

**Annual Report on the
Maine-New Hampshire Inshore Trawl Survey
January 1, 2012-December 31, 2012**

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Haddock	40-C
Longhorn sculpin	44-C
Pollock	48-C
Rainbow smelt	52-C
Red hake	56-C
Sea raven	60-C
Silver hake	64-C
Spiny dogfish	68-C
White hake	73-C
Windowpane flounder	77-C
Winter flounder	81-C
Witch flounder	85-C
Yellowtail flounder	89-C
American lobster	93-C
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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, Kris Weeks, Andrew Langella, 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, Megan Winton, Mike O'Malley, Justin Stevens, John Wood, Trish DeGraaf, Simon Beirne, Shane Conlin, Ed Motyka, and Connor 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 2012 sampling season of a 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 comprehensive 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 twelve complete years and an thirteenth 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 twelve years of biannual survey work, and the thirteenth 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 98% in the spring and 83% 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 multiple 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/rawl/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

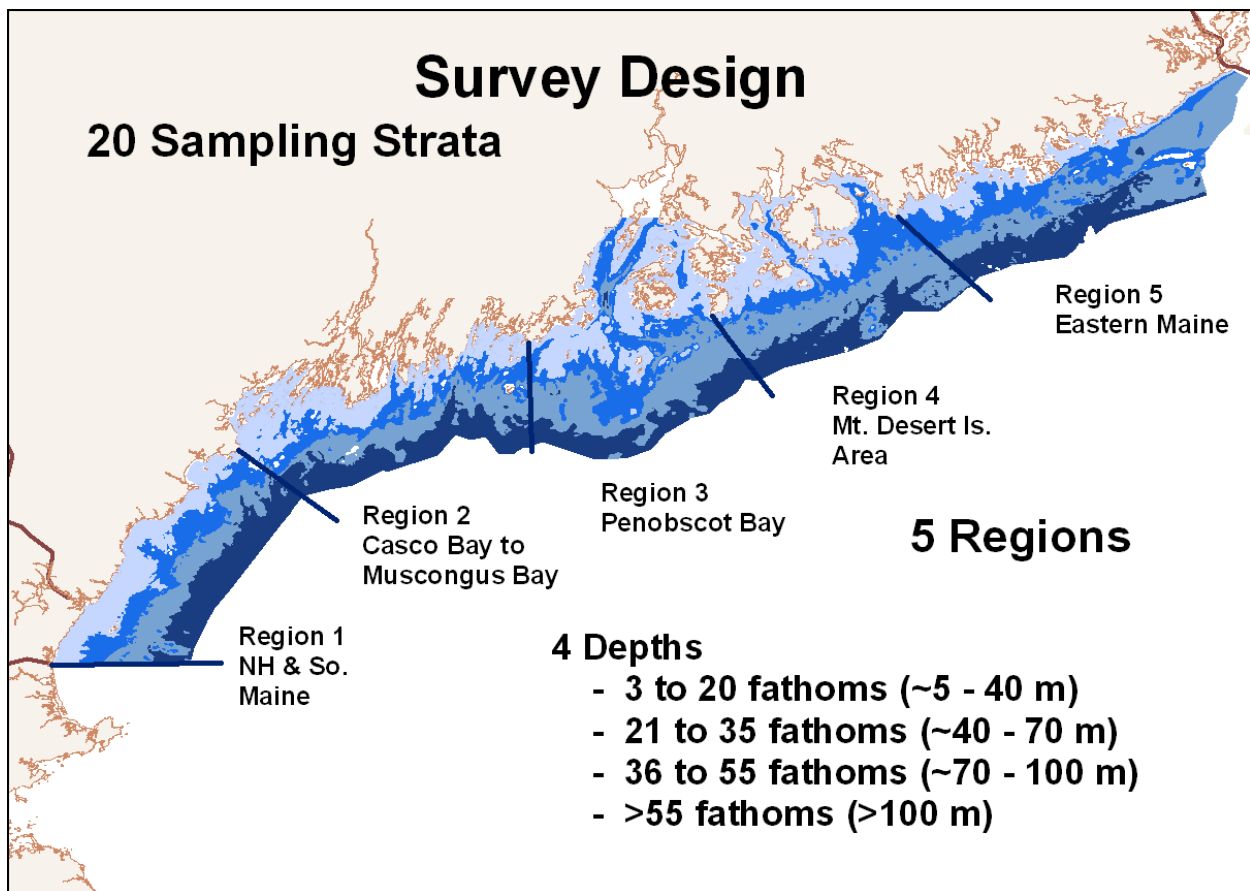


Figure 1. Sampling strata for the Maine-New Hampshire Inshore Trawl Survey

RESULTS

SPRING 2012 SUMMARY

The survey began April 30, 2012 in Portsmouth, New Hampshire and finished on June 1st off of Lubec, Maine. The crew completed 119 tows out of the scheduled 120. This translates to a 99.2% completion rate, with an average of 4.8 tows per day. Personnel from Maine DMR as well as New Hampshire F&G participated in the survey. This spring, Megan Winton, a technician working with Richard McBride of NMFS NEFSC joined the survey for 4 weeks to collect sections of gonads of female winter flounder to be used in a study of spatial heterogeneity of life history parameters within stock boundaries of the species. Michael O'Malley from NOAA's office in Orono, ME, who works in the Penobscot River estuary, came along on the third week to re-establish a groundfish stomach sampling survey looking for alosines as prey. Start coordinates for the spring survey are shown in Figure 2. A complete listing of tow locations, coordinates, dates, times, and depths can be found in Appendix A.

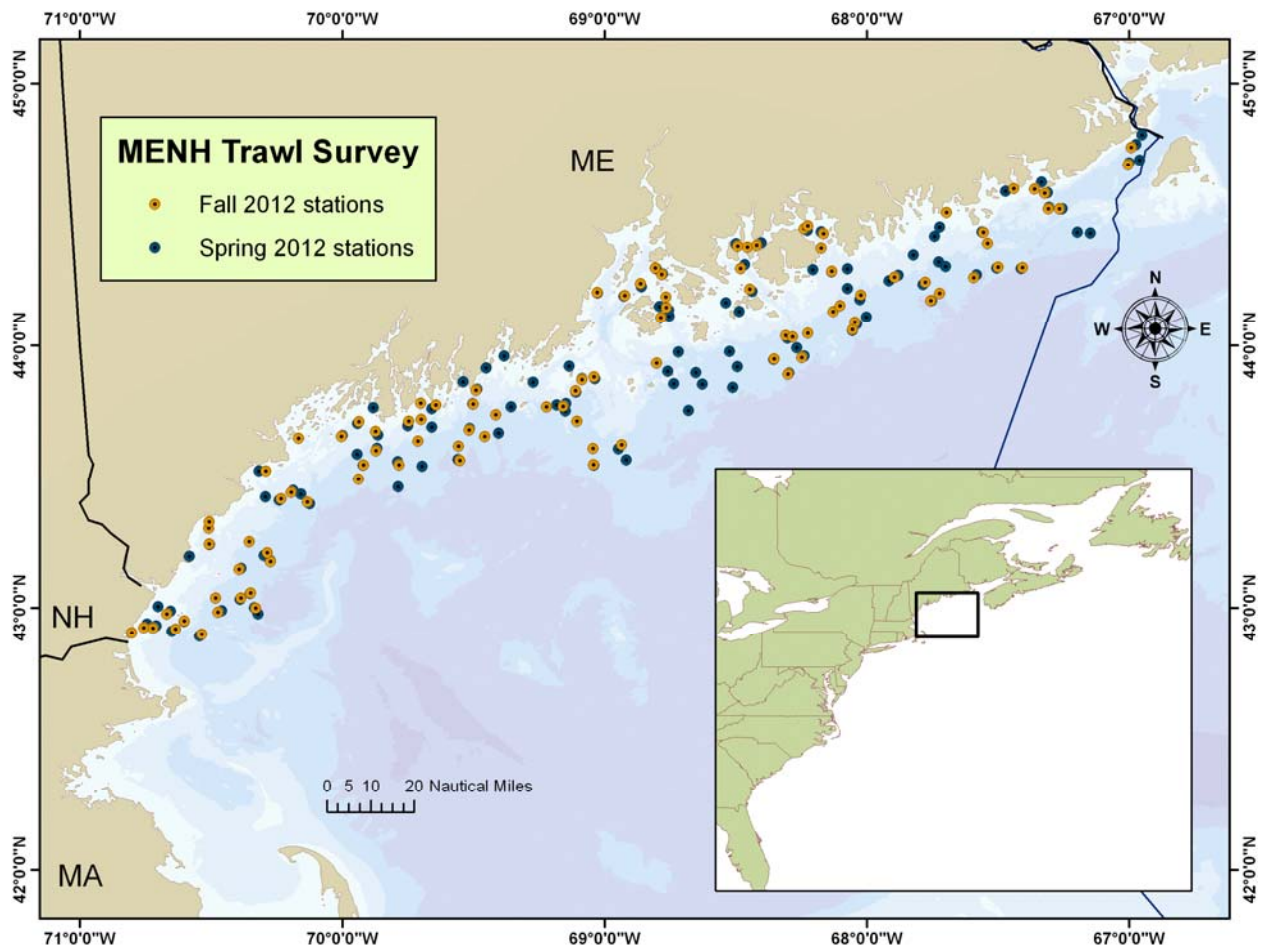


Figure 2. Survey start coordinates for the 2012 season.

Average bottom temperatures by stratum ranged from 5.4 to 8.1°C (Table 1), with an overall average of 6.7°C. This is the highest spring survey average bottom temperature since the

beginning of the survey. The previous 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 (°C) for the spring 2012 survey

STRATUM	REGION				
	1	2	3	4	5
1	6.8	7.1	7.2	8.1	7.7
2	5.9	6.4	6.9	7.0	7.2
3	5.4	5.8	6.4	6.7	7.4
4	5.8	5.9	6.2	6.9	7.9

The total catch weight varied from 7.5 kg to 645.8 kg per tow, with an average of 111.5 kg and a median of 89 kg per tow. The average catch per tow for this survey was lower than the previous spring, the highest (122 kg) occurring in spring 2010 (Sherman et al. 2011) and the lowest (80 kg) occurring in 2005 (Sherman et al. 2007). The total number of species caught was 88, with a low of 7 and high of 31 in any particular tow, and an average and median of 21 species.

Catches of Atlantic herring, blueback herring, and alewife were down noticeably from spring 2011. We measured a survey record number of lobsters, approximately 24,000 (over 4900 kg). Northern shrimp catches were only about a half of the previous spring's catches in weight. Catches of winter flounder, Acadian redfish, sea scallop, yellowtail flounder, longhorn sculpin, and American plaice were also less than the previous spring. Silver hake (whiting) numbers were up. Several species that are typically only seen in the fall survey have become more common in the spring possibly due to the milder winters. Normally much more abundant in the fall, this spring's number of spiny dogfish, 94 individuals, was very close to what was caught in fall of 2012 (117). Dogfish abundance for the fall has dropped considerably (Appendix C). Atlantic mackerel and longfin squid numbers were the highest for a spring survey since the beginning of the time series. Also, spring Atlantic butterfish catches have been increasing since 2010. 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 2012 survey. Lumpfish tissue samples were collected for a genetics study of this species from the northern hemisphere. The study is being conducted by researchers at the Marine Science Institute in Iceland. Winter flounder gonads and selected finfish stomachs were also collected for the previously mentioned projects.

Table 2. Spring 2012 species sampled for individual weights, sex, maturity, food habits, and hard parts for aging.

Number of Biological Samples Spring 2012				
Species	Lengths	Sex and Maturity Stage	Otoliths	Food Habits
American plaice	2522	496	342	NA
Atlantic cod	204	147	102	NA
Haddock	278	101	65	NA
Lumpfish	21	18	NA	NA
Winter flounder	2829	701	480	NA
Yellowtail flounder	133	89	NA	NA

A number of Atlantic halibut were tagged in conjunction with the DMR's Atlantic halibut tagging program.

Other Spring 2012 Survey Highlights

Atlantic spiny lumpstickers were seen for the first time in the 2012 survey, 2 individuals were caught in eastern Maine. An individual of the Myctophidae family, lanternfishes, was caught in Penobscot Bay. A large catch of American sand lance was seen off of Hampton Beach in New Hampshire, the largest catch seen in NH waters since the beginning of the survey. A good size catch of green crab occurred in a shallow tow near Mt. Desert Narrows.

FALL 2012 SUMMARY

The survey began September 24, 2012 in Portsmouth, New Hampshire and finished on October 26th off of Lubec, Maine. The start of the survey was moved ahead a week in order to improve the chances of good weather for the entire 5 weeks. We completed 99 tows out of the scheduled 120 and lost no days to weather. This translates to an 82.5% completion rate, with an average of 4 tows per day. This is our best completion rate for a fall survey. Personnel from Maine DMR as well as New Hampshire F&G participated in the survey. Michael O'Malley and Justin Stevens from NOAA's office in Orono, ME, who work in the Penobscot River estuary, joined the survey for 2 weeks to sample groundfish stomachs looking for alosines as prey. Mike Kersula, a student at the University of Maine in Orono, participated on several days to collect tissue and stomach samples from spiny dogfish. Tissue samples of alewife and blueback herring were collected for Emily Argo, a student of Dr. Eric Palkovacs at University of California-Santa Cruz, for a National Fish and Wildlife Foundation funded grant to examine the population genetic structure of river herring. Lumpfish tissue samples were also collected again for the genetics study mentioned earlier. 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 7.6°C to 13.9°C (Table 5) and the overall average was 11.3°C. This is the highest fall survey average bottom temperature

since the beginning of the survey. The previous highest fall survey average temperature was 10.6°C in 2010 (Sherman et al, 2011) and the lowest average was 8.6°C in 2004 (Sherman et al. 2005).

Table 5. Average bottom temperature (°C) for the fall 2012 survey.

REGION					
STRATUM	1	2	3	4	5
1	12.2	12.6	13.9	13.4	12.3
2	10.1	11.0	12.8	12.9	12.3
3	8.3	9.8	11.4	12.0	12.3
4	7.6	8.4	10.8	11.1	10.7

Total catch weights varied from 6.4 kg to 416.0 kg per tow, with an average of 135.7 kg and a median of 118.9 kg per tow. This was lower than the previous fall’s average catch (Sherman et al. 2012). The highest average catch per tow was in 2007 at 227.8 kg (Sherman et al. 2009). The total number of species caught was 102, with a low of 10 and high of 32 in any particular tow, and an average of 20 species, with a median number of 21.

Catches of American lobster were down from last fall at approximately 2200 fewer individuals measured (~ 3750 kg). Northern shrimp catches were down again for 2012 (a total of 224 kg) compared to the previous fall survey (340 kg). Catches of the major groundfish species were down from fall 2011, along with spiny dogfish, butterfish, and American shad. Atlantic herring, rainbow smelt, and alewife catches were up somewhat. Longfin squid catches were up considerably, they occurred in 90% of the tows. 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. Otoliths were collected from American shad this survey for MEDMR’s Sea Run Fishery and Habitat Division.

Table 6. Fall 2012 species sampled for individual weights, sex, maturity, food habits, and hard parts for aging.

Number of Biological Samples Fall 2012				
Species	Lengths	Sex and Maturity Stage	Otoliths	Food Habits
Atlantic cod	31	28	25	NA
Haddock	720	203	85	NA
Lumpfish	32	28	NA	NA
American shad	241	83	43	NA
White Hake	1124	386	242	NA
Witch Flounder	322	231	134	NA

Winter flounder were tagged during this survey in conjunction with a Northeast Consortium funded tagging project. Additionally, several Atlantic halibut were tagged.

Other Fall 2012 Highlights

Several species that are new to the survey were seen in fall 2012, spotted tinseltail (in southern Maine), and in eastern Maine, yellow jack, kelp snailfish, and longfin hake. Atlantic moonfish and juvenile bluefish were caught in several tows, only a small number of each though. A small armored seas robin showed up in one tow, only one other has been seen previously. An increased number of Atlantic mackerel were seen especially in eastern Maine which was somewhat unusual.

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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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 2012										
4/30/2012	1	1	42.9381	70.7430	1	07:30	00:20	16.3	6.5	32.13
4/30/2012	1	2	42.9049	70.8009	1	08:40	00:20	3.6	7.4	31.87
4/30/2012	1	3	42.9315	70.7072	2	09:53	00:20	22.5	6	32.27
4/30/2012	1	4	42.9867	70.6522	1	11:44	00:20	12.1	7.1	31.97
4/30/2012	1	5	43.0048	70.7001	1	12:48	00:17	11.4	6.7	32.06
5/1/2012	1	6	42.9488	70.6009	2	07:42	00:17	34.7	5.6	32.51
5/1/2012	1	7	42.9091	70.6478	2	09:08	00:20	32.7	5.6	32.54
5/1/2012	1	8	42.8922	70.5426	3	10:37	00:20	46.9	5.4	32.66
5/1/2012	1	9	42.9880	70.4576	3	12:34	00:20	53.2	5.4	32.62
5/2/2012	1	10	42.9761	70.3182	4	08:58	00:20	85.4	6.2	32.61
5/2/2012	1	11	43.0004	70.3335	4	10:10	00:20	74.5	6	32.62
5/2/2012	1	12	43.0556	70.3485	4	11:34	00:20	64.7	6	32.19
5/2/2012	1	13	43.0317	70.3882	4	12:53	00:16	59.9	5.4	32.66
5/3/2012	1	14	43.1968	70.5808	1	08:00	00:20	15	6.4	32.24
5/3/2012	1	15	43.2425	70.5039	2	09:14	00:20	26.3	6.1	32.29
5/3/2012	1	16	43.1503	70.3845	3	11:04	00:15	48.5	5.4	32.59
5/3/2012	1	17	43.1799	70.2707	4	12:33	00:20	65.6	6.1	32.99
5/3/2012	1	18	43.2002	70.2960	4	13:53	00:15	56.2	5.6	32.74
5/3/2012	1	19	43.4102	70.2389	3	16:57	00:15	47.1	5.5	32.56
5/4/2012	1	20	43.4472	70.1847	3	07:52	00:18	49.3	5.4	32.57
5/4/2012	1	21	43.4328	70.1563	3	09:30	00:20	56.5	5.5	32.57
5/4/2012	1	22	43.3954	70.1225	4	11:00	00:20	60.2	5.5	32.62
5/4/2012	1	23	43.4221	70.2906	2	12:44	00:16	32.2	6	32.4
5/4/2012	1	24	43.5220	70.3155	1	14:18	00:20	9.4	6.8	32.04
5/7/2012	2	25	43.5853	69.9410	3	07:45	00:20	50	5.7	32.44
5/7/2012	2	26	43.5451	69.9185	3	09:22	00:20	52.7	5.8	32.41
5/7/2012	2	27	43.6090	69.8652	3	10:49	00:20	45.3	5.8	32.41
5/7/2012	2	28	43.6592	69.8619	1	12:12	00:20	18.6	6.7	32.14
5/7/2012	2	29	43.7632	69.8801	1	13:35	00:20	9.1	6.8	31.67
5/7/2012	2	30	43.7039	69.9397	1	14:54	00:20	19.6	6.9	31.98
5/7/2012	2	31	43.6578	69.9976	2	16:23	00:17	27.3	6.4	32.21
5/8/2012	2	32	43.4618	69.7856	4	09:06	00:20	75.1	6	32.8
5/8/2012	2	33	43.5408	69.6939	4	11:19	00:20	67.1	5.9	32.39
5/8/2012	2	34	43.5578	69.7870	4	12:51	00:20	63.3	5.8	32.76
5/9/2012	2	35	43.6946	69.7475	1	08:33	00:20	18.4	6.9	31.94
5/9/2012	2	36	43.6890	69.6565	3	11:25	00:20	45.1	5.9	31.6
5/9/2012	2	37	43.7600	69.6561	2	13:03	00:16	30.8	6.6	32.07
5/10/2012	2	38	43.5672	69.5555	4	08:20	00:20	81.4	6	32.7
5/10/2012	2	39	43.6663	69.4011	4	10:32	00:18	60.6	5.8	32.73
5/10/2012	2	40	43.7666	69.3549	3	12:47	00:20	45.6	6	32.3
5/10/2012	2	41	43.6838	69.5127	4	14:46	00:20	71	5.7	32.51
5/10/2012	2	42	43.7800	69.5003	3	16:17	00:20	56.7	5.8	32.41

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
5/11/2012	2	43	43.8619	69.5371	1	06:52	00:18	15.1	6.9	31.8
5/11/2012	2	44	43.8338	69.4852	2	08:34	00:20	36.7	6	32.28
5/11/2012	2	45	43.9146	69.4494	1	10:05	00:20	9.1	7.6	31.56
5/11/2012	2	46	43.9602	69.3798	1	11:34	00:20	5.6	8.1	31.21
5/11/2012	2	47	43.8603	69.2706	2	13:56	00:20	35.2	6.7	32.08
5/14/2012	3	48	43.7513	69.1476	3		00:20	53.7	5.8	32.35
5/14/2012	3	49	43.7748	69.1803	3	10:28	00:20	46.9	6	31.99
5/14/2012	3	50	43.7798	69.1458	3	11:45	00:17	45.9	6.2	32.13
5/14/2012	3	51	43.8237	69.1067	2	13:00	00:15	37	6.2	32.15
5/14/2012	3	52	43.8739	69.0835	2	14:12	00:20	31.9	6.5	32.03
5/14/2012	3	53	43.8748	69.0352	2	15:26	00:20	29.5	6.8	31.78
5/14/2012	3	54	43.9209	69.1324	1	16:54	00:20	19.1	7	31.65
5/15/2012	3	55	44.1901	68.9239	2	07:22	00:20	33.2	7.1	31.09
5/15/2012	3	56	44.2262	68.8568	1	08:38	00:20	17.2	6.7	31.38
5/15/2012	3	57	44.2748	68.7768	1	10:03	00:15	16.5	8.7	29.39
5/15/2012	3	58	44.2965	68.8007	1	11:21	00:15	15.6	6.8	30.97
5/15/2012	3	59	44.2024	69.0246	1	15:00	00:20	14.4	6.6	31.25
5/16/2012	3	60	43.5460	69.0378	4	09:32	00:20	69	6	32.39
5/16/2012	3	61	43.5650	68.9149	4	11:23	00:20	73.2	6.2	32.78
5/16/2012	3	62	43.6067	68.9447	4	12:34	00:20	67.2	6.2	32.14
5/17/2012	3	63	43.9024	68.7565	3	07:29	00:20	48.3	6.3	32.08
5/17/2012	3	64	43.8973	68.6491	3	09:03	00:20	51.3	6.2	31.99
5/17/2012	3	65	43.8537	68.6246	3	10:20	00:19	55.8	6.5	32.58
5/17/2012	3	66	43.7521	68.6786	4	12:17	00:15	65.2	6.5	32.51
5/17/2012	3	67	43.8549	68.7339	3	14:28	00:15	53.9	6.9	31.94
5/18/2012	3	68	43.9763	68.7162	3	08:00	00:17	45.7	6.9	31.89
5/18/2012	3	69	44.1128	68.7516	2	09:58	00:17	43.2	7.5	31.05
5/18/2012	3	70	44.1356	68.7536	2	11:00	00:20	30.1	7.5	31.29
5/18/2012	3	71	44.1507	68.7876	1	12:19	00:16	9.4	7.5	31.32
5/21/2012	4	72	43.9777	68.5210	3	09:15	00:20	49.9	6.6	32.29
5/21/2012	4	73	43.9207	68.4917	3	10:36	00:20	54.5	6.6	32.61
5/21/2012	4	74	43.8402	68.5098	4	12:05	00:20	71.9	6.7	32.94
5/21/2012	4	75	44.1307	68.4839	1	15:28	00:10	12.8	8.7	31.62
5/22/2012	4	76	44.1634	68.5354	1	07:22	00:20	13.8	8.9	31.45
5/22/2012	4	77	44.3104	68.4640	2	09:36	00:20	28.4	7.5	30.82
5/22/2012	4	78	44.3922	68.4003	1	11:09	00:20	11.2	7.9	31.3
5/22/2012	4	79	44.3884	68.4961	1	12:19	00:20	14.8	7.6	31.37
5/22/2012	4	80	44.2072	68.4356	1	14:25	00:16	15.2	8.2	31.5
5/23/2012	4	81	44.0282	68.3007	3	07:50	00:20	51	6.7	32.26
5/23/2012	4	82	43.9473	68.3530	4	09:27	00:20	57.4	6.7	32.55
5/23/2012	4	83	43.8953	68.2952	4	10:51	00:20	72.7	7.2	33.18
5/23/2012	4	84	43.9600	68.2360	4	12:13	00:15	60.3	7.2	33.09
5/23/2012	4	85	43.9914	68.2654	3	13:28	00:20	56.8	6.7	32.45
5/24/2012	4	86	44.0593	68.0522	4	09:37	00:20	60.8	6.9	32.69
5/24/2012	4	87	44.0833	68.0362	3	10:46	00:20	53	6.8	32.3

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
5/24/2012	4	88	44.1100	67.9998	3	11:54	00:20	54.1	6.8	32.3
5/24/2012	4	89	44.1772	68.0238	3	13:24	00:20	47.4	6.8	32.45
5/24/2012	4	90	44.2182	68.0717	3	14:26	00:20	41.4	6.8	32.12
5/25/2012	4	91	44.4395	68.2245	2	07:43	00:20	23.6	7	31.73
5/25/2012	4	92	44.4339	68.1715	2	08:58	00:20	21.4	7.1	31.71
5/25/2012	4	93	44.2947	68.0718	2	11:03	00:20	34.1	6.8	31.79
5/25/2012	4	94	44.2840	68.1306	2	12:22	00:20	36.2	6.7	31.82
5/25/2012	4	95	44.2906	68.2033	1	13:34	00:15	18.7	7.3	31.68
5/28/2012	5	96	44.2482	67.9135	2	08:01	00:19	39.2	6.9	31.8
5/28/2012	5	97	44.2703	67.8779	2	09:17	00:20	37.5	6.9	31.94
5/28/2012	5	98	44.3471	67.8202	1	11:04	00:15	16.5	7.5	31.72
5/28/2012	5	99	44.4175	67.7391	2	12:27	00:20	23.4	7.3	31.76
5/28/2012	5	100	44.4521	67.7207	1	13:39	00:15	19.2	7.5	31.68
5/29/2012	5	101	44.3209	67.7237	3	07:18	00:20	42.5	7.1	32.27
5/29/2012	5	102	44.3028	67.6970	3	08:31	00:19	44.1	7.1	32.34
5/29/2012	5	103	44.2340	67.7837	3	10:50	00:20	53.1	7.2	32.7
5/29/2012	5	104	44.1734	67.7504	4	12:44	00:20	121	7.8	33.65
5/30/2012	5	105	44.2720	67.5796	4	07:54	00:20	67.2	7.8	33.43
5/30/2012	5	106	44.2982	67.5022	4	09:19	00:20	60.9	7.6	33.03
5/30/2012	5	107	44.2959	67.4083	4	11:14	00:20	110	8.2	34.2
5/30/2012	5	108	44.4340	67.5578	2	13:43	00:15	32.2	7.3	31.8
5/31/2012	5	109	44.4331	67.1945	3	06:48	00:20	56.5	7.6	32.62
5/31/2012	5	110	44.4302	67.1459	3	08:08	00:15	60	7.7	33.08
5/31/2012	5	111	44.5230	67.2532	3	09:51	00:15	45.6	7.5	32.06
5/31/2012	5	112	44.5270	67.3043	2	11:15	00:16	33	7.3	31.88
5/31/2012	5	113	44.5900	67.4690	1	12:49	00:20	5.8	8.2	31.53
5/31/2012	5	114	44.5839	67.3093	2	14:25	00:20	27.1	7.5	31.66
5/31/2012	5	115	44.6242	67.3322	1	15:36	00:20	11.4	7.6	31.71
6/1/2012	5	116	44.6988	66.9985	3	07:16	00:20	45.7	7.3	31.73
6/1/2012	5	117	44.7085	66.9573	3	08:49	00:16	57.8	7.3	31.78
6/1/2012	5	118	44.7688	66.9709	3	10:19	00:20	46.8	7.5	31.53
6/1/2012	5	119	44.8047	66.9484	2	12:00	00:10	23.8	7.1	31.8

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
9/24/2012	1	1	42.93247	-70.7084	2	09:43	00:20	22.3	11	32.62
9/24/2012	1	2	42.91283	-70.7975	1	11:08	00:16	2.9	14	32.34
9/24/2012	1	3	42.93652	-70.7475	1	12:02	00:20	14.4	12.3	32.32
9/24/2012	1	4	42.98478	-70.6536	1	13:30	00:20	12.4	11	32.45
9/25/2012	1	5	43.04877	-70.4686	3	08:15	00:20	47.7	8.3	32.82
9/25/2012	1	6	42.98882	-70.4547	3	10:13	00:20	53.4	7.7	32.87
9/25/2012	1	7	42.8874	-70.5401	3	11:53	00:20	46.7	7	32.72
9/25/2012	1	8	42.94557	-70.6082	2	13:17	00:13	31.2	9.3	32.67
9/25/2012	1	9	42.91007	-70.6456	2	14:27	00:17	31.5	9.6	32.62
9/26/2012	1	10	43.02588	-70.3906	4	08:06	00:20	60.8	7.2	33.07
9/26/2012	1	11	43.00573	-70.3437	4	09:57	00:20	71.6	7.2	33.3
9/26/2012	1	12	43.04543	-70.3582	4	11:26	00:20	65.8	7.5	33.02
9/26/2012	1	13	43.1645	-70.2801	4	13:08	00:20	65.7	7.7	33.04
9/26/2012	1	14	43.20112	-70.2956	4	14:24	00:18	54.7	8.2	32.19
9/27/2012	1	15	43.15455	-70.3788	3	08:18	00:18	48.8	8.3	32.92
9/27/2012	1	16	43.26135	-70.3455	3	10:29	00:16	46.5	9	32.86
9/27/2012	1	17	43.23535	-70.518	2	12:09	00:19	24	10.4	32.64
9/27/2012	1	18	43.28962	-70.5132	1	13:13	00:20	15.4	11	32.54
9/27/2012	1	19	43.32013	-70.5196	1	14:12	00:20	9.7	11.8	32.5
9/28/2012	1	20	43.3925	-70.1209	4	07:57	00:20	58	8	32.96
9/28/2012	1	21	43.4535	-70.1843	3	09:32	00:20	47.1	8.6	33.1
9/28/2012	1	22	43.40652	-70.2383	3	10:36	00:16	48.2	8.9	33.03
9/28/2012	1	23	43.52028	-70.307	1	12:54	00:20	12	12.8	32.52
10/1/2012	2	24	43.48018	-69.9488	4	08:21	00:21	61.2	8	33.14
10/1/2012	2	25	43.53682	-69.9134	3	10:17	00:15	54.5	9.5	33.12
10/1/2012	2	26	43.63815	-70.1706	1	13:27	00:16	15	13.8	32.13
10/2/2012	2	27	43.64968	-70.0086	2	08:59	00:12	27.4	11.9	32.88
10/2/2012	2	28	43.70102	-69.9389	1	10:13	00:15	19.8	11.9	32.81
10/2/2012	2	29	43.66097	-69.8665	1	11:58	00:20	18.5	12	32.81
10/2/2012	2	30	43.61198	-69.8609	3	13:03	00:20	42.9	9.9	33.13
10/2/2012	2	31	43.55915	-69.7877	4	14:20	00:20	61.3	8.3	33.14
10/2/2012	2	32	43.62593	-69.7111	3	16:03	00:18	51.6	10.1	33.06
10/3/2012	2	33	43.79467	-69.7001	2	07:57	00:20	24.8	11.1	32.9
10/3/2012	2	34	43.7007	-69.7479	1	09:24	00:18	17.5	12.7	32.76
10/3/2012	2	35	43.70783	-69.6921	2	12:57	00:20	36.3	10.7	32.96
10/3/2012	2	36	43.78253	-69.6411	2	14:17	00:13	24.6	11.1	32.83
10/4/2012	2	37	43.57222	-69.5617	4	09:06	00:20	76.6	7.8	32.51
10/4/2012	2	38	43.60955	-69.5482	4	10:11	00:15	68.4	8.2	33.32
10/4/2012	2	39	43.69257	-69.5118	4	11:32	00:20	65.2	8.9	33.2
10/4/2012	2	40	43.66565	-69.4439	4	13:34	00:20	65	9.2	33.39
10/4/2012	2	41	43.74763	-69.4072	3	15:10	00:15	48.7	10.4	33.24
10/5/2012	2	42	43.82058	-69.4899	2	09:25	00:14	38.7	10.2	32.94
10/5/2012	2	43	43.7641	-69.5019	3	10:55	00:20	56	9	33.14
10/8/2012	3	44	43.75562	-69.21	3	09:24	00:20	48.5	10.7	33.14

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
10/8/2012	3	45	43.77638	-69.1471	3	10:41	00:17	46.6	10.8	33.5
10/8/2012	3	46	43.8178	-69.1073	2	12:40	00:16	38.5	12.1	33.29
10/8/2012	3	47	43.85738	-69.0828	2	14:11	00:20	32.7	12	33.31
10/8/2012	3	48	43.8759	-69.0382	2	15:46	00:07	27.9	12.6	33.26
10/9/2012	3	49	44.18055	-68.9287	2	08:12	00:20	32.6	13.8	32.78
10/9/2012	3	50	44.22575	-68.8584	1	09:46	00:20	15	13.9	32.65
10/9/2012	3	51	44.2655	-68.7886	1	10:50	00:15	11.9	14	32.1
10/9/2012	3	52	44.29267	-68.7892	1	11:50	00:16	16.6	13.9	32.69
10/9/2012	3	53	44.19147	-69.0299	1	14:10	00:20	12.6	14.1	32.46
10/9/2012	3	54	43.72227	-69.0951	3	09:59	00:16	53.2	11	33.61
10/9/2012	3	55	43.60883	-69.0602	4	11:31	00:20	75.6	10.7	33.93
10/9/2012	3	56	43.55857	-69.0508	4	12:45	00:20	74.1	10.4	33.93
10/10/2012	3	57	43.61055	-68.9389	4	14:43	00:20	70.8	11.2	32.99
10/11/2012	3	58	43.93397	-68.7859	3	08:31	00:15	43.9	12.9	33.44
10/12/2012	3	59	44.10413	-68.7731	1	08:01	00:16	14.5	13.8	32.48
10/12/2012	3	60	44.1347	-68.757	2	09:26	00:20	29.8	13.7	32.76
10/12/2012	3	61	44.18003	-68.7684	1	11:05	00:12	14.4	13.9	32.56
10/16/2012	4	62	44.20958	-68.4385	1	08:36	00:12	14.5	13.3	32.7
10/16/2012	4	63	44.30453	-68.4702	2	10:06	00:17	31	13.2	32.82
10/16/2012	4	64	44.39148	-68.4021	1	11:45	00:20	12.2	13.7	32.56
10/16/2012	4	65	44.38902	-68.4486	1	13:26	00:20	23.1	13.6	31.17
10/16/2012	4	66	44.3908	-68.497	1	15:13	00:18	13.5	13.7	32.57
10/17/2012	4	67	43.93772	-68.3632	4	07:31	00:20	56.6	11.3	33.92
10/17/2012	4	68	43.90258	-68.2879	4	08:55	00:20	70.4	10.6	34.25
10/17/2012	4	69	43.96273	-68.2316	4	10:19	00:20	60.3	10.9	34.11
10/17/2012	4	70	44.03008	-68.3015	3	11:54	00:15	51.4	12.1	33.81
10/17/2012	4	71	44.04043	-68.2643	3	12:55	00:20	52	11.9	33.8
10/17/2012	4	72	44.03813	-68.2199	3	14:18	00:15	54.7	11.8	33.92
10/18/2012	4	73	44.1809	-68.0207	3	08:56	00:20	45.5	12.3	33.08
10/18/2012	4	74	44.0771	-68.0405	3	10:45	00:20	57.8	11.5	33.95
10/18/2012	4	75	44.05413	-68.0597	4	11:51	00:15	61.5	11.4	34.04
10/18/2012	4	76	44.12078	-68.1245	3	13:39	00:17	46.8	12.2	33.72
10/18/2012	4	77	44.14565	-68.1125	3	14:41	00:20	49	12.3	33.64
10/19/2012	4	78	44.29877	-68.1304	2	08:28	00:20	33.7	12.6	33.39
10/19/2012	4	79	44.36043	-68.1634	2	10:33	00:20	25.7	12.9	33.1
10/19/2012	4	80	44.43968	-68.2219	2	12:03	00:20	25.2	12.9	33.08
10/19/2012	4	81	44.45893	-68.2075	1	13:45	00:18	16.1	12.9	33.01
10/19/2012	4	82	44.43455	-68.1721	2	14:55	00:20	23.2	12.8	33.2
10/22/2012	5	83	44.27013	-67.8759	2	10:17	00:20	36.8	12.2	33.67
10/22/2012	5	84	44.49985	-67.702	1	13:46	00:15	8	12.8	32.98
10/23/2012	5	85	44.27263	-67.5763	4	09:33	00:20	62.8	10.5	34.34
10/23/2012	5	86	44.19192	-67.7198	4	11:28	00:15	84.6	11.2	34.11
10/23/2012	5	87	44.1649	-67.7408	4	12:37	00:20	118	10.8	34.27
10/23/2012	5	88	44.2313	-67.7846	3	14:20	00:20	54.6	12	33.73
10/24/2012	5	89	44.29382	-67.5105	4	09:12	00:20	59.4	11.5	34
10/24/2012	5	90	44.29033	-67.4152	4	10:25	00:20	115	9.5	34.56

Appendix B
Individual Station Descriptors for Start of Tow

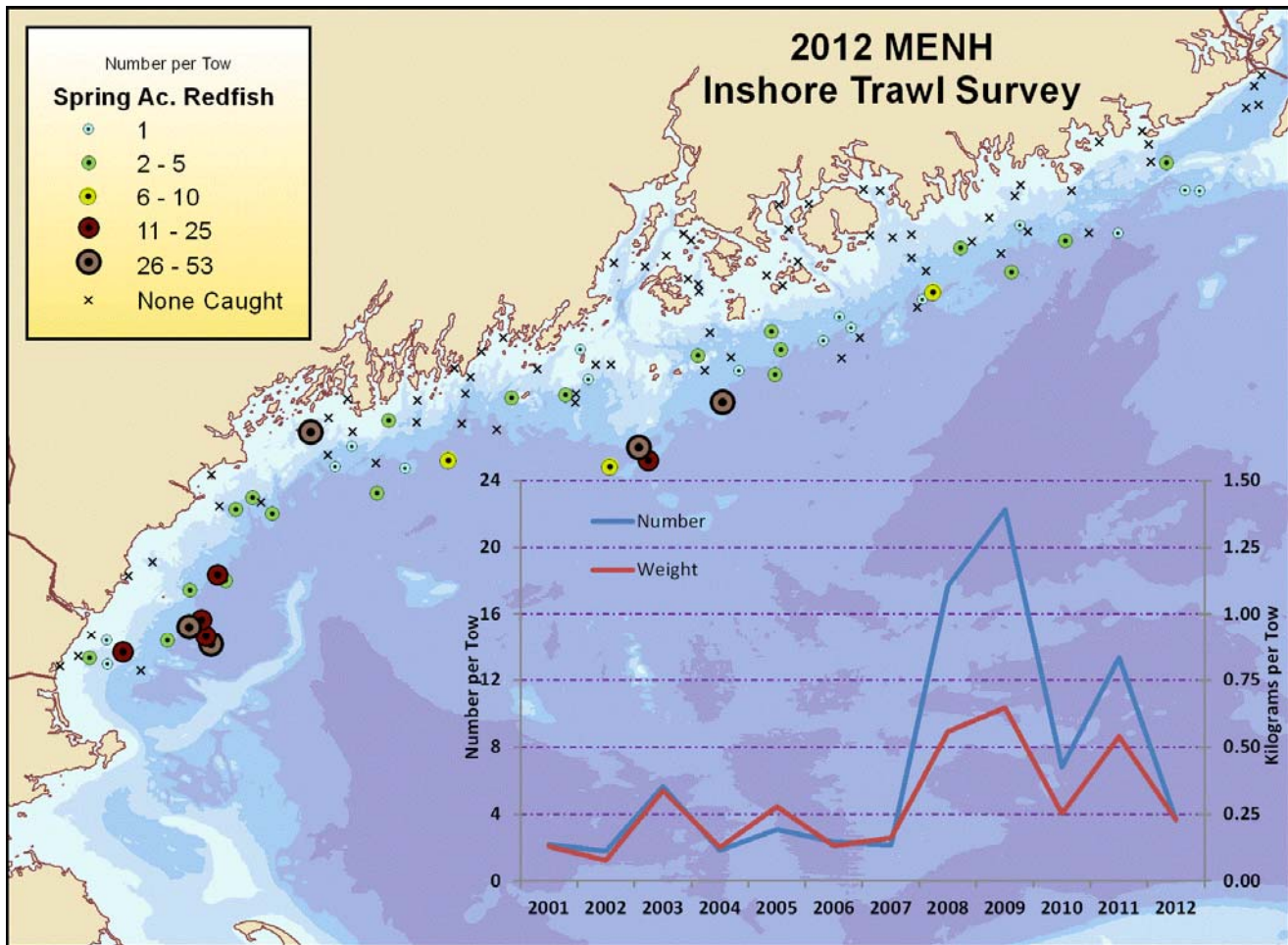
DATE	REGION	TOWID	LAT decimal degrees	LON decimal degrees	Stratum	Time	Tow Duration	Depth (FA)	Temp C °	Salinity ppt
10/24/2012	5	91	44.39757	-67.5257	3	12:33	00:17	46	12.3	33.58
10/24/2012	5	92	44.42492	-67.5626	2	13:45	00:15	32	12.5	33.42
10/25/2012	5	93	44.5146	-67.2736	3	09:06	00:16	37.8	12.1	33.61
10/25/2012	5	94	44.52998	-67.294	2	10:06	00:15	37.7	12.3	33.49
10/25/2012	5	95	44.58803	-67.303	2	11:28	00:19	27.5	12.3	33.38
10/25/2012	5	96	44.5921	-67.4518	1	13:29	00:20	8.2	11.9	32.75
10/25/2012	5	97	44.59088	-67.3672	1	14:33	00:15	22	12.3	33.36
10/26/2012	5	98	44.6972	-66.9949	3	09:56	00:13	44.8	12.5	33.29
10/26/2012	5	99	44.76717	-66.9747	3	11:40	00:18	45.7	12.4	33.24

Appendix C

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 unless otherwise noted.

Acadian redfish, *Sebastes fasciatus*



Means and coefficients of variance for the graph overlain on the above map fixed stations not included for redfish, calculated for regions 1 through 5, strata 1 through 4

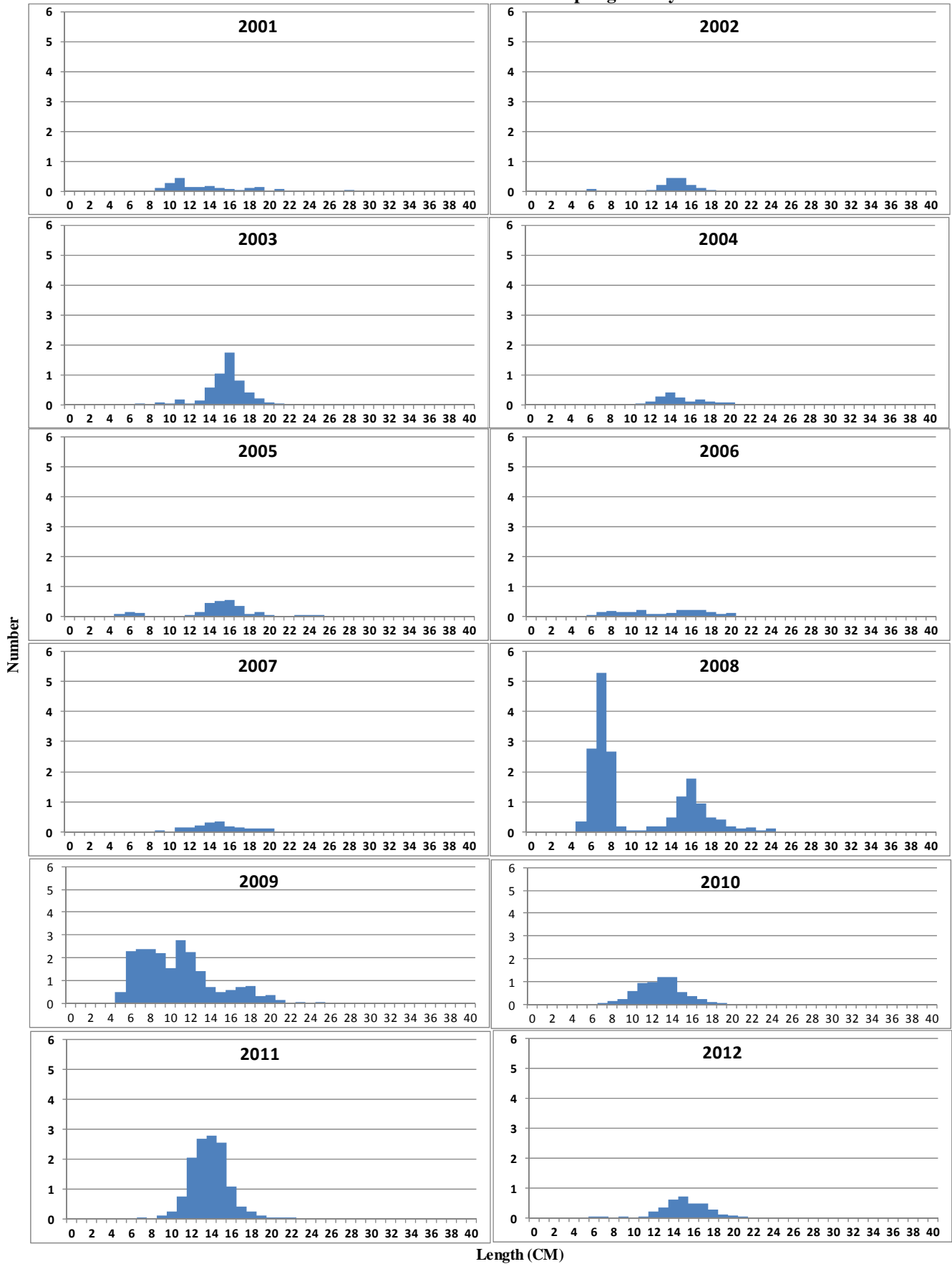
SPRING

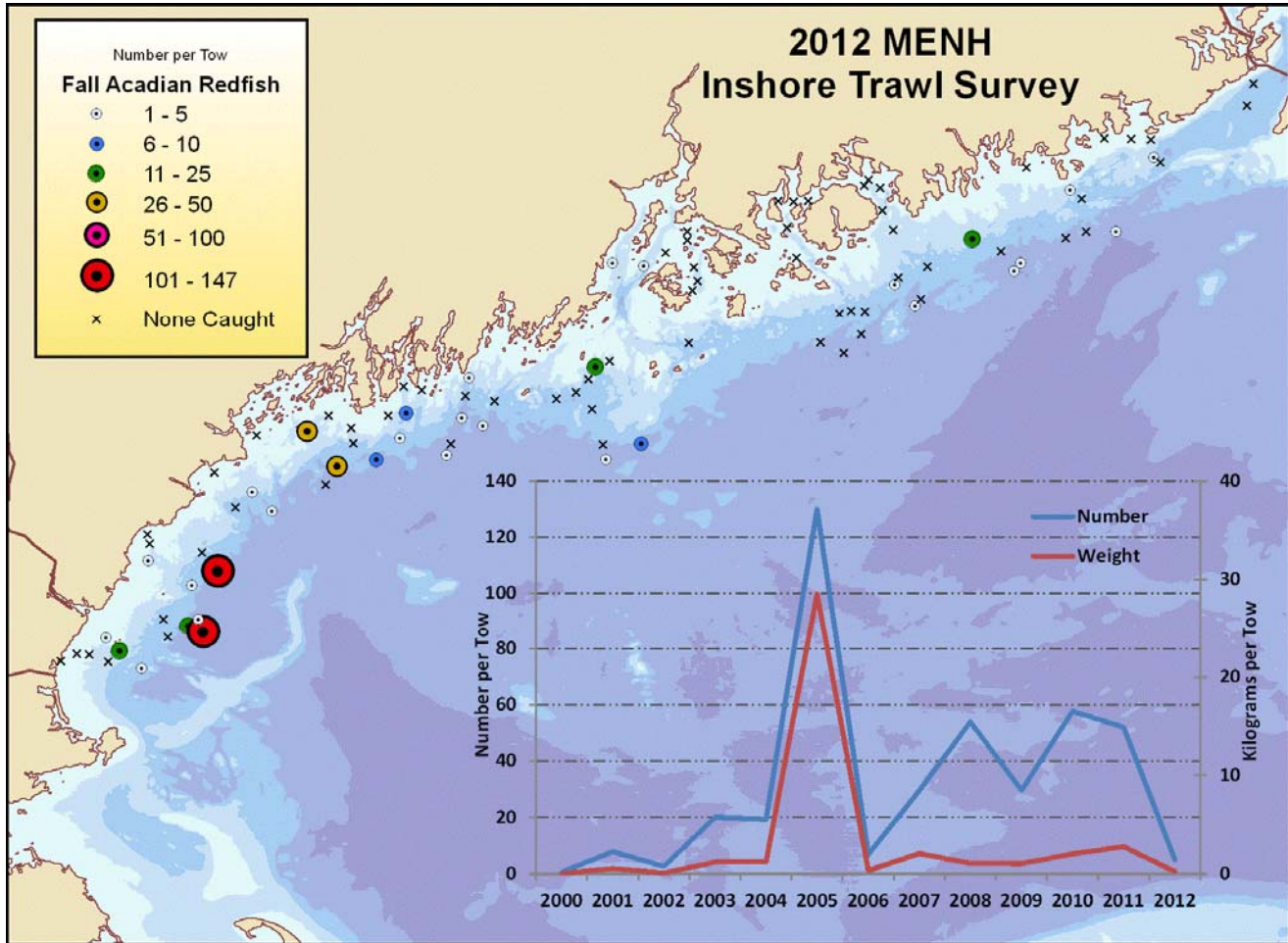
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2001	2.18	0.67	0.13	1.13
2002	1.79	0.51	0.08	0.60
2003	5.66	0.76	0.34	0.80
2004	1.82	0.53	0.13	0.49
2005	3.09	0.48	0.28	0.79
2006	2.33	0.82	0.13	0.78
2007	2.15	0.56	0.16	0.58
2008	17.69	0.67	0.56	0.97
2009	22.27	0.63	0.65	0.74
2010	6.80	0.63	0.25	0.59
2011	13.34	0.58	0.54	0.55
2012	3.66	0.47	0.23	0.50

Appendix C

Acadian Redfish - MENH Spring Surveys



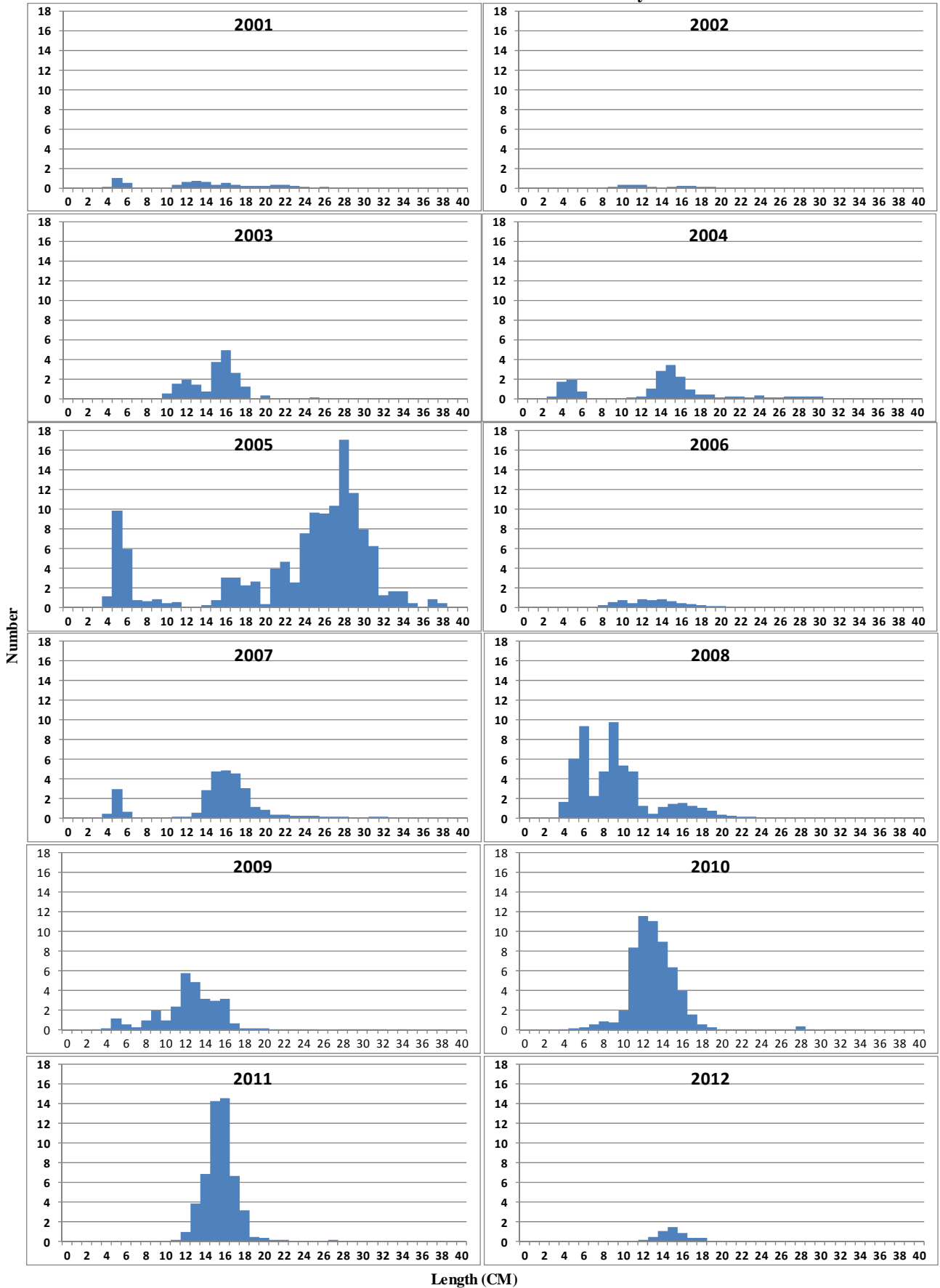


Means and coefficients of variance for the graph overlain on the above map fixed stations not included for redfish, calculated for regions 1 through 5, strata 1 through 4
FALL

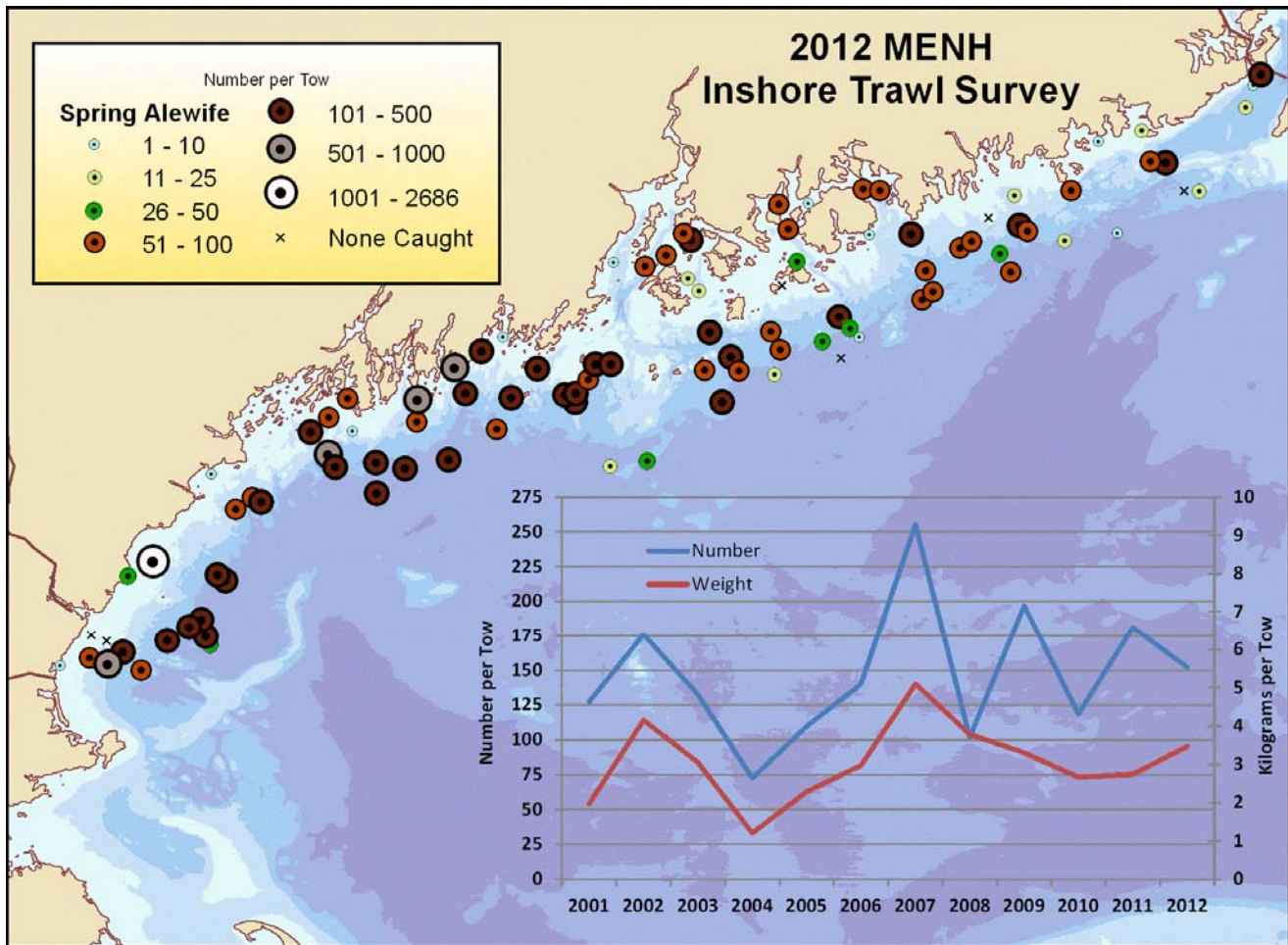
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2000	0.65	0.72	0.03	0.74
2001	7.95	0.84	0.54	1.50
2002	2.70	0.93	0.07	1.60
2003	20.07	1.53	1.19	1.28
2004	19.42	0.50	1.22	0.65
2005	129.96	1.41	28.50	1.70
2006	6.95	0.61	0.32	0.58
2007	29.62	0.84	2.07	0.63
2008	53.93	0.45	1.06	0.52
2009	29.73	1.16	1.03	1.21
2010	57.78	1.32	2.03	1.19
2011	52.12	1.00	2.78	0.92
2012	5.06	0.77	0.23	0.90

Acadian Redfish - MENH Fall Surveys



Alewife, *Alosa pseudoharengus*



Mean and coefficients of variance for the graph overlain on the above map
no fixed stations

For alewife, calculated for regions 1 through 5; strata 1 through 4

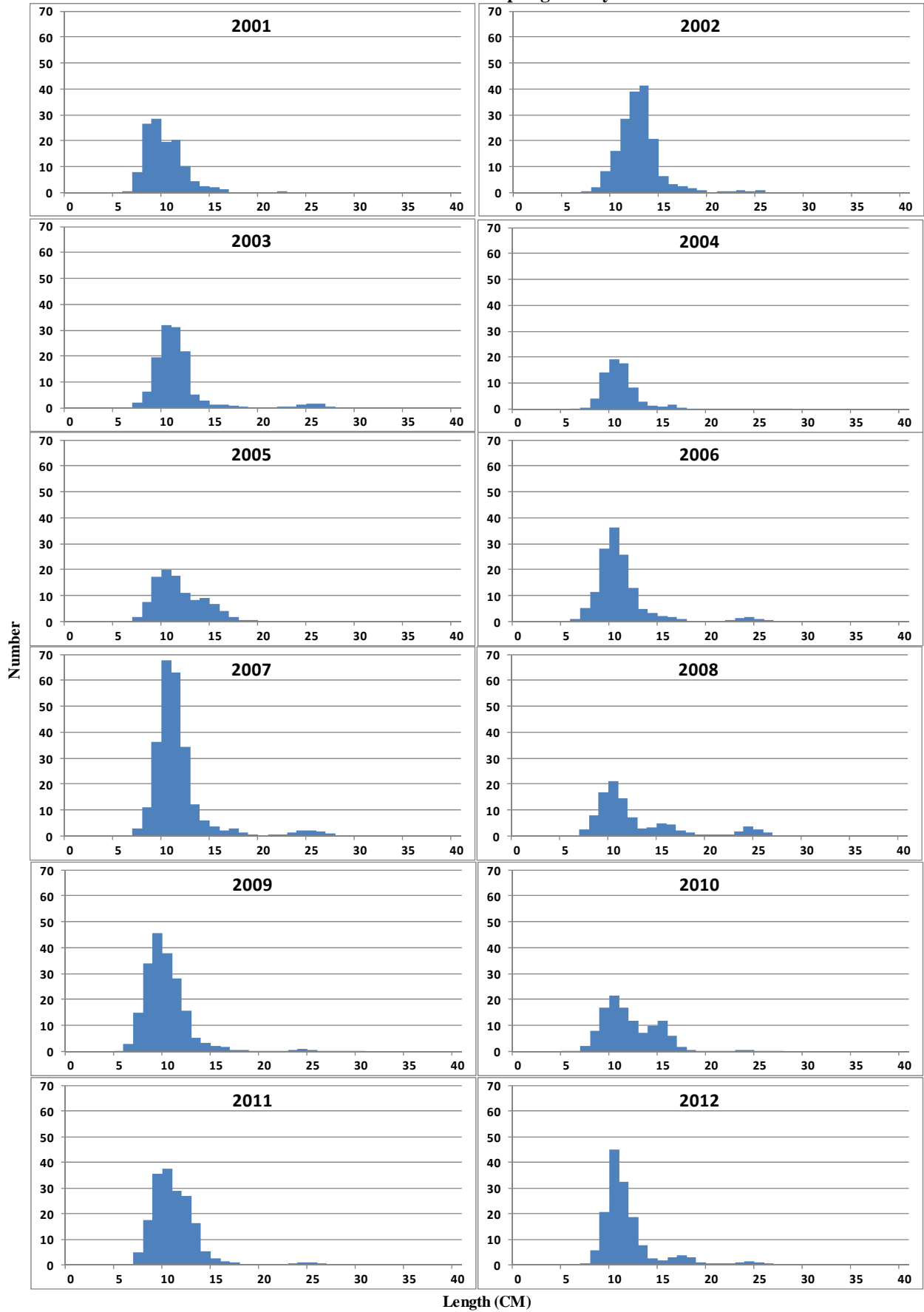
SPRING

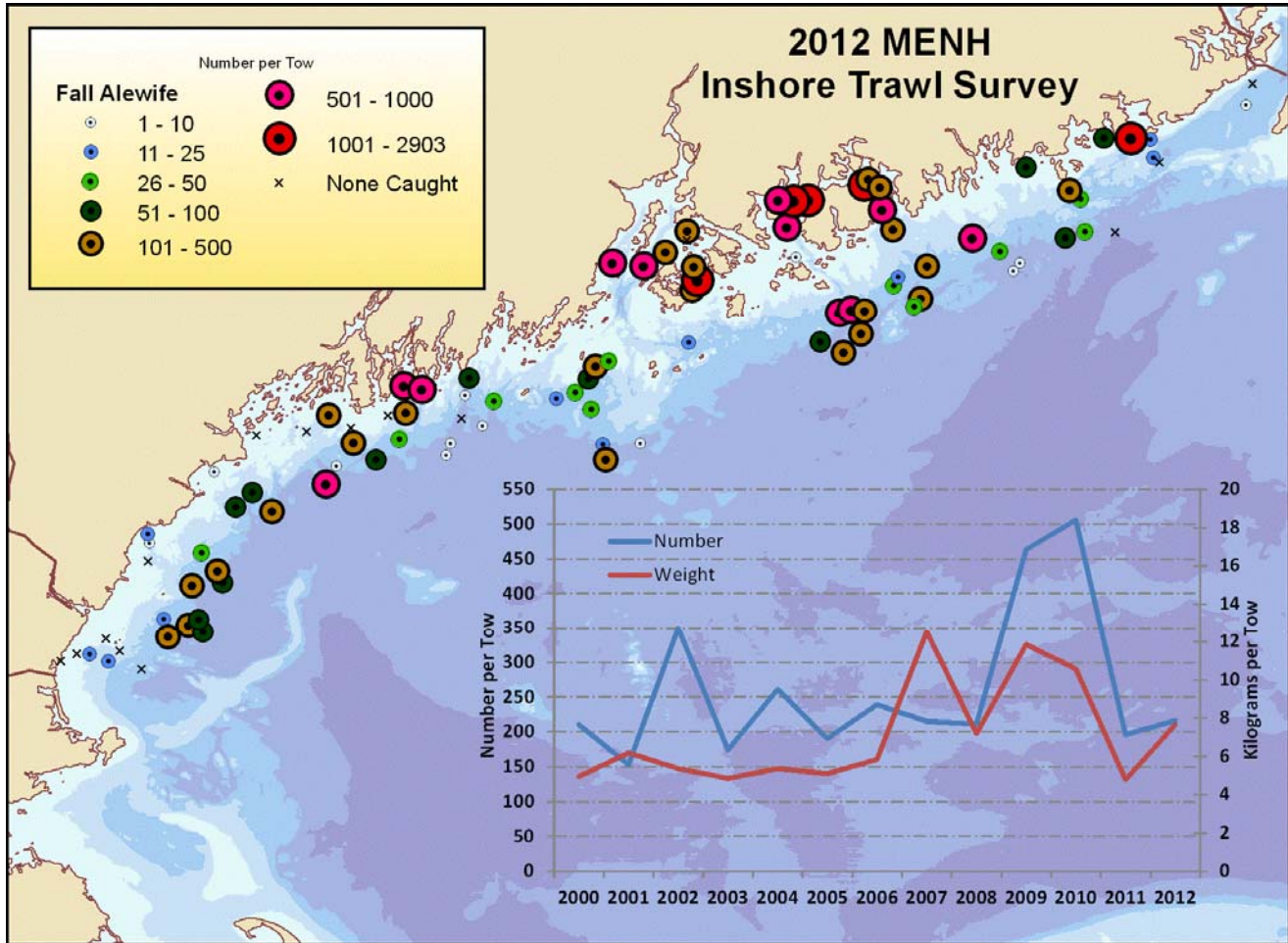
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	127.26	0.52	1.97	0.47
2002	175.75	0.64	4.15	0.45
2003	132.75	0.41	3.05	0.43
2004	72.67	0.28	1.20	0.24
2005	109.69	0.24	2.29	0.24
2006	140.15	0.28	2.97	0.29
2007	255.32	0.64	5.10	0.47
2008	101.86	0.24	3.78	0.69
2009	196.87	0.42	3.30	0.33
2010	118.67	0.39	2.66	0.36
2011	181.09	0.38	2.74	0.28
2012	152.02	0.39	3.47	0.26

Appendix C

Alewife - MENH Spring Surveys





Mean and coefficients of variance for the graph overlain on the above map
no fixed stations

For alewife, calculated for regions 1 through 5; strata 1 through 4

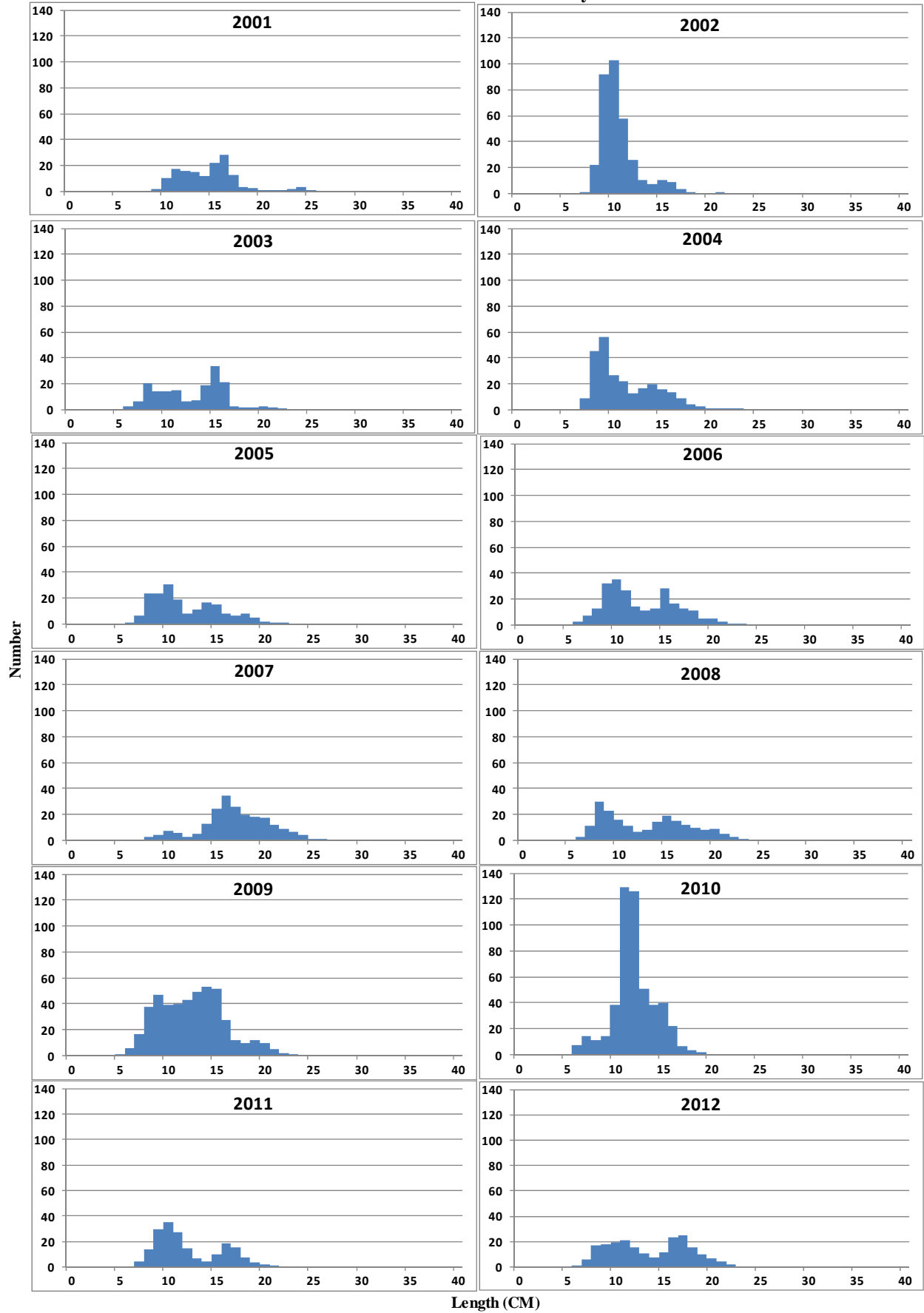
FALL

Stratified Mean

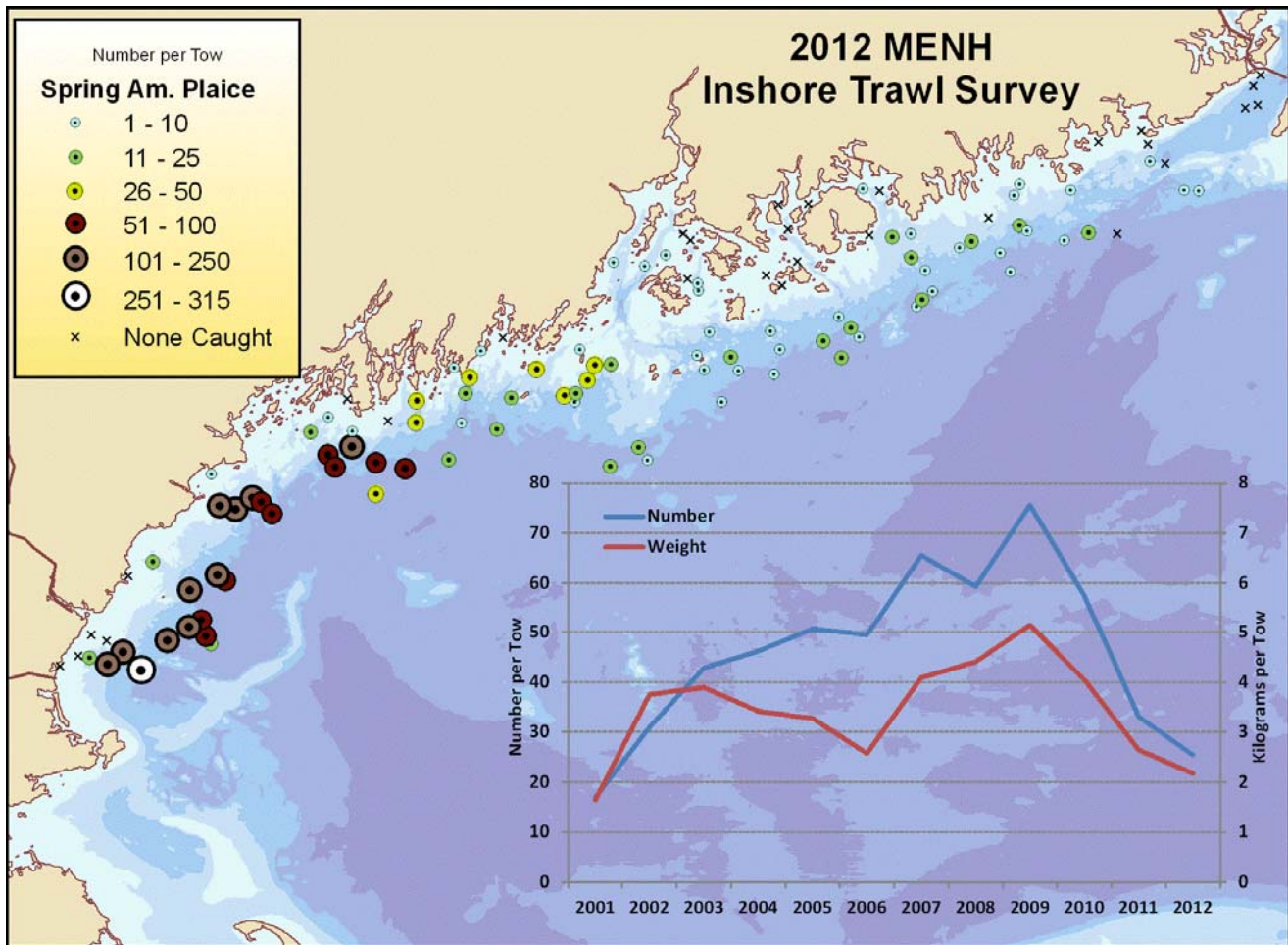
	Number		Weight	
	Mean	CV	Mean	CV
2000	210.69	0.71	4.94	0.66
2001	153.29	0.93	6.18	0.87
2002	349.73	0.79	5.36	0.56
2003	174.43	0.50	4.85	0.74
2004	261.39	0.45	5.36	0.23
2005	190.51	0.24	5.10	0.21
2006	239.46	0.48	5.85	0.50
2007	215.24	0.41	12.52	0.53
2008	211.32	0.36	7.18	0.23
2009	463.63	0.51	11.85	0.27
2010	506.39	0.45	10.58	0.41
2011	196.28	0.44	4.78	0.26
2012	216.38	0.34	7.66	0.33

Appendix C

Alewife - MENH Fall Survey



American plaice, *Hippoglossoides platessoides*



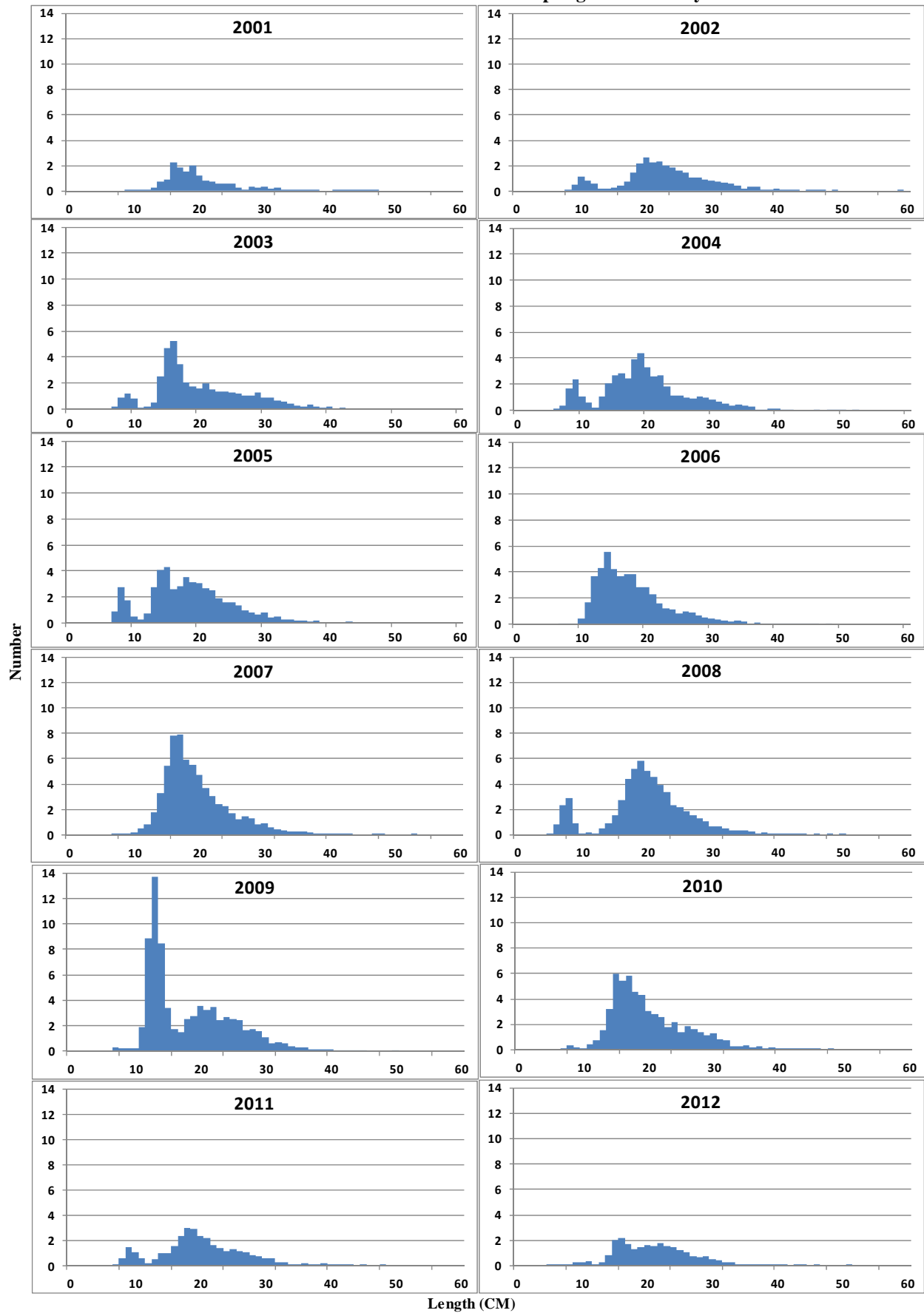
Mean and coefficients of variance for the graph overlain on the above map fixed stations not included for plaice, calculated for regions 1 through 5, strata 1 through 4 **SPRING**

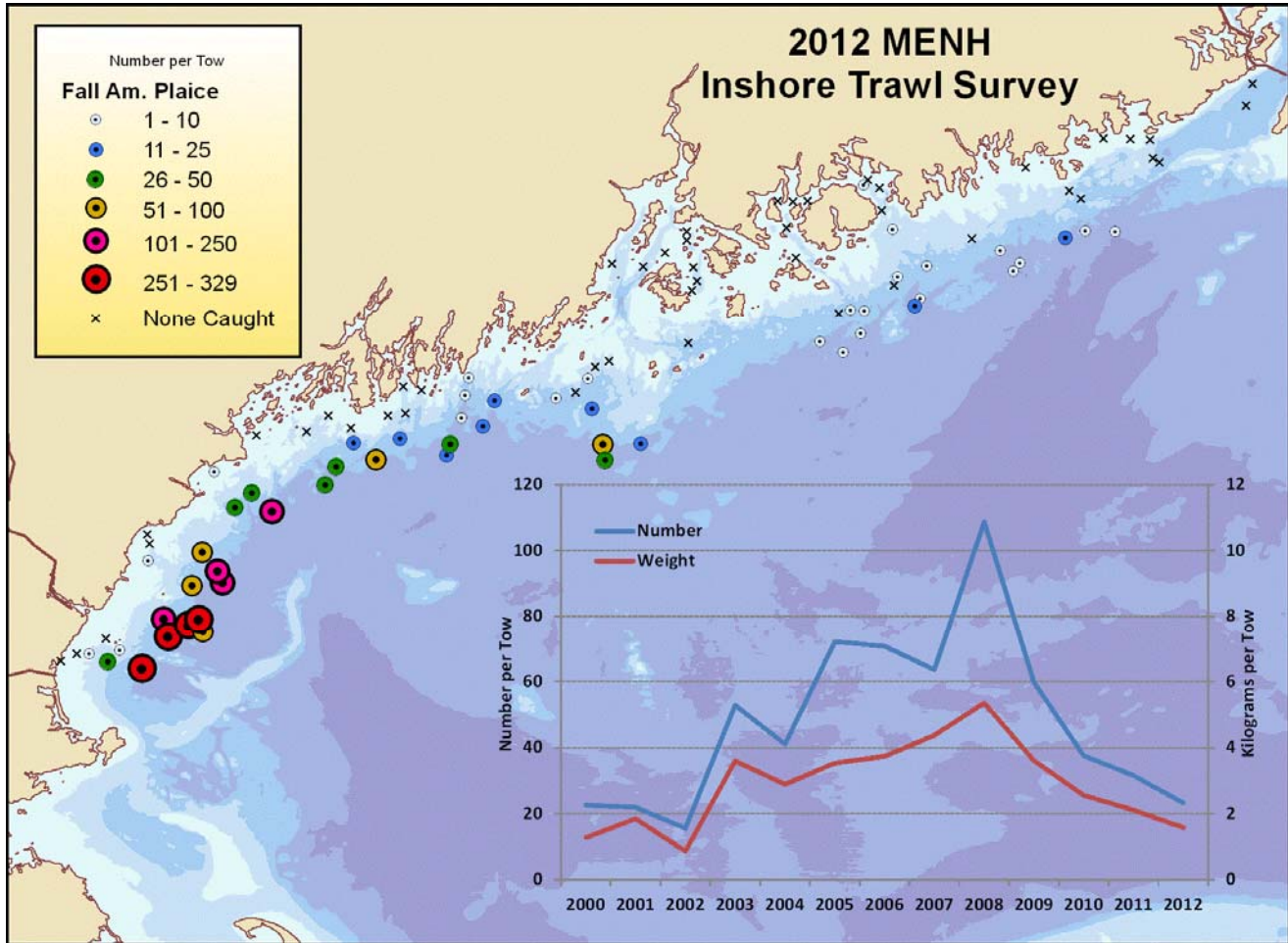
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2001	16.93	0.49	1.64	0.60
2002	31.04	0.26	3.76	0.25
2003	42.82	0.20	3.89	0.22
2004	46.22	0.33	3.42	0.28
2005	50.66	0.20	3.27	0.17
2006	49.51	0.23	2.58	0.18
2007	65.57	0.21	4.09	0.20
2008	59.29	0.30	4.41	0.24
2009	75.65	0.23	5.14	0.21
2010	57.45	0.24	4.05	0.20
2011	33.09	0.31	2.64	0.22
2012	25.46	0.28	2.18	0.22

Appendix C

American Plaice - MENH Spring Trawl Survey





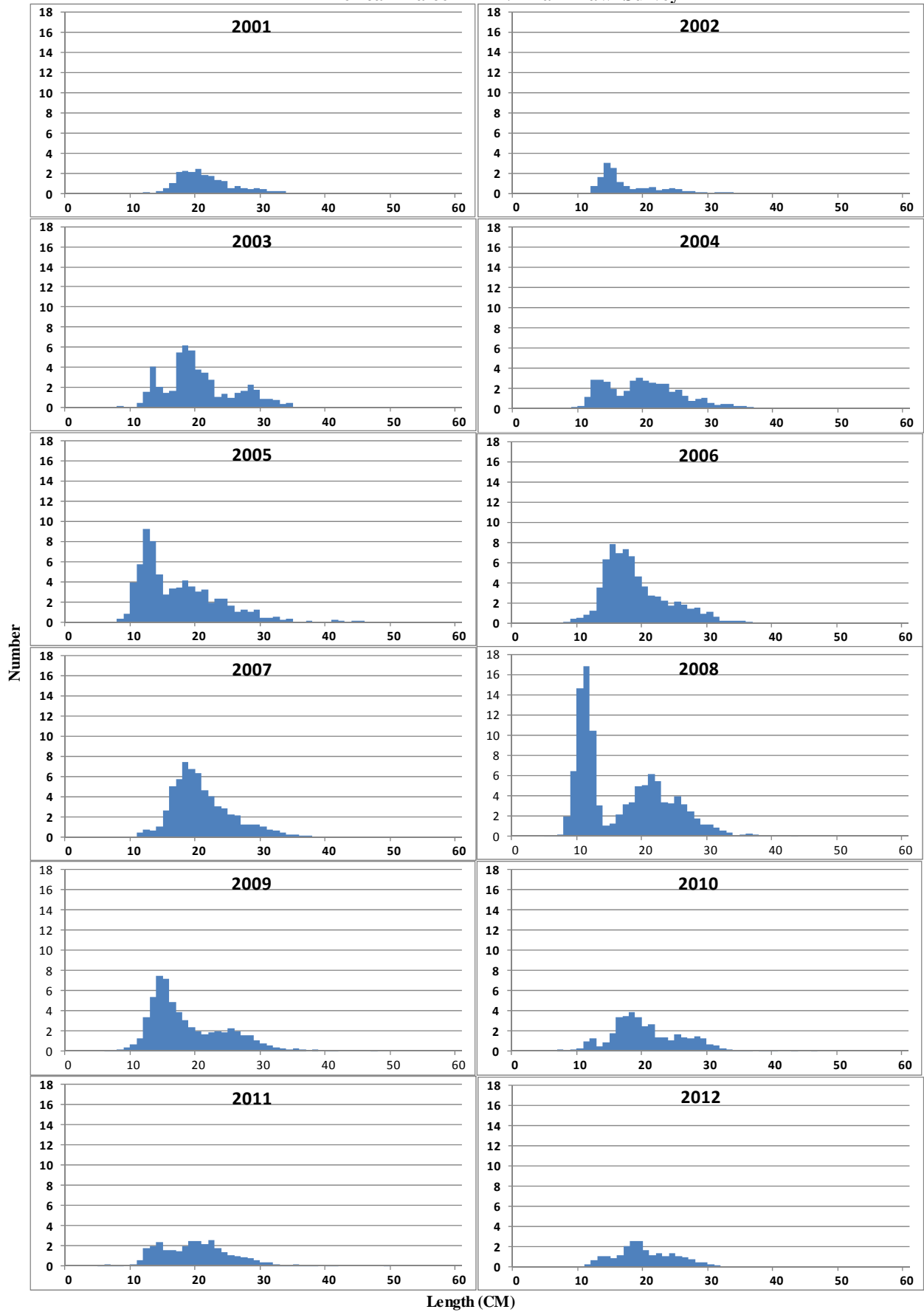
Mean and coefficients of variance for the graph overlain on the above map
 fixed stations not included
 for plaice, calculated for regions 1 through 5, strata 1 through 4
 FALL

Stratified Mean

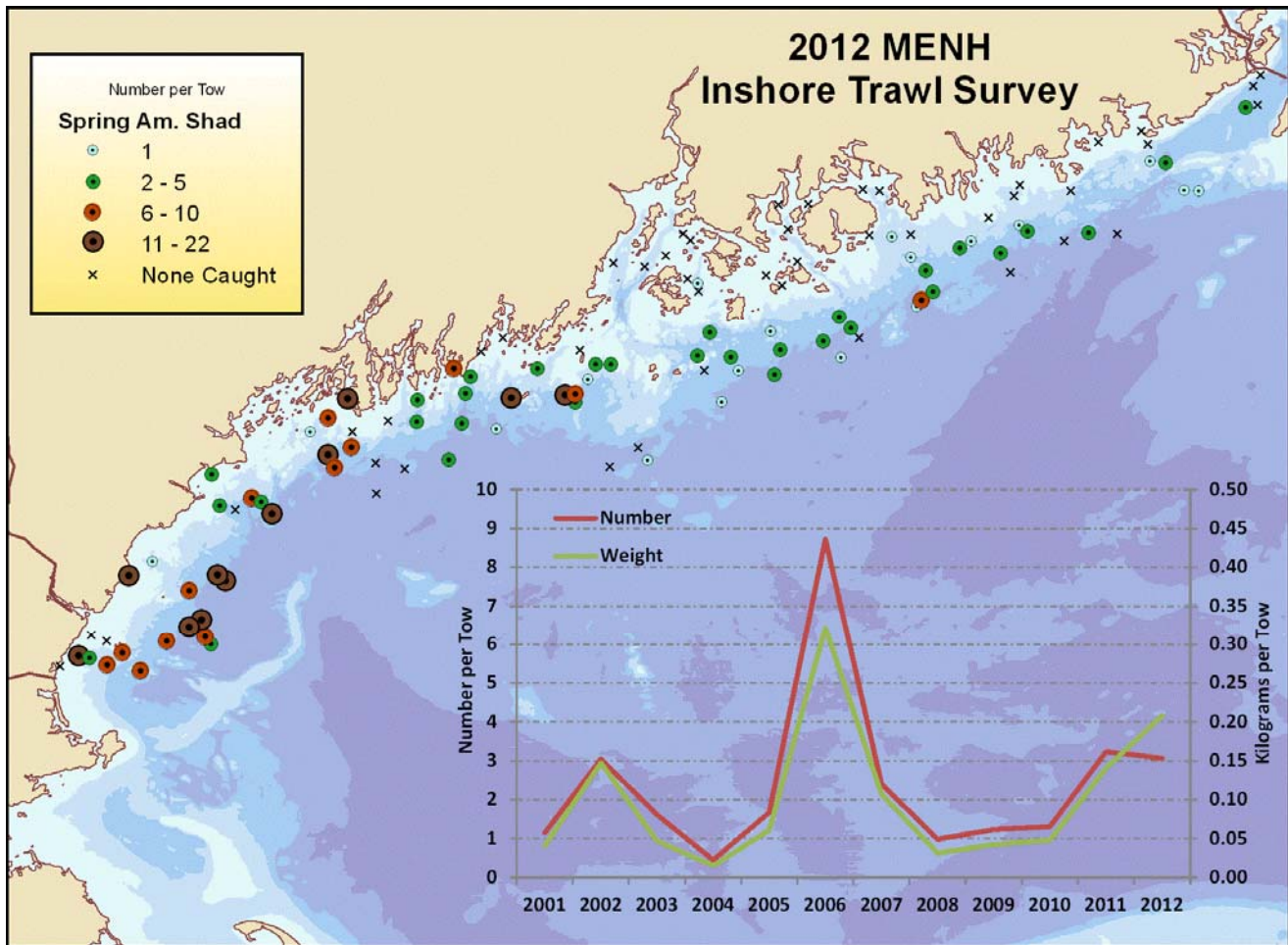
	Number		Weight	
	Mean	CV	Mean	CV
2000	22.66	0.62	1.28	0.48
2001	21.96	0.23	1.85	0.25
2002	15.62	0.47	0.87	0.40
2003	52.82	0.23	3.60	0.18
2004	41.09	0.19	2.89	0.17
2005	72.08	0.23	3.53	0.15
2006	70.75	0.22	3.74	0.16
2007	63.60	0.26	4.38	0.21
2008	108.74	0.21	5.35	0.17
2009	59.88	0.23	3.61	0.19
2010	37.58	0.37	2.56	0.34
2011	31.63	0.28	2.11	0.21
2012	23.28	0.33	1.59	0.31

Appendix C

American Plaice - MENH Fall Trawl Survey



American shad, *Alosa sapidissima*



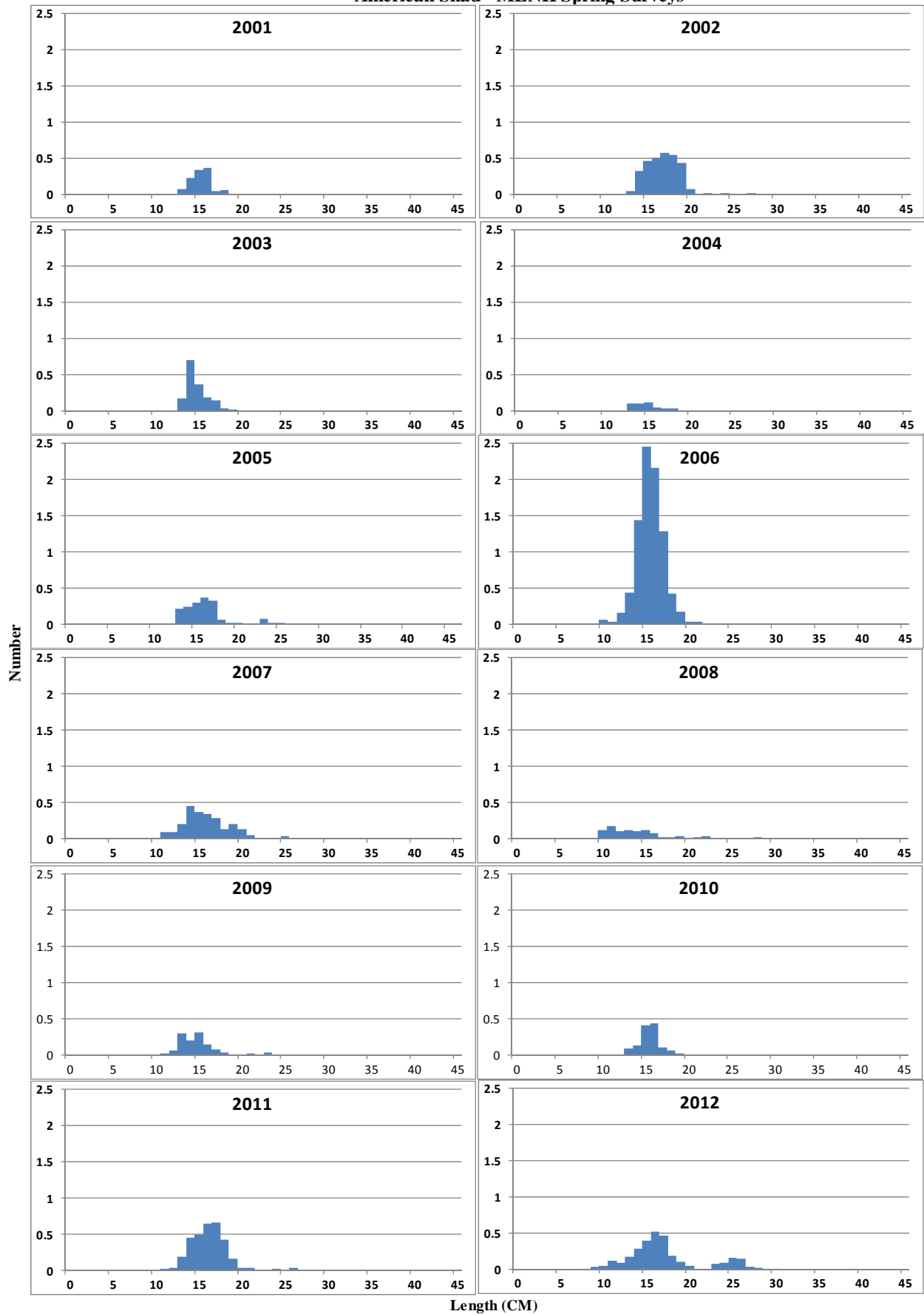
Mean and coefficients of variance for the graph overlain on the above map fixed stations not included for shad, calculated for regions 1 through 5, strata 1 through 4 FALL

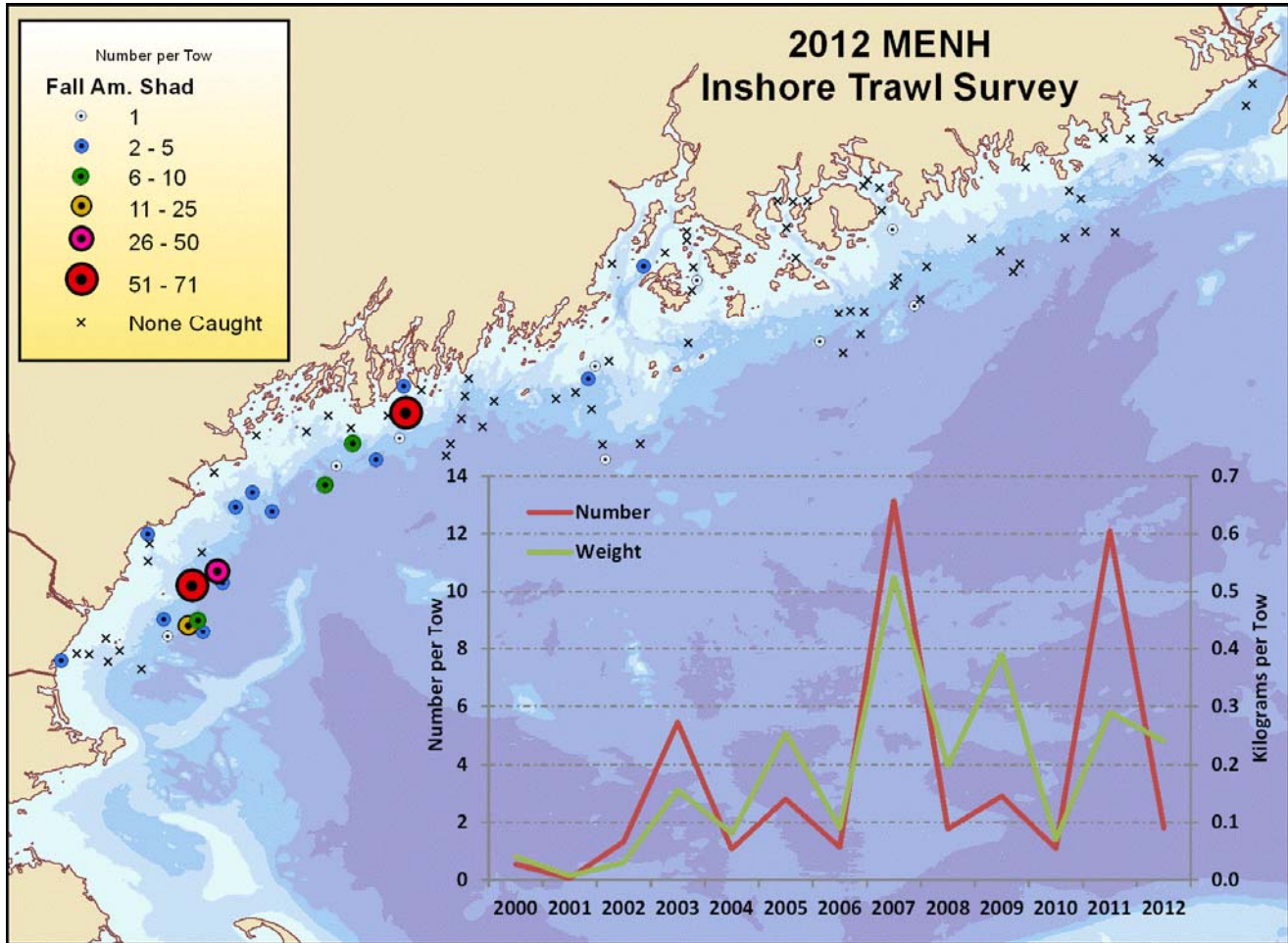
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2001	1.16	0.76	0.04	0.67
2002	3.05	0.39	0.15	0.48
2003	1.62	0.38	0.05	0.39
2004	0.45	0.46	0.02	0.53
2005	1.67	0.31	0.06	0.34
2006	8.72	0.39	0.32	0.40
2007	2.41	0.28	0.11	0.30
2008	0.98	0.78	0.03	0.51
2009	1.24	0.31	0.04	0.32
2010	1.31	0.43	0.05	0.43
2011	3.24	0.41	0.14	0.43
2012	3.06	0.26	0.21	0.29

Appendix C

American Shad - MENH Spring Surveys





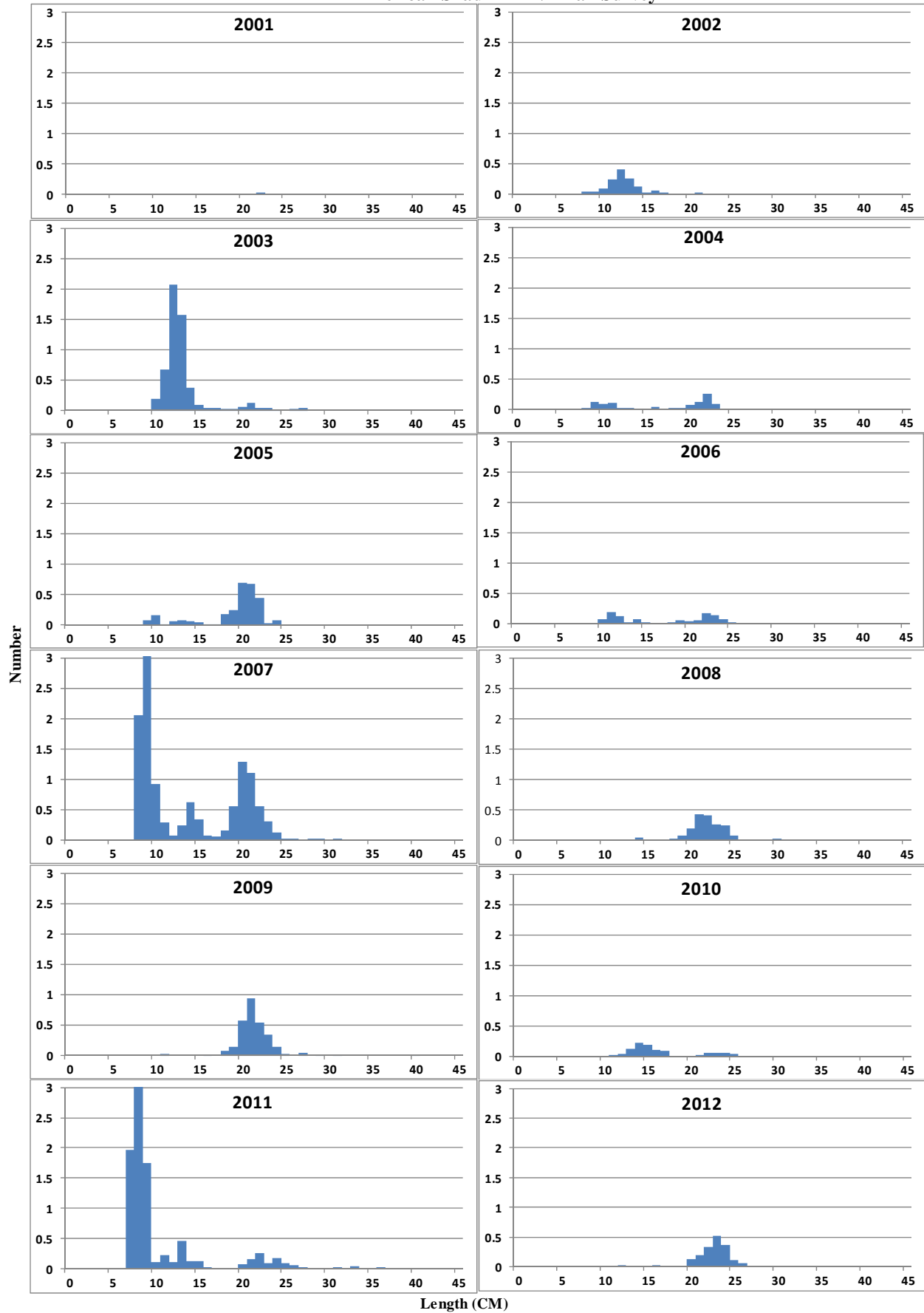
Mean and coefficients of variance for the graph overlain on the above map
 fixed stations not included
 for shad, calculated for regions 1 through 5, strata 1 through 4
 FALL

Stratified Mean

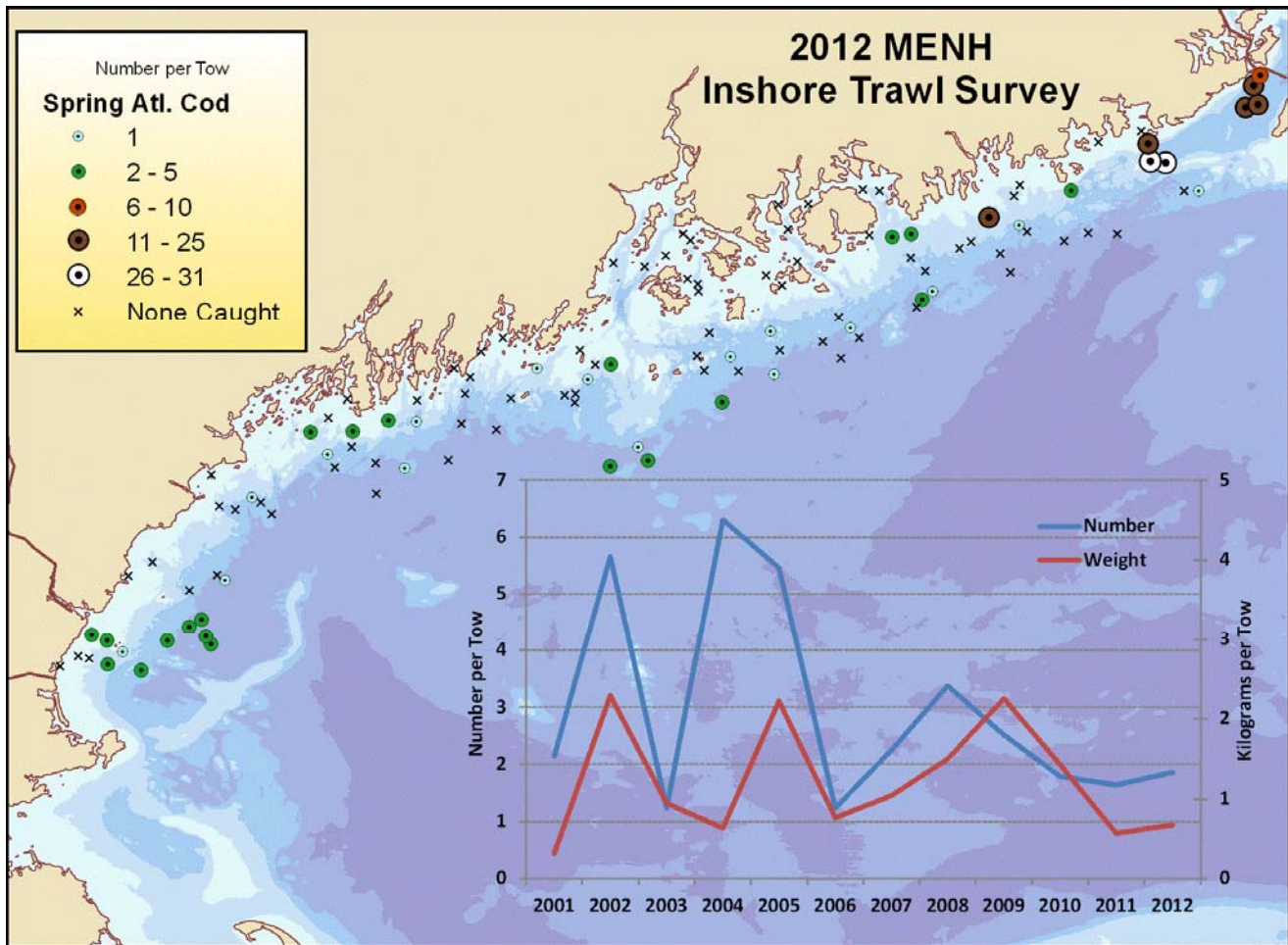
	Number		Weight	
	Mean	CV	Mean	CV
2000	0.56	0.75	0.04	0.79
2001	0.06	1.37	0.01	1.30
2002	1.33	0.81	0.03	0.68
2003	5.45	1.43	0.16	1.00
2004	1.08	0.81	0.08	0.65
2005	2.81	0.21	0.25	0.18
2006	1.14	0.94	0.09	0.51
2007	13.15	1.11	0.53	0.67
2008	1.78	0.47	0.20	0.46
2009	2.91	1.22	0.39	1.17
2010	1.10	0.93	0.07	0.67
2011	12.10	1.81	0.29	0.63
2012	1.81	0.86	0.24	0.83

Appendix C

American Shad - MENH Fall Survey



Atlantic cod, *Gadus morhua*

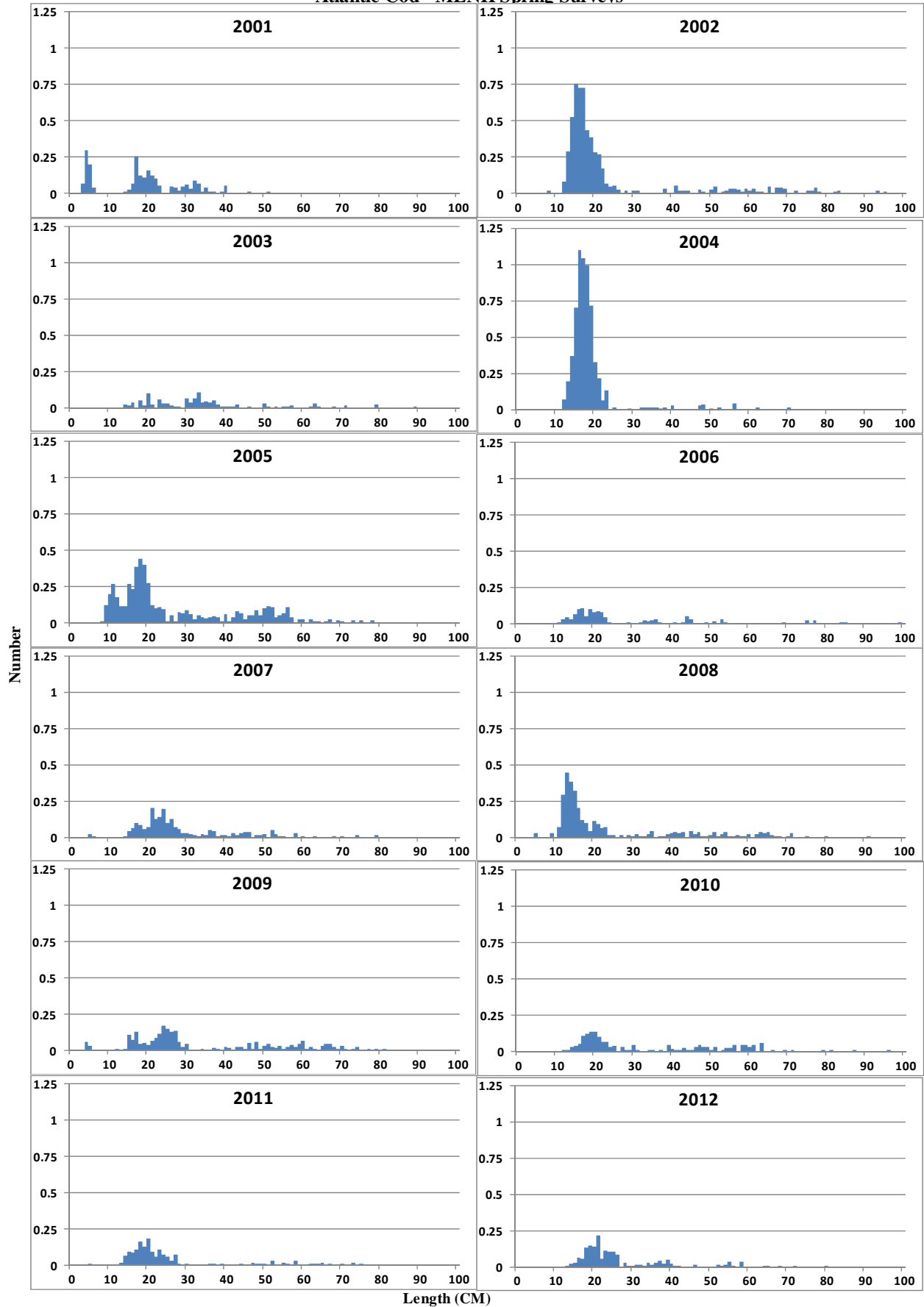


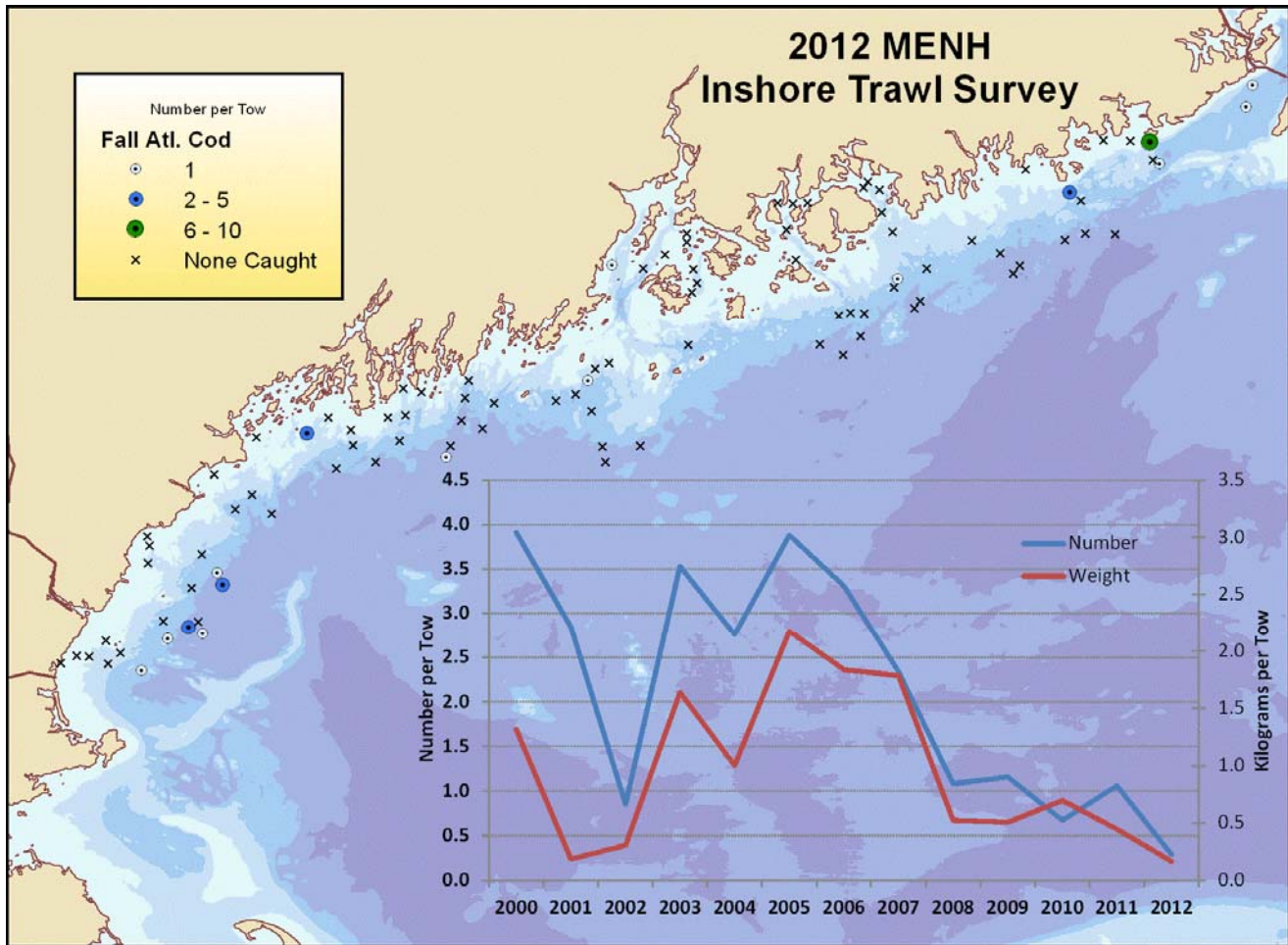
Mean and coefficients of variance for the graph overlain on the above map
 fixed stations not included
 for Atlantic cod, calculated for regions 1 through 5, strata 1 through 4
SPRING

Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	2.14	1.16	0.32	0.63
2002	5.66	0.59	2.29	0.74
2003	1.23	0.49	0.94	0.53
2004	6.30	0.40	0.63	0.55
2005	5.46	0.71	2.22	1.30
2006	1.24	0.81	0.76	1.20
2007	2.25	1.14	1.04	0.39
2008	3.38	1.24	1.49	0.90
2009	2.52	0.63	2.25	0.74
2010	1.79	0.48	1.43	0.78
2011	1.64	0.35	0.57	0.56
2012	1.86	0.36	0.68	0.50

Atlantic Cod - MENH Spring Surveys





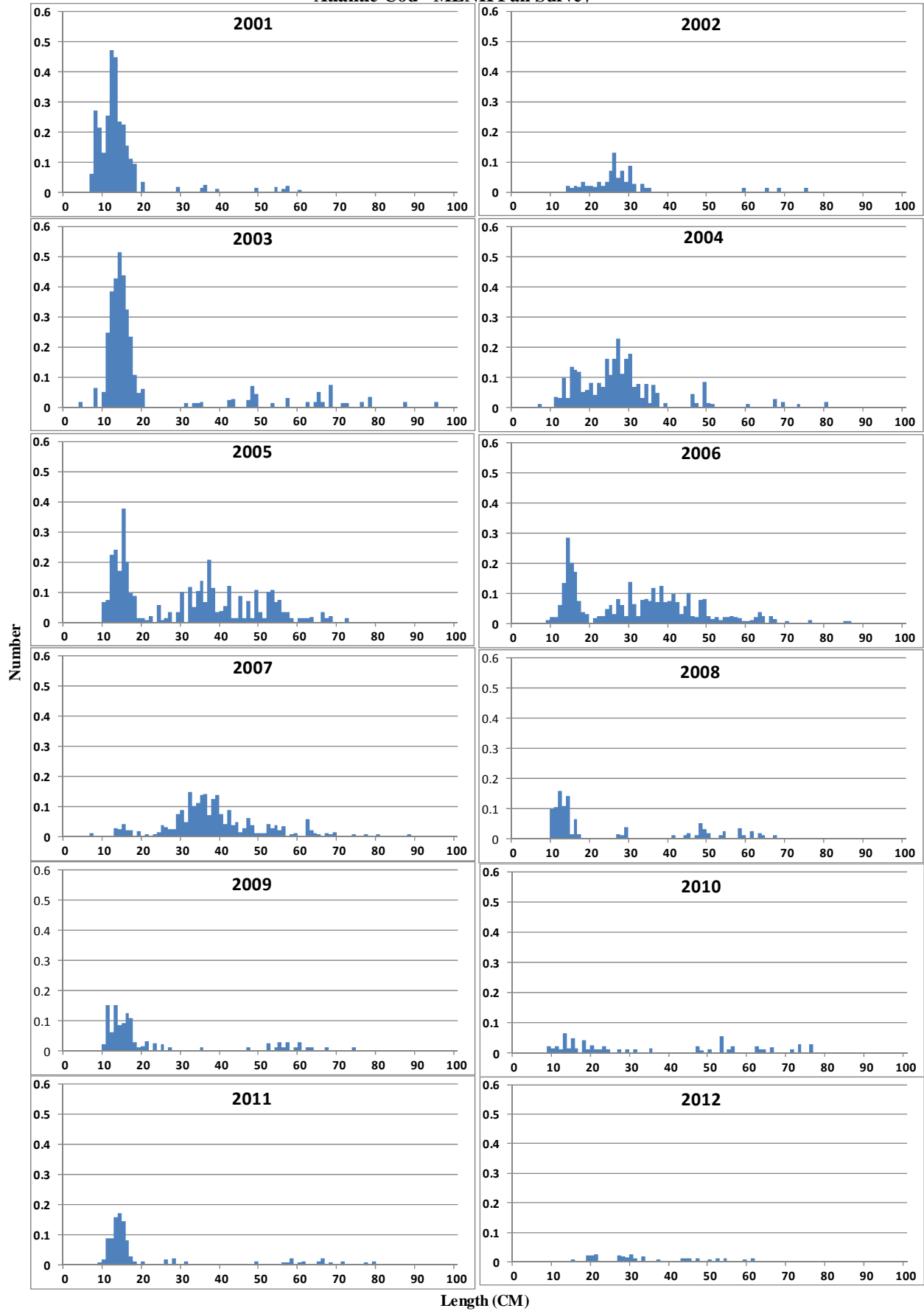
Mean and coefficients of variance for the graph overlain on the above map
 fixed stations not included
 for Atlantic cod, calculated for regions 1 through 5, strata 1 through 4
 FALL

Stratified Mean

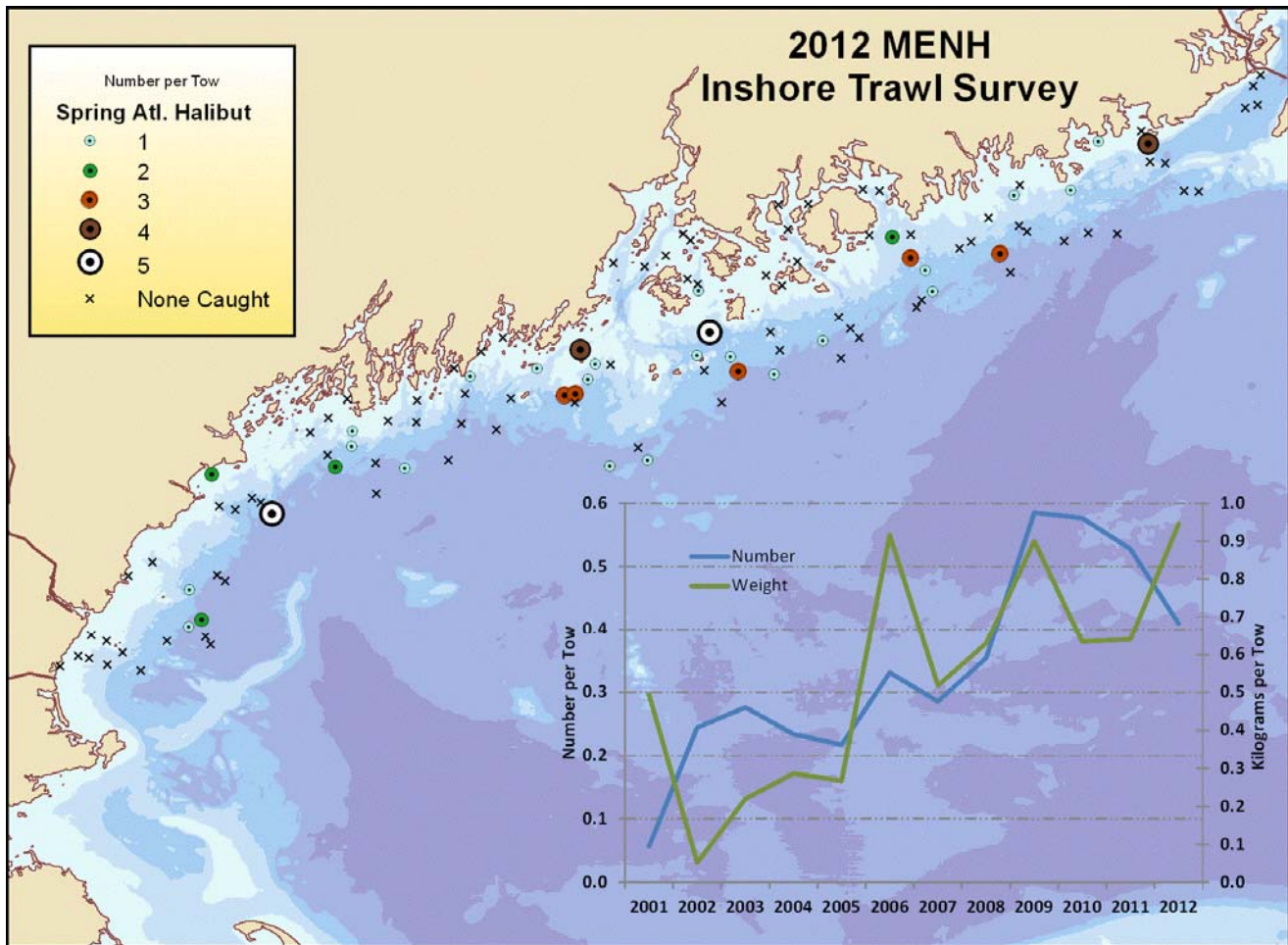
	Number		Weight	
	Mean	CV	Mean	CV
2000	3.91	0.47	1.32	1.49
2001	2.84	0.28	0.18	0.57
2002	0.85	0.23	0.30	0.65
2003	3.53	0.23	1.64	0.32
2004	2.76	0.40	1.00	0.59
2005	3.88	0.48	2.17	1.23
2006	3.31	0.48	1.84	1.28
2007	2.34	0.51	1.78	1.26
2008	1.08	0.41	0.52	0.76
2009	1.16	0.23	0.51	0.17
2010	0.67	0.17	0.70	0.45
2011	1.04	0.18	0.45	0.76
2012	0.29	0.28	0.17	0.59

Appendix C

Atlantic Cod - MENH Fall Survey



Atlantic halibut, *Hippoglossus hippoglossus*



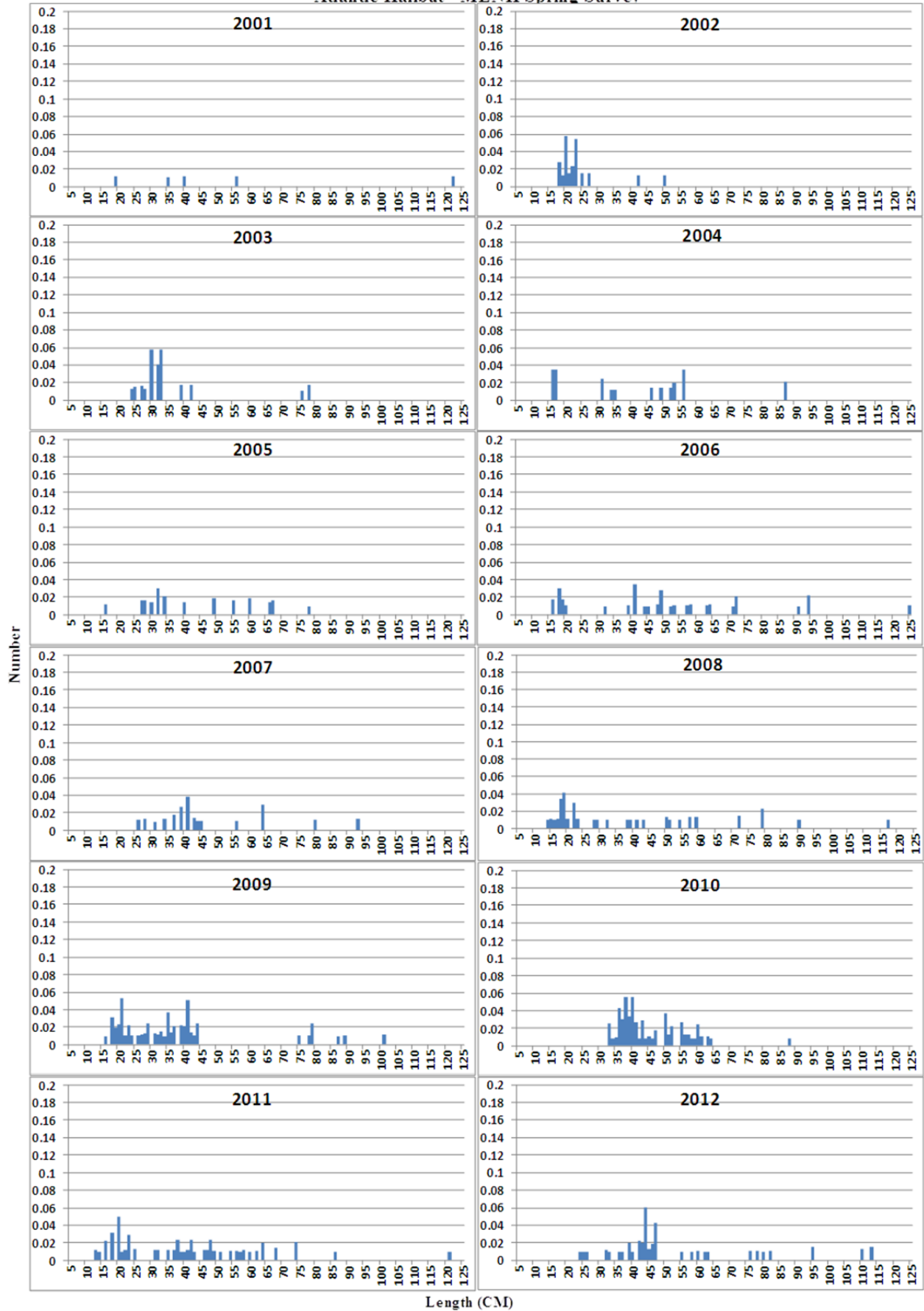
Means and coefficients of variance for graphs overlain on the above map fixed stations not included for halibut, calculated for regions 1 through 5; Strata 1 through 4
SPRING

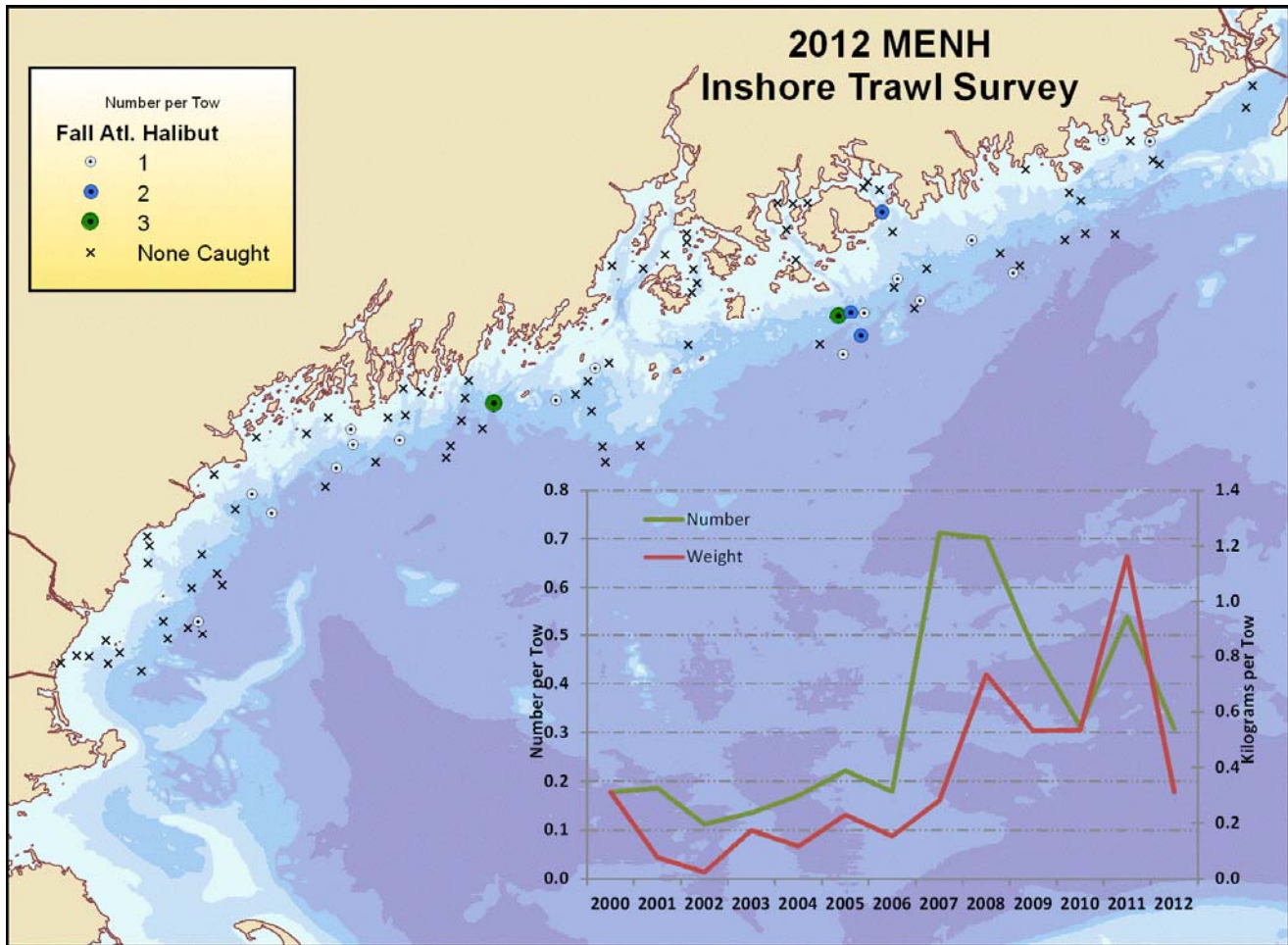
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	0.06	1.15	0.49	2.50
2002	0.24	0.73	0.05	1.38
2003	0.28	0.49	0.22	1.16
2004	0.23	0.48	0.29	0.94
2005	0.22	0.69	0.27	0.86
2006	0.33	0.44	0.92	0.90
2007	0.29	0.72	0.52	1.00
2008	0.35	0.60	0.63	1.00
2009	0.59	0.51	0.90	0.75
2010	0.58	0.47	0.63	0.56
2011	0.53	0.61	0.64	0.56
2012	0.41	0.45	0.95	0.55

Appendix C

Atlantic Halibut - MENH Spring Survey





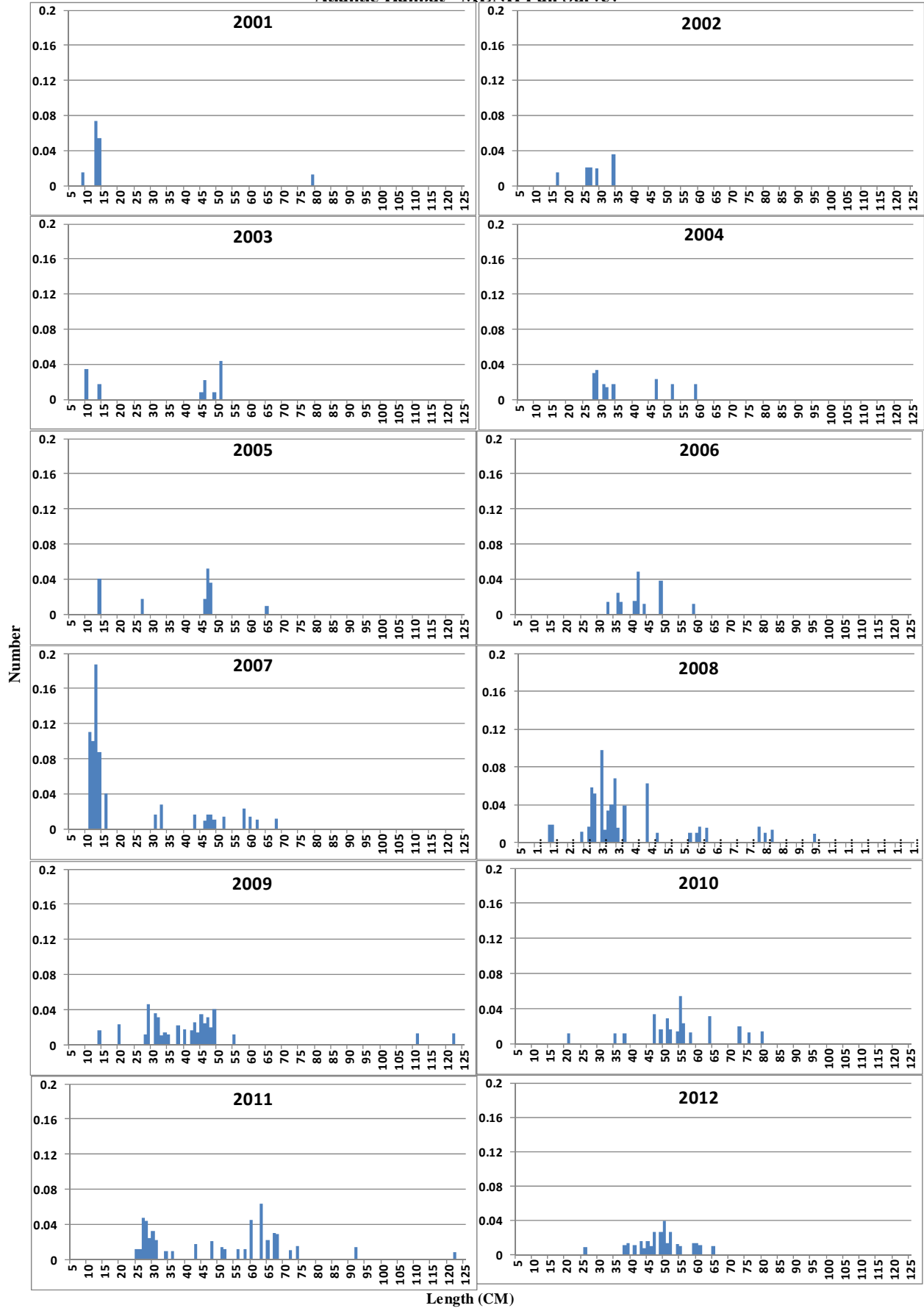
Means and coefficients of variance for graphs overlain on the above map fixed stations not included for halibut, calculated for regions 1 through 5; Strata 1 through 4
FALL

Stratified Mean

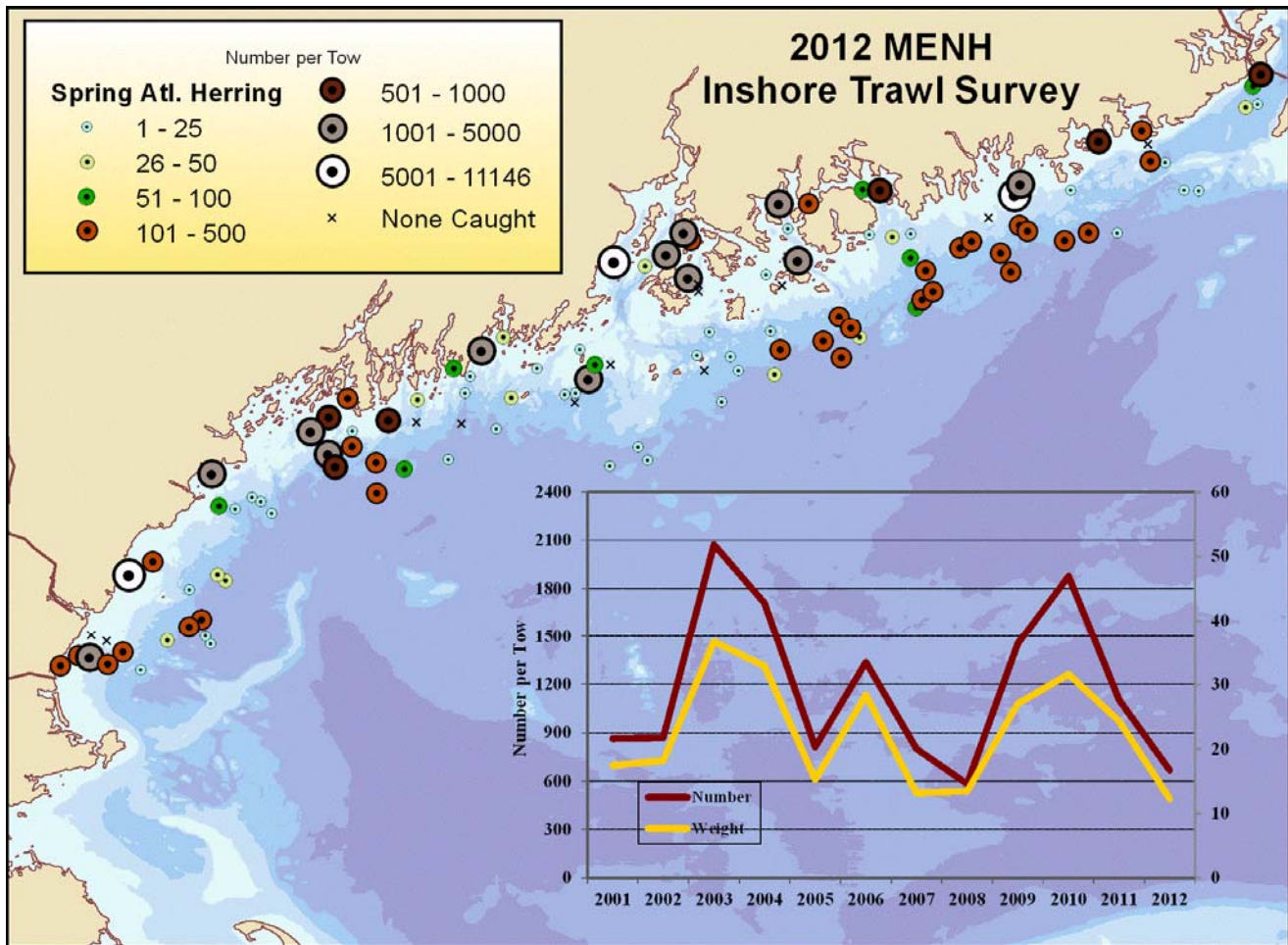
	Number		Weight	
	Mean	CV	Mean	CV
2000	0.18	0.96	0.31	1.32
2001	0.19	1.12	0.08	2.49
2002	0.11	0.79	0.02	0.84
2003	0.14	0.77	0.17	0.83
2004	0.17	0.92	0.12	0.65
2005	0.22	0.38	0.23	0.37
2006	0.18	0.84	0.15	0.88
2007	0.71	1.09	0.28	0.62
2008	0.70	0.40	0.73	0.64
2009	0.48	0.44	0.53	0.92
2010	0.31	0.43	0.53	0.49
2011	0.54	0.53	1.16	0.51
2012	0.31	0.41	0.31	0.45

Appendix C

Atlantic Halibut - MENH Fall Survey



Atlantic herring, *Clupea harengus*



Means and Coefficients of variance for graphs overlaid on the above map fixed stations not included for herring, calculated for regions 1 through 5; Strata 1 through 4

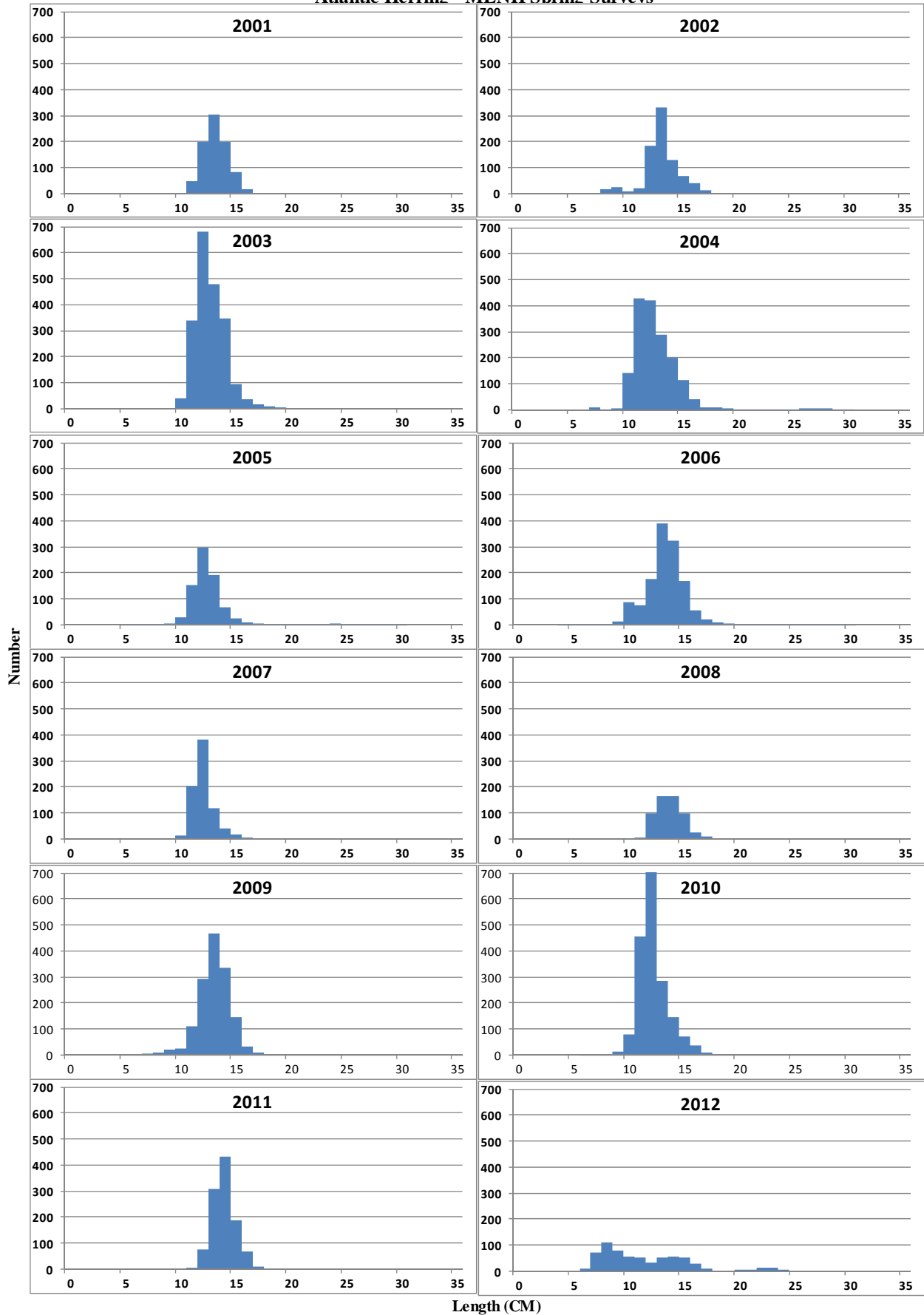
SPRING

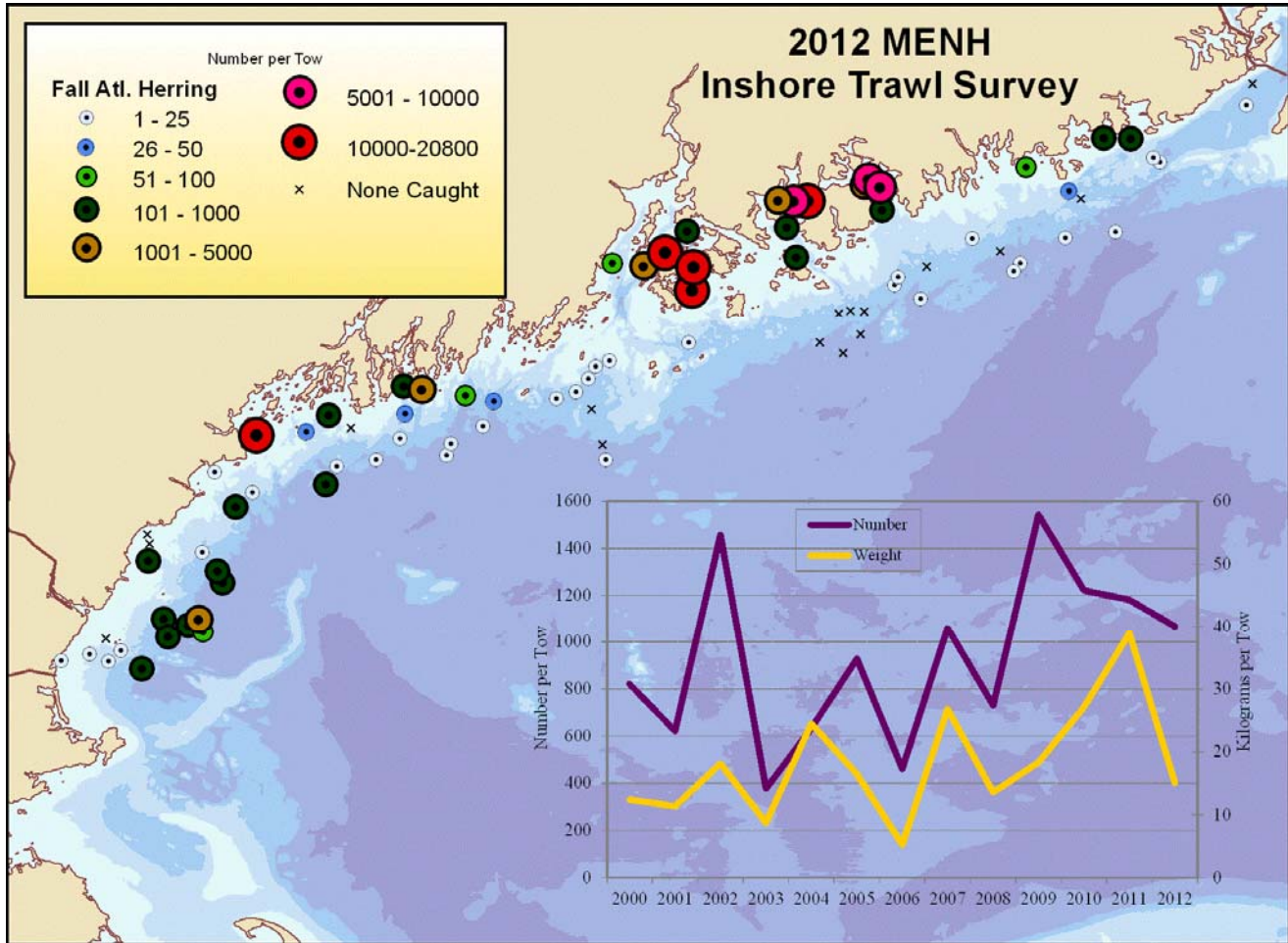
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	863.41	0.83	17.43	0.83
2002	869.60	0.65	18.16	0.56
2003	2072.84	0.46	36.64	0.43
2004	1709.26	0.49	32.81	0.44
2005	810.77	0.62	15.25	0.49
2006	1338.54	0.47	28.35	0.43
2007	800.47	0.72	13.16	0.69
2008	582.47	0.37	13.40	0.36
2009	1454.55	0.58	26.99	0.59
2010	1877.69	0.32	31.58	0.32
2011	1104.53	0.42	24.32	0.41
2012	667.17	0.54	12.23	0.50

Appendix C

Atlantic Herring - MENH Spring Surveys





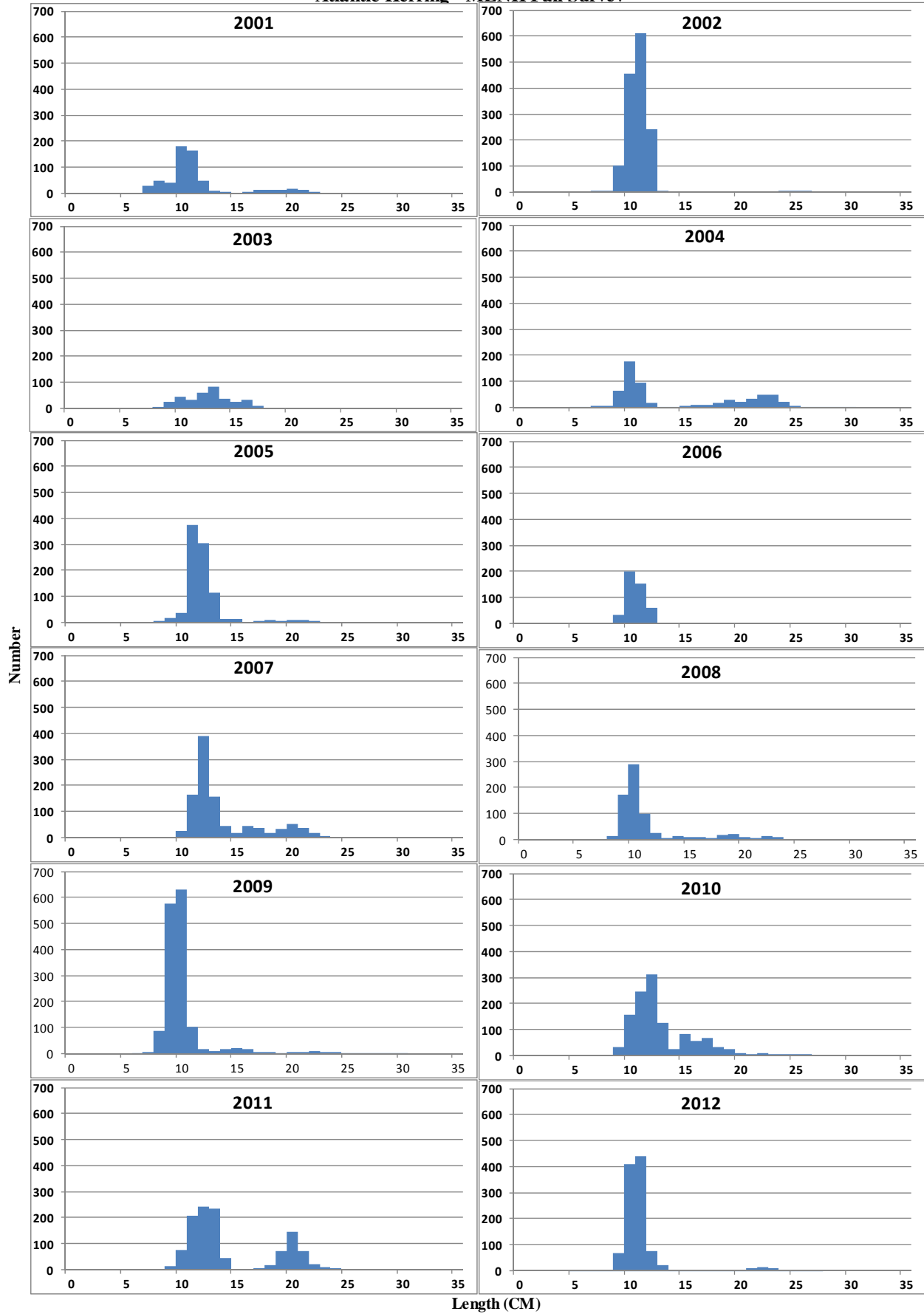
Means and Coefficients of variance for graphs overlaid on the above map
 fixed stations not included
 for herring, calculated for regions 1 through 5; Strata 1 through 4
FALL

Stratified Mean

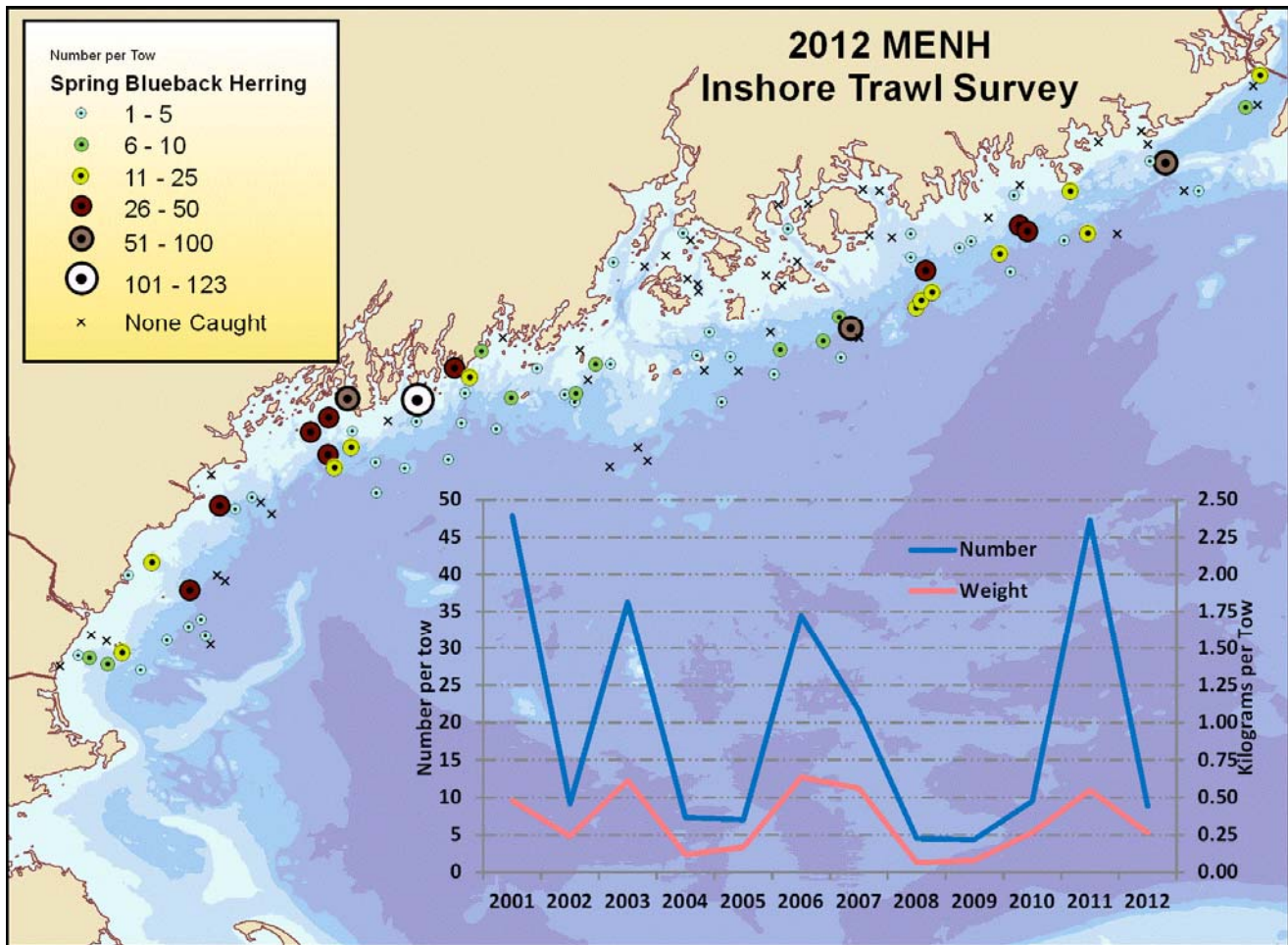
	Number		Weight	
	Mean	CV	Mean	CV
2000	820.02	0.77	12.42	0.55
2001	621.33	0.62	11.34	0.62
2002	1457.21	0.60	18.15	0.55
2003	376.73	0.97	8.71	0.90
2004	633.36	0.58	24.47	0.71
2005	928.07	0.48	16.44	0.52
2006	461.44	0.41	5.26	0.39
2007	1059.37	0.55	26.78	0.82
2008	730.86	0.48	13.58	0.59
2009	1542.49	0.37	18.32	0.34
2010	1221.33	0.51	27.12	0.39
2011	1180.79	0.52	38.89	0.29
2012	1067.01	0.58	15.04	0.47

Appendix C

Atlantic Herring - MENH Fall Survey



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

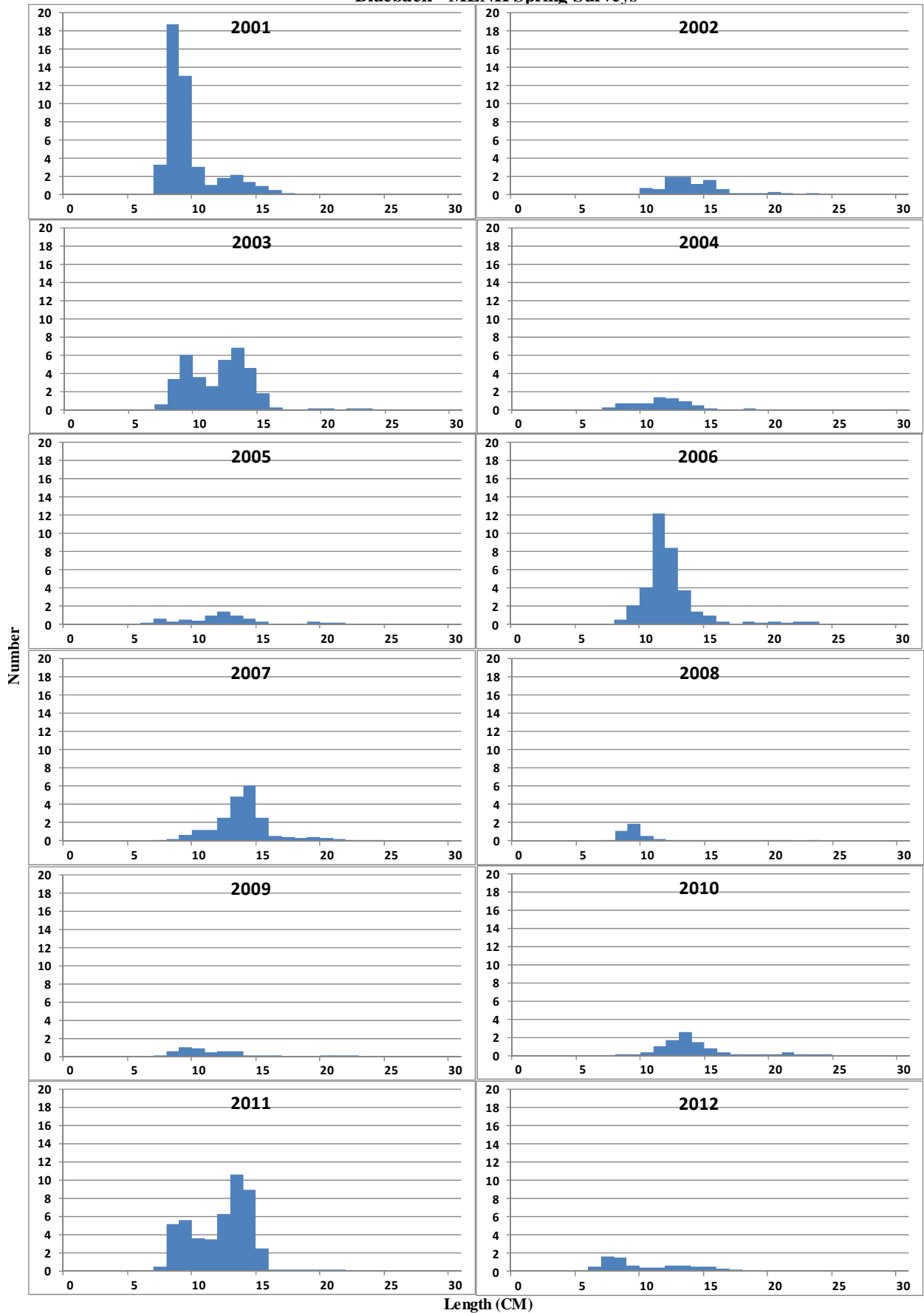


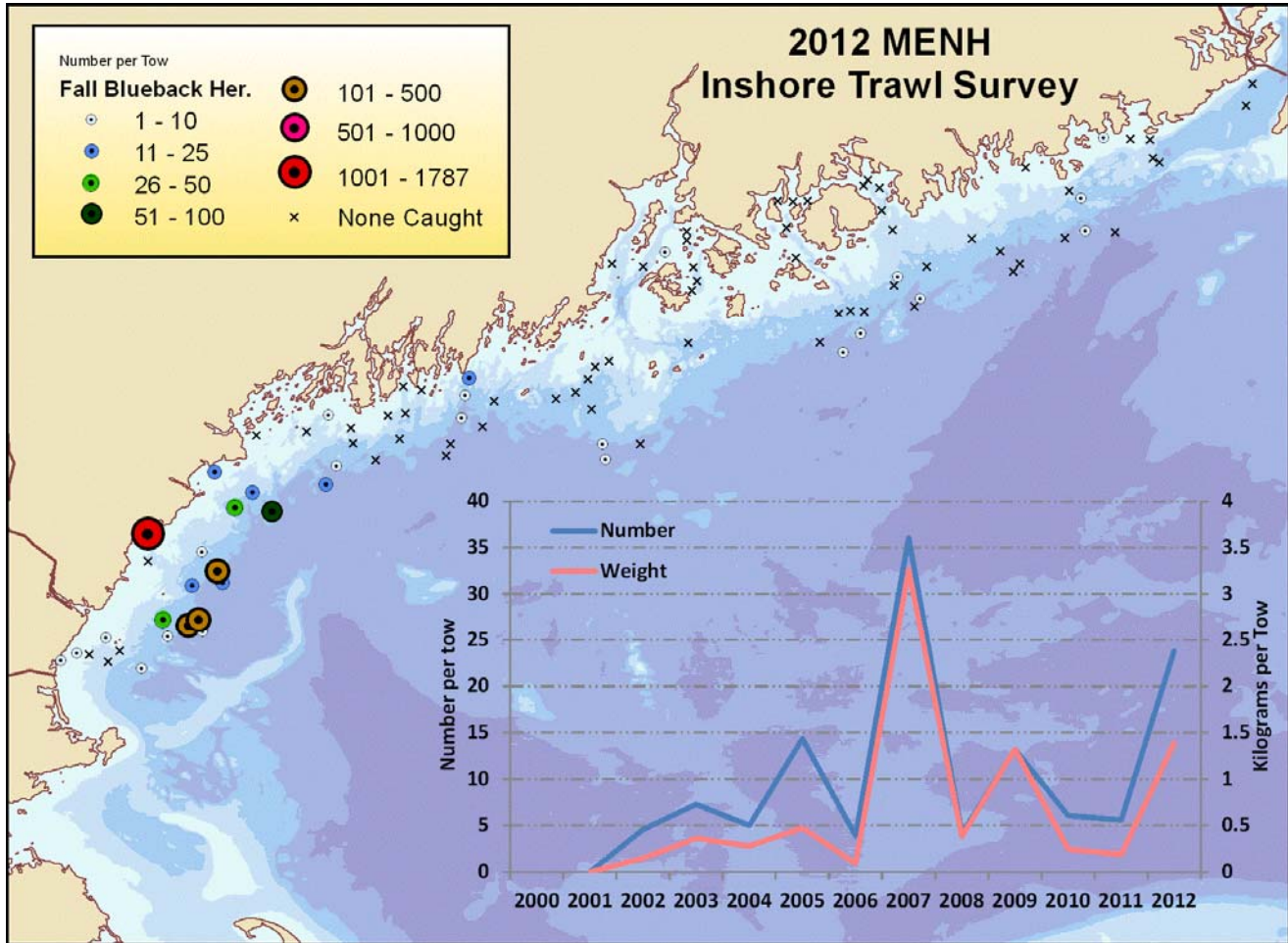
Means and coefficients of variance for graphs overlaid on the above map fixed stations not included for blueback herring, calculated for regions 1 through 5; Strata 1 through 4
SPRING
 Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2001	47.87	1.02	0.48	0.74
2002	9.15	1.32	0.24	1.30
2003	36.25	0.51	0.61	0.54
2004	7.31	0.50	0.12	0.39
2005	7.02	0.42	0.17	0.38
2006	34.45	0.75	0.63	0.64
2007	21.66	0.67	0.56	0.70
2008	4.52	0.52	0.07	0.42
2009	4.34	1.20	0.08	1.28
2010	9.50	0.36	0.26	0.35
2011	47.27	0.88	0.55	0.71
2012	8.80	0.43	0.26	0.48
2013	21.45	0.77	0.77	0.66

Appendix C

Blueback - MENH Spring Surveys





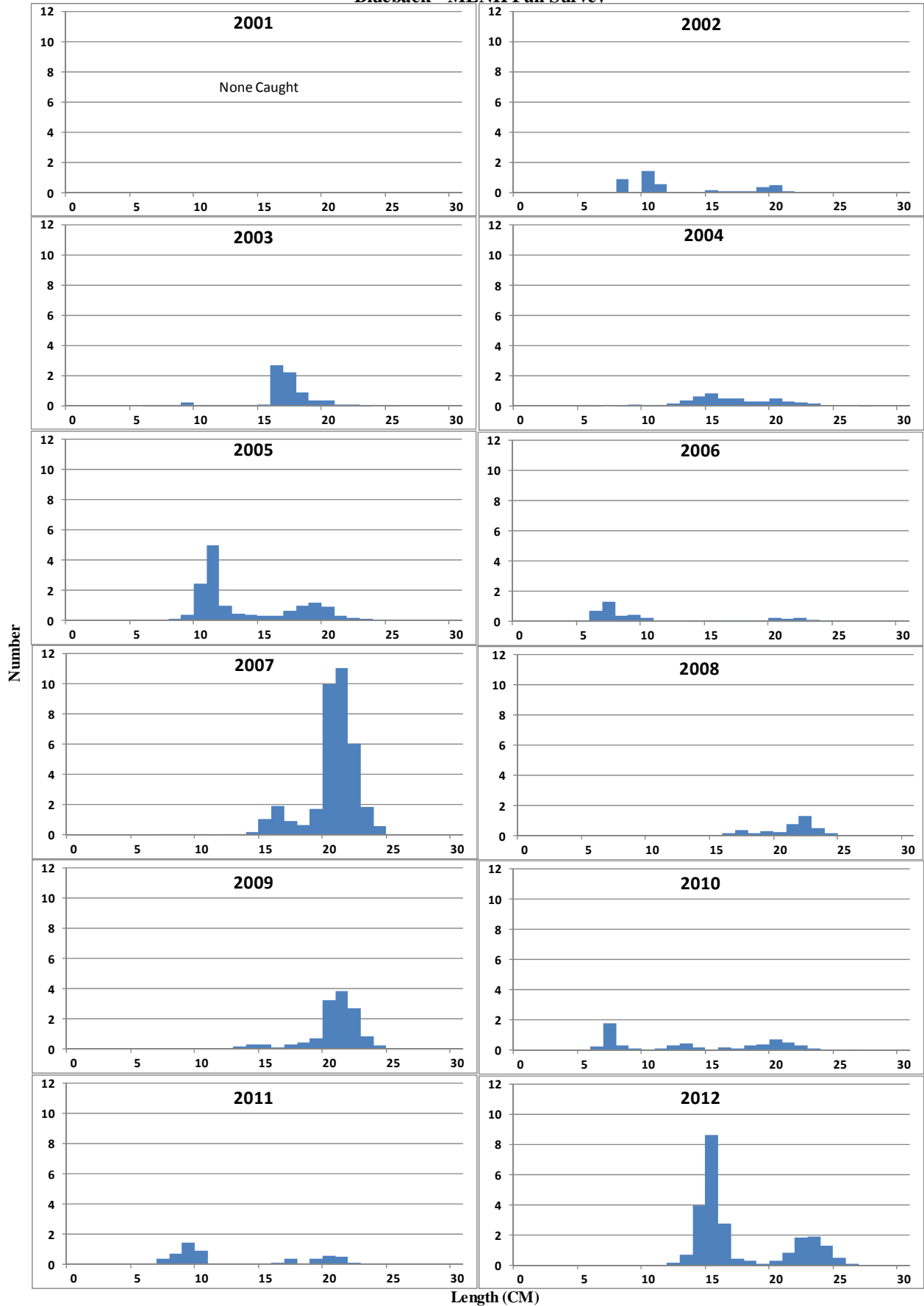
Means and coefficients of variance for graphs overlaid on the above map
 fixed stations not included
 for blueback herring, calculated for regions 1 through 5; Strata 1 through 4
FALL

Stratified Mean

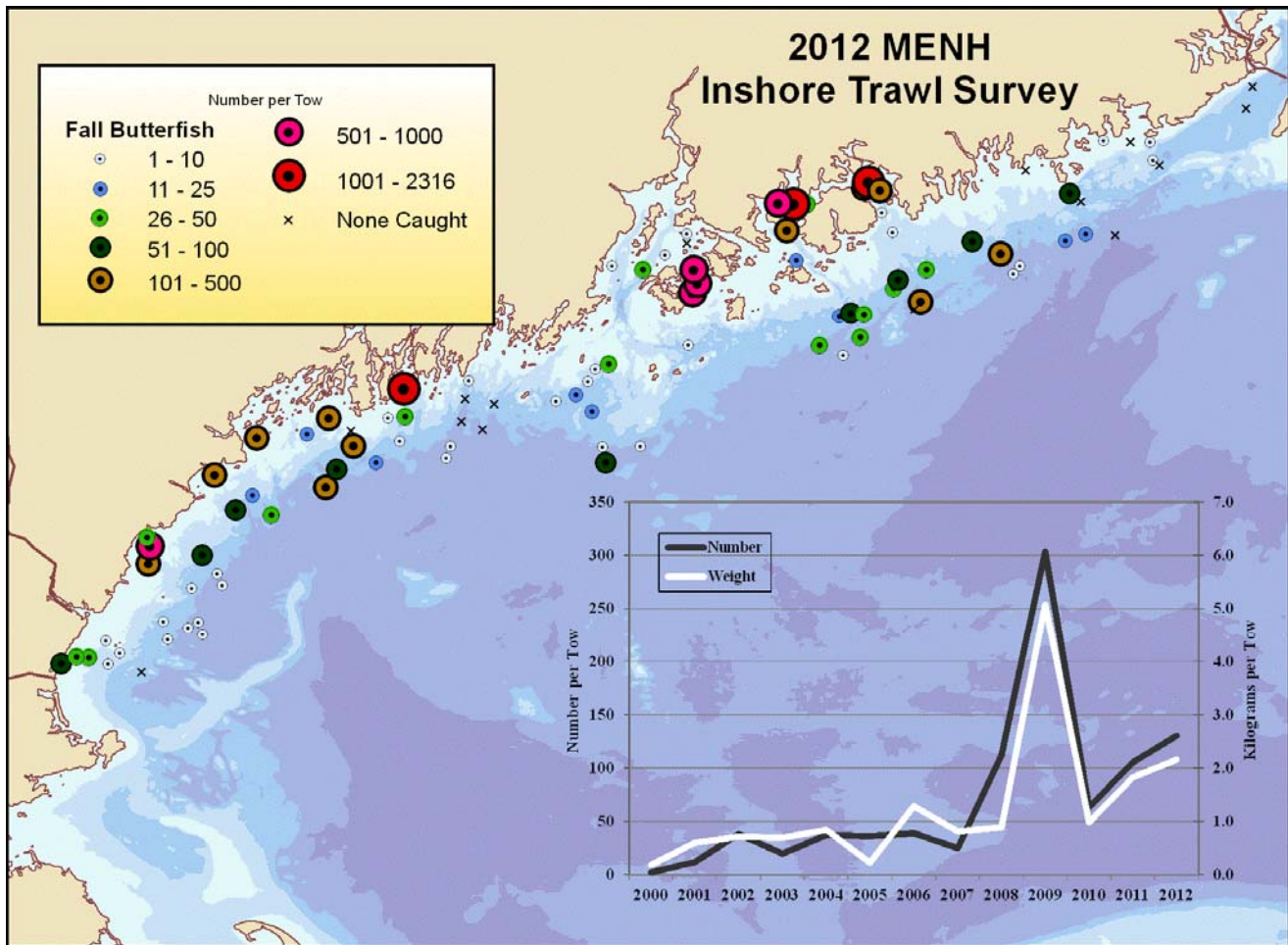
	Number Mean	CV	Weight Mean	CV
2000				
2001	0		0	
2002	4.57	0.90	0.15	0.91
2003	7.30	0.70	0.36	0.69
2004	5.02	0.65	0.28	0.43
2005	14.34	0.88	0.48	0.51
2006	3.91	1.05	0.09	1.06
2007	36.09	1.27	3.26	1.31
2008	4.12	0.97	0.39	1.19
2009	13.21	1.30	1.32	1.28
2010	6.08	0.68	0.25	0.38
2011	5.62	1.20	0.19	0.46
2012	23.82	1.62	1.39	1.05

Appendix C

Blueback - MENH Fall Survey



Butterfish, *Peprilus tricanthus*, Butterfish are fairly rare in the spring surveys, shown here are fall catches.



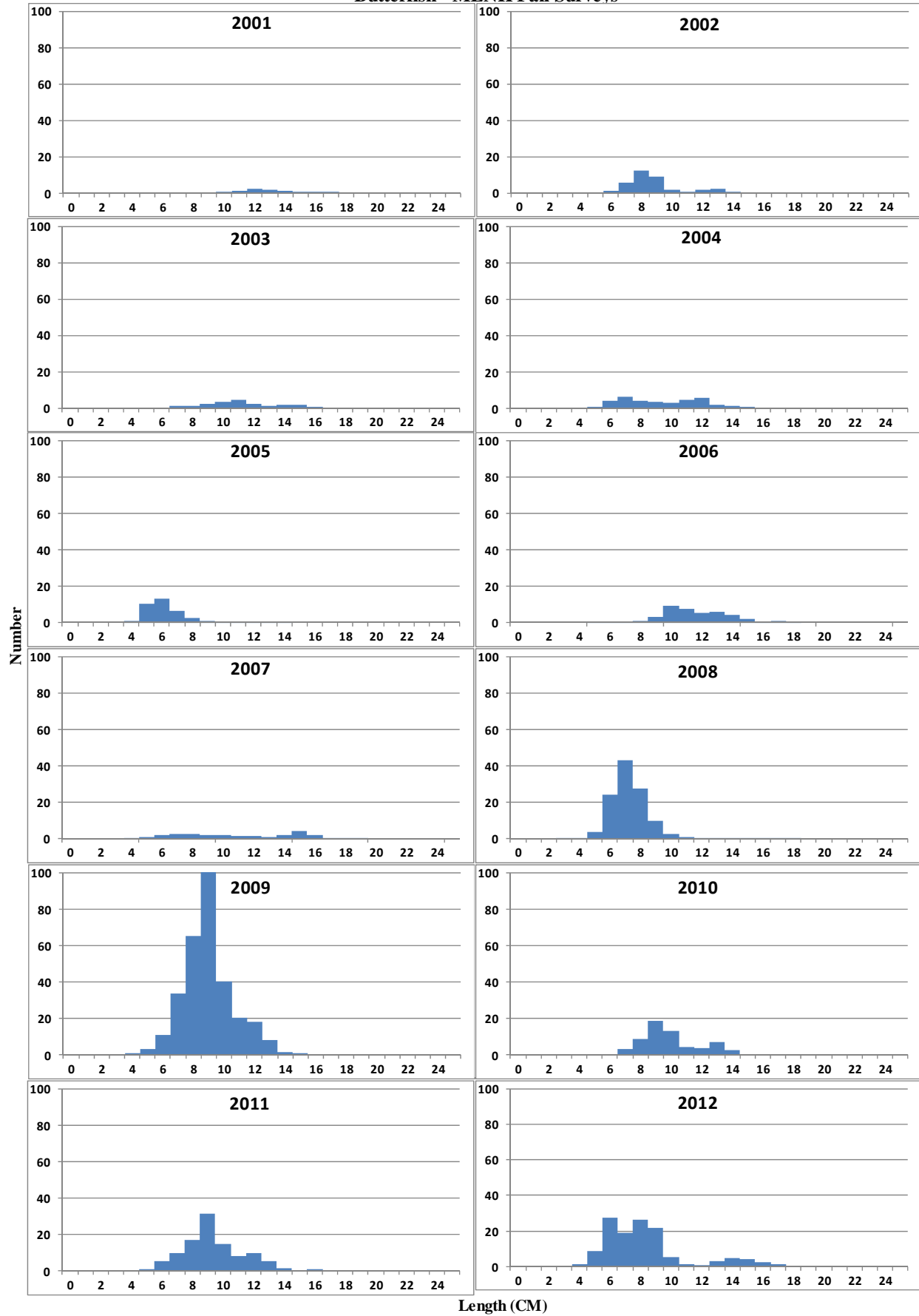
Means and coefficients of Variance for graph overlain on the above map
 Fixed stations not included
 for butterfish, calculated for regions 1 through 5; strata 1 through 4
FALL

Stratified Mean

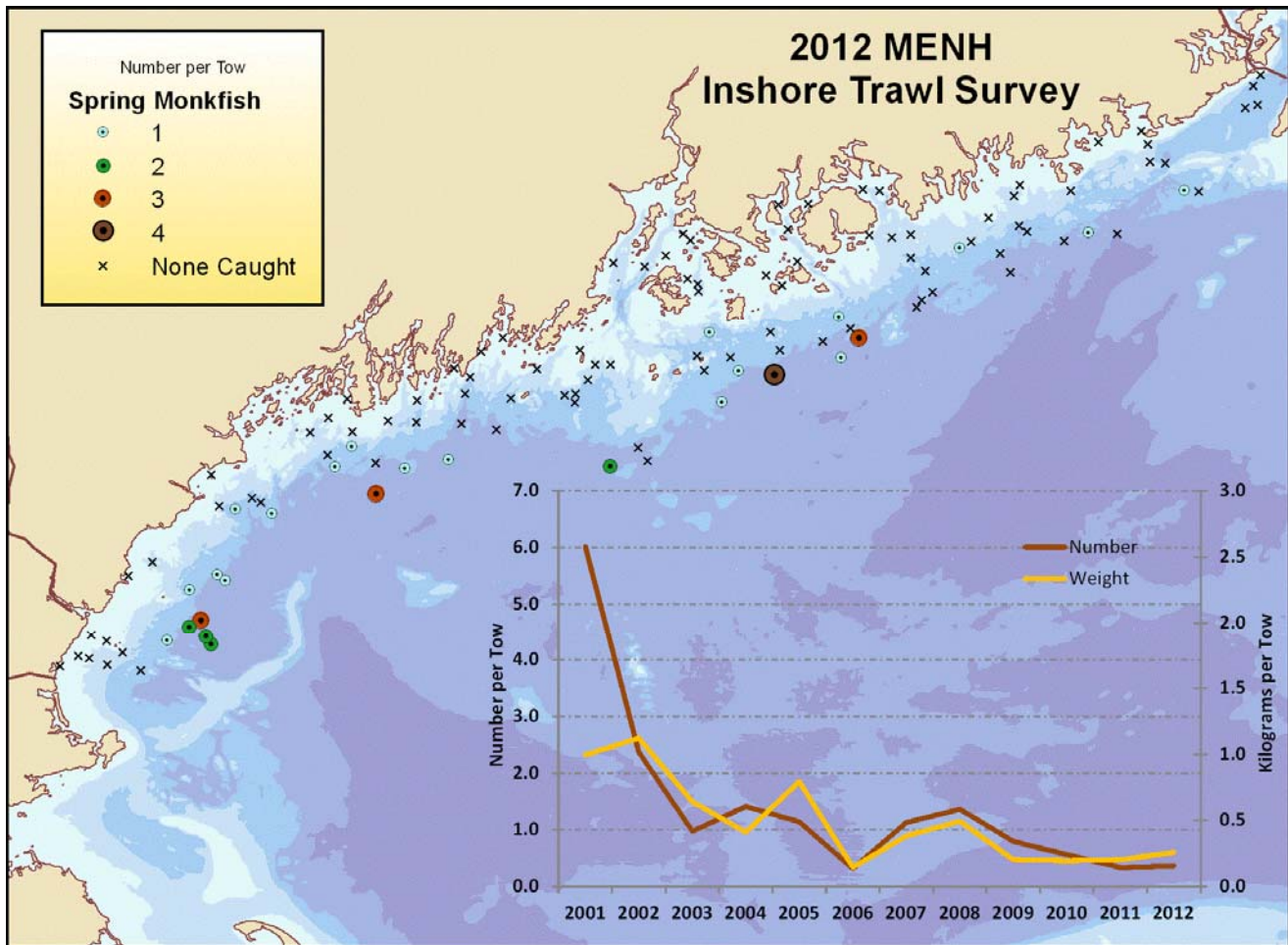
	Number		Weight	
	Mean	CV	Mean	CV
2000	2.26	0.78	0.87	0.18
2001	11.73	4.38	0.65	0.60
2002	37.90	13.72	0.63	0.71
2003	19.65	4.50	0.40	0.69
2004	37.24	6.02	0.30	0.84
2005	36.16	21.37	0.84	0.22
2006	38.91	10.93	0.66	1.28
2007	24.85	3.71	0.29	0.81
2008	112.10	42.00	0.64	0.88
2009	303.59	50.50	0.36	5.08
2010	63.24	12.26	0.38	0.98
2011	105.37	27.89	0.58	1.82
2012	130.27	30.35	0.49	2.16

Appendix C

Butterfish - MENH Fall Surveys



Goosefish, *Lophius americanus*



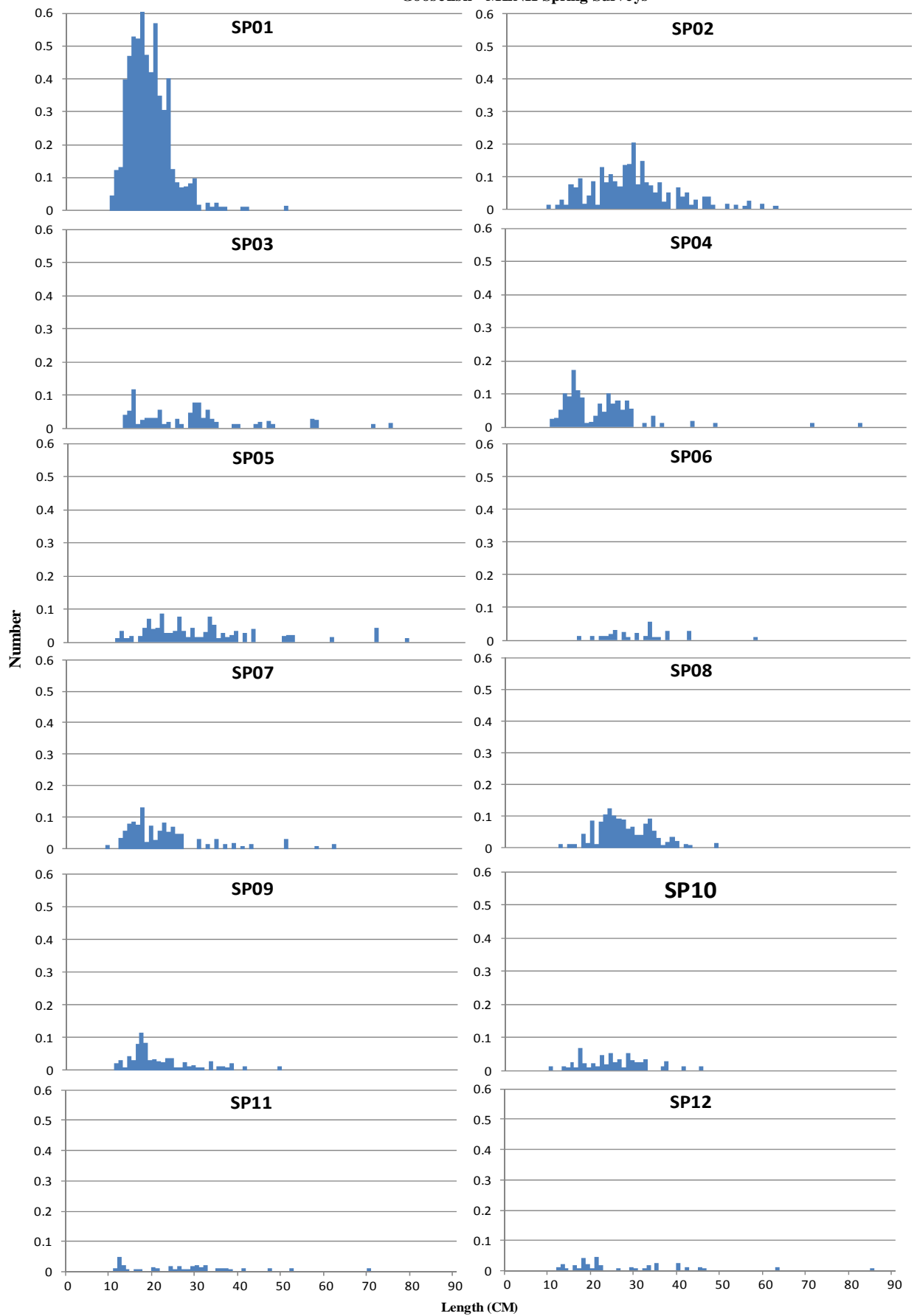
Means and coefficients of variance for graph overlain on the above map fixed stations not included for goosefish, calculated for regions 1 through 5; Strata 1 through 4
SPRING

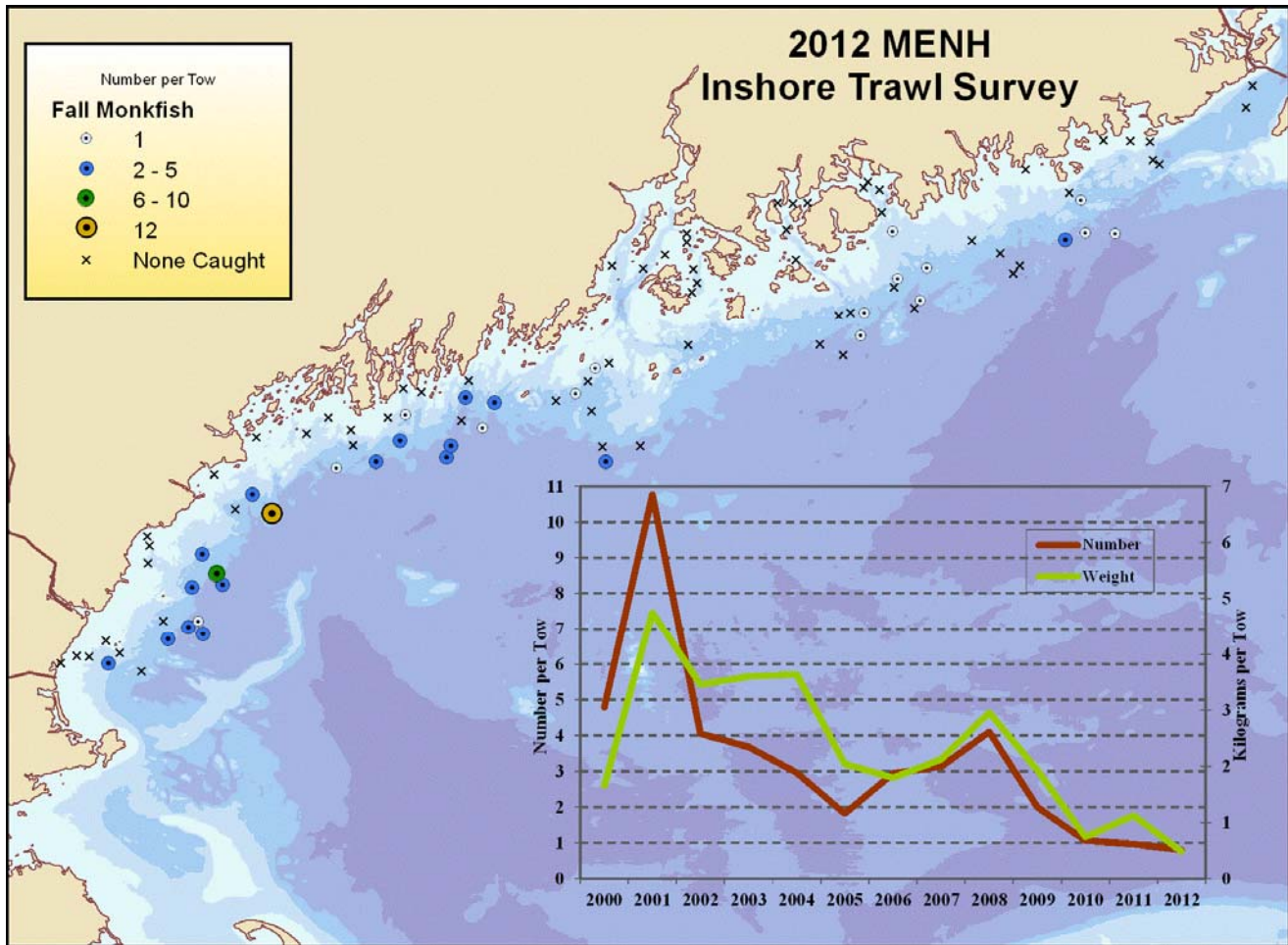
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	6.02	0.35	0.99	0.35
2002	2.37	0.31	1.12	0.37
2003	0.98	0.26	0.64	0.52
2004	1.41	0.23	0.41	0.60
2005	1.14	0.22	0.79	0.36
2006	0.32	0.42	0.15	0.45
2007	1.13	0.30	0.38	0.49
2008	1.37	0.26	0.49	0.30
2009	0.80	0.31	0.20	0.44
2010	0.57	0.41	0.20	0.49
2011	0.33	0.35	0.20	0.70
2012	0.37	0.36	0.26	0.95

Appendix C

Goosefish - MENH Spring Surveys





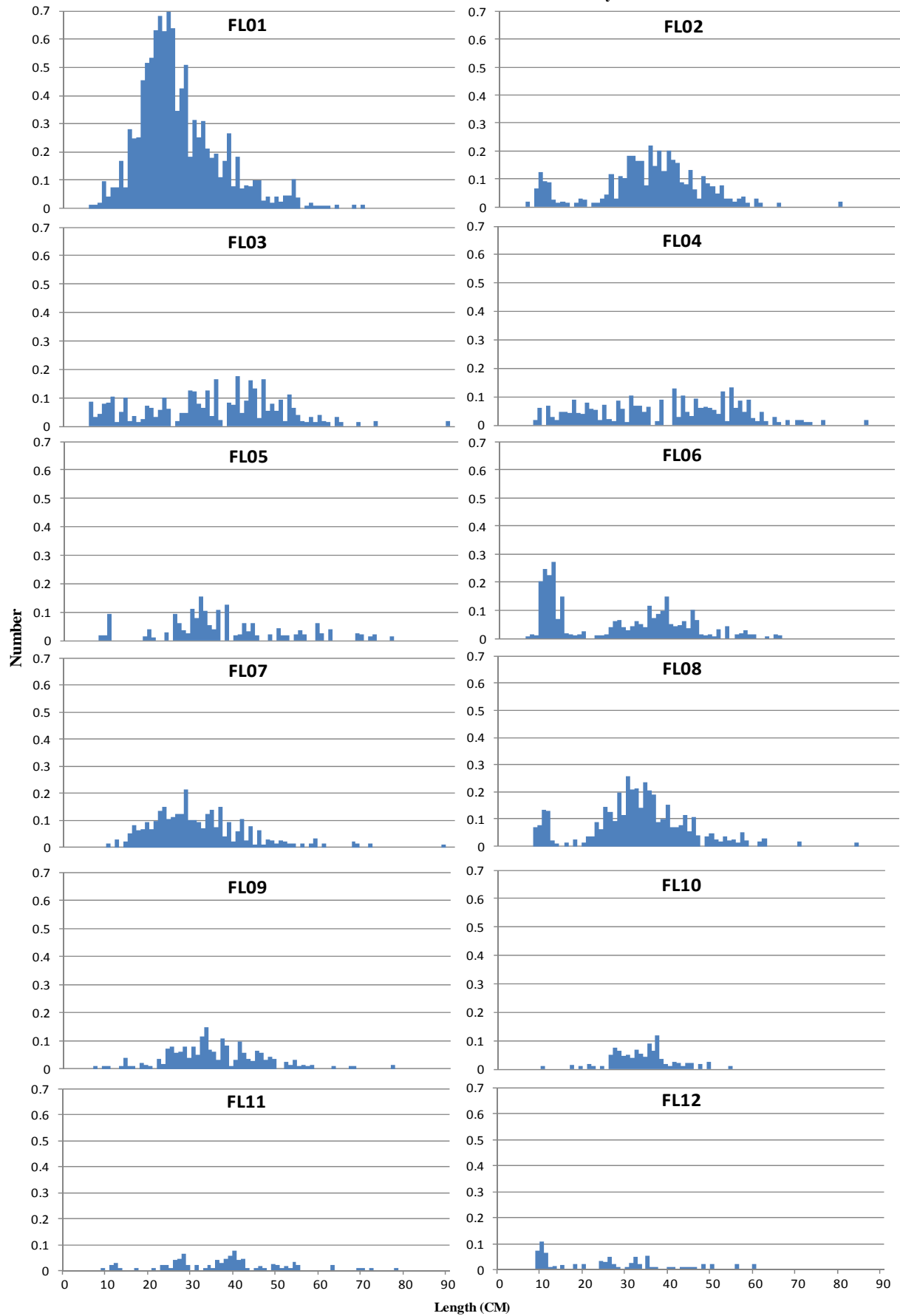
Means and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for goosefish, calculated for regions 1 through 5; Strata 1 through 4
 FALL

Stratified Mean

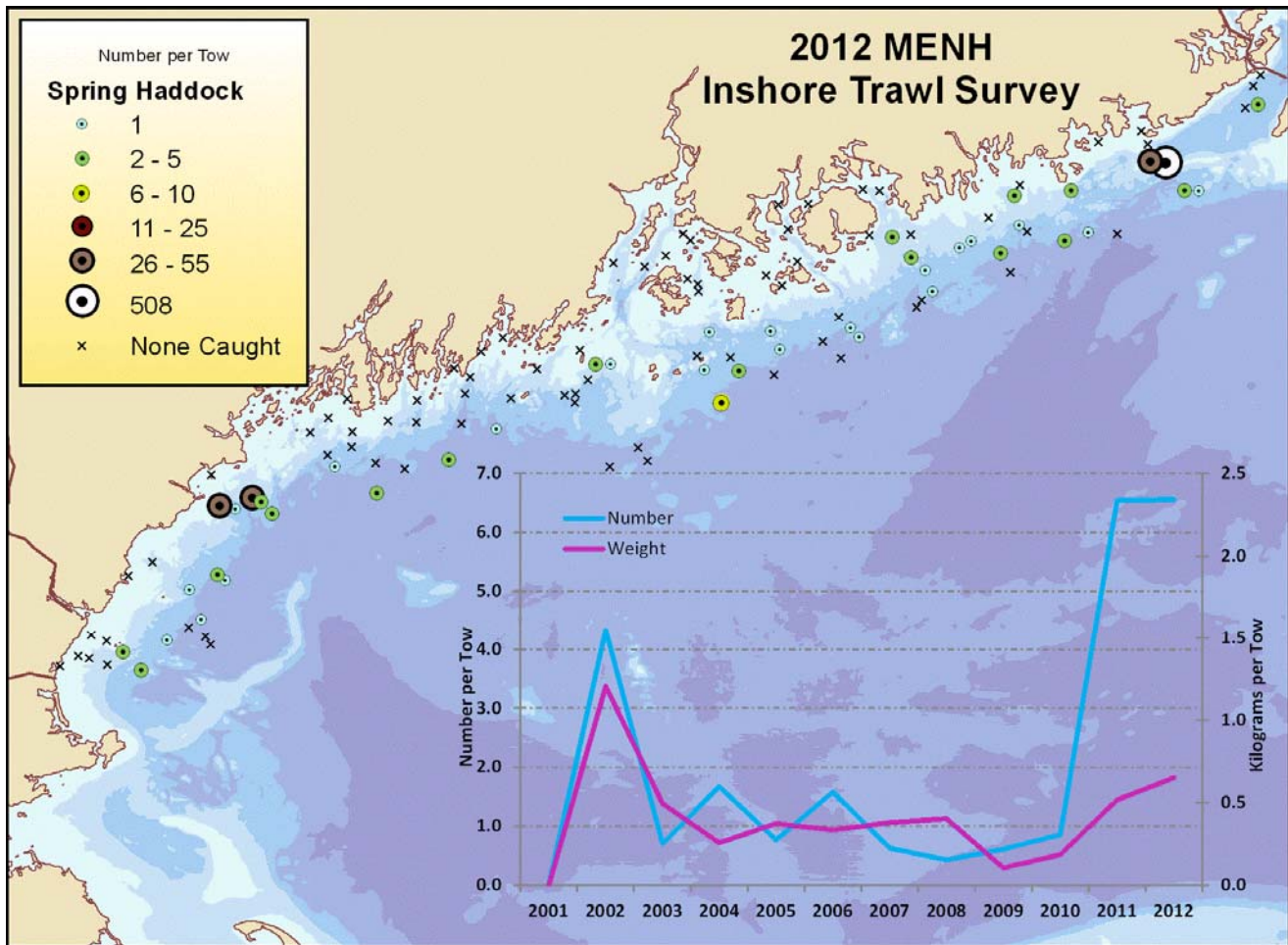
	Number		Weight	
	Mean	CV	Mean	CV
2000	4.78	0.29	1.65	0.39
2001	10.77	0.21	4.75	0.20
2002	4.05	0.56	3.45	0.66
2003	3.68	0.31	3.60	0.38
2004	2.96	0.31	3.63	0.40
2005	1.82	0.22	2.04	0.35
2006	2.94	0.22	1.79	0.23
2007	3.13	0.26	2.13	0.32
2008	4.10	0.33	2.96	0.27
2009	2.00	0.45	1.93	0.59
2010	1.06	0.32	0.74	0.35
2011	0.97	0.37	1.12	0.38
2012	0.80	0.35	0.48	0.51

Appendix C

Goosefish - MENH Fall Surveys



Haddock, *Melanogrammus aeglefinus*

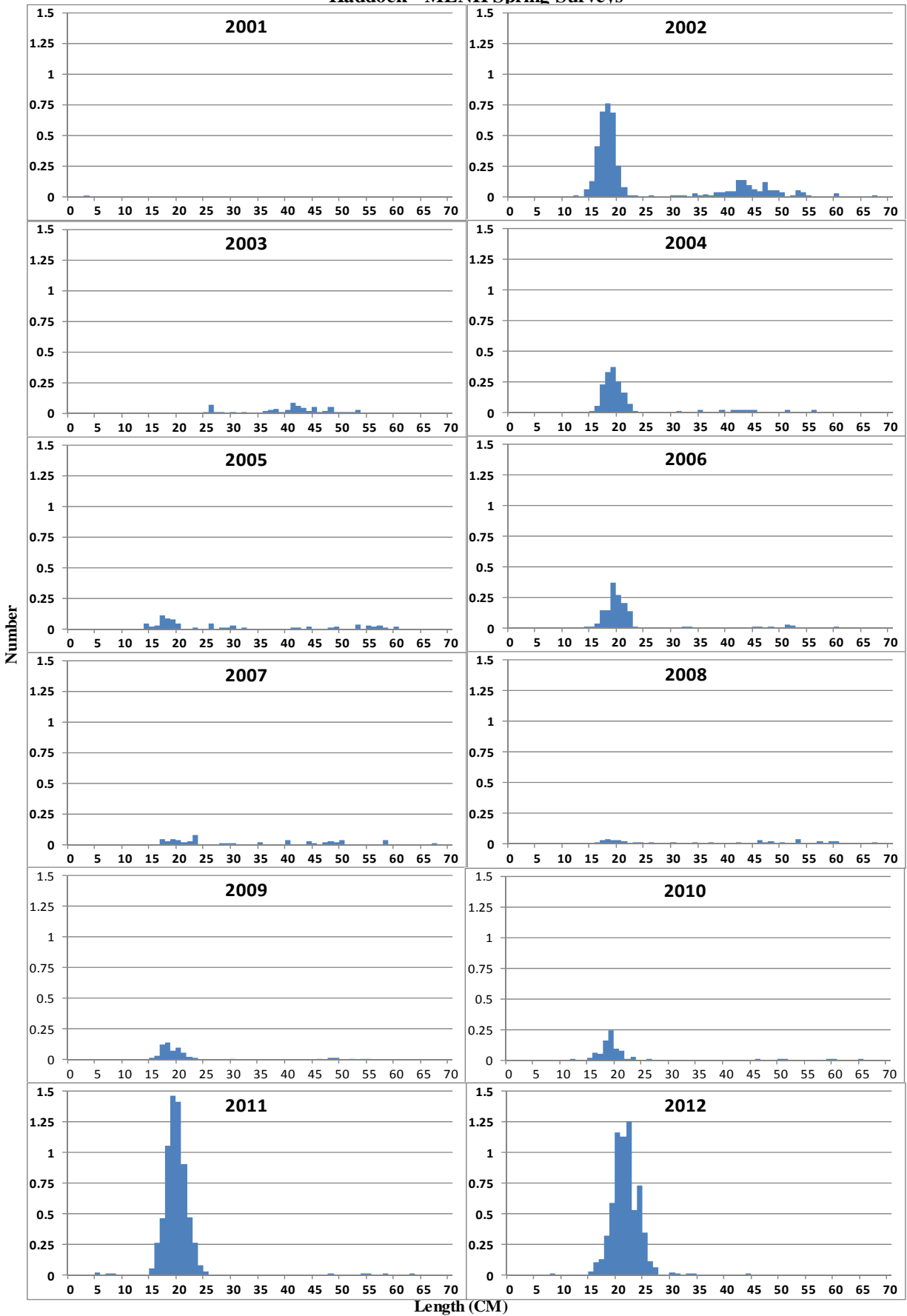


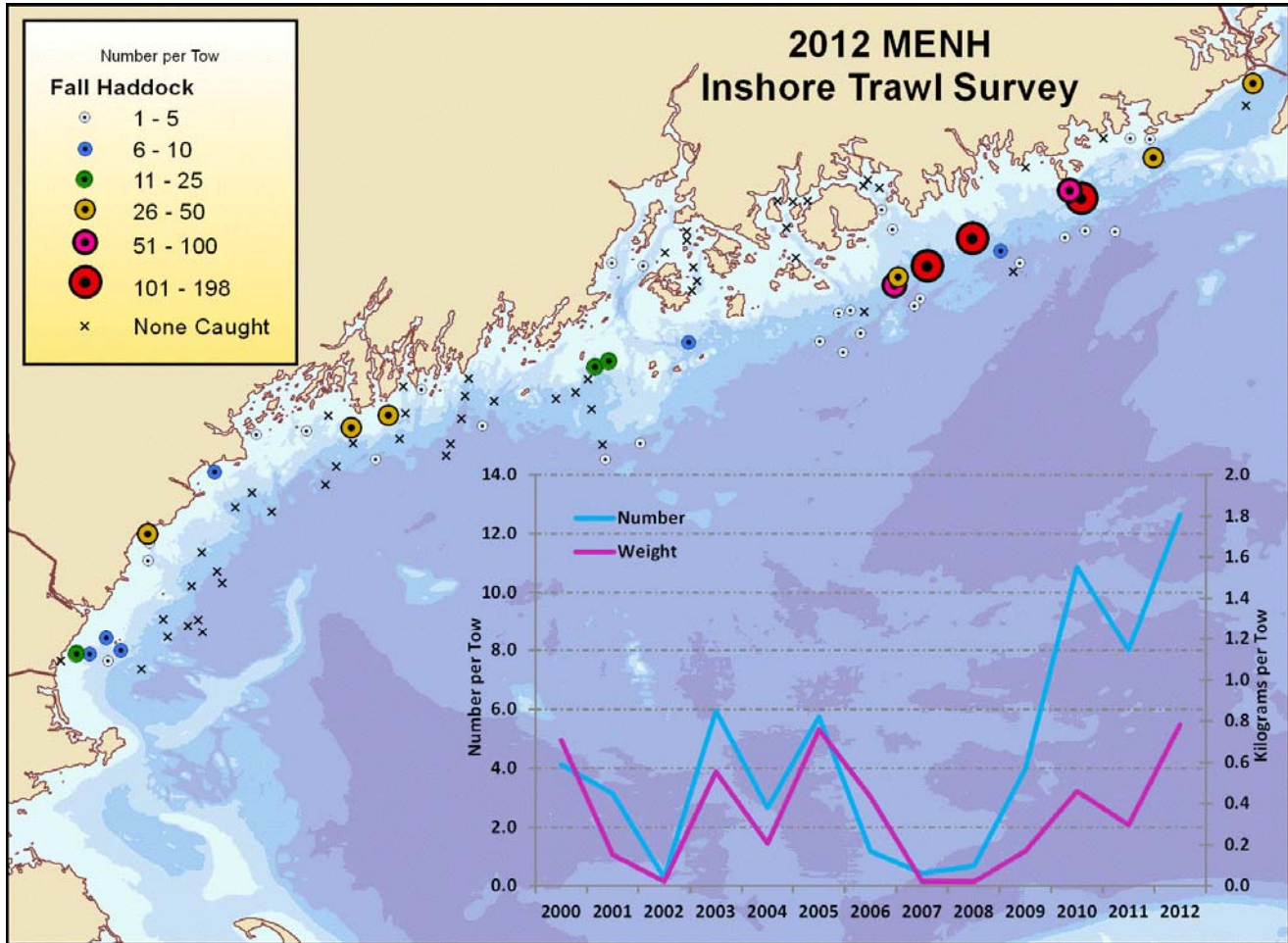
Means and coefficients of variance for graphs overlain on distribution maps fixed stations not included for haddock, calculated for regions 1 through 5; Strata 1 through 4
SPRING
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	0.02	2.00	0.00	2.00
2002	4.33	0.71	1.20	0.58
2003	0.70	0.92	0.49	1.04
2004	1.67	0.71	0.26	0.60
2005	0.77	0.66	0.37	0.71
2006	1.58	1.47	0.33	0.81
2007	0.63	0.50	0.38	0.66
2008	0.43	0.75	0.40	0.75
2009	0.61	0.60	0.10	0.70
2010	0.85	0.69	0.19	0.71
2011	6.54	1.00	0.52	0.88
2012	6.56	2.18	0.65	2.29

Appendix C

Haddock - MENH Spring Surveys





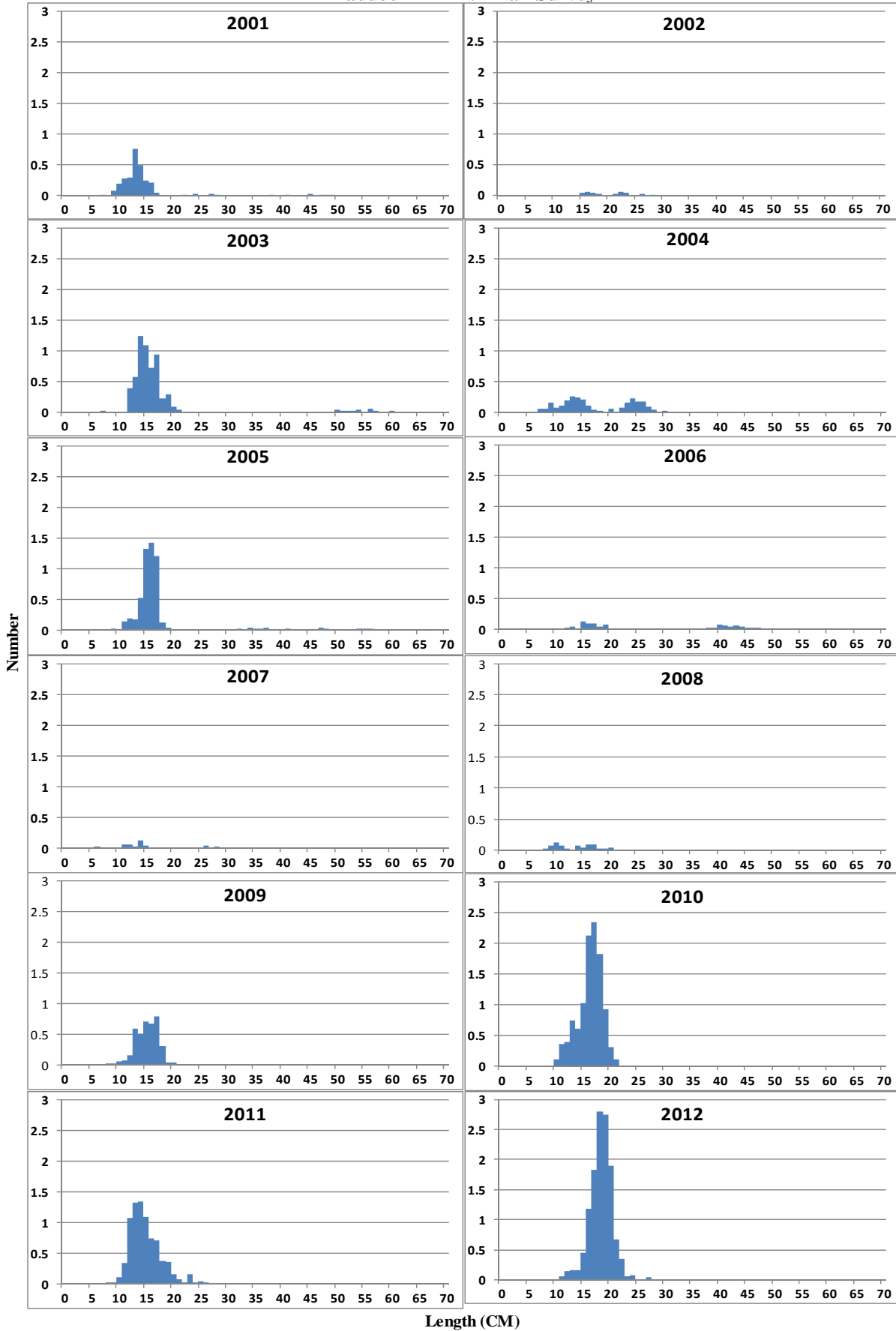
Means and coefficients of variance for graphs overlain on distribution maps
 fixed stations not included
 for haddock, calculated for regions 1 through 5; Strata 1 through 4
FALL

Stratified Mean

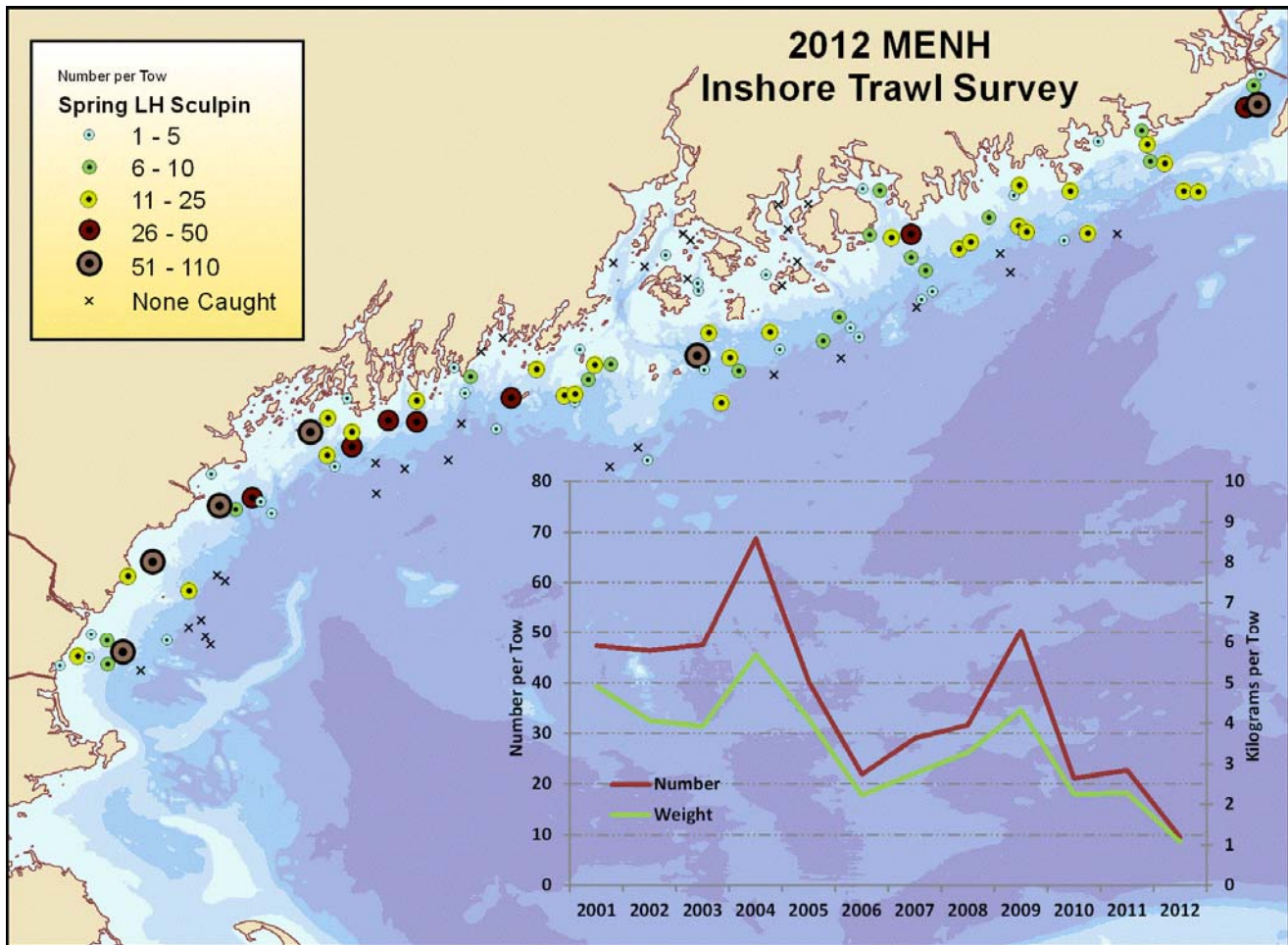
	Number		Weight	
	Mean	CV	Mean	CV
2000	4.12	0.71	0.71	1.74
2001	3.14	1.02	0.15	1.06
2002	0.29	0.92	0.02	1.23
2003	5.94	0.94	0.55	0.73
2004	2.65	0.71	0.21	0.80
2005	5.75	0.18	0.76	1.34
2006	1.18	1.27	0.43	2.22
2007	0.44	1.08	0.02	0.53
2008	0.68	0.59	0.02	0.53
2009	3.99	0.67	0.17	0.56
2010	10.86	0.64	0.46	0.68
2011	8.02	0.78	0.30	0.71
2012	12.65	0.67	0.78	0.68

Appendix C

Haddock - MENH Fall Survey



Longhorn sculpin, *Myoxocephalus octodecemspinosus*



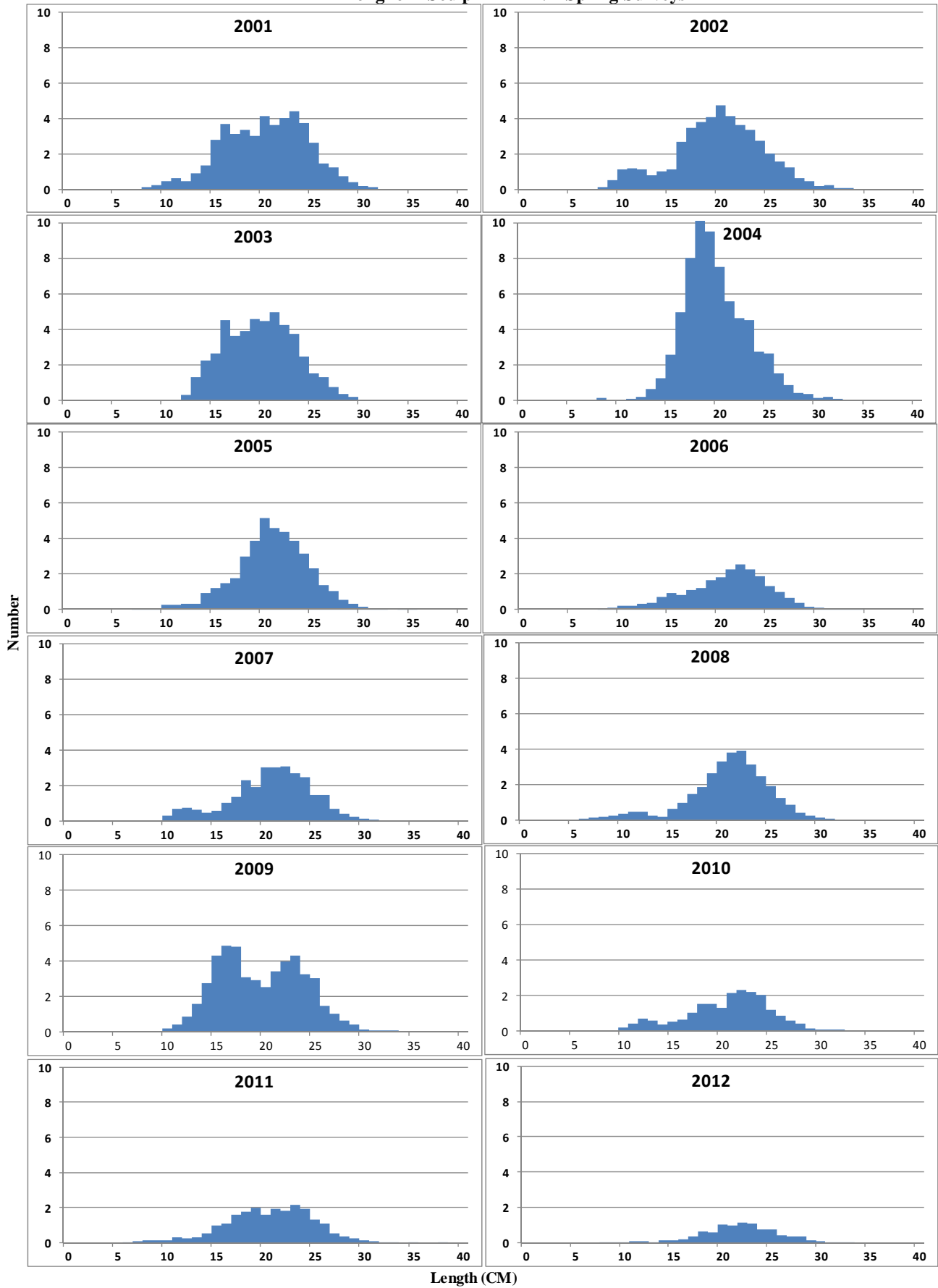
Means and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for LH Sculpin, calculated for regions 1 through 5; Strata 1 through 4
 SPRING

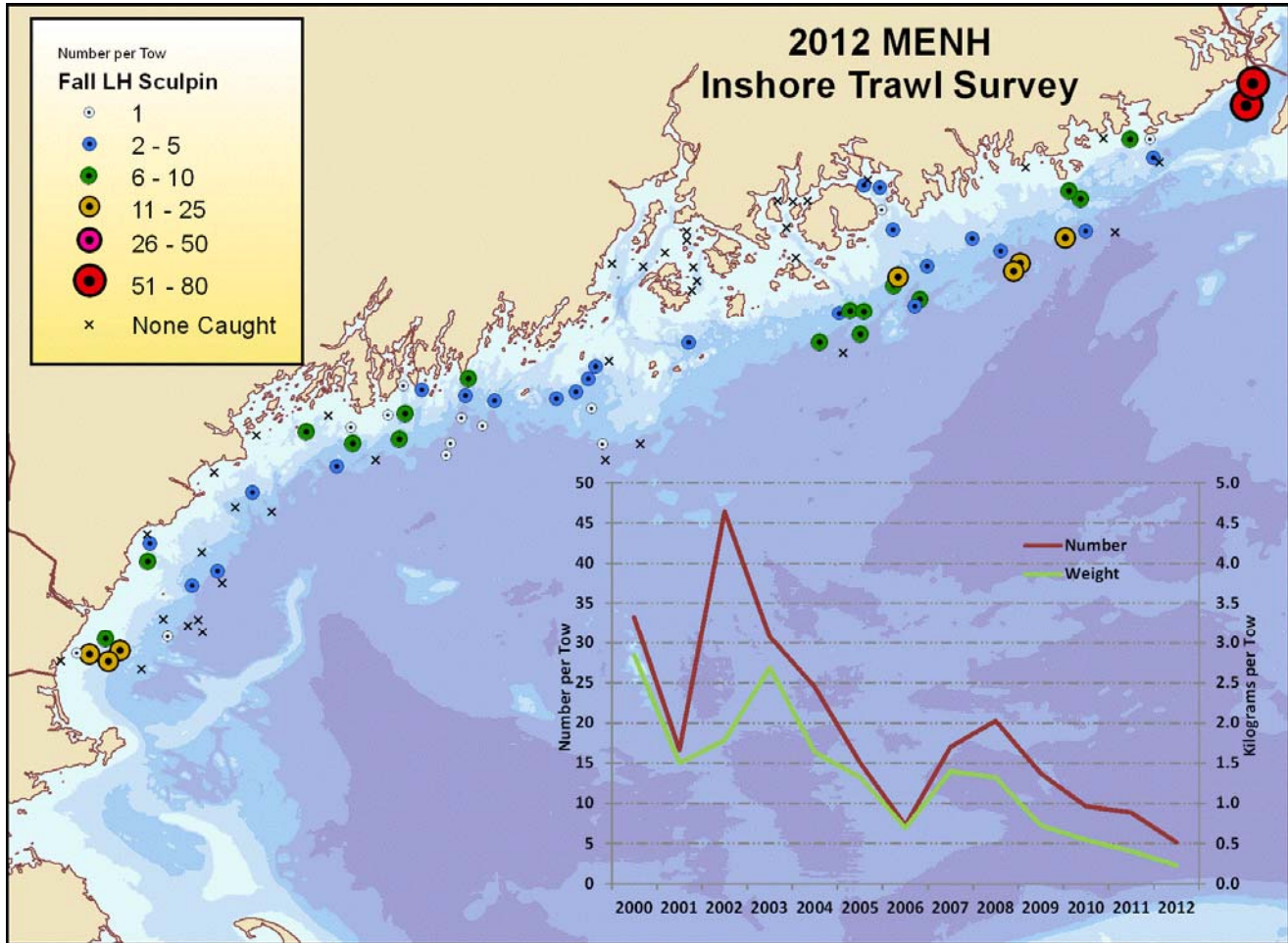
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2001	47.28	0.26	4.91	0.24
2002	46.32	0.33	4.07	0.29
2003	47.45	0.21	3.93	0.24
2004	68.71	0.17	5.70	0.17
2005	40.17	0.18	4.10	0.18
2006	21.86	0.38	2.22	0.33
2007	29.00	0.43	2.77	0.41
2008	31.61	0.25	3.28	0.27
2009	50.37	0.33	4.33	0.27
2010	21.08	0.34	2.25	0.33
2011	22.69	0.34	2.28	0.32
2012	9.47	0.28	1.07	0.27

Appendix C

Longhorn Sculpin - MENH Spring Surveys





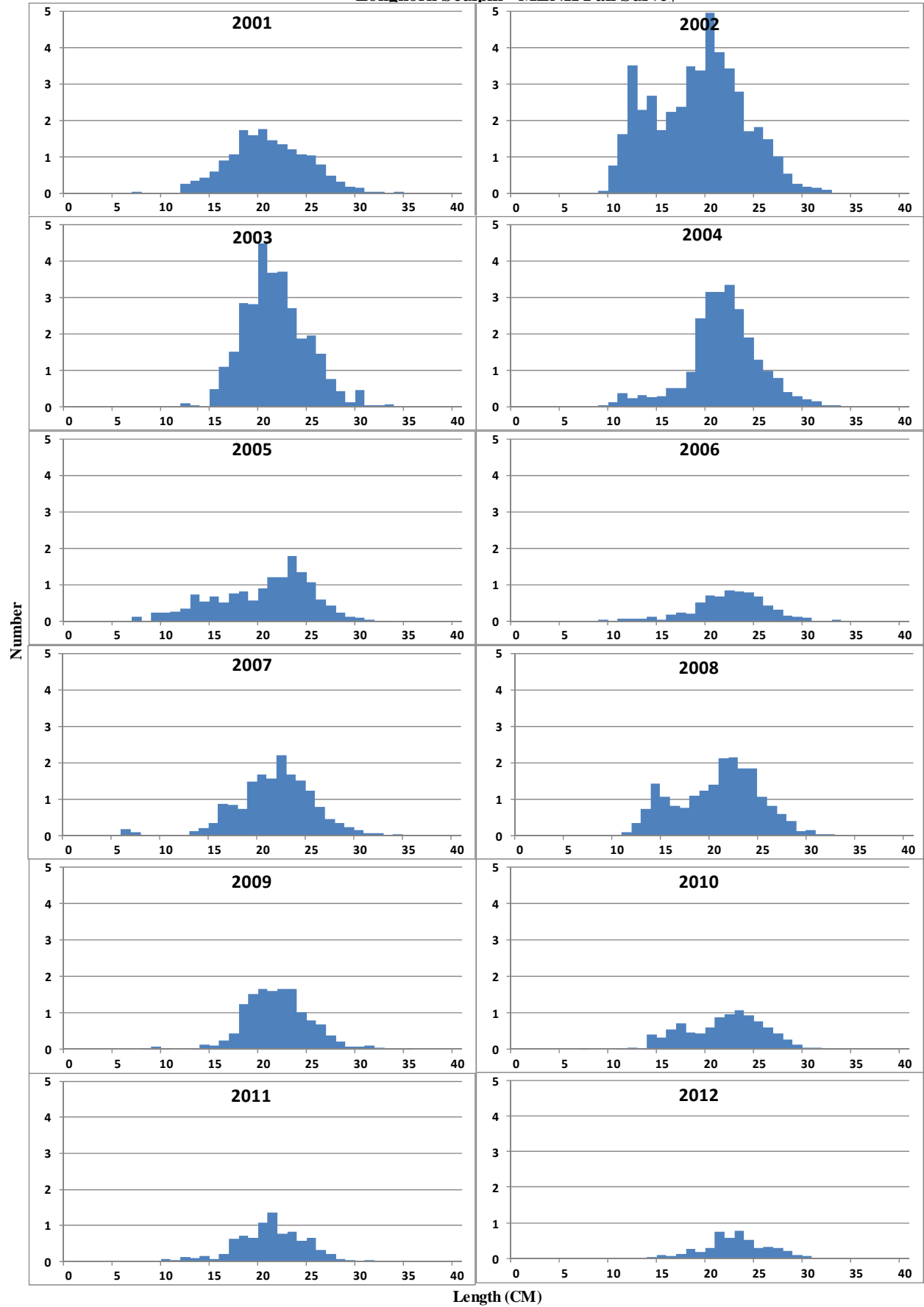
Means and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for LH Sculpin, calculated for regions 1 through 5; Strata 1 through 4
 FALL

Stratified Mean

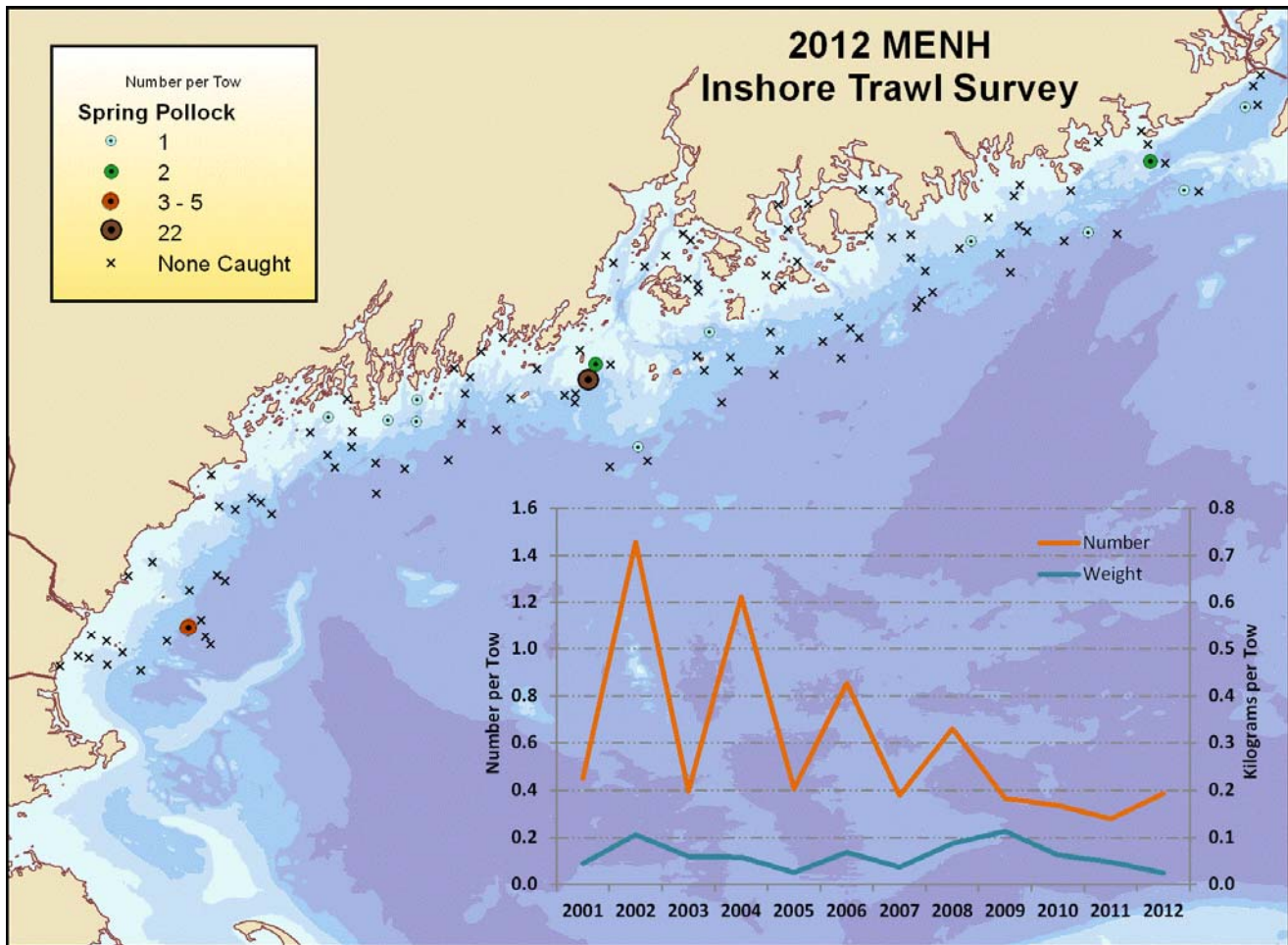
	Number		Weight	
	Mean	CV	Mean	CV
2000	33.20	0.48	2.84	0.27
2001	16.66	0.46	1.50	0.42
2002	46.40	0.36	1.79	0.63
2003	30.75	0.11	2.69	0.13
2004	24.45	0.39	1.64	0.32
2005	15.01	0.28	1.32	0.32
2006	7.27	0.29	0.70	0.31
2007	17.00	0.39	1.40	0.35
2008	20.25	0.26	1.32	0.35
2009	13.68	0.25	0.72	0.39
2010	9.62	0.26	0.54	0.33
2011	8.84	0.27	0.41	0.15
2012	5.16	0.56	0.23	0.26

Appendix C

Longhorn Sculpin - MENH Fall Survey



Pollock, *Pollachius virens*



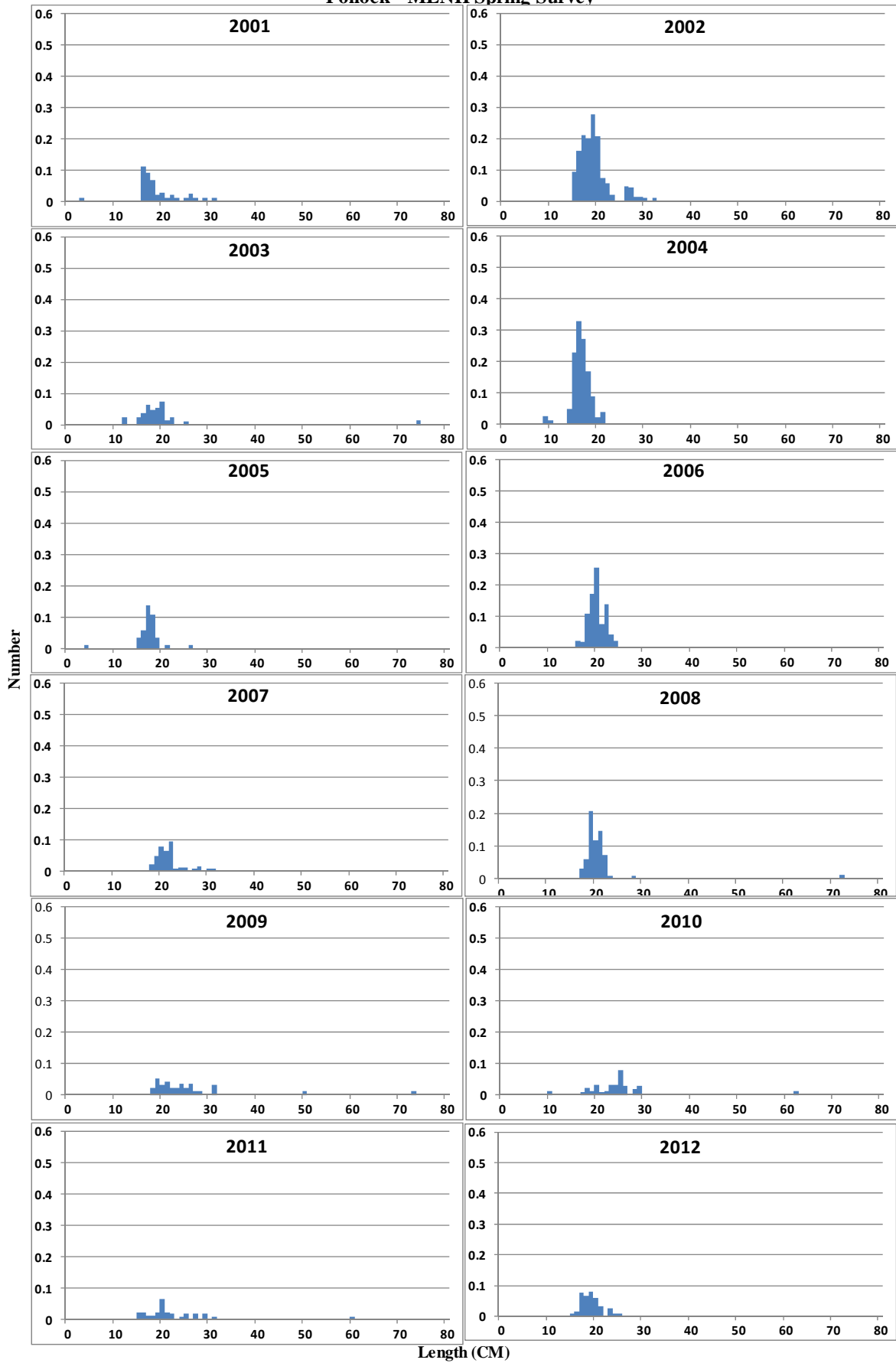
Means and coefficients of variance for graph overlain on the above map fixed stations not included for pollock, calculated for regions 1 through 5; Strata 1 through 4
SPRING

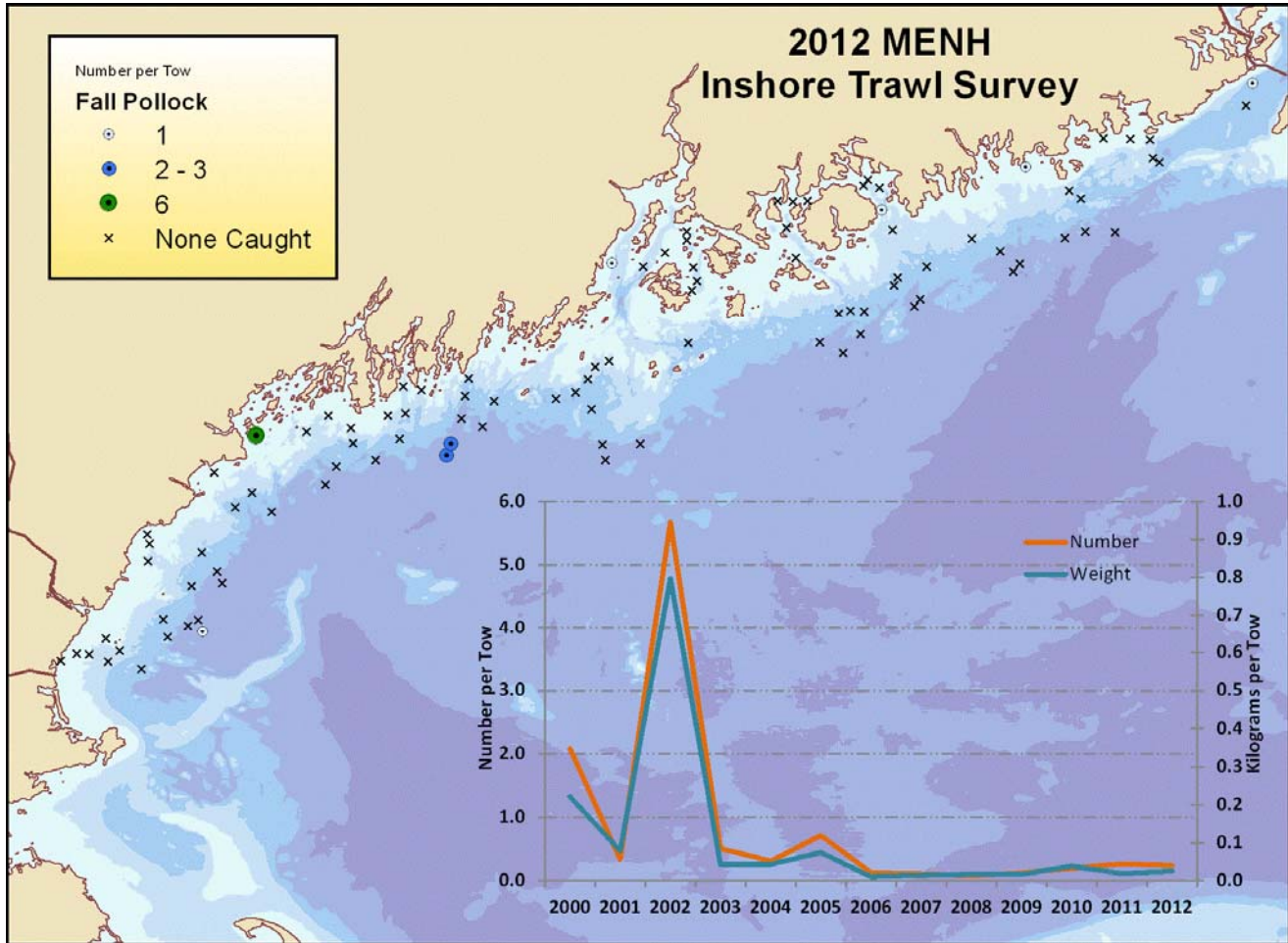
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	0.45	0.81	0.05	0.89
2002	1.46	0.56	0.11	0.59
2003	0.40	0.56	0.06	1.03
2004	1.22	0.54	0.06	0.48
2005	0.41	2.08	0.03	1.95
2006	0.85	1.28	0.07	1.30
2007	0.38	1.44	0.04	1.22
2008	0.66	1.76	0.09	1.44
2009	0.37	0.79	0.11	1.26
2010	0.34	0.88	0.06	1.15
2011	0.28	0.88	0.05	1.03
2012	0.39	1.33	0.03	1.23

Appendix C

Pollock - MENH Spring Survey





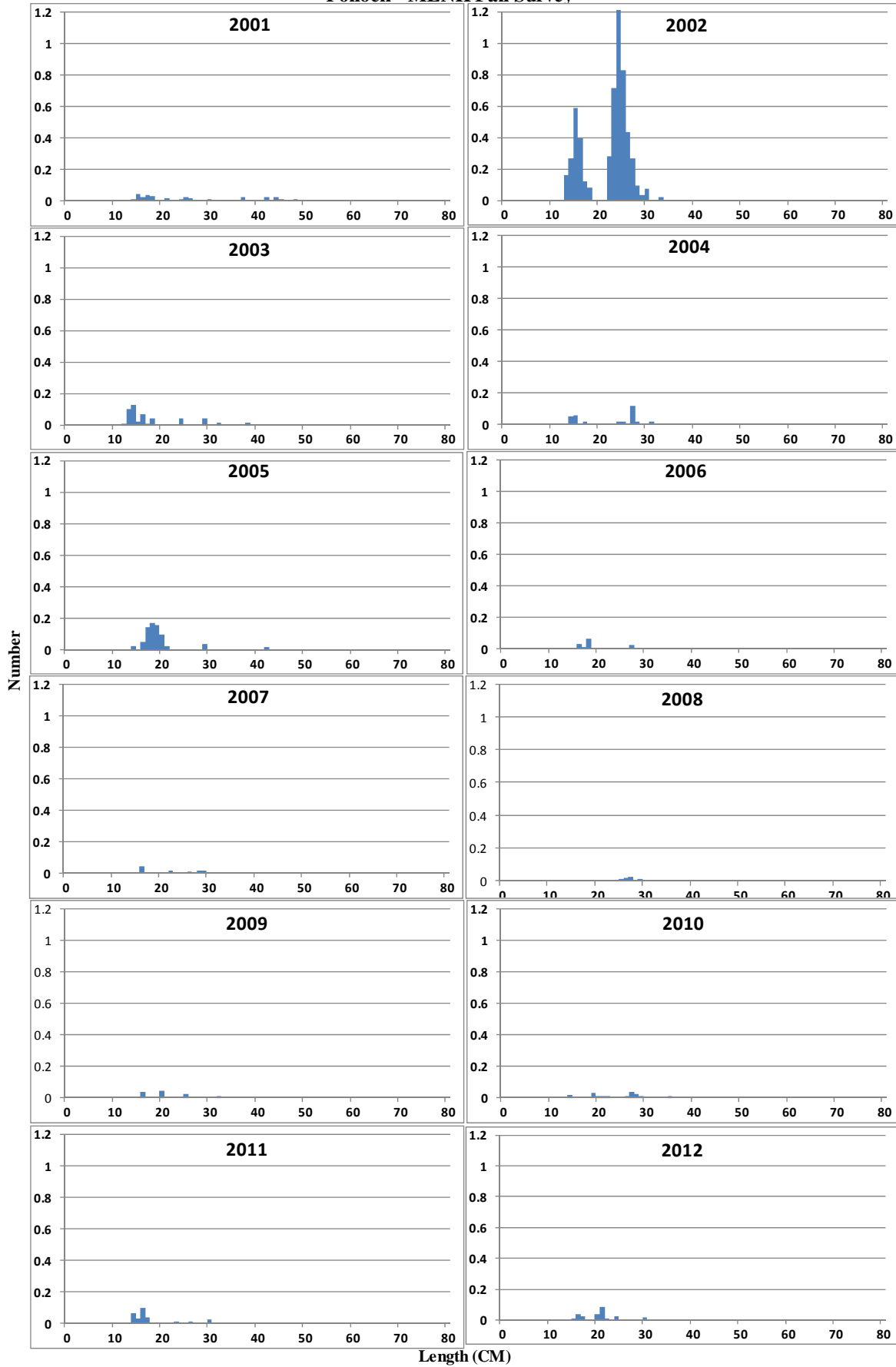
Means and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for pollock, calculated for regions 1 through 5; Strata 1 through 4
FALL

Stratified Mean

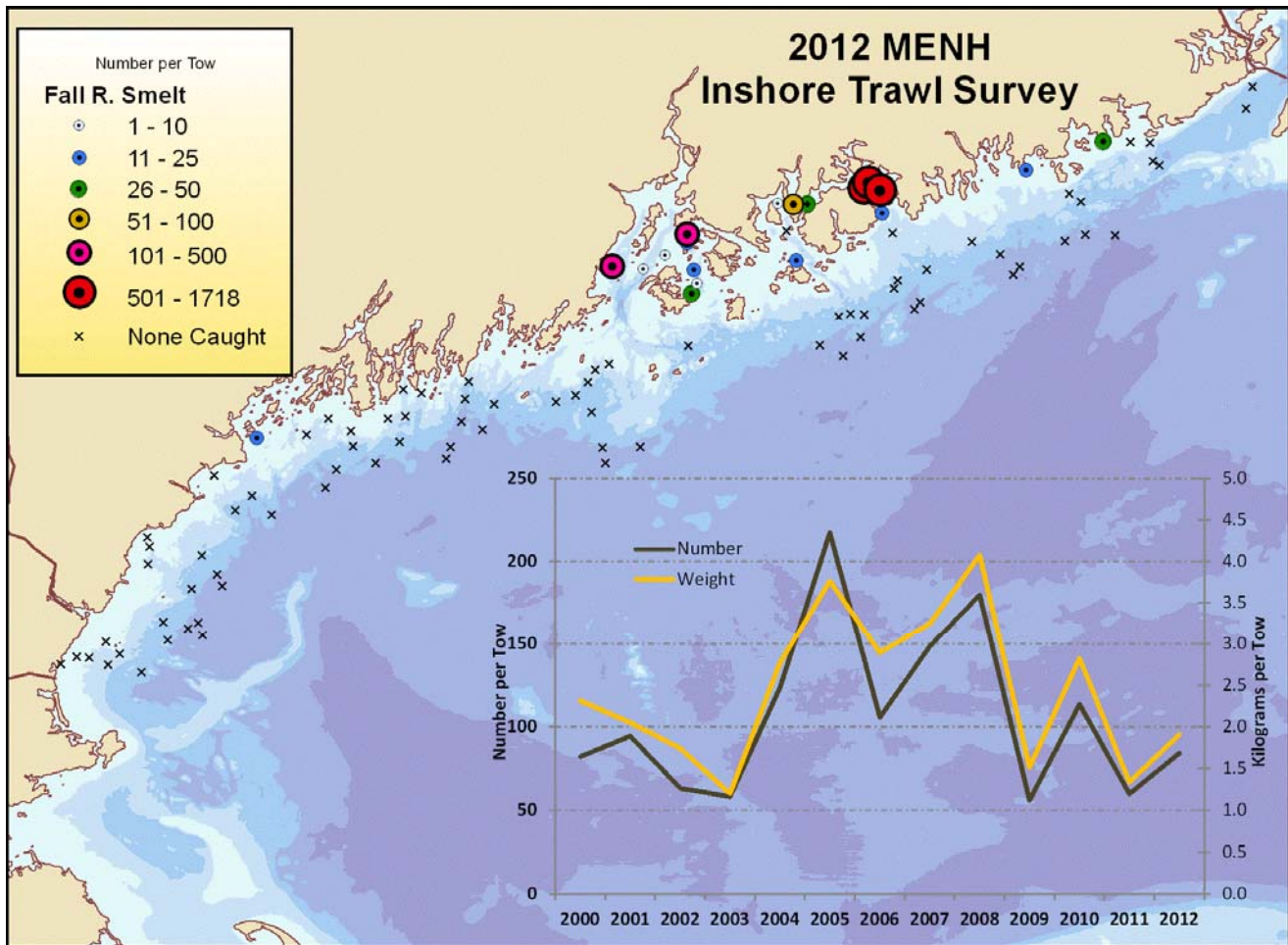
	Number		Weight	
	Mean	CV	Mean	CV
2000	2.08	1.21	0.22	0.67
2001	0.33	0.53	0.08	0.68
2002	5.68	1.65	0.80	1.80
2003	0.51	0.57	0.04	0.60
2004	0.31	0.68	0.04	0.60
2005	0.71	0.11	0.07	0.42
2006	0.13	0.88	0.01	0.91
2007	0.11	1.04	0.01	0.93
2008	0.07	0.82	0.02	0.84
2009	0.12	0.70	0.02	0.88
2010	0.19	0.63	0.04	0.65
2011	0.27	0.59	0.02	0.70
2012	0.24	0.95	0.02	1.02

Appendix C

Pollock - MENH Fall Survey



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

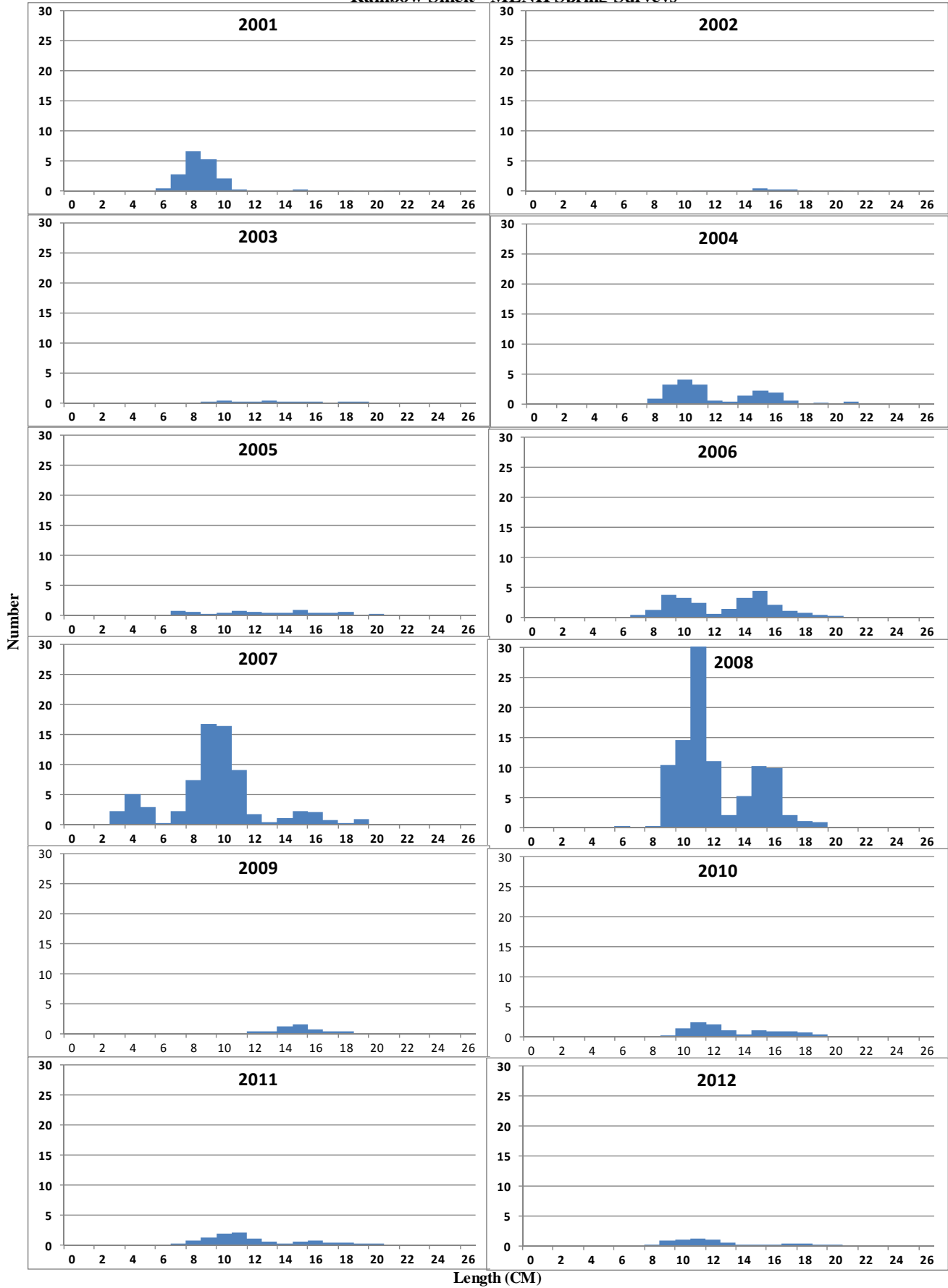


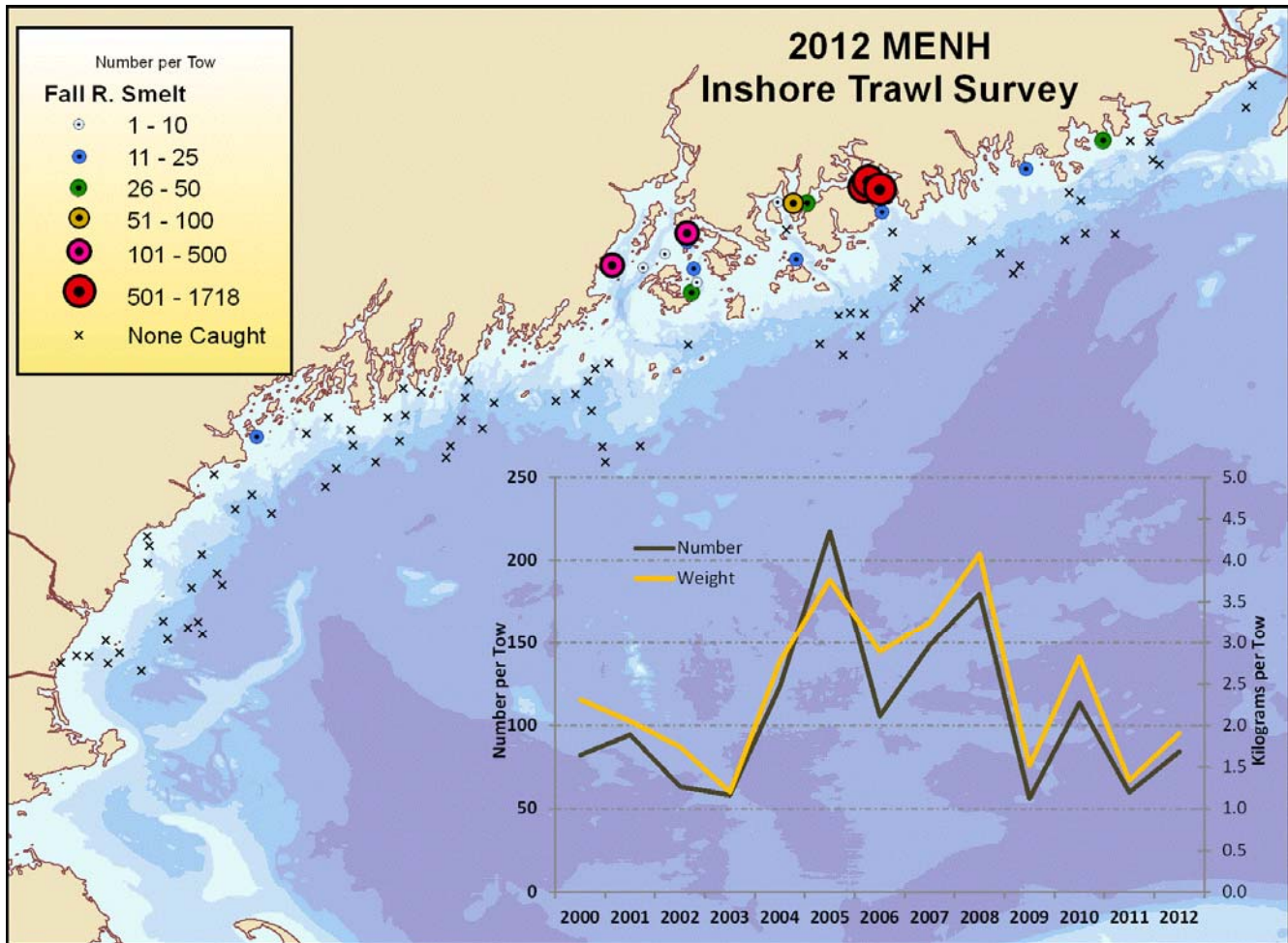
Mean and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for smelt, calculated for regions 1 through 5; Strata 1 and 2
SPRING
 Stratified Mean

	Number Mean	CV	Mean	Weight CV
2001	18.07	1.48	0.09	1.19
2002	1.34	0.82	0.04	0.83
2003	3.20	0.62	0.06	0.55
2004	19.50	1.25	0.26	0.99
2005	6.72	0.63	0.13	0.98
2006	25.62	0.86	0.40	0.83
2007	72.07	1.17	0.34	0.93
2008	98.81	1.79	1.20	1.70
2009	5.59	0.89	0.14	0.86
2010	11.74	1.21	0.22	1.12
2011	10.91	1.05	0.16	0.83
2012	7.56	1.19	0.12	0.92

Appendix C

Rainbow Smelt - MENH Spring Surveys



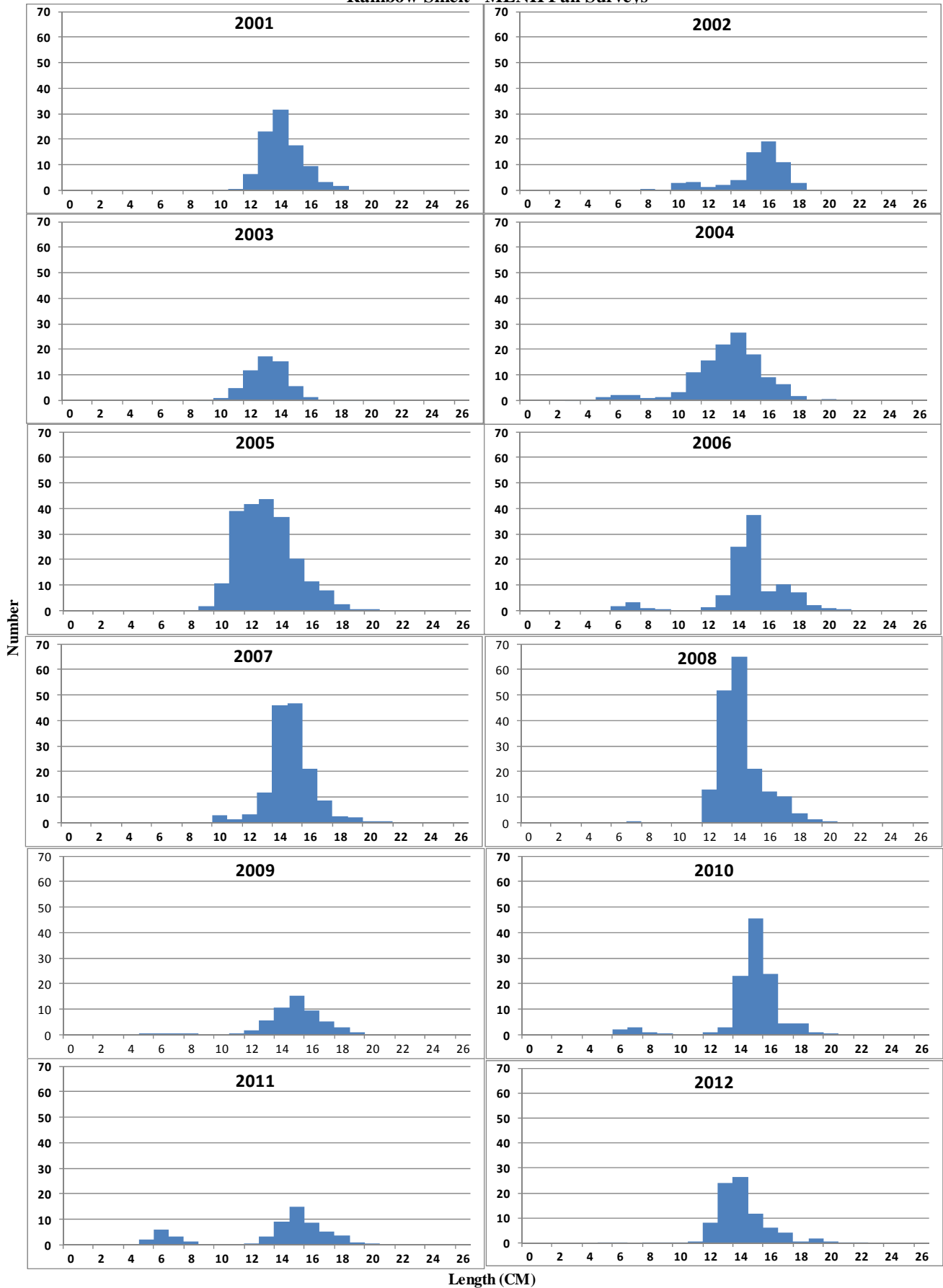


Mean and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for smelt, calculated for regions 1 through 5; Strata 1 and 2
FALL
Stratified Mean

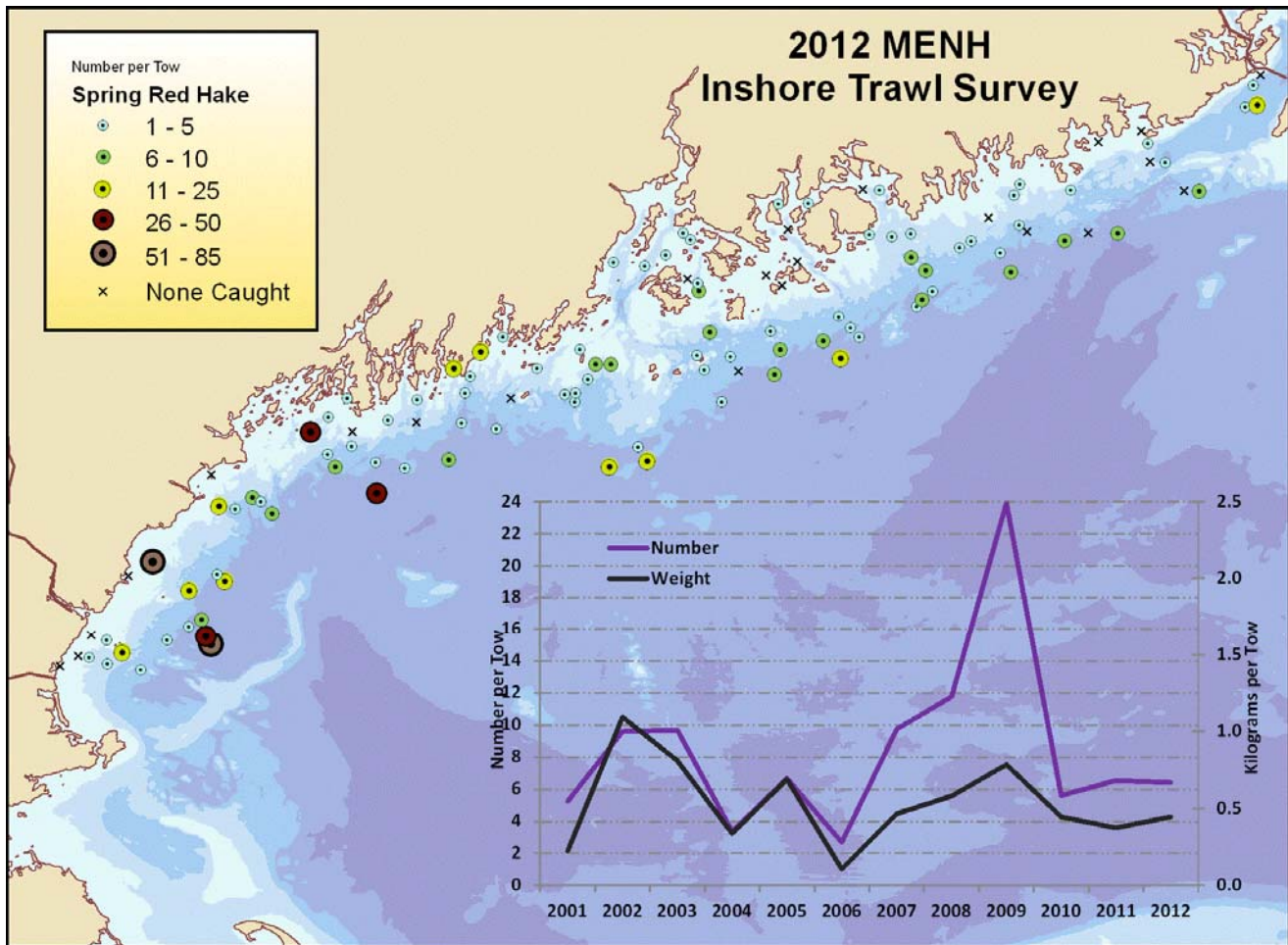
	Number		Weight	
	Mean	CV	Mean	CV
2000	82.20	1.18	2.32	1.35
2001	94.54	0.39	2.05	0.42
2002	63.24	1.56	1.74	1.52
2003	58.18	0.48	1.20	0.45
2004	123.81	0.61	2.77	0.61
2005	217.34	0.32	3.77	0.37
2006	105.85	1.10	2.89	0.96
2007	148.49	1.12	3.25	1.03
2008	179.87	1.23	4.07	1.16
2009	56.05	0.78	1.52	0.86
2010	113.81	1.42	2.83	1.50
2011	59.94	0.31	1.34	0.35
2012	84.40	0.97	1.91	0.99

Appendix C

Rainbow Smelt - MENH Fall Surveys



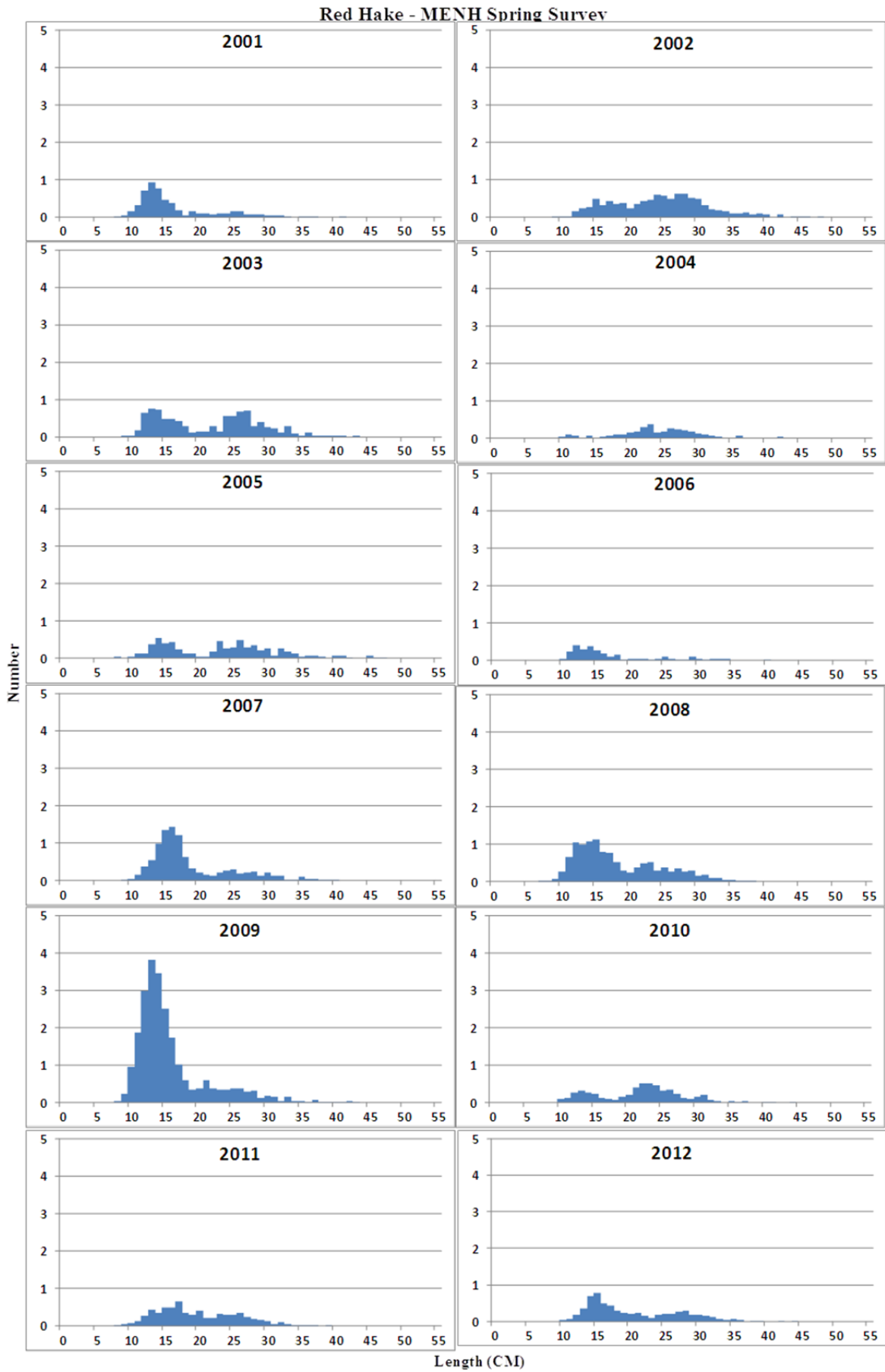
Red hake, *Urophycis chuss*

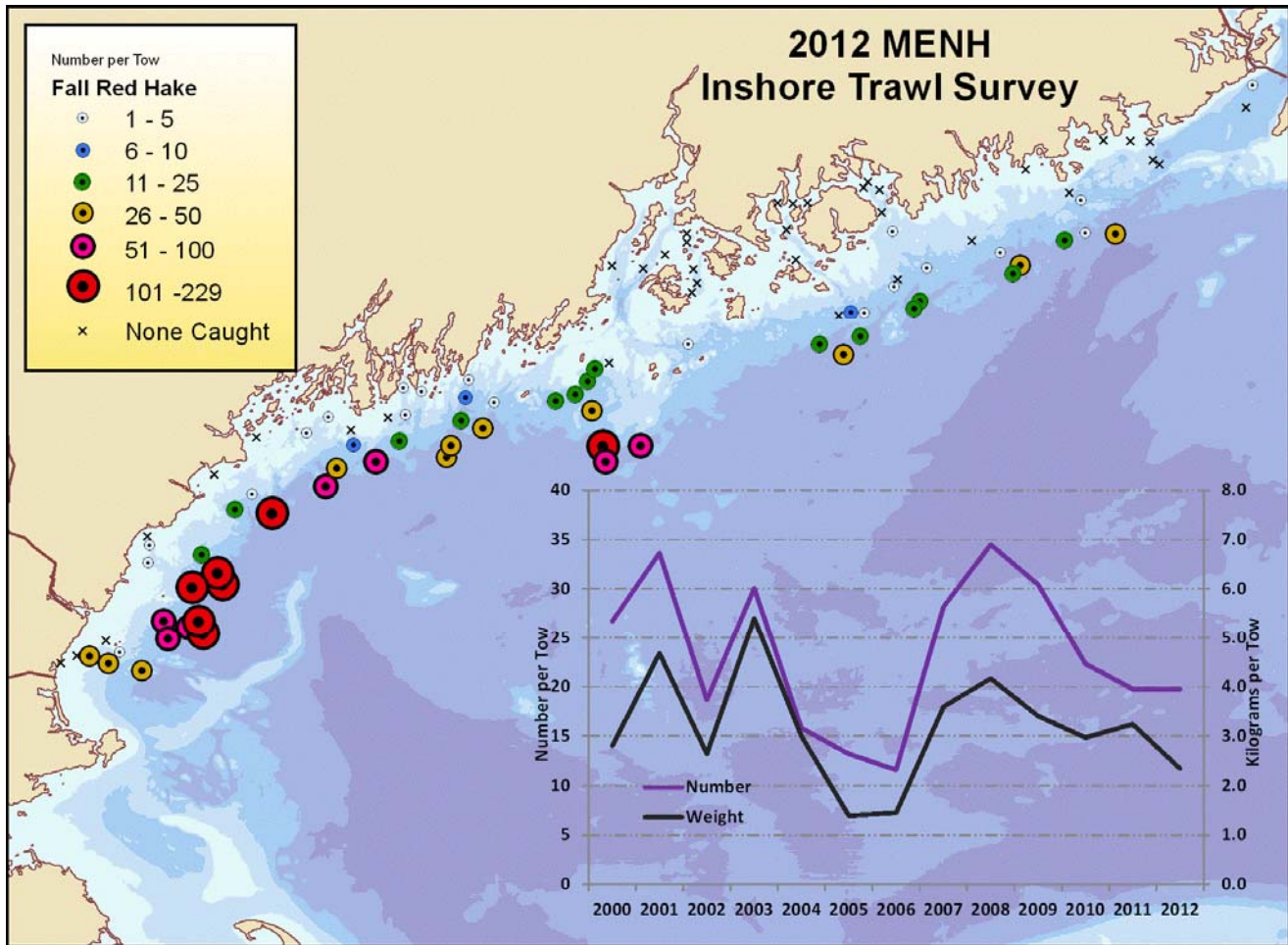


Mean and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for red hake, calculated for regions 1 through 5; Strata 1 through 4
SPRING
 Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	5.24	0.46	0.22	0.76
2002	9.59	0.26	1.09	0.26
2003	9.69	0.28	0.81	0.40
2004	3.37	0.20	0.34	0.27
2005	6.68	0.19	0.69	0.14
2006	2.69	0.40	0.11	0.43
2007	9.75	0.28	0.47	0.36
2008	11.76	0.34	0.58	0.27
2009	23.89	0.21	0.78	0.14
2010	5.60	0.17	0.45	0.25
2011	6.55	0.38	0.37	0.45
2012	6.42	0.38	0.45	0.65

Appendix C





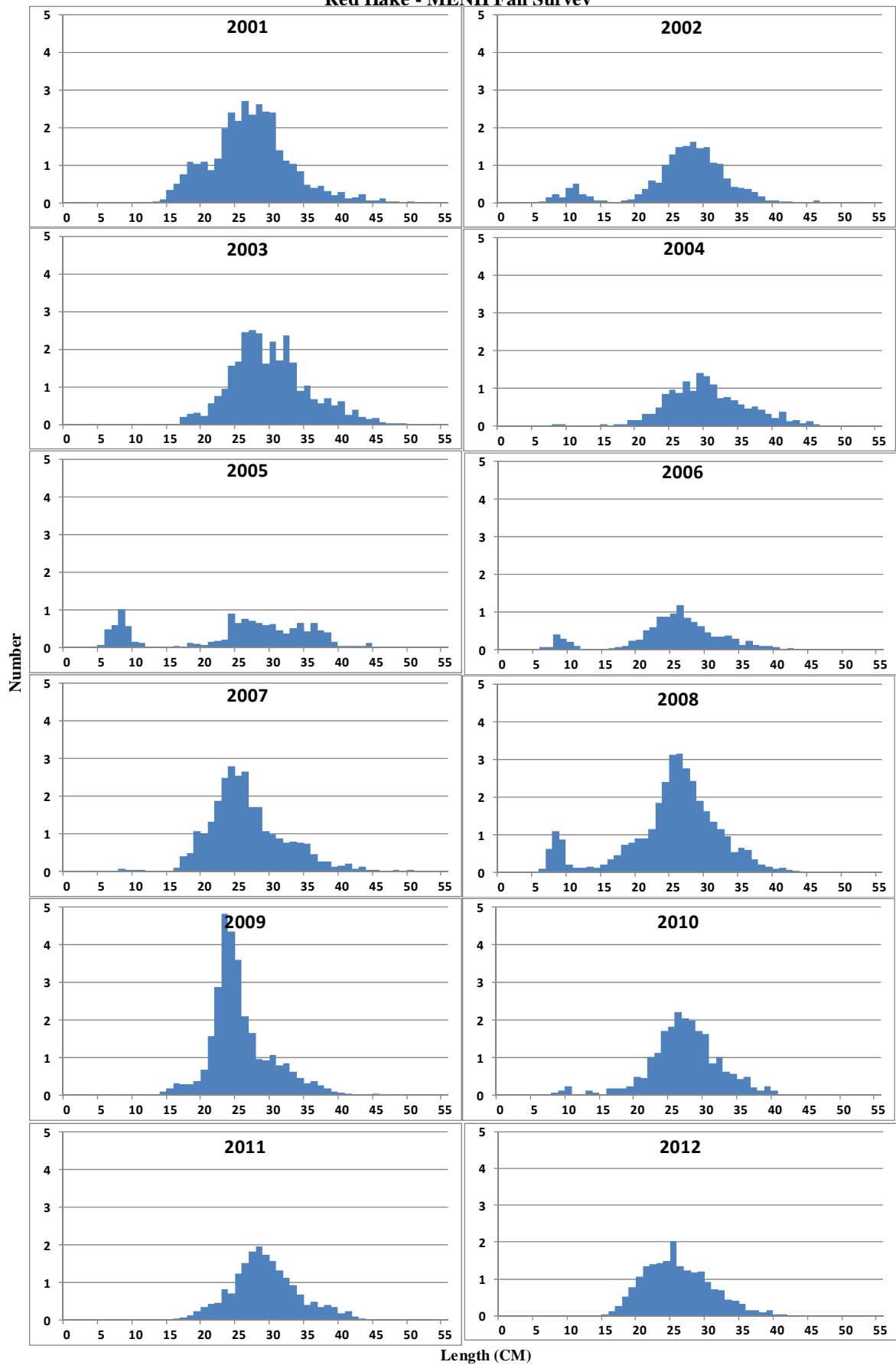
Mean and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for red hake, calculated for regions 1 through 5; Strata 1 through 4
FALL

Stratified Mean

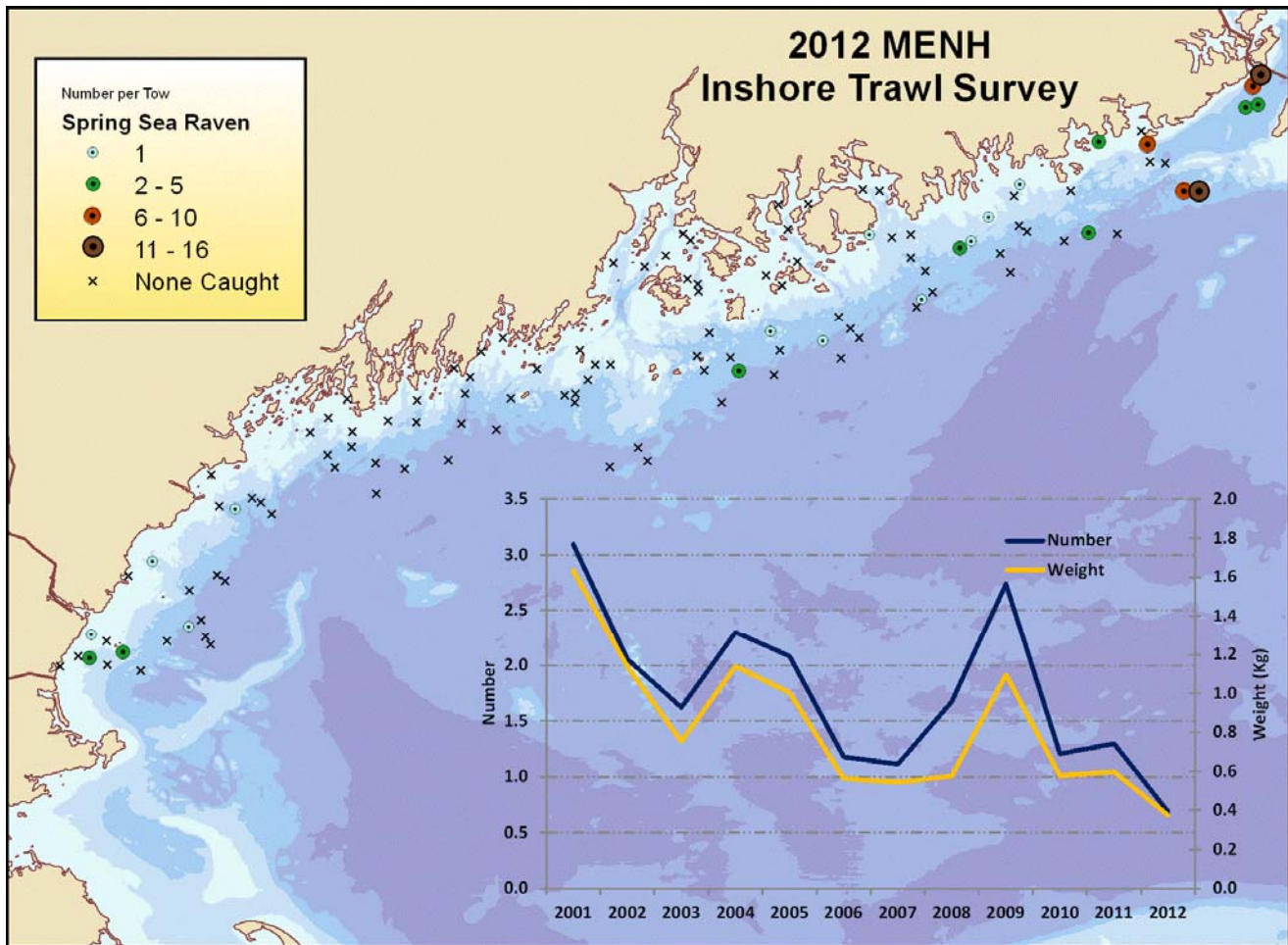
	Number		Weight	
	Mean	CV	Mean	CV
2000	26.71	0.29	2.81	0.29
2001	33.66	0.34	4.68	0.33
2002	18.67	0.38	2.64	0.42
2003	30.07	0.14	5.39	0.14
2004	15.81	0.19	3.00	0.22
2005	13.20	0.15	1.39	0.24
2006	11.58	0.25	1.45	0.23
2007	28.19	0.24	3.60	0.27
2008	34.50	0.15	4.16	0.11
2009	30.45	0.19	3.41	0.20
2010	22.33	0.18	2.97	0.19
2011	19.76	0.19	3.24	0.17
2012	19.74	0.15	2.34	0.16

Appendix C

Red Hake - MENH Fall Survey



Sea raven, *Hemiripheus americanus*



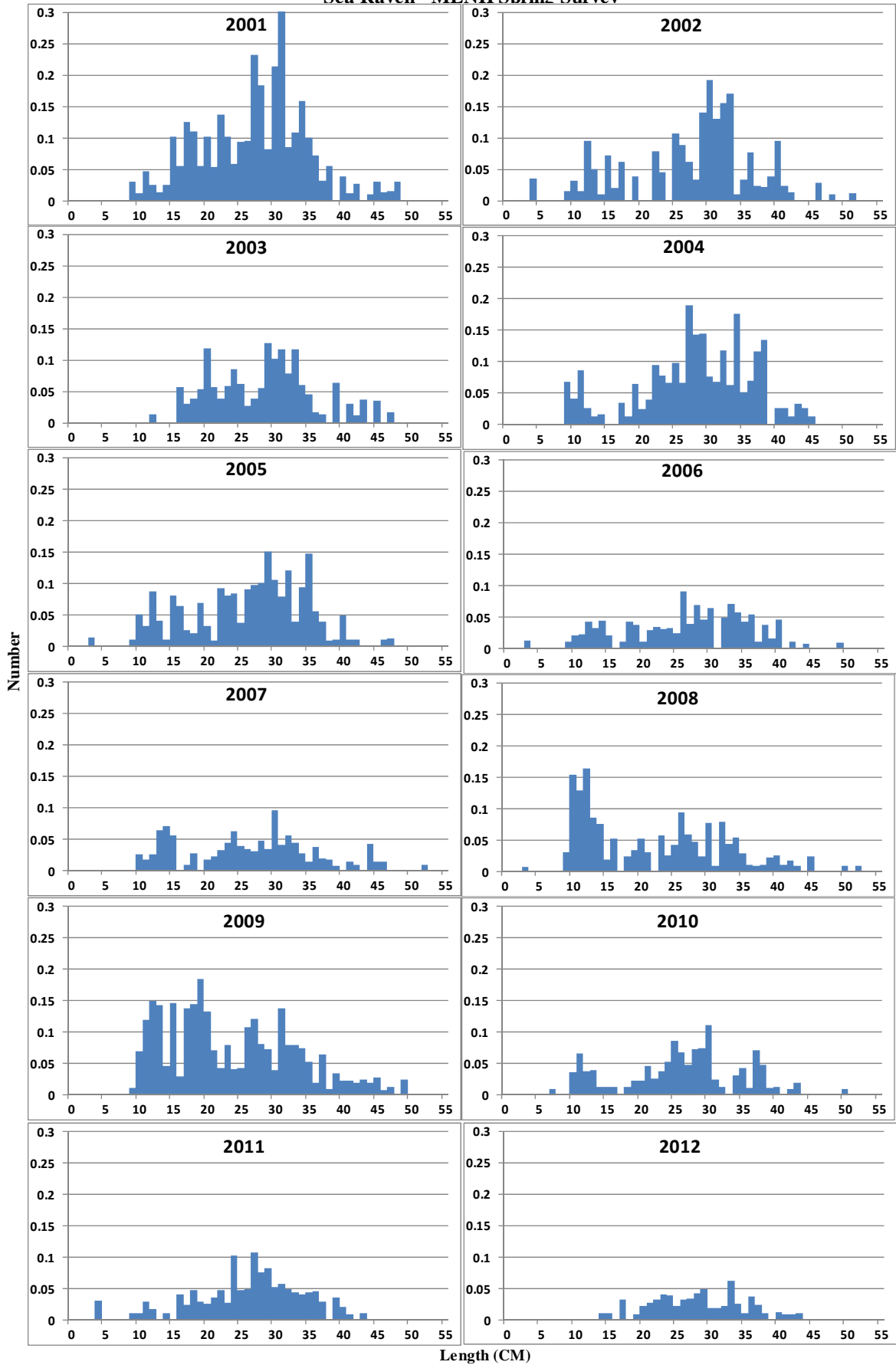
Mean and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for sea raven, calculated for regions 1 through 5; strata 1 through 4
SPRING

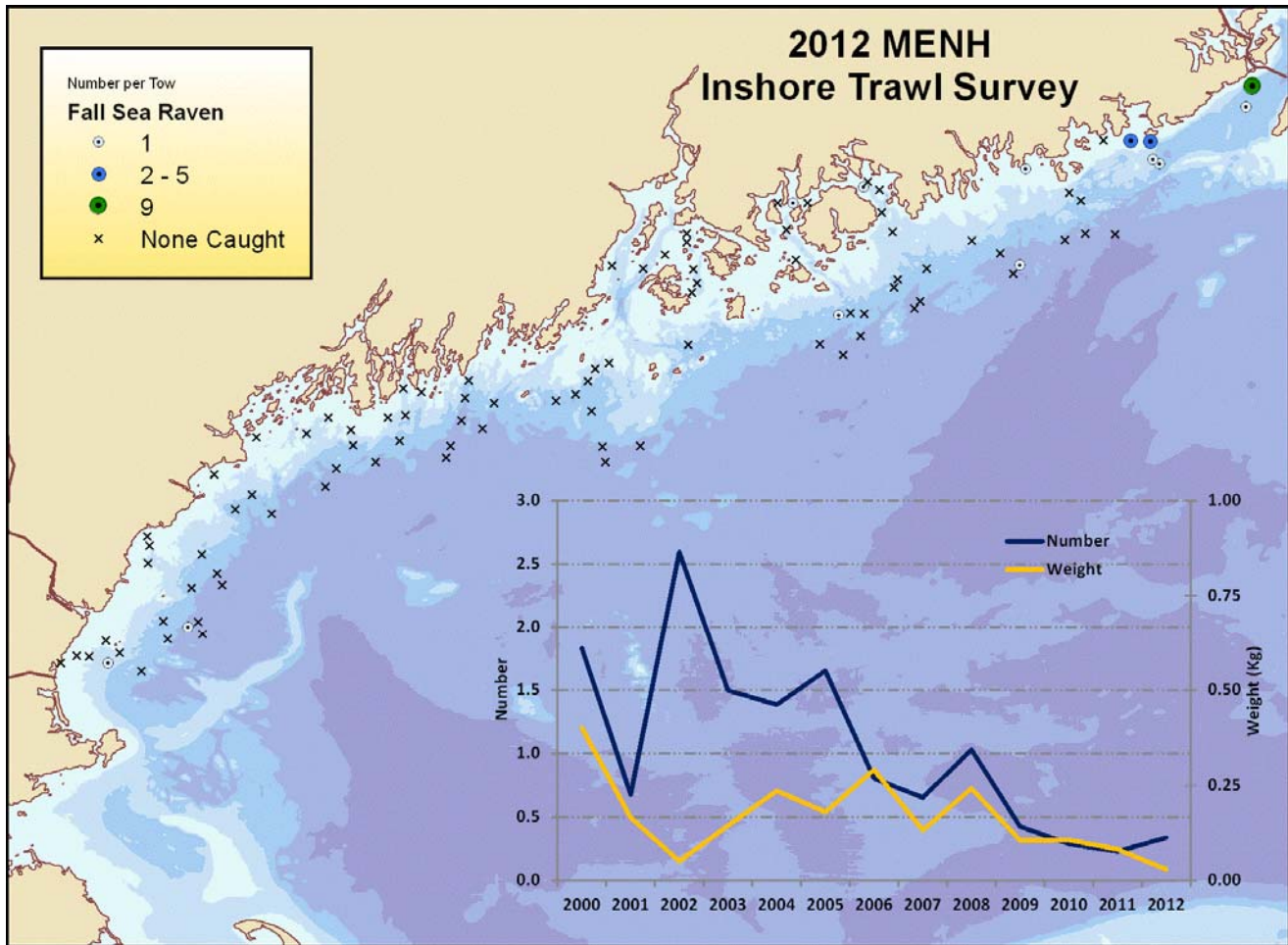
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2001	3.09	0.73	1.63	0.77
2002	2.06	0.38	1.14	0.48
2003	1.62	0.38	0.75	0.39
2004	2.30	0.51	1.14	0.61
2005	2.08	0.31	1.00	0.33
2006	1.18	0.48	0.56	0.59
2007	1.11	0.40	0.54	0.39
2008	1.68	0.41	0.58	0.42
2009	2.74	0.38	1.09	0.46
2010	1.21	0.54	0.58	0.57
2011	1.30	0.57	0.60	0.53
2012	0.69	0.71	0.37	0.63

Appendix C

Sea Raven - MENH Spring Survey





Mean and coefficients of variance for graph overlain on the above map
 fixed stations not included

for sea raven, calculated for regions 1 through 5; strata 1 through 4

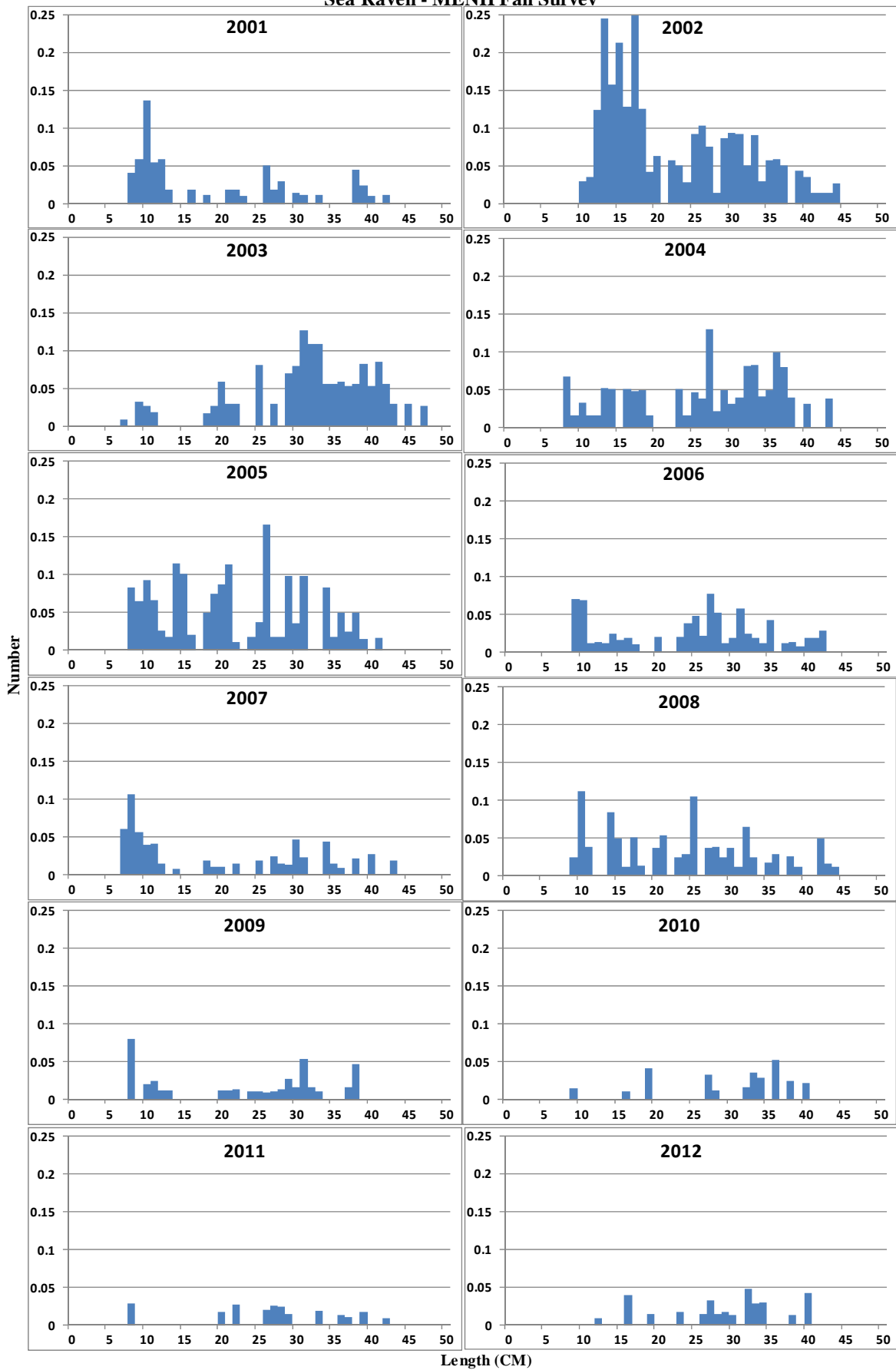
FALL

Stratified Mean

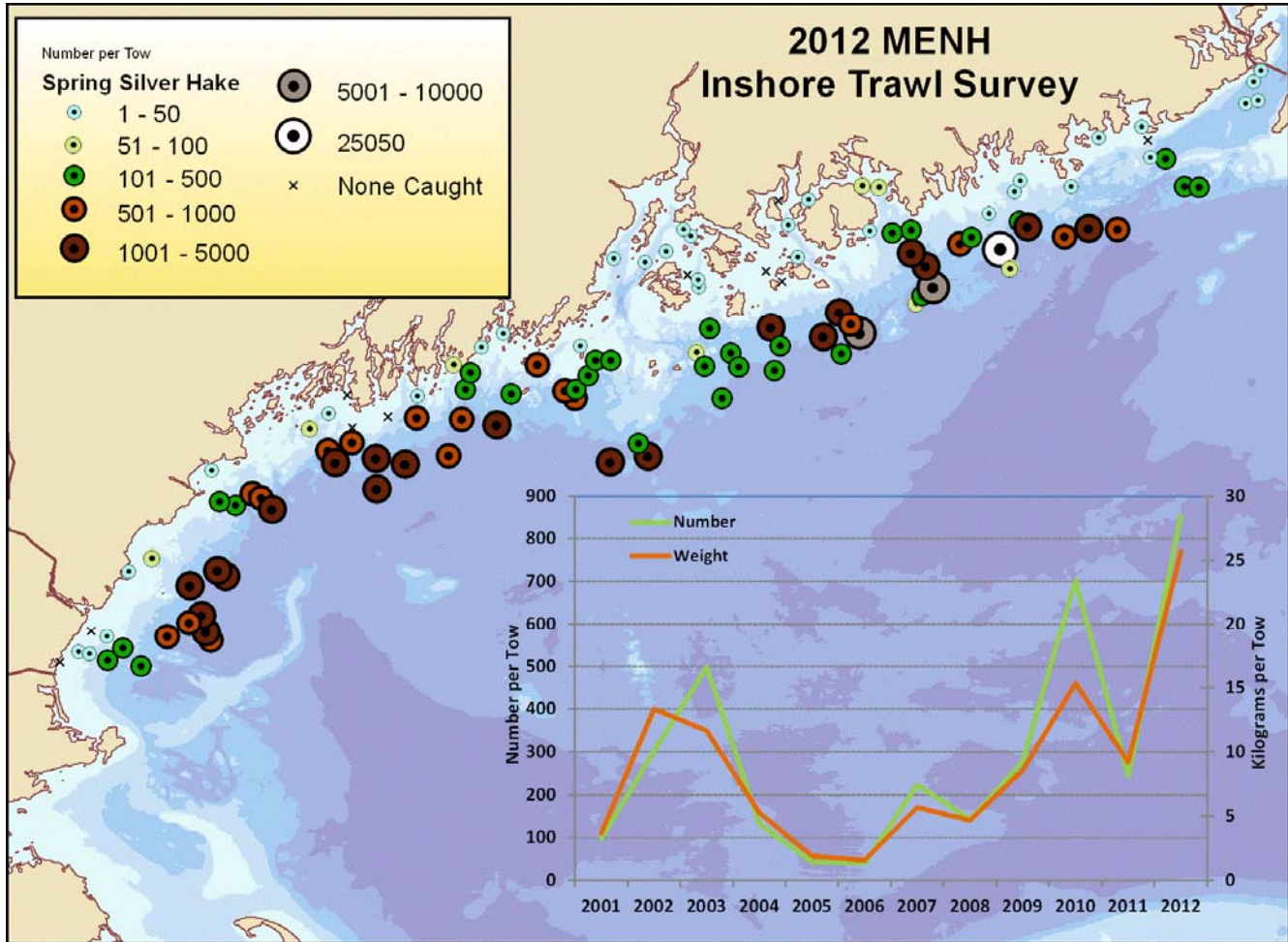
	Number		Weight	
	Mean	CV	Mean	CV
2000	1.83	0.40	0.40	0.51
2001	0.68	0.44	0.16	0.86
2002	2.59	0.64	0.05	0.92
2003	1.50	0.42	0.14	0.55
2004	1.39	0.54	0.24	0.49
2005	1.65	0.16	0.18	0.39
2006	0.80	0.42	0.29	0.53
2007	0.65	0.85	0.13	0.67
2008	1.03	0.51	0.24	0.84
2009	0.43	0.43	0.11	0.58
2010	0.29	0.51	0.11	0.86
2011	0.23	0.61	0.08	0.88
2012	0.34	0.93	0.03	1.14

Appendix C

Sea Raven - MENH Fall Survey



Silver hake, *Merluccius bilinearis*



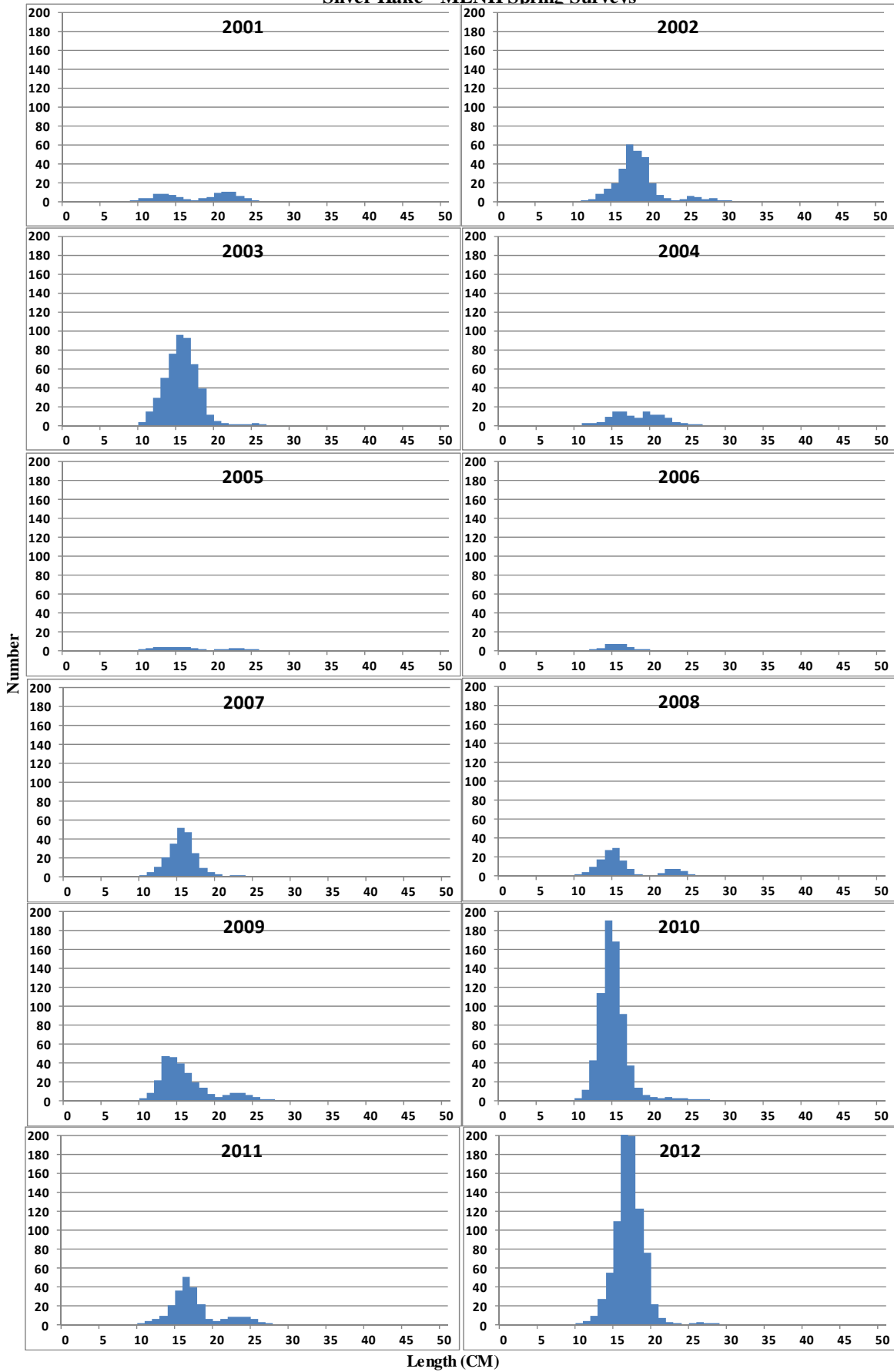
Mean and coefficients of variance for graph overlain on the above map fixed stations not included for silver hake, calculated for regions 1 through 5; strata 1 through 4
SPRING

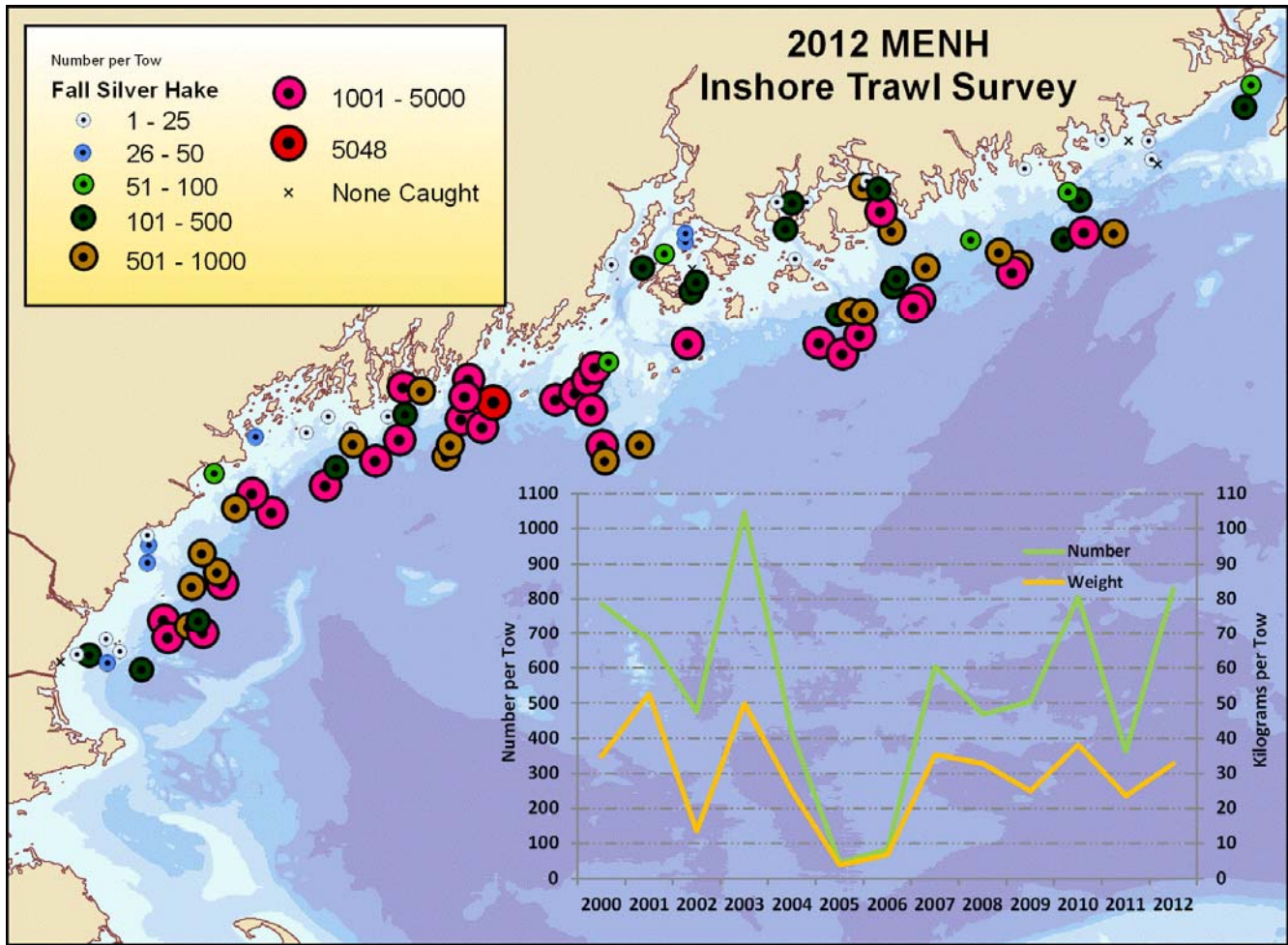
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2001	97.62	0.34	3.68	0.35
2002	302.18	1.00	13.34	0.99
2003	497.84	0.30	11.63	0.31
2004	131.82	0.17	5.26	0.22
2005	43.34	0.19	1.91	0.17
2006	40.60	0.37	1.58	0.41
2007	223.16	0.76	5.68	0.79
2008	142.90	0.27	4.67	0.32
2009	277.91	0.27	8.59	0.29
2010	702.43	0.37	15.33	0.33
2011	243.92	0.22	9.21	0.23
2012	854.53	0.84	25.68	0.69

Appendix C

Silver Hake - MENH Spring Surveys





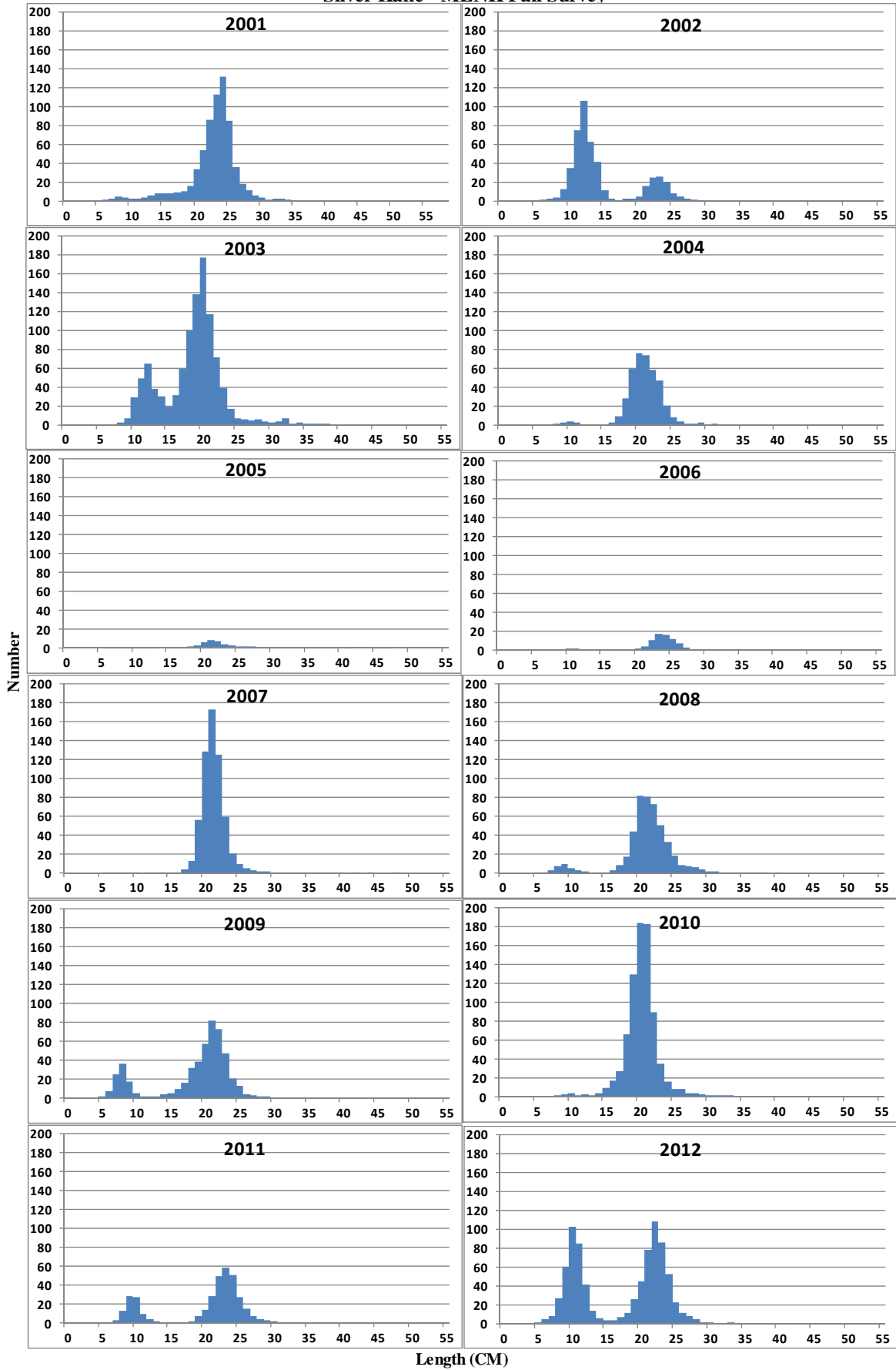
Mean and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for silver hake, calculated for regions 1 through 5; strata 1 through 4
FALL

Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2000	786.14	0.19	34.77	0.21
2001	682.55	0.37	52.62	0.34
2002	476.01	0.47	13.47	0.30
2003	1046.09	0.14	49.97	0.15
2004	413.66	0.31	24.85	0.33
2005	44.91	0.24	3.77	0.30
2006	83.14	0.33	6.76	0.41
2007	605.57	0.28	35.35	0.30
2008	467.93	0.35	32.77	0.39
2009	504.72	0.26	24.88	0.28
2010	806.34	0.20	38.16	0.20
2011	361.96	0.17	23.51	0.19
2012	829.66	0.20	32.76	0.25

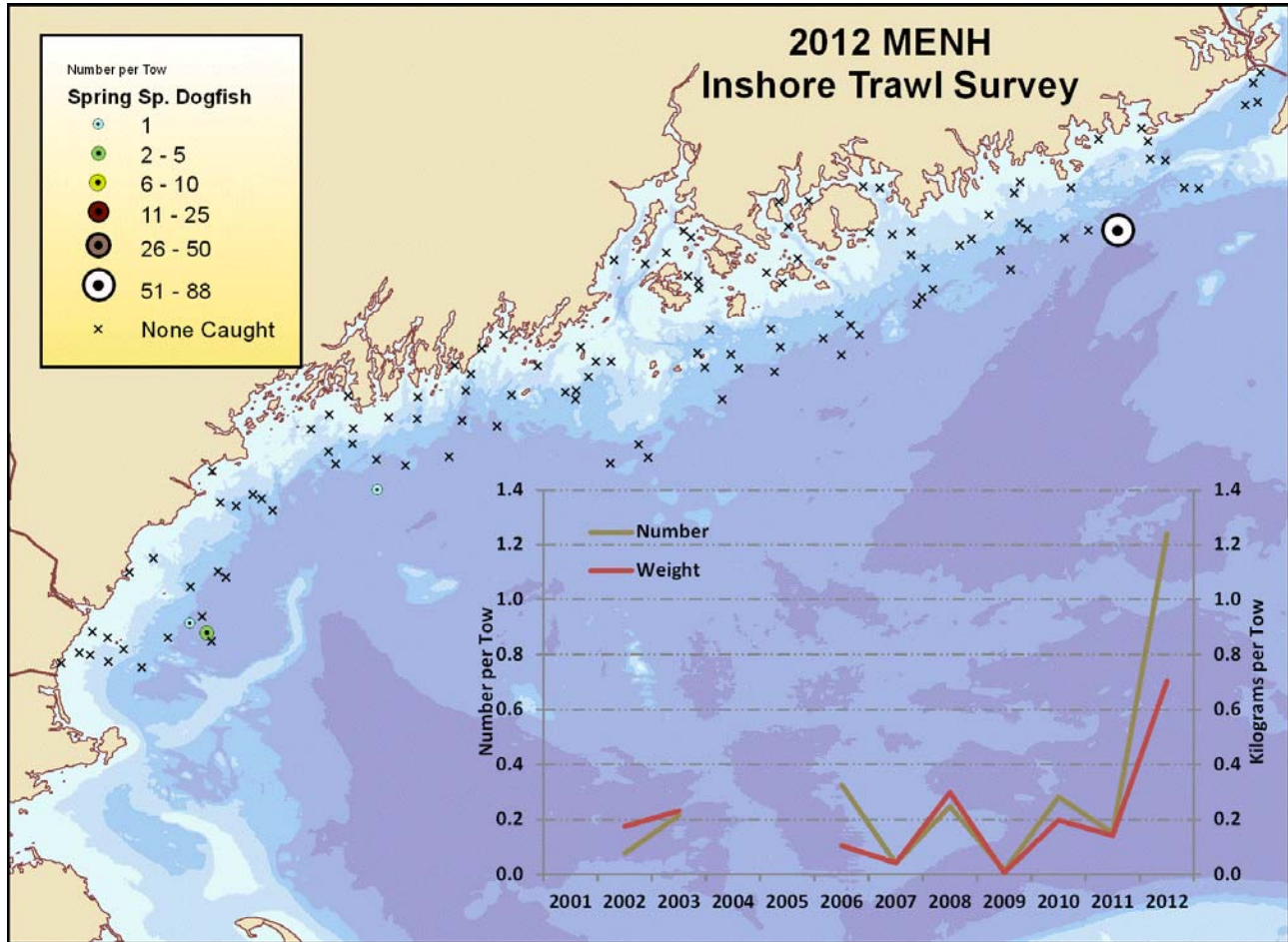
Appendix C

Silver Hake - MENH Fall Survey



Spiny dogfish, *Squalus acanthias*

Dogfish historically are more abundant in the fall surveys. This spring approximately 95 were seen in total with 88 of those caught in a single station off of Jonesport, ME.



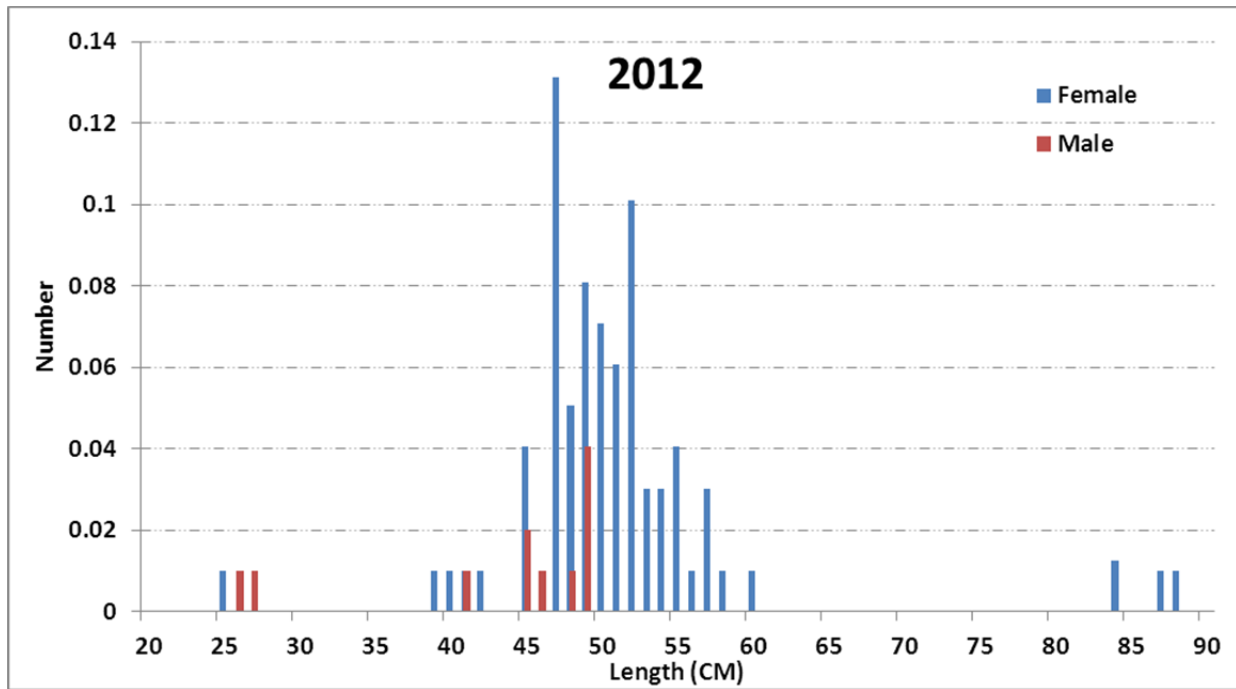
Mean and coefficients of variance for graph overlain on the above map
 fixed stations not included

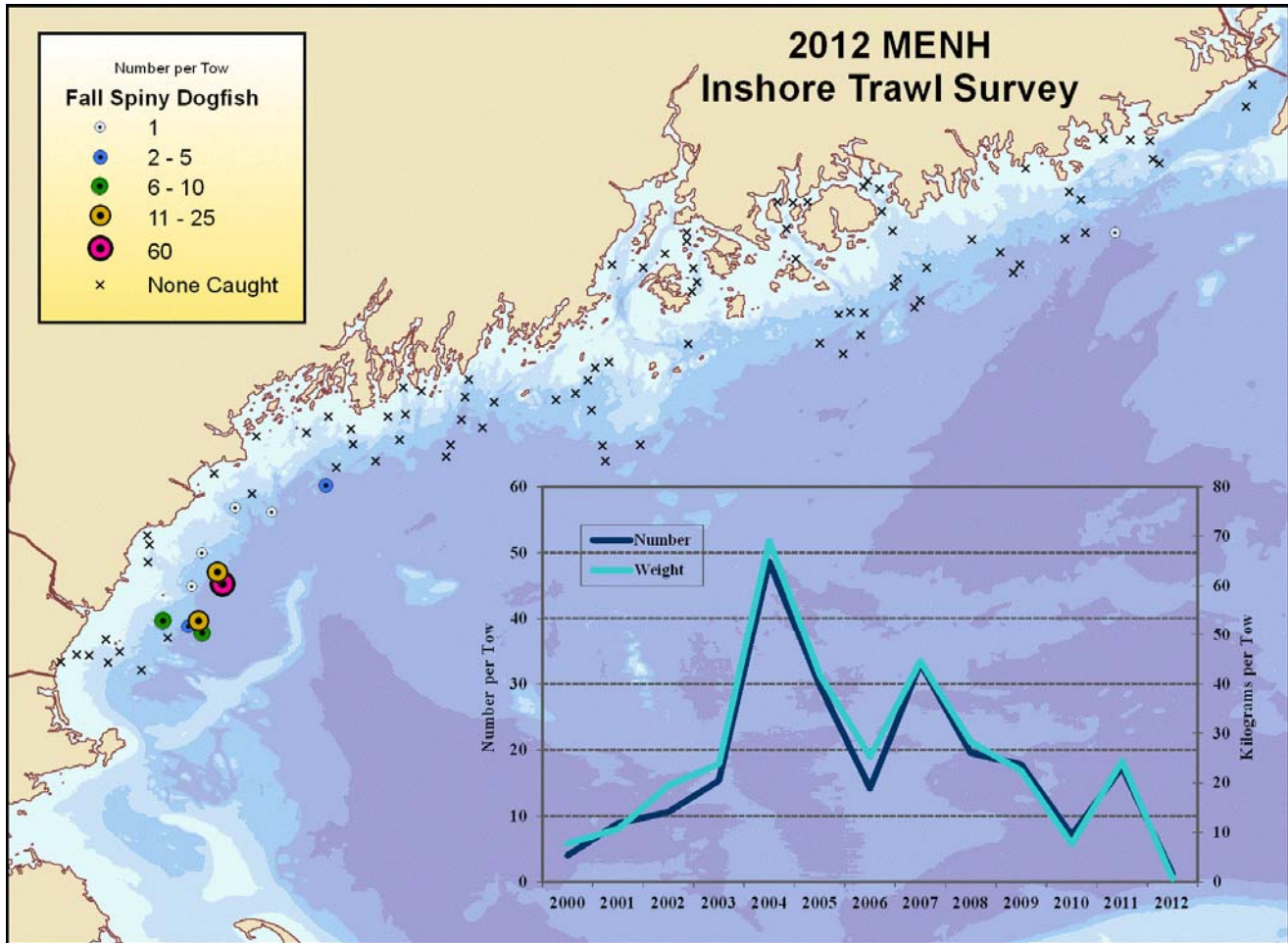
for dogs, calculated for regions 1 through 5; strata 1 through 4
 SPRING

Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001				
2002	0.08	1.42	0.17	1.30
2003	0.21	1.18	0.23	1.65
2004				
2005				
2006	0.33	0.80	0.10	0.92
2007	0.04	1.28	0.04	1.91
2008	0.25	1.14	0.30	1.18
2009	0.01	2.00	0.01	2.00
2010	0.28	2.00	0.20	2.00
2011	0.15	1.50	0.14	1.58
2012	1.24	1.65	0.70	1.52

Size distribution of female and male spiny dogfish seen in the spring 2012 survey. Shown as simple mean number per tow.





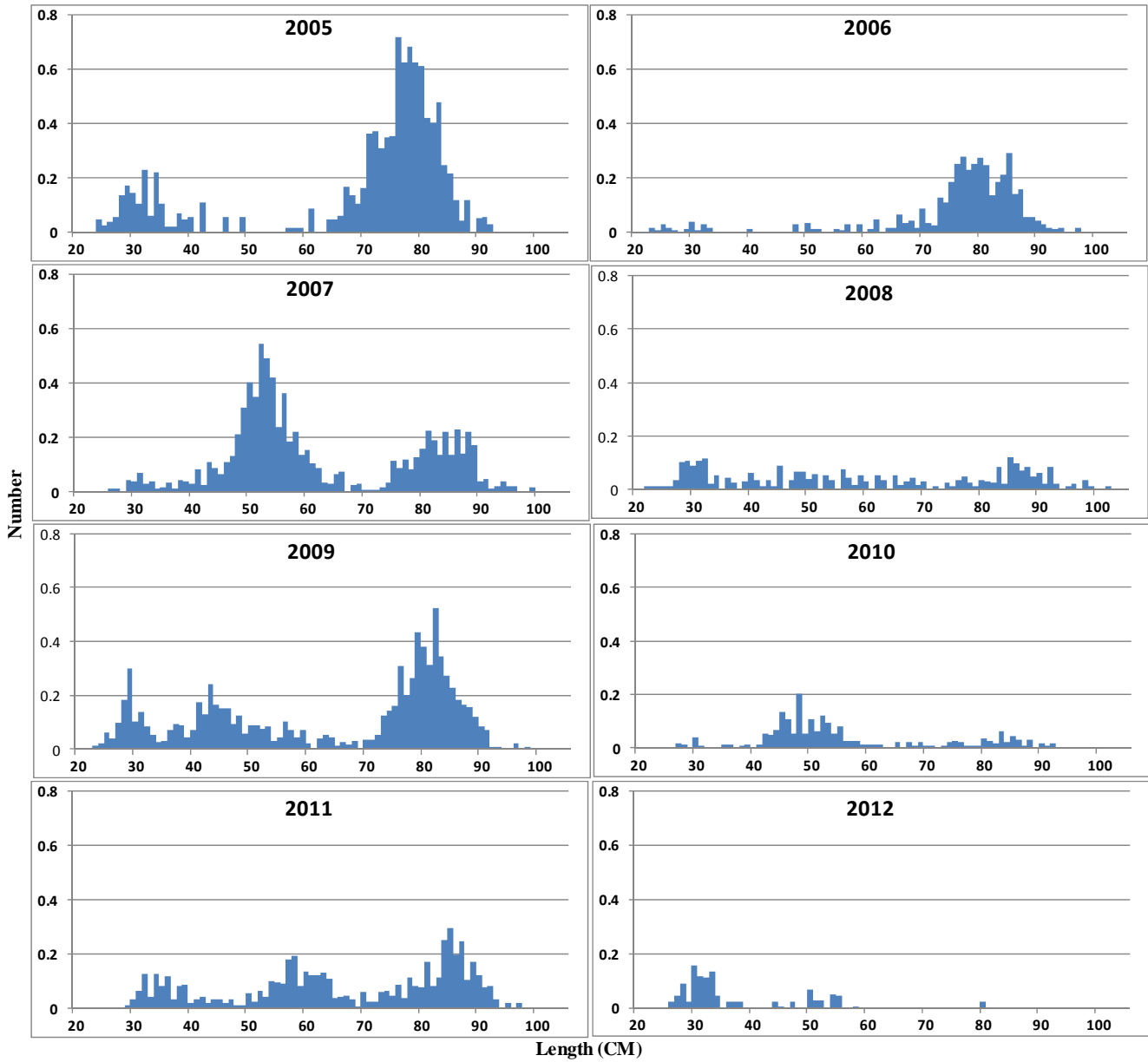
Mean and coefficients of variance for graph overlain on above map
 fixed stations not included
 for dogs, calculated for regions 1 through 5; strata 1 through 4
 FALL

Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2000	4.04	0.32	7.74	0.33
2001	8.85	0.75	10.66	0.69
2002	13.78	0.40	25.29	0.43
2003	15.36	0.37	23.82	0.35
2004	48.61	0.44	69.03	0.46
2005	29.75	0.19	41.79	0.22
2006	14.16	0.32	25.23	0.31
2007	33.07	0.60	44.59	0.60
2008	19.52	0.79	28.25	0.85
2009	17.79	0.61	22.40	0.50
2010	7.08	0.71	7.66	0.48
2011	17.35	0.54	24.39	0.45
2012	1.23	1.01	0.65	0.45

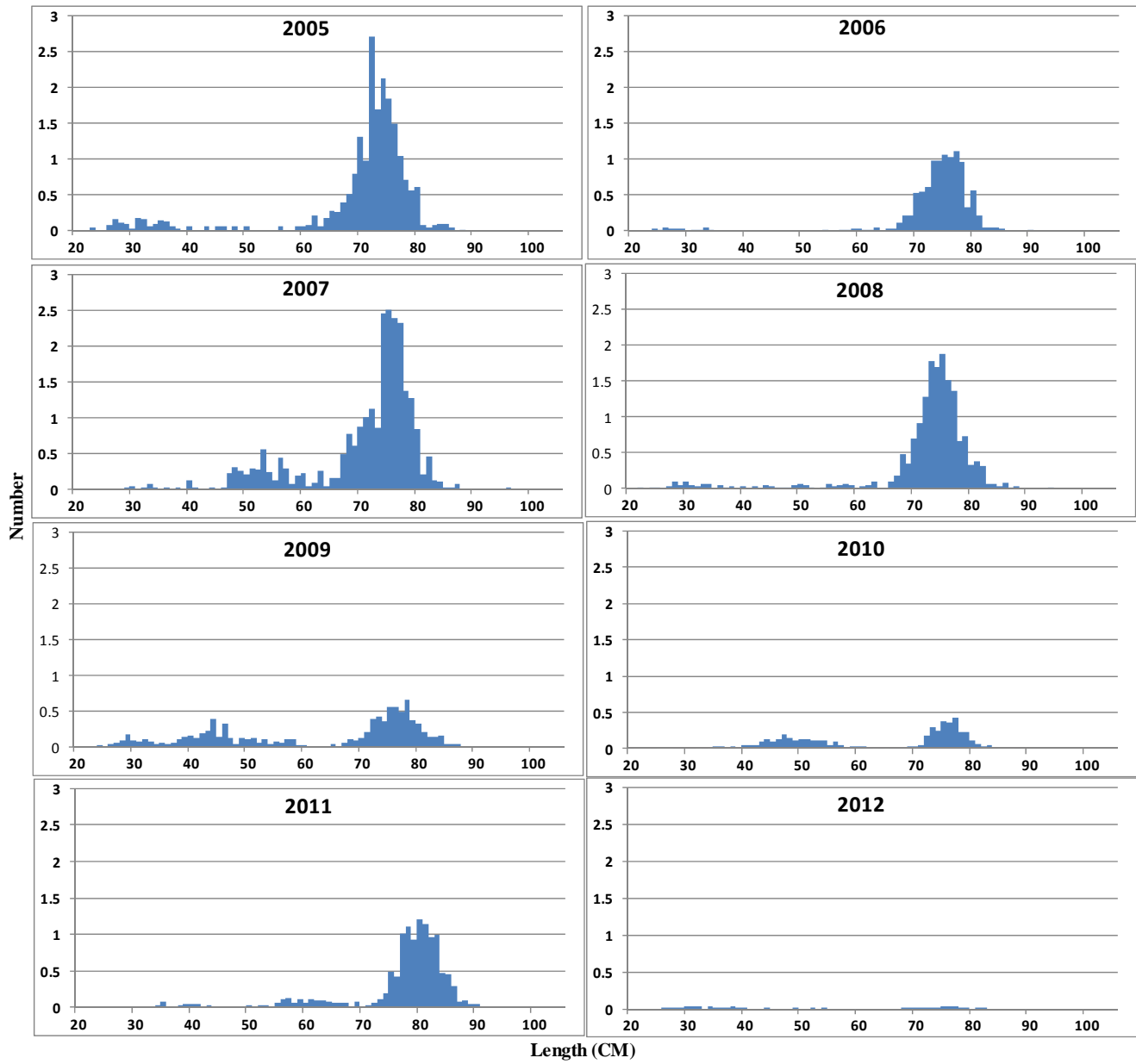
Spiny dogfish have been separated by sex since 2005. Length data before that was sexes combined and is not shown.

Spiny Dogfish Female - MENH Fall Survey

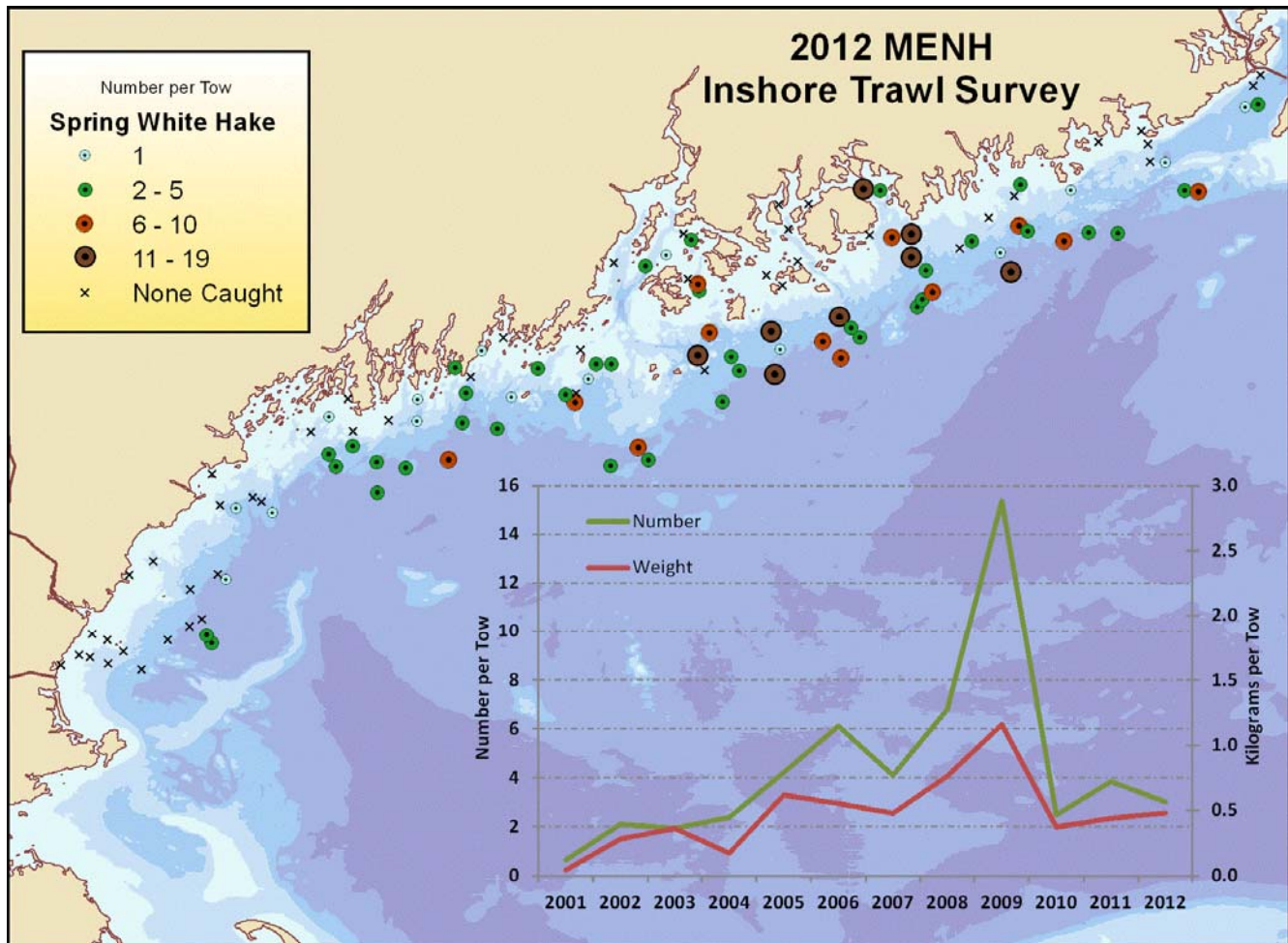


Appendix C

Spiny Dogfish Male - MENH Fall Survey



White hake, *Urophycis tenuis*



Means and coefficients of variance for the graph overlain on the above map fixed stations not included for white hake, calculated for regions 1 through 5; strata 1 through 4

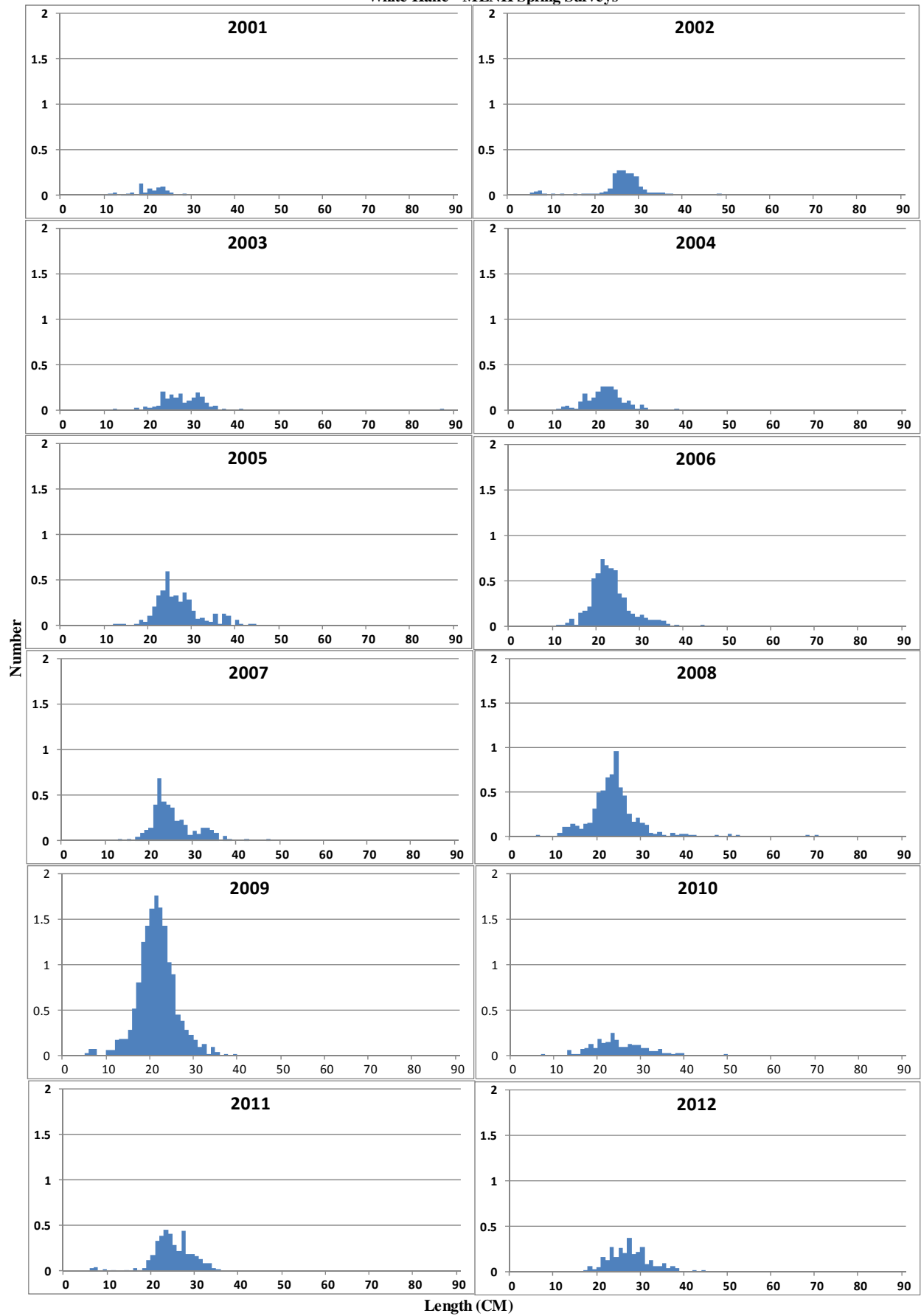
Stratified Mean

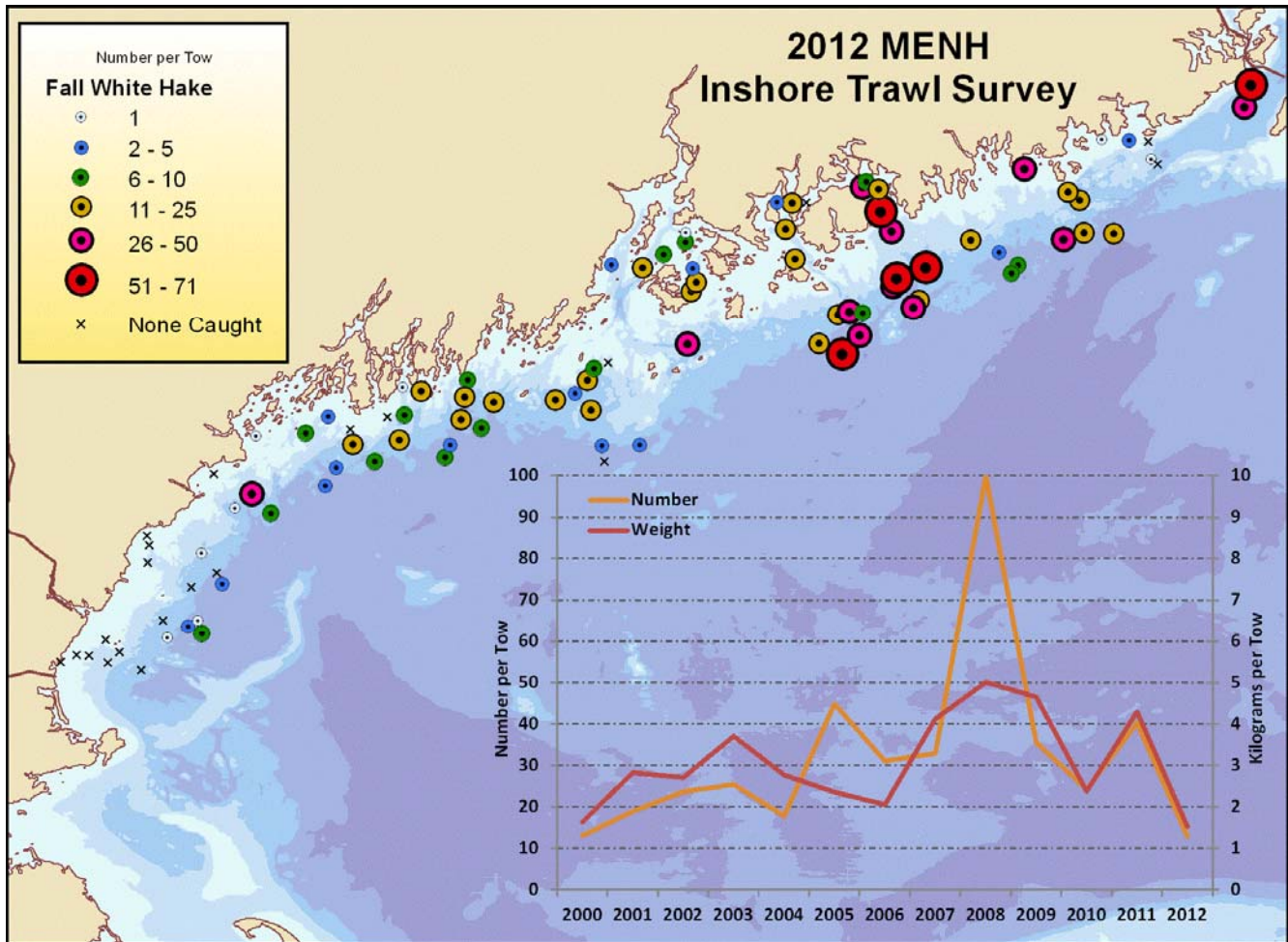
SPRING

	Number Mean	CV	Weight Mean	CV
2001	0.65	0.49	0.04	0.52
2002	2.10	0.49	0.28	0.51
2003	1.94	0.44	0.36	0.53
2004	2.39	0.32	0.17	0.30
2005	4.23	0.31	0.62	0.33
2006	6.12	0.25	0.55	0.27
2007	4.11	0.38	0.48	0.52
2008	6.79	0.26	0.76	0.31
2009	15.38	0.19	1.16	0.24
2010	2.49	0.30	0.37	0.78
2011	3.85	0.29	0.44	0.30
2012	3.02	0.25	0.48	0.31

Appendix C

White Hake - MENH Spring Surveys





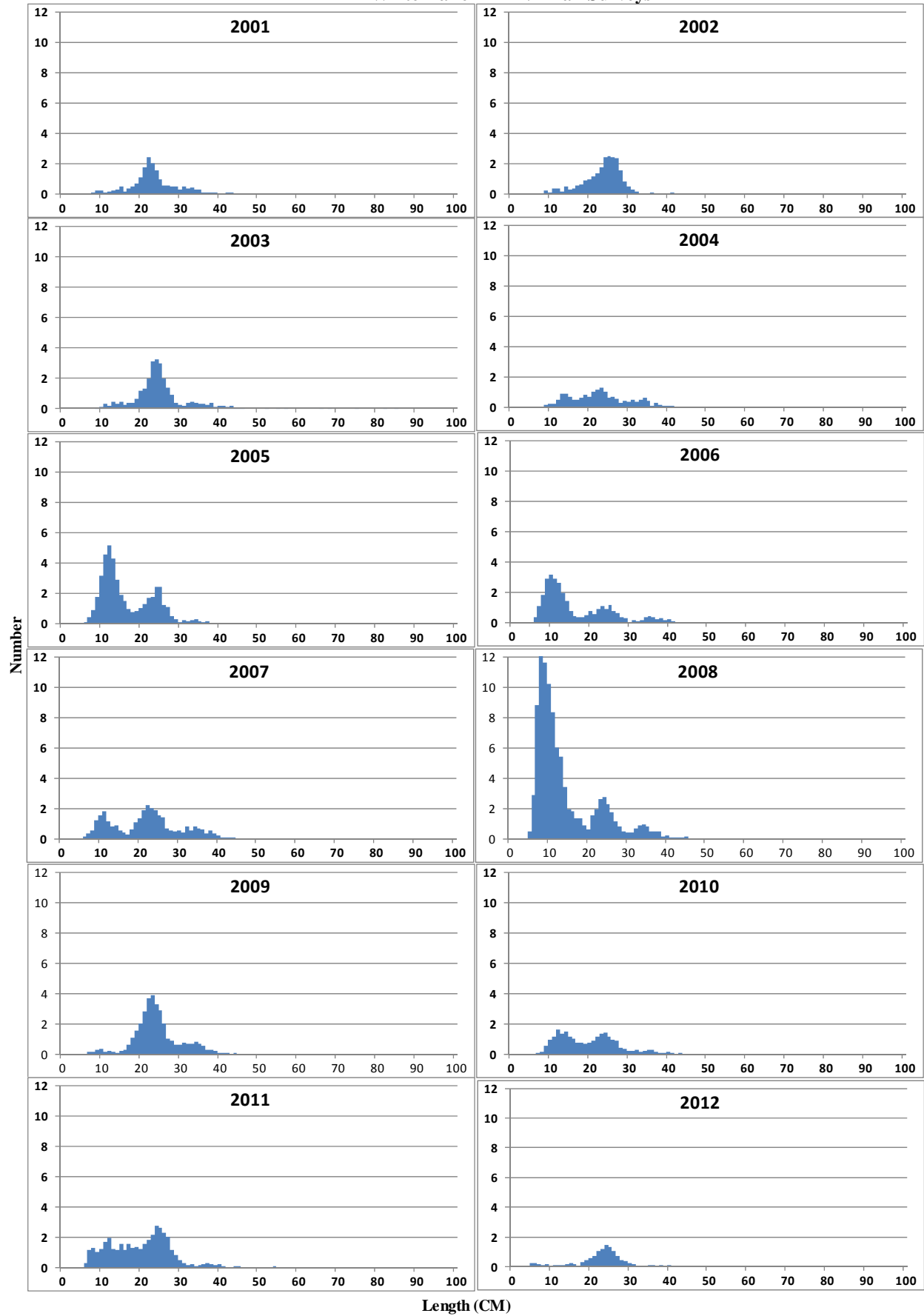
Means and coefficients of variance for the graph overlain on the above map
 fixed stations not included
 for white hake, calculated for regions 1 through 5; strata 1 through 4
 Stratified Mean

FALL

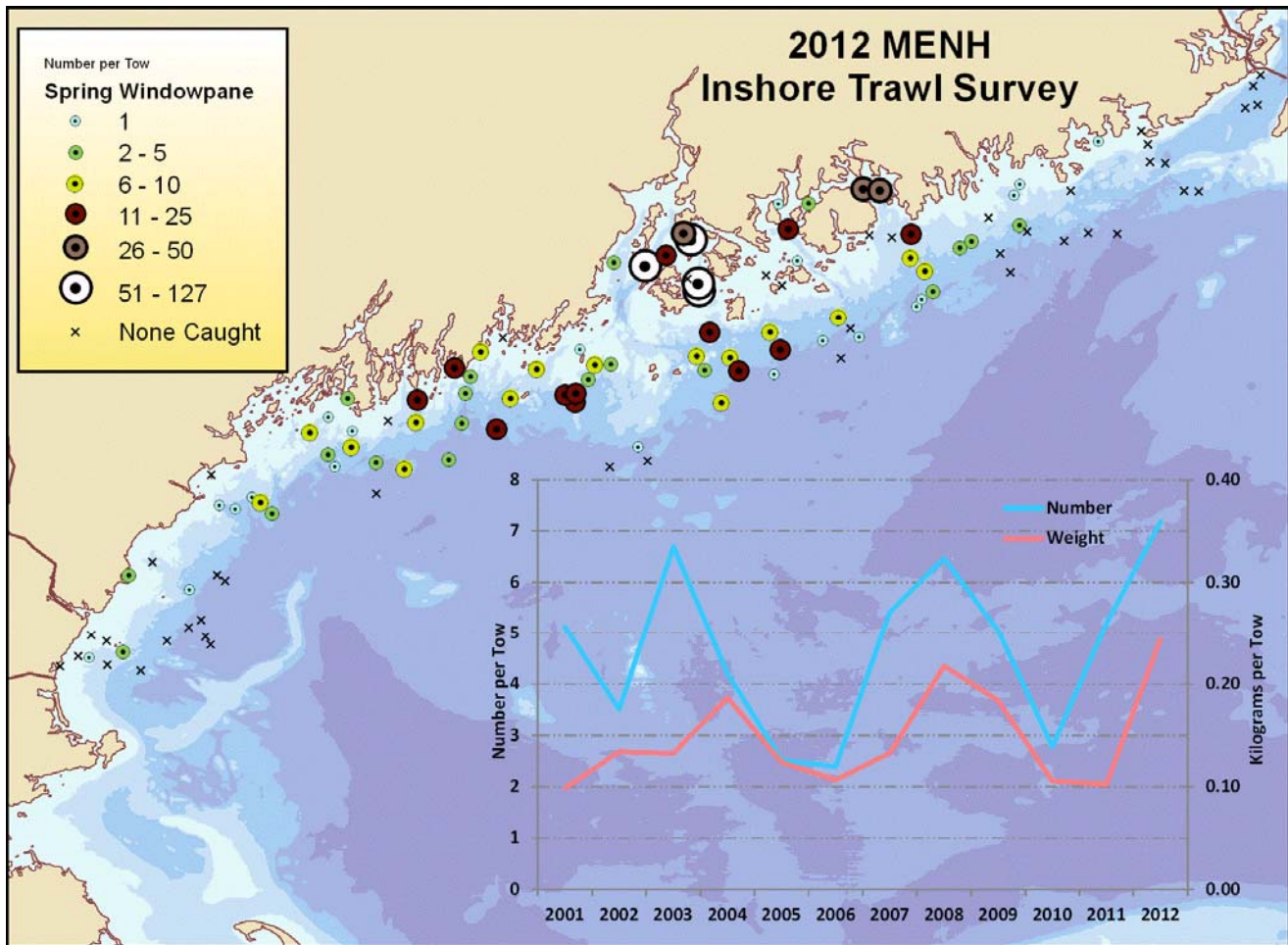
	Number Mean	CV	Weight Mean	CV
2000	13.03	0.21	1.63	0.22
2001	18.90	0.33	2.83	0.28
2002	23.65	0.18	2.71	0.22
2003	25.41	0.20	3.70	0.21
2004	17.81	0.28	2.77	0.23
2005	44.82	0.12	2.35	0.15
2006	31.06	0.23	2.05	0.19
2007	32.90	0.17	4.12	0.25
2008	99.93	0.15	5.00	0.11
2009	35.54	0.13	4.65	0.16
2010	24.20	0.20	2.37	0.23
2011	40.23	0.12	4.30	0.19
2012	12.88	0.25	1.52	0.24

Appendix C

White Hake - MENH Fall Surveys



Windowpane flounder, *Scophthalmus aquosus*

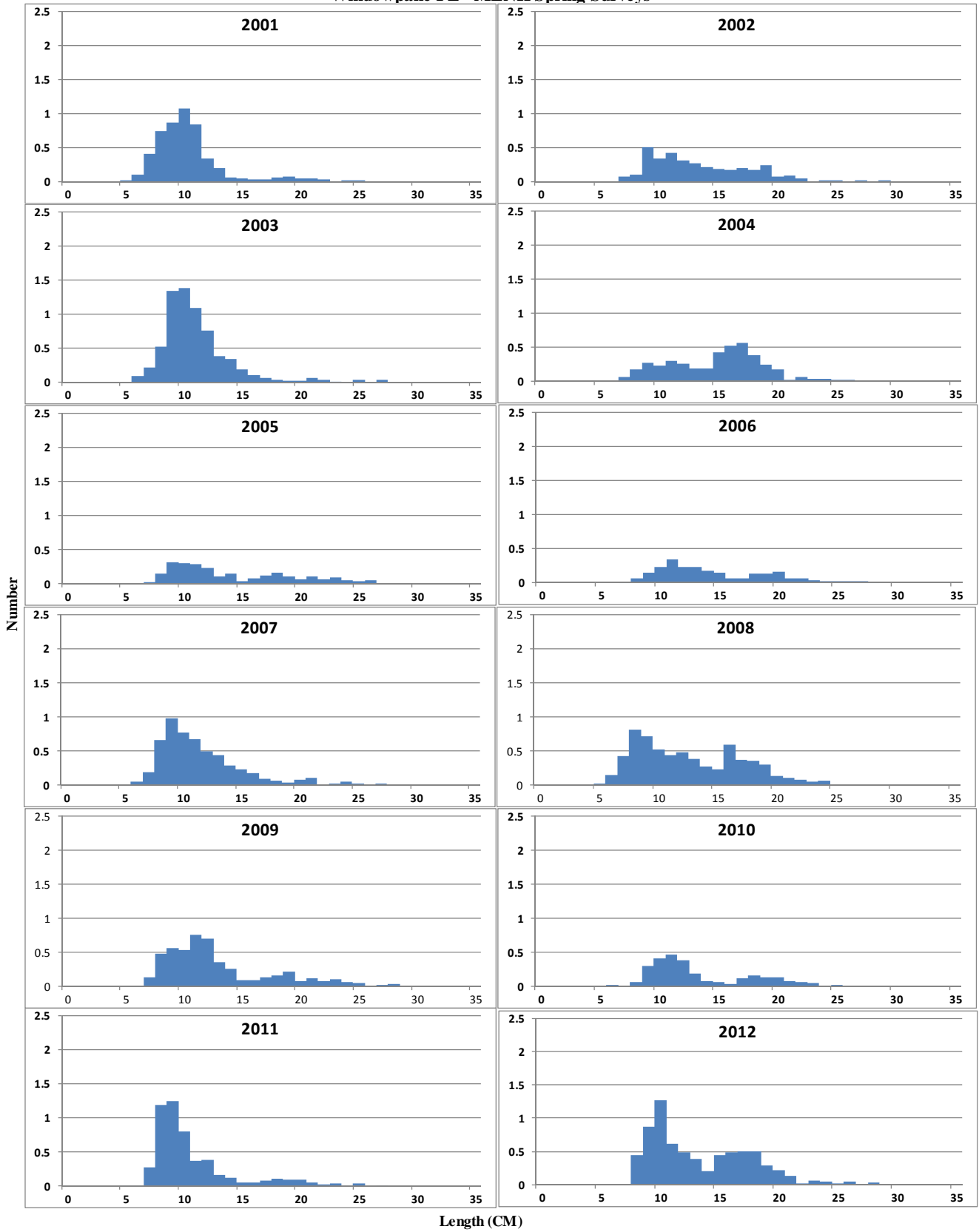


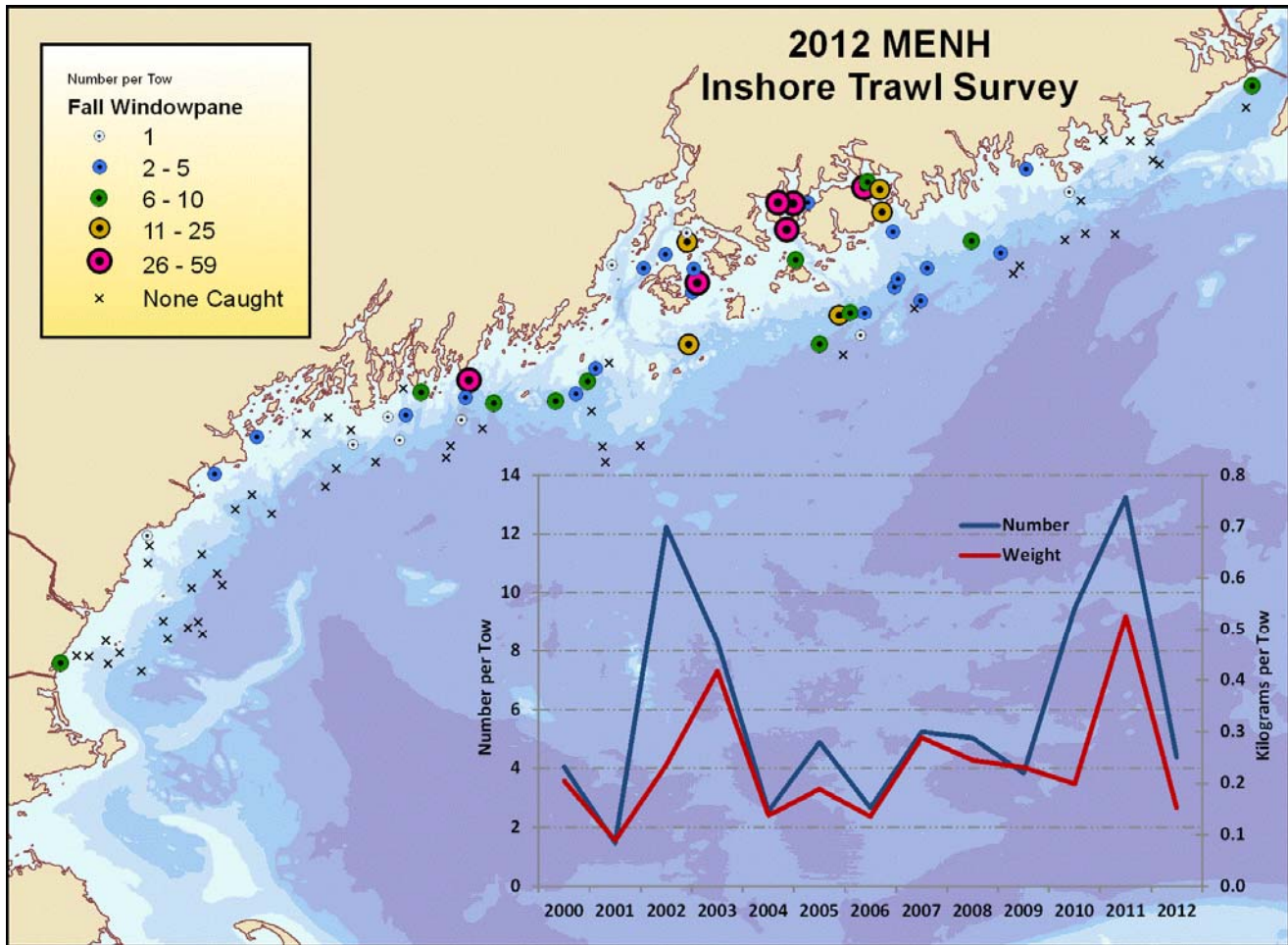
Means and coefficients of variance for the graph overlain on the above map fixed stations not included for windowpane, calculated for regions 1 through 5; strata 1 through 4
SPRING
 Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	5.12	0.63	0.10	0.40
2002	3.51	0.33	0.13	0.37
2003	6.70	0.30	0.13	0.30
2004	4.20	0.30	0.19	0.27
2005	2.51	0.35	0.12	0.34
2006	2.39	0.44	0.11	0.33
2007	5.42	0.40	0.13	0.28
2008	6.47	0.43	0.22	0.26
2009	5.05	0.34	0.18	0.27
2010	2.78	0.36	0.11	0.32
2011	5.19	0.43	0.10	0.33
2012	7.18	0.44	0.24	0.33

Appendix C

Windowpane FL - MENH Spring Surveys





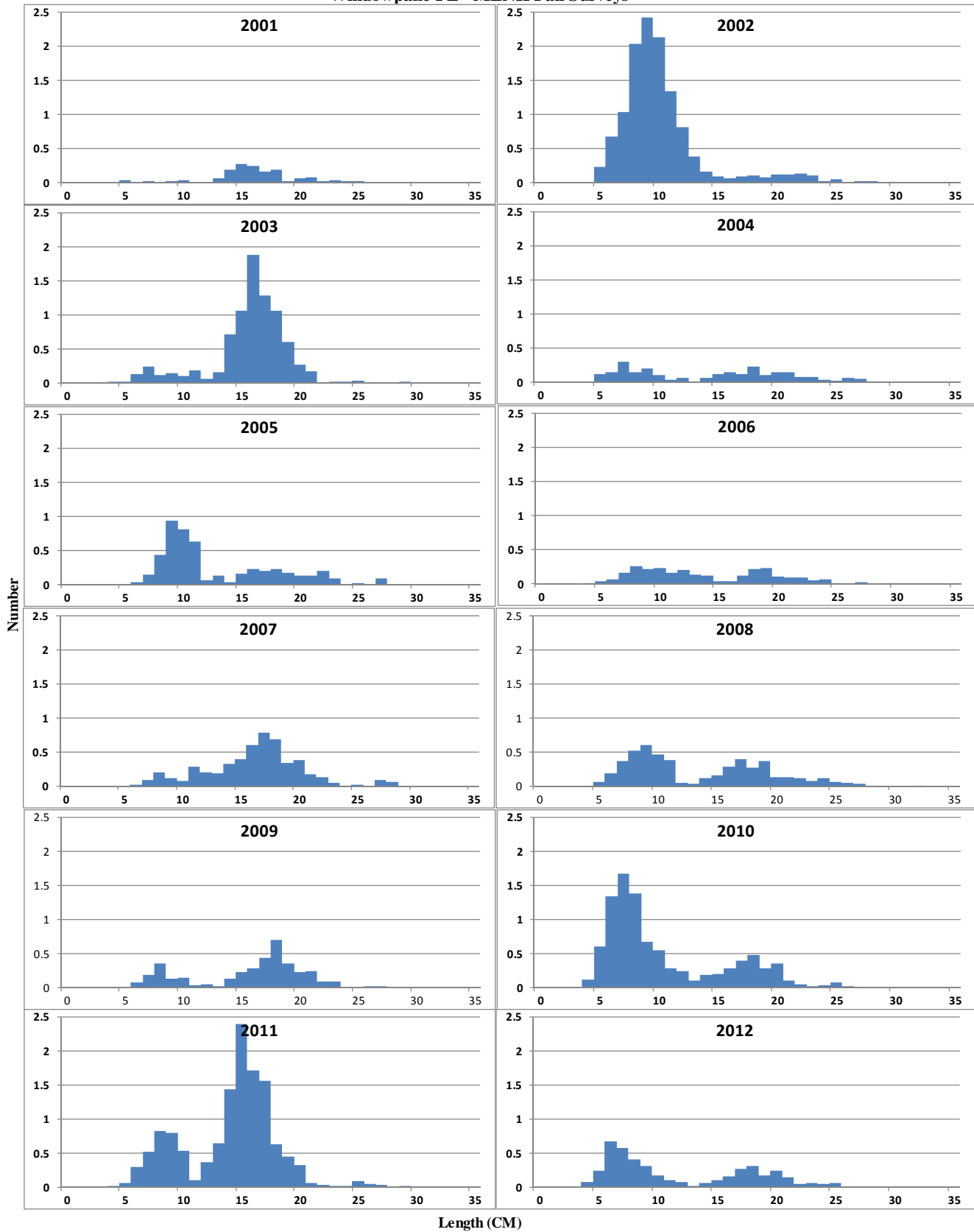
Means and coefficients of variance for the graph overlain on the above map
 fixed stations not included
 for windowpane, calculated for regions 1 through 5; strata 1 through 4
 FALL

Stratified Mean

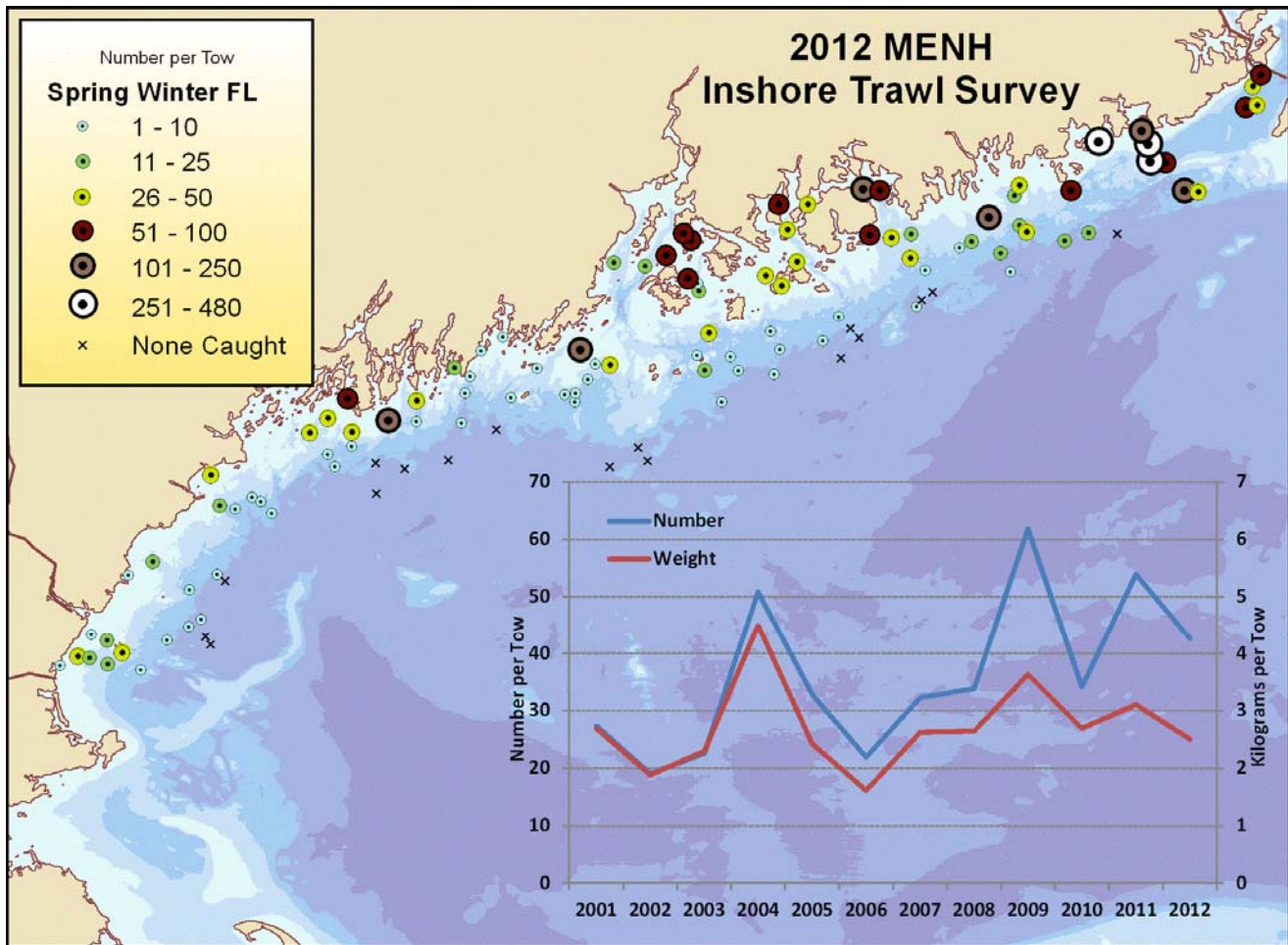
	Number		Weight	
	Mean	CV	Mean	CV
2000	4.05	0.35	0.20	0.30
2001	1.47	0.58	0.09	0.71
2002	12.24	0.47	0.24	0.38
2003	8.31	0.23	0.42	0.18
2004	2.54	0.54	0.14	0.36
2005	4.90	0.49	0.19	0.33
2006	2.66	0.27	0.14	0.43
2007	5.24	0.39	0.29	0.31
2008	5.03	0.31	0.24	0.26
2009	3.83	0.27	0.23	0.29
2010	9.47	0.74	0.20	0.23
2011	13.25	0.28	0.53	0.23
2012	4.38	0.33	0.15	0.37

Appendix C

Windowpane FL - MENH Fall Surveys



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



Means and coefficients of variance for the graph overlain on the above map fixed stations not included for winter flounder, calculated for regions 1 through 5; strata 1 through 4

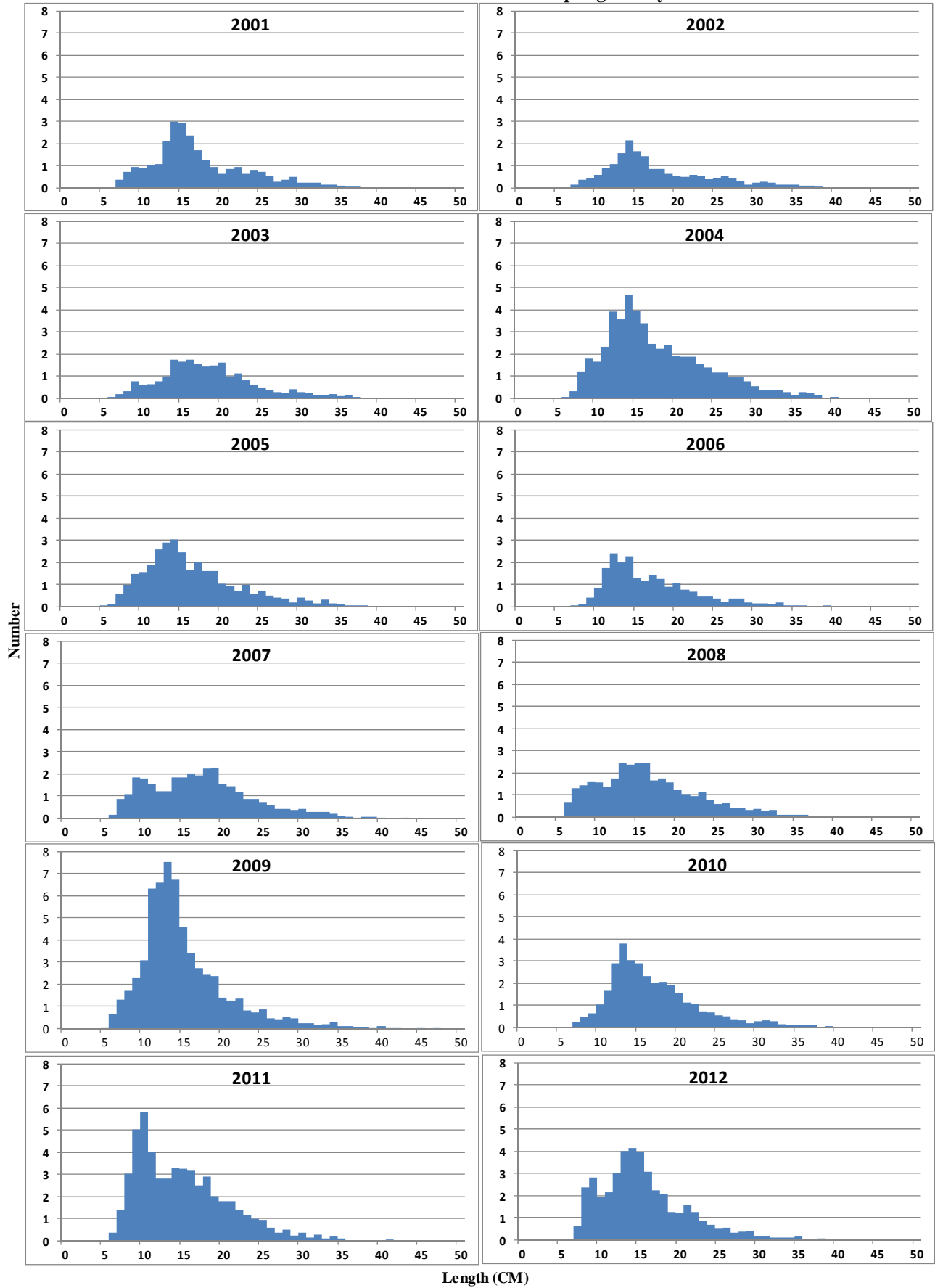
SPRING

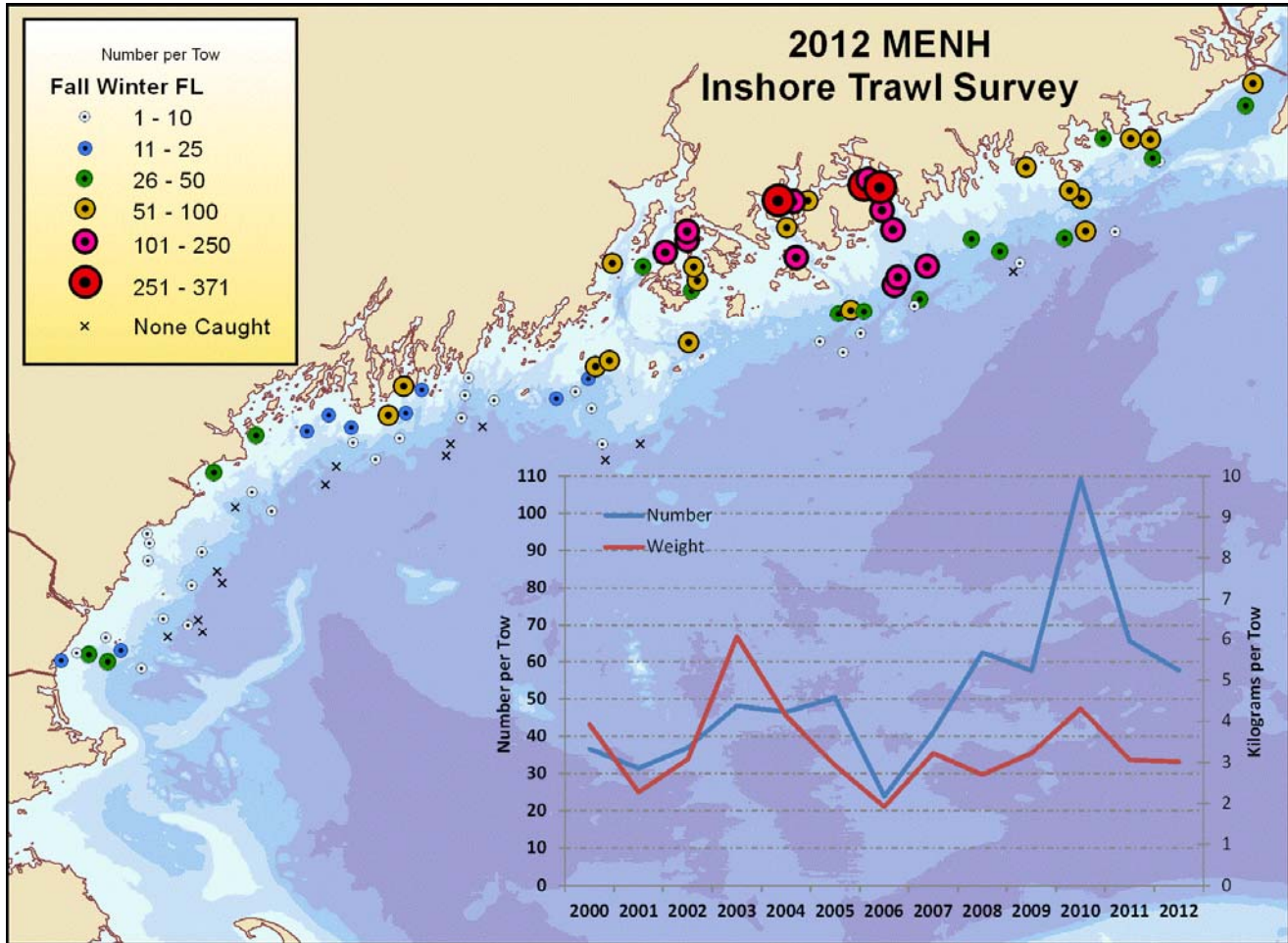
Stratified Mean

	Number Mean	CV	Mean	Weight CV
2001	27.40	0.31	2.69	0.29
2002	19.04	0.31	1.88	0.33
2003	22.57	0.29	2.30	0.42
2004	50.83	0.26	4.50	0.40
2005	32.88	0.22	2.43	0.19
2006	21.94	0.50	1.62	0.47
2007	32.29	0.28	2.63	0.24
2008	33.89	0.29	2.65	0.29
2009	61.85	0.34	3.64	0.24
2010	34.19	0.37	2.69	0.33
2011	53.90	0.23	3.11	0.43
2012	42.62	0.35	2.51	0.38

Appendix C

Winter Flounder - MENH Spring Surveys





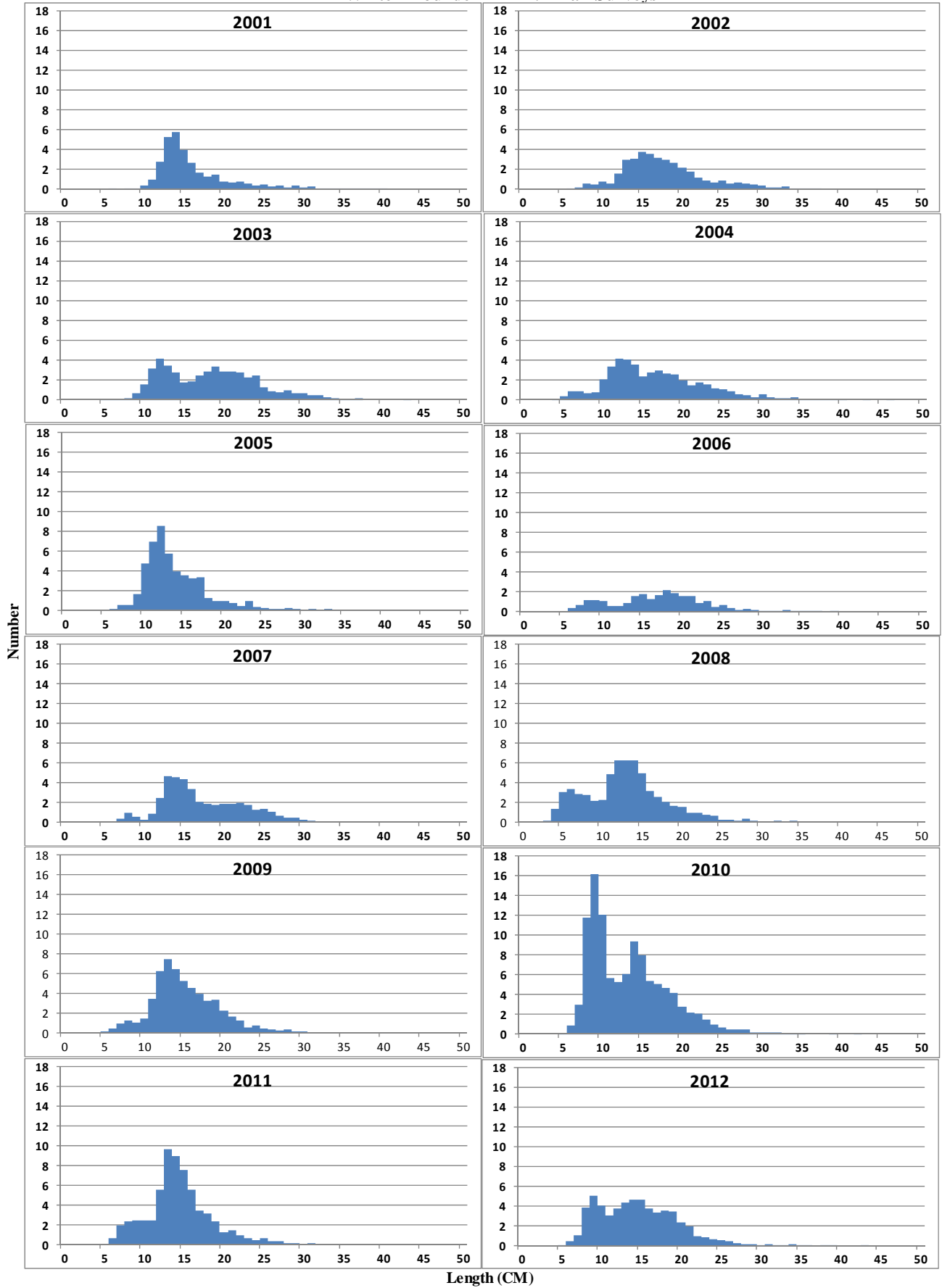
Means and coefficients of variance for the graph overlain on the above map
 fixed stations not included
 for winter flounder, calculated for regions 1 through 5; strata 1 through 4
FALL

Stratified Mean

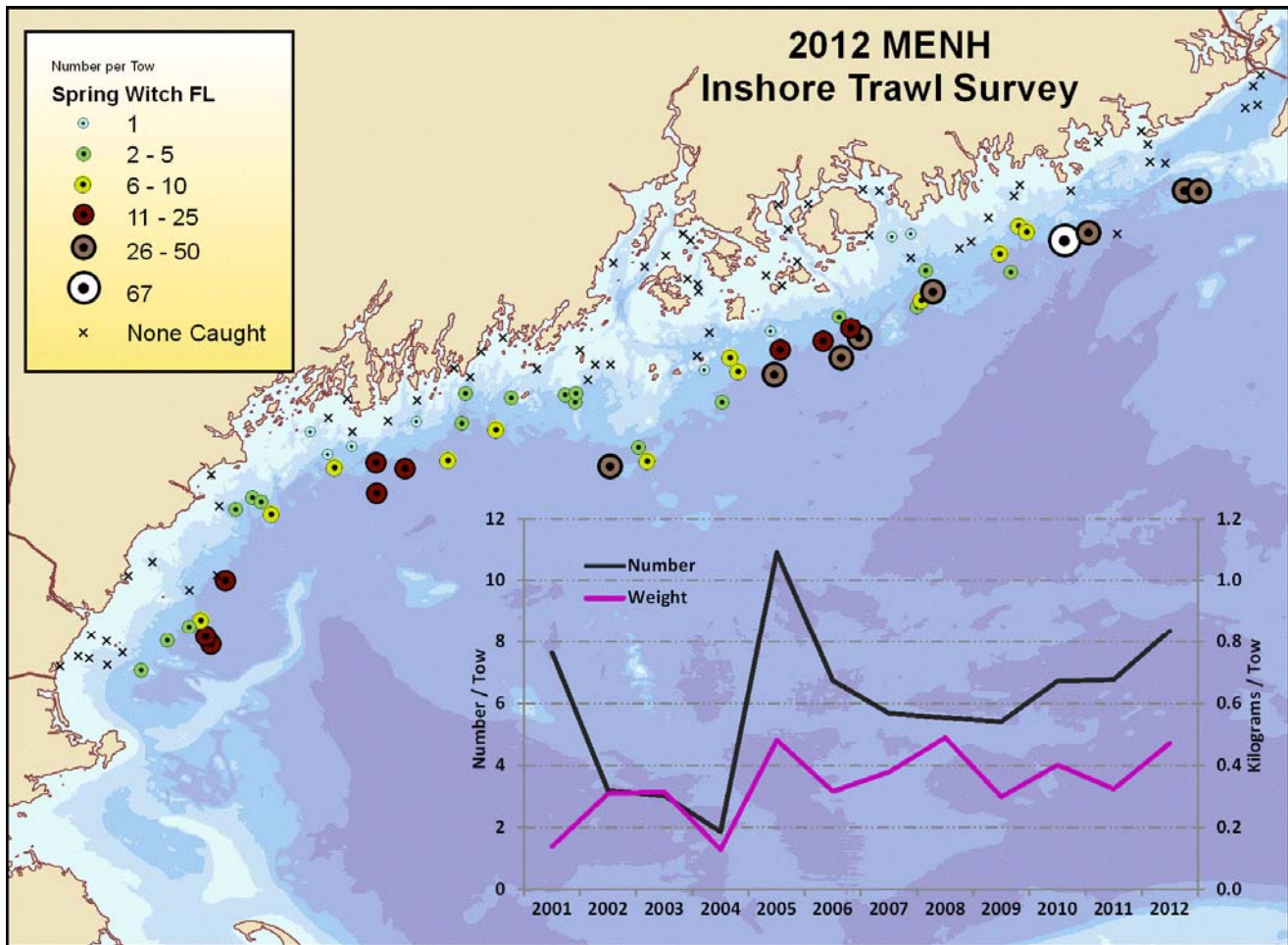
	Number Mean	CV	Mean	Weight CV
2000	36.59	0.20	3.92	0.26
2001	31.38	0.33	2.28	0.20
2002	36.92	0.42	3.08	0.59
2003	48.15	0.19	6.06	0.06
2004	46.45	0.34	4.14	0.35
2005	50.32	0.09	2.92	0.15
2006	23.90	0.26	1.92	0.25
2007	41.18	0.35	3.22	0.50
2008	62.46	0.16	2.70	0.16
2009	57.57	0.27	3.22	0.30
2010	109.25	0.32	4.31	0.19
2011	65.50	0.15	3.06	0.13
2012	57.60	0.20	3.01	0.18

Appendix C

Winter Flounder - MENH Fall Surveys



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

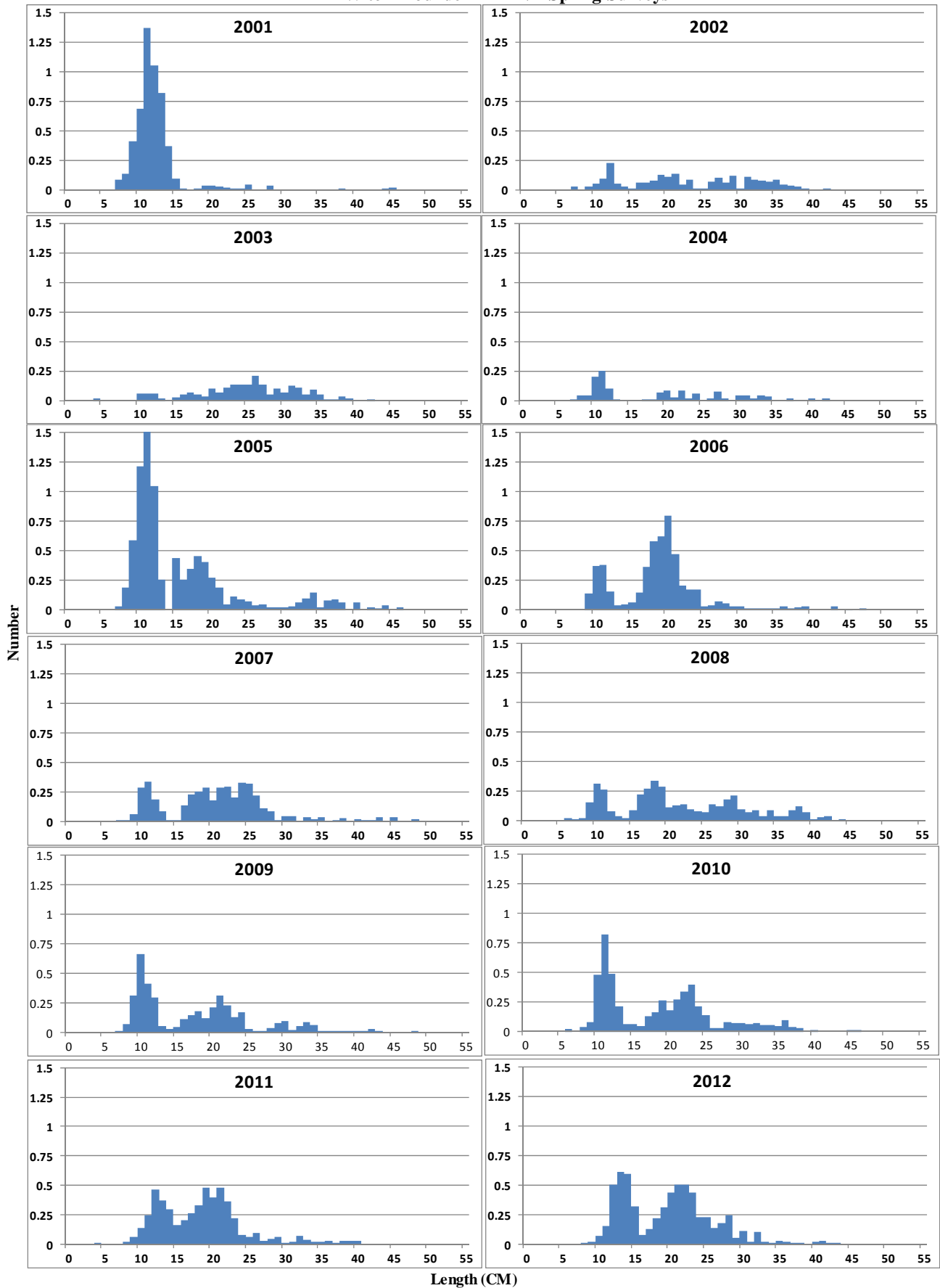


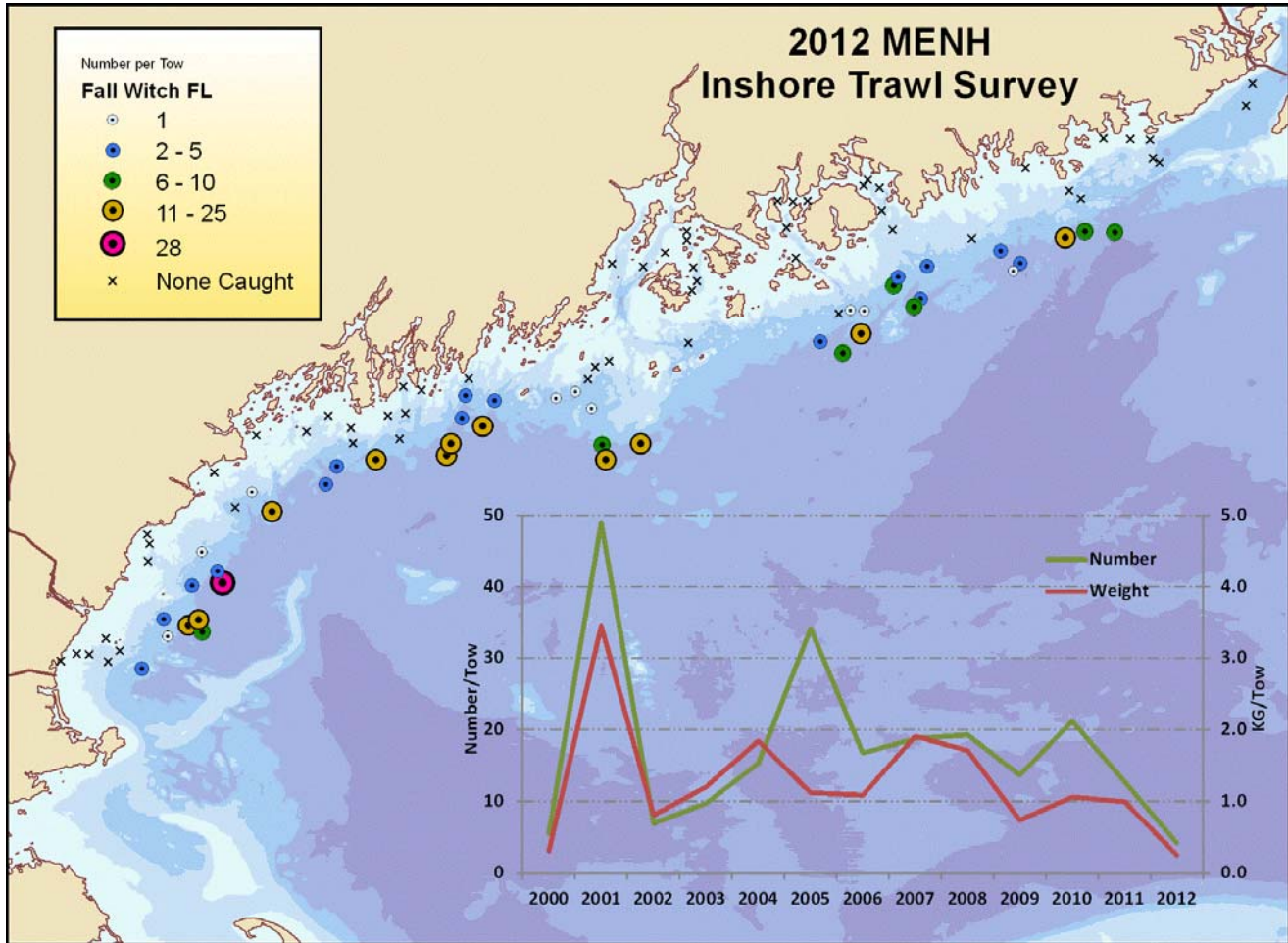
Means and coefficients of variance for the graph overlain on the above map fixed stations not included for witch flounder, calculated for regions 1 through 5; strata 2 through 4
SPRING
 Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	7.65	0.68	0.14	0.72
2002	3.18	1.17	0.31	1.73
2003	3.02	0.78	0.31	0.77
2004	1.86	0.43	0.13	0.53
2005	10.91	0.40	0.48	0.48
2006	6.74	0.61	0.32	0.75
2007	5.69	0.42	0.38	0.39
2008	5.54	0.43	0.49	0.57
2009	5.41	0.47	0.30	0.71
2010	6.72	0.52	0.40	0.62
2011	6.78	0.39	0.32	0.50
2012	8.36	0.51	0.47	0.67

Appendix C

Witch Flounder - MENH Spring Surveys





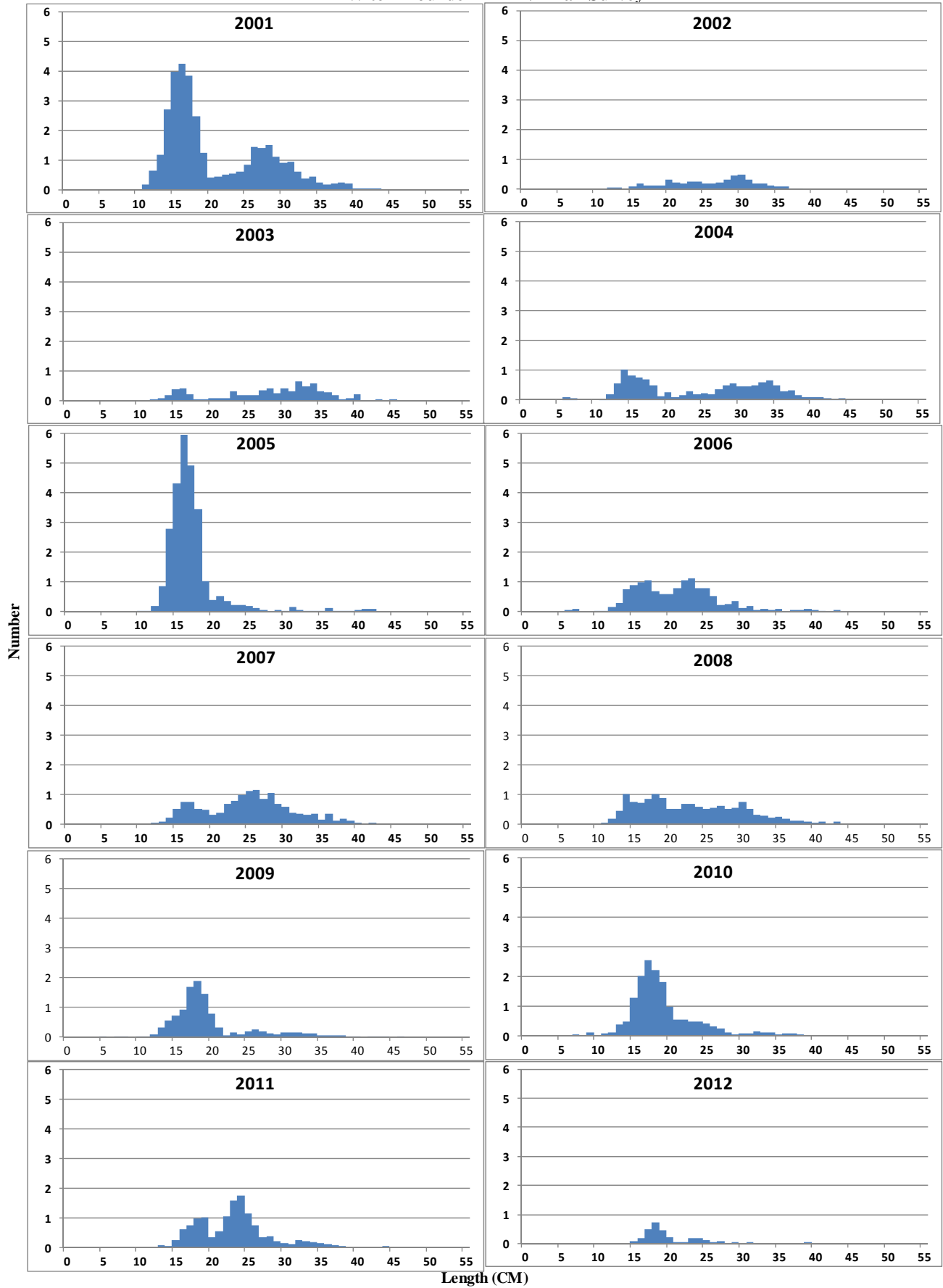
Means and coefficients of variance for the graph overlain on the above map
 fixed stations not included
 for witch flounder, calculated for regions 1 through 5; strata 2 through 4
FALL

Stratified Mean

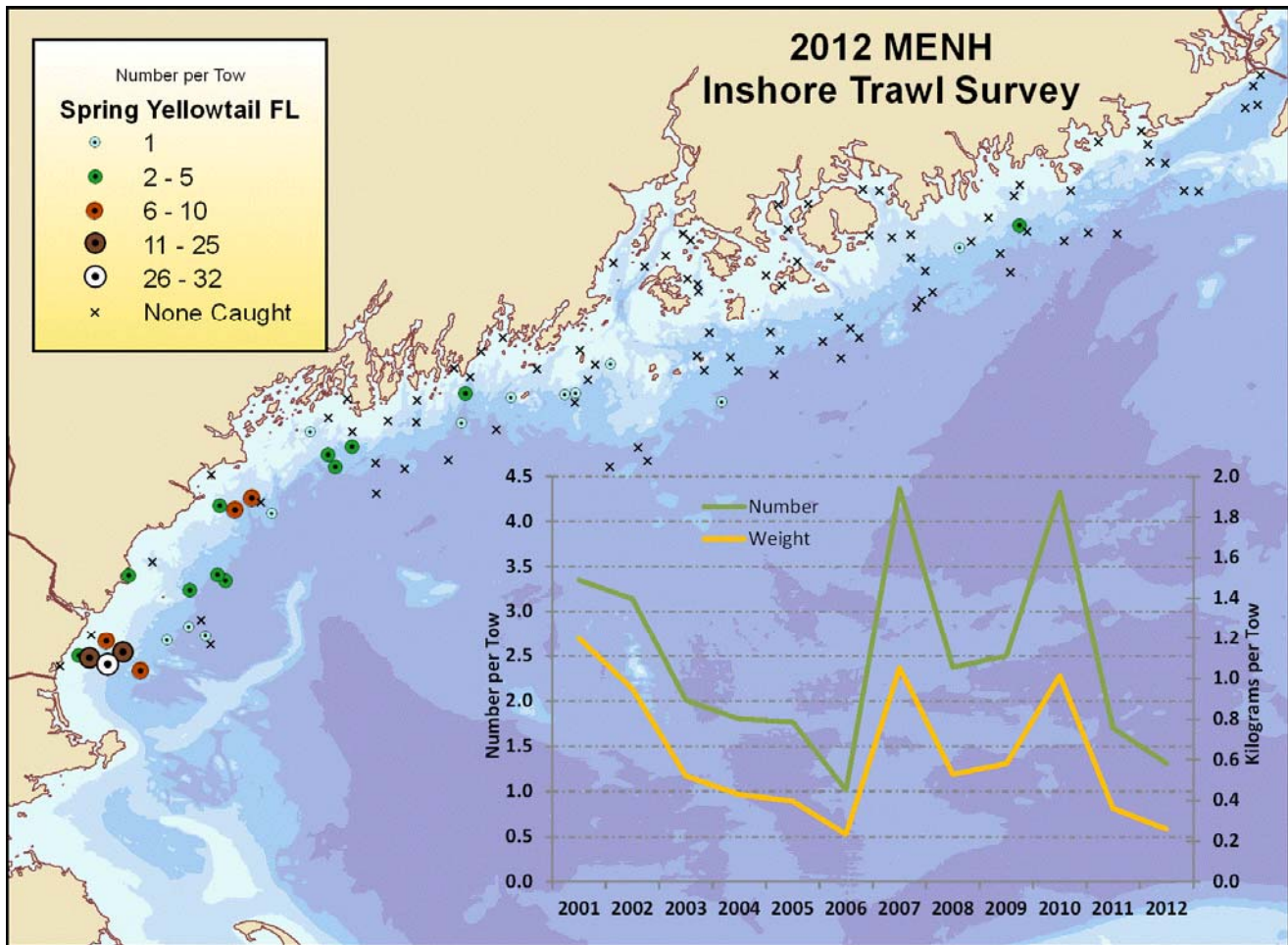
	Number		Weight	
	Mean	CV	Mean	CV
2000	5.52	0.46	0.31	0.45
2001	48.96	0.31	3.44	0.46
2002	6.94	0.56	0.81	0.62
2003	9.71	0.40	1.20	0.52
2004	15.29	0.49	1.84	0.35
2005	34.08	0.30	1.12	0.28
2006	16.73	0.31	1.09	0.23
2007	18.76	0.41	1.91	0.57
2008	19.27	0.33	1.71	0.49
2009	13.66	0.31	0.74	0.37
2010	21.15	0.32	1.06	0.35
2011	12.77	0.35	1.00	0.49
2012	4.25	0.35	0.26	0.64

Appendix C

Witch Flounder - MENH Fall Survey



Yellowtail flounder, *Limanda ferruginea*

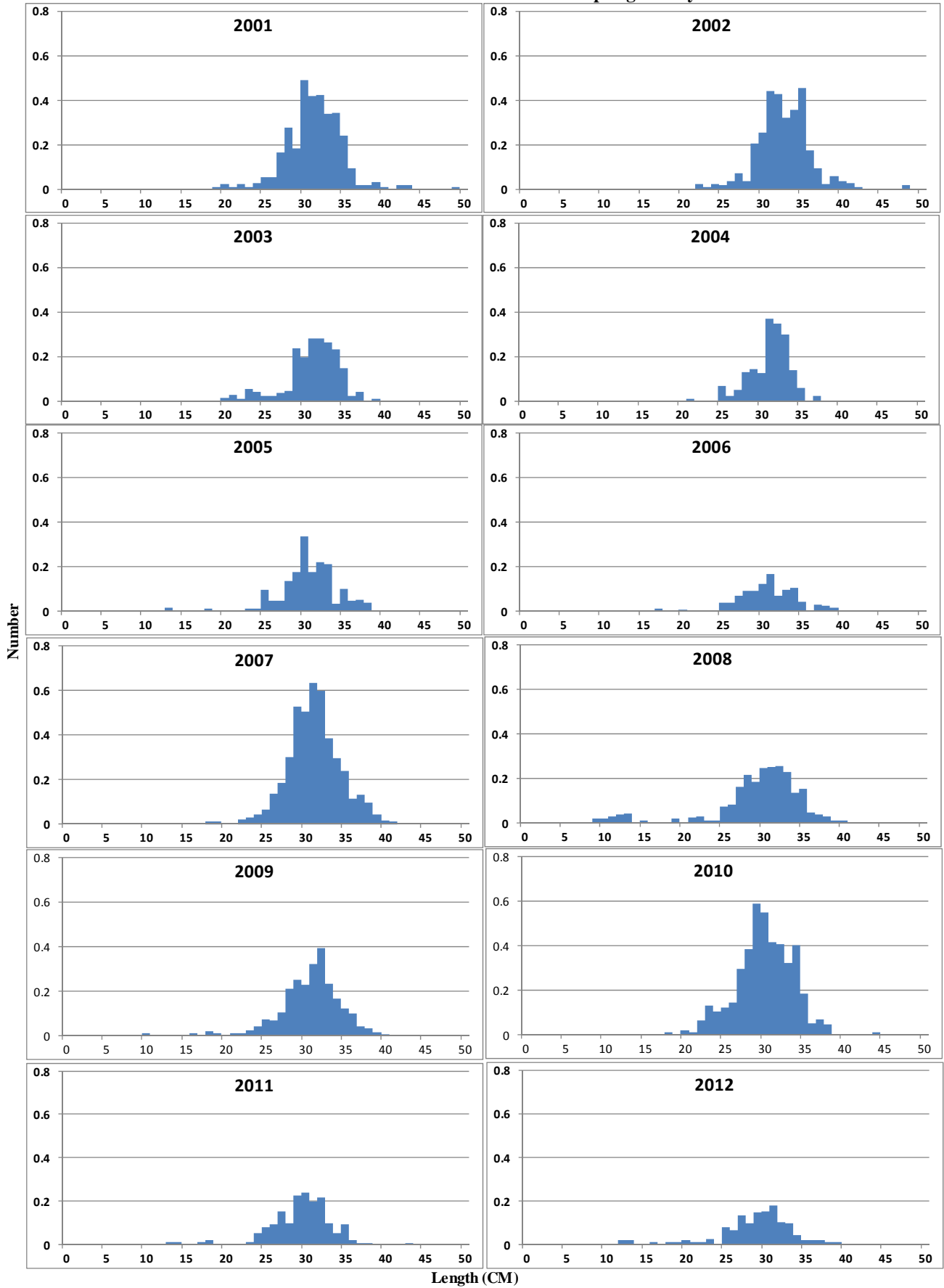


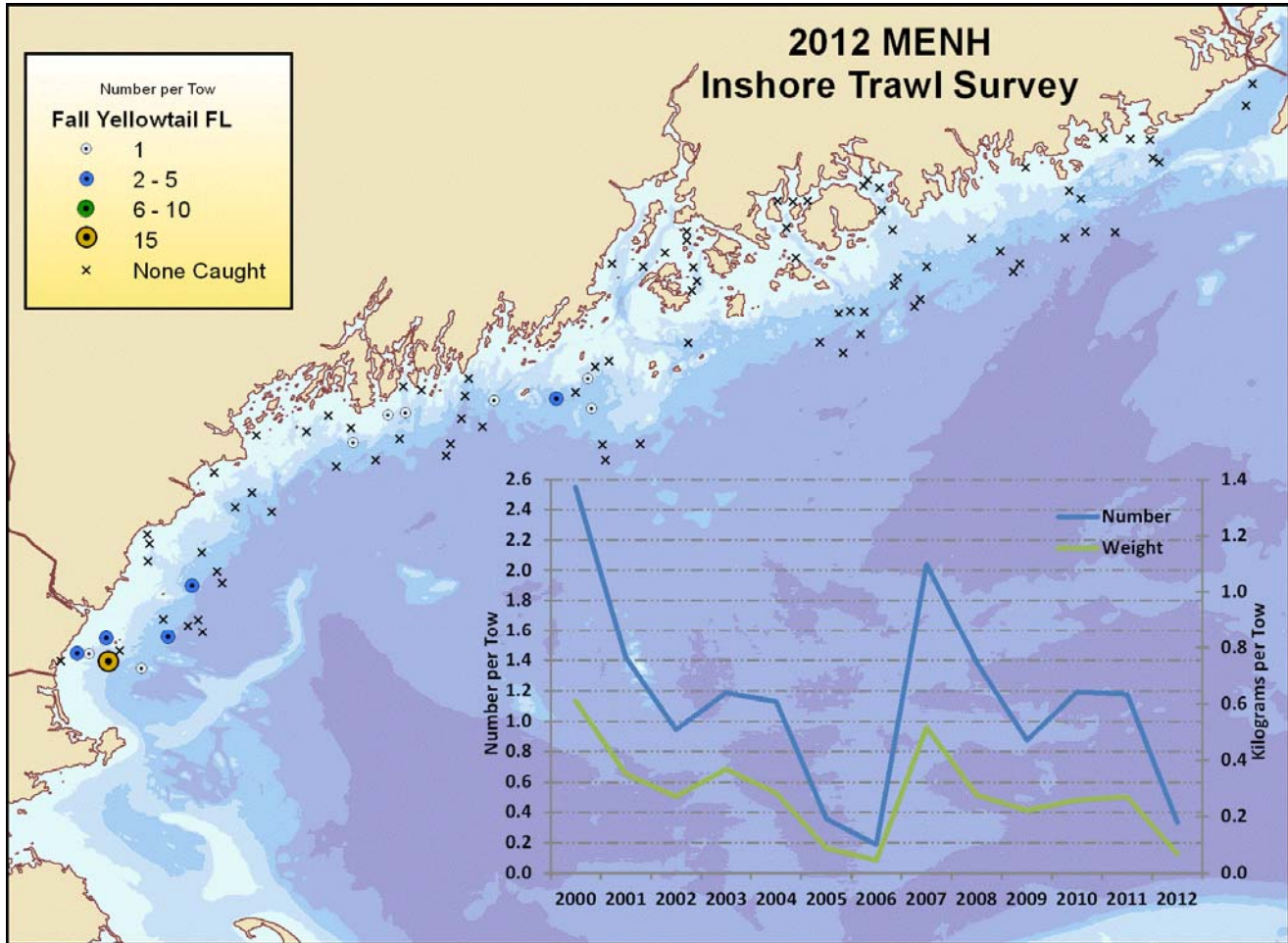
Mean and coefficients of variance for graph overlain on the above map fixed stations not included for yellowtail, calculated for regions 1 through 5; Strata 1 through 4
SPRING
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	3.35	1.40	1.20	1.52
2002	3.14	0.53	0.95	0.51
2003	2.01	0.42	0.52	0.40
2004	1.80	0.48	0.43	0.49
2005	1.77	0.50	0.40	0.49
2006	1.02	0.46	0.23	0.47
2007	4.36	0.61	1.05	0.60
2008	2.37	0.64	0.53	0.62
2009	2.50	0.55	0.58	0.59
2010	4.33	0.56	1.01	0.55
2011	1.70	0.56	0.36	0.60
2012	1.31	0.50	0.26	0.53

Appendix C

Yellowtail Flounder - MENH Spring Surveys





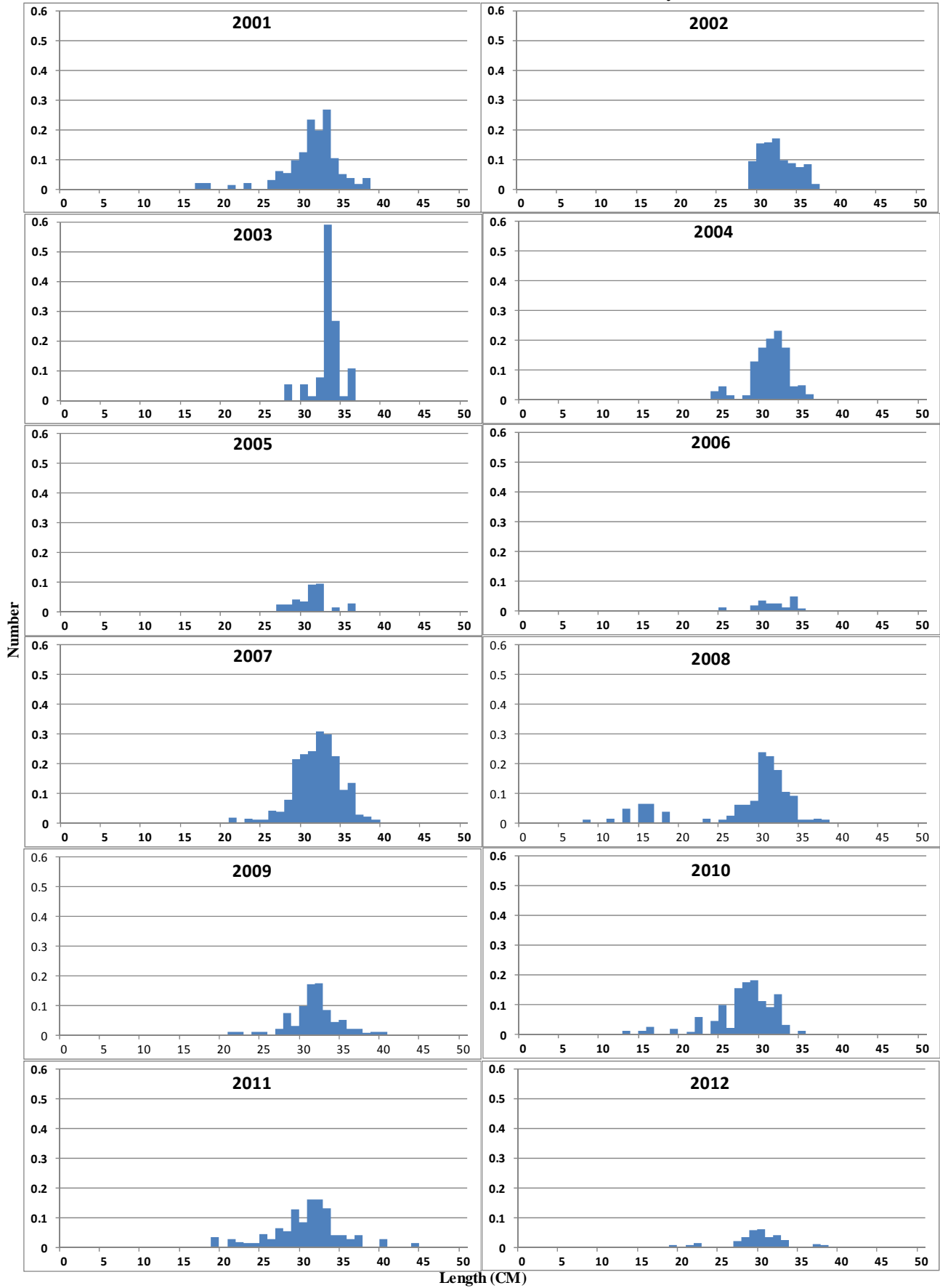
Mean and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for yellowtail, calculated for regions 1 through 5; Strata 1 through 4
FALL

Stratified Mean

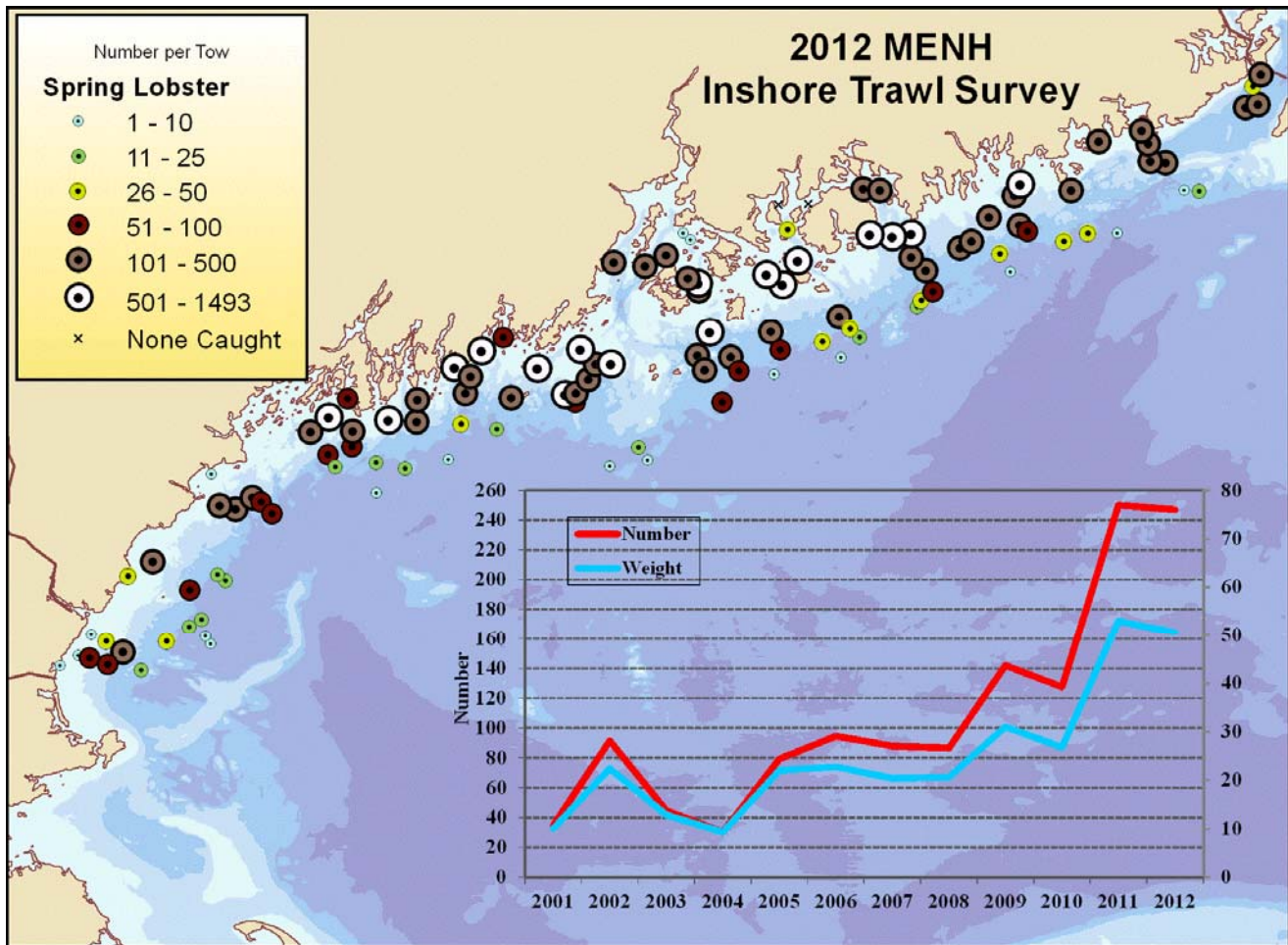
	Number		Weight	
	Mean	CV	Mean	CV
2000	2.55	1.18	0.61	1.14
2001	1.42	0.91	0.35	0.85
2002	0.94	0.53	0.27	0.47
2003	1.19	0.06	0.37	0.06
2004	1.13	0.45	0.28	0.38
2005	0.36	1.10	0.09	1.16
2006	0.19	1.54	0.05	1.52
2007	2.04	0.85	0.52	0.92
2008	1.39	0.72	0.28	0.80
2009	0.87	0.75	0.22	0.74
2010	1.19	0.87	0.26	0.92
2011	1.18	1.26	0.27	1.47
2012	0.33	1.03	0.07	1.12

Appendix C

Yellowtail Flounder - MENH Fall Survey



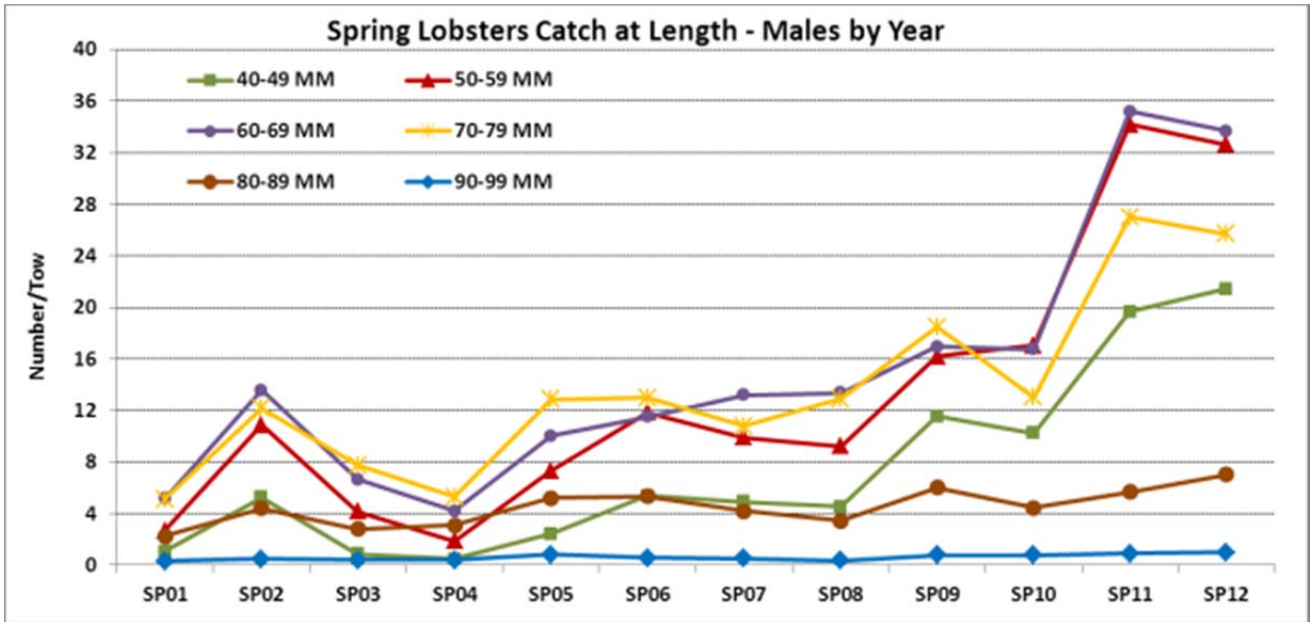
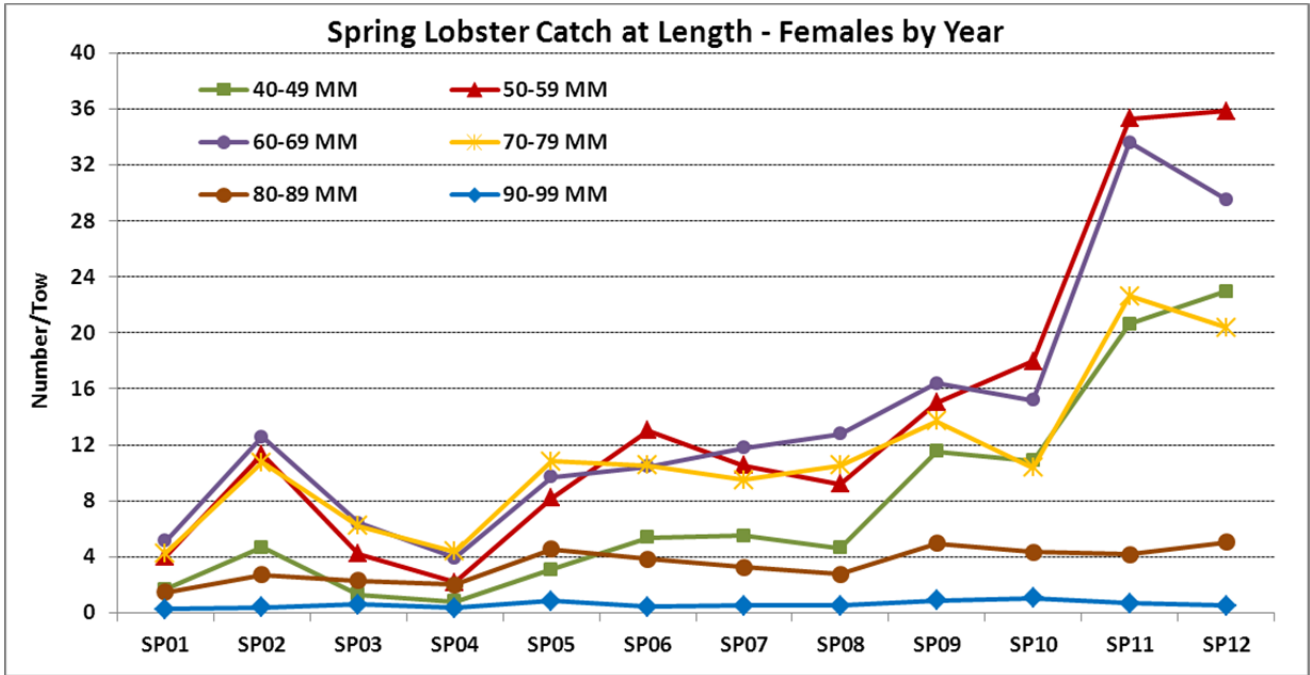
American lobster, *Homarus americanus* (Strata 1 through 3 were used for lobster indices)

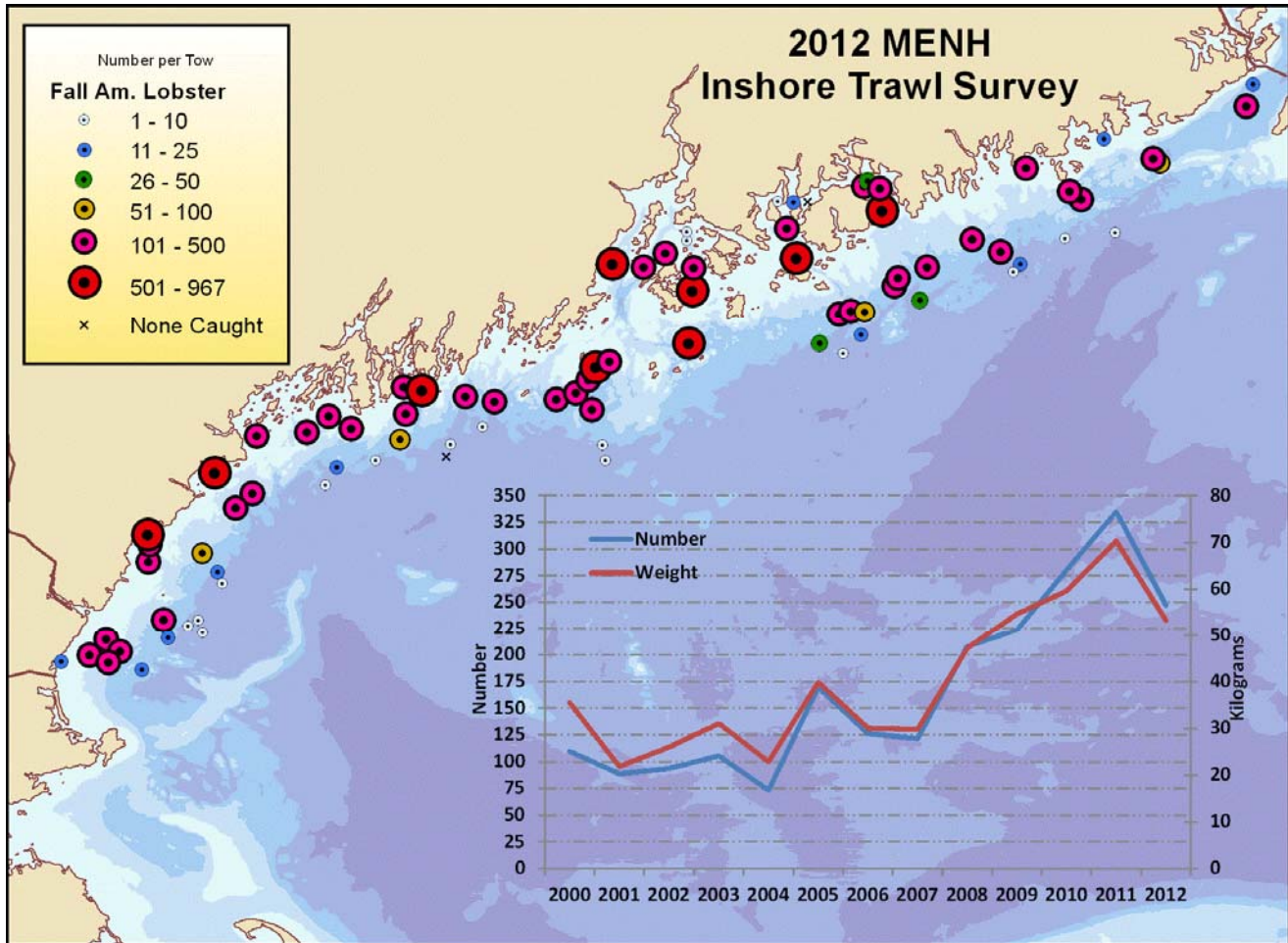


Means and coefficients of variance for graph overlain on the above map fixed stations not included for lobster, calculated for regions 1 through 5; Strata 1 through 3
SPRING

	Stratified Mean		Stratified Mean	
	Number Mean	CV	Weight Mean	CV
2001	34.67	0.33	10.04	0.29
2002	91.47	0.32	22.42	0.29
2003	44.64	0.32	12.81	0.27
2004	30.17	0.24	9.31	0.22
2005	79.24	0.36	22.02	0.33
2006	94.52	0.46	22.75	0.38
2007	87.97	0.27	20.38	0.25
2008	86.54	0.46	20.63	0.47
2009	141.89	0.48	31.02	0.38
2010	127.54	0.24	26.80	0.21
2011	250.20	0.27	52.90	0.25
2012	247.04	0.26	50.57	0.23

Lobster catch at length is shown for selected size bins separated by sex. All measurements are carapace length to the nearest millimeter.

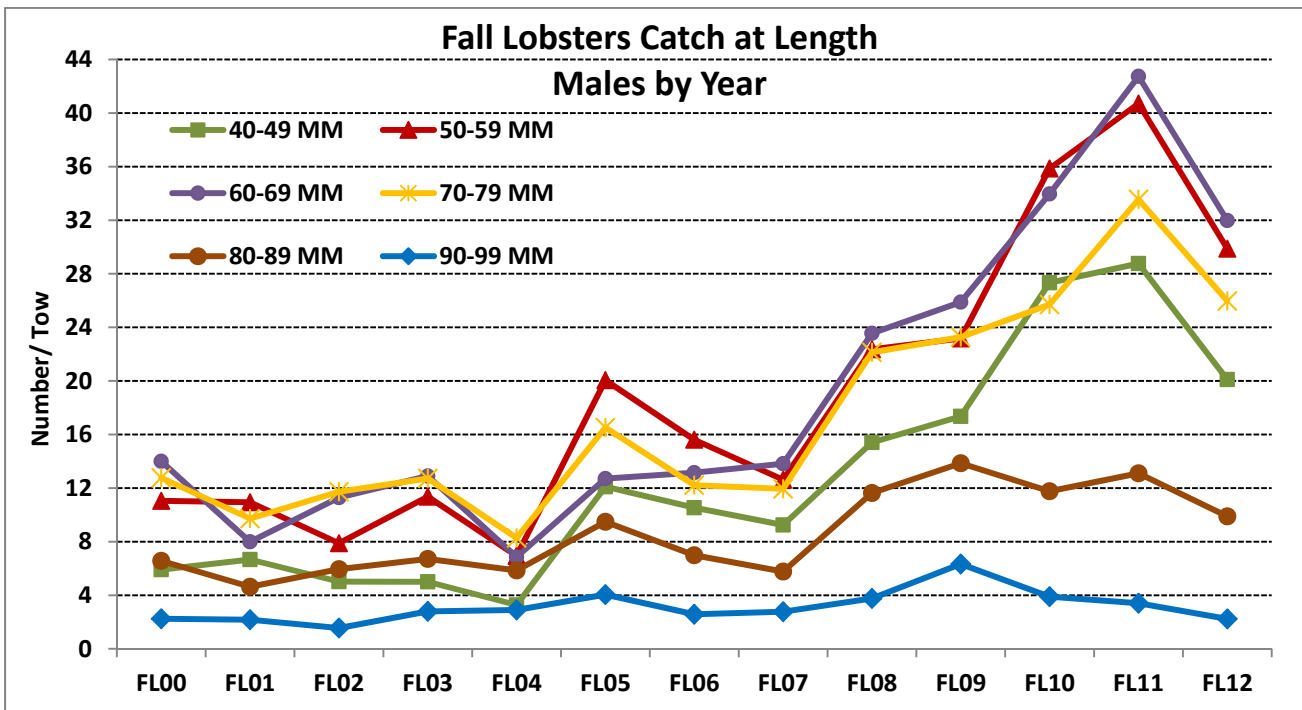
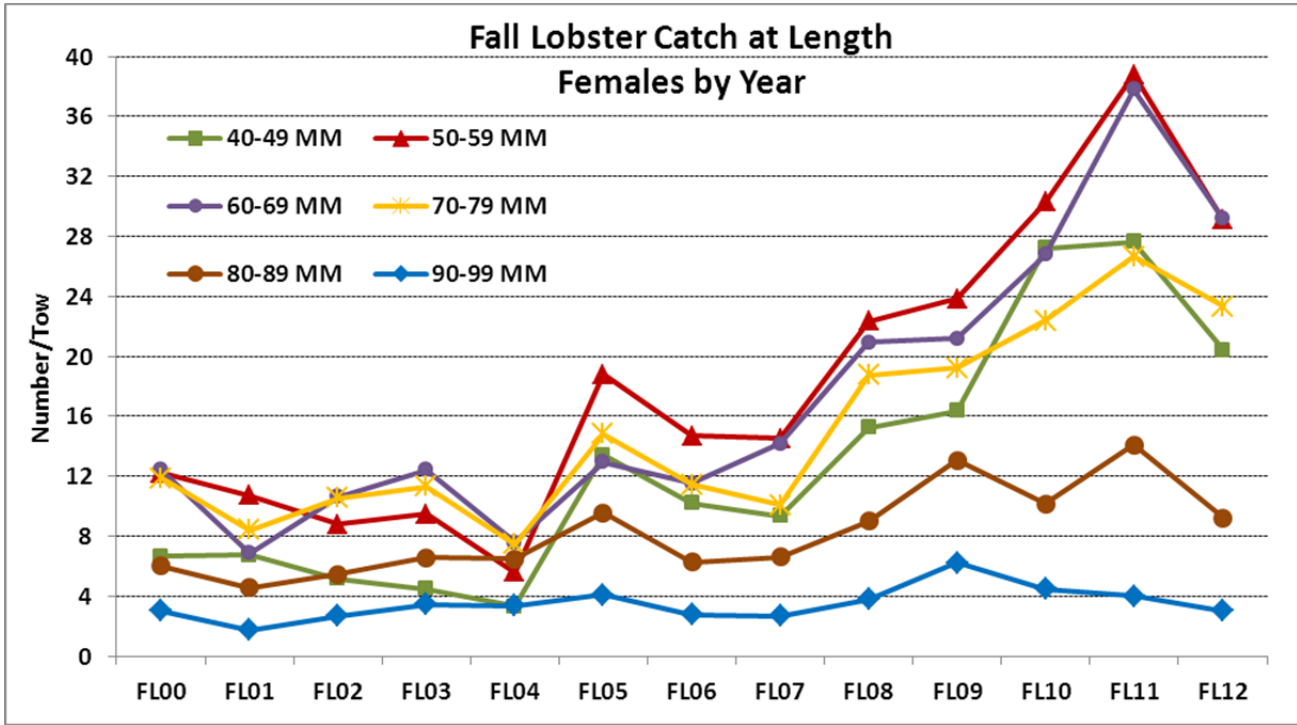




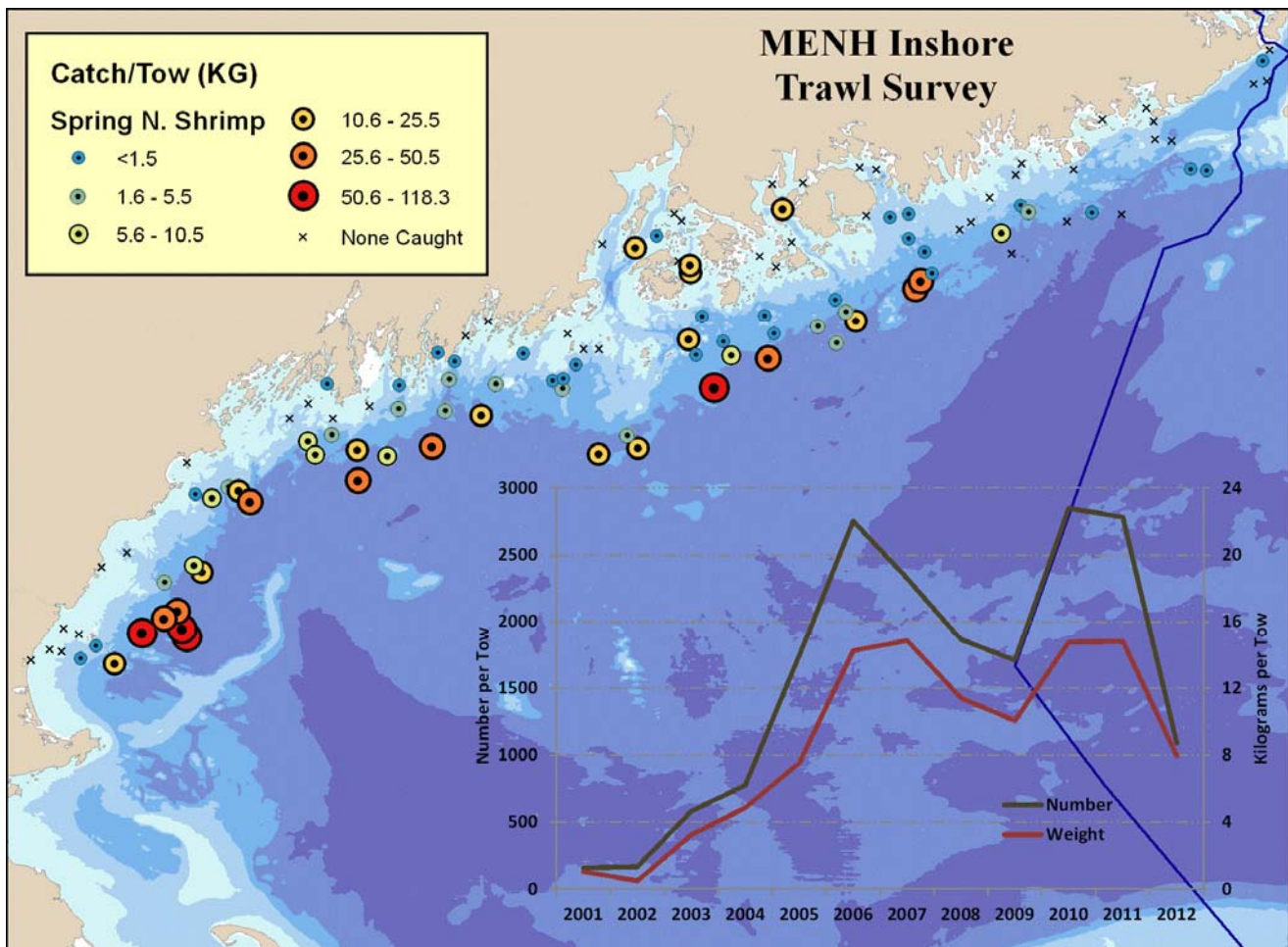
Means and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for lobster, calculated for regions 1 through 5; Strata 1 through 3
FALL

	Stratified Mean		Stratified Mean	
	Number	CV	Weight	CV
2000	109.43	0.39	35.44	0.30
2001	88.61	0.37	21.79	0.28
2002	93.61	0.23	25.97	0.19
2003	105.40	0.16	30.99	0.16
2004	73.21	0.36	22.84	0.28
2005	169.79	0.30	39.83	0.31
2006	126.31	0.33	30.02	0.31
2007	121.53	0.30	29.75	0.27
2008	207.77	0.36	47.15	0.25
2009	223.66	0.34	54.62	0.27
2010	280.43	0.21	59.57	0.21
2011	334.86	0.23	70.25	0.21
2012	247.29	0.20	53.20	0.18

Lobster catch at length is shown for selected size bins separated by sex. All measurements are carapace length to the nearest millimeter.



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



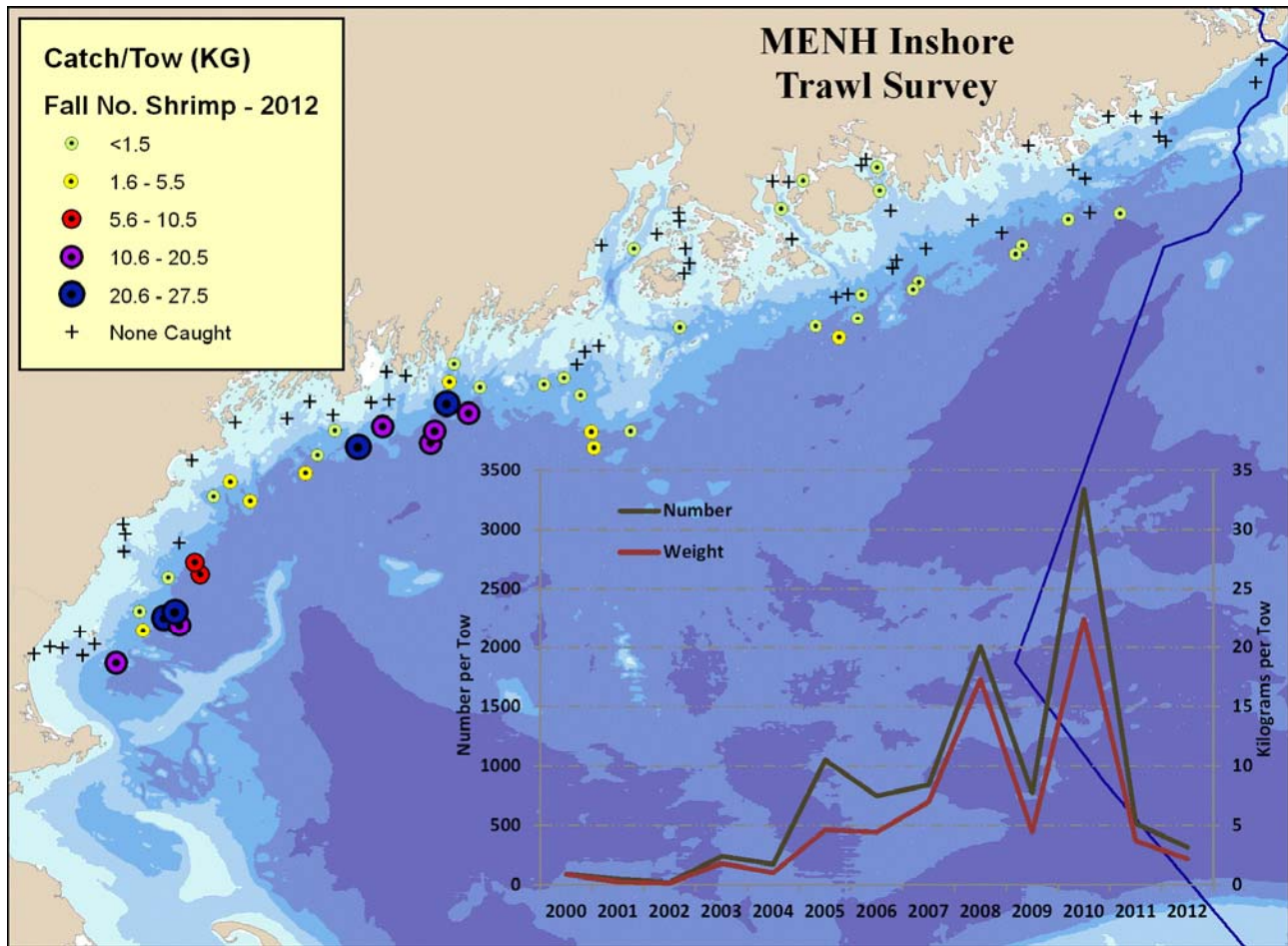
Mean and coefficients of variance for graph overlain on the above map

fixed stations not included

for shrimp, calculated for regions 1 through 5; strata 1 through 4
SPRING

Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	159.77	0.84	1.05	0.84
2002	167.40	1.04	0.50	1.15
2003	582.09	0.23	3.25	0.21
2004	774.30	0.32	4.86	0.42
2005	1746.05	0.16	7.54	0.17
2006	2754.63	0.30	14.25	0.31
2007	2327.07	0.47	14.86	0.53
2008	1865.34	0.19	11.41	0.20
2009	1709.08	0.26	10.08	0.28
2010	2849.73	0.27	14.76	0.34
2011	2784.09	0.18	14.80	0.19
2012	1089.37	0.36	7.95	0.39

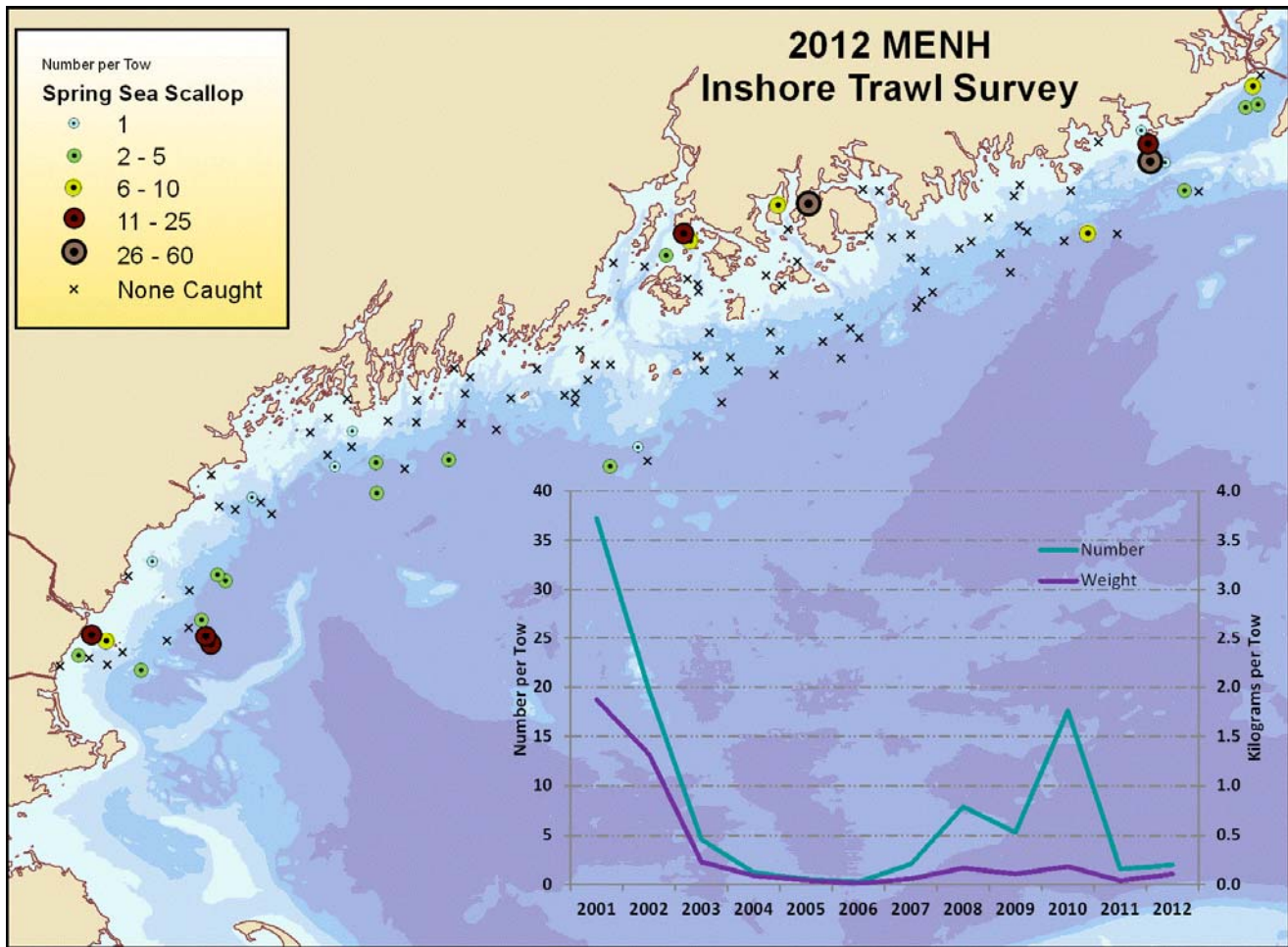


Mean and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for shrimp, calculated for regions 1 through 5; strata 1 through 4
FALL
 Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2000	92.57	1.43	0.88	1.14
2001	49.89	1.11	0.27	1.11
2002	22.95	1.00	0.16	0.99
2003	242.48	0.66	1.80	0.64
2004	175.04	0.99	1.03	0.95
2005	1052.09	0.07	4.63	0.06
2006	749.43	0.54	4.44	0.60
2007	843.76	0.38	7.00	0.38
2008	2010.33	0.68	17.29	0.76
2009	775.52	0.15	4.47	0.17
2010	3340.03	0.24	22.47	0.26
2011	518.02	0.31	3.72	0.31
2012	318.03	0.37	2.20	0.33

Mean numbers and weights for fall 2010 northern shrimp are estimates. Total weights of mixed shrimp catches are recorded on the vessel. Due to missing samples, estimated weights and numbers for northern shrimp were obtained by averaging all previous fall's proportions of pandalid shrimp species from the missing regions and strata.

Sea scallop, *Placopecten magelanicus*



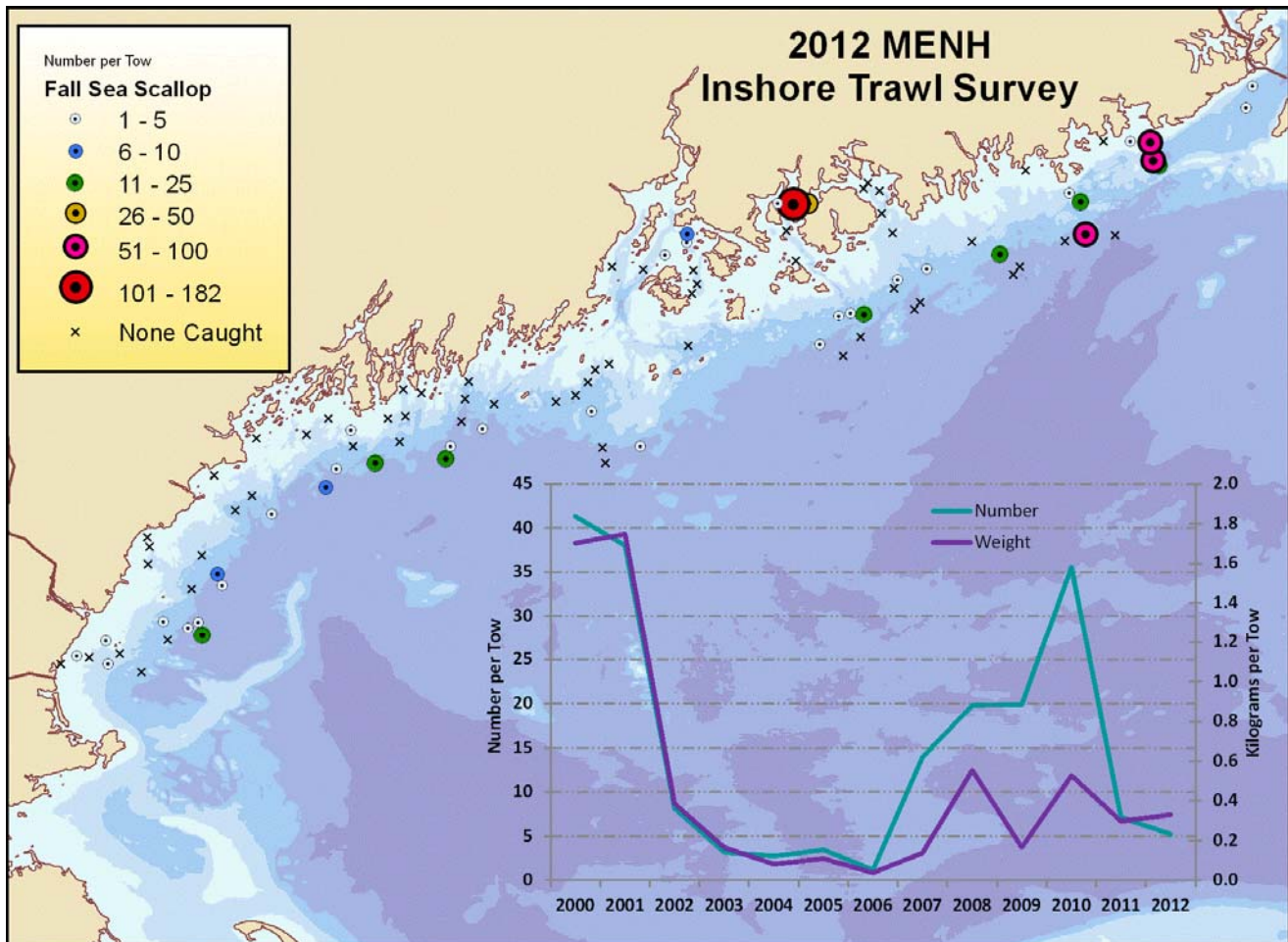
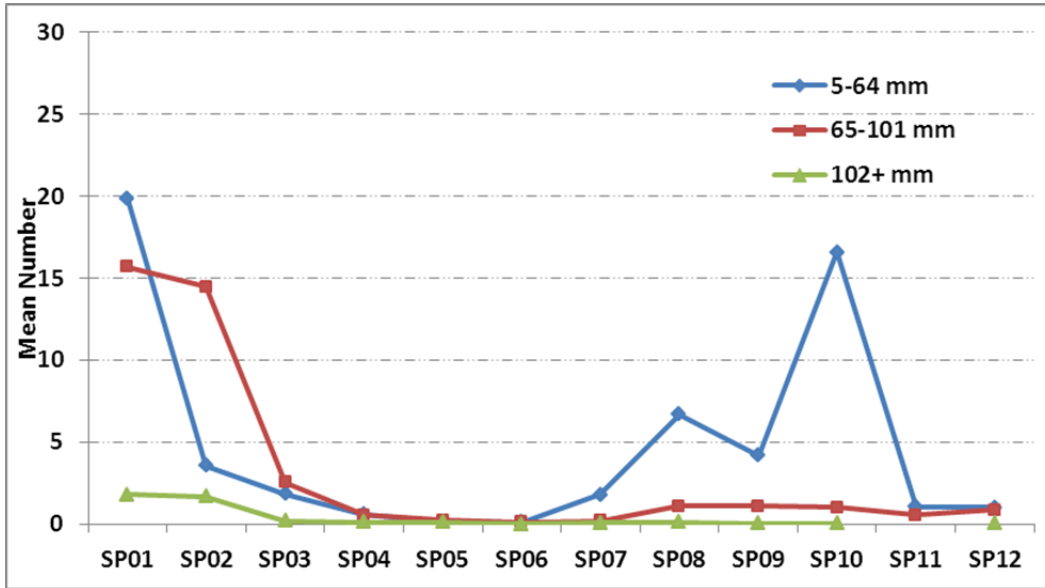
Mean and coefficients of variance for graph overlain on the above map
 fixed stations not included
 for scallop, calculated for regions 1 through 5; Strata 1 through 4
SPRING

Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2001	37.25	0.58	1.87	0.98
2002	19.66	0.71	1.32	0.74
2003	4.55	0.49	0.23	0.57
2004	1.23	0.50	0.09	0.48
2005	0.51	0.56	0.04	0.75
2006	0.27	0.92	0.01	0.97
2007	2.08	0.65	0.06	0.88
2008	7.89	0.58	0.17	0.58
2009	5.28	0.75	0.11	0.70
2010	17.61	1.11	0.18	0.99
2011	1.59	0.53	0.04	0.56
2012	1.98	0.75	0.11	1.14

Scallop catch at length is shown for all sizes in 3 length bins. Measurements are shell height to the nearest millimeter.

Spring



Appendix C

**Mean and coefficients of variance for graph overlain on the above map
fixed stations not included**

for scallop, calculated for regions 1 through 5; Strata 1 through 4

FALL

Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2000	41.30	0.63	1.70	0.85
2001	38.01	0.67	1.75	0.49
2002	8.13	0.55	0.39	0.60
2003	3.17	1.08	0.16	0.97
2004	2.72	0.96	0.08	0.65
2005	3.43	0.51	0.11	0.49
2006	1.16	0.79	0.04	0.56
2007	13.94	0.75	0.14	0.52
2008	19.80	0.54	0.55	0.71
2009	19.88	0.80	0.17	0.51
2010	35.57	0.51	0.53	0.71
2011	7.12	1.56	0.30	1.92
2012	5.21	0.79	0.33	1.57

Scallop catch at length is shown for all sizes in 3 length bins. Measurements are shell height to the nearest millimeter.

Fall

