Annual Report on the Maine-New Hampshire Inshore Trawl Survey

January 1, 2011-December 31, 2011

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By

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The Maine-New Hampshire Inshore Trawl Survey is a complex project that benefits from the assistance of many people. Without their help the surveys could not be successfully completed.

We would like to thank the Maine DMR and New Hampshire F&G staff that helped with the mailings, car shuttles, web site, and contributed to the data collection and entry. We appreciate the hard work put in by the crew of the F/V Robert Michael, Captain Robert Tetrault II, and crewmembers Steve Train, Larry Rich, Kris Weeks, and Alex Anderson. Jeff Flagg and Danny Libby provided invaluable assistance by mending and transporting nets to keep the survey running on schedule, and storing gear during the off-season.

Thanks to science staff, Amanda Harden, Kathleen Reardon, Melissa Smith, Lisa Pinkham, Steve Sutton, John Sowles, Nicole DeLisle, Ruth Indrick, John Wood, Jessica Devoid, Simon Beirne, Lon Robinson, and Conor O'Donnell. Thanks to Margaret Hunter for updating our website. We are especially grateful for the support provided by Colonel Joe Fessenden, Lieutenants Jon Cornish and Dale Sproul, boat captains Ed Logan, Mike Neelon, Mike Forgues, Corrie Roberts, Colin McDonald, Mark Murry, Russell Wright and other Marine Patrol Officers who helped both on and off the water, handling gear and assisting in communications with lobstermen, and whose presence added to our security.

We also express many thanks to all of the facilities along the coast that provided dockage for the survey vessel: University of New Hampshire Pier (Newcastle, NH), Journey's End Marina (Rockland, ME), Vinalhaven Town Pier (Vinalhaven, ME), Billings Marine (Stonington, ME), Dysart's Great Harbor Marina (Southwest Harbor, ME) and the US Coast Guard (Jonesport, ME).

Lastly, we appreciate the support and cooperation of those fixed gear fishermen throughout the survey area that moved gear and suggested alternate sites when necessary. The Lobster Zone Councils, Maine Lobster Advisory Council, Maine Lobstermen's Association, and Downeast Lobstermen's Association also provided many comments and suggestions to help minimize gear conflicts and improve cooperation.

EXECUTIVE SUMMARY

This report summarizes results from the 2011 sampling season of a comprehensive bottom trawl survey of groundfish and invertebrate species along the coast of Maine and New Hampshire. Prior to 2000, fishery-independent data were not available for nearly 80% of the Gulf of Maine's inshore waters. The Maine-New Hampshire Inshore Trawl Survey was established to fill the information gap and collect valuable information on the fish and biological communities in this area and create a time series for long-term monitoring of inshore stocks. The survey uses a stratified random sampling design, with an additional single fixed 'sentinel' station per stratum. Using the Jeff Flagg designed MENH survey trawl net and a commercial fishing vessel, the survey has proven to be a successful example of fishermen and scientists working together to benefit fisheries management. Two annual surveys are conducted, fall and spring, to create a rich database on fish and invertebrate species that is accessible to fishery managers, academic researchers, fishing industry members, graduate students, non-governmental organizations, and the general public. With eleven complete years and an twelfth underway, seasonal time series of abundance have been established for over 25 species of fish and invertebrates. Information from the survey is used in the assessment and management of several fisheries, and additional requests for and uses of these data have provided new insight into communities and populations in the Gulf of Maine.

INTRODUCTION

Initiated in the fall of 2000, the Maine-New Hampshire Inshore Trawl Survey is a collaborative partnership between commercial fishermen and state researchers to assess inshore fish stocks along the Maine and New Hampshire coasts. The survey has completed eleven years of biannual survey work, and the twelfth year is now underway. From its inception, the project has been supported by federal funds appropriated to the National Marine Fisheries Service to foster cooperative research using commercial vessels. Collaborative research enables fishermen to contribute their knowledge and experience toward the progress of scientific data collection and ultimately to resource management decisions. It is a valuable method to strengthen the trust between fishermen and scientists and increase the confidence fishermen have in the data.

Fishery-independent trawl surveys help to provide an index of the distribution and abundance of a variety of fish and invertebrate species that is not influenced or biased by fishing effort or outside factors. As they continue on an annual basis, these surveys should reflect changes in population abundances more accurately than commercial fisheries catch statistics. Abundance indices derived from research trawl surveys that maintain consistent and standardized efforts can be utilized to enhance catch statistic based assessments and with additional research efforts could eventually provide population abundance estimates.

Surveying the inshore waters of the Maine and New Hampshire coasts has been difficult due to a complex bottom consisting of ledges, canyons, seamounts and boulders, amplified by an abundance of lobster gear. The survey has seen an average success rate of 99% in the spring and 74% in the fall. Dealing with the large quantity of fixed gear, especially in the fall, still limits the number of tows that can be made, but continual and extensive public outreach has maintained a satisfactory level of tow completion. Despite the difficulties, the coverage this survey provides promises to be very valuable to better understanding marine ecosystems in the Gulf of Maine. We are confident that the northern Gulf of Maine can be successfully and consistently sampled via trawl survey indefinitely, with sustained funding.

Project Objectives:

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 can affect fish distribution.
- To gather information on biological parameters (growth rates and reproduction).

MATERIALS AND METHODS

Methods are described under separate cover in "Maine-New Hampshire Inshore Groundfish Trawl Survey Procedures and Protocols (2005)," available on-line at http://www.maine.gov/dmr/rm/trawl/reports.htm. The manual includes detailed descriptions of survey design, station selection, survey vessels, net design, public notification, sample collection and catch handling, and other information on survey methods and operations.
Figure 1 illustrates the survey design. The 12-mile limit approximates the survey's seaward extent, the black lines divide the regions and the depth strata are illustrated by the color gradient.

SURVEY STRATA

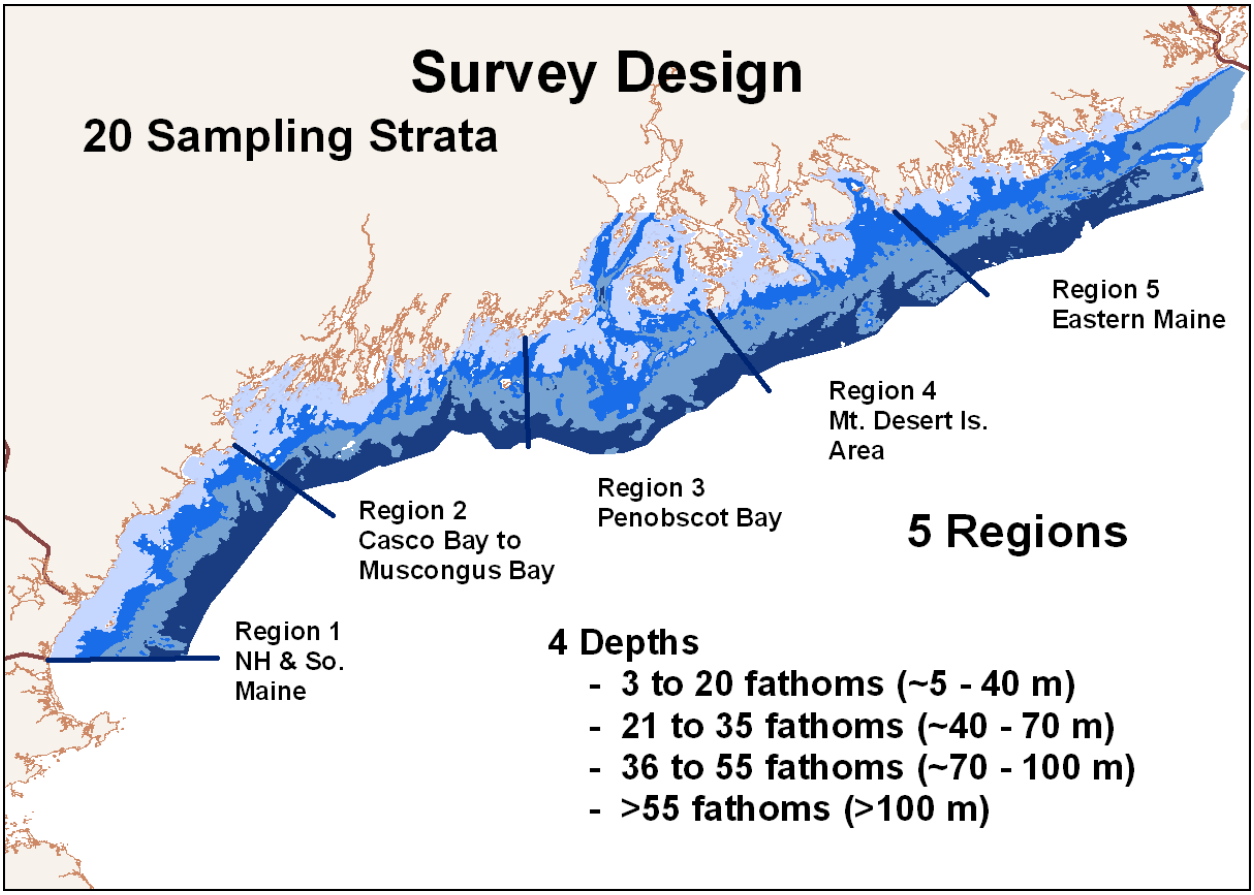

Figure 1. Sampling strata for the Maine-New Hampshire Inshore Trawl Survey

RESULTS

SPRING 2011 SUMMARY

The survey began May 2, 2011 in Portsmouth, New Hampshire and finished on June 3rd off of Cutler, Maine. Weather conditions were not as favorable as the previous spring survey; one day was postponed by weather. We were able to make up the work by working extended days for the rest of that week. We completed 116 tows out of the scheduled 120. This translates to a 96.7% completion rate, with an average of 4.8 tows per day. Start coordinates for the spring survey are shown in Figure 2. Personnel from Maine DMR as well as New Hampshire F&G participated in the survey. This spring, Steve Sutton, a technician working with Kevin Friedland and Jason Link of NMFS on the diadromous fish predator project joined the survey for three weeks to collect samples and assist us. A complete listing of tow locations, coordinates, dates, times, and depths can be found in Appendix A.

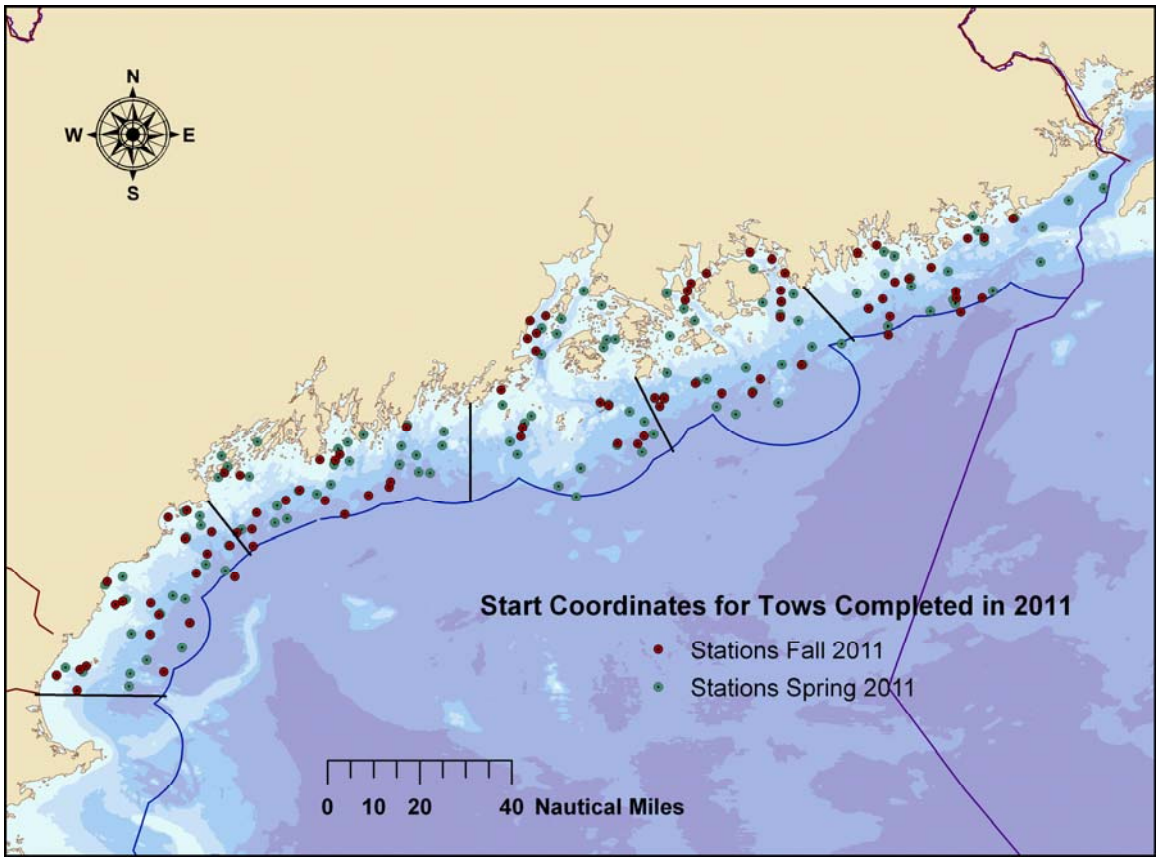

Figure 2. Survey start coordinates for the 2011 season.

Average bottom temperatures by stratum ranged from 4.3 to 7.2°C (Table 1), with an overall average of 5.9°C. The highest spring survey average temperature was 6.2°C in 2006 (Sherman et al, 2007) and the lowest average was 4.0°C in 2004 (Sherman et al, 2005).

Table 1. Average bottom water temperature (^{o}C) for the spring 2011 survey

REGION					
STRATUM	**1**	**2**	**3**	**4**	**5**
1	5.0	6.6	6.5	7.2	7.2
2	4.3	4.8	6.0	6.4	6.7
3	4.3	4.7	6.4	6.4	6.6
4	4.9	4.9	6.5	6.7	6.7

The volume of total mixed catch varied from 0.9 kg to 487 kg per tow, with an average of 113.5 kg and a median of 92 kg per tow. The average catch per tow for this survey was the second highest average spring catch since the start of the survey, the highest occurring the previous spring (Sherman et al, 2011) and the lowest (80 kg) occurring in 2005 (Sherman et al, 2007). The total number of species caught was 90, with a low of 8 and high of 32 in any particular tow, and an average and median of 22 species.

Catches of Atlantic herring and silver hake were down noticeably from spring 2010. We measured a survey record number of lobsters, over 21,000 (nearly 4700 kilograms). It was also a survey record catch of Northern shrimp, with a total of more than 1,800 kilograms caught. Catches of river herring (alewife, shad, and blueback herring), winter flounder, Acadian redfish, and haddock were also up significantly, while sea scallop, yellowtail flounder, and American plaice were less than the previous spring. Distribution maps, catch at length plots, and abundance indices for selected species are presented in Appendix C.

Biological samples are collected on selected finfish species, based on seasonal abundance and available time between tows. Table 2 shows the numbers of biological samples taken for the spring 2011 survey. Additionally, sections of gonads of female winter flounder were collected for Richard McBride at NMFS to be used in a study of spatial heterogeneity of life history parameters within stock boundaries of the species. Stomachs were also collected for the diadromous fish predator project on a select number of cod, hake, dogfish, goosefish, and sea raven.

Table 2. Spring 2011 species sampled for individual weights, sex, maturity, food habits, and hard parts for aging.

Number of Biological Samples Spring 2011				
Species	**Lengths**	**Sex and Maturity Stage**	**Otoliths**	**Food Habits**
American plaice	3023	429	273	NA
Atlantic cod	174	89	72	NA
Haddock	504	176	85	NA
Goosefish	35	4	NA	NA
Winter flounder	3952	622	407	NA
Yellowtail flounder	195	91	NA	NA

Besides biological samples, a number of Atlantic halibut were tagged along the eastern portion of the survey in conjunction with the DMR's Atlantic halibut tagging program.

FALL 2011 SUMMARY

The survey began October 4, 2011 in Portsmouth, New Hampshire, a day late due to weather conditions, and finished on November 4th off of Cutler, Maine. As usual in the fall survey, we were delayed various days due to the weather and completed 24 out of 25 scheduled sea days. We completed 85 tows out of the scheduled 120. This translates to a 71% completion rate, with an average of 3.5 tows per day. Personnel from Maine DMR as well as New Hampshire F&G participated in the survey. Acadian redfish samples were collected for David Berlinsky at the University of New Hampshire for a project dealing with genetics. Start coordinates for the fall survey are shown in Figure 2. A complete listing of tow locations, coordinates, dates, times, and depths can be found in Appendix B.

Average bottom sea water temperatures for each stratum ranged from 8.6^{o}C to12.3^{o}C (Table 5) and the overall average was 10.4^{o}C. Some temperature and salinity values for the first 2 weeks of the survey were lost due to an uploading error caused by the USB to serial port adapter for the laptop. A laptop docking station was acquired and resolved the problem.

Table 5. Average bottom temperature (^{o}C) for the fall 2011 survey.

REGION					
STRATUM	**1**	**2**	**3**	**4**	**5**
1	9.2	**NA**	12.3	12.1	10.0
2	**NA**	**NA**	12.1	11.9	10.7
3	9.6	9.3	11.0	10.7	10.6
4	8.6	9.3	10.1	9.6	9.4

The volume of total mixed catch varied from 18.6 kg to 1012.3 kg per tow, with an average of 185.0 kg and a median of 140 kg per tow. This compares to a high average catch per tow in 2007, the lowest average catch per tow occurred in 2006 (Sherman et al, 2009). The total number of species caught was 100, with a low of 10 and high of 33 in any particular tow, and an average of 22 species.

Catches of American lobster were again a record for the fall survey with over 19,000 (nearly 4200 kilograms) lobsters sampled. Northern shrimp catches were down considerably for 2011 (a total of 340 kilograms) compared to the previous fall survey, approximately 1315 kilograms. Catches of haddock, alewife, silver hake, sea scallop, and winter flounder were down somewhat from fall 2010; while catches of butterfish, spiny dogfish, halibut, and cod showed some increase from the previous fall. Distribution maps, catch at length plots, and abundance indices for selected species are presented in Appendix C.

Otoliths, sex, and maturity stages were collected on selected individuals of cod, haddock, white hake, and witch flounder. Stomach content analysis was done on goosefish and cod (Table 6).

Table 6. Fall 2011 species sampled for individual weights, sex, maturity, food habits, and hard parts for aging.

Number of Biological Samples Fall 2011				
Species	**Lengths**	**Sex and Maturity Stage**	**Otoliths**	**Food Habits**
Atlantic cod	122	82	47	14
Haddock	706	121	54	NA
Goosefish	97	60	NA	60
Atlantic Halibut	54	3	3	NA
White Hake	2795	477	278	NA
Witch Flounder	829	304	169	NA

Additionally, several Atlantic halibut were tagged.

PARTNERSHIPS

The fisherman-scientist partnership during this project has been consistently strong. Foremost is the partnership between the scientific staff and commercial boat crews. The commercial crew of the F/V Robert Michael has proven to be completely dedicated to this project. Not only did the crew operate the boat and handle the gear, they have become equal partners in solving problems related to gear conflicts, communications, scheduling and logistics. Their participation involves far more than boat operations and gear handling, including sorting the catch, weighing and measuring samples, and collecting biological specimens including otoliths. Their involvement has resulted in significant improvements to survey efficiency while still adhering to standard protocols.

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Sherman, S., K. Stepanek, C. King, A. Gowen, R. Eckert, and R.M. Tetrault. 2011 Annual Report on the Maine-New Hampshire Inshore Trawl Survey January 1, 2010-December 31, 2010 Contract # NA07NMF4720357 Submitted to the NOAA Fisheries Northeast Region Cooperative Research Partners Program December 2011.

Appendix A
Individual Station Descriptors for Start of Tow

DATE	REGION	TOWID	LAT decimal degrees	LON decimal degrees	Stratum	Time	Tow Duration	Depth (FA)	Temp C °	Salinity ppt
Spring 2011										
5/2/2011	1	1	42.95742	70.72122	1	08:16	19	17.7	4.6	31.68
5/2/2011	1	2	42.92917	70.75375	1	09:22	20	15.0	5.3	31.88
5/2/2011	1	3	42.94167	70.65793	2	10:35	20	27.5	4.4	31.87
5/2/2011	1	4	42.89142	70.49140	4	12:36	20	57.7	4.8	32.32
5/2/2011	1	5	42.93595	70.48697	3	13:50	20	56.9	4.5	32.24
5/2/2011	1	6	42.98473	70.42665	3	15:35	20	57.8	4.3	32.07
5/3/2011	1	7	43.08105	70.48290	2	07:40	20	39.3	4.3	32.07
5/3/2011	1	8	43.07878	70.41470	3	09:20	20	50.1	4.2	31.99
5/3/2011	1	9	43.15400	70.37750	3	10:53	20	49.7	4.2	31.97
5/3/2011	1	10	43.21823	70.33247	3	12:25	17	52.5	4.2	32.12
5/3/2011	1	11	43.20593	70.28717	4	13:26	20	58.1	4.5	32.29
5/3/2011	1	12	43.12105	70.27087	4	14:44	20	76.3	5.1	32.35
5/3/2011	1	13	43.02958	70.29917	4	16:16	20	79.9	5.9	32.66
5/4/2011	1	14	43.20482	70.50152	1	09:18	20	18.6	4.9	31.76
5/4/2011	1	15	43.28770	70.51380	1	12:53	20	20.3	4.7	31.78
5/4/2011	1	16	43.25792	70.57745	1	14:16	19	7.6	5.9	31.49
5/5/2011	1	17	43.33287	70.21293	3	09:08	20	54.4	4.3	31.94
5/5/2011	1	18	43.30883	70.14210	4	10:30	20	67.4	5.3	32.57
5/5/2011	1	19	43.40195	70.12962	4	12:04	20	60.0	4.5	32.25
5/5/2011	1	20	43.45840	70.08235	4	13:23	20	65.7	4.4	32.14
5/6/2011	1	21	43.47300	70.23015	2	07:47	20	34.8	4.2	31.96
5/6/2011	1	22	43.43022	70.28297	2	09:16	20	33.8	4.6	31.96
5/6/2011	1	23	43.52238	70.29200	1	11:04	20	14.1	4.6	31.52
5/6/2011	1	24	43.50760	70.23457	2	12:23	20	26.5	4.2	31.89
5/9/2011	2	25	43.72687	70.15592	1	07:46	20	7.3	5.8	30.96
5/9/2011	2	26	43.77875	70.02572	1	09:49	20	7.5	6.3	30.61
5/9/2011	2	27	43.65258	70.05568	2	11:33	20	30.1	5.1	31.66
5/9/2011	2	28	43.68705	70.13428	1	13:05	20	14.8	5.6	31.34
5/9/2011	2	29	43.64895	70.16737	1	13:54	20	13.0	9.3	27.56
5/11/2011	2	30	43.48290	69.96265	4	08:01	20	65.9	5.0	32.33
5/11/2011	2	31	43.49752	69.91913	4	09:18	20	66.1	4.5	32.14
5/11/2011	2	32	43.54468	69.95508	4	10:39	20	57.3	4.5	32.17
5/11/2011	2	33	43.59987	69.87653	3	12:25	20	46.1	4.5	31.94
5/11/2011	2	34	43.58700	69.81035	3	13:54	20	53.7	4.6	32.02
5/11/2011	2	35	43.62357	69.76092	3	15:17	20	47.2	4.7	31.85
5/11/2011	2	36	43.70660	69.69332	2	17:01	20	37.1	4.8	31.50
5/12/2011	2	37	43.69498	69.74847	1	07:39	20	19.3	6.2	31.21
5/12/2011	2	38	43.75298	69.73470	1	08:46	20	10.5	7.7	29.00
5/12/2011	2	39	43.77772	69.69993	2	09:56	20	25.0	4.5	31.70
5/12/2011	2	40	43.80462	69.64340	1	11:16	20	17.5	5.5	31.54
5/13/2011	2	41	43.69557	69.51165	4	07:31	20	65.9	5.1	32.06
5/13/2011	2	42	43.66498	69.40155	4	09:24	20	62.5	5.2	32.48
5/13/2011	2	43	43.66797	69.44192	4	10:36	20	63.2	5.0	32.28
5/13/2011	2	44	43.72912	69.45118	3	12:16	16	54.2	4.8	32.20

Appendix A
Individual Station Descriptors for Start of Tow

DATE	REGION	TOWID	LAT decimal degrees	LON decimal degrees	Stratum	Time	Tow Duration	Depth (FA)	Temp C °	Salinity ppt
5/13/2011	2	45	43.76377	69.50495	3	13:17	20	55.0	4.7	32.01
5/13/2011	2	46	43.83995	69.48305	2	14:24	20	33.8	5.0	32.01
5/13/2011	2	47	43.81593	69.35140	2	16:20	20	38.4	4.8	31.76
5/13/2011	2	48	43.76465	69.35695	3	17:23	20	45.8	5.0	31.85
5/16/2011	3	49	43.91413	69.13942	1	13:05	17	20.0	6.6	31.13
5/17/2011	3	50	44.17217	68.94283	2	06:48	20	28.0	5.8	30.64
5/17/2011	3	51	44.32572	68.84503	2	09:55	20	24.9	5.6	30.95
5/17/2011	3	52	44.27415	68.78000	1	10:59	20	13.5	6.0	30.45
5/17/2011	3	53	44.22383	68.92608	1	13:02	20	13.4	6.0	30.91
5/17/2011	3	54	44.19102	68.99700	2	14:50	16	38.1	5.2	31.07
5/17/2011	3	55	44.09773	68.99855	3	16:09	20	43.6	6.5	31.15
5/18/2011	3	56	43.87423	69.03537	2	08:31	20	30.0	6.3	31.42
5/18/2011	3	57	43.84803	69.05982	2	10:18	17	38.8	6.2	31.52
5/18/2011	3	58	43.77908	69.11187	3	11:44	20	50.6	6.2	31.59
5/18/2011	3	59	43.73197	69.08555	3	13:11	20	51.6	6.2	31.75
5/18/2011	3	60	43.61730	68.93697	4	15:21	20	78.5	6.3	32.24
5/18/2011	3	61	43.57685	68.87302	4	16:43	20	63.4	6.2	32.31
5/18/2011	3	62	43.68185	68.85710	4	18:26	20	60.5	6.4	32.01
5/19/2011	3	63	43.91728	68.75470	3	06:56	20	52.6	6.2	31.55
5/19/2011	3	64	43.76575	68.72430	3	09:11	16	57.2	6.6	32.52
5/19/2011	3	65	43.74103	68.63460	4	10:51	20	71.5	6.7	32.81
5/19/2011	3	66	43.80625	68.59222	4	12:18	15	73.3	6.7	32.75
5/19/2011	3	67	43.85320	68.62548	3	13:49	16	56.0	6.4	32.07
5/19/2011	3	68	43.88920	68.67987	3	15:08	20	52.0	6.4	32.10
5/20/2011	3	69	44.12157	68.77375	1	08:21	19	14.2	6.7	30.62
5/20/2011	3	70	44.15053	68.76220	2	11:30	21	25.5	7.1	30.83
5/20/2011	3	71	44.15210	68.73087	1	12:42	20	16.3	7.4	30.93
5/23/2011	4	72	43.94153	68.55502	3	10:08	20	48.9	6.4	32.03
5/23/2011	4	73	43.99595	68.43460	3	11:53	20	45.8	6.4	31.89
5/23/2011	4	74	44.00630	68.40033	3	13:16	19	47.8	6.3	31.93
5/23/2011	4	75	44.02843	68.54412	2	15:04	20	38.0	6.3	31.62
5/23/2011	4	76	44.16485	68.53345	1	17:02	20	16.6	7.2	30.99
5/24/2011	4	77	44.31755	68.54427	1	08:01	17	20.2	6.5	30.23
5/24/2011	4	78	44.26018	68.48270	1	09:47	10	17.0	7.4	31.06
5/24/2011	4	79	44.21730	68.44407	1	11:39	15	13.1	7.1	31.00
5/25/2011	4	80	43.90753	68.36437	4	08:07	21	68.7	6.6	32.56
5/25/2011	4	81	43.88050	68.29565	4	09:27	20	81.7	6.5	32.50
5/25/2011	4	82	43.96080	68.23352	4	11:07	17	58.6	6.5	32.31
5/25/2011	4	83	43.92222	68.14077	4	12:34	20	83.4	7.1	33.28
5/25/2011	4	84	44.04762	68.25903	3	14:41	20	52.5	6.4	31.95
5/26/2011	4	85	44.40722	68.23117	1	08:01	20	7.8	7.9	31.06
5/26/2011	4	86	44.31463	68.08647	2	09:44	15	32.0	6.2	30.98
5/26/2011	4	87	44.21743	68.06822	3	12:03	20	40.7	6.4	31.73
5/26/2011	4	88	44.24020	68.13408	2	13:14	20	34.8	6.3	31.71
5/26/2011	4	89	44.28330	68.19778	2	14:51	16	33.8	6.5	31.28
5/26/2011	4	90	44.28427	68.13082	2	15:51	20	36.0	6.7	31.08

Appendix A
Individual Station Descriptors for Start of Tow

DATE	REGION	TOWID	LAT decimal degrees	LON decimal degrees	Stratum	Time	Tow Duration	Depth (FA)	Temp C °	Salinity ppt
5/27/2011	4	91	44.12453	68.01940	3	09:06	20	52.9	6.3	32.30
5/27/2011	4	92	44.13612	67.91222	3	10:20	20	54.1	6.3	32.56
5/27/2011	4	93	44.05915	68.05207	4	11:54	20	60.5	6.6	32.68
5/27/2011	4	94	44.05865	68.12893	3	13:07	20	54.7	6.4	32.48
5/30/2011	5	95	44.31705	67.85722	2	10:27	20	33.1	6.7	31.75
5/30/2011	5	96	44.26072	67.81407	3	12:02	20	43.3	6.4	32.02
5/30/2011	5	97	44.19795	67.74382	4	13:47	20	71.6	6.8	33.06
5/30/2011	5	98	44.38825	67.75543	2	16:53	18	26.3	6.9	31.48
5/31/2011	5	99	44.39800	67.52698	3	08:25	20	47.1	6.5	31.91
5/31/2011	5	100	44.34323	67.66053	3	09:58	18	39.8	6.6	32.00
5/31/2011	5	101	44.37430	67.66327	2	11:46	20	34.6	6.5	31.95
5/31/2011	5	102	44.45202	67.72167	1	13:24	20	19.9	6.7	31.44
5/31/2011	5	103	44.46783	67.75887	1	15:39	19	17.5	7.1	31.28
6/1/2011	5	104	44.25137	67.59070	4	08:20	20	75.3	7.1	33.24
6/1/2011	5	105	44.29418	67.50927	4	10:01	20	60.4	6.3	32.36
6/1/2011	5	106	44.27948	67.50112	4	11:15	20	70.7	6.4	32.61
6/1/2011	5	107	44.32555	67.36457	4	12:57	20	92.5	6.8	32.71
6/2/2011	5	108	44.59683	67.43733	1	08:13	20	20.0	7.8	31.22
6/2/2011	5	109	44.50315	67.39588	2	10:01	15	37.0	6.7	31.59
6/2/2011	5	110	44.54353	67.41747	2	11:14	16	28.9	6.9	31.50
6/2/2011	5	111	44.43270	67.19262	3	14:02	16	54.2	6.4	31.94
6/2/2011	5	112	44.59040	67.28597	2	16:40	20	32.7	6.7	31.54
6/3/2011	5	113	44.55635	67.18532	3	07:20	20	42.0	6.7	31.59
6/3/2011	5	114	44.69733	66.96300	3	10:20	20	53.9	6.7	31.43
6/3/2011	5	115	44.74413	67.00083	3	12:30	20	48.0	6.7	31.39
6/3/2011	5	116	44.65530	67.09048	3	14:22	16	46.9	6.6	31.54

Appendix B
Individual Station Descriptors for Start of Tow

DATE	REGION	TOWID	LAT	LON	Stratum	Time	Tow	Depth	Temp	Salinity
			decimal degrees	decimal degrees			Duration	(FA)	C °	ppt
Fall 2011										
10/4/2011	1	1	42.96282	70.64532	2	08:37	16	19.8		
10/4/2011	1	2	42.95070	70.66868	2	10:17	16	23.1		
10/4/2011	1	3	42.87798	70.67870	2	11:39	20	31.2		
10/4/2011	1	4	42.92890	70.75225	1	13:40	15	14.4		
10/5/2011	1	5	43.07917	70.41403	3	08:40	20	49.5		
10/5/2011	1	6	43.12137	70.27128	4	10:50	20	74.8		
10/5/2011	1	7	42.94153	70.36463	4	13:19	20	71.2		
10/6/2011	1	8	43.15128	70.38250	3	09:00	20	48.1	9.5	32.51
10/6/2011	1	9	43.19208	70.41248	3	10:38	19	41.7	10.9	32.16
10/6/2011	1	10	43.19700	70.51407	1	11:58	16	16.8	9.2	32.56
10/6/2011	1	11	43.18510	70.53993	1	13:00	20	15.8		
10/6/2011	1	12	43.26965	70.56955	1	14:20	20	7.7		
10/7/2011	1	13	43.29988	70.24782	3	10:02	15	49.0	9.2	32.56
10/7/2011	1	14	43.28772	70.10752	4	11:48	20	82.6	7.9	33.04
10/7/2011	1	15	43.39812	70.04138	4	13:22	20	72.8	8.9	32.70
10/7/2011	1	16	43.40080	70.12620	4	15:01	20	58.1	8.7	32.76
10/7/2011	1	17	43.44603	70.10098	4	16:28	20	59.2	8.9	32.76
10/8/2011	1	18	43.44880	70.19183	3	08:47	20	48.3	9.2	32.63
10/8/2011	1	19	43.37027	70.20753	3	10:08	20	53.7	9.3	32.60
10/8/2011	1	20	43.42472	70.28778	2	11:43	15	32.5		
10/8/2011	1	21	43.50273	70.34932	1	12:55	20	7.7		
10/8/2011	1	22	43.52750	70.28117	1	13:48	20	12.8		
10/10/2011	2	23	43.45938	70.04595	4	08:32	20	62.3	9.4	32.76
10/10/2011	2	24	43.51873	70.02862	3	09:55	20	55.1	9.0	31.89
10/10/2011	2	25	43.56452	69.92347	3	12:04	20	51.5	9.2	32.61
10/10/2011	2	26	43.65655	70.08943	1	13:58	12	20.2		
10/10/2011	2	27	43.66567	70.14590	1	15:08	18	13.1		
10/11/2011	2	28	43.60178	69.87282	3	10:57	20	46.2	9.6	32.79
10/11/2011	2	29	43.71258	69.80025	1	13:02	20	11.0		
10/11/2011	2	30	43.73212	69.72747	1	14:36	15	15.6		
10/12/2011	2	31	43.51260	69.71060	4	09:18	20	71.6	9.6	33.02
10/12/2011	2	32	43.56278	69.78192	4	10:55	17	60.5	8.9	32.74
10/12/2011	2	33	43.71037	69.74382	1	14:06	17	15.9		
10/13/2011	2	34	43.58185	69.62370	4	09:42	20	68.0	9.1	33.07
10/13/2011	2	35	43.61207	69.54957	4	11:20	18	72.2	9.1	33.07
10/13/2011	2	36	43.63243	69.54413	4	12:30	15	66.7	9.7	32.98
10/14/2011	2	37	43.83168	69.48690	2	08:23	15	37.4		
10/18/2011	3	38	43.79855	69.07292	3	11:55	20	44.1	10.7	32.90
10/18/2011	3	39	43.83097	69.06648	2	13:28	20	39.7	10.8	32.80
10/18/2011	3	40	43.96622	69.14387	1	16:04	15	16.3	10.9	32.50
10/19/2011	3	41	44.10995	69.01815	2	08:11	15	35.7	12.4	31.70
10/19/2011	3	42	44.15398	69.04863	1	11:00	15	12.6	12.9	30.51
10/19/2011	3	43	44.23503	68.98295	2	12:32	20	25.5	12.7	29.29
10/19/2011	3	44	44.21682	69.03928	1	13:43	16	7.4	13.0	31.40

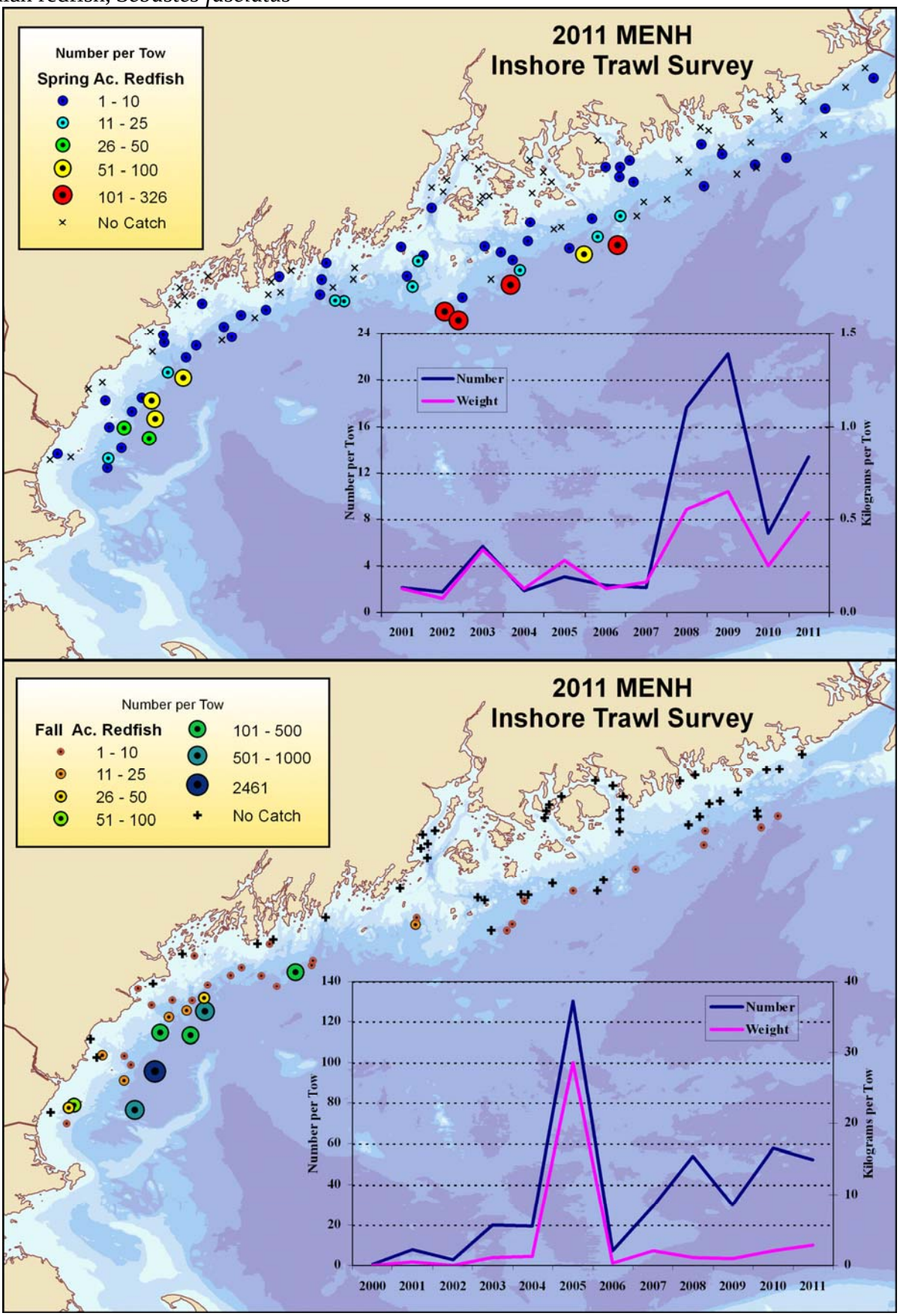
Appendix B
Individual Station Descriptors for Start of Tow

DATE	REGION	TOWID	LAT decimal degrees	LON decimal degrees	Stratum	Time	Tow Duration	Depth (FA)	Temp C °	Salinity ppt
10/19/2011	3	45	44.17458	69.01588	2	14:48	15	30.4	12.5	31.98
10/22/2011	3	46	43.92358	68.78528	3	08:22	15	49.7	11.3	32.44
10/22/2011	3	47	43.91218	68.75462	3	10:21	15	48.9	11.3	32.72
10/22/2011	3	48	43.77268	68.72297	3	12:25	10	58.4	10.5	33.12
10/22/2011	3	49	43.77082	68.65028	4	13:32	20	65.5	9.9	33.41
10/22/2011	3	50	43.79918	68.62673	4	14:48	15	61.4	10.2	33.28
10/24/2011	4	51	43.93817	68.58767	3	09:32	10	50.4	10.7	32.56
10/24/2011	4	52	43.90822	68.57045	3	10:59	20	51.1	10.7	32.64
10/24/2011	4	53	43.93650	68.55352	3	12:14	20	49.9	10.9	30.46
10/24/2011	4	54	43.99027	68.44163	3	14:06	16	45.8	11.1	32.76
10/25/2011	4	55	44.35310	68.45698	1	10:19	20	17.8	12.7	31.97
10/25/2011	4	56	44.39080	68.40112	1	11:32	19	12.0	12.8	31.98
10/25/2011	4	57	44.32498	68.46983	2	13:11	15	33.6	12.6	31.73
10/25/2011	4	58	44.29273	68.47807	2	14:35	18	30.6	12.5	31.98
10/26/2011	4	59	43.95497	68.34603	4	09:48	20	58.1	10.1	33.35
10/26/2011	4	60	43.95570	68.23550	4	11:32	20	60.0	9.4	32.86
10/26/2011	4	61	44.00632	68.20607	3	13:00	15	54.0	10.3	33.27
10/26/2011	4	62	44.22993	68.13360	2	16:13	20	35.5	11.4	32.60
10/27/2011	4	63	44.28717	68.13060	2	08:28	20	35.7	11.4	32.57
10/27/2011	4	64	44.46628	68.24382	1	10:41	18	14.3	11.8	32.19
10/27/2011	4	65	44.44200	68.16428	1	12:35	15	20.6	11.7	31.93
10/27/2011	4	66	44.39163	68.11640	1	13:48	17	18.5	11.5	32.50
10/27/2011	4	67	44.32705	68.13275	2	15:41	20	31.7	11.5	32.56
10/28/2011	4	68	44.05613	68.05728	4	12:06	15	60.5	9.2	33.74
11/1/2011	5	69	44.26097	67.81580	3	10:31	20	41.5	10.5	32.55
11/1/2011	5	70	44.16805	67.74363	4	12:15	20	121.0	9.6	33.72
11/1/2011	5	71	44.23302	67.73733	4	13:34	20	59.9	9.9	33.45
11/1/2011	5	72	44.29700	67.76342	3	15:01	20	43.6	10.7	32.76
11/2/2011	5	73	44.49125	67.78498	1	08:33	17	8.3	9.6	31.62
11/2/2011	5	74	44.46337	67.85492	1	09:45	20	4.8	10.3	31.75
11/2/2011	5	75	44.35762	67.71898	2	12:04	20	32.1	10.7	32.57
11/2/2011	5	76	44.37025	67.66912	2	13:16	20	33.6	10.7	32.57
11/2/2011	5	77	44.41085	67.58755	2	14:33	16	36.3	10.8	32.62
11/3/2011	5	78	44.32395	67.49908	3	09:37	16	53.7	10.3	33.00
11/3/2011	5	79	44.29942	67.49613	4	11:05	20	58.7	10.2	33.04
11/3/2011	5	80	44.24852	67.48070	4	13:41	18	98.1	8.7	34.26
11/3/2011	5	81	44.29997	67.40297	4	15:04	20	106.0	8.6	34.27
11/4/2011	5	82	44.58788	67.29183	2	08:00	20	31.3	10.7	32.57
11/4/2011	5	83	44.51545	67.45562	2	12:42	20	26.2	10.6	32.51
11/4/2011	5	84	44.51880	67.39600	3	14:00	20	37.2	10.7	32.55

SELECTED SPECIES

The following pages contain bubble distribution maps, catch at length plots, abundance indices, and data tables for a selection of fish and invertebrates that are important to Maine and New Hampshire commercially or recreationally as well as others that are consistently abundant in our trawl catch. All indices and catch at length data were calculated for the entire survey area (20 strata) unless otherwise noted. All means are stratified mean number or weight and length frequencies are stratified catch at length.

Acadian redfish, *Sebastes fasciatus*



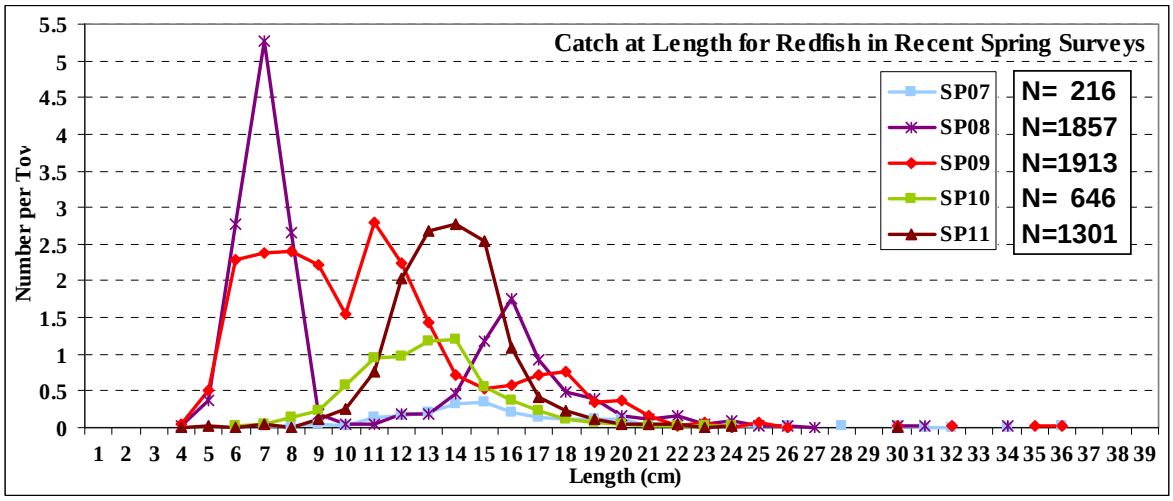
Means and standard error for the graphs overlain on the distribution maps

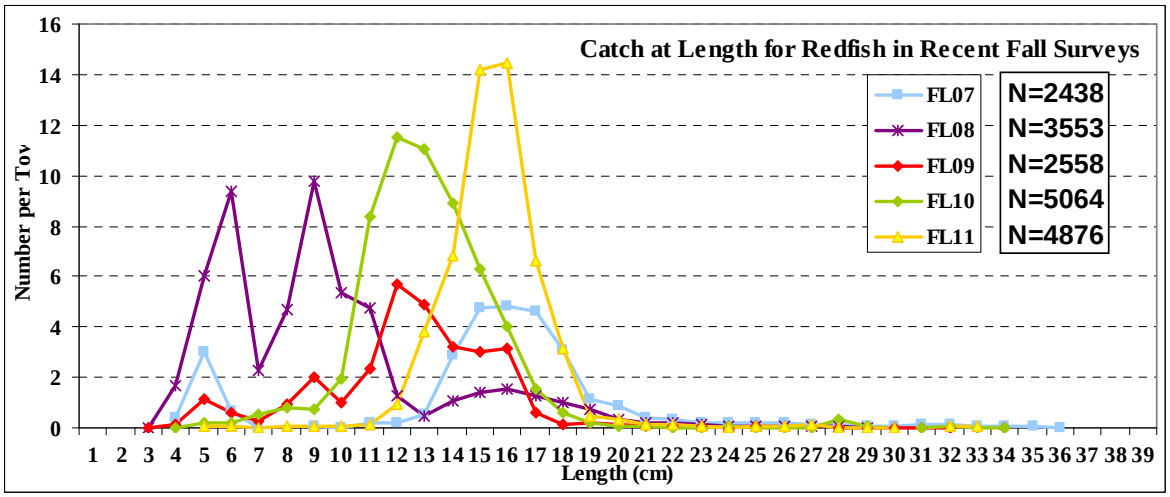
fixed stations not included

SPRING **FALL**

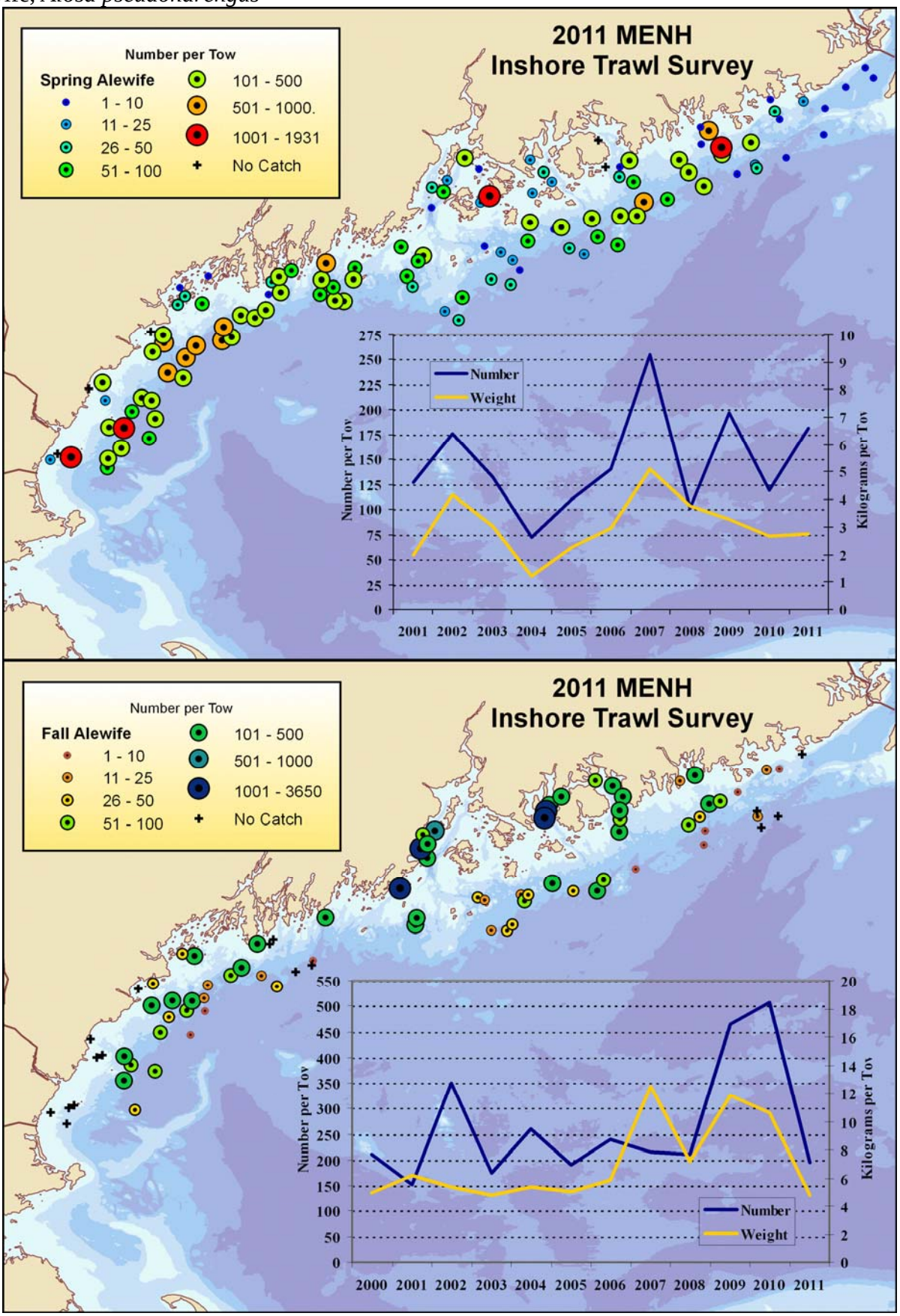
for redfish, indices calculated for regions 1 through 5, strata 1 through 4 (2003 on)

	Stratified Mean Number		Weight			Stratified Mean Number		Weight	
	Mean	SE	Mean	SE		Mean	SE	Mean	SE
					2000	0.65	0.21	0.03	0.01
2001	2.18	0.62	0.13	0.06	**2001**	7.95	2.75	0.54	0.33
2002	1.79	0.41	0.08	0.02	**2002**	2.70	1.24	0.07	0.05
2003	5.66	2.14	0.34	0.14	**2003**	20.07	17.79	1.19	0.88
2004	1.82	0.53	0.13	0.03	**2004**	19.42	5.58	1.22	0.46
2005	3.09	0.76	0.28	0.12	**2005**	129.96	105.82	28.50	28.05
2006	2.33	0.91	0.13	0.05	**2006**	6.95	2.10	0.32	0.09
2007	2.15	0.51	0.16	0.04	**2007**	29.62	12.15	2.07	0.64
2008	17.69	5.14	0.56	0.22	**2008**	53.93	14.85	1.06	0.33
2009	22.27	7.18	0.65	0.24	**2009**	29.73	17.19	1.03	0.62
2010	6.80	2.04	0.25	0.07	**2010**	57.78	38.11	2.03	1.21
2011	13.34	3.81	0.54	0.14	**2011**	52.12	23.35	2.78	1.15



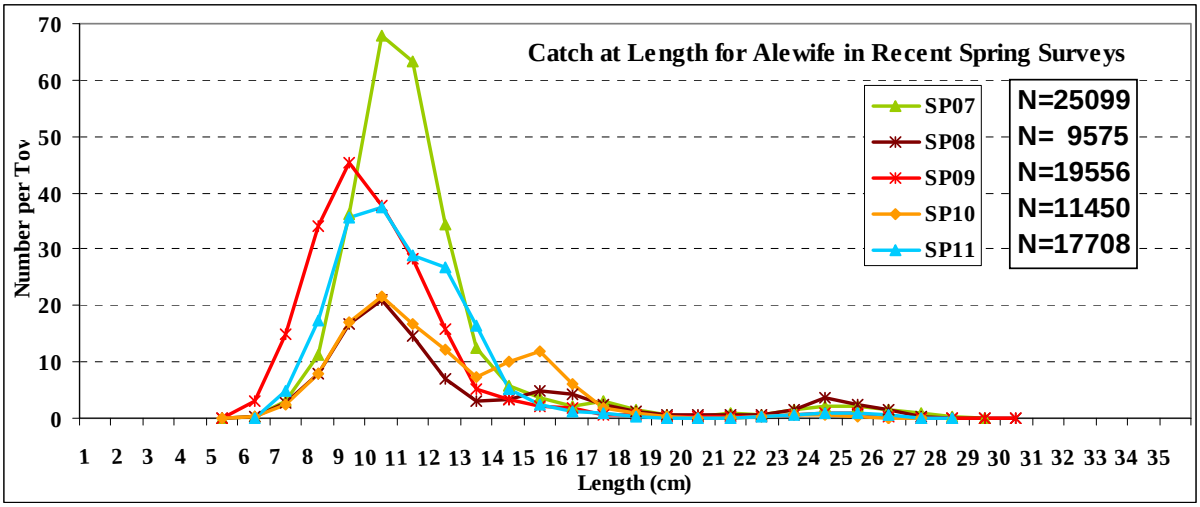


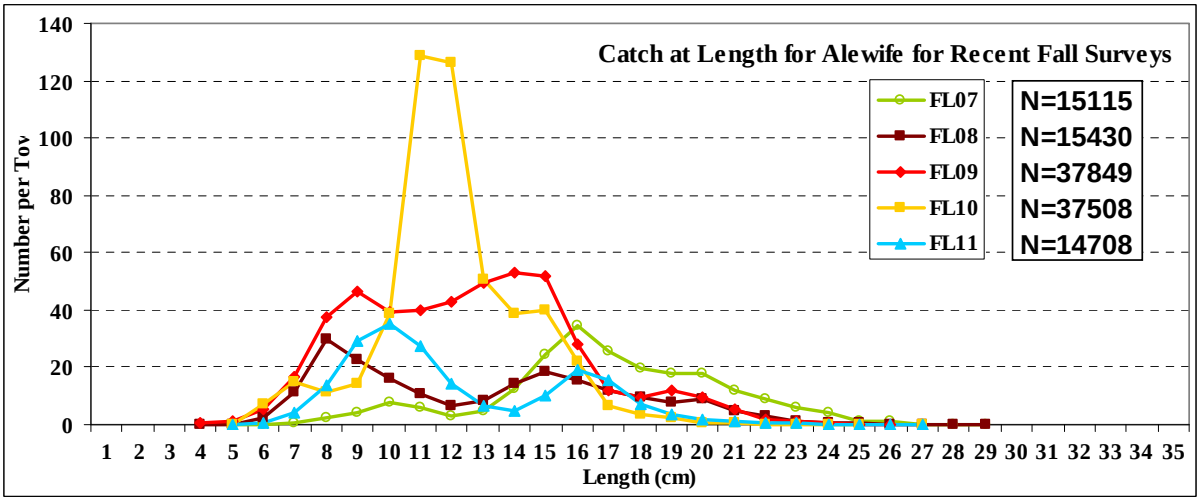
Alewife, *Alosa pseudoharengus*



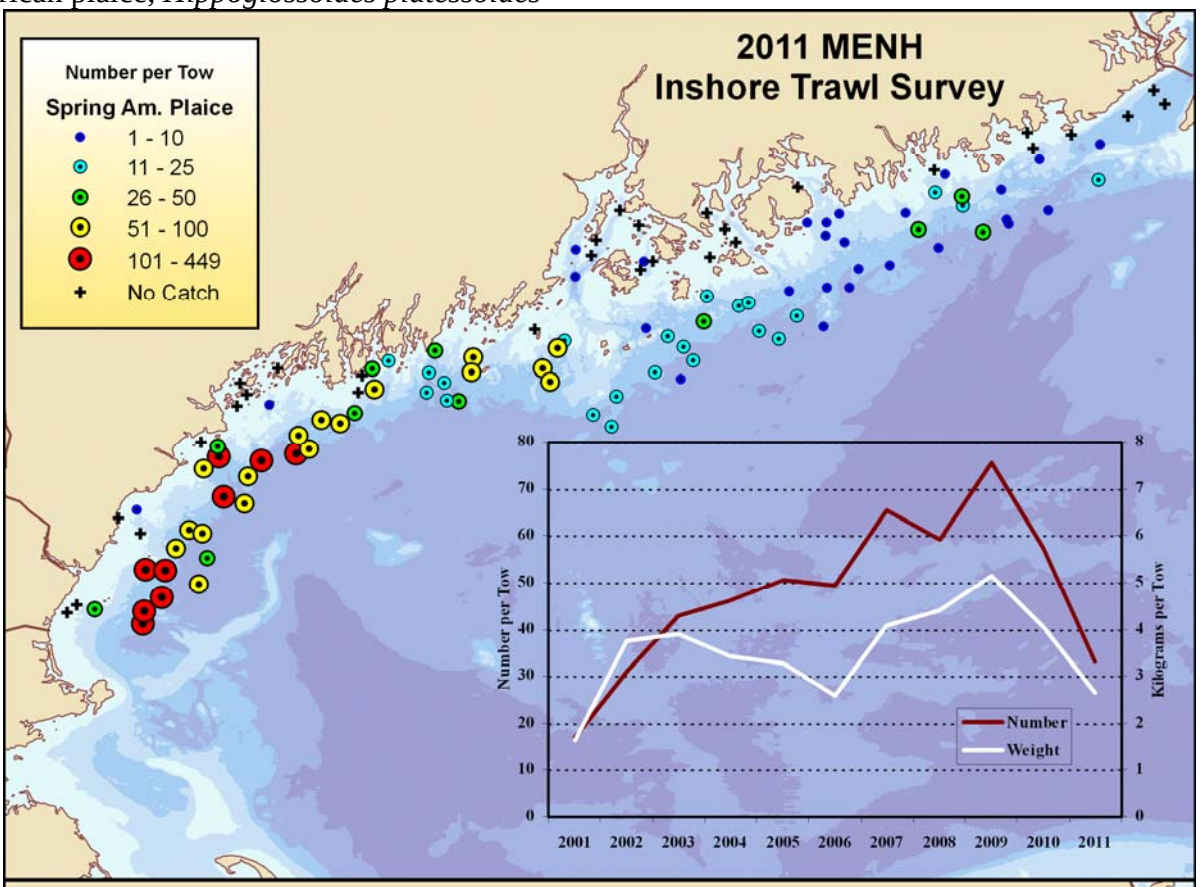
Mean and standard error for the graphs overlain on the distribution maps
fixed stations not included
For alewife, Regions 1 through 5; Strata 1 through 4 (2003 on)

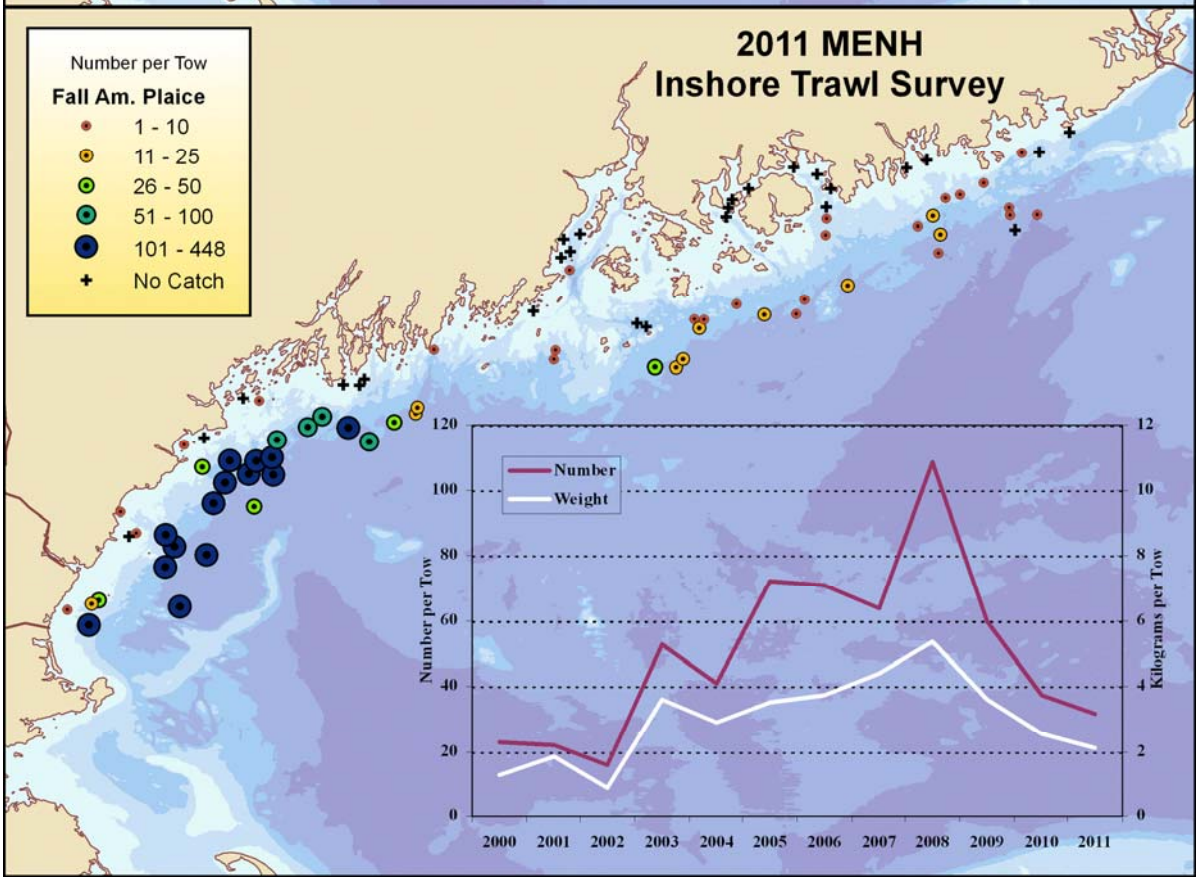
SPRING	Stratified Mean Number		Weight		FALL	Stratified Mean Number		Weight	
	mean	error	mean	error		mean	error	mean	error
					2000	210.69	72.14	4.94	1.48
2001	127.26	31.42	1.97	0.41	**2001**	153.29	71.84	6.18	2.67
2002	175.75	53.23	4.15	0.88	**2002**	349.73	159.72	5.36	1.71
2003	132.75	32.46	3.05	0.72	**2003**	174.43	51.42	4.85	2.07
2004	72.67	10.45	1.20	0.15	**2004**	261.39	61.81	5.36	0.66
2005	109.69	13.40	2.29	0.29	**2005**	190.51	28.49	5.10	0.70
2006	140.15	18.11	2.97	0.39	**2006**	239.46	59.48	5.85	1.45
2007	255.32	67.31	5.10	1.06	**2007**	215.24	49.97	12.52	3.33
2008	101.86	11.83	3.78	1.13	**2008**	211.32	43.56	7.18	0.79
2009	196.87	37.43	3.30	0.48	**2009**	463.63	117.52	11.85	1.59
2010	118.67	22.22	2.66	0.46	**2010**	506.39	126.17	10.58	2.38
2011	181.09	32.08	2.74	0.36	**2011**	196.26	45.67	4.78	0.66





American plaice, *Hippoglossoides platessoides*





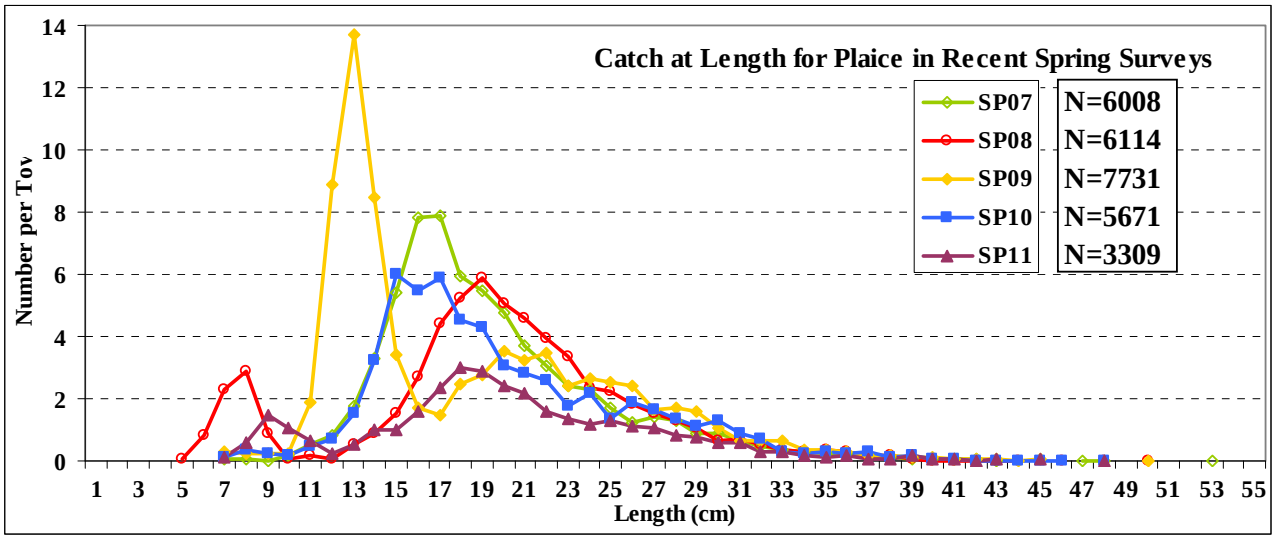
Mean and standard error for the graphs overlain on the distribution maps

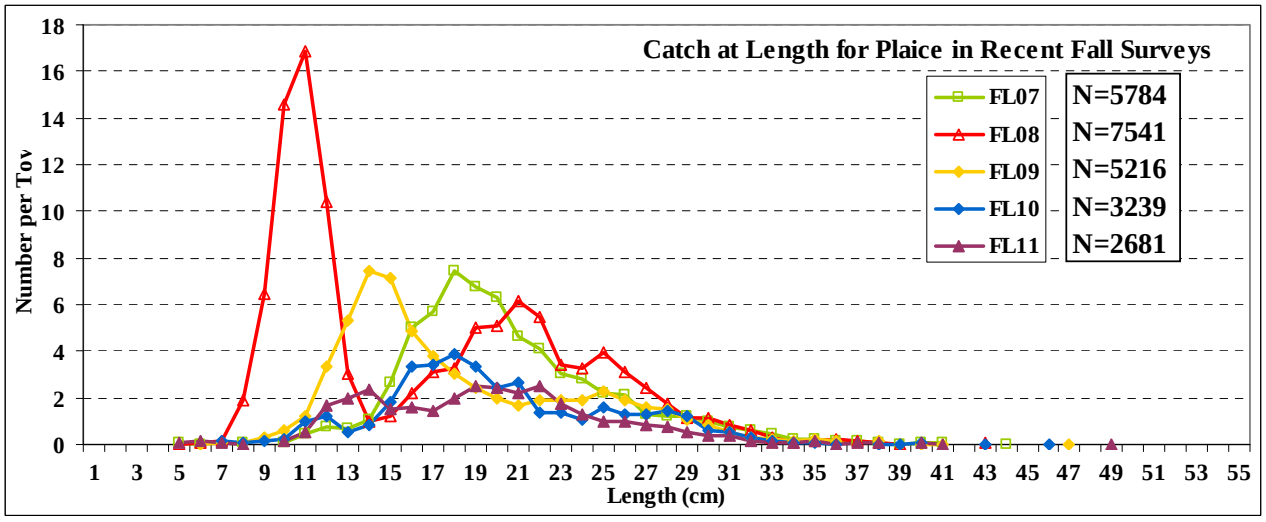
fixed stations not included

SPRING **FALL**

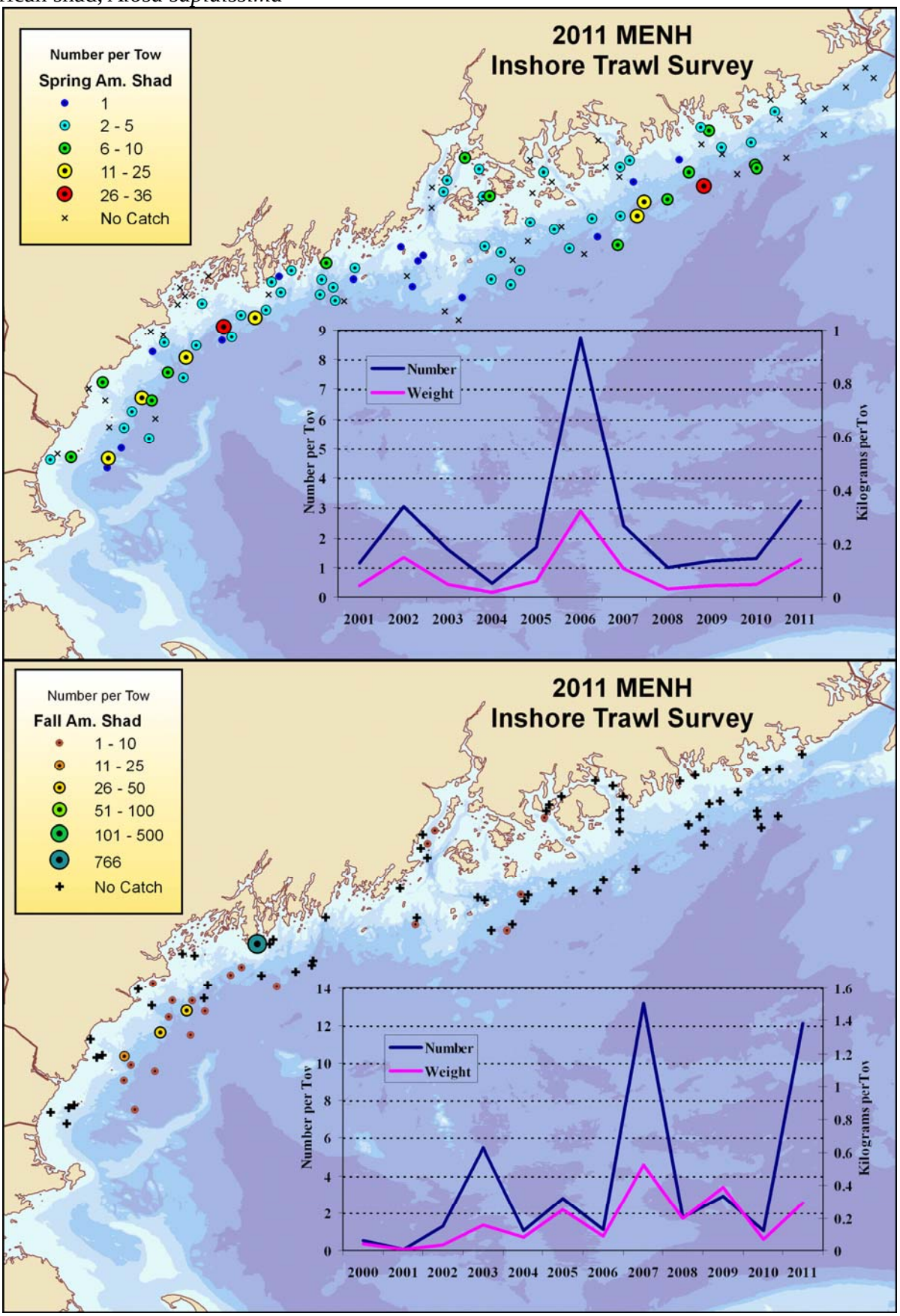
for plaice, indices calculated for regions 1 through 5, strata 1 through 4 (2003 on)

	Stratified Mean Number		Weight			Stratified Mean Number		Weight	
	Mean	Error	Mean	Error		Mean	Error	Mean	Error
					2000	22.66	6.29	1.28	0.28
2001	16.93	3.73	1.64	0.44	**2001**	21.96	2.27	1.85	0.20
2002	31.04	3.80	3.76	0.46	**2002**	15.62	3.65	0.87	0.17
2003	42.82	4.39	3.89	0.46	**2003**	52.82	7.31	3.60	0.49
2004	46.22	7.86	3.42	0.52	**2004**	41.09	4.28	2.89	0.36
2005	50.66	5.85	3.27	0.34	**2005**	72.08	9.88	3.53	0.42
2006	49.51	5.03	2.58	0.20	**2006**	70.75	7.67	3.74	0.39
2007	65.57	6.40	4.09	0.35	**2007**	63.60	7.38	4.38	0.56
2008	59.29	7.51	4.41	0.45	**2008**	108.74	12.69	5.35	0.63
2009	75.65	7.71	5.14	0.51	**2009**	59.88	6.68	3.61	0.43
2010	57.45	6.10	4.05	0.36	**2010**	37.58	6.92	2.56	0.56
2011	33.09	4.90	2.64	0.25	**2011**	31.63	4.11	2.11	0.28



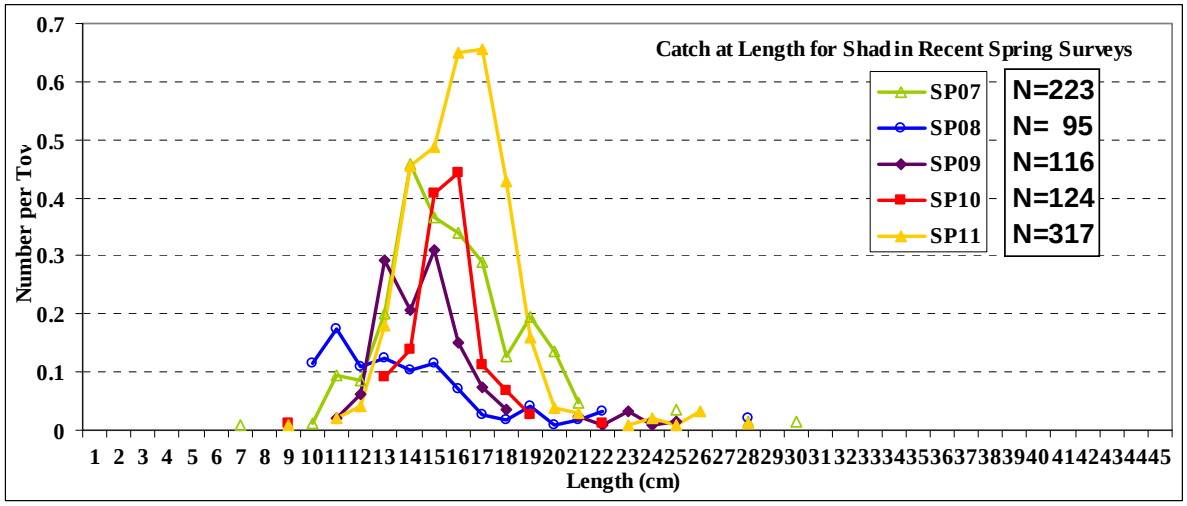


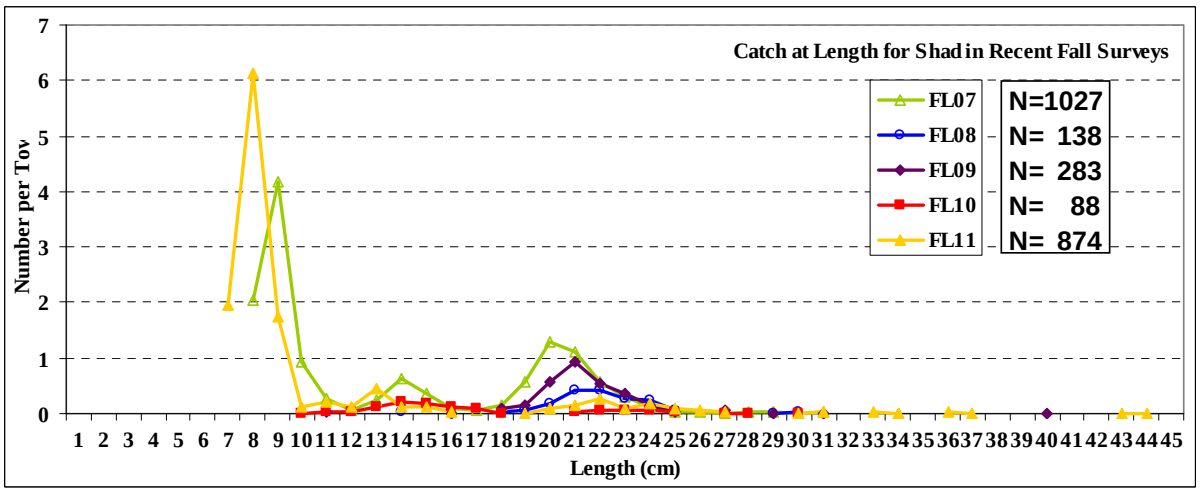
American shad, *Alosa sapidissima*



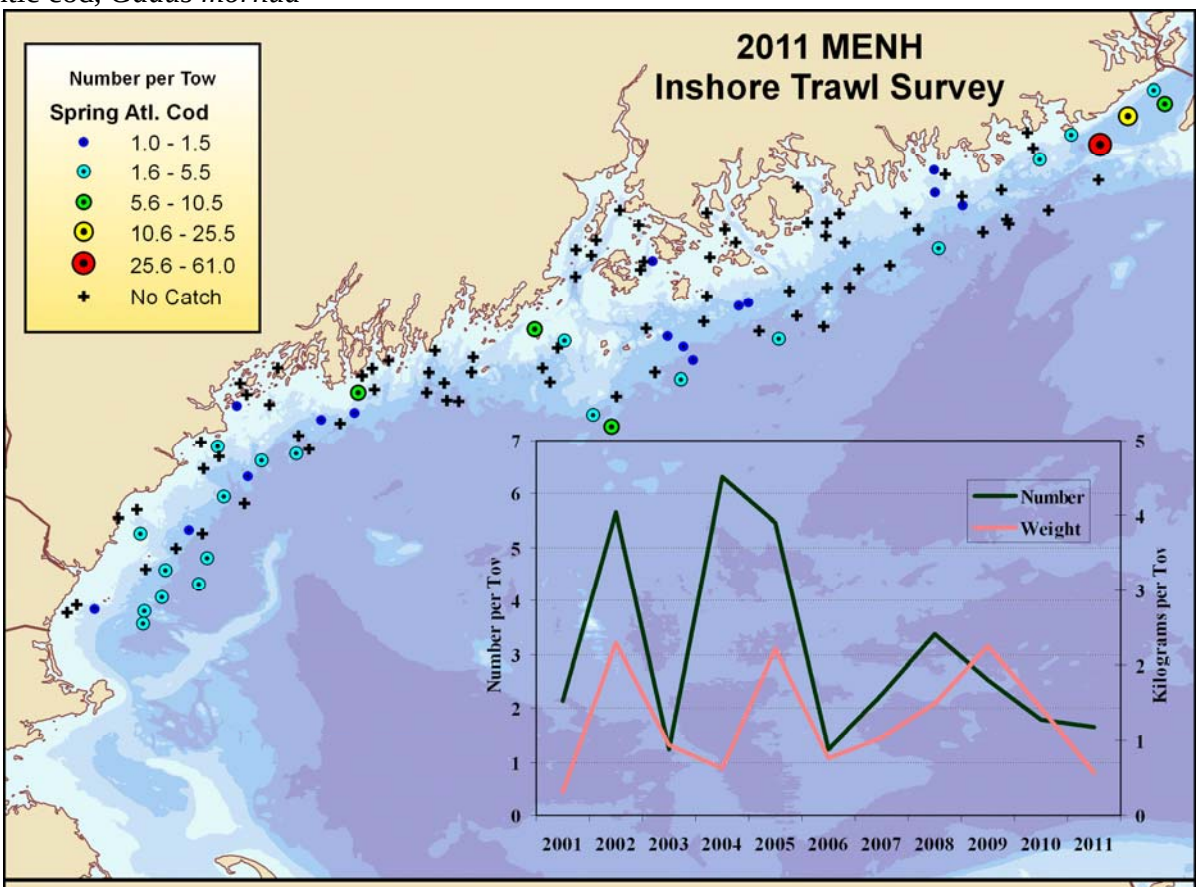
Mean and standard error for the graphs overlain on the distribution maps
fixed stations not included
For shad, Regions 1 through 5; Strata 1 through 4 (2003 on)

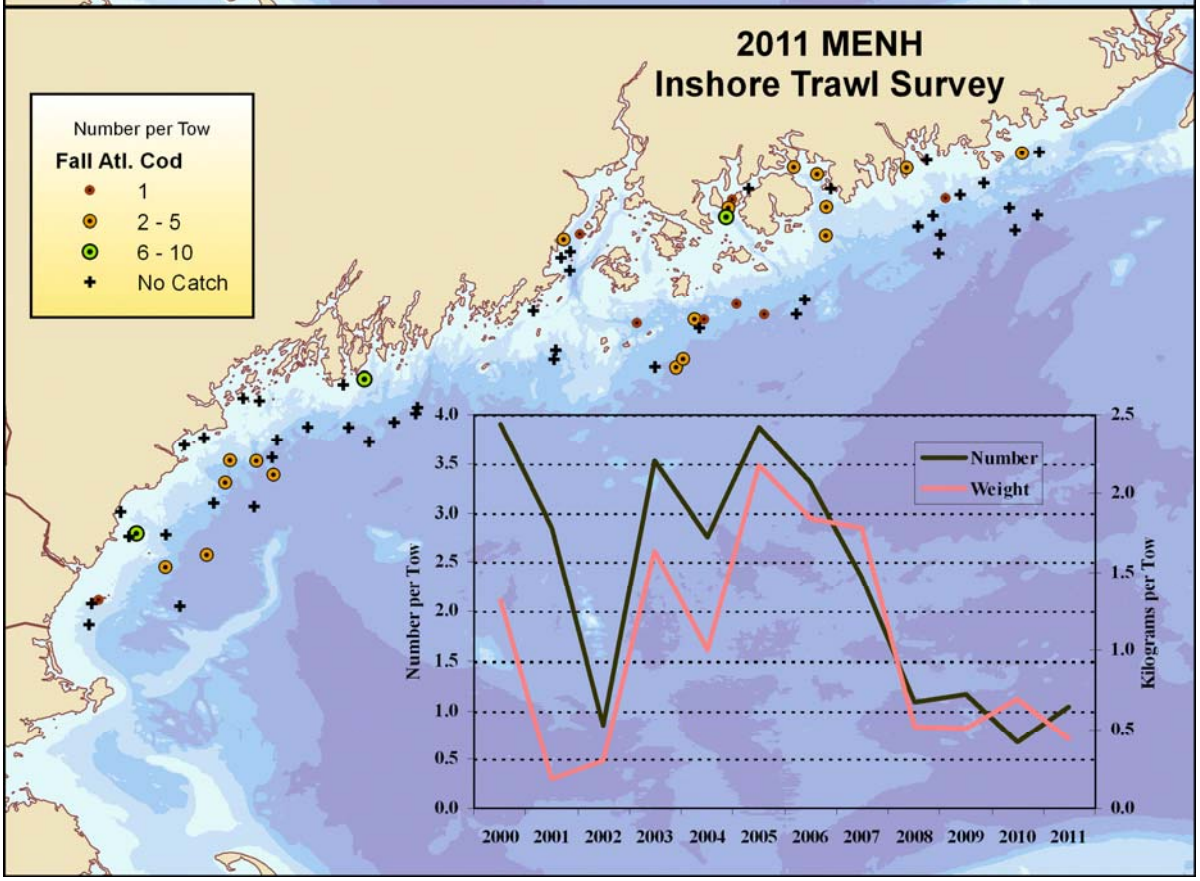
SPRING	Stratified Mean Number		Weight		FALL	Stratified Mean Number		Weight	
	Mean	Error	Mean	Error		Mean	Error	Mean	Error
					2000	0.56	0.18	0.04	0.01
2001	1.16	0.37	0.04	0.01	2001	0.06	0.04	0.01	0.00
2002	3.05	0.50	0.15	0.03	2002	1.33	0.54	0.03	0.01
2003	1.62	0.34	0.05	0.01	2003	5.45	4.52	0.16	0.09
2004	0.45	0.11	0.02	0.00	2004	1.08	0.46	0.08	0.03
2005	1.67	0.29	0.06	0.01	2005	2.81	0.37	0.25	0.03
2006	8.72	1.59	0.32	0.06	2006	1.14	0.54	0.09	0.02
2007	2.41	0.30	0.11	0.01	2007	13.15	7.26	0.53	0.16
2008	0.98	0.35	0.03	0.01	2008	1.78	0.43	0.20	0.05
2009	1.24	0.17	0.04	0.01	2009	2.91	1.60	0.39	0.21
2010	1.31	0.25	0.05	0.01	2010	1.10	0.51	0.07	0.02
2011	3.24	0.60	0.14	0.03	2011	12.10	10.92	0.29	0.09





Atlantic cod, *Gadus morhua*





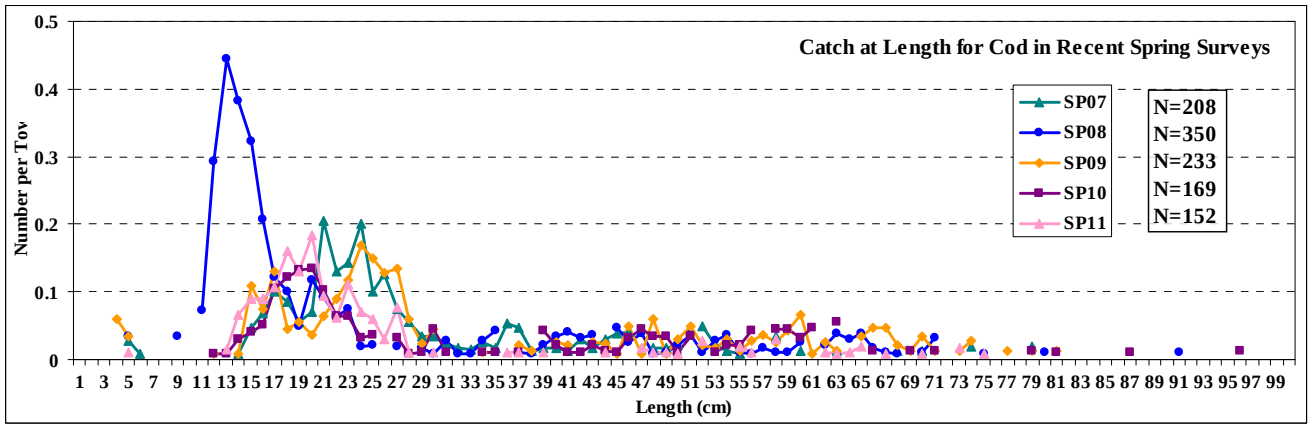
Mean and standard error for the graphs overlain on the distribution maps

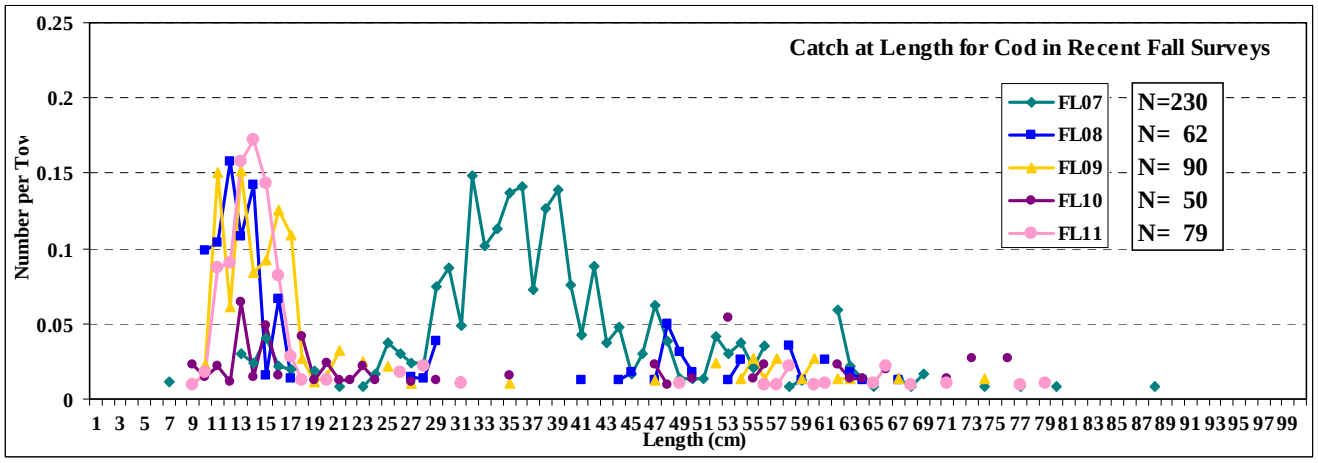
fixed stations not included

SPRING **FALL**

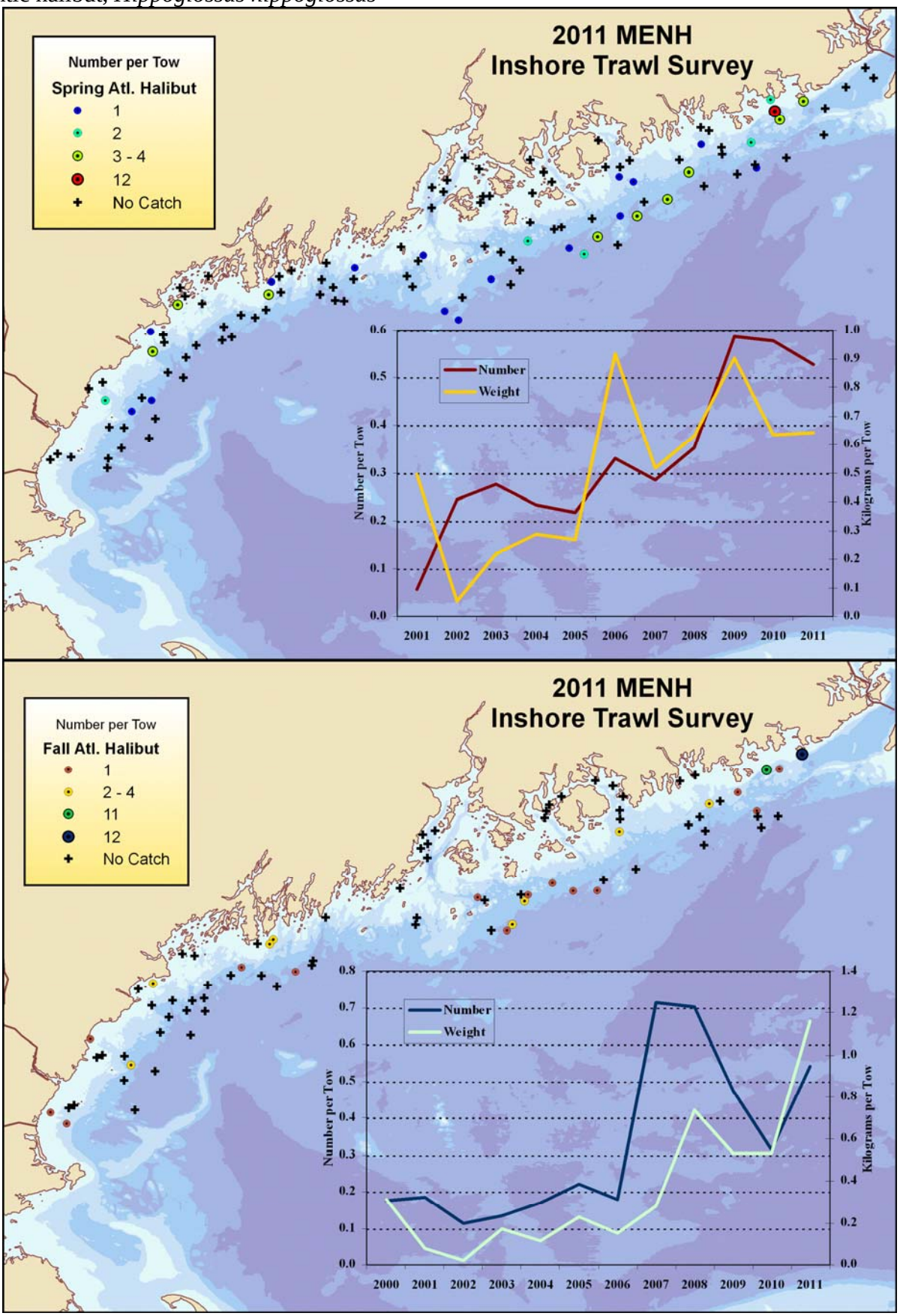
for Atlantic cod, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

	Stratified Mean Number		Weight			Stratified Mean Number		Weight	
	Mean	SE	Mean	SE		Mean	SE	Mean	SE
					2000	3.91	1.85	1.32	0.74
2001	2.14	0.51	0.32	0.09	2001	2.84	0.80	0.18	0.05
2002	5.66	2.95	2.29	0.92	2002	0.85	0.20	0.30	0.09
2003	1.23	0.27	0.94	0.28	2003	3.53	0.80	1.64	0.31
2004	6.30	1.60	0.63	0.18	2004	2.76	1.11	1.00	0.33
2005	5.46	2.68	2.22	1.45	2005	3.88	1.87	2.17	1.54
2006	1.24	0.35	0.76	0.45	2006	3.31	1.59	1.84	0.97
2007	2.25	0.61	1.04	0.19	2007	2.34	1.21	1.78	0.93
2008	3.38	1.46	1.49	0.57	2008	1.08	0.45	0.52	0.21
2009	2.52	0.59	2.25	0.79	2009	1.16	0.26	0.51	0.04
2010	1.79	0.42	1.427	0.498	2010	0.67	0.12	0.697	0.149
2011	1.64	0.69	0.568	0.132	2011	1.04	0.22	0.447	0.153





Atlantic halibut, *Hippoglossus hippoglossus*

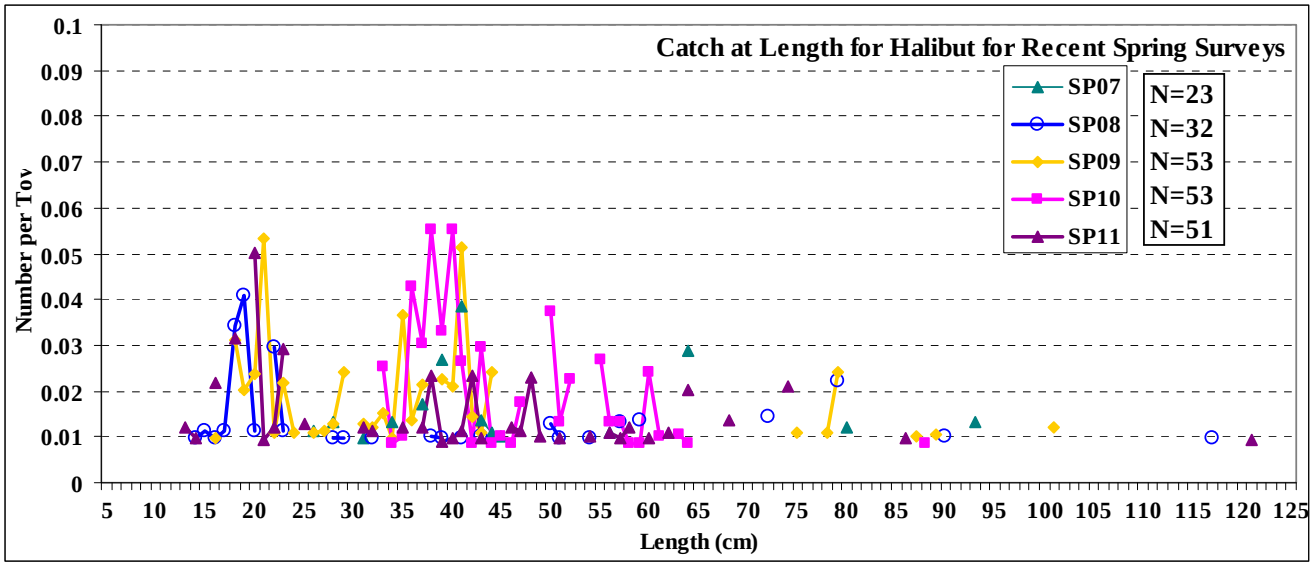


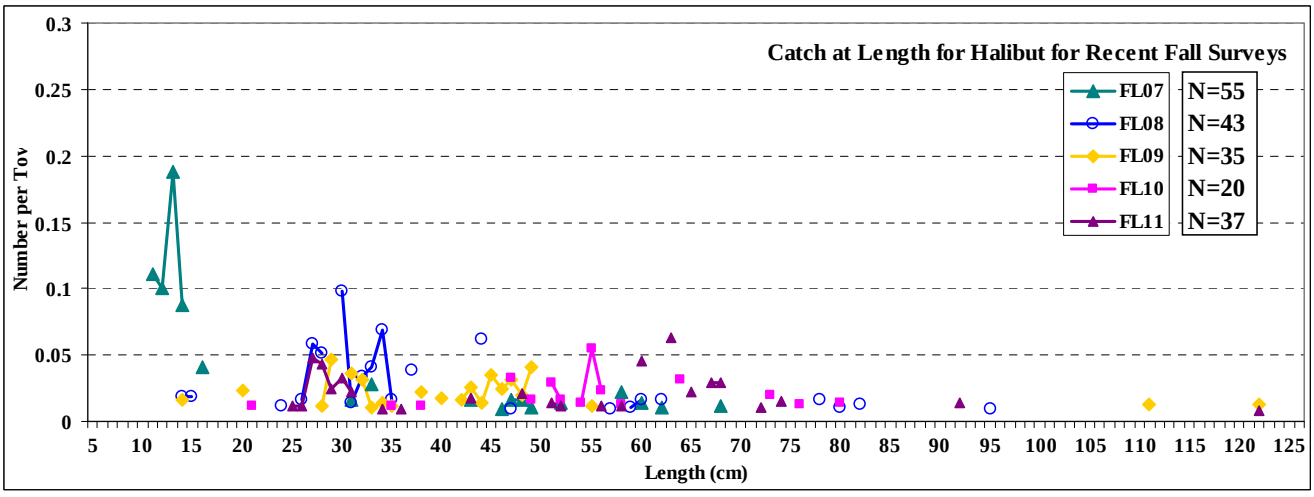
Means and standard error for graphs overlain on distribution maps

fixed stations not included

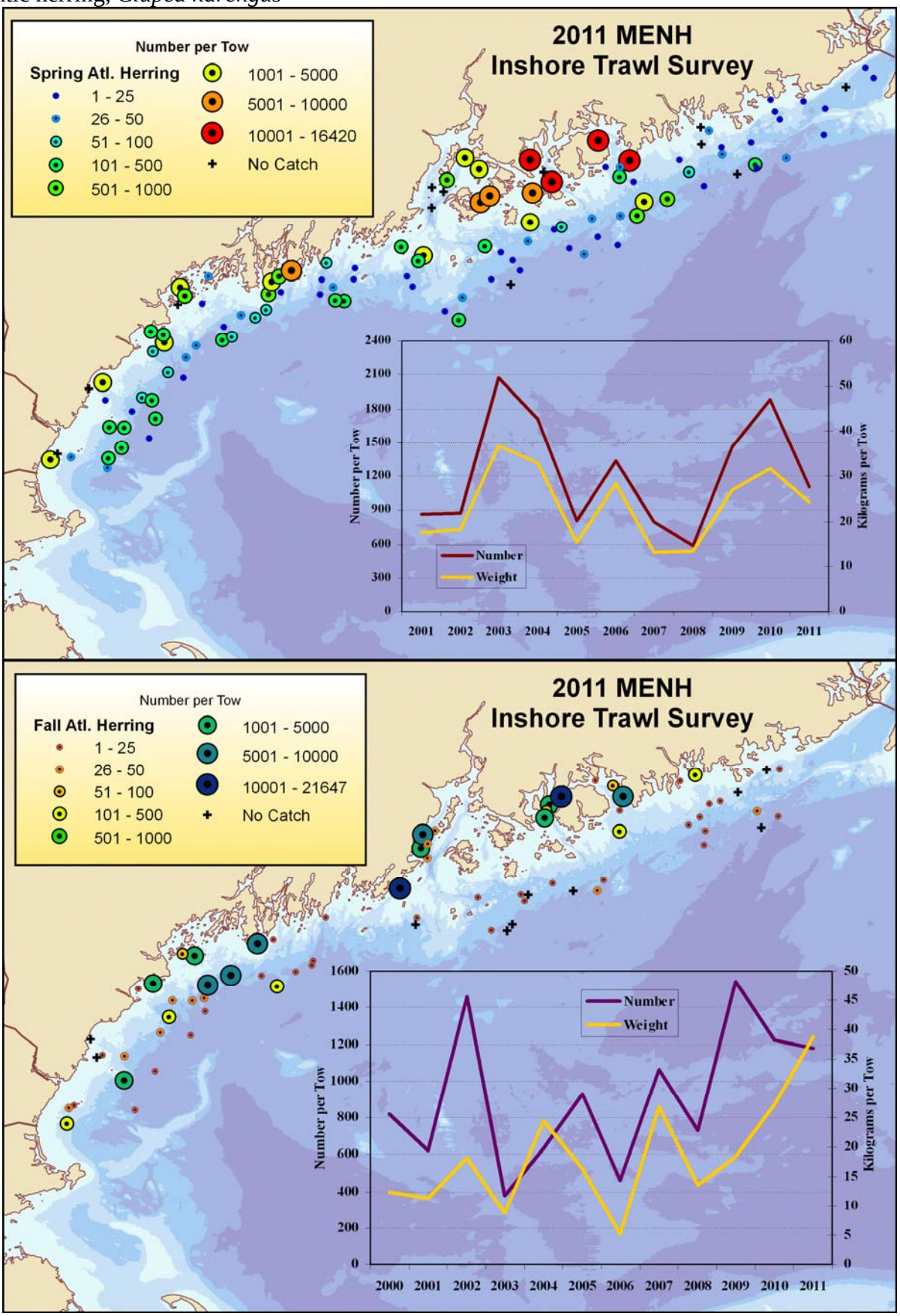
for halibut, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

SPRING					FALL				
	Stratified Mean					Stratified Mean			
	Number		Weight			Number		Weight	
	Mean	SE	Mean	SE		Mean	SE	Mean	SE
					2000	0.18	0.08	0.31	0.16
2001	0.06	0.02	0.49	0.41	**2001**	0.19	0.10	0.08	0.07
2002	0.24	0.08	0.05	0.03	**2002**	0.11	0.05	0.02	0.01
2003	0.28	0.07	0.22	0.13	**2003**	0.14	0.05	0.17	0.07
2004	0.23	0.06	0.29	0.18	**2004**	0.17	0.09	0.12	0.04
2005	0.22	0.08	0.27	0.12	**2005**	0.22	0.06	0.23	0.05
2006	0.33	0.08	0.92	0.34	**2006**	0.18	0.10	0.15	0.09
2007	0.29	0.09	0.52	0.21	**2007**	0.71	0.39	0.28	0.08
2008	0.35	0.11	0.63	0.27	**2008**	0.70	0.18	0.73	0.23
2009	0.59	0.15	0.90	0.32	**2009**	0.48	0.10	0.53	0.24
2010	0.58	0.11	0.63	0.14	**2010**	0.31	0.08	0.53	0.13
2011	0.53	0.14	0.64	0.15	**2011**	0.54	0.15	1.16	0.30





Atlantic herring, *Clupea harengus*



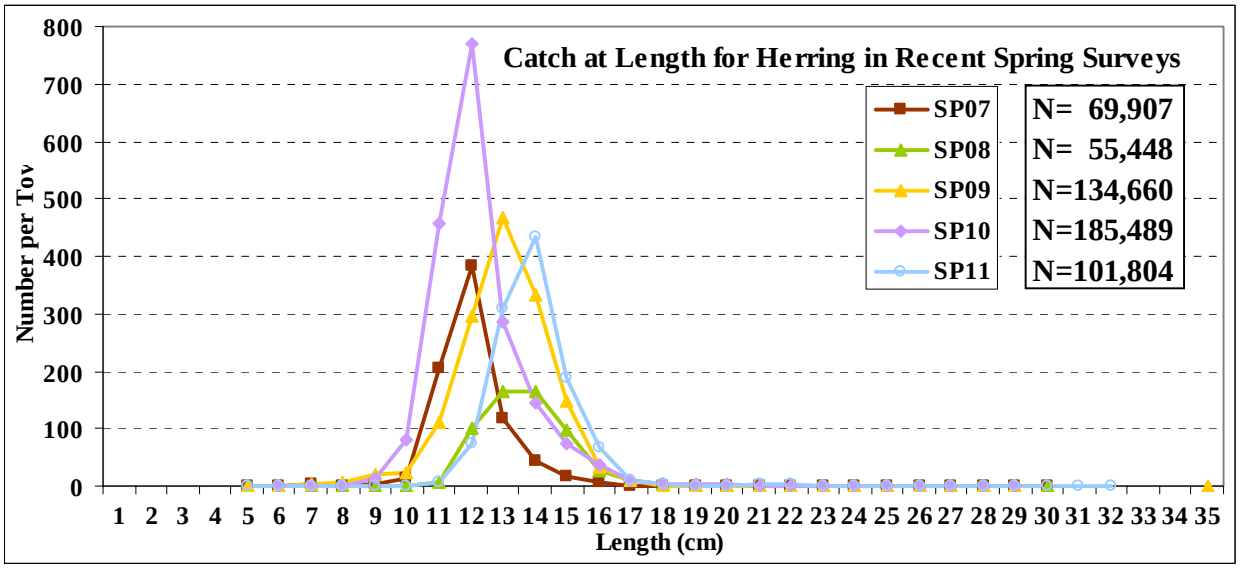
Means and standard error for graphs overlaid on distribution maps
fixed stations not included
for herring, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

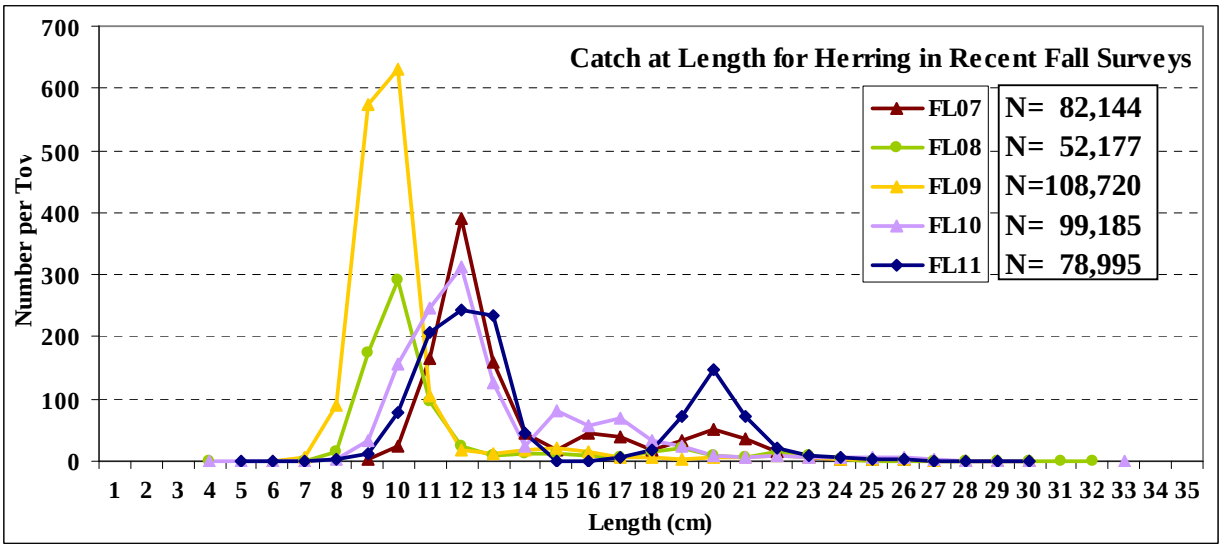
SPRING

	Stratified Mean Number		Weight	
	Mean	Error	Mean	Error
2001	863.41	320.15	17.43	6.35
2002	869.60	283.65	18.16	5.12
2003	2072.84	544.43	36.64	9.17
2004	1709.26	394.93	32.81	7.04
2005	810.77	285.45	15.25	4.24
2006	1338.54	314.00	28.35	6.04
2007	800.47	279.69	13.16	4.45
2008	582.47	97.37	13.40	2.16
2009	1454.55	397.81	26.99	7.71
2010	1877.69	292.24	31.58	4.85
2011	1104.53	226.97	24.32	4.84

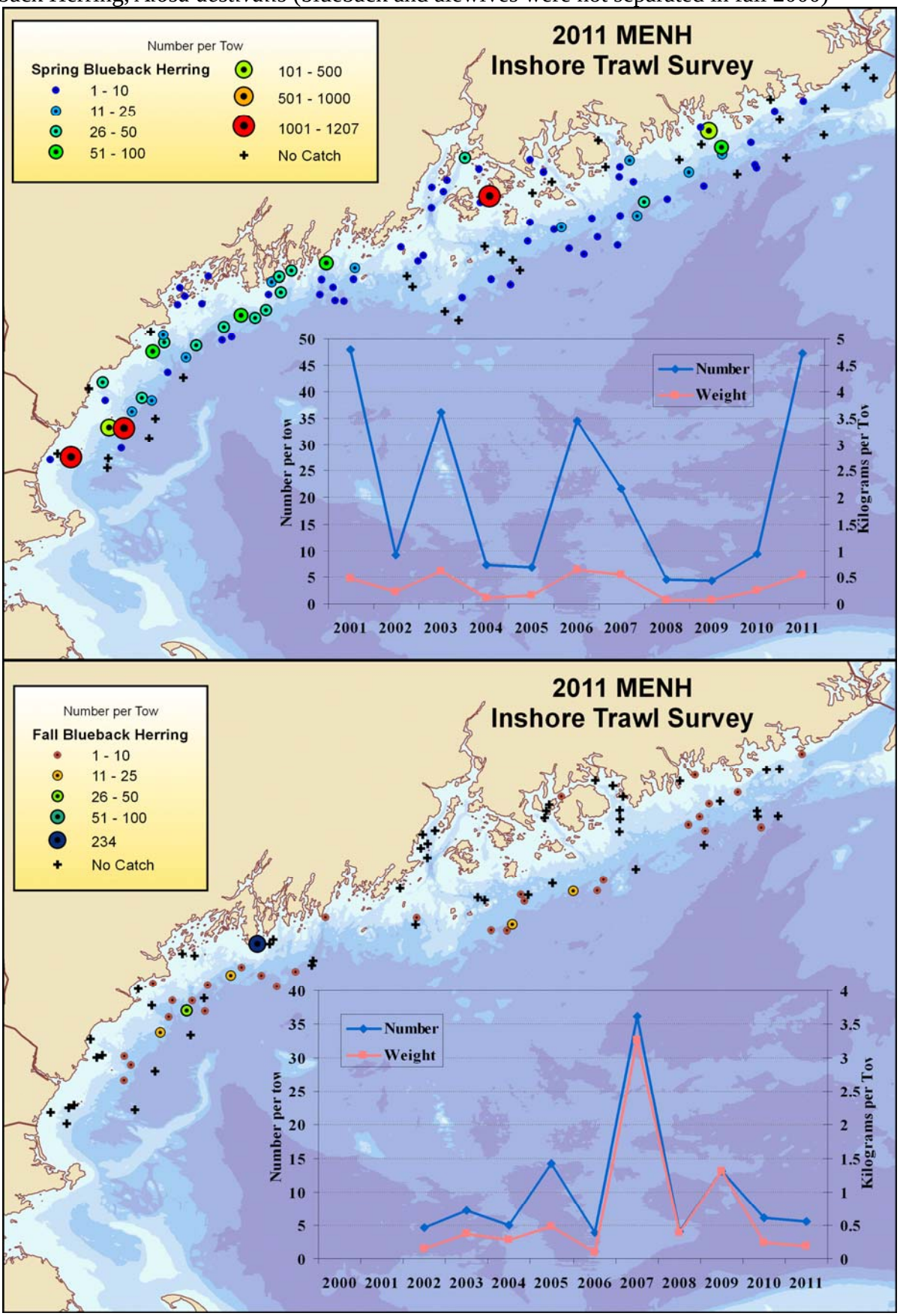
FALL

	Stratified Mean Number		Weight	
	Mean	Error	Mean	Error
2000	820.02	280.03	12.42	2.99
2001	621.33	250.91	11.34	4.25
2002	1457.21	583.46	18.15	6.45
2003	376.73	184.61	8.71	5.23
2004	633.36	206.06	24.47	11.50
2005	928.07	248.14	16.44	6.37
2006	461.44	86.01	5.26	1.22
2007	1059.37	284.90	26.78	13.05
2008	730.86	195.77	13.58	5.61
2009	1542.49	361.47	18.32	4.58
2010	1221.33	316.57	27.12	7.01
2011	1180.79	334.42	38.89	9.10



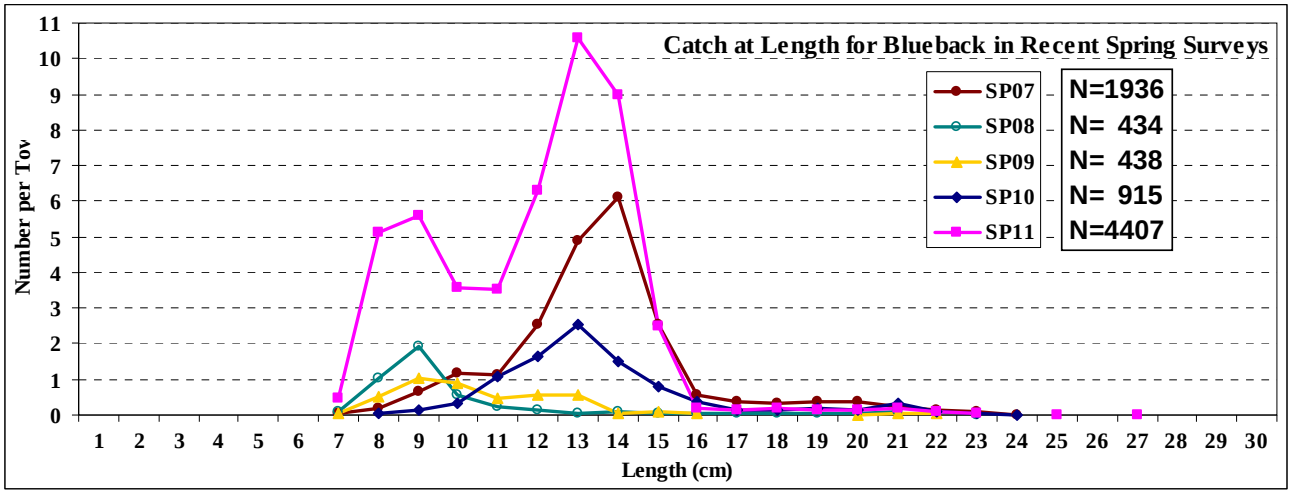


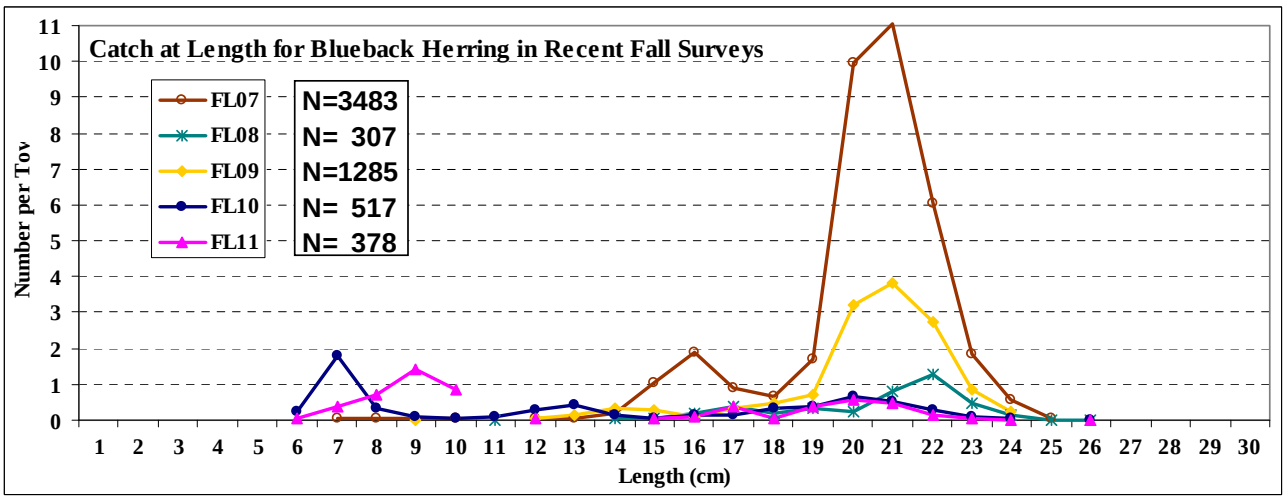
Blueback Herring, *Alosa aestivalis* (blueback and alewives were not separated in fall 2000)



Means and standard error for graphs overlaid on distribution maps
fixed stations not included
for blueback herring, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

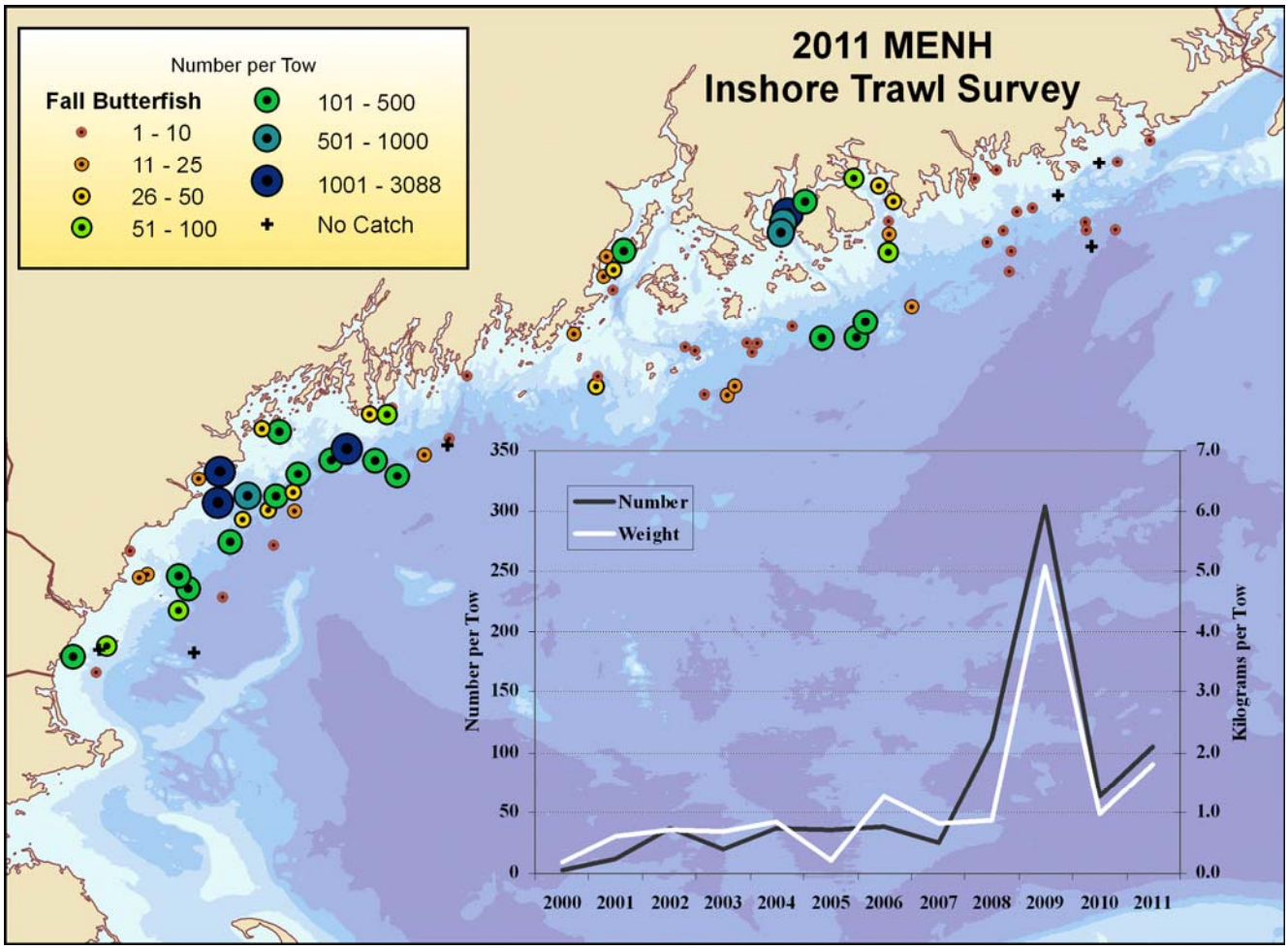
SPRING	Stratified Mean Number		Weight		FALL	Stratified Mean Number		Weight	
	Mean	Error	Mean	Error		Mean	Error	Mean	Error
					2000				
2001	47.87	24.09	0.48	0.17	2001				
2002	9.15	5.82	0.24	0.13	2002	4.57	2.11	0.15	0.08
2003	36.25	11.50	0.61	0.22	2003	7.30	3.31	0.36	0.16
2004	7.31	1.81	0.12	0.02	2004	5.02	1.66	0.28	0.06
2005	7.02	1.56	0.17	0.03	2005	14.34	8.88	0.48	0.15
2006	34.45	11.55	0.63	0.18	2006	3.91	2.31	0.09	0.04
2007	21.66	5.96	0.56	0.16	2007	36.09	20.50	3.26	2.04
2008	4.52	1.07	0.07	0.01	2008	4.12	1.98	0.39	0.22
2009	4.34	2.30	0.08	0.04	2009	13.21	7.70	1.32	0.81
2010	9.50	1.58	0.26	0.04	2010	6.08	2.34	0.25	0.04
2011	47.27	20.20	0.55	0.19	2011	5.62	3.38	0.19	0.05



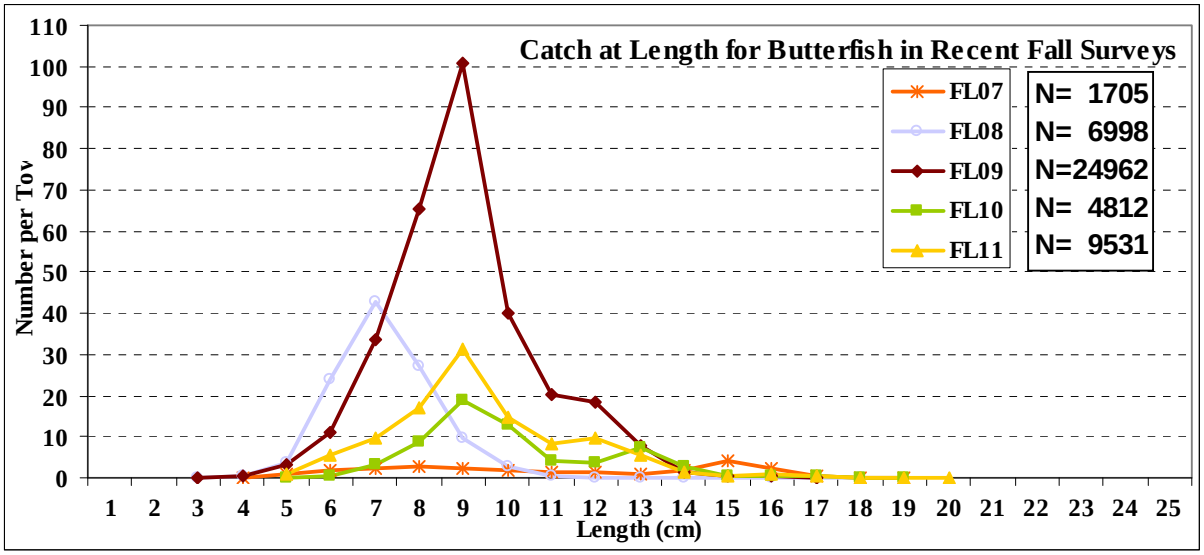


Butterfish, *Peprilus tricanthus*

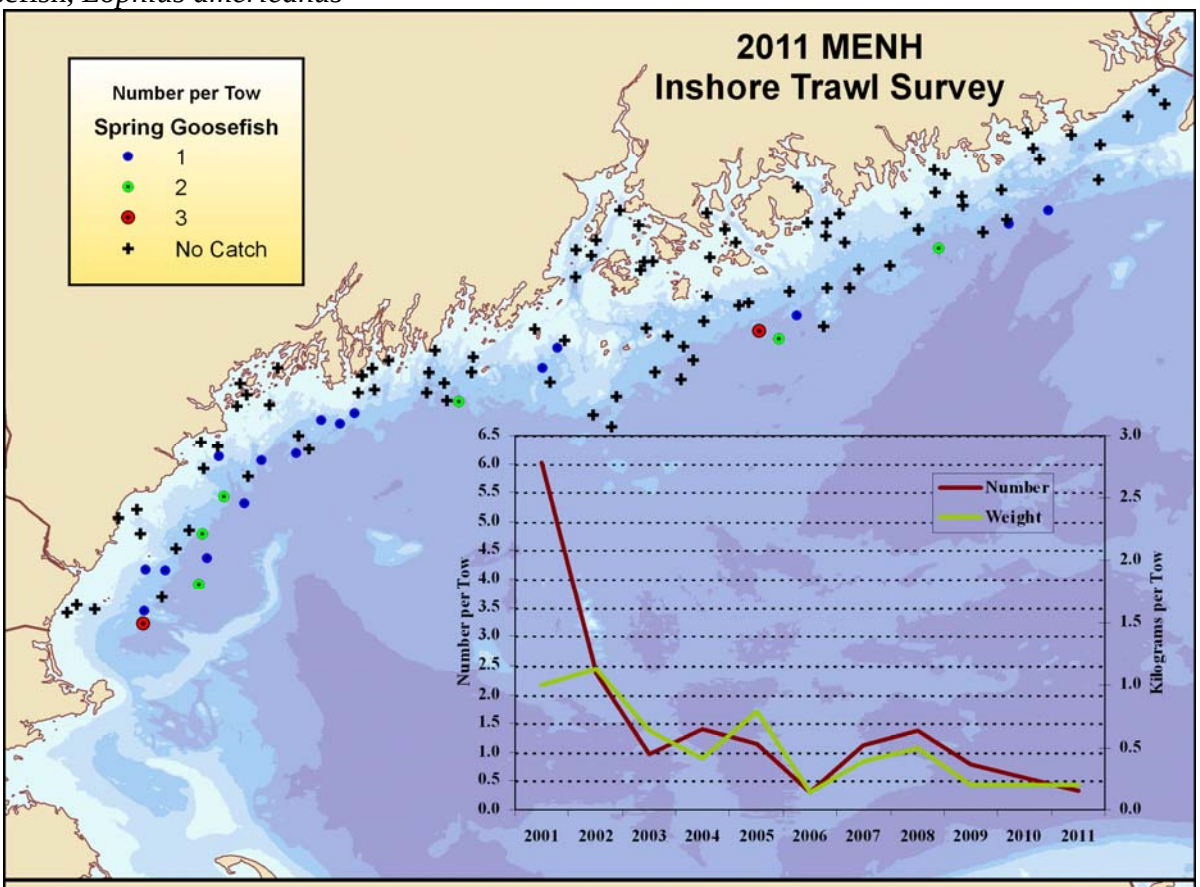
Butterfish are fairly rare in the spring surveys, a total of 2 fish were caught in 2001, 3 in 2002, then nothing until 2006 where 13 fish were caught, 15 in 2007, 3 in spring 2008, none in 2009, and 35 in 2010. Shown here are fall catches.

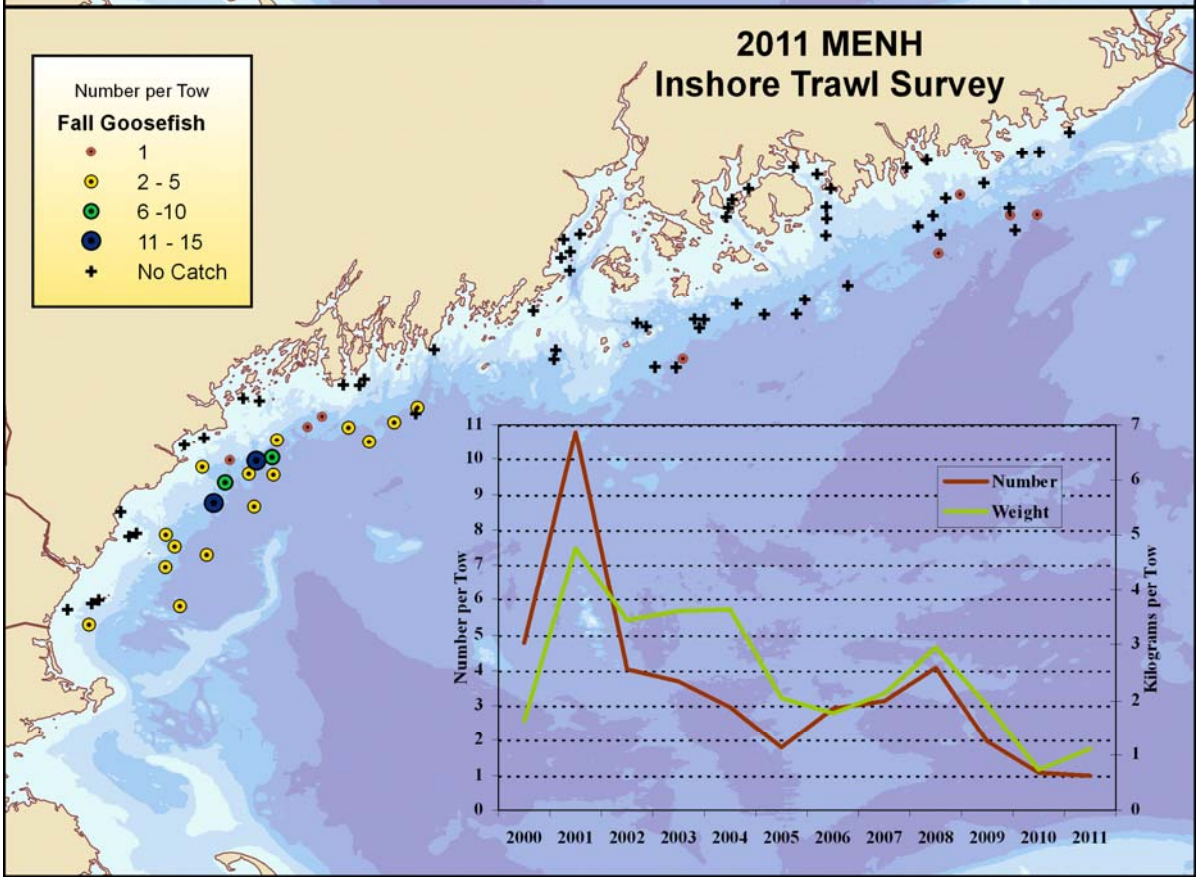


Means and standard error for graphs overlaid on distribution maps				
FALL				
Fixed stations not included				
for butterfish, indices calculated for regions 1 through 5				
strata 1 through 4 (2003 on)				
	Stratified Mean			
	Number		Weight	
	Mean	Error	Mean	Error
2000	2.26	0.78	0.18	0.07
2001	11.73	4.38	0.60	0.23
2002	37.90	13.72	0.71	0.21
2003	19.65	4.50	0.69	0.10
2004	37.24	6.02	0.84	0.26
2005	36.16	21.37	0.22	0.10
2006	38.91	10.93	1.28	0.43
2007	24.85	3.71	0.81	0.10
2008	112.10	42.00	0.88	0.28
2009	303.59	50.50	5.08	0.75
2010	63.24	12.26	0.98	0.15
2011	105.37	27.89	1.82	0.37



Goosefish, *Lophius americanus*





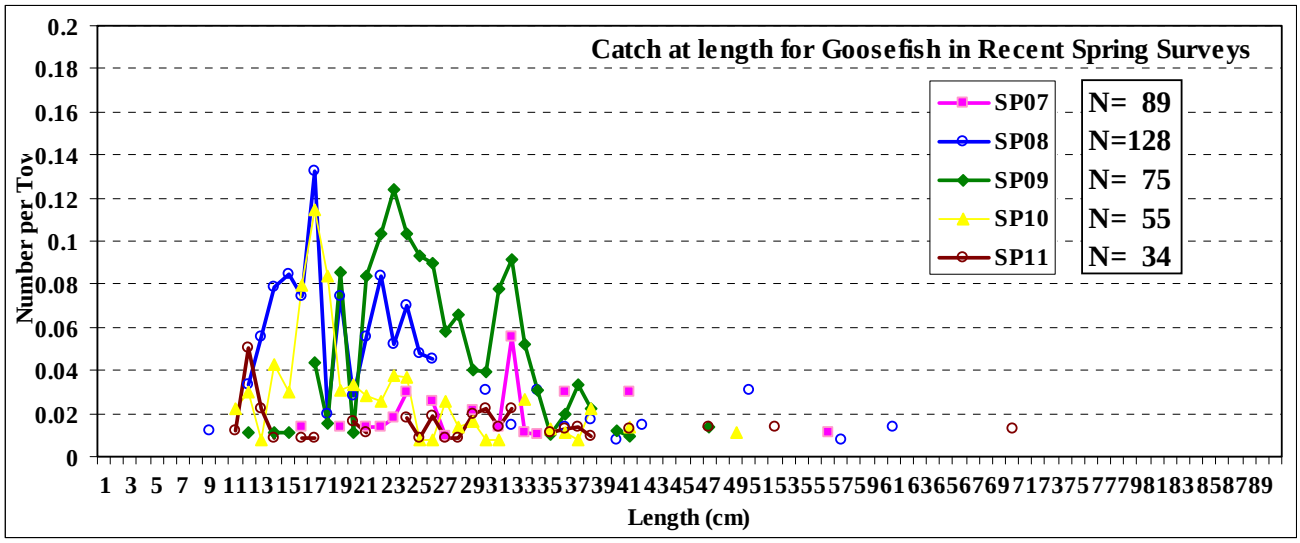
Means and standard error for graphs overlain on distribution maps
fixed stations not included
for goosefish, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

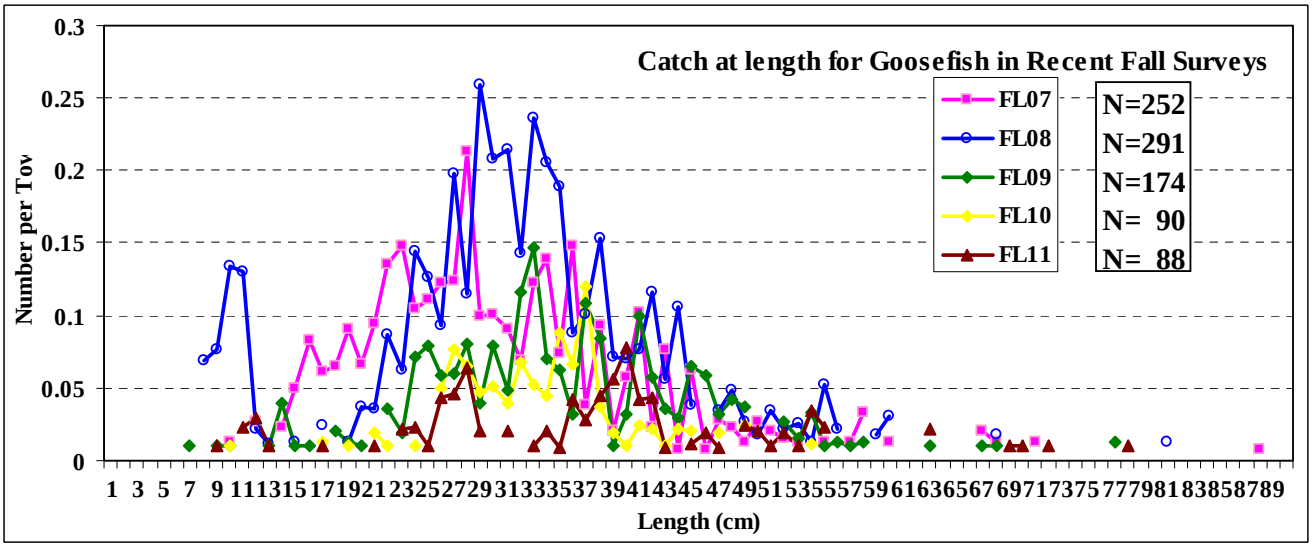
SPRING

	Stratified Mean Number		Weight	
	Mean	**SE**	**Mean**	**SE**
2001	6.0	0.91	0.99	0.15
2002	2.4	0.33	1.12	0.17
2003	1.0	0.14	0.64	0.18
2004	1.4	0.17	0.41	0.12
2005	1.1	0.16	0.79	0.15
2006	0.3	0.06	0.15	0.03
2007	1.1	0.18	0.38	0.10
2008	1.37	0.19	0.49	0.08
2009	0.80	0.11	0.20	0.04
2010	0.57	0.10	0.20	0.04
2011	0.33	0.05	0.20	0.07

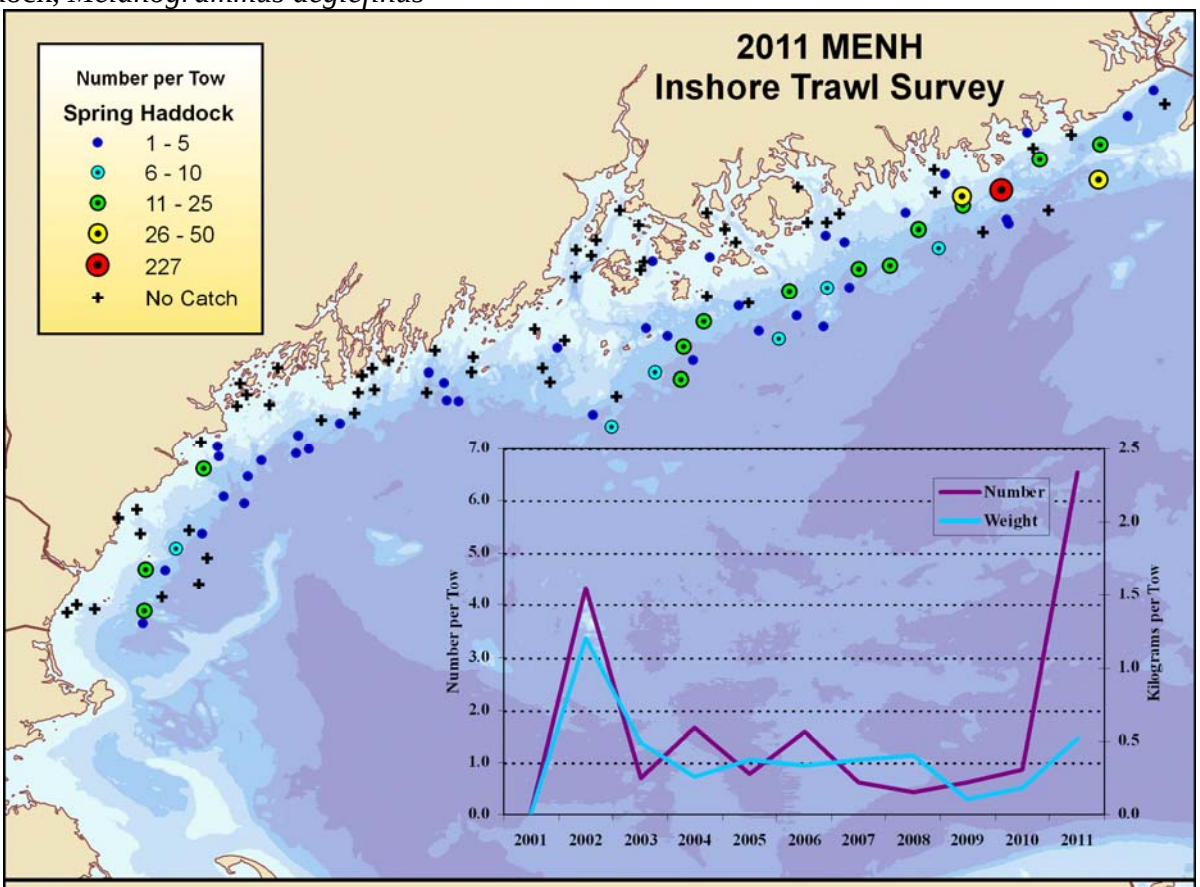
FALL

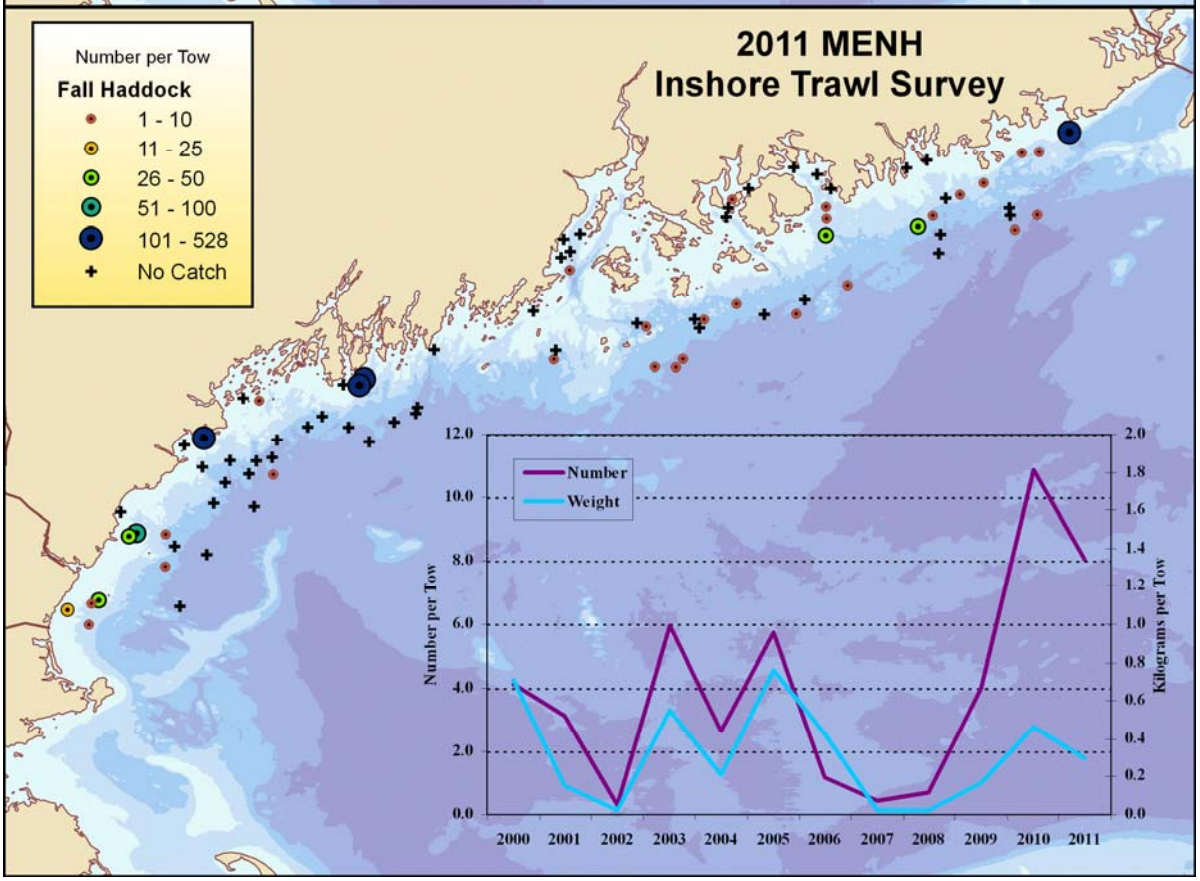
	Stratified Mean Number		Weight	
	Mean	**SE**	**Mean**	**SE**
2000	4.78	0.61	1.65	0.28
2001	10.77	1.11	4.75	0.43
2002	4.05	1.13	3.45	1.14
2003	3.68	0.66	3.60	0.80
2004	2.96	0.52	3.63	0.84
2005	1.82	0.25	2.04	0.47
2006	2.94	0.31	1.79	0.20
2007	3.13	0.43	2.13	0.35
2008	4.10	0.70	2.96	0.41
2009	2.00	0.41	1.93	0.52
2010	1.06	0.17	0.74	0.13
2011	0.97	0.17	1.12	0.20





Haddock, *Melanogrammus aeglefinus*



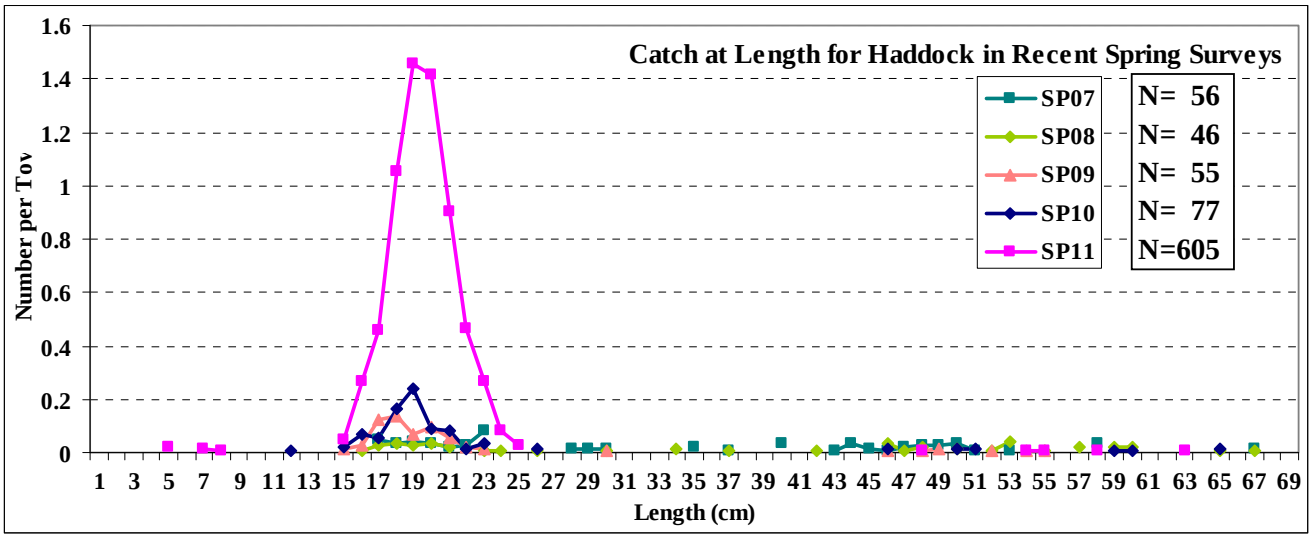


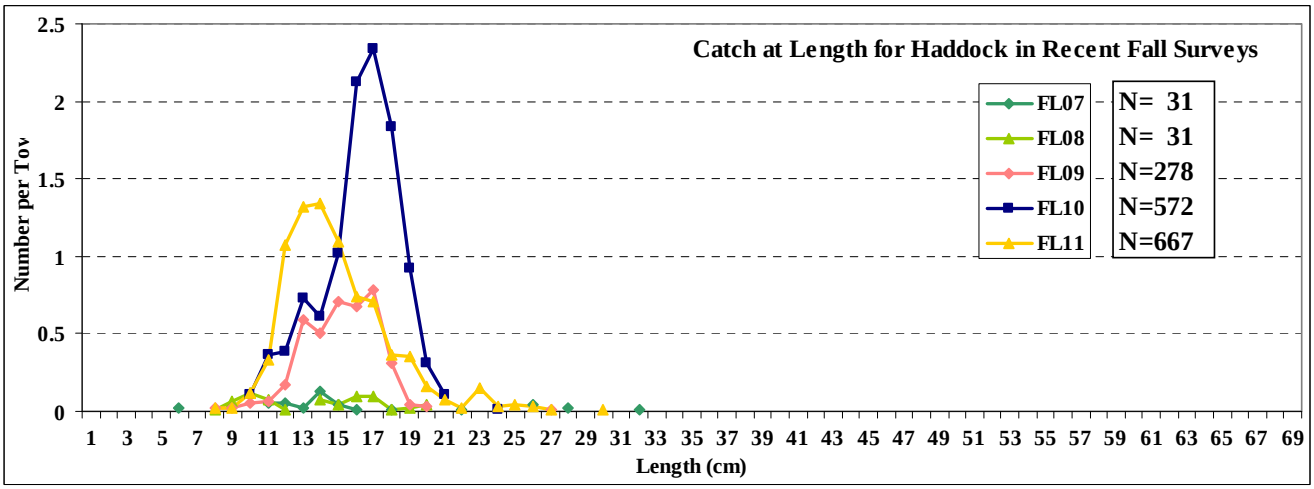
Means and standard errors for graphs overlain on distribution maps

fixed stations not included

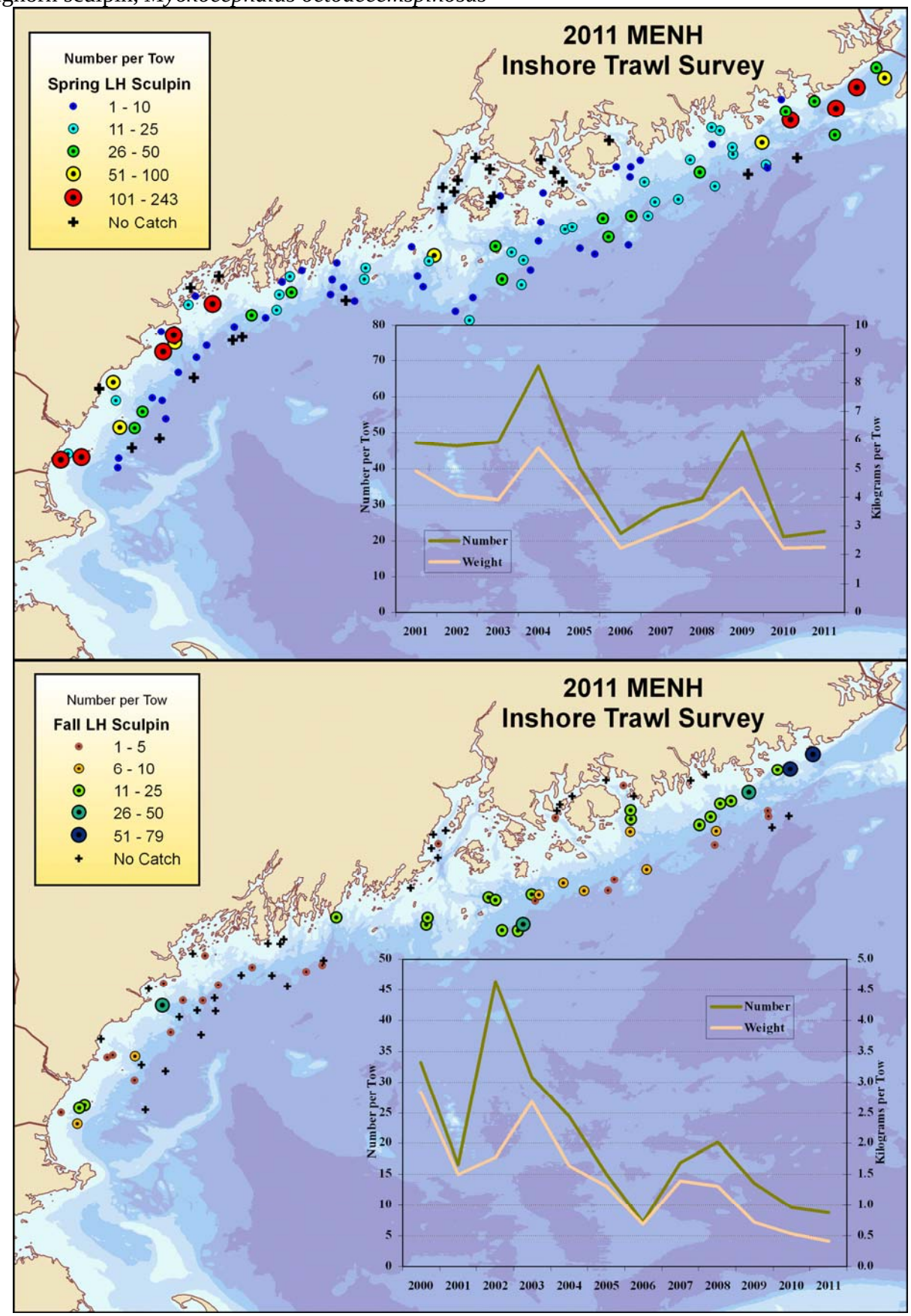
for haddock, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

SPRING					FALL				
	Number mean	error	Weight mean	error		Number mean	error	Weight mean	error
					2000	4.12	1.27	0.71	0.47
2001	0.02	0.02	0.00	0.00	**2001**	3.14	1.62	0.15	0.07
2002	4.33	1.25	1.20	0.32	**2002**	0.29	0.15	0.02	0.02
2003	0.70	0.43	0.49	0.26	**2003**	5.94	3.90	0.55	0.24
2004	1.67	0.66	0.26	0.08	**2004**	2.65	1.04	0.21	0.09
2005	0.77	0.35	0.37	0.18	**2005**	5.75	0.60	0.76	0.59
2006	1.58	1.35	0.33	0.12	**2006**	1.18	0.62	0.43	0.39
2007	0.63	0.20	0.38	0.12	**2007**	0.44	0.23	0.02	0.01
2008	0.43	0.17	0.40	0.13	**2008**	0.68	0.26	0.02	0.01
2009	0.61	0.23	0.10	0.03	**2009**	3.99	1.24	0.17	0.05
2010	0.85	0.37	0.19	0.06	**2010**	10.86	3.97	0.46	0.18
2011	6.54	3.24	0.52	0.18	**2011**	8.02	2.98	0.30	0.10





Longhorn sculpin, *Myoxocephalus octodecemspinosus*

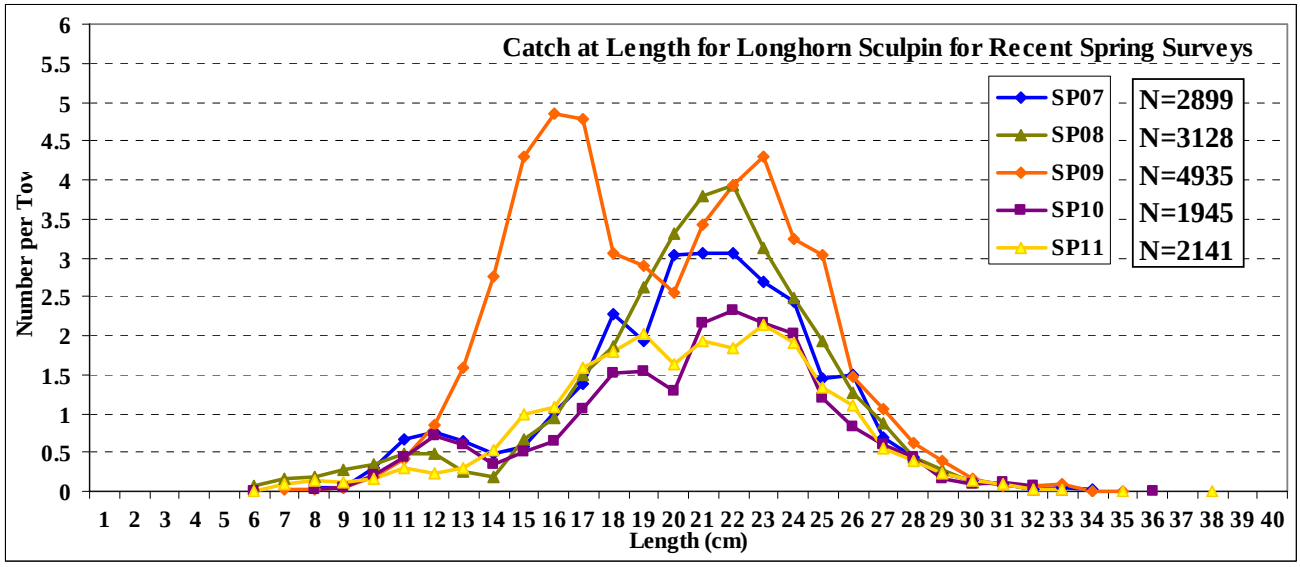


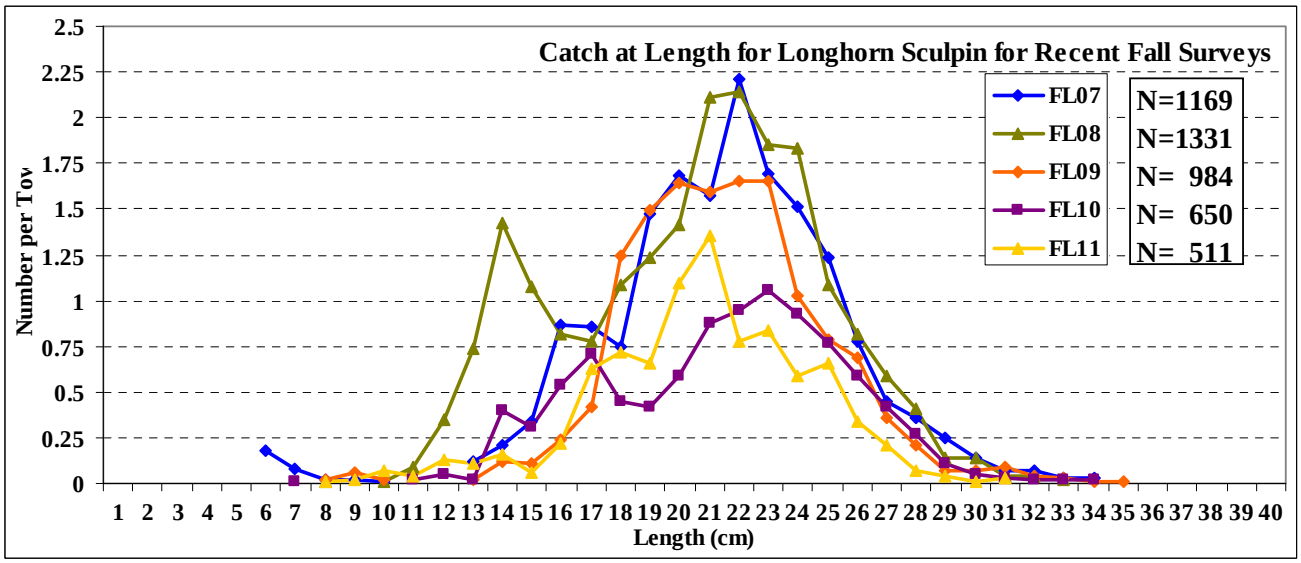
Means and standard errors for graphs overlain on distribution maps

fixed stations not included

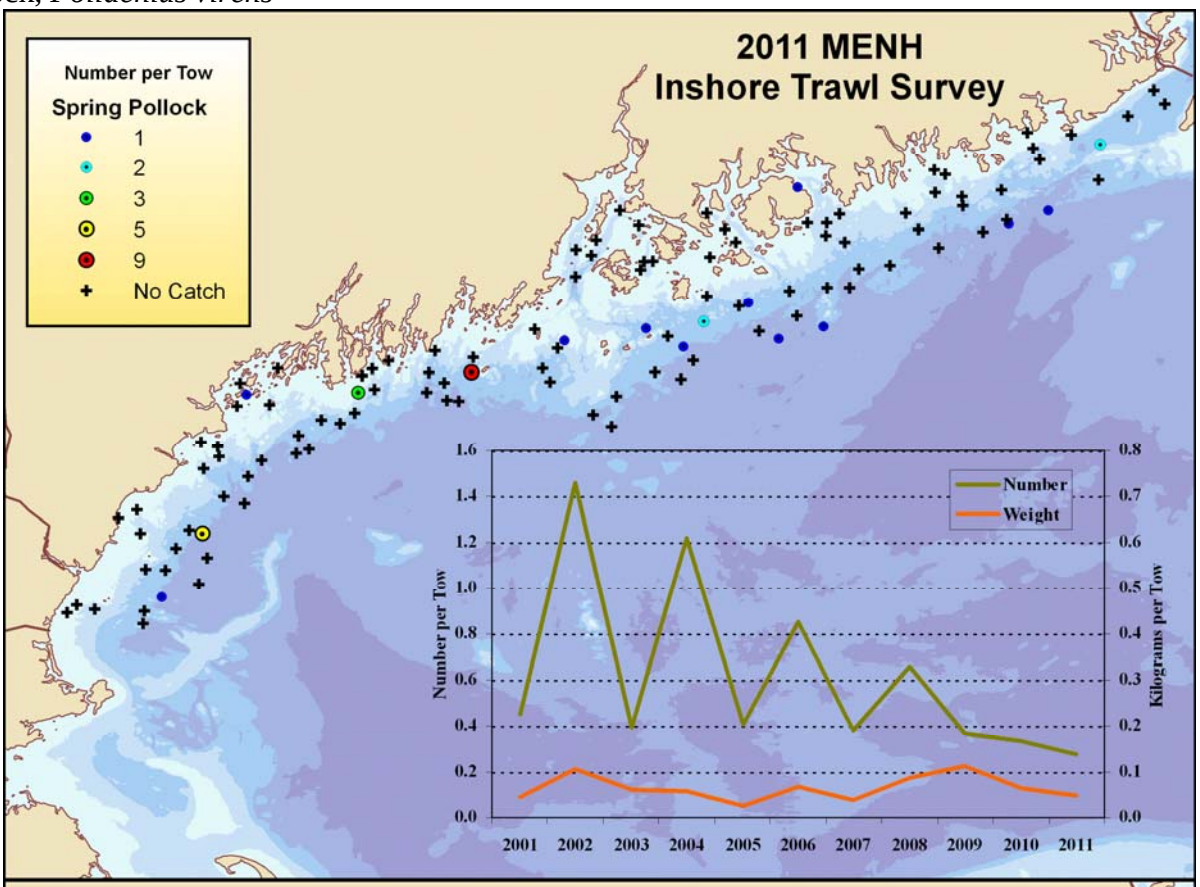
for LH Sculpin, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

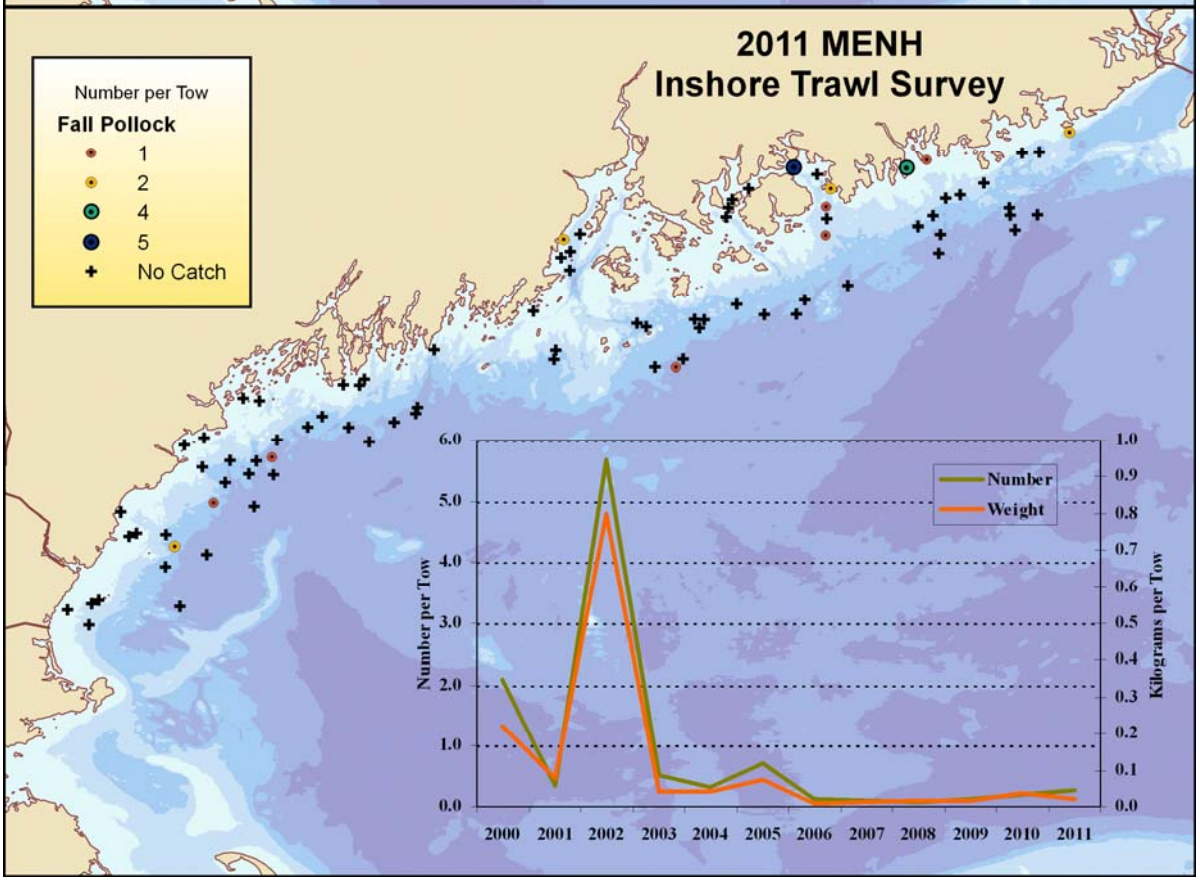
SPRING Stratified Mean					FALL Stratified Mean				
	Number Mean	SE	Weight Mean	SE		Number Mean	SE	Weight Mean	SE
					2000	33.20	7.83	2.84	0.38
2001	47.28	5.67	4.91	0.53	**2001**	16.66	3.74	1.50	0.29
2002	46.32	7.29	4.07	0.53	**2002**	46.40	8.24	1.79	0.51
2003	47.45	5.25	3.93	0.50	**2003**	30.75	1.73	2.69	0.17
2004	68.71	5.83	5.70	0.50	**2004**	24.45	4.55	1.64	0.29
2005	40.17	3.90	4.10	0.37	**2005**	15.01	2.89	1.32	0.28
2006	21.86	3.79	2.22	0.34	**2006**	7.27	0.97	0.70	0.10
2007	29.00	5.01	2.77	0.46	**2007**	17.00	3.33	1.40	0.28
2008	31.61	3.51	3.28	0.39	**2008**	20.25	3.00	1.32	0.26
2009	50.37	7.59	4.33	0.51	**2009**	13.68	1.81	0.72	0.14
2010	21.08	3.26	2.25	0.32	**2010**	9.62	1.33	0.54	0.10
2011	22.69	3.16	2.28	0.30	**2011**	8.84	1.22	0.41	0.03





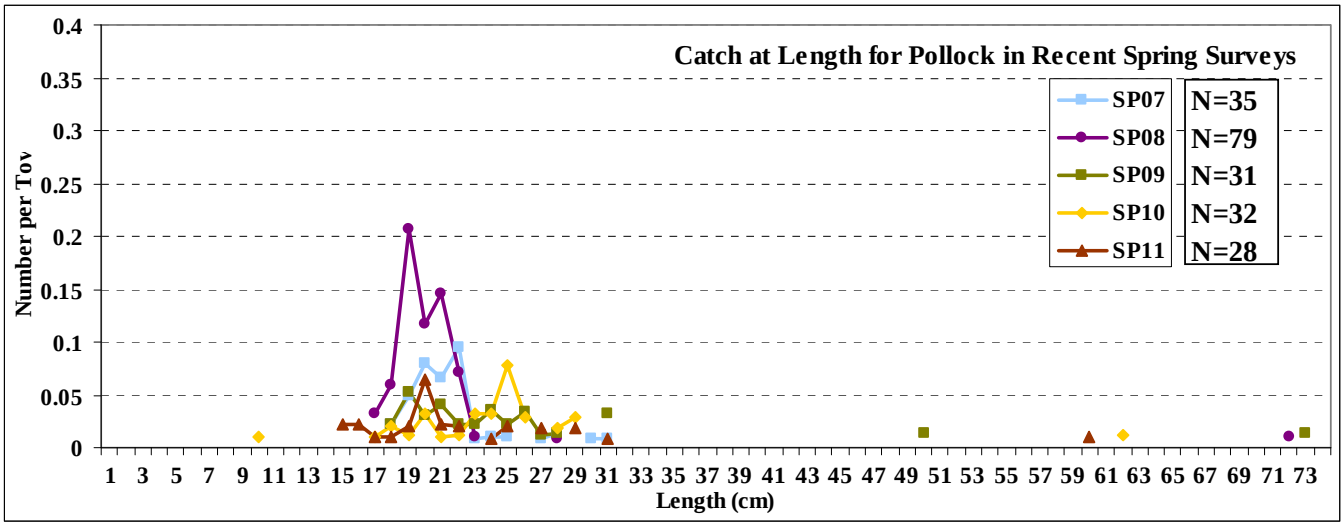
Pollock, *Pollachius virens*

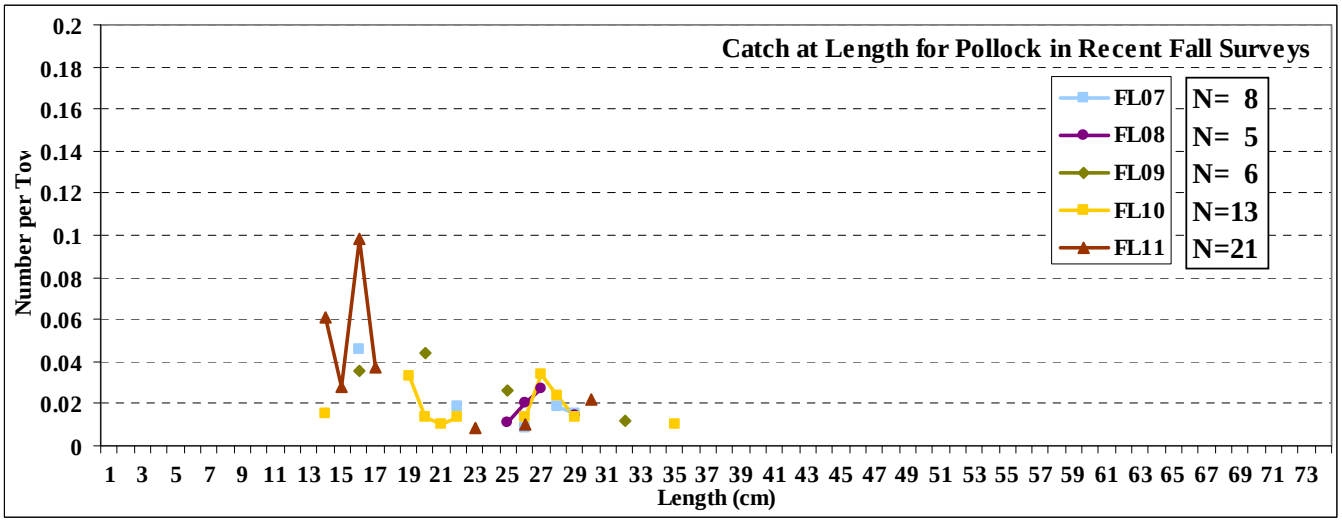




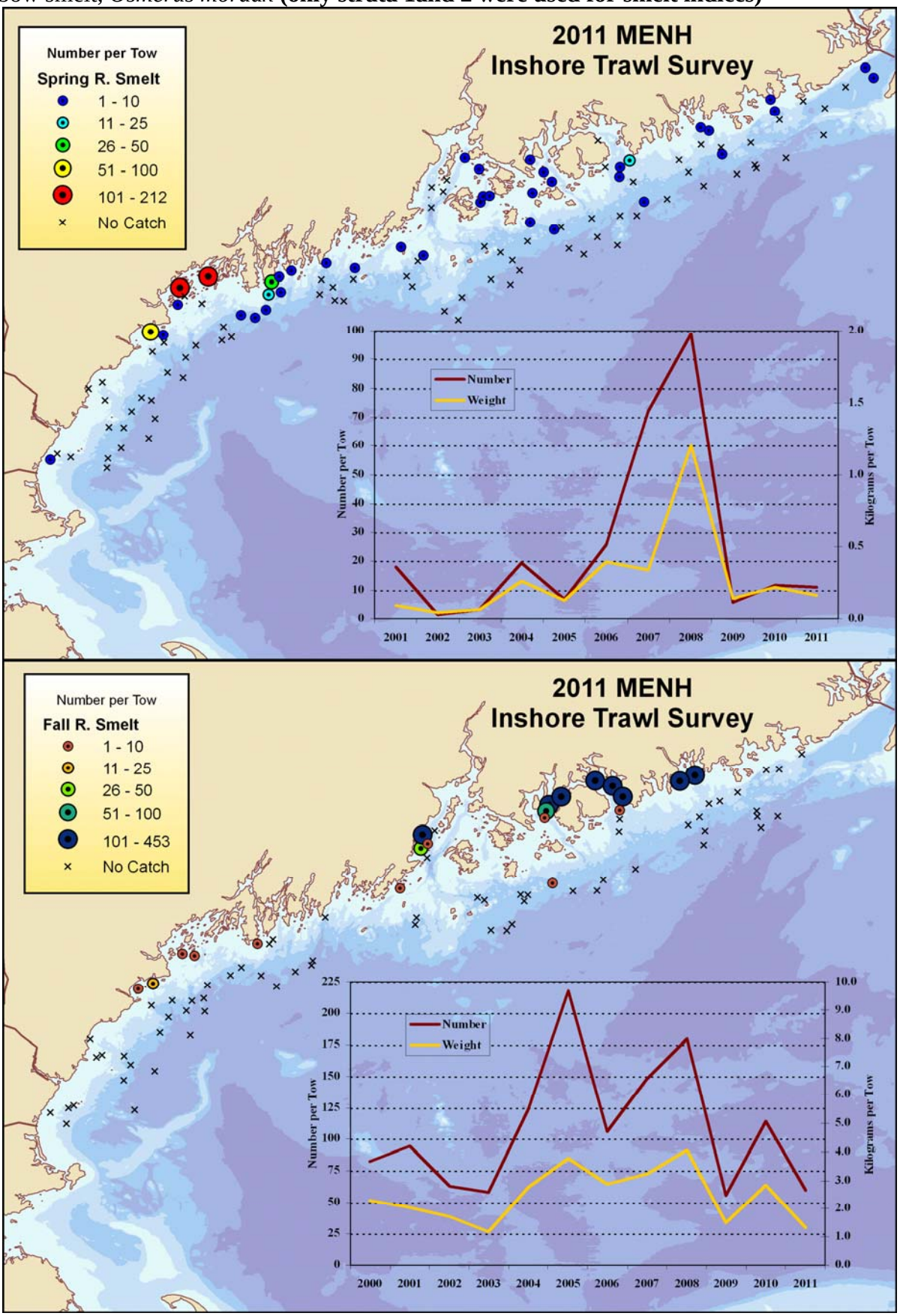
Mean and standard error for graphs overlain on distribution maps
fixed stations not included
for pollock, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

SPRING	Stratified Mean Number		Weight		FALL	Stratified Mean Number		Weight	
	Mean	SE	Mean	SE		Mean	SE	Mean	SE
					2000	2.08	1.10	0.22	0.06
2001	0.45	0.16	0.05	0.02	**2001**	0.33	0.09	0.08	0.02
2002	1.46	0.46	0.11	0.03	**2002**	5.68	4.03	0.80	0.60
2003	0.40	0.13	0.06	0.04	**2003**	0.51	0.19	0.04	0.02
2004	1.22	0.37	0.06	0.02	**2004**	0.31	0.11	0.04	0.01
2005	0.41	0.38	0.03	0.02	**2005**	0.71	0.06	0.07	0.02
2006	0.85	0.46	0.07	0.04	**2006**	0.13	0.06	0.01	0.00
2007	0.38	0.22	0.04	0.02	**2007**	0.11	0.05	0.01	0.01
2008	0.66	0.48	0.09	0.05	**2008**	0.07	0.03	0.02	0.01
2009	0.37	0.13	0.11	0.07	**2009**	0.12	0.05	0.02	0.01
2010	0.34	0.13	0.06	0.03	**2010**	0.19	0.06	0.04	0.01
2011	0.28	0.11	0.05	0.02	**2011**	0.27	0.09	0.02	0.01



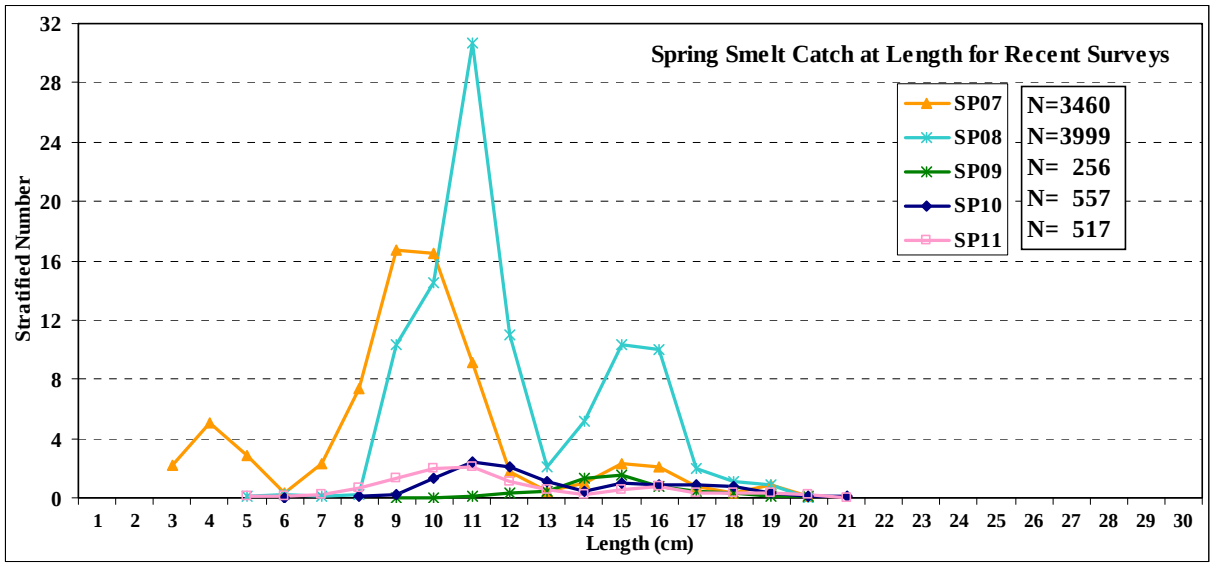


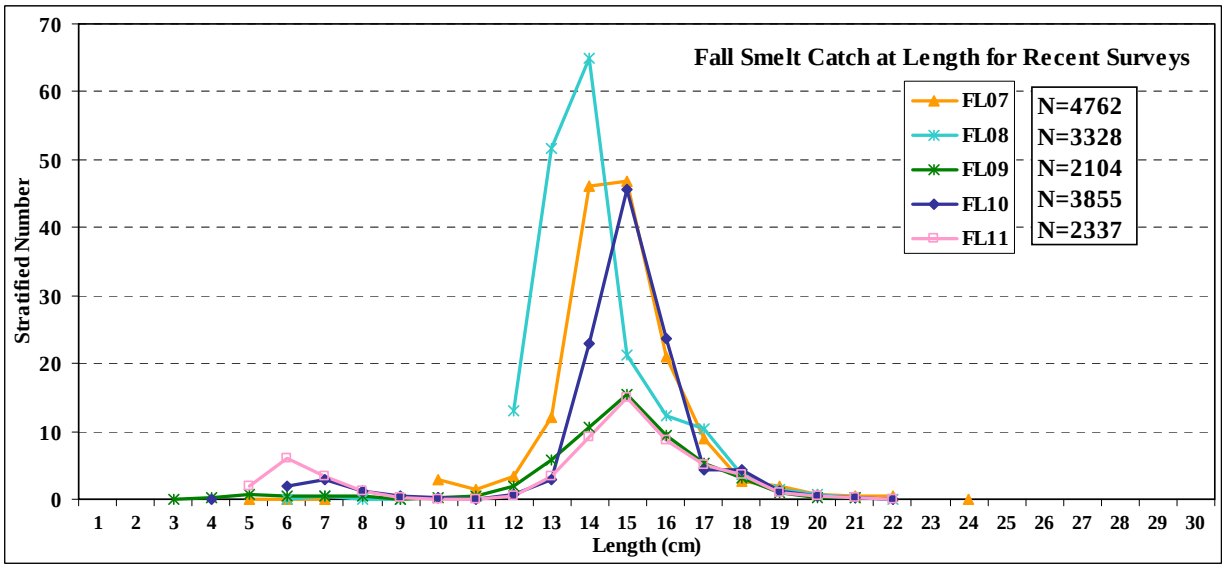
Rainbow smelt, *Osmerus mordax* **(only strata 1and 2 were used for smelt indices)**



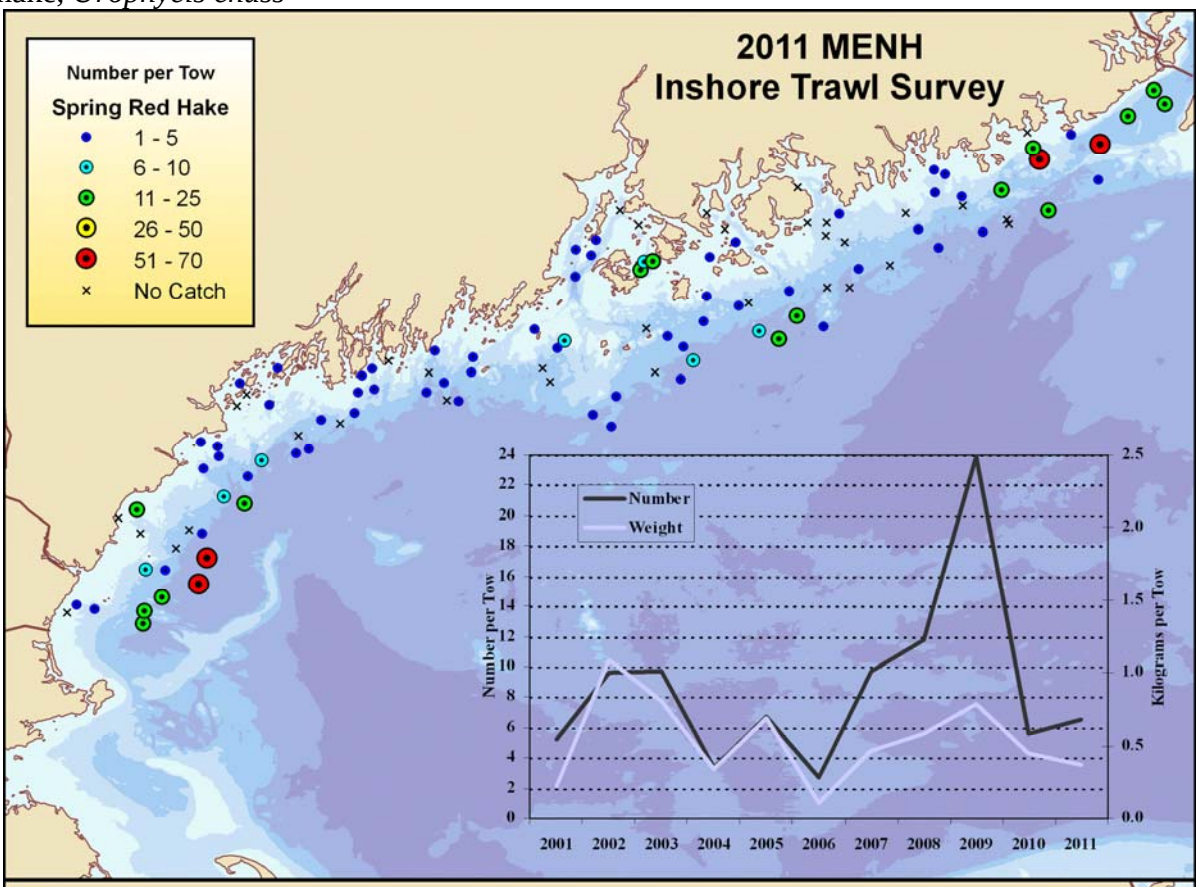
Mean and standard error for graphs overlain on distribution maps for smelt, indices calculated for regions 1 through 5; Strata 1 and 2
fixed stations not included

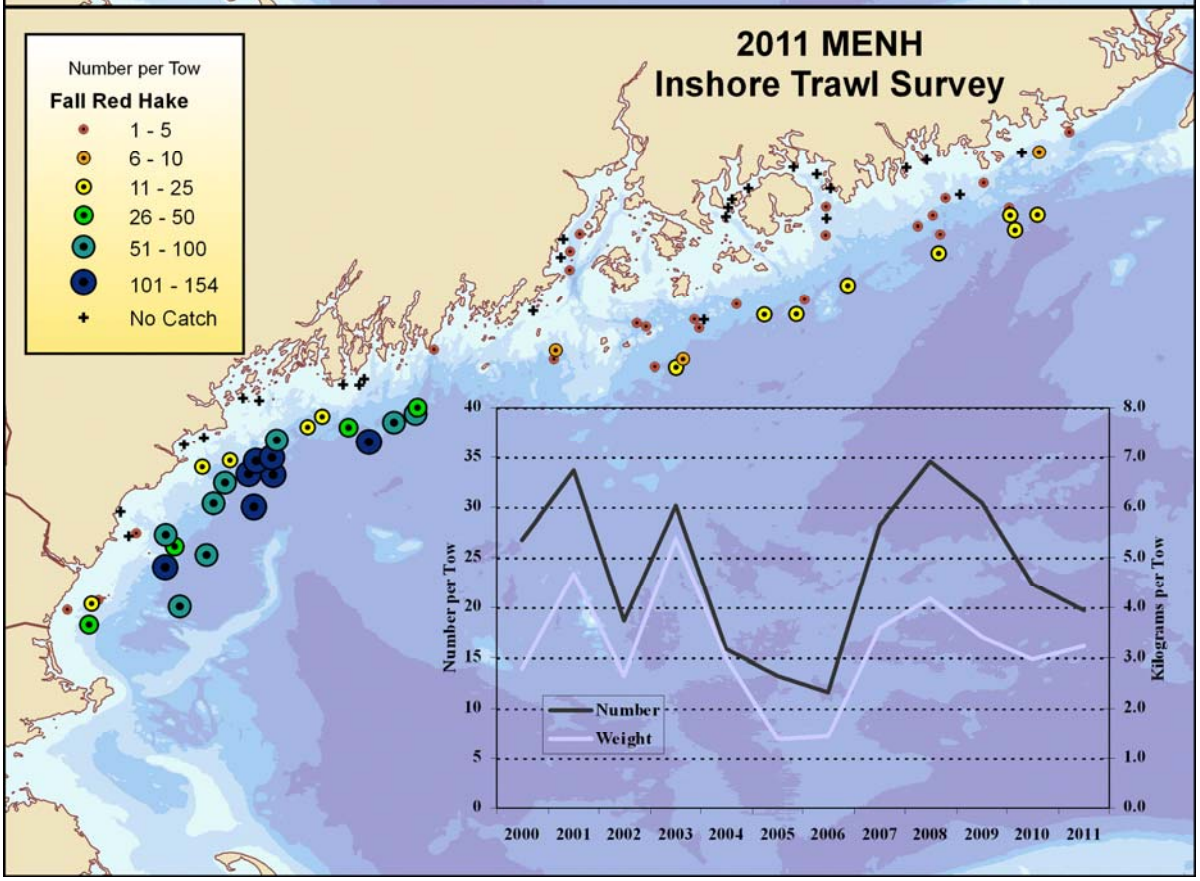
SPRING	Stratified Mean Number		Weight		FALL	Stratified Mean Number		Weight	
	Mean	SE	Mean	SE		Mean	SE	Mean	SE
					2000	82.20	39.89	2.32	1.28
2001	18.07	11.76	0.09	0.05	**2001**	94.54	19.81	2.05	0.46
2002	1.34	0.53	0.04	0.02	**2002**	63.24	49.51	1.74	1.32
2003	3.20	1.16	0.06	0.02	**2003**	58.18	16.65	1.20	0.35
2004	19.50	10.88	0.26	0.12	**2004**	123.81	42.44	2.77	0.92
2005	6.68	2.14	0.13	0.06	**2005**	217.34	48.69	3.77	0.97
2006	25.62	9.20	0.40	0.14	**2006**	105.85	58.25	2.89	1.39
2007	72.07	37.68	0.34	0.14	**2007**	148.49	85.05	3.25	1.70
2008	98.81	78.88	1.20	0.91	**2008**	179.87	156.18	4.07	3.34
2009	5.59	2.05	0.14	0.05	**2009**	56.05	20.44	1.52	0.61
2010	11.74	6.10	0.22	0.11	**2010**	113.81	81.07	2.83	2.11
2011	10.91	4.72	0.16	0.06	**2011**	59.94	10.40	1.34	0.22





Red hake, *Urophycis chuss*





Mean and standard error for graphs overlain on distribution maps

fixed stations not included

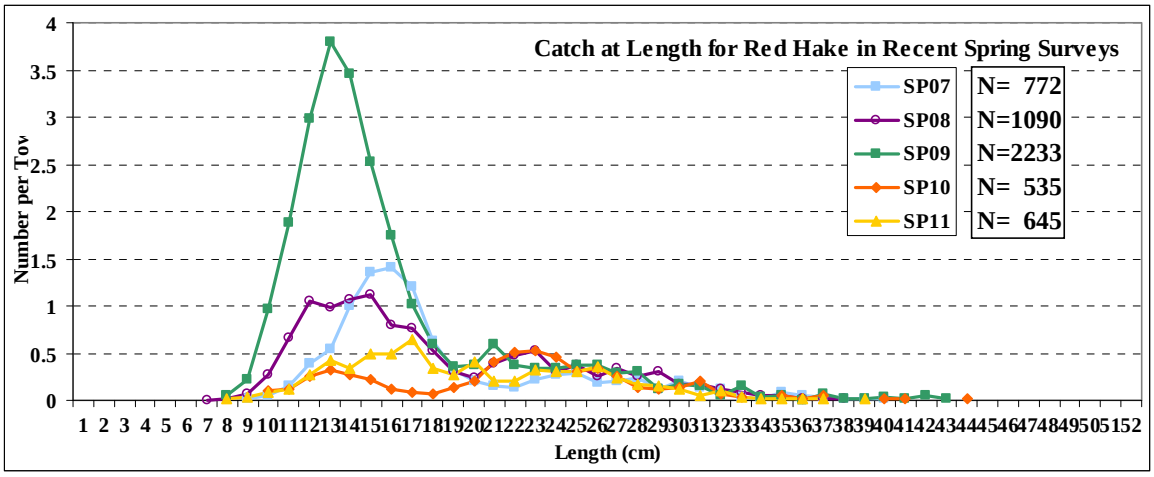
for red hake, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

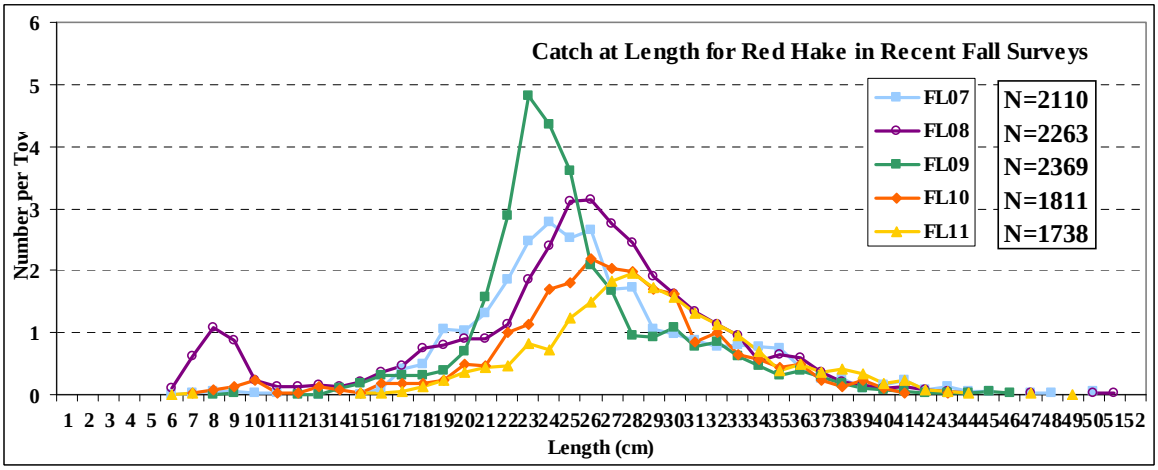
SPRING

	Stratified Mean Number		Weight	
	Mean	SE	Mean	SE
2001	5.24	1.13	0.22	0.08
2002	9.59	1.11	1.09	0.13
2003	9.69	1.53	0.81	0.18
2004	3.37	0.37	0.34	0.05
2005	6.68	0.63	0.69	0.06
2006	2.69	0.49	0.11	0.02
2007	9.75	1.48	0.47	0.10
2008	11.76	1.77	0.58	0.07
2009	23.89	2.10	0.78	0.05
2010	5.60	0.43	0.45	0.05
2011	6.55	1.05	0.37	0.07

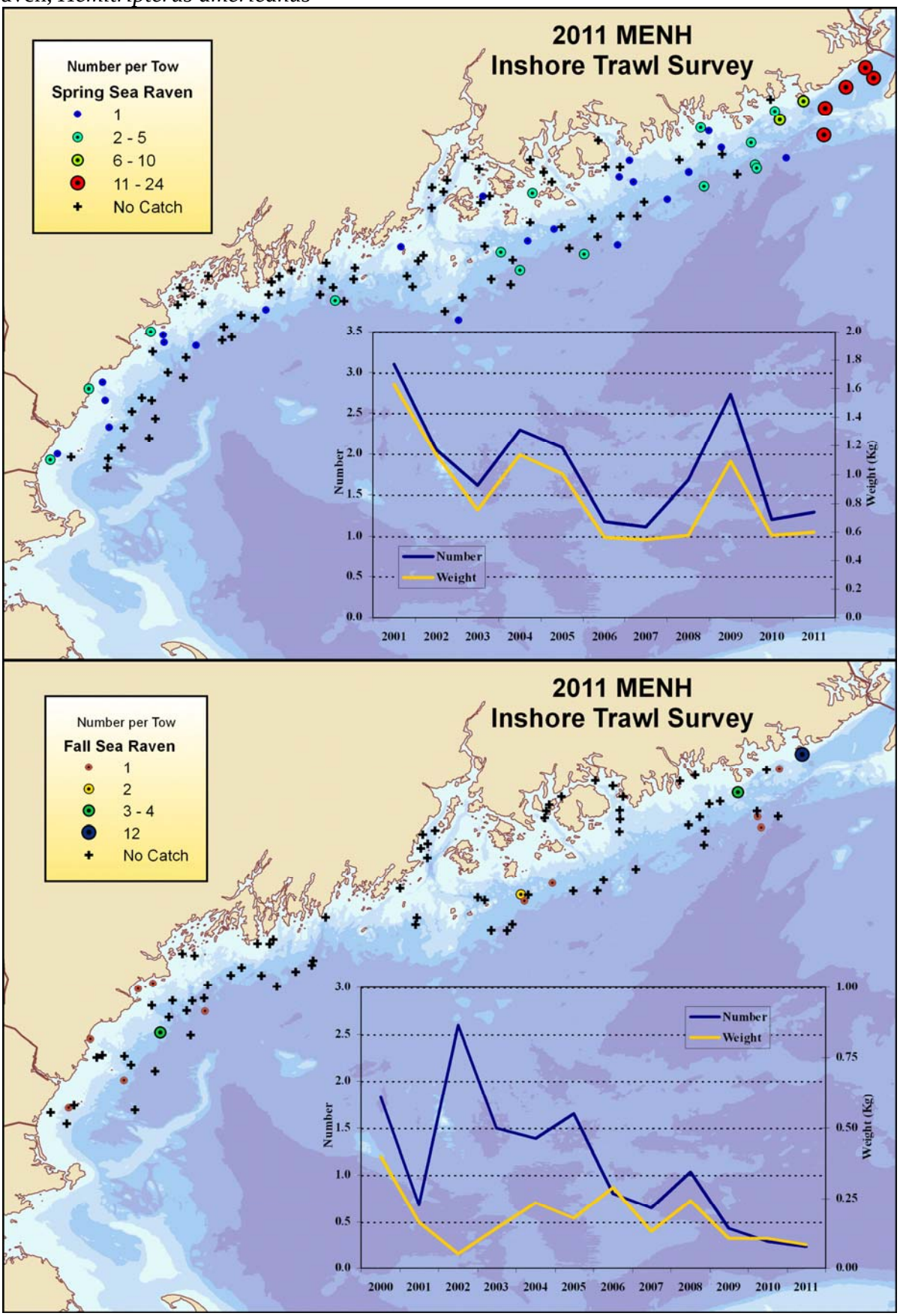
FALL

	Stratified Mean Number		Weight	
	Mean	SE	Mean	SE
2000	26.71	3.27	2.81	0.33
2001	33.66	5.01	4.68	0.68
2002	18.67	3.35	2.64	0.52
2003	30.07	2.46	5.39	0.45
2004	15.81	1.68	3.00	0.39
2005	13.20	1.18	1.39	0.20
2006	11.58	1.53	1.45	0.17
2007	28.19	3.37	3.60	0.48
2008	34.50	2.90	4.16	0.28
2009	30.45	2.84	3.41	0.33
2010	22.33	1.95	2.97	0.27
2011	19.76	1.84	3.24	0.28





Sea raven, *Hemitripterus americanus*



Mean and standard error for graphs overlain on distribution maps

fixed stations not included

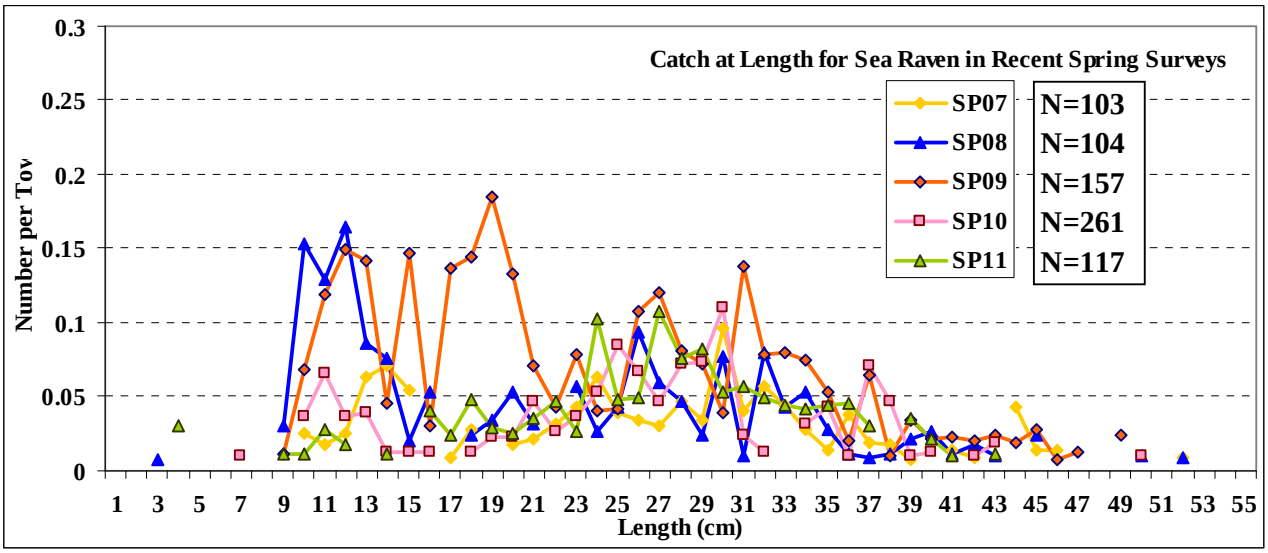
for sea raven, indices calculated for regions 1 through 5 and strata 1 through 4

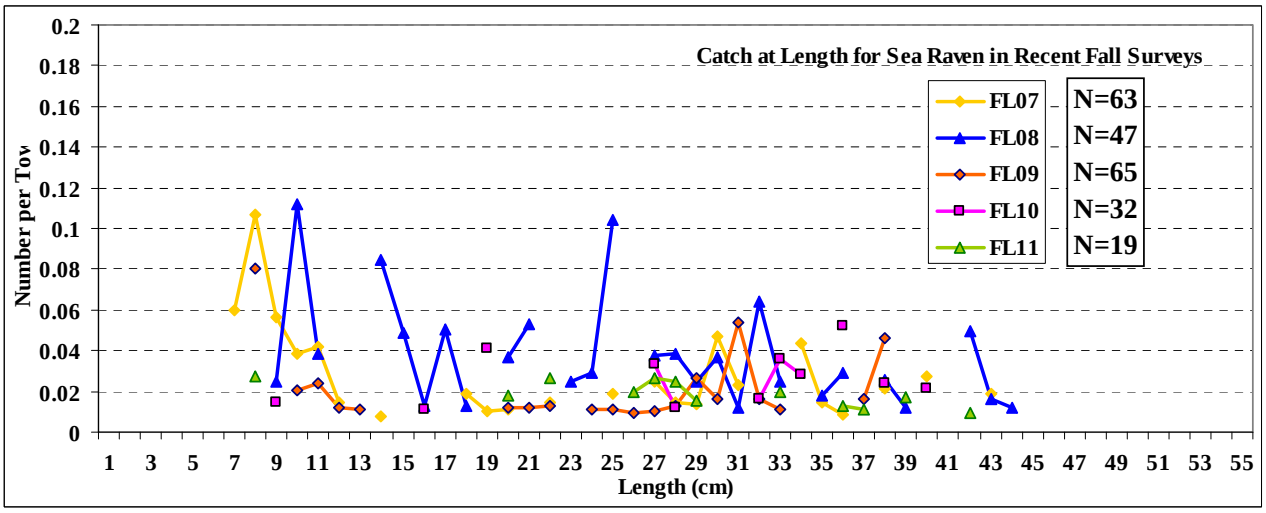
SPRING

	Stratified Mean Number Mean	Error	Weight Mean	Error
2001	3.09	1.01	1.63	0.55
2002	2.06	0.34	1.14	0.22
2003	1.62	0.35	0.75	0.17
2004	2.30	0.56	1.14	0.33
2005	2.08	0.29	1.00	0.14
2006	1.18	0.26	0.56	0.15
2007	1.11	0.22	0.54	0.09
2008	1.68	0.32	0.58	0.09
2009	2.74	0.42	1.09	0.19
2010	1.21	0.27	0.58	0.14
2011	1.30	0.29	0.60	0.12

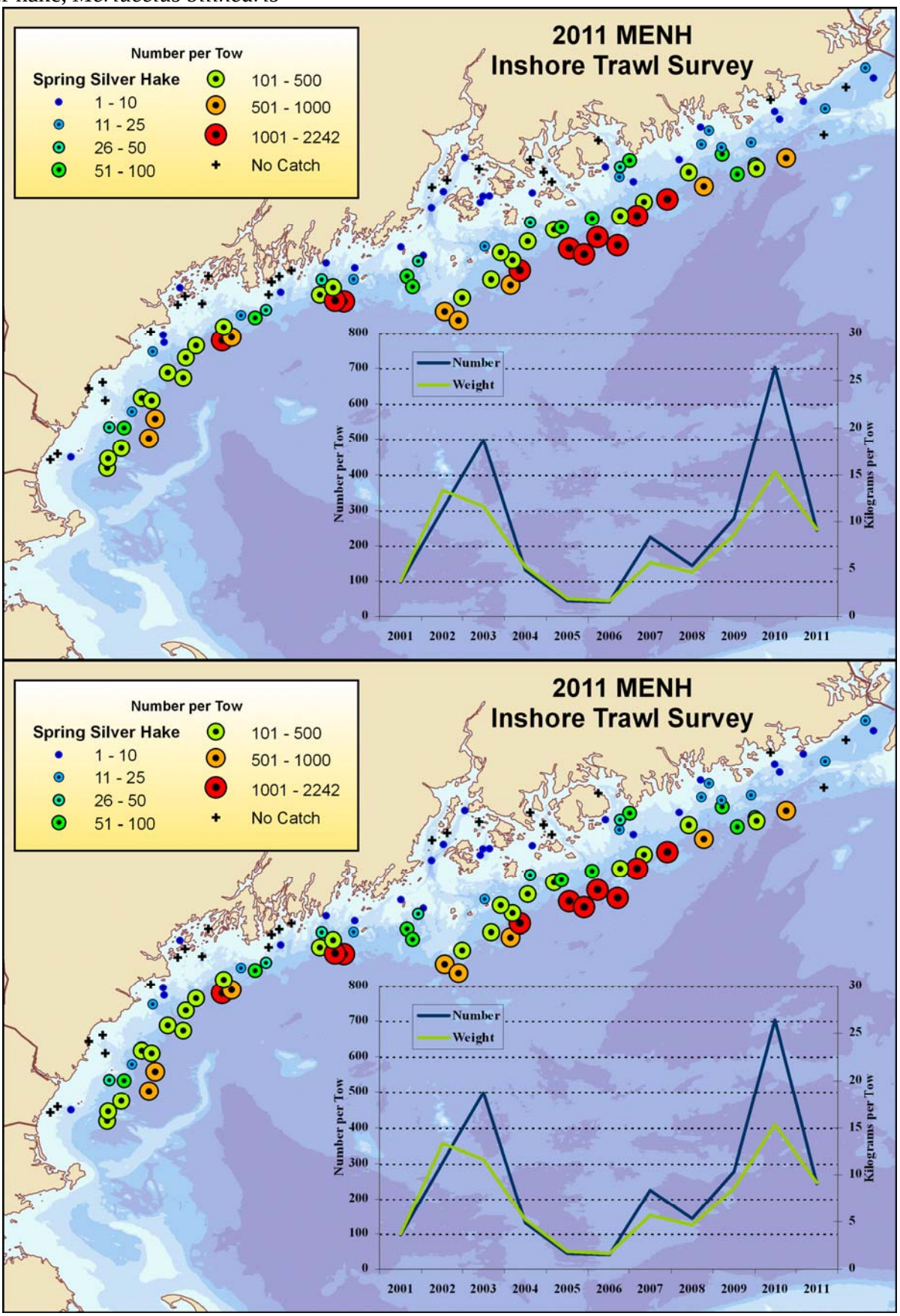
FALL

	Stratified Mean Number Mean	Error	Weight Mean	Error
2000	1.83	0.30	0.40	0.09
2001	0.68	0.14	0.16	0.06
2002	2.59	0.84	0.05	0.02
2003	1.50	0.36	0.14	0.06
2004	1.39	0.42	0.24	0.06
2005	1.65	0.17	0.18	0.04
2006	0.80	0.17	0.29	0.07
2007	0.65	0.25	0.13	0.04
2008	1.03	0.34	0.24	0.11
2009	0.43	0.09	0.11	0.03
2010	0.29	0.08	0.11	0.05
2011	0.23	0.07	0.08	0.03





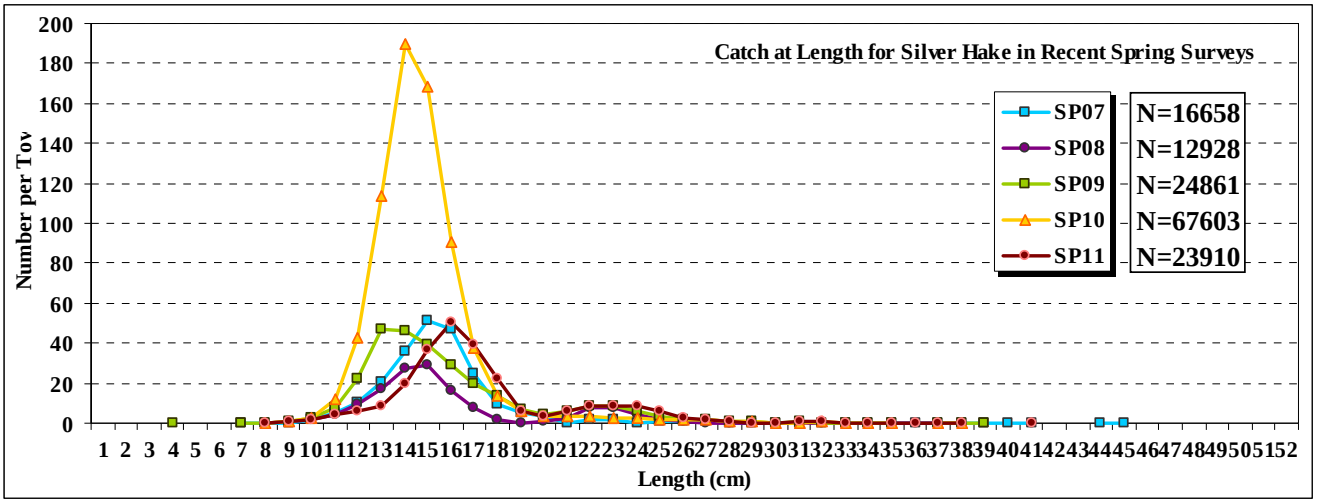
Silver hake, *Merluccius bilinearis*

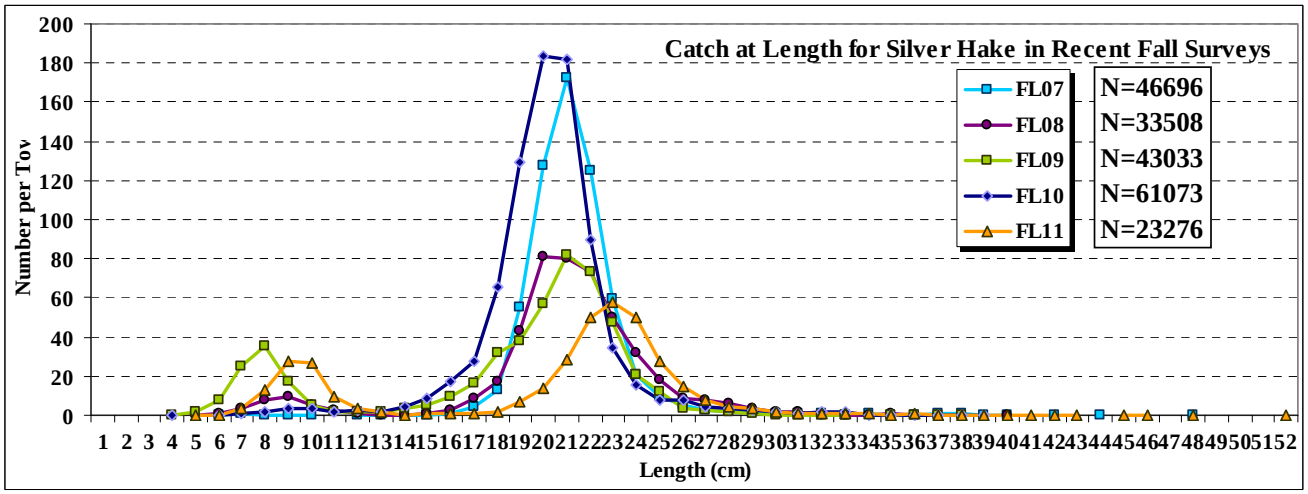


Number per Tow
Spring Silver Hake
1 - 10
11 - 25
26 - 50
51 - 100
101 - 500
501 - 1000
1001 - 2242
No Catch
2011 MENH
Inshore Trawl Survey
Number
Weight
Number per Tow
Kilograms per Tow
0
100
200
300
400
500
600
700
800
0
5
10
15
20
25
30
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011

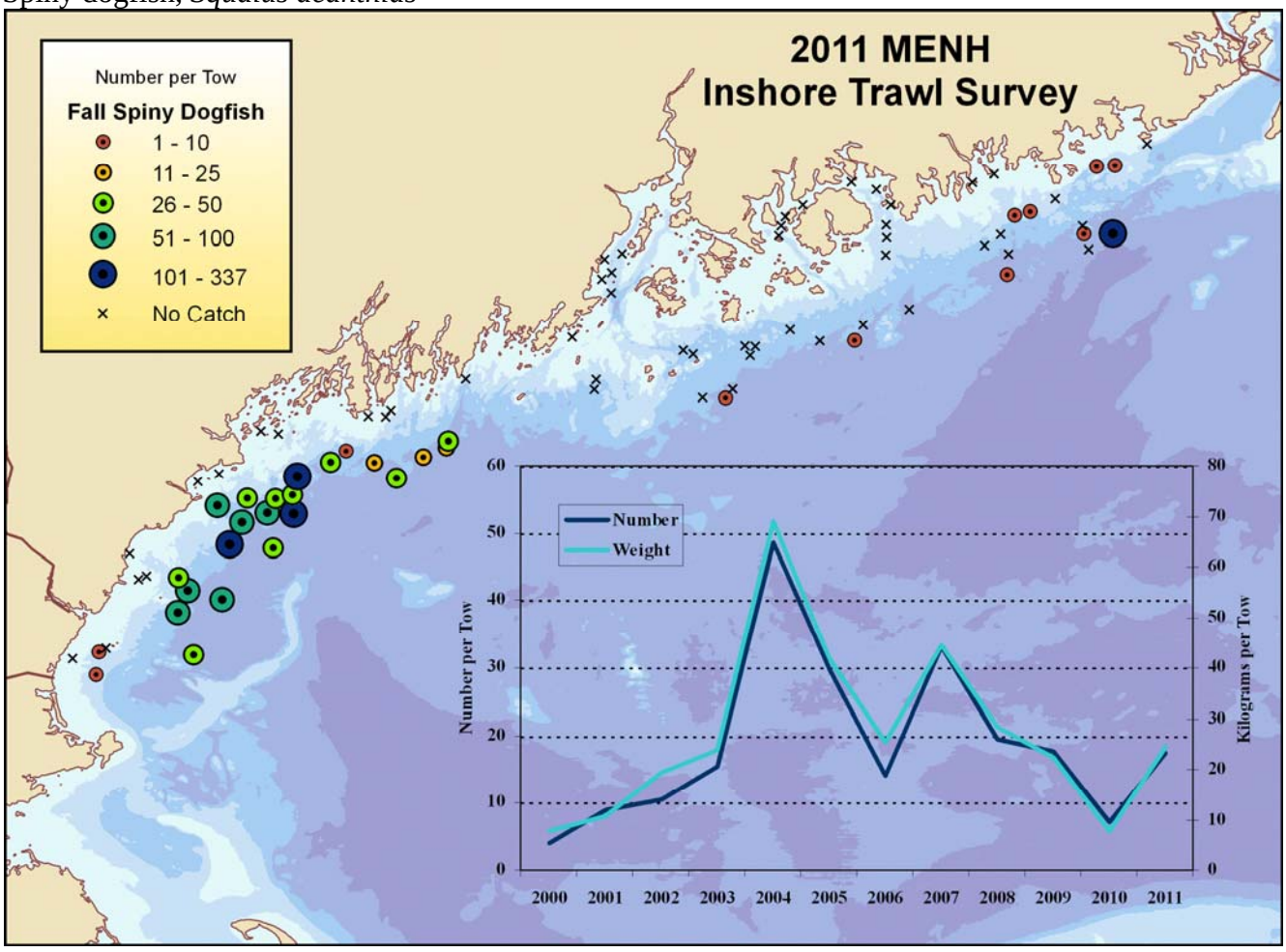
Mean and standard error for grpahs overlain on distribution maps
fixed stations not included
for silver hake, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

SPRING	Stratified Mean Number Mean	SE	Weight Mean	SE	FALL	Stratified Mean Number Mean	SE	Weight Mean	SE
					2000	786.14	70.47	34.77	3.55
2001	97.62	13.59	3.68	0.50	**2001**	682.55	109.26	52.62	7.73
2002	302.18	103.63	13.34	4.69	**2002**	476.01	111.24	13.47	2.15
2003	497.84	77.05	11.63	1.86	**2003**	1046.09	116.69	49.97	5.72
2004	131.82	11.73	5.26	0.64	**2004**	413.66	95.64	24.85	6.03
2005	43.34	4.88	1.91	0.21	**2005**	44.91	9.31	3.77	0.92
2006	40.60	7.28	1.58	0.29	**2006**	83.14	20.10	6.76	2.05
2007	223.16	97.15	5.68	2.57	**2007**	605.57	111.88	35.35	6.67
2008	142.90	18.16	4.67	0.70	**2008**	467.93	120.68	32.77	11.28
2009	277.91	30.32	8.59	1.03	**2009**	504.72	84.99	24.88	4.24
2010	702.43	115.63	15.33	2.28	**2010**	806.34	112.04	38.16	4.84
2011	243.92	23.39	9.21	0.96	**2011**	361.96	45.25	22.81	2.99



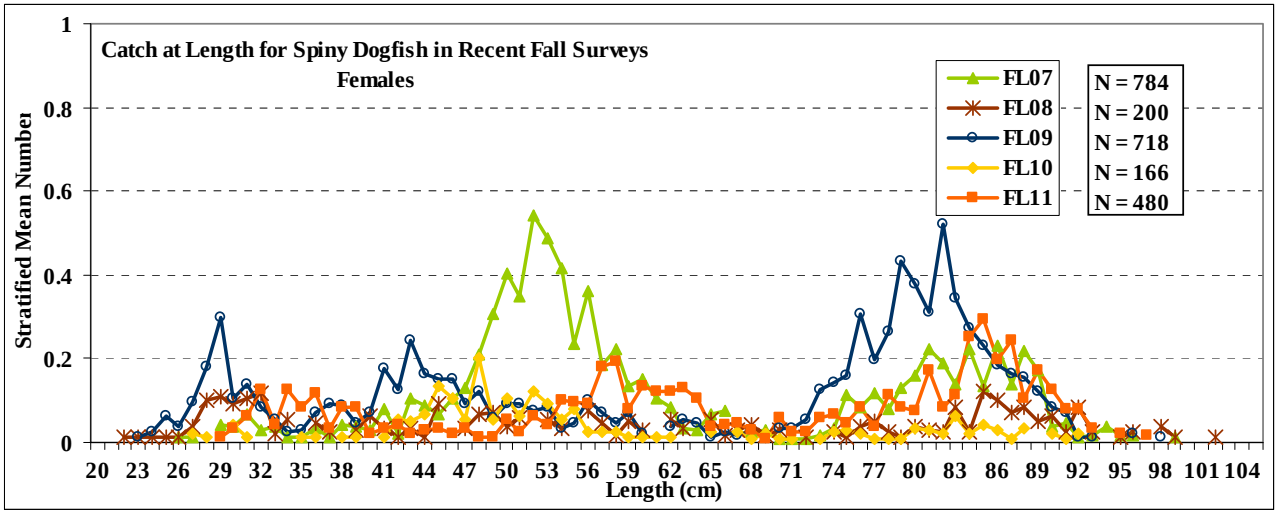


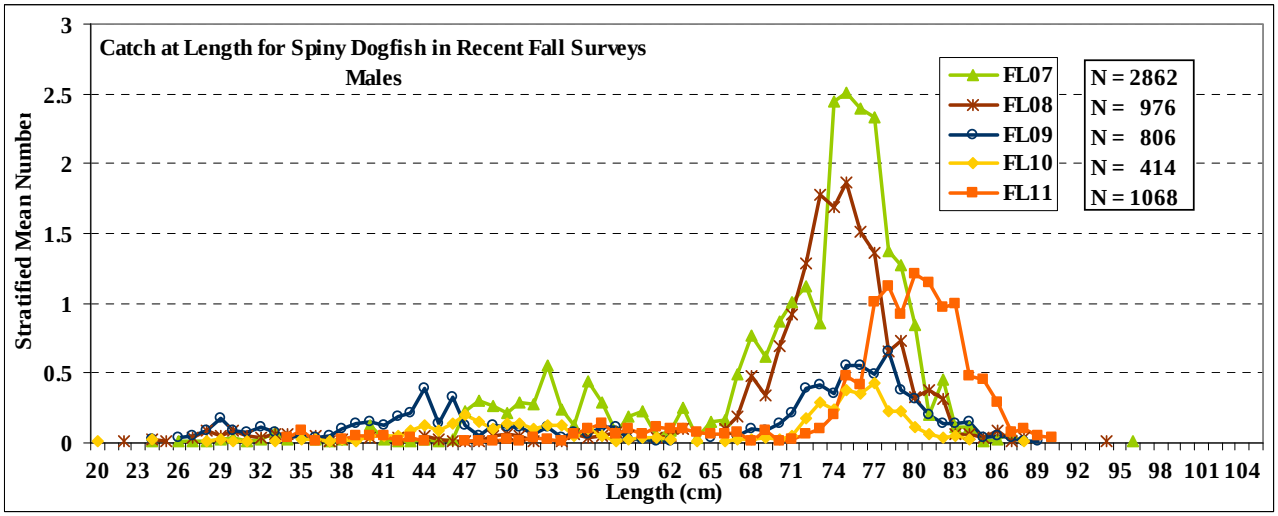
Spiny dogfish, *Squalus acanthias*



Means and standard errors for both seasons, only fall is displayed on the distribution map
fixed stations not included
for dogs, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

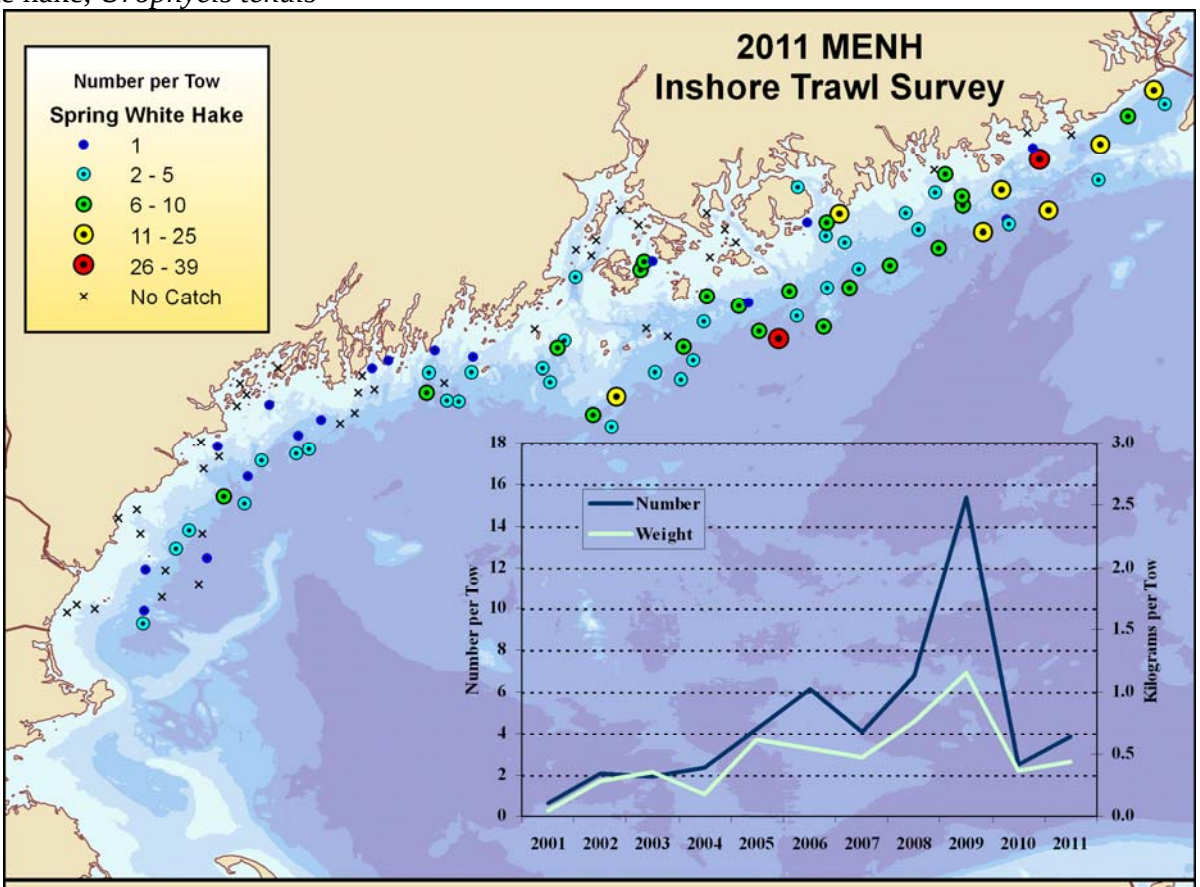
SPRING					**FALL**				
	Stratified Mean					**Stratified Mean**			
	Number		**Weight**			**Number**		**Weight**	
	Mean	**SE**	**Mean**	**SE**		**Mean**	**SE**	**Mean**	**SE**
					2000	4.0	0.54	7.7	1.05
2001					**2001**	8.9	2.70	10.7	3.06
2002	0.076	0.038	0.174	0.082	**2002**	10.6	1.94	19.5	3.81
2003	0.215	0.146	0.231	0.220	**2003**	15.4	3.36	23.8	4.96
2004					**2004**	48.6	12.08	69.0	17.73
2005					**2005**	29.7	3.43	41.8	5.54
2006	0.326	0.131	0.104	0.049	**2006**	14.2	2.38	25.2	4.16
2007	0.040	0.026	0.041	0.040	**2007**	33.1	8.10	44.6	11.06
2008	0.248	0.164	0.297	0.203	**2008**	19.5	8.9	28.3	13.8
2009	0.013	0.013	0.006	0.006	**2009**	17.79	5.33	22.40	5.29
2010	0.282	0.282	0.197	0.197	**2010**	7.08	2.50	7.66	1.83
2011	0.15	0.11	0.14	0.11	**2011**	17.35	4.47	24.39	5.57

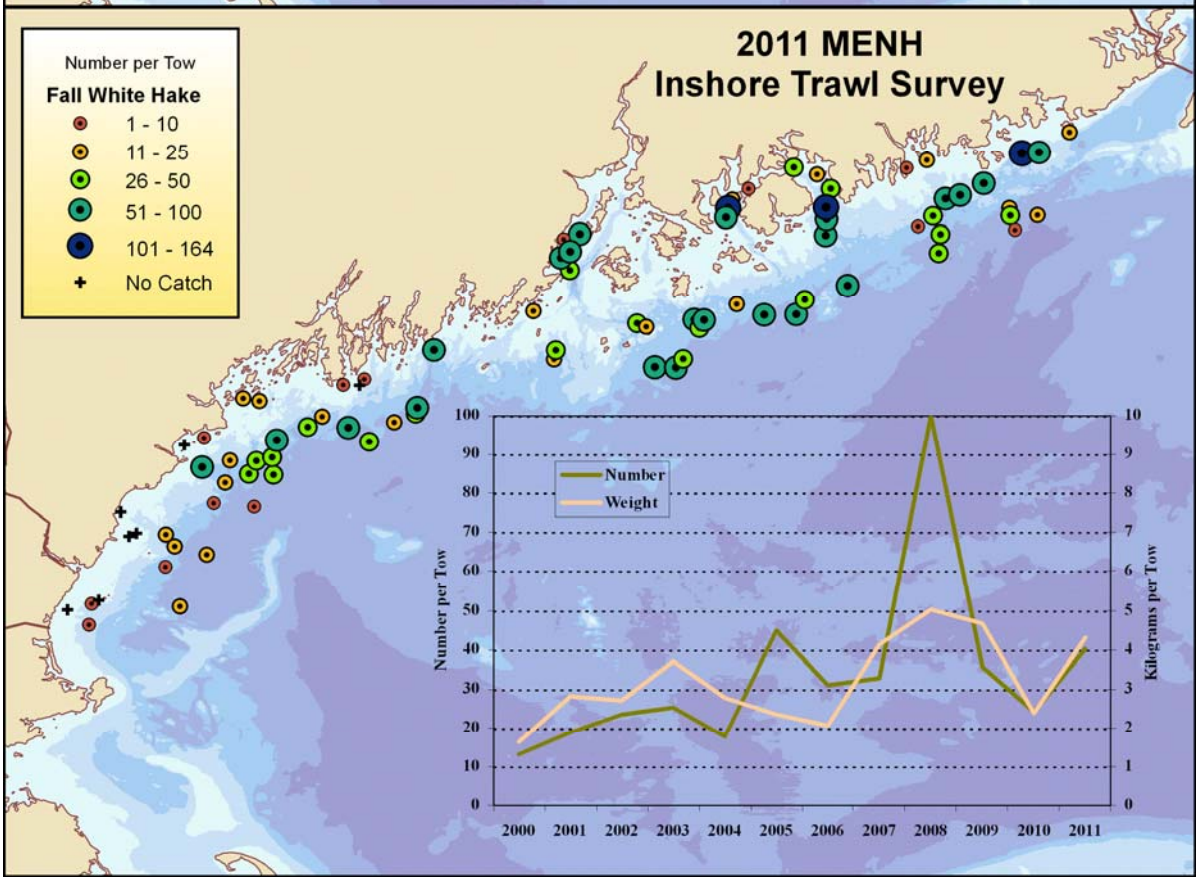




Dogfish are rarely caught in spring surveys, so only the indices are presented.

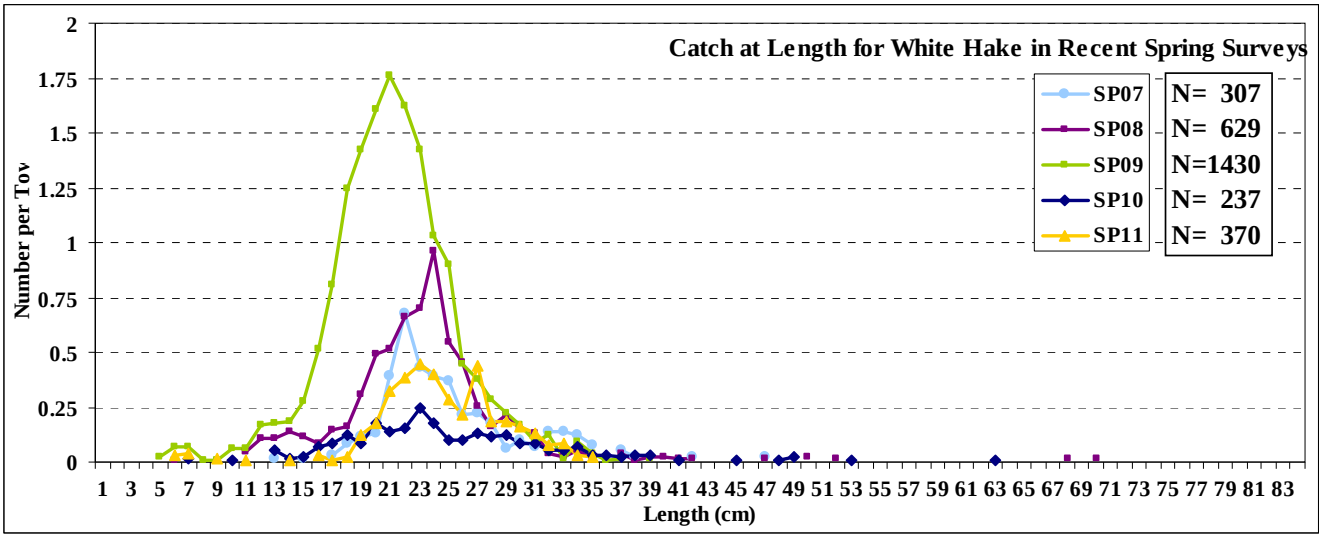
White hake, *Urophycis tenuis*

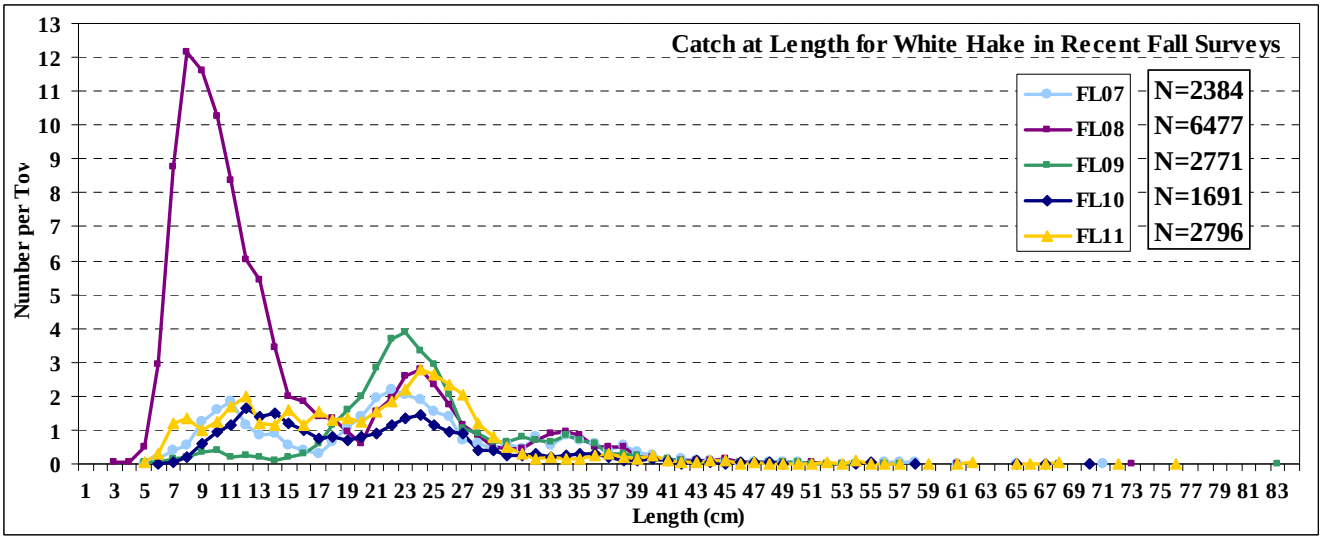




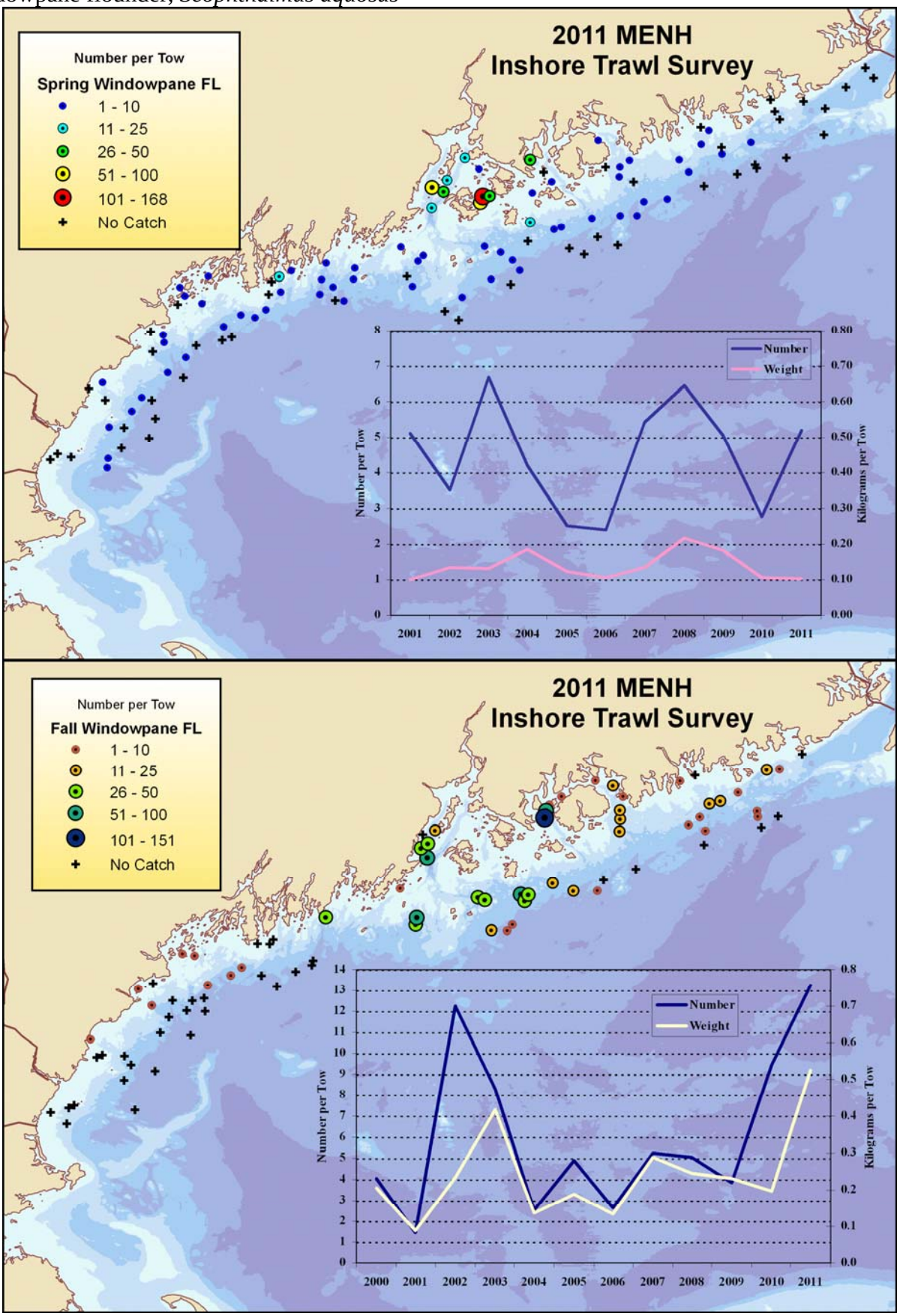
Means and standard errors for both seasons, only fall is displayed on the distribution map
fixed stations not included
for white hake, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

SPRING	Stratified Mean Number Mean	SE	Weight Mean	SE	FALL	Stratified Mean Number Mean	SE	Weight Mean	SE
					2000	13.03	1.22	1.63	0.16
2001	0.65	0.15	0.04	0.01	**2001**	18.90	2.75	2.83	0.33
2002	2.10	0.40	0.28	0.06	**2002**	23.65	1.88	2.71	0.27
2003	1.94	0.47	0.36	0.11	**2003**	25.41	2.99	3.70	0.45
2004	2.39	0.41	0.17	0.03	**2004**	17.81	2.56	2.77	0.35
2005	4.23	0.77	0.62	0.13	**2005**	44.82	3.11	2.35	0.22
2006	6.12	0.72	0.55	0.08	**2006**	31.06	3.68	2.05	0.21
2007	4.11	0.91	0.48	0.17	**2007**	32.90	2.82	4.12	0.51
2008	6.79	0.78	0.76	0.12	**2008**	99.93	8.38	5.00	0.33
2009	15.38	1.34	1.16	0.14	**2009**	35.54	2.22	4.65	0.37
2010	2.49	0.35	0.37	0.14	**2010**	24.20	2.47	2.37	0.27
2011	3.85	0.51	0.44	0.06	**2011**	40.23	2.63	4.30	0.39





Windowpane flounder, *Scophthalmus aquosus*



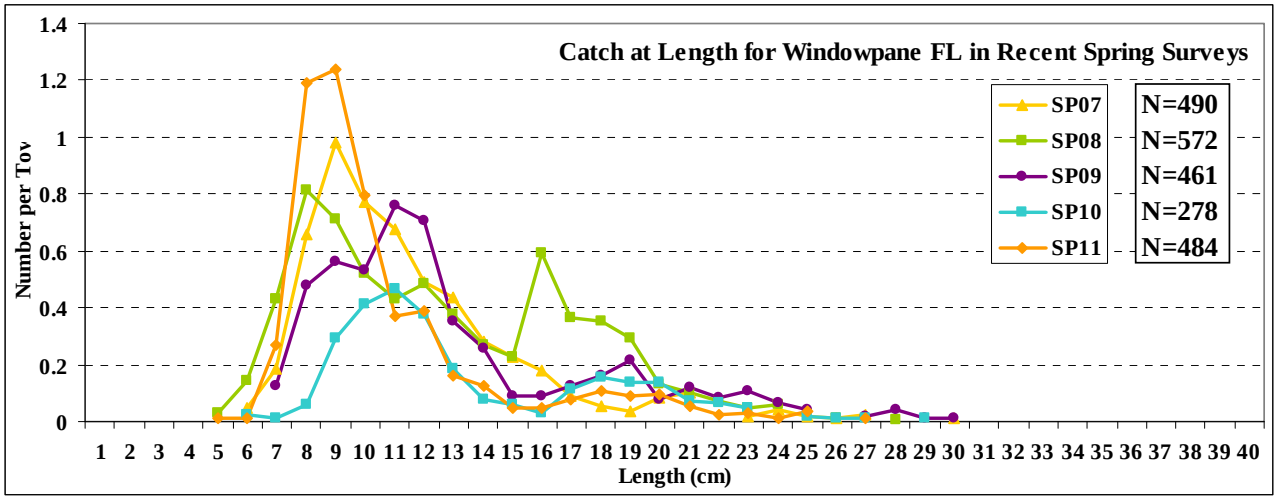
Mean and standard error for graphs overlain on distribution maps
fixed stations not included
for windowpane, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

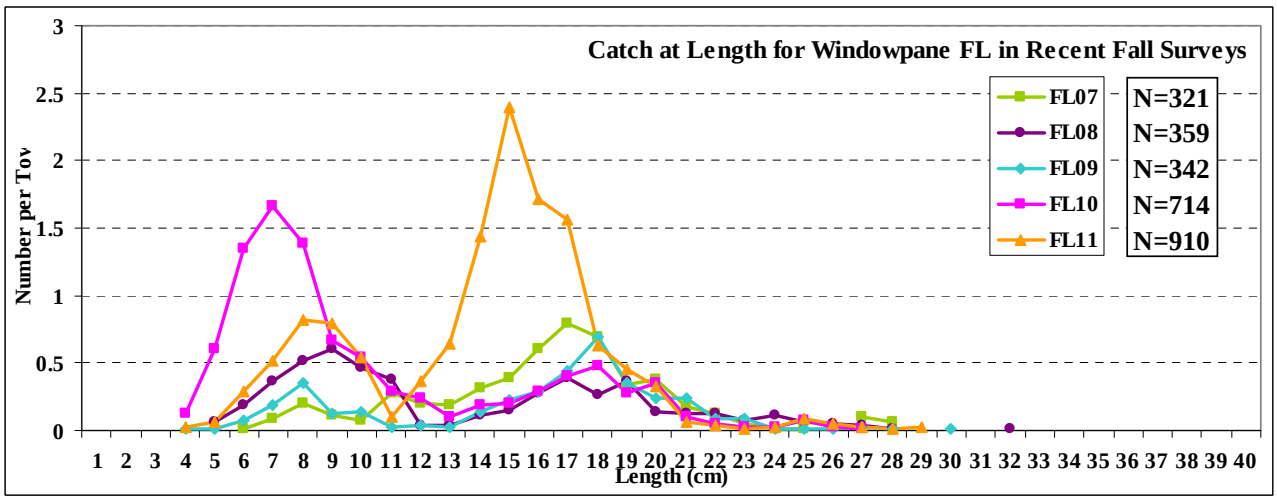
SPRING

	Stratified Mean Number		Weight	
	Mean	SE	Mean	SE
2001	5.12	1.48	0.10	0.02
2002	3.51	0.61	0.13	0.02
2003	6.70	1.15	0.13	0.02
2004	4.20	0.69	0.19	0.03
2005	2.51	0.45	0.12	0.02
2006	2.39	0.52	0.11	0.02
2007	5.42	1.06	0.13	0.02
2008	6.47	1.31	0.22	0.03
2009	5.05	0.84	0.18	0.02
2010	2.78	0.46	0.11	0.01
2011	5.19	1.06	0.10	0.01

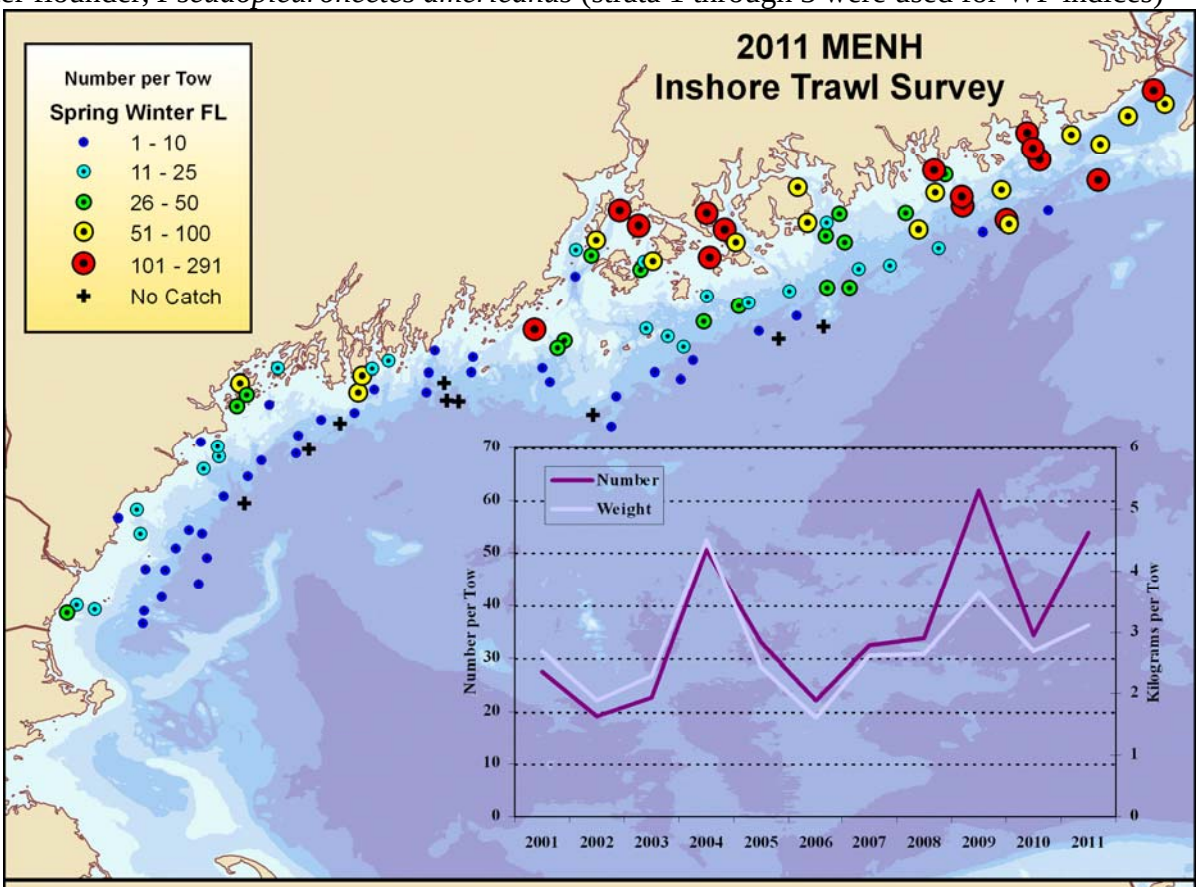
FALL

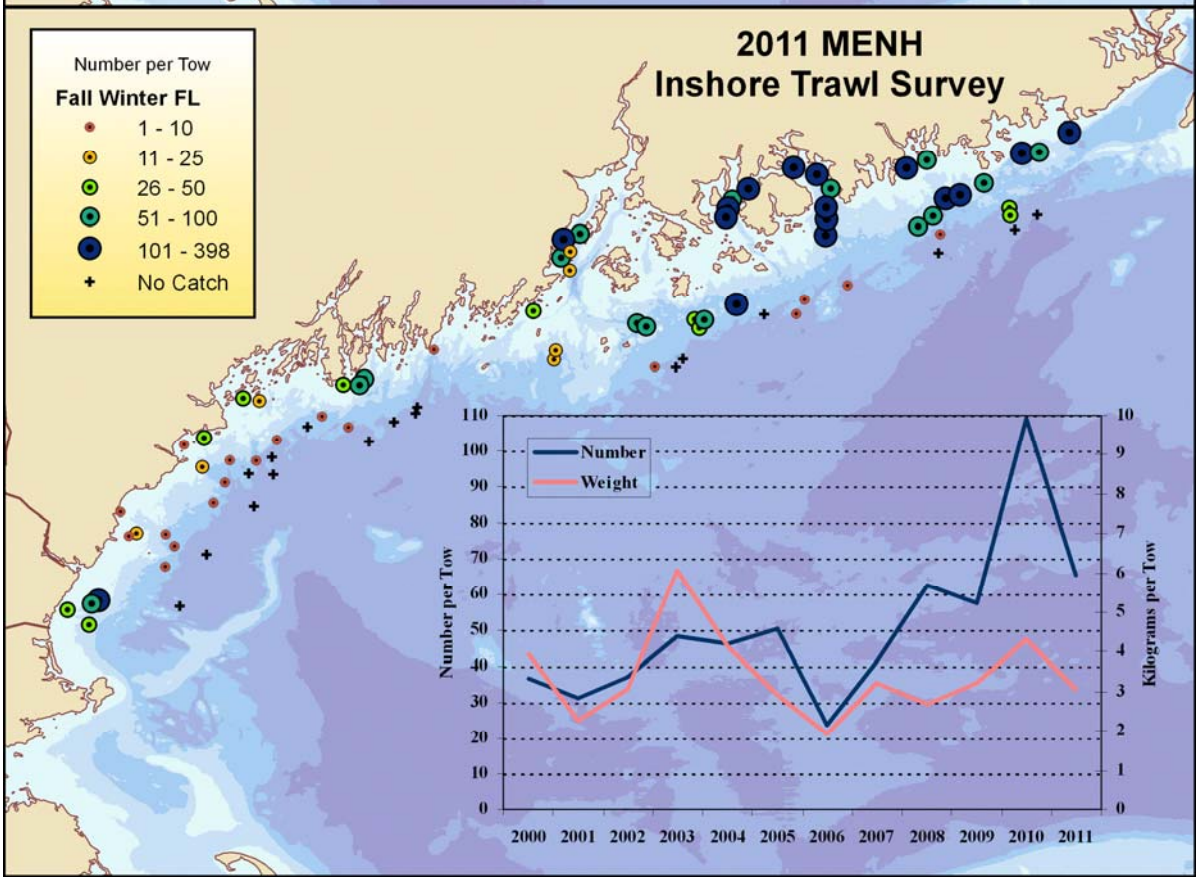
	Stratified Mean Number		Weight	
	Mean	SE	Mean	SE
2000	4.05	0.62	0.20	0.03
2001	1.47	0.48	0.09	0.03
2002	12.24	3.60	0.24	0.05
2003	8.31	1.20	0.42	0.05
2004	2.54	0.78	0.14	0.03
2005	4.90	1.60	0.19	0.04
2006	2.66	0.39	0.14	0.03
2007	5.24	1.16	0.29	0.06
2008	5.03	0.82	0.24	0.03
2009	3.83	0.46	0.23	0.03
2010	9.47	3.53	0.20	0.02
2011	13.25	1.91	0.53	0.06





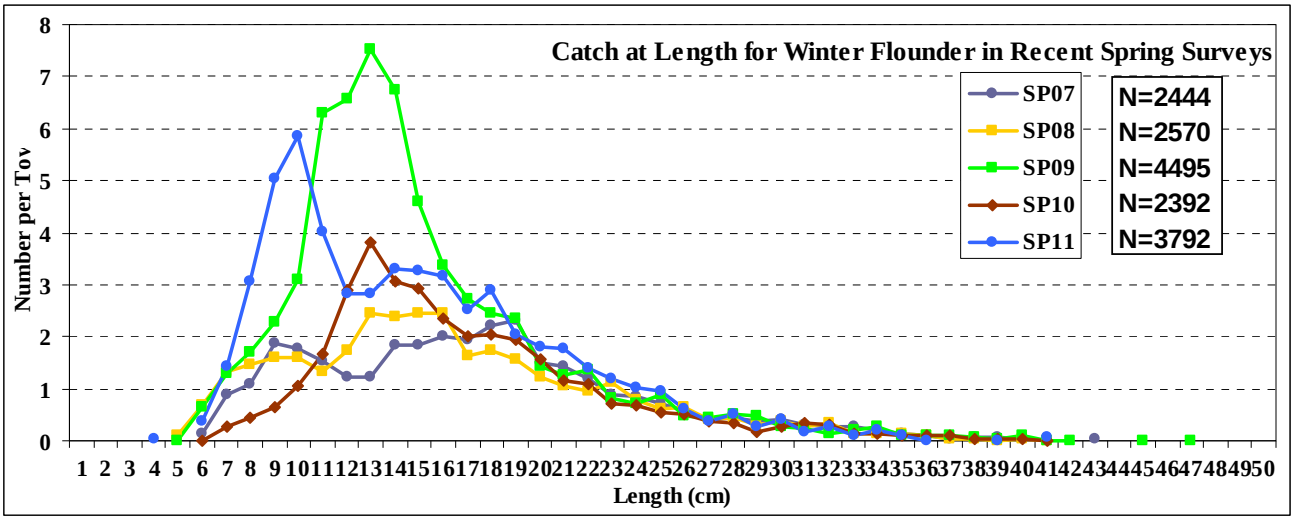
Winter flounder, *Pseudopleuronectes americanus* (strata 1 through 3 were used for WF indices)

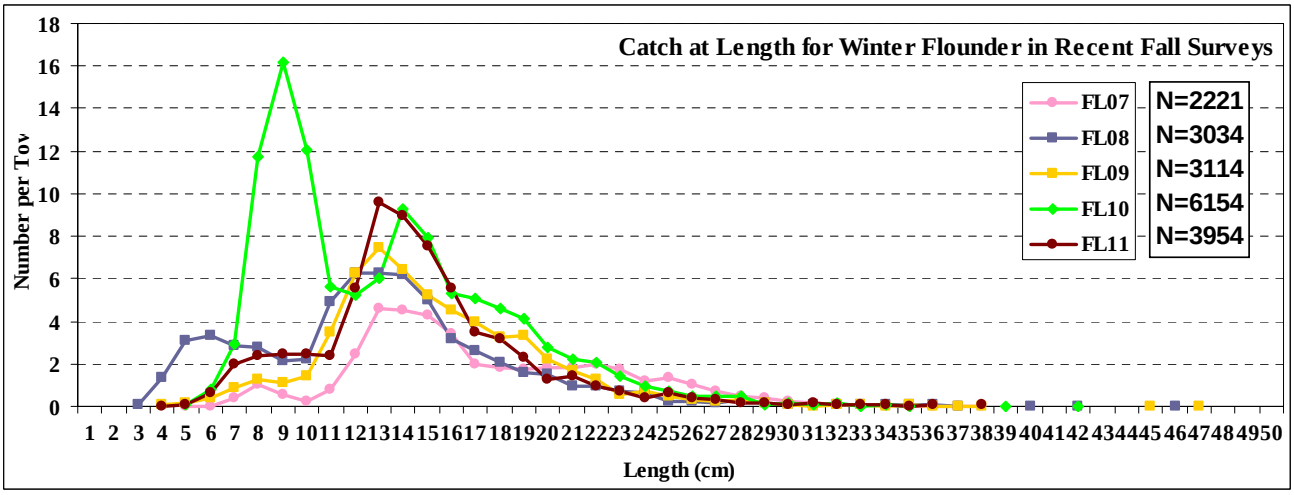




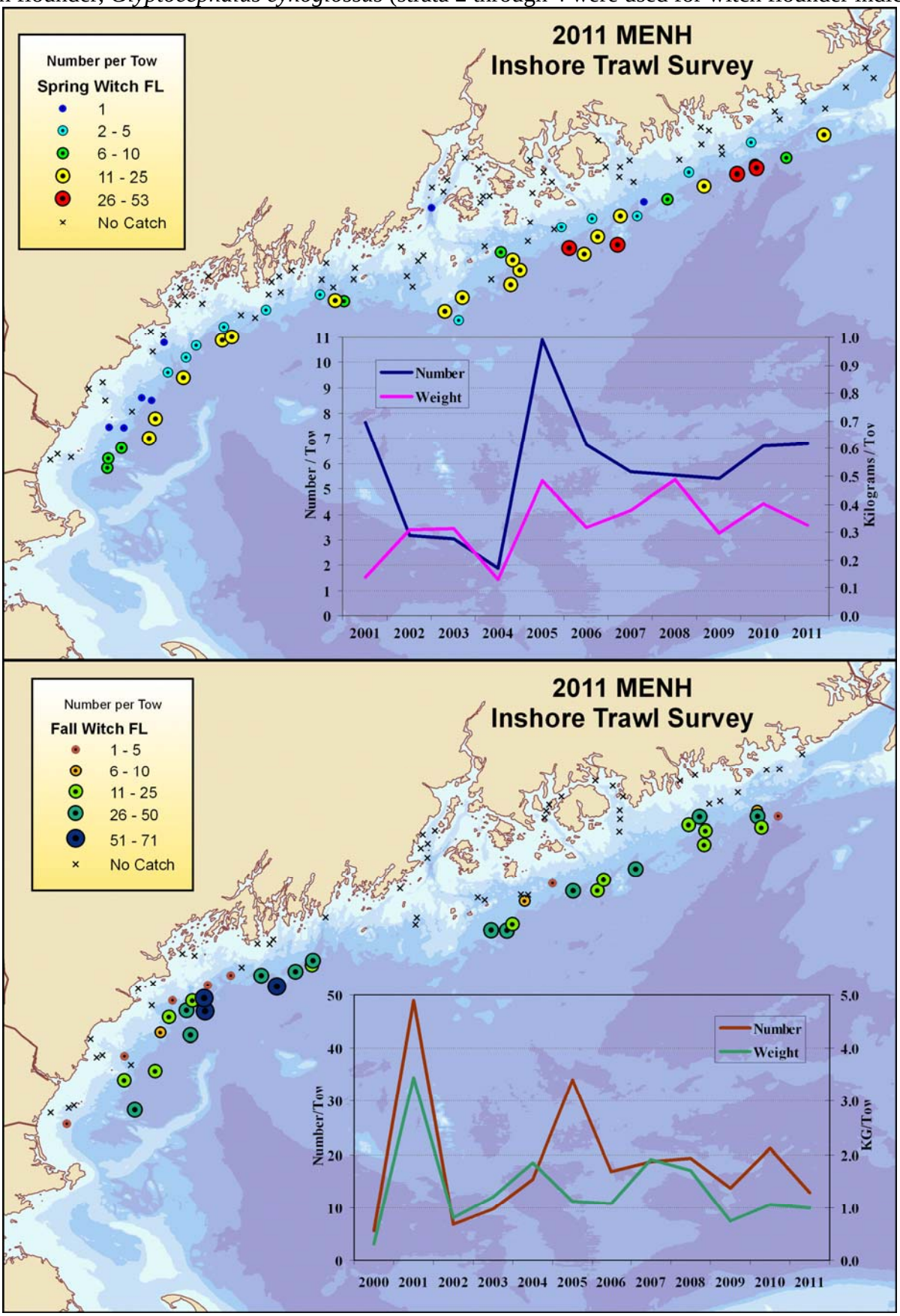
Means and standard errors for graphs overlain on distrbution maps
fixed stations not included
for winter flounder, indices calculated for regions 1 through 5; Strata 1 through 3

SPRING	Stratified Mean Number		Weight		FALL	Stratified Mean Number		Weight	
	Mean	SE	Mean	SE		Mean	SE	Mean	SE
					2000	36.59	3.12	3.92	0.41
2001	27.40	4.03	2.69	0.35	**2001**	31.38	5.74	2.28	0.22
2002	19.04	2.81	1.88	0.23	**2002**	36.92	6.77	3.08	0.71
2003	22.57	3.81	2.30	0.41	**2003**	48.15	5.82	6.06	0.22
2004	50.83	6.31	4.50	0.83	**2004**	46.45	9.03	4.14	0.82
2005	32.88	3.82	2.43	0.23	**2005**	50.32	2.57	2.92	0.28
2006	21.94	5.25	1.62	0.36	**2006**	23.90	3.43	1.92	0.25
2007	32.29	3.69	2.63	0.27	**2007**	41.18	7.78	3.22	0.91
2008	33.89	4.63	2.65	0.36	**2008**	62.46	5.96	2.70	0.24
2009	61.85	11.03	3.64	0.39	**2009**	57.57	8.49	3.22	0.51
2010	34.19	5.95	2.69	0.41	**2010**	109.25	17.75	4.31	0.46
2011	53.90	5.20	3.11	0.51	**2011**	65.50	4.92	3.06	0.19



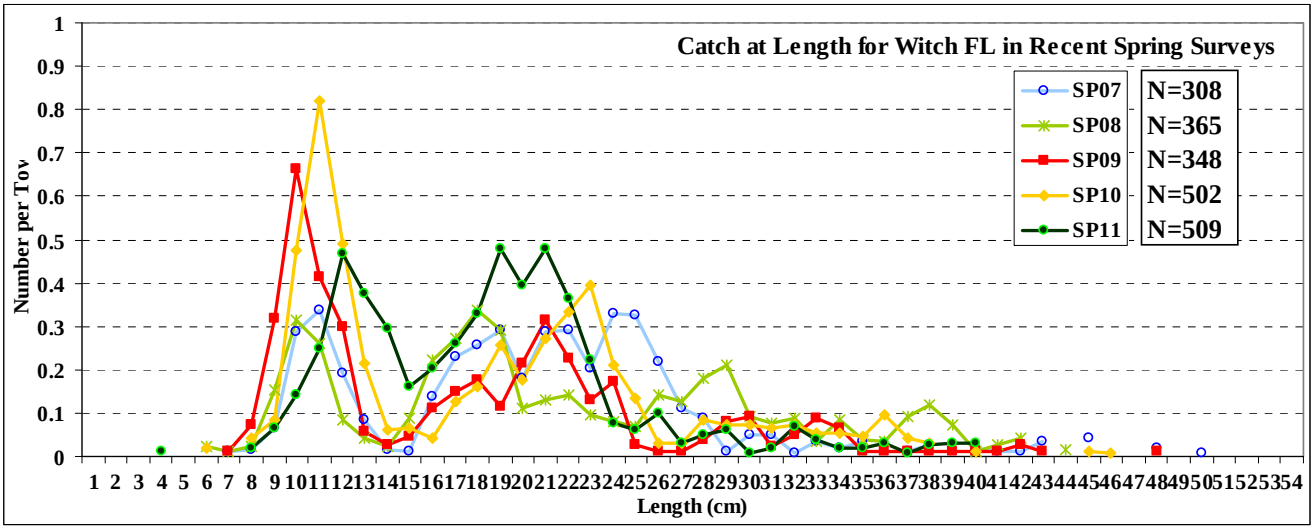


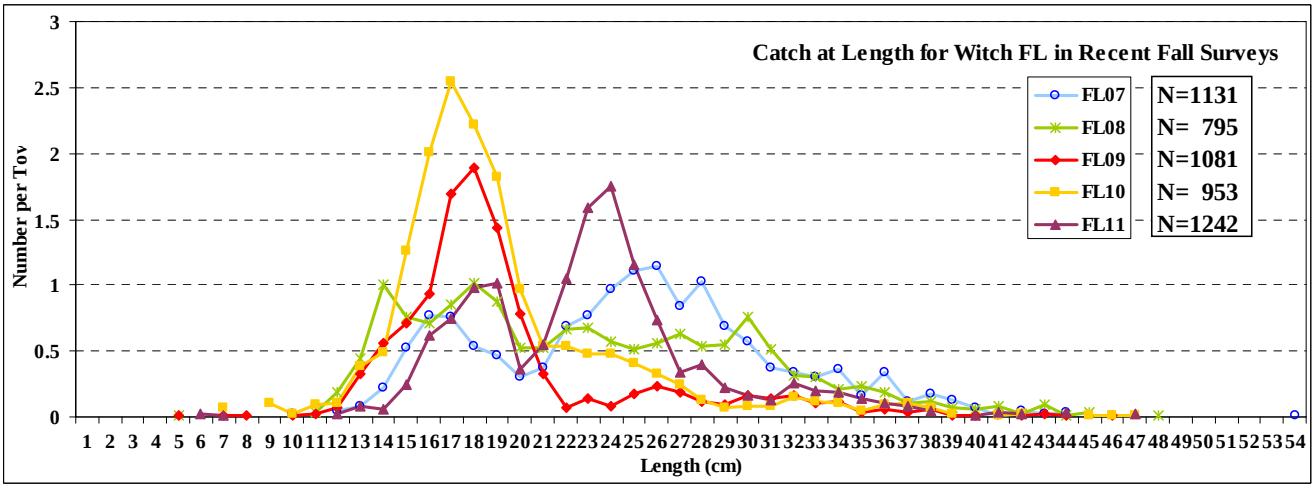
Witch flounder, *Glyptocephalus cynoglossus* (strata 2 through 4 were used for witch flounder indices)



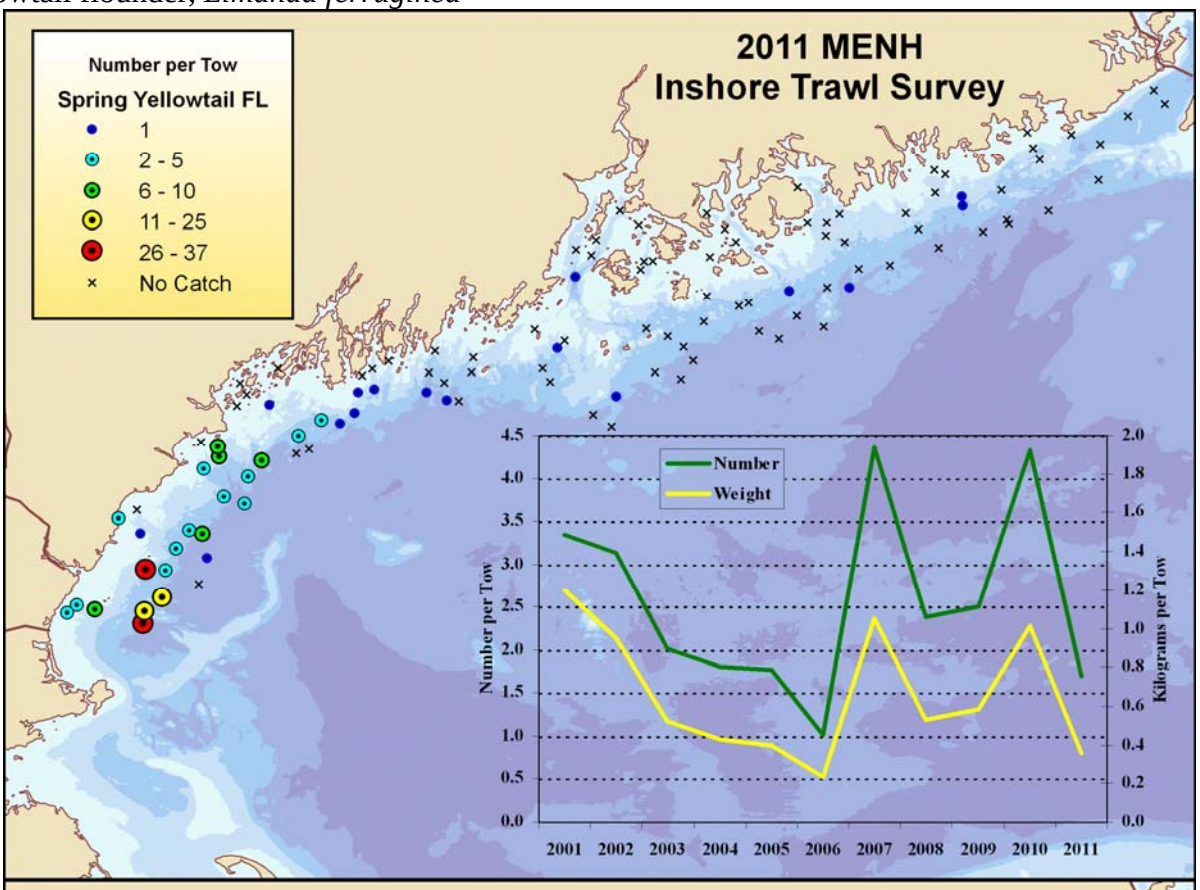
Mean and standard errors for graphs overlain on distribution maps
fixed stations not included
for witch flounder, indices calculated for regions 1 through 5; Strata 2 through 4 (2003 on)

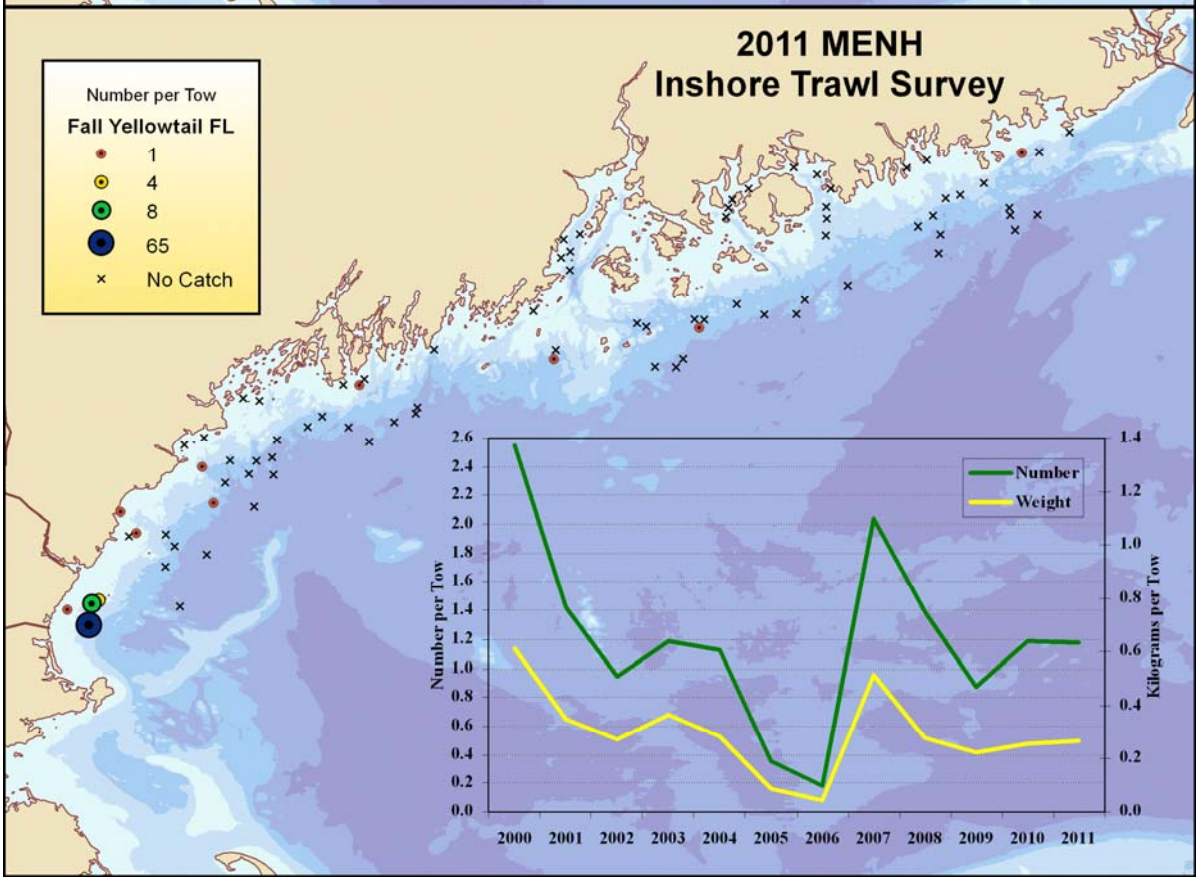
SPRING	Stratified Mean Number Mean	SE	Weight Mean	SE	FALL	Stratified Mean Number Mean	SE	Weight Mean	SE
					2000	5.52	1.02	0.31	0.06
2001	7.65	1.98	0.14	0.04	**2001**	48.96	6.18	3.44	0.65
2002	3.18	1.30	0.31	0.18	**2002**	6.94	1.77	0.81	0.25
2003	3.02	0.94	0.31	0.10	**2003**	9.71	1.51	1.20	0.25
2004	1.86	0.27	0.13	0.03	**2004**	15.29	2.54	1.84	0.26
2005	10.91	1.73	0.48	0.11	**2005**	34.08	4.63	1.12	0.13
2006	6.74	1.44	0.32	0.08	**2006**	16.73	1.79	1.09	0.09
2007	5.69	0.88	0.38	0.05	**2007**	18.76	2.66	1.91	0.39
2008	5.54	0.79	0.49	0.11	**2008**	19.27	2.33	1.71	0.30
2009	5.41	0.88	0.30	0.08	**2009**	13.66	1.40	0.74	0.09
2010	6.72	1.19	0.40	0.08	**2010**	21.15	2.27	1.06	0.13
2011	6.78	0.82	0.32	0.05	**2011**	12.77	1.60	1.00	0.15





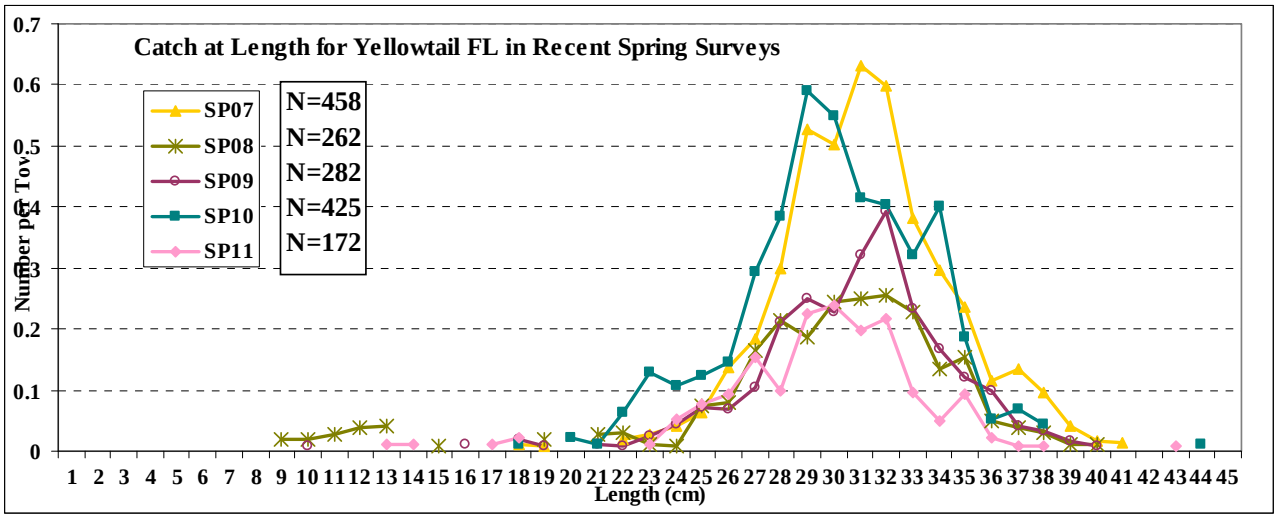
Yellowtail flounder, *Limanda ferruginea*

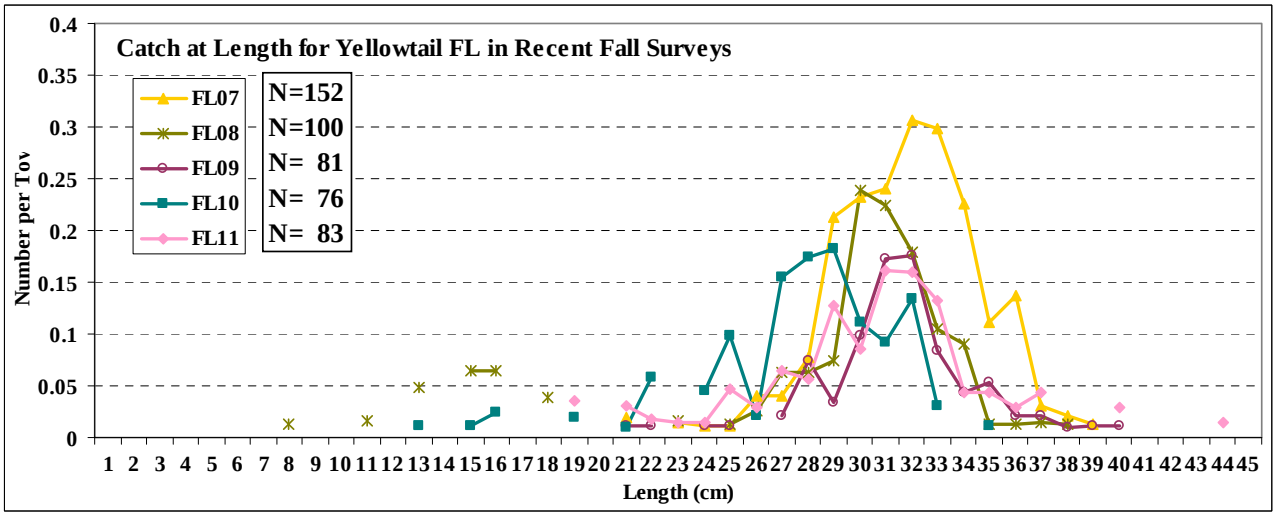




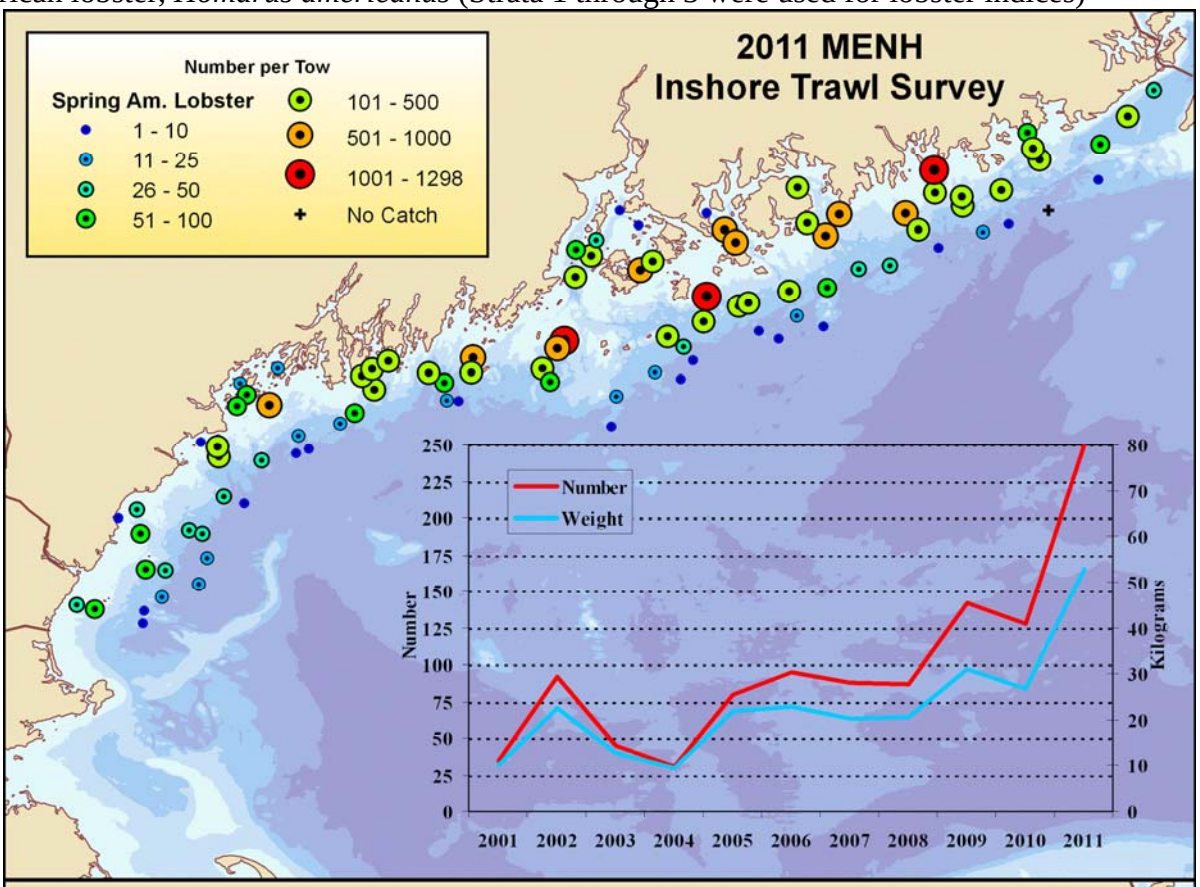
Mean and standard errors for graphs overlain on distribution maps
fixed stations not included
for yellowtail flounder, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

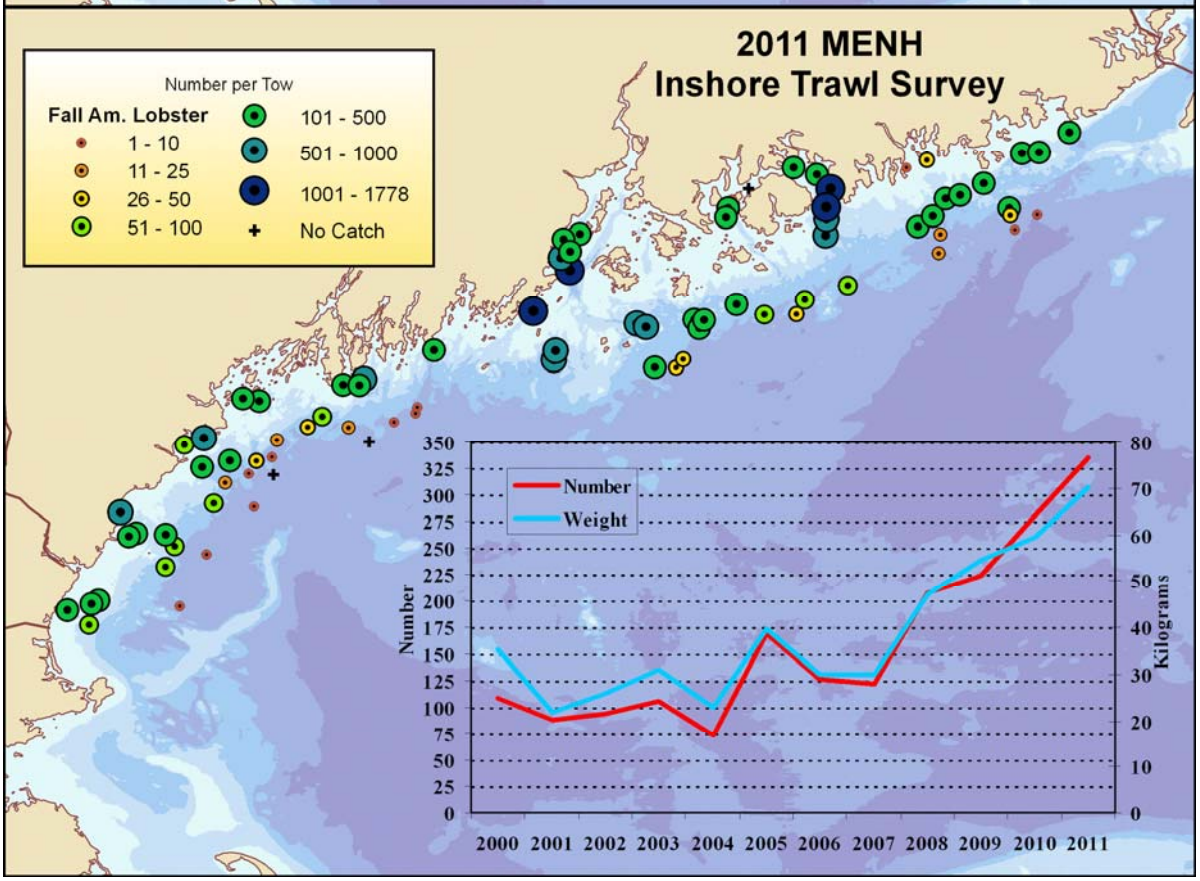
SPRING	Stratified Mean Number		Weight		FALL	Stratified Mean Number		Weight	
	Mean	SE	Mean	SE		Mean	SE	Mean	SE
					2000	2.55	1.34	0.61	0.31
2001	3.35	2.09	1.20	0.82	**2001**	1.42	0.74	0.35	0.17
2002	3.14	0.76	0.95	0.22	**2002**	0.94	0.28	0.27	0.07
2003	2.01	0.43	0.52	0.11	**2003**	1.19	0.04	0.37	0.01
2004	1.80	0.45	0.43	0.11	**2004**	1.13	0.29	0.28	0.06
2005	1.77	0.51	0.40	0.11	**2005**	0.36	0.24	0.09	0.06
2006	1.02	0.20	0.23	0.05	**2006**	0.19	0.14	0.05	0.03
2007	4.36	1.17	1.05	0.27	**2007**	2.04	0.95	0.52	0.27
2008	2.37	0.68	0.53	0.15	**2008**	1.39	0.53	0.28	0.11
2009	2.50	0.61	0.58	0.15	**2009**	0.87	0.33	0.22	0.08
2010	4.33	1.15	1.01	0.27	**2010**	1.19	0.70	0.26	0.16
2011	1.70	0.44	0.36	0.09	**2011**	1.18	0.85	0.27	0.23





American lobster, *Homarus americanus* (Strata 1 through 3 were used for lobster indices)

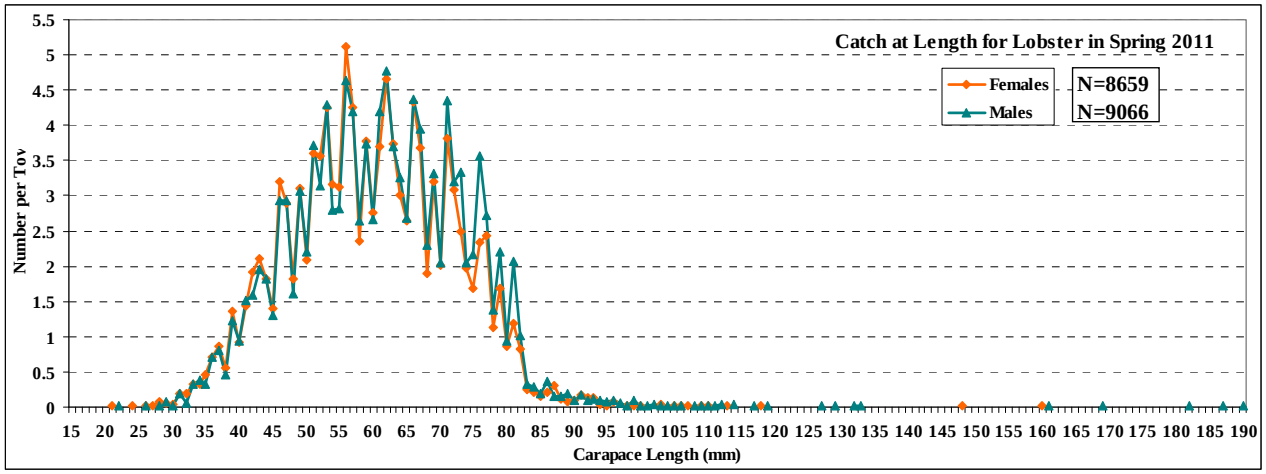


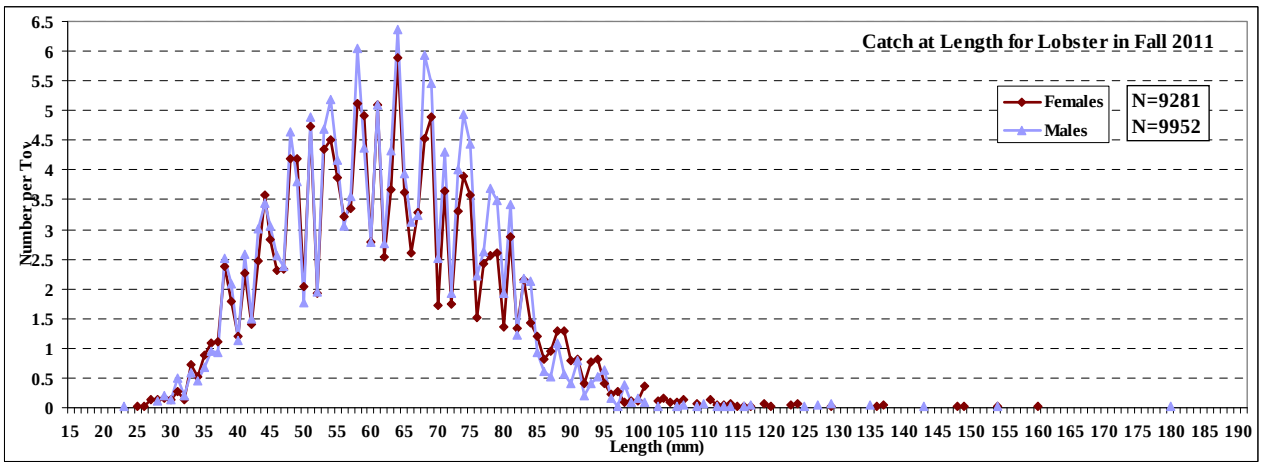


Mean and standard error for graphs overlain on distribution maps
fixed stations not included
for lobster, indices calculated for regions 1 through 5; Strata 1 through 3

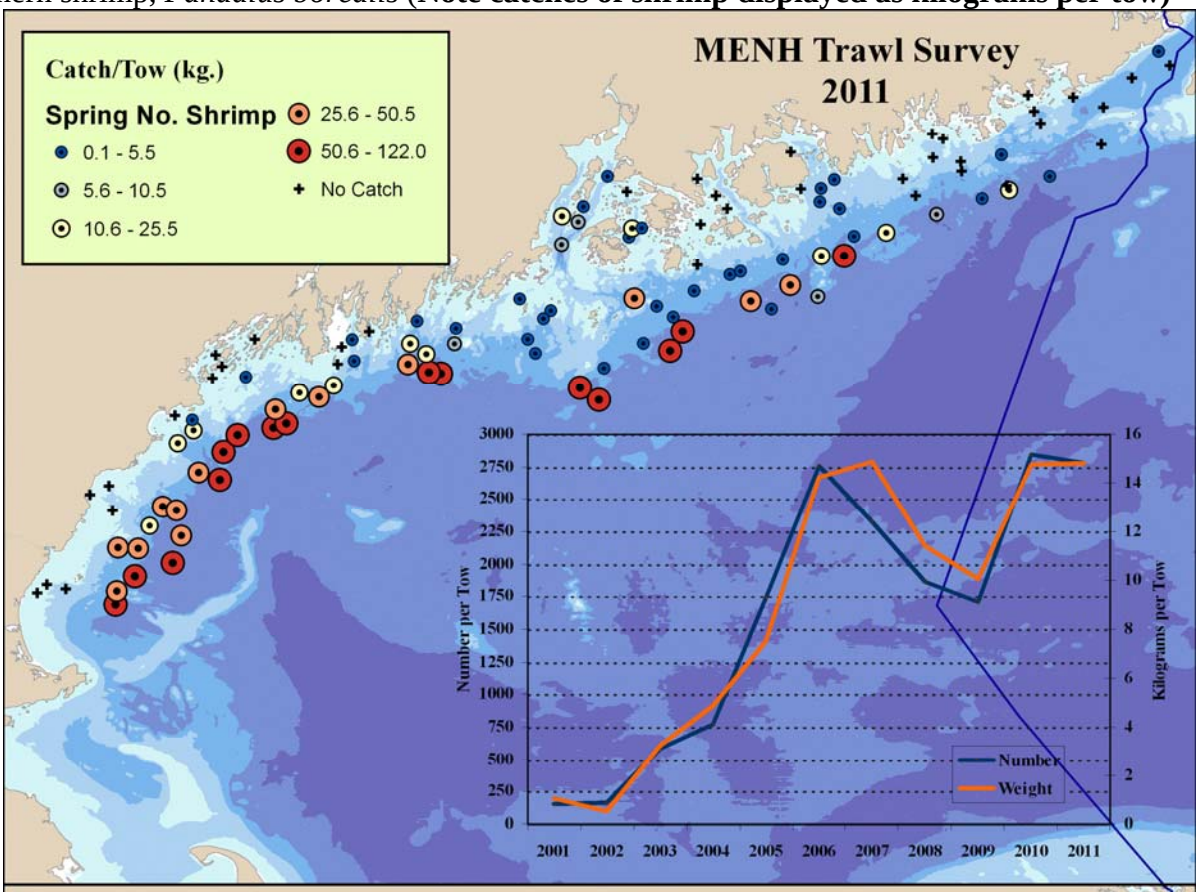
SPRING Stratified Mean	Number Mean	SE	Weight Mean	SE
2001	34.67	5.53	10.04	1.37
2002	91.47	13.85	22.42	3.09
2003	44.64	7.43	12.81	1.84
2004	30.17	3.81	9.31	1.07
2005	79.24	14.21	22.02	3.75
2006	94.52	22.57	22.75	4.65
2007	87.97	11.67	20.38	2.47
2008	86.54	22.40	20.63	5.34
2009	141.89	30.74	31.02	5.33
2010	127.54	13.97	26.80	2.59
2011	250.23	35.80	52.90	7.26

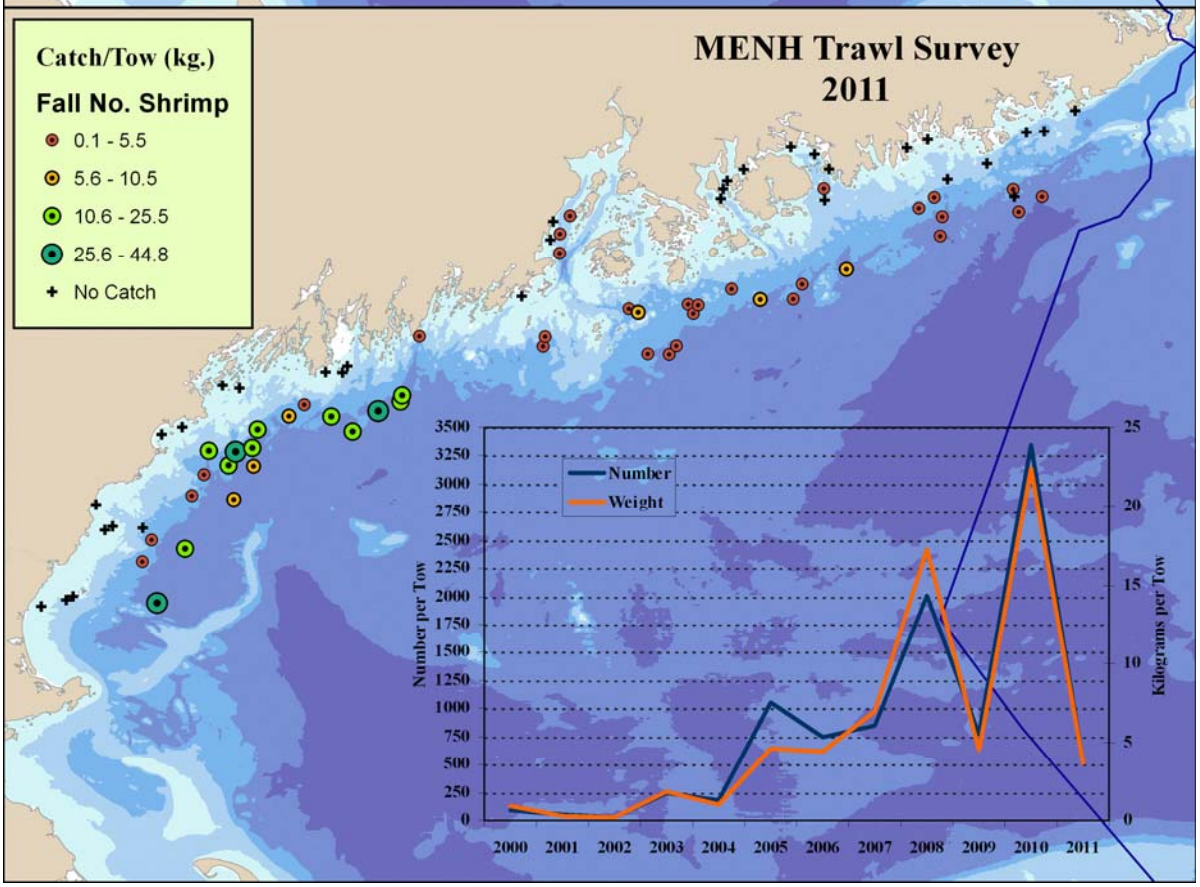
FALL Stratified Mean	Number Mean	SE	Weight Mean	SE
2000	109.43	19.58	35.44	4.97
2001	88.61	17.60	21.79	3.34
2002	93.61	11.91	25.97	2.77
2003	105.40	10.09	30.99	2.97
2004	73.21	14.55	22.84	3.69
2005	169.79	28.23	39.83	6.82
2006	126.31	20.14	30.02	4.37
2007	121.53	21.91	29.75	4.47
2008	207.77	50.58	47.15	7.64
2009	223.66	39.24	54.62	7.64
2010	280.43	31.71	59.57	6.87
2011	334.86	39.10	70.25	7.48





Northern shrimp, *Pandalus borealis* (**Note catches of shrimp displayed as kilograms per tow)**



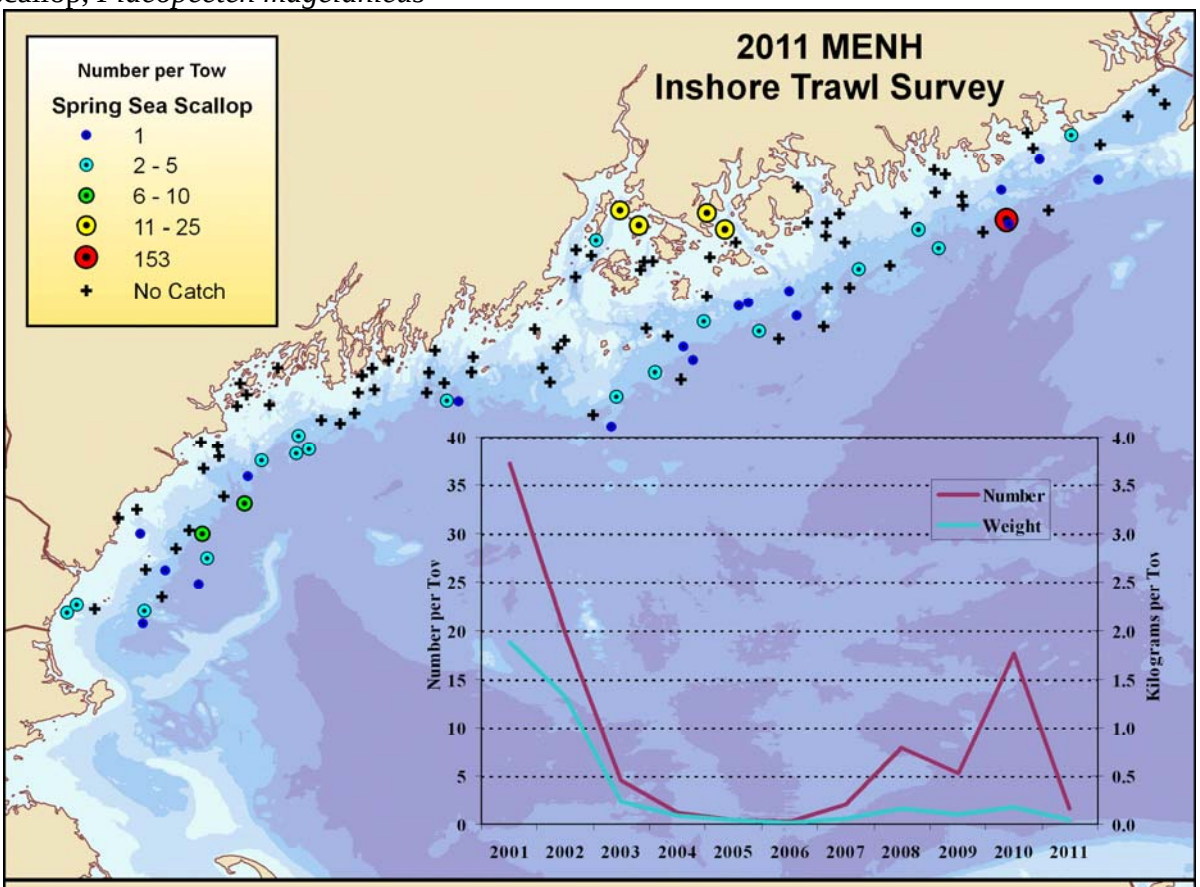


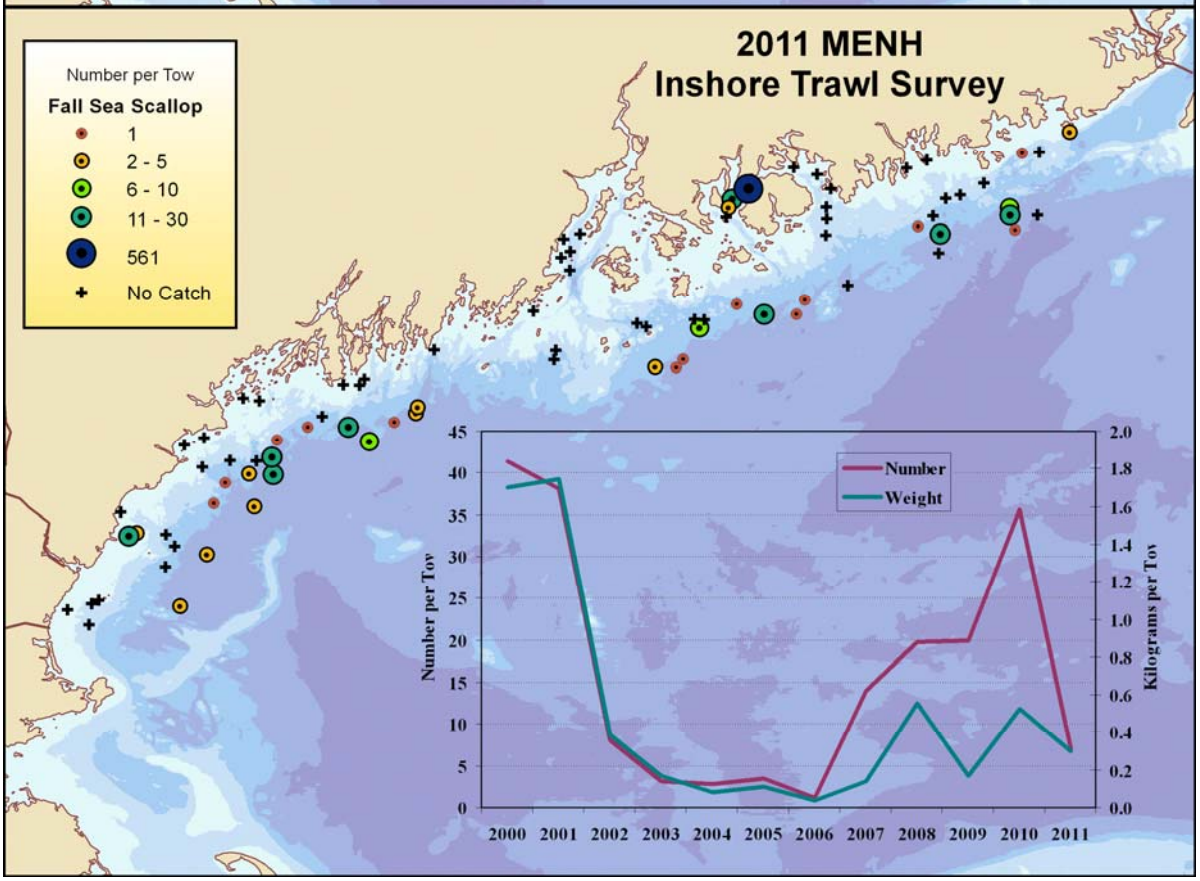
Mean numbers and weights for fall 2010 northern shrimp are estimates. Total weights of mixed shrimp catches are recorded on the vessel. Region 1 and 2 shrimp samples were lost due to a freezer failure. Data collected for the remaining regions was worked up according to protocols. In the case of the missing samples, estimated weights for northern shrimp were obtained by averaging all previous fall's proportions of pandalid shrimp species from the missing regions and strata. The number per tow was also estimated from averaging previous data.

Mean and standard error for graphs overlain on distribution maps
fixed stations not included
for shrimp, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

SPRING					**FALL**				
	Stratified Mean					**Stratified Mean**			
	Number		**Weight**			**Number**		**Weight**	
	Mean	**Error**	**Mean**	**Error**		**Mean**	**Error**	**Mean**	**Error**
					2000	92.57	54.20	0.88	0.41
2001	159.77	52.13	1.05	0.35	**2001**	49.89	24.04	0.27	0.13
2002	167.40	68.82	0.50	0.22	**2002**	22.95	10.15	0.16	0.07
2003	582.09	77.06	3.25	0.39	**2003**	242.48	92.03	1.80	0.67
2004	774.30	139.20	4.86	1.18	**2004**	175.04	99.88	1.03	0.57
2005	1746.05	176.71	7.54	0.89	**2005**	1052.09	50.44	4.63	0.17
2006	2754.63	407.04	14.25	2.17	**2006**	749.43	204.83	4.44	1.34
2007	2327.07	611.97	14.86	4.38	**2007**	843.76	163.47	7.00	1.37
2008	1865.34	169.86	11.41	1.19	**2008**	2010.33	965.43	17.29	9.23
2009	1709.08	250.33	10.08	1.46	**2009**	775.52	55.45	4.47	0.37
2010	2849.73	360.86	14.76	2.36	**2010**	3340.03	428.25	22.47	3.27
2011	2784.09	236.47	14.80	1.35	**2011**	518.02	73.62	3.72	0.53

Sea scallop, *Placopecten magelanicus*





Mean and standard error for graphs overlain on distribution maps
fixed stations not included
for scallop, indices calculated for regions 1 through 5; Strata 1 through 4 (2003 on)

SPRING Stratified Mean					FALL Stratified Mean				
	Number Mean	SE	Weight Mean	SE		Number Mean	SE	Weight Mean	SE
					2000	41.30	11.65	1.70	0.67
2001	37.25	8.35	1.87	0.70	**2001**	38.01	10.51	1.75	0.37
2002	19.66	5.41	1.32	0.39	**2002**	8.13	1.95	0.39	0.10
2003	4.55	1.20	0.23	0.07	**2003**	3.17	1.96	0.16	0.09
2004	1.23	0.33	0.09	0.02	**2004**	2.72	1.20	0.08	0.03
2005	0.51	0.16	0.04	0.02	**2005**	3.43	1.24	0.11	0.04
2006	0.27	0.11	0.01	0.00	**2006**	1.16	0.39	0.04	0.01
2007	2.08	0.60	0.06	0.02	**2007**	13.94	4.71	0.14	0.03
2008	7.89	1.87	0.17	0.04	**2008**	19.80	6.12	0.55	0.27
2009	5.28	1.75	0.11	0.03	**2009**	19.88	9.17	0.17	0.05
2010	17.61	8.07	0.18	0.08	**2010**	35.57	8.39	0.53	0.19
2011	1.59	0.40	0.04	0.01	**2011**	7.12	4.96	0.30	0.26