003	0.003	0.250	0.250	9.000	
American Plaice	0.018	0.010	0.750	0.479	13.333	0.577
American Shad	0.045	0.017	1.250	0.479	15.600	0.876
Atlantic Cod	0.690	0.690	0.250	0.250	64.000	
Atlantic Halibut	0.060	0.060	0.250	0.250	29.000	

Appendix C Survey Catch Summaries

Survey Results Fall 2002

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Atlantic Herring	12.223	11.038	1034.500	940.411	10.974	3.122
Atlantic Mackerel	4.645	2.814	54.000	40.158	20.894	3.230
Atlantic Menhaden	0.100	0.060	12.250	7.075	8.510	1.157
Blueback Herring	0.070	0.064	2.250	1.931	15.556	0.720
Bristled Longbeak	1.483	0.696	545.500	246.682		
Butterfish	1.973	1.411	162.750	120.383	8.338	1.165
Cunner	0.010	0.010	0.250	0.250	14.000	
Fourbeard Rockling	0.030	0.030	0.250	0.250	27.000	
Goosefish	1.008	0.292	2.000	0.408	31.375	3.545
Haddock	0.035	0.035	1.000	1.000	15.750	0.677
Jonah Crab	0.095	0.059	0.750	0.479	9.333	2.309
Little Skate	0.660	0.396	0.750	0.479	49.667	1.764
Longfin Squid	0.965	0.558	71.000	38.490	5.417	1.088
Longhorn Sculpin	4.833	1.214	48.500	12.823	20.349	1.000
Octopus (unclass.)	0.015	0.015	0.250	0.250	10.000	
Red Hake	0.063	0.053	2.000	1.225	13.875	3.584
Rough Scad	0.005	0.005	0.250	0.250	13.000	
Round Scad	0.023	0.013	1.250	0.946	10.800	2.530
Scup	0.003	0.003	0.250	0.250	10.000	
Sea Raven	0.105	0.105	0.250	0.250	27.000	
Sea Scallop	0.015	0.015	1.500	1.500	4.333	1.247
Sea Urchin	0.003	0.003	0.500	0.500		
Shortfin Squid	0.145	0.145	2.000	2.000	4.625	0.907
Silver hake	26.525	11.230	1799.500	964.540	12.829	5.030
Snakeblenny	0.010	0.010	0.250	0.250	33.000	
Spiny Dogfish	17.420	9.031	8.750	4.423	78.059	2.489
White Hake	1.730	0.533	20.000	6.770	21.208	0.815
Windowpane	0.283	0.133	21.250	13.332	9.726	0.893
Winter Flounder	3.780	2.837	49.000	36.366	18.200	1.344
Winter Skate	0.615	0.615	0.250	0.250	70.000	
Yellowtail Flounder	0.275	0.198	1.000	0.707	33.000	1.080
					CL (mm) (+/- mm)	
American Lobster	61.880	11.896	227.750	43.716	68.999	0.005
Region 2						
Stratum 3						
Acadian Redfish	0.033	0.025	0.857	0.459	10.500	2.814
Aesop Shrimp	1.239	0.880	323.571	227.103		
Alewife	4.846	1.786	90.000	34.067	16.467	0.833
American Plaice	3.394	0.725	62.857	15.209	17.693	0.988
American Shad	0.031	0.031	0.429	0.429	18.667	0.577
Anemone	0.034	0.034	0.143	0.143		
Atlantic Herring	1.257	0.556	26.000	12.917	16.725	1.098

Appendix C
Survey Catch Summaries

Survey Results Fall 2002

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Atlantic Mackerel	1.564	1.224	14.571	11.023	22.127	1.433
Blueback Herring	0.016	0.010	0.286	0.184	16.500	1.500
Bristled Longbeak	2.227	0.749	1163.000	369.609		
Butterfish	0.310	0.153	9.143	4.672	11.516	0.616
Fourbeard Rockling	0.069	0.029	1.429	0.528	21.200	1.083
Goosefish	4.060	1.475	7.286	2.388	30.843	1.641
Greenland Halibut	0.003	0.003	0.143	0.143	9.000	
Jonah Crab	0.180	0.114	1.286	0.808	9.778	0.568
Little Skate	0.260	0.209	0.429	0.297	45.333	2.728
Longfin Squid	0.274	0.105	14.000	6.004	6.643	0.671
Longhorn Sculpin	0.874	0.640	8.143	6.674	21.158	1.303
Northern Shrimp	1.229	0.793	171.143	114.900		
Pollock	0.081	0.053	0.429	0.297	23.667	4.485
Rainbow Smelt	0.014	0.014	0.143	0.143	21.000	
Red Hake	8.171	3.242	49.714	17.309	28.761	1.267
Scup	0.006	0.006	0.286	0.286	9.000	
Sea Scallop	0.399	0.142	11.286	3.663	6.165	0.566
Shortfin Squid	0.434	0.182	4.429	1.784	15.581	0.545
Silver hake	59.607	6.947	3012.571	847.509	13.207	6.589
Spiny Dogfish	158.470	49.448	83.571	25.067	77.562	1.039
Starfish (unclass.)	0.094	0.070	0.429	0.429		
White Hake	6.753	0.908	54.857	8.526	24.979	0.691
Windowpane	0.103	0.070	1.286	0.969	16.222	2.153
Winter Flounder	0.034	0.018	0.714	0.421	15.600	1.600
Winter Skate	0.680	0.680	0.143	0.143	81.000	
Witch Flounder	0.354	0.281	4.714	3.435	22.758	1.577
Wrymouth	0.014	0.014	0.143	0.143	36.000	
Yellowtail Flounder	0.069	0.046	0.286	0.184	31.500	1.500
					CL (mm) (+/- mm)	
American Lobster	3.989	1.709	7.714	4.481	82.259	0.082
Region 3						
Stratum 1						
Aesop Shrimp	0.868	0.678	195.000	122.193		
Alewife	6.720	4.285	605.000	361.515	9.909	3.691
American Plaice	0.010	0.010	0.250	0.250	16.000	
American Shad	0.030	0.019	1.000	0.707	13.000	0.816
Anemone	0.283	0.253	9.000	8.670		
Atlantic Cod	0.055	0.055	1.250	1.250	16.600	1.288
Atlantic Herring	36.873	28.735	3989.250	3207.549	10.039	5.981
Atlantic Mackerel	0.165	0.050	1.750	0.479	20.571	0.724
Atlantic Menhaden	0.043	0.018	7.500	4.924	6.800	0.731
Atlantic Silverside	0.020	0.008	1.750	0.629	9.714	0.609

Appendix C
Survey Catch Summaries

Survey Results Fall 2002

	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
	Weight	(+/-)	Number	(+/-)	Length	(+/-)
	(kg)	(kg)			(cm)	(cm)
Blue Mussel	0.095	0.095	1.250	1.250		
Boreal Asterias	0.005	0.005	0.500	0.500		
Bristled Longbeak	0.868	0.389	310.500	124.814		
Butterfish	0.053	0.023	4.500	2.102	7.833	0.453
Cunner	0.045	0.045	0.500	0.500	18.000	1.000
Longfin Squid	0.005	0.005	0.250	0.250	9.000	
Longhorn Sculpin	0.085	0.057	0.500	0.289	22.000	3.000
Moustache Sculpin	0.013	0.013	0.250	0.250	12.000	
Northern Shrimp	0.030	0.020	41.250	40.252		
Pollock	0.278	0.278	6.500	6.500	15.615	1.160
Rainbow Smelt	1.253	0.581	59.000	29.752	13.373	1.352
Red Hake	0.015	0.015	1.500	1.500	11.167	1.034
Rock Crab	0.025	0.025	1.000	1.000	5.250	0.677
Sea Cucumber	0.095	0.095	0.250	0.250		
Sea Raven	0.170	0.170	0.250	0.250	35.000	
Sea Scallop	0.005	0.005	0.500	0.500	2.000	
Sevenspine Bay Shrimp	0.123	0.042	123.250	94.488		
Shorthorn Sculpin	0.103	0.103	1.500	1.500	16.000	1.080
Silver hake	0.203	0.165	14.000	11.203	12.750	1.122
Spiny Lebbeid	0.008	0.008	1.000	1.000		
Toad Crab	0.030	0.030	2.500	2.500	1.700	1.025
White Hake	0.068	0.045	1.000	0.408	17.750	3.473
Windowpane	0.165	0.057	15.750	5.573	8.365	0.859
Winter Flounder	1.655	0.342	35.000	7.778	15.114	0.796
					CL (mm) (+/- mm)	
American Lobster	45.400	45.180	165.500	165.167	69.571	0.005
Region 3						
Stratum 2						
Acadian Redfish	0.024	0.024	0.600	0.600	12.000	1.528
Aesop Shrimp	0.588	0.230	183.400	74.054		
Alewife	12.032	3.132	768.000	249.418	10.842	3.234
Alligatorfish	0.004	0.004	0.200	0.200	16.000	
American Plaice	0.014	0.012	0.800	0.583	12.500	1.708
American Shad	0.010	0.010	0.200	0.200	13.000	
Anemone	0.004	0.004	0.200	0.200		
Atlantic Cod	0.044	0.044	0.200	0.200	30.000	
Atlantic Halibut	0.084	0.084	0.200	0.200	34.000	
Atlantic Herring	27.322	14.909	2562.400	1427.306	10.718	4.372
Atlantic Mackerel	0.628	0.334	6.000	2.702	21.933	1.197
Atlantic Menhaden	0.156	0.117	20.000	15.408	7.480	0.711
Atlantic Silverside	0.020	0.010	1.800	0.860	9.444	0.727
Blueback Herring	0.010	0.010	1.400	1.400	8.429	0.926

Appendix C Survey Catch Summaries

Survey Results Fall 2002

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Bristled Longbeak	1.182	0.334	436.600	119.284		
Butterfish	0.276	0.077	19.000	6.197	8.642	0.502
Jonah Crab	0.042	0.042	0.200	0.200	11.000	
Little Skate	0.216	0.144	0.400	0.245	43.500	4.500
Longfin Squid	0.578	0.546	30.000	27.530	6.680	1.625
Longhorn Sculpin	1.672	1.492	20.400	16.391	18.765	1.770
Moustache Sculpin	0.004	0.004	0.200	0.200	11.000	
Northern Shrimp	0.006	0.004	0.600	0.400		
Rainbow Smelt	0.038	0.017	0.800	0.200	14.500	0.500
Red Hake	0.132	0.081	1.600	1.030	18.125	3.973
Rock Crab	0.104	0.044	0.800	0.374	11.250	0.479
Scup	0.012	0.008	0.400	0.245	9.500	0.500
Sea Scallop	0.008	0.008	0.600	0.600	6.000	0.577
Sevenspine Bay Shrimp	0.052	0.045	33.200	31.965		
Shortfin Squid	0.042	0.042	0.600	0.600	14.000	0.577
Silver hake	6.020	5.115	395.600	337.939	12.613	2.434
Starfish (unclass.)	0.278	0.224	2.600	1.661		
Toad Crab	0.026	0.026	0.800	0.800	3.250	0.890
White Hake	0.498	0.166	8.200	2.782	18.585	1.031
Windowpane	0.418	0.125	28.600	13.351	8.986	1.105
Winter Flounder	0.614	0.129	10.000	1.897	16.540	0.851
Wrymouth	0.036	0.036	0.200	0.200	32.000	
Yellowtail Flounder	0.040	0.040	0.200	0.200	29.000	
					CL (mm) (+/- mm)	
American Lobster	98.158	87.856	269.200	252.333	74.916	0.003
Region 3						
Stratum 3						
Acadian Redfish	0.716	0.432	11.375	7.156	15.000	1.341
Aesop Shrimp	2.618	1.465	975.125	636.941		
Alewife	2.298	0.705	50.250	16.452	15.692	0.721
Alligatorfish	0.004	0.003	0.250	0.164	11.500	3.500
American Eel	0.010	0.010	0.125	0.125	34.000	
American Plaice	1.079	0.275	10.000	2.307	20.050	1.289
American Shad	0.008	0.008	0.125	0.125	19.000	
Anemone	0.018	0.018	0.000	0.000		
Atlantic Cod	0.311	0.159	1.375	0.754	28.091	1.169
Atlantic Halibut	0.060	0.060	0.125	0.125	26.000	
Atlantic Herring	0.898	0.745	56.875	51.794	12.084	1.411
Atlantic Mackerel	0.618	0.416	1.750	0.726	23.214	1.669
Atlantic Menhaden	0.003	0.003	0.250	0.250	8.500	0.500
Blueback Herring	0.143	0.081	2.375	1.253	17.947	0.768
Bristled Longbeak	8.163	4.325	3051.125	1632.637		

Appendix C
Survey Catch Summaries

Survey Results Fall 2002

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Butterfish	0.194	0.109	11.000	7.368	9.375	0.685
Euphausid Shrimp	0.001	0.001	0.375	0.375		
Fourbeard Rockling	0.066	0.025	1.375	0.596	21.545	1.015
Goosefish	1.221	0.622	2.000	1.052	30.500	3.166
Jonah Crab	1.284	0.944	2.250	0.796	10.000	0.927
Little Skate	0.320	0.142	0.750	0.313	35.333	4.937
Longfin Squid	0.176	0.059	14.375	3.674	5.539	0.562
Longhorn Sculpin	7.685	2.702	86.500	34.236	20.383	1.189
Lumpfish	0.643	0.329	1.250	0.526	19.200	1.806
Northern Shrimp	0.686	0.602	169.875	149.004		
Northern Stone Crab	0.030	0.030	0.125	0.125	8.000	
Pollock	5.063	5.034	31.875	31.732	24.275	3.127
Red Hake	1.623	0.910	11.750	5.401	25.064	1.401
Rock Crab	0.055	0.055	0.375	0.375	9.000	2.646
Scup	0.003	0.003	0.125	0.125	9.000	
Sea Raven	0.055	0.041	0.375	0.263	18.000	2.646
Sea Scallop	1.641	0.645	28.375	9.142	7.648	0.746
Sevenspine Bay Shrimp	0.103	0.101	90.875	90.732		
Short Bigeye	0.003	0.003	0.125	0.125	12.000	
Shortfin Squid	0.169	0.066	2.000	0.655	16.000	0.742
Silver hake	16.643	5.212	459.875	130.145	15.961	2.891
Spiny Dogfish	6.636	3.564	3.875	1.995	73.290	4.237
Starfish (unclass.)	0.305	0.214	1.375	1.238		
Thorny Skate	0.210	0.210	0.125	0.125	55.000	
Toad Crab	0.003	0.003	0.250	0.250	2.000	1.000
White Hake	5.976	1.069	47.750	8.387	24.458	0.948
Windowpane	0.560	0.213	15.875	8.991	12.827	1.391
Winter Flounder	1.936	1.059	16.125	9.737	20.372	1.175
Witch Flounder	0.526	0.429	6.500	3.836	23.308	1.603
Wrymouth	0.005	0.005	0.125	0.125	28.000	
Yellowtail Flounder	0.025	0.025	0.125	0.125	29.000	
					CL (mm) (+/- mm)	
American Lobster	32.886	12.254	47.750	19.947	92.000	0.012
Region 4						
Stratum 1						
Aesop Shrimp	0.473	0.283	178.750	107.938		
Alewife	2.058	0.947	187.750	82.362	9.721	1.407
Alligatorfish	0.005	0.005	0.750	0.750	10.667	1.202
Anemone	0.083	0.083	1.750	1.750		
Atlantic Cod	0.085	0.085	0.250	0.250	36.000	
Atlantic Halibut	0.188	0.188	0.250	0.250	41.000	
Atlantic Herring	37.245	25.127	2795.250	1798.047	11.275	5.716

Appendix C Survey Catch Summaries

Survey Results Fall 2002

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Atlantic Mackerel	0.128	0.128	0.750	0.750	25.333	0.577
Atlantic Menhaden	2.028	1.723	306.500	256.694	7.498	1.654
Atlantic Silverside	0.083	0.017	12.750	3.065	9.061	0.584
Ax Head Clam	0.025	0.025	4.500	4.500		
Blueback Herring	0.003	0.003	0.250	0.250	10.000	
Bristled Longbeak	0.058	0.036	20.750	13.187		
Euphausid Shrimp	0.005	0.005	4.000	4.000		
False Quahog	0.040	0.040	3.250	3.250		
Jonah Crab	0.290	0.177	1.000	0.577	13.000	1.414
Longhorn Sculpin	0.015	0.005	0.750	0.250	9.667	0.333
Moustache Sculpin	0.005	0.005	0.500	0.500	10.500	0.500
Ocean Quahog	0.013	0.013	0.500	0.500		
Pollock	0.020	0.020	0.250	0.250	19.000	
Rainbow Smelt	0.480	0.328	7.250	3.010	15.793	0.549
Rat-tail Cucumber	0.203	0.203	1.250	1.250		
Red Hake	0.010	0.010	0.500	0.500	12.000	1.000
Rock Crab	1.483	0.759	11.250	5.437	8.953	0.707
Sea Cucumber	19.815	19.755	48.250	47.255		
Sea Raven	0.020	0.020	1.000	1.000	10.000	1.732
Sea Sponges	0.700	0.700	0.750	0.750		
Sevenspine Bay Shrimp	10.228	7.960	7020.500	5765.332		
Silver hake	0.635	0.373	39.750	23.701	13.038	1.327
Toad Crab	0.008	0.005	1.000	0.707	2.000	0.408
White Hake	0.303	0.220	11.750	9.214	13.723	1.104
Windowpane	0.370	0.179	48.500	24.551	7.995	0.784
Winter Flounder	1.393	0.564	26.500	8.292	14.267	1.166
Wrymouth	0.005	0.005	0.250	0.250	16.000	
					CL (mm) (+/- mm)	
American Lobster	11.035	5.492	36.500	20.431	70.144	0.023
Region 4						
Stratum 2						
Aesop Shrimp	2.337	1.660	1228.333	1075.076		
Alewife	7.300	1.866	927.667	494.663	10.478	3.140
Atlantic Herring	53.017	49.258	4262.667	3978.622	11.484	5.140
Atlantic Mackerel	0.080	0.080	0.667	0.667	22.500	3.500
Atlantic Menhaden	1.520	0.831	181.333	93.853	7.645	2.068
Atlantic Silverside	0.060	0.042	6.333	5.364	9.842	1.103
Blueback Herring	0.007	0.007	0.333	0.333	13.000	
Bristled Longbeak	0.830	0.623	532.667	269.738		
Butterfish	0.010	0.006	1.333	0.882	7.250	0.354
Fourbeard Rockling	0.017	0.017	0.333	0.333	20.000	
Goosefish	0.007	0.007	0.333	0.333	8.000	

Appendix C Survey Catch Summaries

Survey Results Fall 2002

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Jonah Crab	2.173	2.173	15.667	15.667	9.723	1.552
Little Skate	1.220	0.341	1.333	0.333	49.000	1.414
Longhorn Sculpin	1.147	0.900	14.667	12.680	18.205	1.617
Moustache Sculpin	0.013	0.007	1.000	0.577	10.000	0.000
Rainbow Smelt	0.073	0.007	1.333	0.333	17.500	0.645
Rock Crab	0.140	0.095	0.667	0.333	10.500	1.500
Sea Cucumber	0.253	0.253	0.667	0.667		
Sea Scallop	0.053	0.053	0.667	0.667	9.000	
Sevenspine Bay Shrimp	0.757	0.757	594.333	594.333		
Shorthorn Sculpin	0.213	0.213	0.333	0.333	33.000	
Silver hake	2.583	1.197	149.333	32.763	13.355	1.343
Starfish (unclass.)	0.577	0.440	3.000	3.000		
Toad Crab	0.007	0.007	2.000	2.000	1.333	0.816
White Hake	0.593	0.364	10.333	5.364	17.806	1.349
Windowpane	0.653	0.312	43.000	31.880	9.837	1.459
Winter Flounder	0.913	0.316	12.000	4.509	16.971	1.191
					CL (mm) (+/- mm)	
American Lobster	42.087	19.221	133.667	63.283	70.749	0.009
Region 4						
Stratum 3						
Acadian Redfish	0.036	0.015	1.000	0.535	13.714	1.629
Aesop Shrimp	0.286	0.118	90.000	41.977		
Alewife	2.491	1.565	118.571	92.833	12.010	1.119
Alligatorfish	0.003	0.003	0.286	0.286	11.000	2.000
American Plaice	0.293	0.055	3.571	0.896	19.480	1.369
Anemone	0.003	0.003	0.143	0.143		
Armored Searobin	0.001	0.001	0.143	0.143	7.000	
Atlantic Cod	0.097	0.046	0.571	0.297	26.000	3.189
Atlantic Halibut	0.100	0.065	0.286	0.184	33.000	0.000
Atlantic Herring	4.660	4.490	211.143	206.313	13.317	2.583
Atlantic Mackerel	0.170	0.059	1.429	0.481	22.600	1.474
Atlantic Menhaden	0.003	0.003	0.143	0.143	9.000	
Atlantic Silverside	0.004	0.003	0.286	0.184	11.000	2.000
Blueback Herring	0.041	0.022	0.857	0.459	16.167	0.861
Boreal Asterias	2.274	2.261	0.286	0.286		
Bristled Longbeak	3.336	0.838	1130.571	280.551		
Butterfish	0.067	0.036	3.143	1.818	9.955	0.802
Euphausiid Shrimp	0.000	0.000	0.143	0.143		
Fourbeard Rockling	0.063	0.022	1.571	0.612	19.273	1.037
Fourspot Flounder	0.214	0.183	0.286	0.184	32.000	1.000
Goosefish	1.524	1.160	1.429	0.528	28.000	6.880
Greenland Halibut	0.026	0.026	0.143	0.143	30.000	

Appendix C
Survey Catch Summaries

Survey Results Fall 2002

	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
	Weight	(+/-)	Number	(+/-)	Length	(+/-)
	(kg)	(kg)			(cm)	(cm)
Haddock	0.023	0.014	0.429	0.202	15.667	0.882
Jonah Crab	1.969	1.029	12.571	6.369	11.000	0.745
Little Skate	0.594	0.350	0.857	0.553	45.833	2.535
Longfin Squid	0.087	0.032	9.429	2.759	5.288	0.476
Longhorn Sculpin	8.393	3.635	103.143	38.901	19.463	1.204
Lumpfish	0.151	0.151	0.286	0.286	20.500	3.500
Moustache Sculpin	0.003	0.003	0.143	0.143	10.000	
Northern Cardita	0.006	0.006	1.143	1.143		
Northern Shrimp	0.070	0.040	12.000	7.148		
Ocean Quahog	0.001	0.001	0.143	0.143		
Pearlsides	0.001	0.001	0.143	0.143	6.000	
Pollock	0.176	0.064	1.000	0.378	24.000	0.690
Rat-tail Cucumber	0.001	0.001	0.143	0.143		
Red Hake	0.313	0.169	5.143	1.610	17.861	2.084
Rock Crab	0.026	0.026	0.286	0.286	8.000	1.000
Rough Scad	0.009	0.006	0.286	0.184	10.500	0.500
Round Scad	0.003	0.003	0.143	0.143	11.000	
Sea Raven	0.296	0.145	1.143	0.634	24.250	2.926
Sea Scallop	1.629	0.630	35.143	15.151	6.882	0.626
Sevenspine Bay Shrimp	0.001	0.001	0.143	0.143		
Shortfin Squid	0.146	0.049	1.429	0.528	16.100	0.849
Silver hake	11.001	2.515	301.000	37.309	15.944	2.236
Snakeblenny	0.013	0.007	0.857	0.553	24.833	1.621
Spiny Dogfish	4.610	2.478	3.000	1.215	65.429	5.417
Starfish (unclass.)	0.154	0.115	0.857	0.857		
Thorny Skate	0.006	0.004	0.286	0.184	13.000	2.000
Waved Astarte	0.026	0.026	6.286	6.286		
White Hake	4.130	1.290	42.714	8.785	22.920	0.920
Windowpane	0.380	0.083	8.429	2.515	13.966	1.038
Winter Flounder	2.966	1.018	25.857	6.857	19.725	0.812
Winter Skate	0.591	0.591	0.143	0.143	79.000	
Witch Flounder	0.190	0.087	3.857	1.779	20.259	0.829
Yellowtail Flounder	0.066	0.066	0.286	0.286	31.000	1.000
					CL (mm) (+/- mm)	
American Lobster	38.669	7.254	74.714	21.081	82.496	0.008
Region 5						
Stratum 1						
Aesop Shrimp	2.392	1.870	1029.200	642.830		
Alewife	2.438	1.373	239.600	135.153	9.573	1.524
Alligatorfish	0.058	0.041	23.400	21.913	9.752	1.460
American Plaice	0.004	0.004	0.200	0.200	9.000	
Anemone	0.012	0.008	0.400	0.245		

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Survey Results Fall 2002

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Atlantic Cod	0.036	0.036	0.400	0.400	20.000	2.000
Atlantic Halibut	0.162	0.100	0.600	0.400	29.000	6.028
Atlantic Herring	18.788	13.391	1419.800	955.222	11.475	2.097
Atlantic Menhaden	1.128	0.633	234.800	137.305	7.020	1.488
Atlantic Silverside	0.010	0.006	0.400	0.245	11.500	0.500
Blueback Herring	0.010	0.010	0.800	0.800	9.500	0.645
Bristled Longbeak	0.430	0.196	169.400	86.271		
Fourbeard Rockling	0.110	0.098	3.000	2.757	19.133	0.941
Goosefish	0.044	0.039	1.800	1.562	10.667	0.683
Jonah Crab	1.106	0.442	4.600	1.720	10.783	0.647
Little Skate	2.046	0.786	5.200	2.818	31.615	2.980
Longhorn Sculpin	3.726	1.796	101.200	71.121	13.677	1.910
Moustache Sculpin	0.010	0.010	0.200	0.200	14.000	
Octopus (unclass.)	0.004	0.004	0.200	0.200	14.000	
Pollock	0.260	0.250	6.200	5.953	15.323	1.222
Radiated Shanny	0.088	0.088	6.800	6.800	11.559	1.665
Rainbow Smelt	2.662	1.571	136.400	93.008	13.256	2.359
Red Hake	0.102	0.053	10.600	4.823	11.057	0.558
Rock Crab	2.194	1.244	16.200	9.568	9.025	0.865
Sea Cucumber	0.078	0.078	0.200	0.200		
Sea Raven	1.300	0.740	6.600	4.069	18.485	2.086
Sea Scallop	0.100	0.081	1.000	0.632	7.800	1.594
Sea Urchin	0.052	0.052	0.800	0.800		
Sevenspine Bay Shrimp	5.460	2.942	2720.600	1630.540		
Shorthorn Sculpin	0.186	0.080	7.000	5.550	12.359	2.798
Silver Anchovy	0.040	0.040	0.200	0.200		
Silver hake	3.128	2.204	174.400	125.402	13.594	1.241
Slender Snipe Eel	0.010	0.010	0.200	0.200	46.000	
Spiny Dogfish	1.124	1.124	0.400	0.400	85.000	1.000
Starfish (unclass.)	0.128	0.082	3.000	2.000		
Thorny Skate	0.056	0.056	0.400	0.400	24.500	6.500
Toad Crab	0.022	0.012	2.200	1.068	2.091	0.405
White Hake	0.966	0.359	22.200	7.303	17.144	0.883
Windowpane	0.064	0.036	4.600	2.502	9.435	0.686
Winter Flounder	2.474	1.598	82.600	49.890	13.165	1.335
Winter Skate	0.848	0.379	1.200	0.583	47.667	2.028
					CL (mm) (+/- mm)	
American Lobster	37.668	10.824	177.800	62.107	61.441	0.004
Region 5						
Stratum 2						
Acadian Redfish	0.778	0.505	18.000	12.376	13.417	1.403
Aesop Shrimp	1.350	0.460	400.250	138.315		

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Survey Results Fall 2002

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Alewife	1.385	1.378	86.750	86.084	11.049	3.046
Alligatorfish	0.040	0.018	11.000	4.223	9.682	0.604
American Plaice	0.013	0.008	0.500	0.289	17.000	0.000
Atlantic Cod	0.808	0.354	5.500	2.500	23.955	1.077
Atlantic Halibut	0.725	0.545	1.000	0.408	35.750	8.128
Atlantic Herring	0.703	0.181	16.500	4.252	15.712	0.980
Atlantic Menhaden	0.053	0.035	6.250	3.660	8.000	0.707
Blueback Herring	0.013	0.013	0.250	0.250	15.000	
Bristled Longbeak	0.125	0.081	37.500	30.294		
Butterfish	0.013	0.008	0.500	0.289	9.000	0.000
Euphausid Shrimp	0.008	0.005	6.750	4.498		
Fourbeard Rockling	0.148	0.062	4.500	1.708	19.167	0.699
Goosefish	0.030	0.010	1.250	0.250	9.400	0.510
Greenland Halibut	0.750	0.750	0.250	0.250	66.000	
Horse Mussel	0.140	0.140	1.000	1.000	10.000	0.577
Jonah Crab	1.575	1.314	3.250	2.016	12.154	0.704
Little Skate	3.245	0.655	6.000	2.041	38.375	2.759
Longhorn Sculpin	11.843	3.654	179.500	46.008	17.731	1.632
Lumpfish	0.005	0.005	0.250	0.250	6.000	
Mantis Shrimp	0.005	0.005	0.250	0.250		
Moustache Sculpin	0.290	0.199	13.250	5.154	10.528	0.606
Northern Shrimp	0.003	0.003	0.250	0.250		
Ocean Pout	0.008	0.008	0.250	0.250	22.000	
Octopus (unclass.)	0.130	0.066	5.000	2.799	12.900	0.699
Pollock	0.145	0.109	0.750	0.479	20.667	6.173
Radiated Shanny	0.015	0.009	0.750	0.479	11.667	0.882
Red Hake	0.733	0.246	11.250	3.902	17.200	1.823
Rock Crab	0.060	0.060	0.250	0.250	8.667	1.211
Rough Scad	0.015	0.015	0.500	0.500	11.500	0.500
Scup	0.005	0.005	0.250	0.250	12.000	
Sea Raven	3.825	1.557	17.250	8.538	19.710	1.628
Sea Scallop	0.183	0.153	1.750	0.479	6.571	1.716
Sevenspine Bay Shrimp	0.033	0.014	22.250	12.466		
Silver hake	1.260	0.676	82.750	49.026	13.039	1.078
Smooth Skate	0.730	0.730	1.250	1.250	45.000	3.706
Spiny Dogfish	0.940	0.940	0.500	0.500	79.500	0.500
Spiny Lebbeid	0.008	0.008	1.000	1.000		
Starfish (unclass.)	0.048	0.026	2.750	1.377		
Thorny Skate	0.430	0.430	0.750	0.750	34.333	9.939
Toad Crab	0.010	0.007	1.500	0.957	2.000	0.816
Waved Astarte	0.005	0.005	0.250	0.250		
White Hake	3.208	0.753	33.500	4.173	21.806	1.167

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Survey Results Fall 2002

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Windowpane	0.080	0.052	1.250	0.750	15.000	3.017
Winter Flounder	3.883	0.603	66.000	10.840	16.492	1.001
Winter Skate	1.750	0.898	2.250	1.031	45.000	1.592
Witch Flounder	0.015	0.015	0.250	0.250	22.000	
					CL (mm) (+/- mm)	
American Lobster	33.293	7.388	156.750	21.623	60.106	0.007
Region 5						
Stratum 3						
Acadian Redfish	0.007	0.005	0.222	0.147	10.500	1.500
Aesop Shrimp	0.309	0.161	94.222	47.852		
Alewife	0.697	0.552	14.778	10.455	15.485	0.962
Alligatorfish	0.002	0.001	0.222	0.147	9.000	1.000
American Plaice	0.080	0.039	1.444	0.669	18.308	0.941
Atlantic Cod	1.464	0.885	1.778	0.894	37.813	4.788
Atlantic Herring	0.069	0.026	1.556	0.503	16.308	1.246
Atlantic Mackerel	0.446	0.337	2.444	1.966	27.682	0.919
Atlantic Menhaden	0.006	0.003	0.556	0.294	7.400	0.447
Blue Mussel	0.001	0.001	0.111	0.111		
Blueback Herring	0.002	0.002	0.111	0.111	15.000	
Boreal Asterias	1.303	0.957	5.333	5.209		
Bristled Longbeak	0.489	0.145	166.333	48.424		
Butterfish	0.013	0.013	0.222	0.222	13.500	1.500
Euphausid Shrimp	0.020	0.016	4.333	3.358		
Fourbeard Rockling	0.077	0.029	1.667	0.850	20.933	0.767
Fourspot Flounder	0.001	0.001	0.111	0.111	8.000	
Goosefish	0.221	0.102	1.111	0.754	17.600	5.128
Haddock	0.278	0.254	0.444	0.294	35.250	8.097
Hermit Crab (unclass.)	0.013	0.013	0.222	0.222		
Horse Mussel	0.001	0.001	0.111	0.111	3.000	
Jonah Crab	5.312	2.166	27.444	11.507	10.877	0.518
Little Skate	2.047	0.793	2.778	1.128	43.120	2.796
Longfin Squid	0.003	0.002	0.222	0.147	5.000	2.000
Longhorn Sculpin	7.304	1.864	77.333	22.521	20.478	0.787
Lumpfish	0.006	0.006	0.111	0.111	13.000	
Moustache Sculpin	0.004	0.004	0.111	0.111	15.000	
Northern Cardita	0.008	0.007	1.444	1.324	1.000	
Northern Shrimp	0.157	0.123	21.444	16.081		
Ocean Quahog	0.272	0.259	11.556	10.937	4.667	0.577
Octopus (unclass.)	0.011	0.011	0.222	0.222	13.500	0.500
Pollock	0.040	0.030	0.222	0.147	28.500	0.500
Red Hake	1.687	0.717	17.222	7.127	23.142	1.142
Rock Crab	0.240	0.087	1.556	0.580	10.214	0.575

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Survey Results Fall 2002

	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
	Weight	(+/-)	Number	(+/-)	Length	(+/-)
	(kg)	(kg)			(cm)	(cm)
Scup	0.051	0.036	1.222	0.703	11.364	1.336
Sea Raven	3.667	2.589	4.556	3.127	32.902	1.451
Sea Scallop	0.211	0.178	3.222	2.228	7.690	0.897
Sea Urchin	0.071	0.071	0.667	0.667		
Sevenspine Bay Shrimp	0.013	0.007	7.444	4.741		
Shortfin Squid	0.032	0.027	0.222	0.147	16.500	3.500
Shorthorn Sculpin	0.009	0.009	0.111	0.111	14.000	
Silver hake	1.627	0.481	65.222	18.693	14.300	1.098
Smooth Skate	0.653	0.299	0.778	0.278	50.000	0.816
Spiny Dogfish	2.776	1.791	1.333	0.745	77.917	2.708
Starfish (unclass.)	0.342	0.156	0.222	0.147		
Thorny Skate	1.329	0.777	2.333	1.518	33.238	3.249
Toad Crab	0.003	0.002	0.333	0.236	2.000	0.000
Waved Astarte	0.012	0.010	2.889	2.643	2.000	1.000
White Hake	4.886	0.979	42.444	7.211	24.592	0.671
Windowpane	0.113	0.069	1.444	0.709	20.154	0.787
Winter Flounder	12.417	5.185	90.333	39.286	21.347	1.046
Winter Skate	0.606	0.453	1.333	1.093	40.417	1.202
Witch Flounder	0.298	0.179	6.556	3.986	20.407	0.811
Yellowtail Flounder	0.136	0.111	0.556	0.444	32.200	0.663
					CL (mm) (+/- mm)	
American Lobster	16.359	4.074	39.444	11.441	77.515	0.011

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Survey Catch Summaries

Survey Results Spring 2003

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Region 1						
Stratum 1						
Acadian Redfish	0.005	0.005	0.250	0.250	13.000	
Aesop Shrimp	0.003	0.003	0.250	0.250		
Alewife	0.130	0.130	3.250	3.250	15.000	
American Plaice	0.050	0.025	1.750	0.854	16.000	0.632
Anemone	0.015	0.015	0.500	0.500		
Atlantic Cod	1.060	0.796	4.750	2.750	18.684	0.989
Atlantic Herring	192.593	92.783	4976.500	3116.359	14.580	9.400
Atlantic Shad	3.905	2.194	304.250	173.671	10.597	1.823
Blueback Herring	4.633	2.311	528.500	258.091	10.933	4.010
Bristled Longbeak	0.003	0.003	0.250	0.250		
Jonah Crab	0.058	0.054	0.500	0.289	7.000	4.000
Little Skate	0.675	0.421	0.750	0.479	49.333	2.404
Longhorn Sculpin	7.970	3.154	63.000	26.420	23.096	1.012
Ocean Pout	0.553	0.467	0.750	0.479	54.000	8.718
Pollock	0.140	0.062	2.000	1.080	17.875	1.125
Rainbow Smelt	0.060	0.038	5.000	4.359	11.400	1.831
Red Hake	0.193	0.129	6.250	3.376	16.000	1.327
Rock Crab	0.230	0.198	3.750	3.425	7.533	1.178
Sand Dollar	0.015	0.015	1.500	1.500		
Sea Raven	1.825	1.427	3.500	2.843	30.071	2.520
Sea Scallop	0.003	0.003	0.250	0.250	3.000	
Sevenspine Bay Shrimp	0.003	0.003	0.250	0.250		
Silver Hake	0.020	0.020	0.500	0.500	14.500	1.500
Starfish (unclass.)	0.030	0.030	0.750	0.750		
White Hake	0.030	0.030	0.250	0.250	23.000	
Windowpane	0.060	0.048	1.500	0.866	12.667	3.077
Winter Flounder	2.490	0.890	25.500	6.813	17.598	1.145
Yellowtail Flounder	0.320	0.320	1.000	1.000	33.750	1.797
					CL (mm) (+/- mm)	
American Lobster	8.730	3.730	32.250	13.689	68.915	0.024
Region 1						
Stratum 2						
Acadian Redfish	0.082	0.055	2.200	1.463	13.091	0.875
Aesop Shrimp	0.050	0.025	18.800	10.322		
Alewife	0.116	0.063	3.200	1.985	15.813	0.621
Alligatorfish	0.008	0.008	0.800	0.800	11.000	0.913
American Plaice	8.616	1.322	175.400	19.159	16.815	1.465
Atlantic Cod	0.996	0.592	1.800	0.860	31.333	6.420
Atlantic Halibut	0.032	0.032	0.200	0.200	27.000	
Atlantic Herring	68.460	14.154	1507.200	398.594	17.056	3.992

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	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Atlantic Shad	11.228	6.271	567.400	347.243	11.652	2.638
Atlantic Sturgeon	3.500	3.500	0.200	0.200	152.000	
Blueback Herring	1.434	0.669	52.000	32.006	13.622	1.102
Boreal Asterias	0.020	0.020	0.400	0.400		
Bristled Longbeak	0.718	0.168	272.800	69.824		
Cunner	0.016	0.016	0.200	0.200	13.000	
Daubed Shanny	0.014	0.006	0.800	0.374	12.000	0.408
Fourbeard Rockling	0.012	0.012	0.200	0.200	23.000	
Fourspot Flounder	0.058	0.058	0.400	0.400	24.000	8.000
Goosefish	0.236	0.122	1.200	0.200	19.667	3.148
Haddock	0.792	0.519	1.000	0.632	40.200	6.837
Jonah Crab	0.156	0.072	0.800	0.374	10.500	1.258
Little Skate	1.790	0.377	2.200	0.374	48.000	1.293
Longhorn Sculpin	13.428	1.745	171.000	8.608	19.300	1.418
Mantis Shrimp	0.010	0.010	0.200	0.200		
Northern Shrimp	0.328	0.209	63.800	42.112		
Ocean Pout	0.300	0.144	2.800	1.497	28.786	1.819
Pollock	0.044	0.031	0.600	0.400	19.667	0.882
Red Hake	1.336	0.402	28.200	7.060	18.191	1.240
Sea Raven	0.976	0.327	2.400	0.748	25.250	2.226
Sea Scallop	0.022	0.020	0.400	0.245	8.000	2.000
Silver Hake	2.962	0.971	116.000	34.946	15.633	1.235
Thorny Skate	0.004	0.004	0.200	0.200	14.000	
White Hake	0.068	0.068	1.200	1.200	19.500	1.893
Windowpane	0.104	0.069	3.000	1.897	14.533	0.728
Winter Flounder	4.626	1.870	45.000	13.217	19.636	1.032
Yellowtail Flounder	3.924	1.493	14.000	4.743	31.282	0.905
					CL (mm) (+/- mm)	
American Lobster	20.292	5.194	88.800	29.664	65.039	0.008
Region 1						
Stratum 3						
Acadian Redfish	2.093	1.708	32.667	27.283	16.163	1.082
Aesop Shrimp	0.208	0.069	31.500	13.053		
Alewife	0.037	0.020	1.333	0.803	14.875	0.793
Alligatorfish	0.002	0.002	0.167	0.167	13.000	
American Plaice	23.120	3.689	661.667	280.466	21.245	2.693
Anemone	0.008	0.008	0.167	0.167		
Atlantic Cod	3.825	1.826	2.333	0.715	48.857	6.326
Atlantic Herring	11.560	3.087	118.167	30.375	21.499	1.733
Atlantic Shad	3.770	1.037	109.333	16.584	12.970	1.649
Blueback Herring	0.642	0.331	7.167	1.621	17.419	1.275
Bristled Longbeak	0.960	0.117	447.500	55.511		

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Survey Results Spring 2003

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Cunner	0.025	0.025	0.167	0.167	21.000	
Fourbeard Rockling	0.037	0.017	1.167	0.543	22.286	1.454
Fourspot Flounder	1.513	1.482	0.667	0.494	32.000	2.415
Goosefish	1.237	0.615	3.167	0.872	26.158	2.327
Green Sea Urchin	0.002	0.002	0.167	0.167	2.000	
Haddock	5.177	3.267	6.833	4.438	42.100	1.645
Hookear Sculpin (unclass.)	0.002	0.002	0.167	0.167	8.000	
Jonah Crab	0.072	0.058	0.500	0.224	8.333	2.963
Little Skate	0.210	0.210	0.167	0.167	52.000	
Longhorn Sculpin	2.323	0.690	19.833	5.764	21.748	0.763
Northern Shrimp	7.617	2.500	1416.333	427.107		
Ocean Pout	0.120	0.098	0.500	0.342	34.000	10.214
Pollock	0.093	0.061	1.500	1.118	18.778	1.544
Red Hake	2.300	0.702	19.667	5.110	25.966	1.071
Sea Raven	0.213	0.213	0.333	0.333	28.500	1.500
Sea Scallop	0.092	0.082	0.500	0.224	9.667	3.180
Sevenspine Bay Shrimp	0.002	0.002	0.333	0.333		
Silver Hake	7.492	1.877	300.500	73.807	15.028	1.732
Smooth Skate	0.265	0.172	0.333	0.211	54.500	3.500
Snakeblenny	0.013	0.008	0.833	0.543	27.800	5.203
Snow Crab	0.008	0.008	0.167	0.167	5.000	
Starfish (unclass.)	5.142	5.104	2.833	2.056		
Thorny Skate	1.872	1.097	1.167	0.477	48.571	8.479
White Hake	0.257	0.108	2.333	1.022	22.857	0.773
Windowpane	0.013	0.013	0.500	0.500	15.000	1.732
Winter Flounder	2.120	0.547	8.500	1.586	26.000	0.904
Witch Flounder	0.282	0.180	4.167	1.493	18.280	3.542
Yellowtail Flounder	4.453	1.295	17.667	5.018	30.745	0.701
					CL (mm) (+/- mm)	
American Lobster	4.392	1.322	15.667	5.852	70.649	0.036
Region 1						
Stratum 4						
Acadian Redfish	3.432	2.589	54.800	44.072	15.175	1.375
Aesop Shrimp	0.160	0.160	36.000	36.000		
American Plaice	7.276	2.093	58.800	15.438	23.351	1.210
Anemone	0.044	0.044	0.000	0.000		
Atlantic Cod	2.412	1.246	1.000	0.316	62.200	8.749
Atlantic Herring	2.150	1.029	29.800	19.369	19.275	1.785
Atlantic Shad	1.204	0.551	17.000	5.301	15.329	2.004
Blueback Herring	0.040	0.040	0.400	0.400	19.000	6.000
Bristled Longbeak	0.548	0.464	255.600	216.967		
Euphausiid Shrimp	0.038	0.038	109.800	109.800		

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	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Fourbeard Rockling	0.004	0.004	0.200	0.200	18.000	
Fourspot Flounder	0.050	0.050	0.400	0.400	25.500	0.500
Goosefish	1.418	0.437	2.600	0.748	29.692	2.360
Gulf Stream Flounder	0.006	0.006	0.200	0.200	15.000	
Haddock	1.800	1.640	1.800	1.562	45.889	1.486
Hagfish	0.008	0.008	0.200	0.200		
Jonah Crab	0.252	0.135	1.600	0.927	9.750	1.048
Little Skate	0.136	0.136	0.200	0.200	45.000	
Longhorn Sculpin	0.276	0.229	2.400	2.159	22.083	1.797
Lumpfish	0.072	0.072	0.200	0.200	16.000	
Northern Shrimp	12.540	2.349	2084.800	601.896		
Northern Stone Crab	0.048	0.048	0.200	0.200	10.000	
Ocean Pout	0.012	0.012	0.200	0.200	22.000	
Ocean Quahog	0.004	0.004	0.200	0.200		
Pollock	0.452	0.442	8.000	7.752	18.600	1.358
Red Crab	1.312	1.312	0.600	0.600	10.000	1.732
Red Hake	6.974	1.902	41.600	13.851	29.319	0.930
Rock Crab	0.024	0.024	0.400	0.400	8.000	2.000
Sea Raven	0.528	0.528	0.800	0.800	28.000	4.416
Sea Scallop	0.096	0.047	3.600	1.288	5.278	0.861
Silver Hake	12.398	5.942	396.600	221.670	15.617	2.997
Smooth Skate	0.428	0.292	0.600	0.400	52.667	2.186
Snow Crab	0.084	0.084	0.200	0.200	11.000	
Starfish (unclass.)	0.360	0.244	0.000	0.000		
Thorny Skate	1.060	0.674	0.400	0.245	63.500	3.500
White Hake	0.980	0.315	6.400	2.502	26.906	1.170
Winter Flounder	0.488	0.239	2.200	1.281	28.750	4.768
Witch Flounder	0.824	0.264	6.000	1.449	27.433	1.454
Wrymouth	0.232	0.232	0.200	0.200	76.000	
Yellowtail Flounder	0.604	0.493	2.200	1.960	32.545	1.326
					CL (mm) (+/- mm)	
American Lobster	0.898	0.569	1.400	0.927	89.143	0.518
Region 2						
Stratum 1						
Aesop Shrimp	0.085	0.079	28.000	27.012		
Alewife	0.025	0.025	1.000	1.000	14.333	0.667
American Eel	0.037	0.037	0.333	0.333		
American Plaice	0.040	0.036	0.333	0.211	23.000	8.000
Anemone	0.007	0.007	0.167	0.167		
Atlantic Cod	0.222	0.139	4.500	2.630	17.231	0.933
Atlantic Halibut	0.050	0.050	0.167	0.167	32.000	
Atlantic Herring	145.030	60.792	8742.167	3789.553	12.697	9.963

Appendix C
Survey Catch Summaries

Survey Results Spring 2003

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Atlantic Shad	9.440	5.421	220.667	77.126	10.810	4.476
Blue Mussel	0.010	0.010	0.333	0.333		
Blueback Herring	2.060	1.426	94.000	64.310	11.000	3.671
Bristled Longbeak	0.002	0.002	0.667	0.667		
Green Sea Urchin	0.002	0.002	0.167	0.167		
Jonah Crab	0.080	0.057	0.833	0.654	7.600	1.806
Little Skate	0.183	0.183	0.167	0.167	52.000	
Longhorn Sculpin	2.497	1.237	20.500	10.164	22.165	1.078
Northern Shrimp	0.013	0.013	1.667	1.667		
Pollock	0.053	0.034	0.833	0.543	19.200	2.083
Radiated Shanny	0.008	0.007	0.500	0.342		
Rainbow Smelt	0.152	0.070	4.833	2.023	16.069	0.665
Red Hake	0.060	0.041	1.500	0.806	16.444	2.049
Rock Crab	0.238	0.097	2.500	0.806	7.933	1.004
Sand Dollar	0.287	0.260	25.833	23.515		
Sea Raven	0.010	0.010	0.167	0.167	18.000	
Sea Scallop	0.003	0.003	0.333	0.333	4.500	1.500
Sea Sponges	0.113	0.113	0.167	0.167		
Sevenspine Bay Shrimp	0.010	0.008	2.500	1.962		
Starfish (unclass.)	0.003	0.003	0.000	0.000		
Thorny Skate	0.003	0.003	0.167	0.167	11.000	
Toad Crab	0.010	0.010	0.167	0.167	3.000	
White Hake	0.017	0.017	0.167	0.167	25.000	
Windowpane	0.110	0.064	2.833	2.242	12.235	1.975
Winter Flounder	3.170	1.762	46.500	26.516	15.631	1.105
Yellowtail Flounder	0.037	0.023	0.500	0.342	21.667	1.333
					CL (mm) (+/- mm)	
American Lobster	21.675	6.096	78.167	19.736	68.415	0.007
Region 2						
Stratum 2						
Acadian Redfish	0.024	0.024	0.600	0.600	14.667	0.882
Aesop Shrimp	0.720	0.370	316.400	121.748		
Alewife	0.098	0.040	2.800	1.463	14.000	0.378
American Plaice	4.030	1.365	73.800	17.998	17.775	1.269
Atlantic Cod	1.574	1.542	0.800	0.200	34.750	18.126
Atlantic Herring	20.272	8.530	1330.000	586.034	13.424	3.555
Atlantic Shad	11.996	3.125	338.400	97.663	12.077	3.395
Atlantic Sturgeon	1.924	1.924	0.200	0.200	125.000	
Blue Mussel	0.006	0.006	0.400	0.400		
Blueback Herring	1.654	0.923	64.400	38.207	13.061	1.555
Bristled Longbeak	0.662	0.321	343.600	189.369		
Euphausiid Shrimp	0.006	0.006	6.600	6.600		

Appendix C
Survey Catch Summaries

Survey Results Spring 2003

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Goosefish	0.010	0.010	0.200	0.200	14.000	
Jonah Crab	0.116	0.097	0.400	0.245	12.000	2.000
Little Skate	0.812	0.465	1.200	0.583	43.500	3.063
Longhorn Sculpin	9.592	3.017	150.400	49.759	18.445	1.168
Northern Shrimp	0.374	0.335	44.400	39.240		
Rainbow Smelt	0.010	0.010	0.200	0.200	16.000	
Red Hake	0.160	0.046	8.600	2.015	14.744	0.749
Sea Raven	0.052	0.052	0.200	0.200	22.000	
Sevenspine Bay Shrimp	0.014	0.007	3.400	1.778		
Silver Hake	0.232	0.103	12.600	5.997	13.778	0.653
White Hake	0.012	0.012	0.200	0.200	20.000	
Windowpane	0.450	0.187	19.000	9.333	11.947	1.016
Winter Flounder	1.452	0.357	19.000	5.568	17.705	0.832
Yellowtail Flounder	0.056	0.056	0.200	0.200	33.000	
					CL (mm) (+/- mm)	
American Lobster	28.046	6.080	145.200	30.266	61.559	0.005
Region 2						
Stratum 3						
Acadian Redfish	0.460	0.252	8.800	4.663	15.159	0.639
Aesop Shrimp	3.990	1.764	1411.000	583.960		
Alewife	0.008	0.008	0.200	0.200	15.000	
American Plaice	11.172	5.784	72.800	28.767	25.104	1.524
Anemone	0.070	0.060	0.400	0.245		
Atlantic Cod	0.658	0.575	0.400	0.245	50.500	16.500
Atlantic Herring	1.352	0.742	44.200	25.711	14.738	1.234
Atlantic Shad	3.244	1.277	48.200	22.030	14.963	2.124
Blueback Herring	0.082	0.052	2.000	1.517	13.400	1.863
Bristled Longbeak	3.006	0.670	1614.600	404.435		
Cusk	0.216	0.216	0.200	0.200	47.000	
Euphausiid Shrimp	0.102	0.092	76.800	53.087		
Fourbeard Rockling	0.070	0.026	1.800	0.860	20.333	1.093
Goosefish	1.920	1.281	2.600	1.661	25.692	7.099
Haddock	0.176	0.176	0.200	0.200	45.000	
Jonah Crab	0.544	0.333	2.400	1.600	11.083	0.801
Little Skate	0.724	0.216	0.800	0.200	48.250	1.315
Longhorn Sculpin	3.164	1.248	29.400	9.605	21.231	0.981
Northern Shrimp	8.442	3.498	2132.000	727.288		
Ocean Pout	0.056	0.056	0.200	0.200	43.000	
Pollock	0.008	0.008	0.200	0.200	17.000	
Red Hake	0.444	0.103	6.200	1.463	20.935	1.469
Sea Raven	0.132	0.132	0.200	0.200	35.000	
Sea Scallop	0.606	0.410	7.200	4.420	8.054	0.831

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Survey Catch Summaries

Survey Results Spring 2003

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Sevenspine Bay Shrimp	0.032	0.012	36.800	17.304		
Silver Hake	6.280	3.146	299.000	147.772	14.972	1.522
Snow Crab	0.004	0.004	0.200	0.200		
Starfish (unclass.)	0.574	0.569	0.400	0.400		
White Hake	0.076	0.049	0.600	0.400	24.333	2.333
Windowpane	0.166	0.079	1.400	0.400	16.857	2.072
Winter Flounder	0.452	0.250	2.800	1.463	21.143	2.276
Winter Skate	0.080	0.080	0.200	0.200	40.000	
Witch Flounder	0.004	0.004	0.400	0.400	10.500	0.500
Wrymouth	0.052	0.033	0.600	0.400	34.667	0.333
Yellowtail Flounder	0.060	0.046	0.400	0.245	27.500	3.500
					CL (mm) (+/- mm)	
American Lobster	2.748	0.888	6.400	1.631	76.906	0.122
Region 2						
Stratum 4						
Acadian Redfish	1.788	0.849	28.600	13.212	16.287	1.044
Aesop Shrimp	1.314	0.507	376.200	173.043		
American Plaice	8.970	4.428	49.200	24.424	26.785	1.366
Anemone	0.012	0.012	0.200	0.200		
Atlantic Cod	0.876	0.557	0.600	0.400	54.000	1.528
Atlantic Herring	1.594	0.686	211.000	195.535	15.009	2.236
Atlantic Shad	3.676	2.223	24.600	10.586	21.228	2.210
Ax Head Clam	0.526	0.329	63.400	41.085		
Blueback Herring	0.028	0.023	0.400	0.245	17.500	5.500
Bristled Longbeak	0.546	0.174	247.200	85.672		
Euphausiid Shrimp	0.012	0.010	28.000	18.276		
False Quahog	0.012	0.012	3.200	3.200		
Fourbeard Rockling	0.384	0.179	9.600	4.501	20.188	1.245
Fourspot Flounder	0.048	0.048	0.200	0.200	35.000	
Goosefish	2.150	1.535	2.800	0.970	27.071	3.864
Greenland Halibut	0.036	0.036	0.200	0.200	27.000	
Haddock	0.216	0.216	0.200	0.200	48.000	
Jonah Crab	1.990	0.934	10.000	5.030	10.300	0.752
Little Skate	0.452	0.345	0.400	0.245	42.500	2.500
Longhorn Sculpin	0.268	0.160	2.200	1.200	23.091	1.476
Northern Shrimp	13.392	2.184	2533.800	450.692		
Northern Stone Crab	0.288	0.200	0.600	0.400	13.000	
Ocean Quahog	0.008	0.008	0.200	0.200		
Rat-Tail Cucumber	0.004	0.004	0.200	0.200		
Red Hake	0.528	0.162	5.000	1.414	25.800	1.188
Sea Raven	0.258	0.225	0.600	0.400	27.333	3.480
Sea Scallop	1.536	0.680	36.200	14.161	6.569	0.994

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Survey Catch Summaries

Survey Results Spring 2003

	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
	Weight	(+/-)	Number	(+/-)	Length	(+/-)
	(kg)	(kg)			(cm)	(cm)
Sea Sponges	0.194	0.192	0.400	0.400		
Sevenspine Bay Shrimp	0.002	0.002	1.600	1.600		
Silver Hake	11.964	3.539	523.600	180.121	14.752	2.553
Snow Crab	0.128	0.077	1.000	0.447	6.600	1.329
Starfish (unclass.)	32.514	19.860	10.800	8.139		
Thorny Skate	0.328	0.328	0.400	0.400	35.500	19.500
Waved Astarte	0.250	0.153	92.800	57.918		
White Hake	0.286	0.276	1.600	1.364	28.125	1.515
Windowpane	0.024	0.012	1.000	0.447	15.200	0.860
Winter Flounder	0.234	0.199	1.200	0.800	22.500	4.612
Winter Skate	0.424	0.424	0.200	0.200	60.000	
Witch Flounder	0.342	0.305	4.600	2.857	21.348	1.699
Wolf Eelpout	0.004	0.004	0.200	0.200	10.000	
Wrymouth	0.722	0.315	9.600	5.706	28.625	2.892
Yellowtail Flounder	0.270	0.184	1.200	0.970	30.667	2.539
					CL (mm) (+/- mm)	
American Lobster	0.456	0.456	0.400	0.400	110.000	2.452
Region 3						
Stratum 1						
Aesop Shrimp	3.580	1.342	1665.500	609.587		
Alligatorfish	0.008	0.005	1.000	0.707	9.250	0.854
American Plaice	0.035	0.029	0.500	0.289	19.000	7.000
Anemone	0.063	0.056	3.750	3.119		
Atlantic Herring	27.168	11.056	2060.750	745.447	12.015	5.904
Atlantic Shad	0.250	0.205	30.500	22.078	9.213	0.937
Ax Head Clam	0.010	0.010	0.250	0.250		
Blueback Herring	0.045	0.029	8.500	5.694	8.543	0.679
Boreal Asterias	0.015	0.015	1.750	1.750		
Bristled Longbeak	0.425	0.187	285.000	130.285		
False Quahog	0.008	0.008	1.000	1.000		
Green Sea Urchin	0.003	0.003	0.750	0.750		
Greenland Shrimp	0.033	0.017	6.750	3.400		
Jonah Crab	0.265	0.265	1.250	1.250	11.000	0.707
Longhorn Sculpin	1.690	1.690	27.500	27.500	17.436	2.108
Moustache Sculpin	0.005	0.005	0.250	0.250	12.000	
Northern Cardita	0.020	0.020	3.000	3.000		
Northern Shrimp	0.005	0.005	0.500	0.500		
Ocean Quahog	0.008	0.008	0.250	0.250		
Parrot Shrimp	0.003	0.003	0.500	0.500		
Pollock	0.010	0.007	0.500	0.289	10.500	6.500
Propinquus	0.005	0.003	3.000	1.915		
Radiated Shanny	0.003	0.003	0.250	0.250	9.000	

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Survey Catch Summaries

Survey Results Spring 2003

	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
	Weight	(+/-)	Number	(+/-)	Length	(+/-)
	(kg)	(kg)			(cm)	(cm)
Rainbow Smelt	0.008	0.008	0.750	0.750	13.000	
Red Hake	0.215	0.164	12.750	10.467	14.137	0.991
Rock Crab	4.558	1.355	32.500	9.734	9.377	0.718
Sea Cucumber	0.255	0.255	0.500	0.500		
Sea Raven	0.680	0.680	2.500	2.500	20.300	3.480
Sea Scallop	0.128	0.087	6.250	4.479	4.600	1.069
Sevenspine Bay Shrimp	0.658	0.370	365.500	122.232		
Shorthorn Sculpin	0.080	0.080	0.750	0.750	19.667	0.882
Silver Hake	0.123	0.088	5.000	3.719	15.800	0.890
Snakeblenny	0.030	0.030	2.250	2.250	27.000	1.496
Starfish (unclass.)	0.825	0.617	7.250	7.250		
Toad Crab	0.015	0.010	3.500	2.598	2.545	1.168
Waved Astarte	0.113	0.113	15.000	15.000		
Windowpane	0.190	0.081	16.000	5.323	9.375	0.673
Winter Flounder	1.580	0.600	26.250	11.665	15.800	1.067
Wrymouth	0.025	0.017	3.500	2.021	14.286	1.122
					CL (mm) (+/- mm)	
American Lobster	21.623	20.715	78.000	76.008	69.237	0.010
Region 3						
Stratum 2						
Aesop Shrimp	3.307	1.195	1296.500	508.928		
Alewife	0.007	0.007	0.167	0.167	13.000	
American Plaice	0.913	0.550	24.500	16.264	16.748	1.217
Atlantic Halibut	0.020	0.020	0.167	0.167	25.000	
Atlantic Herring	19.125	18.838	1270.833	1252.100	12.028	3.535
Atlantic Shad	0.317	0.059	23.000	3.651	10.348	0.683
Blueback Herring	0.060	0.039	2.500	1.432	10.818	1.289
Boreal Asterias	0.303	0.118	1.000	1.000		
Bristled Longbeak	0.360	0.165	185.000	96.930		
Euphausiid Shrimp	0.008	0.005	12.833	7.097		
False Quahog	0.005	0.005	0.167	0.167		
Fourbeard Rockling	0.020	0.014	0.333	0.211	23.000	3.000
Greenland Shrimp	0.010	0.010	11.000	11.000		
Jonah Crab	0.140	0.140	0.500	0.500	11.333	1.856
Little Skate	0.153	0.153	0.167	0.167	48.000	
Longhorn Sculpin	2.917	1.743	43.167	27.108	18.514	1.692
Northern Shrimp	0.190	0.095	30.167	18.344		
Pollock	0.007	0.007	0.167	0.167	16.000	
Red Hake	0.237	0.098	9.000	3.376	15.796	0.974
Rock Crab	1.550	0.681	10.667	4.745	9.813	0.571
Sea Raven	0.655	0.518	2.000	1.366	23.333	2.177
Sevenspine Bay Shrimp	0.230	0.102	267.833	170.072		

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Survey Results Spring 2003

	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
	Weight	(+/-)	Number	(+/-)	Length	(+/-)
	(kg)	(kg)			(cm)	(cm)
Shorthorn Sculpin	0.113	0.113	0.167	0.167	31.000	
Silver Hake	1.032	0.379	46.833	16.400	15.263	0.769
Snakeblenny	0.005	0.005	0.333	0.333	21.000	1.000
Starfish (unclass.)	12.540	12.167	0.000	0.000		
Toad Crab	0.007	0.007	0.833	0.833		
White Hake	0.030	0.020	0.500	0.342	21.000	1.155
Windowpane	0.487	0.169	39.500	15.579	9.801	0.647
Winter Flounder	0.288	0.164	5.500	2.941	16.091	1.065
Wrymouth	0.047	0.021	0.667	0.211	28.250	4.661
					CL (mm) (+/- mm)	
American Lobster	26.695	13.696	104.833	60.706	66.433	0.006
Region 3						
Stratum 3						
Acadian Redfish	0.123	0.037	3.333	1.145	12.550	0.993
Aesop Shrimp	2.617	0.641	694.167	150.161		
Alewife	0.098	0.038	3.667	1.563	14.591	0.438
Alligatorfish	0.007	0.004	0.500	0.342	11.333	0.882
American Plaice	2.048	0.520	22.500	5.898	21.141	0.959
Anemone	0.003	0.003	0.167	0.167		
Atlantic Cod	0.032	0.023	0.333	0.211	21.000	3.000
Atlantic Halibut	0.060	0.060	0.167	0.167	34.000	
Atlantic Herring	0.687	0.292	31.667	11.462	13.636	0.625
Atlantic Shad	1.477	0.679	78.333	37.947	11.323	1.220
Blueback Herring	0.065	0.033	2.167	0.980	14.000	1.424
Boreal Asterias	1.630	0.622	27.333	15.504		
Bristled Longbeak	3.120	0.694	1172.167	179.527		
Euphausid Shrimp	0.042	0.040	69.500	65.009		
Fourbeard Rockling	0.083	0.045	1.833	1.046	20.273	2.346
Goosefish	0.157	0.050	1.833	0.601	16.091	0.807
Greenland Shrimp	0.005	0.003	0.333	0.211		
Haddock	0.117	0.107	0.333	0.211	28.000	10.000
Hagfish	0.025	0.025	0.167	0.167	35.000	
Jonah Crab	5.247	1.735	25.167	6.770	10.801	0.629
Little Skate	0.093	0.093	0.167	0.167	43.000	
Longhorn Sculpin	12.210	3.510	122.167	30.080	20.655	1.115
Northern Shrimp	0.843	0.337	102.333	34.431		
Octopus (unclass.)	0.003	0.003	0.167	0.167	12.000	
Pearlside	0.005	0.002	0.500	0.224	5.667	0.333
Pollock	0.010	0.010	0.167	0.167	19.000	
Red Hake	0.132	0.042	5.333	1.961	15.563	0.987
Rock Crab	0.147	0.093	1.333	0.843	9.500	0.724
Sea Raven	2.932	0.798	5.833	1.621	27.486	1.253

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Survey Catch Summaries

Survey Results Spring 2003

	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
	Weight	(+/-)	Number	(+/-)	Length	(+/-)
	(kg)	(kg)			(cm)	(cm)
Sea Scallop	0.680	0.562	10.333	7.873	7.431	1.065
Sea Sponges	0.137	0.118	0.333	0.211		
Silver Hake	7.822	3.010	407.333	158.646	14.714	1.602
Snakeblenny	0.067	0.030	4.167	1.579	26.800	0.882
Snow Crab	0.020	0.014	0.667	0.422	5.250	0.479
Starfish (unclass.)	31.555	29.394	0.000	0.000		
Waved Astarte	0.003	0.003	0.667	0.667		
White Hake	0.095	0.043	1.000	0.516	24.000	1.000
Windowpane	0.125	0.058	6.167	2.651	12.568	0.870
Winter Flounder	0.427	0.130	5.333	1.256	18.406	0.901
Wrymouth	0.062	0.062	2.333	2.333	20.714	1.668
Yellowtail Flounder	0.072	0.039	0.500	0.224	26.000	2.887
					CL (mm) (+/- mm)	
American Lobster	10.567	0.701	20.167	3.497	79.388	0.039
Region 3						
Stratum 4						
Acadian Redfish	0.065	0.065	0.250	0.250	25.000	
Aesop Shrimp	0.433	0.083	99.000	39.351		
Alewife	0.180	0.052	5.750	1.250	14.565	0.501
American Plaice	3.245	1.788	15.250	6.700	27.262	1.591
Anemone	0.833	0.654	3.250	1.887		
Atlantic Cod	1.315	0.419	3.500	1.258	34.286	1.505
Atlantic Halibut	0.295	0.295	0.500	0.500	38.500	1.500
Atlantic Herring	0.935	0.488	14.250	5.764	17.982	1.248
Atlantic Shad	2.345	1.016	130.500	64.834	11.549	1.543
Ax Head Clam	0.003	0.003	2.750	2.750		
Blueback Herring	0.080	0.049	3.500	2.363	12.571	0.522
Boreal Asterias	0.030	0.030	2.000	2.000		
Bristled Longbeak	0.483	0.114	197.500	71.284		
Cunner	0.015	0.015	0.250	0.250	19.000	
Euphausiid Shrimp	0.040	0.040	60.000	60.000		
Fourbeard Rockling	0.083	0.059	1.000	0.707	24.750	1.315
Goosefish	0.630	0.506	0.750	0.479	35.000	5.508
Greenland Halibut	0.013	0.008	0.500	0.289	16.000	1.000
Jonah Crab	1.605	0.369	8.750	1.548	10.833	0.595
Little Skate	0.820	0.575	1.000	0.707	48.250	0.479
Longhorn Sculpin	1.270	0.650	11.750	7.250	21.936	1.055
Northern Cardita	0.460	0.453	165.000	164.667		
Northern Shrimp	11.390	3.089	1908.250	611.990		
Ocean Pout	0.135	0.135	0.500	0.500	39.000	6.000
Ocean Quahog	0.700	0.700	19.250	19.250		
Pollock	0.035	0.035	0.250	0.250	24.000	

Appendix C
Survey Catch Summaries

Survey Results Spring 2003

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Red Hake	0.043	0.014	1.750	0.750	15.571	1.429
Rock Crab	0.080	0.080	0.500	0.500	10.000	
Sea Raven	0.935	0.428	1.250	0.479	31.800	0.735
Sea Scallop	0.090	0.057	2.750	2.136	6.182	0.763
Sea Sponges	0.360	0.360	0.000	0.000		
Silver Hake	59.863	28.917	2785.000	1303.847	15.431	4.607
Snakeblenny	0.005	0.005	0.250	0.250	20.000	
Snow Crab	0.005	0.005	0.250	0.250	3.000	
Squid uncl.	0.005	0.005	0.250	0.250	13.000	
Starfish (unclass.)	3.635	3.635	0.000	0.000		
Thorny Skate	0.845	0.845	0.500	0.500	54.500	2.500
Toad Crab	0.005	0.005	0.250	0.250	3.000	
Waved Astarte	6.290	6.233	1250.750	1245.089		
White Hake	0.085	0.085	0.500	0.500	26.500	6.500
Winter Skate	3.980	3.980	0.750	0.750	82.667	3.283
Witch Flounder	0.118	0.065	2.250	1.031	19.000	2.321
Wrymouth	0.020	0.014	0.500	0.289	24.500	9.500
					CL (mm) (+/- mm)	
American Lobster	3.345	1.553	2.750	0.854	106.636	0.383
Region 4						
Stratum 1						
Aesop Shrimp	0.664	0.466	217.000	152.640		
Alewife	0.076	0.066	2.400	2.159	14.000	0.000
Anemone	0.012	0.008	0.600	0.400		
Atlantic Cod	0.096	0.096	0.800	0.800	22.500	1.780
Atlantic Herring	105.886	49.379	7336.600	3811.641	12.093	7.136
Atlantic Shad	0.380	0.231	52.200	35.422	8.644	1.286
Blueback Herring	0.158	0.096	20.800	12.435	9.212	1.770
Boreal Asterias	0.064	0.059	1.600	1.166		
Bristled Longbeak	0.002	0.002	0.400	0.400		
Jonah Crab	0.420	0.234	2.800	1.881	9.786	0.980
Longhorn Sculpin	0.140	0.067	1.200	0.583	21.667	1.202
Rainbow Smelt	0.036	0.017	2.200	1.463	12.455	1.368
Red Hake	0.034	0.019	1.600	0.927	15.375	0.891
Rock Crab	0.776	0.323	6.800	2.332	8.545	0.626
Sand Dollar	0.002	0.002	0.200	0.200		
Sea Cucumber	15.914	10.166	32.600	21.442		
Sea Raven	0.020	0.020	0.200	0.200	17.000	
Sea Sponges	3.772	3.772	0.000	0.000		
Sevenspine Bay Shrimp	0.636	0.262	316.800	131.309		
Shorthorn Sculpin	0.268	0.268	1.000	1.000	21.800	4.803
Silver Hake	0.022	0.016	0.600	0.400	17.000	2.000

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Survey Catch Summaries

Survey Results Spring 2003

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Snakeblenny	0.004	0.004	0.200	0.200	19.000	
Starfish (unclass.)	0.586	0.394	1.600	1.600		
Toad Crab	0.018	0.007	1.200	0.490	2.167	0.585
Windowpane	0.102	0.080	5.200	2.853	10.440	1.512
Winter Flounder	0.918	0.177	15.200	3.367	15.974	0.973
Wrymouth	0.008	0.008	0.200	0.200	30.000	
					CL (mm) (+/- mm)	
American Lobster	26.396	11.818	79.600	36.562	71.737	0.009
Region 4						
Stratum 2						
Acadian Redfish	0.004	0.004	0.200	0.200	13.000	
Aesop Shrimp	13.824	4.947	5135.600	1851.907		
Alewife	0.004	0.004	0.200	0.200	14.000	
Alligatorfish	0.010	0.010	0.800	0.800	12.750	1.837
American Plaice	0.492	0.423	6.000	4.550	20.400	2.110
Anemone	0.008	0.008	0.200	0.200		
Atlantic Halibut	1.160	0.999	0.600	0.400	48.000	14.012
Atlantic Herring	64.512	42.401	4682.600	3045.565	11.951	4.363
Atlantic Mackerel	0.136	0.136	8.400	8.400	42.000	
Atlantic Shad	1.294	0.529	63.200	26.753	10.756	1.409
Blueback Herring	0.176	0.137	4.800	2.200	10.583	0.650
Boreal Asterias	1.624	1.091	0.000	0.000		
Bristled Longbeak	0.372	0.129	128.600	50.581		
Cunner	0.008	0.008	0.200	0.200	17.000	
Fourbeard Rockling	0.008	0.008	0.200	0.200	22.000	
Greenland Shrimp	0.002	0.002	0.200	0.200		
Jonah Crab	0.350	0.195	1.600	0.812	11.000	0.724
Longfin Squid	0.022	0.011	1.400	0.748	7.714	0.884
Longhorn Sculpin	2.940	1.189	44.600	17.716	18.430	0.996
Northern Shrimp	0.452	0.236	75.600	50.698		
Pollock	0.016	0.016	0.200	0.200	20.000	
Rainbow Smelt	0.142	0.110	7.400	5.921	13.595	1.303
Rat-Tail Cucumber	0.032	0.032	0.600	0.600		
Red Hake	0.132	0.113	6.600	5.879	15.394	0.965
Rock Crab	6.526	5.607	41.200	35.514	10.209	1.002
Sea Cucumber	2.712	2.712	5.600	5.600		
Sea Raven	0.124	0.124	0.200	0.200	32.000	
Sevenspine Bay Shrimp	0.226	0.163	249.400	242.215		
Shorthorn Sculpin	0.228	0.153	0.600	0.245	27.000	4.041
Silver Hake	0.944	0.401	40.200	16.880	15.184	0.806
Snakeblenny	0.002	0.002	0.200	0.200	15.000	
Starfish (unclass.)	0.284	0.284	0.000	0.000		

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Survey Results Spring 2003

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Toad Crab	0.008	0.006	1.600	1.364	2.000	
White Hake	0.068	0.047	0.800	0.583	23.250	1.061
Windowpane	0.564	0.117	39.800	9.656	10.357	0.891
Winter Flounder	0.444	0.114	7.000	1.414	16.714	1.151
					CL (mm) (+/- mm)	
American Lobster	10.244	3.193	33.200	10.707	70.157	0.021
Region 4						
Stratum 3						
Acadian Redfish	0.028	0.014	1.000	0.365	12.167	1.662
Aesop Shrimp	2.048	1.241	602.667	361.837		
Alewife	0.057	0.029	2.000	0.931	15.000	0.486
Alligatorfish	0.002	0.002	0.167	0.167	10.000	
American Plaice	1.557	0.318	18.167	2.664	20.390	0.979
Anemone	0.053	0.035	0.333	0.333		
Atlantic Cod	0.268	0.108	0.833	0.307	33.200	1.200
Atlantic Halibut	1.097	1.097	0.500	0.500	53.000	12.530
Atlantic Herring	24.430	12.438	1086.333	611.106	14.236	2.171
Atlantic Shad	1.870	0.442	103.000	24.357	11.295	0.904
Blueback Herring	0.140	0.053	3.500	1.384	14.750	0.917
Boreal Asterias	0.507	0.475	0.833	0.833		
Bristled Longbeak	1.327	0.516	536.667	261.504		
Euphausiid Shrimp	0.180	0.168	10.833	4.996		
Goosefish	0.088	0.043	0.833	0.477	17.200	2.869
Jonah Crab	1.222	0.377	7.500	2.643	9.909	0.702
Little Skate	0.020	0.020	0.167	0.167	29.000	
Longhorn Sculpin	4.195	1.521	60.667	27.383	18.597	0.854
Lumpfish	0.253	0.176	0.500	0.342	21.000	0.000
Northern Cardita	0.003	0.002	0.667	0.422		
Northern Shrimp	0.570	0.403	95.333	71.388		
Ocean Pout	0.020	0.013	0.333	0.211	26.000	1.000
Pearlside	0.002	0.002	0.167	0.167	5.000	
Rainbow Smelt	0.007	0.004	0.333	0.211	15.500	1.500
Red Hake	0.318	0.127	7.667	3.313	17.273	1.282
Sea Raven	1.385	0.296	2.833	0.833	28.294	2.183
Sea Scallop	0.393	0.134	6.333	2.261	7.838	0.468
Silver Hake	35.415	15.372	1518.500	677.993	15.419	3.218
Snakeblenny	0.027	0.019	1.667	1.282	25.500	1.491
Starfish (unclass.)	0.588	0.454	0.333	0.333		
Toad Crab	0.002	0.002	0.167	0.167	2.000	
Waved Astarte	0.007	0.005	1.333	1.145		
White Hake	0.077	0.065	0.833	0.654	23.600	1.749
Windowpane	0.072	0.029	2.667	1.382	13.563	0.929

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	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Winter Flounder	1.118	0.237	14.833	4.715	18.045	0.881
Wolf Eelpout	0.002	0.002	0.167	0.167	9.000	
Yellowtail Flounder	0.010	0.010	0.167	0.167	22.000	
					CL (mm) (+/- mm)	
American Lobster	9.428	1.960	16.833	4.020	80.870	0.048
Region 4						
Stratum 4						
Acadian Redfish	0.050	0.038	1.250	0.750	13.000	1.472
Aesop Shrimp	0.130	0.093	32.500	19.259		
Alewife	0.015	0.010	0.500	0.289	13.000	3.000
American Plaice	2.160	0.233	14.750	3.987	23.644	1.505
Atlantic Cod	0.358	0.338	1.250	0.946	30.600	2.821
Atlantic Herring	1.410	0.337	26.250	5.991	17.409	0.789
Atlantic Shad	0.510	0.222	17.500	6.813	12.686	0.947
Blueback Herring	0.038	0.034	0.500	0.289	16.500	6.500
Bristled Longbeak	0.535	0.196	159.750	51.450		
Euphausiid Shrimp	0.358	0.228	956.000	726.329		
Fourbeard Rockling	0.095	0.038	2.250	0.479	21.000	1.374
Goosefish	0.835	0.482	2.250	1.109	23.333	4.868
Greenland Halibut	0.038	0.024	1.000	0.707	16.750	0.750
Jonah Crab	1.435	0.376	9.000	1.780	10.611	0.469
Little Skate	0.550	0.257	1.000	0.408	44.000	1.354
Longhorn Sculpin	1.675	0.789	18.500	8.539	20.189	0.897
Northern Shrimp	7.133	3.279	1143.500	558.311		
Pearlside	0.003	0.003	0.250	0.250	5.000	
Pollock	0.035	0.024	0.500	0.289	20.500	0.500
Red Hake	0.455	0.151	6.500	1.323	19.538	1.591
Sea Raven	0.820	0.575	1.250	0.750	32.600	3.641
Sea Scallop	0.145	0.104	2.250	1.436	8.000	0.756
Sevenspine Bay Shrimp	0.003	0.003	4.000	4.000		
Silver Hake	32.173	4.920	1297.500	247.174	15.498	3.655
Smooth Skate	0.113	0.113	0.250	0.250	46.000	
Snakeblenny	0.013	0.005	1.000	0.408	25.250	3.449
Snow Crab	0.095	0.095	1.750	1.750	6.000	0.816
Starfish (unclass.)	0.015	0.015	0.000	0.000		
Stimpson's Whelk	0.063	0.063	0.250	0.250	7.000	
Thorny Skate	0.490	0.490	0.250	0.250	60.000	
White Hake	1.255	0.870	7.500	5.268	28.700	0.875
Windowpane	0.155	0.067	1.250	0.629	21.000	3.033
Winter Flounder	0.105	0.092	1.250	0.946	19.600	1.749
Witch Flounder	1.005	0.691	14.000	8.860	22.196	1.668
Yellowtail Flounder	0.045	0.045	0.250	0.250	29.000	

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Survey Results Spring 2003

	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
					CL (mm) (+/- mm)	
Region 5						
American Lobster	4.480	1.236	4.250	0.946	104.412	0.257
Stratum 1						
Aesop Shrimp	0.130	0.090	59.500	36.753		
Alewife	0.005	0.005	0.250	0.250	14.000	
Atlantic Herring	188.825	99.641	13554.750	7083.297	11.963	10.284
Atlantic Shad	1.433	0.949	163.000	124.109	9.573	1.595
Blueback Herring	0.063	0.029	6.000	2.972	14.706	1.166
Bristled Longbeak	0.013	0.013	7.500	7.500		
Goosefish	0.018	0.010	0.500	0.289	12.500	2.500
Green Sea Urchin	0.255	0.255	2.750	2.750		
Jonah Crab	0.120	0.120	0.750	0.750	10.333	0.577
Little Skate	0.060	0.060	0.250	0.250	30.000	
Longfin Squid	0.013	0.013	0.250	0.250	14.000	
Longhorn Sculpin	11.703	9.423	42.250	19.640	17.815	1.256
Lumpfish	0.188	0.188	0.500	0.500	18.500	4.500
Rainbow Smelt	0.018	0.010	0.500	0.289	15.000	2.000
Red Hake	0.113	0.062	2.250	0.750	18.667	2.082
Rock Crab	0.055	0.033	1.250	0.629	9.000	1.354
Sea Cucumber	1.983	1.422	5.500	4.272		
Sea Raven	0.140	0.140	0.250	0.250	29.000	
Sea Sponges	0.055	0.055	0.250	0.250		
Sevenspine Bay Shrimp	0.525	0.213	171.250	70.711		
Shorthorn Sculpin	0.038	0.038	0.750	0.750	17.000	1.732
Silver Hake	0.328	0.116	12.250	4.131	16.063	0.656
Toad Crab	0.008	0.005	0.750	0.479	1.000	
Windowpane	0.125	0.096	9.500	6.614	10.342	0.982
Winter Flounder	1.793	0.784	46.500	34.844	13.276	1.608
					CL (mm) (+/- mm)	
American Lobster	34.733	11.150	123.500	41.961	68.377	0.007
Region 5						
Stratum 2						
Acadian Redfish	0.040	0.040	0.500	0.500	16.500	2.500
Aesop Shrimp	0.605	0.267	196.750	90.326		
Alewife	0.025	0.010	1.000	0.408	14.750	0.479
Alligatorfish	0.043	0.028	23.000	14.300	10.696	1.017
American Plaice	1.133	0.890	10.750	7.004	19.628	2.084
Atlantic Cod	0.205	0.205	1.000	1.000	27.250	3.568
Atlantic Halibut	0.135	0.135	0.500	0.500	31.500	1.500
Atlantic Herring	22.310	17.195	971.250	697.164	13.652	4.325
Atlantic Shad	0.873	0.385	70.250	19.341	10.043	1.114

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	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Barnacle	0.010	0.010	0.250	0.250		
Blueback Herring	0.165	0.129	4.750	1.887	13.368	2.364
Bristled Longbeak	0.145	0.088	54.500	31.661		
Euphausiid Shrimp	0.005	0.003	4.500	4.173		
Goosefish	0.110	0.110	0.250	0.250	33.000	
Haddock	0.135	0.099	1.000	0.707	24.750	1.458
Jonah Crab	1.040	0.561	4.750	1.887	10.684	1.038
Longfin Squid	0.025	0.025	0.500	0.500	11.000	6.000
Longhorn Sculpin	2.718	0.529	39.500	8.818	18.778	0.973
Lumpfish	1.630	1.151	3.000	2.041	21.917	1.043
Northern Shrimp	0.005	0.005	0.250	0.250		
Rainbow Smelt	0.005	0.005	0.250	0.250	18.000	
Red Hake	0.060	0.023	2.750	0.946	16.545	1.230
Rock Crab	0.285	0.131	2.500	0.957	9.556	0.876
Sea Raven	4.398	3.531	10.250	7.941	27.902	1.867
Sea Scallop	0.013	0.009	0.500	0.289		
Sea Sponges	0.583	0.380	0.000	0.000		
Sevenspine Bay Shrimp	0.008	0.005	1.750	1.436		
Silver Hake	2.563	1.549	104.500	59.112	15.033	1.284
Snakeblenny	0.003	0.003	0.250	0.250	26.000	
Thorny Skate	0.025	0.025	0.500	0.500	19.500	0.500
Toad Crab	0.008	0.005	1.750	1.181	1.500	0.500
Waved Astarte	0.003	0.003	0.250	0.250	6.000	3.000
White Hake	0.093	0.044	1.250	0.629	23.400	1.030
Windowpane	0.090	0.061	2.500	1.555	13.700	1.691
Winter Flounder	4.115	1.158	42.000	10.400	18.523	1.192
					CL (mm) (+/- mm)	
American Lobster	15.730	4.077	59.000	19.744	65.786	0.016
Region 5						
Stratum 3						
Acadian Redfish	0.100	0.054	1.000	0.309	18.286	1.924
Aesop Shrimp	0.579	0.137	154.857	31.406		
Alewife	0.024	0.013	0.714	0.360	15.200	0.735
Alligatorfish	0.006	0.003	0.429	0.202	11.333	0.333
American Plaice	0.613	0.346	4.143	1.908	21.724	1.629
Anemone	0.003	0.003	0.286	0.286		
Atlantic Cod	1.460	0.787	3.571	1.863	34.800	0.894
Atlantic Halibut	0.204	0.089	0.857	0.340	30.167	1.424
Atlantic Herring	0.153	0.090	4.143	2.463	14.793	1.149
Atlantic Shad	0.939	0.557	50.286	27.407	11.414	1.008
Blueback Herring	0.079	0.047	1.571	0.812	16.545	1.194
Boreal Asterias	0.229	0.229	0.571	0.571		

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	Mean Weight (kg)	Std. Error (+/-) (kg)	Mean Number	Std. Error (+/-)	Mean Length (cm)	Std. Error (+/-) (cm)
Bristled Longbeak	0.101	0.054	31.714	16.586		
Dogfish	0.009	0.009	0.143	0.143	29.000	
Euphausiid Shrimp	0.031	0.022	3.143	3.143		
Fourbeard Rockling	0.021	0.009	0.714	0.286	21.200	1.562
Fourspot Flounder	0.009	0.009	0.143	0.143	25.000	
Goosefish	0.700	0.544	0.429	0.297	46.667	8.007
Greenland Halibut	0.006	0.006	0.143	0.143	17.000	
Jonah Crab	0.996	0.448	4.571	1.811	11.281	0.546
Little Skate	1.123	0.868	1.857	1.388	41.154	3.908
Longfin Squid	0.047	0.042	0.286	0.184	16.000	7.000
Longhorn Sculpin	3.850	1.392	54.286	22.500	18.903	0.871
Lumpfish	0.903	0.508	1.286	0.680	23.667	0.516
Northern Cardita	0.003	0.003	0.286	0.286		
Northern Shrimp	0.016	0.007	2.000	0.900		
Ocean Pout	0.083	0.050	0.571	0.202	29.500	5.140
Ocean Quahog	0.003	0.003	0.143	0.143		
Pearlside	0.004	0.003	0.571	0.429	4.750	0.354
Red Hake	0.281	0.117	4.286	1.728	21.633	1.380
Rock Crab	0.336	0.282	2.000	1.558	11.000	0.779
Sea Raven	1.359	0.658	2.857	1.471	31.200	1.919
Sea Scallop	0.123	0.077	2.000	1.215	8.429	0.525
Sea Sponges	0.323	0.273	0.000	0.000		
Sevenspine Bay Shrimp	0.009	0.003	5.857	2.272		
Silver Hake	5.163	2.921	227.571	132.101	15.412	1.356
Smooth Skate	0.097	0.097	0.143	0.143	51.000	
Snakeblenny	0.017	0.014	0.857	0.705	28.167	1.833
Starfish (unclass.)	0.637	0.432	4.286	4.286		
Thorny Skate	1.491	0.749	2.857	1.438	34.400	2.915
Toad Crab	0.004	0.003	0.571	0.429	1.500	0.289
White Hake	0.391	0.146	3.000	1.047	25.500	1.094
Windowpane	0.014	0.014	0.286	0.286	14.000	1.000
Winter Flounder	7.190	3.008	40.429	14.747	22.074	1.008
Witch Flounder	0.001	0.001	0.143	0.143	15.000	
Wrymouth	0.004	0.004	0.143	0.143	25.000	
Yellowtail Flounder	0.017	0.017	0.143	0.143	27.000	
					CL (mm) (+/- mm)	
American Lobster	9.040	2.520	24.286	9.800	72.288	0.024
Region 5						
Stratum 4						
Acadian Redfish	0.124	0.065	2.400	1.503	14.167	1.590
Aesop Shrimp	0.040	0.023	10.000	5.586		
Alewife	0.088	0.041	2.400	1.166	15.417	0.424

Appendix C
Survey Catch Summaries

Survey Results Spring 2003

	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
	Weight	(+/-)	Number	(+/-)	Length	(+/-)
	(kg)	(kg)			(cm)	(cm)
American Plaice	0.940	0.910	3.400	2.926	30.706	2.879
Atlantic Cod	4.896	2.985	3.000	1.449	51.600	4.370
Atlantic Herring	0.626	0.413	12.400	8.280	17.097	1.056
Atlantic Shad	1.508	0.655	49.000	25.803	12.878	1.232
Blueback Herring	0.150	0.076	3.000	1.673	16.133	1.143
Bristled Longbeak	0.018	0.012	5.800	3.955		
Dogfish	4.284	3.186	3.200	2.267	59.875	6.319
Euphausiid Shrimp	0.136	0.111	12.800	9.178		
Fourbeard Rockling	0.020	0.020	0.400	0.400	25.000	1.000
Goosefish	1.652	1.215	0.800	0.583	53.500	2.255
Greenland Halibut	0.020	0.020	0.200	0.200	25.000	
Haddock	1.680	1.680	2.000	2.000	42.200	3.479
Jonah Crab	1.324	0.496	5.000	2.168	11.880	0.742
Little Skate	0.312	0.312	0.600	0.600	44.333	2.603
Longfin Squid	0.004	0.004	0.200	0.200	8.000	
Longhorn Sculpin	0.132	0.084	1.000	0.632	23.000	1.483
Lumpfish	0.682	0.390	0.600	0.245	26.333	2.848
Northern Cardita	0.002	0.002	0.400	0.400		
Northern Shrimp	0.142	0.102	15.800	9.620		
Parrot Shrimp	0.002	0.002	0.200	0.200		
Pearlside	0.004	0.002	0.400	0.245	5.500	1.500
Pink Glass Shrimp	0.006	0.004	1.400	0.980		
Pollock	0.540	0.525	0.400	0.245	46.500	27.500
Propinquus	0.002	0.002	1.000	1.000		
Red Hake	0.546	0.396	5.600	2.561	26.931	2.918
Rock Crab	0.022	0.022	0.200	0.200	10.000	
Sea Raven	0.330	0.145	0.600	0.245	30.667	3.180
Sea Sponges	0.030	0.030	0.200	0.200		
Silver Hake	28.580	14.223	1099.600	492.752	15.855	3.407
Spotted Hake	0.012	0.012	0.200	0.200	29.000	
Starfish (unclass.)	0.004	0.004	0.600	0.600		
Thorny Skate	1.796	1.101	1.000	0.632	47.400	8.571
Waved Astarte	0.002	0.002	0.200	0.200		
White Hake	3.004	1.522	10.200	5.389	30.880	2.415
Windowpane	0.056	0.043	0.800	0.583	20.750	0.629
Winter Flounder	1.758	0.803	5.600	2.676	29.643	1.366
Winter Skate	1.640	1.640	0.400	0.400	82.500	2.500
Witch Flounder	2.160	0.891	14.600	7.620	29.027	1.192
					CL (mm) (+/- mm)	
American Lobster	3.490	1.200	4.200	1.241	96.524	0.203

Appendix D

Policy on Release of Trawl Survey Data

When the Maine - New Hampshire Inshore Groundfish Trawl Survey was first proposed, we made a commitment to do everything legally and reasonably possible to not “harm” local fishing communities. Concern was raised at a Downeast Lobstermen Association meeting where it was suggested that release of detailed data and information from individual tows might result in economic loss to small Downeast fishing communities. The fear was that boats not from the area would take advantage of stock abundance knowledge to the detriment of the small communities.

Withholding publicly collected data on a publicly held resource is difficult to justify. At the same time, however, we cannot justify and do not condone harming local communities. We believe the Department has honored our commitment to downeast fishermen over the past two years.

Information from the trawl survey has been available in summary form but not by specific tows. We have had several requests for the raw data but in the spirit of our commitment we have not released it. In discussions with DELA and some individual lobstermen, it is now apparent that the concern over data release was really over lobsters.

Obviously, as time goes on, the data become less and less representative of conditions of the resource and therefore less valuable to “outsiders.”

Therefore, the following policy was developed regarding the release of tow specific trawl data.

1. No data will be released to the general public until it has passed all Quality Assurance / Quality Control checks
2. Excepting #3 below, no tow specific data on lobsters will be released to the general public that is less than one year old.
3. Where management/policy/regulatory decisions may benefit, specific information may be released to decision makers upon written specific request. The request must justify why that information has bearing on the decision and how the information will be used, and who will have access to that information.

We believe that this balances the needs of small downeast communities and provides access to information on our publicly held and managed resources.

Appendix E Taxa List

The following is a list of taxa we have encountered in all surveys conducted since 2000.

Finfish species

Flatfish

Atlantic halibut	<i>Hippoglossus hippoglossus</i>
Greenland halibut	<i>Reinhardtius hippoglossoides</i>
American plaice	<i>Hippoglossoides platessoides</i>
Summer flounder	<i>Paralichthys dentatus</i>
Four-spot flounder	<i>Paralichthys oblongus</i>
Yellowtail flounder	<i>Limanda ferruginea</i>
Winter flounder	<i>Pseudopleuronectes americanus</i>
Witch flounder	<i>Glyptocephalus cynoglossus</i>
Windowpane	<i>Scophthalmus aquosus</i>
Gulf Stream flounder	<i>Citharichthys arctifrons</i>

Gadids

Atlantic cod	<i>Gadus morhua</i>
Haddock	<i>Melanogrammus aeglefinus</i>
Pollock	<i>Pollachius virens</i>
Silver hake	<i>Merluccius bilinearis</i>
Cusk	<i>Brosme brosme</i>
White hake	<i>Urophycis tenuis</i>
Red hake	<i>Urophycis chuss</i>
Spotted hake	<i>Urophycis regia</i>
Four-beard rockling	<i>Enchelyopus cimbrius</i>

Other Benthics

Acadian redfish	<i>Sebastes fasciatus</i>
Ocean pout	<i>Macrozoarces americanus</i>
Goosefish	<i>Lophius americanus</i>
Spiny Dogfish	<i>Squalus acanthias</i>
Atlantic hagfish	<i>Mxyine glutinosa</i>
Sea raven	<i>Hemitripteris americanus</i>
Alligatorfish	<i>Aspidophoroides monoptyerygius</i>
Lumpfish	<i>Cyclopterus lumpus</i>
Atlantic torpedo	<i>Torpedo nobiliana</i>
Winter skate	<i>Raja ocellata</i>
Little skate	<i>Raja erinacea</i>
Smooth skate	<i>Raja senta</i>
Thorny skate	<i>Raja radiata</i>
Longhorn sculpin	<i>Myoxocephalus octodecemspinosus</i>
Shorthorn sculpin	<i>Myoxocephalus scorpius</i>
Moustache sculpin	<i>Triglops murrayi</i>
Northern searobin	<i>Prionotus carolinus</i>
Snakeblenny	<i>Lumpenus lumpretaeformis</i>
Daubed shanny	<i>Lumpenus maculatus</i>

Appendix E
Taxa List

American sand lance	<i>Ammodytes americanus</i>
Atlantic silverside	<i>Menidia menidia</i>
Three-spine stickleback	<i>Gasterosteus aculeatus</i>
Black sea bass	<i>Centropristis striata</i>
Atlantic tomcod	<i>Microgadus tomcod</i>
Cunner	<i>Tautoglabrus adspersus</i>
Grubby	<i>Myoxocephalus aeneus</i>
Slender snipe eel	<i>Nemichthys scolopaceus</i>
Striped seasnail	<i>Liparis liparis</i>
Seasnail	<i>Liparis atlanticus</i>
Gulf seasnail	<i>Liparis coheni</i>
Gelatinous seasnail	<i>Liparis fabricii</i>
Radiated shanny	<i>Ulvaria subbifurcata</i>
Wolf eelpout	<i>Lycenchelys verrillii</i>
Pearlsides	<i>Maurolicus muelleri</i>
Wrymouth	<i>Cryptacanthodes maculatus</i>
Sturgeon	<i>Acipenser spp.</i>

Pelagics

Atlantic herring	<i>Clupea harengus</i>
Alewife	<i>Alosa pseudoharengus</i>
Blueback herring	<i>Alosa aestivalis</i>
American shad	<i>Alosa sapidissima</i>
Atlantic menhaden	<i>Brevoortia tyrannus</i>
Rainbow smelt	<i>Osmerus mordax</i>
Buckler dory	<i>Zenopsis conchifera</i>
Atlantic mackerel	<i>Scomber scombrus</i>
Butterfish	<i>Peprilus triacanthus</i>
Scup	<i>Stenotomas chrysops</i>
Rough scad	<i>Trachurus lathami</i>
Round scad	<i>Decapterus punctatus</i>
Atlantic moonfish	<i>Vomer setapinnis</i>
Short Bigeye	<i>Pristigenys alta</i>
Silver anchovy	<i>Engraulis eurystole</i>
Barracudina sp.	<i>Paralepididae spp.</i>

Invertebrates

Crustaceans

American Lobster	<i>Homarus americanus</i>
Jonah Crab	<i>Cancer borealis</i>
Rock Crab	<i>Cancer irroratus</i>
Spider Crab unclass.	<i>Majidae spp.</i>
Northern Stone Crab	<i>Lithodes sp.</i>
Snow Crab	<i>Chionectes opilio</i>
Green Crab	<i>Carcinus maenus</i>
Sevenspine Bay Shrimp	<i>Crangon septemspinosa</i>

Appendix E Taxa List

Spiny Lebbeid	<i>Lebbeus groenlandicus</i>
Bristled Longbeak	<i>Dichelopandalus leptocerus</i>
Aesop Shrimp	<i>Pandalus montagui</i>
Northern Shrimp	<i>Pandalus borealis</i>
Mantis Shrimp	<i>Stomatopod sp.</i>
Hermit Crab (unclass.)	<i>Diogenidae/Paguridae spp</i>
Pink Glass Shrimp	<i>Pasiphaea multidentata</i>
Propinquus	<i>Pandalus propinquus</i>
Krill	<i>Euphausid spp.</i>

Molluscs

Blue Mussel	<i>Mytilus edulis</i>
Sea Scallop	<i>Placopecten magelanicus</i>
Iceland Scallop	<i>Chlamys islandica</i>
Horse Mussel	<i>Modiolus modiolus</i>
Ocean Quahog	<i>Arctica islandica</i>
False Quahog	<i>Pitar morrhuana</i>
Northern Cardita	<i>Venercardia borealis</i>
Ax Head Clam	<i>Yoldia thraciaeformis</i>
Waved Astarte	<i>Astarte undata</i>
Squid (unclass.)	<i>Rossia spp.</i>
Shortfin Squid	<i>Illex illecebrosus</i>
Longfin Squid	<i>Loligo pealei</i>
Octopus (unclass.)	<i>Cephalopoda spp.</i>
Ten-Ridged Whelk	<i>Neptunea decemcostata</i>
Stimpson's Whelk	<i>Colus stimpsoni</i>

Others

Sand Dollar	<i>Echinoidea sp.</i>
Sea Urchin	<i>Strongylocentrotus droebachiensis</i>
Starfish (unclass.)	various species
Boreal Asterias	<i>Asterias vulgaris</i>
Sea sponges	various species
Rat-tail Cucumber	<i>Caudina arenata</i>
Sea Cucumber	<i>Cucumaria frondosa</i>
Anemone	various species
Barnacle	various species