Annual Report on the
Maine-New Hampshire Inshore Trawl Survey
January 1, 2013-December 31, 2013

Contract # NA07NMF4720357

Submitted to the NOAA Fisheries Northeast Region
Cooperative Research Partners Program

By

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ACKNOWLEDGEMENTS

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 Stuart Hanna. Danny Libby and Jeff Flagg 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, Mike O'Malley, Julie Neiland, Christine Lipsky, 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 Rene Cloutier 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), Wentworth Marina (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 2013 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 thirteen complete years and an fourteenth 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 thirteen years of biannual survey work, and the fourteenth 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/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

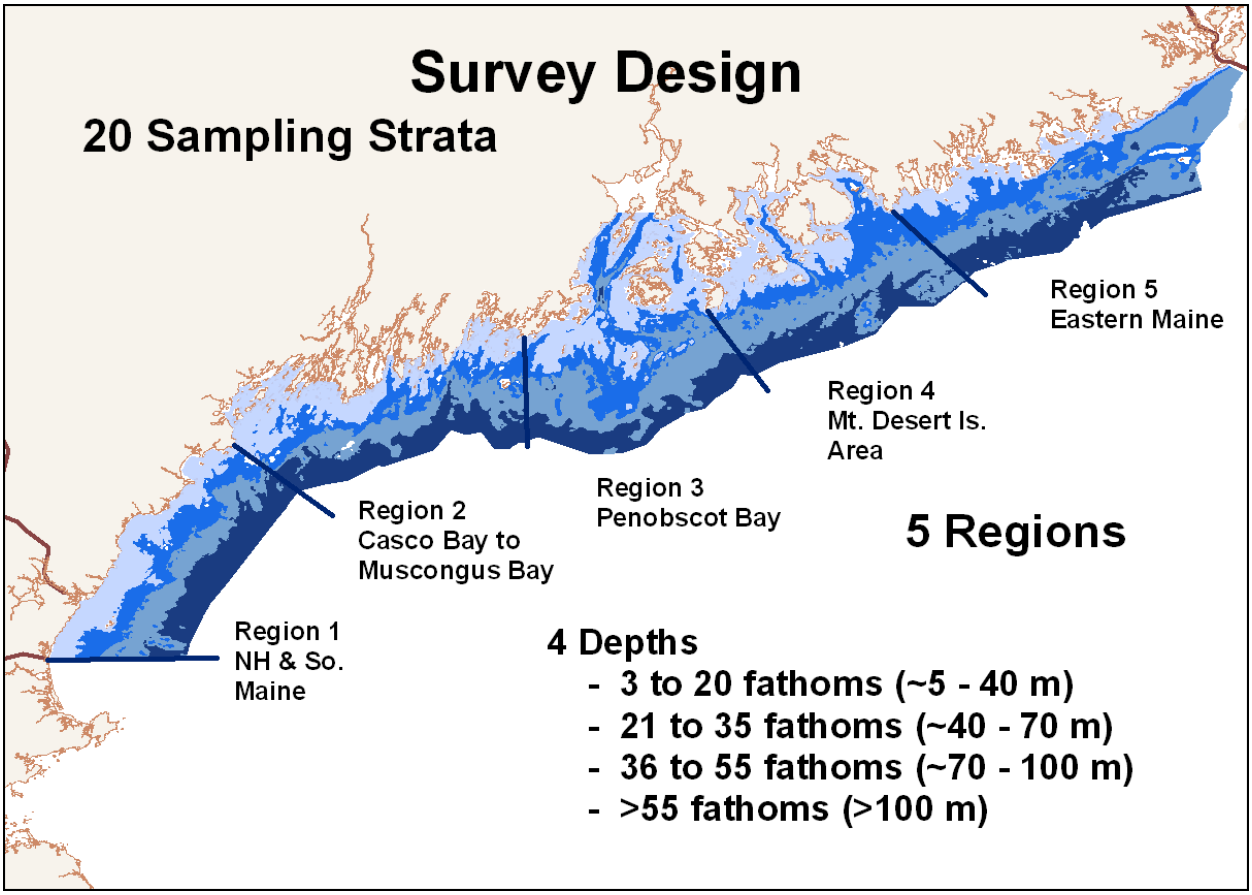

Figure 1. Sampling strata for the Maine-New Hampshire Inshore Trawl Survey

RESULTS

SPRING 2013 SUMMARY

The survey began May 6, 2013 in Portsmouth, New Hampshire and finished on June 7th off of Lubec, Maine. The crew completed 113 tows out of the scheduled 120. This translates to a 94.2% completion rate, with an average of 4.5 tows per day. Personnel from Maine DMR as well as New Hampshire F&G participated in the survey. Christine Lipsky, Julie Neiland, and Michael O'Malley from NOAA fisheries' field office in Orono, ME, participated in the second and third weeks to continue 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.

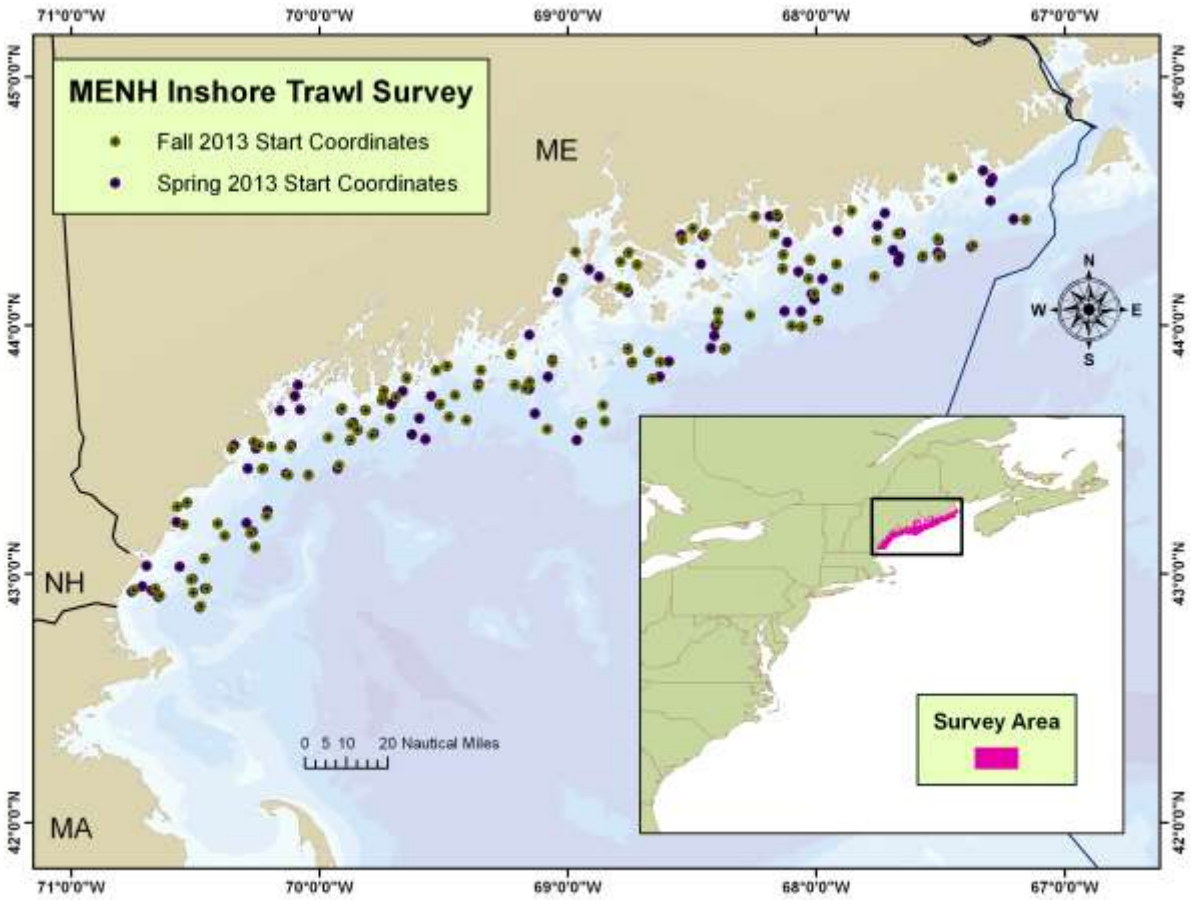

Figure 2. Survey start coordinates for the 2012 season.

Average bottom temperatures by stratum ranged from 4.9 to 8.3°C (Table 1), with an overall average of 6.2°C. The previous highest spring survey average temperature was 6.7°C in 2012 (Sherman et al, 2013) and the lowest average was 4.0°C in 2004 (Sherman et al, 2005).

Table 1. Average bottom water temperature (°C) for the spring 2013 survey

REGION					
STRATUM	**1**	**2**	**3**	**4**	**5**
1	7.5	6.5	6.7	8.3	7.9
2	5.3	5.4	6.5	6.7	6.8
3	4.9	5.0	5.3	6.4	6.9
4	5.0	5.2	5.3	6.2	7.4
Total	5.7	5.5	5.9	6.9	7.1

The total catch weight varied from 6.2 kg to 390.4 kg per tow, with an average of 99.7 kg and a median of 82 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, Figure 3) and the lowest (80 kg) occurring in 2005 (Sherman et al. 2007, Figure 3).

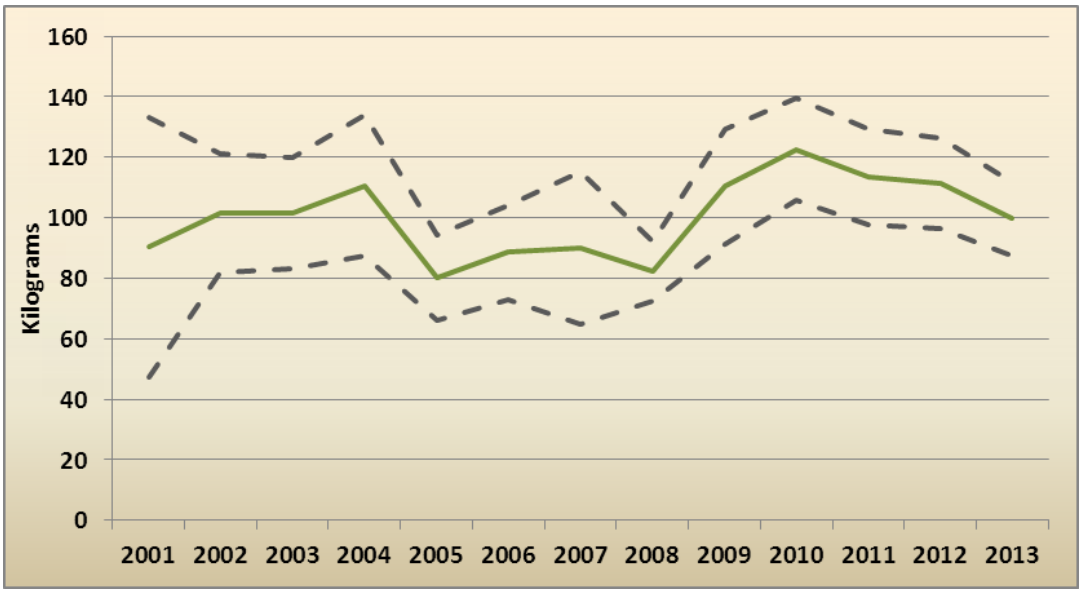

Figure 3. Plot of average catch weight (kilograms) per tow for each spring survey, dashed lines are 2 standard errors.

Figure 6 illustrates the top ten species by portion of the total catch for all spring surveys since 2001. Early on Atlantic herring compromised the largest portion of the total catch and in the most recent years, American lobster has become the predominant catch, lobster and herring account for more than 50% of the average catch weight for 9 of the 13 spring surveys. Mixed pandalid shrimp and silver hake are the two other major contributors. Silver hake comprised a larger portion of the catch in 2012 and 2013 and mixed shrimp dropped in those 2 years as well.

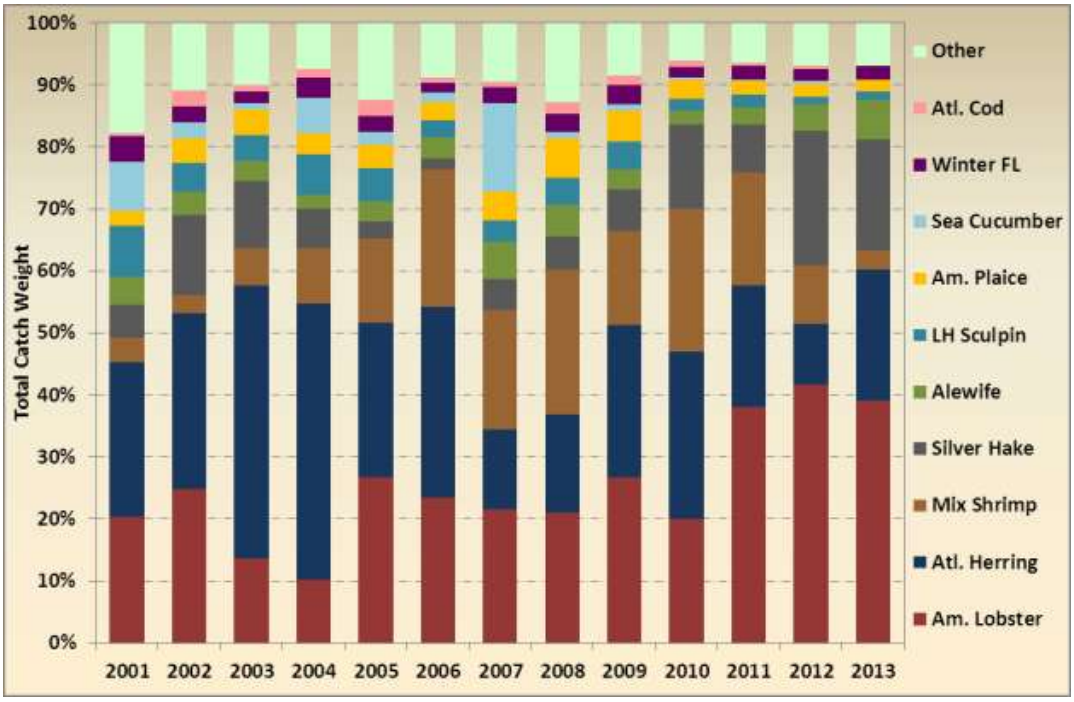

Figure 6. Top ten species by catch weight shown as a percent of total weight for spring surveys, 2001-2013.

For 2013, the total number of species caught was 87, with a low of 10 and high of 32 in any particular tow, and a per tow average of 19 species.

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 2013 survey. It doesn't include the samples taken for NOAA Fisheries.

Table 2. Spring 2013 species sampled for weights, sex, maturity, food habits, and aging.

Number of Biological Samples Spring 2013				
Species	**Lengths**	**Weights/Sex/ Maturity Stage**	**Otoliths**	**Food Habits**
Atlantic cod	32	26	21	NA
Haddock	183	130	89	NA
American plaice	1948	447	300	NA
Yellowtail flounder	530	233	NA	NA
Winter flounder	2796	762	471	NA

A number of Atlantic halibut were tagged. Winter flounder were also tagged in some areas of the survey in conjunction with an ongoing winter flounder tagging project.

Other Spring 2013 Survey Highlights

For the spring 2013 survey, we saw 100% occurrence of American lobsters, they were caught in every tow conducted. Although water temperatures were not as high as the previous spring, catches of the more typical fall survey species were elevated, such as long-finned squid, butterfish, and spiny dogfish. Sea scallop numbers were up considerably, the majority of them caught were juveniles (Appendix C) and yellowtail flounder as well. Atlantic cod, haddock, white hake, and sea raven numbers were down.

FALL 2013 SUMMARY

The survey began September 23, 2013 in Portsmouth, New Hampshire and finished on October 25th off of Lubec, Maine. On the first day of the survey, we encountered a wreck at a tow location and damaged one of our survey nets. We lost the cod-end and a good portion of the lengthening piece. We completed 96 tows out of the scheduled 120. This translates to an 80.0% completion rate, with an average of 4.0 tows per day.

Personnel from Maine Department of Marine Resources (MEDMR) as well as New Hampshire Fish & Game participated in the survey. Michael O'Malley from the NOAA Fisheries participated on the second week to continue a groundfish stomach sampling program looking for alosines as prey.

Table 4 shows the average near bottom water temperature by stratum for the fall 2013 survey with totals for each region along the coast. Temperatures ranged from 6.9°C to 12.9°C throughout the survey strata. The overall average near bottom sea water temperature was 10.2^{o}C which is one degree lower than the previous fall.

Table 4. Average near bottom water temperatures (^{o}C) for fall 2013

	REGION				
STRATUM	**1**	**2**	**3**	**4**	**5**
1	11.0	11.4	12.9	12.8	11.6
2	9.1	9.9	12.0	11.8	11.5
3	7.7	9.0	10.7	11.1	11.4
4	6.9	7.7	10.4	10.2	10.2
Total	8.6	9.3	11.3	11.6	11.0

The volume of mixed catch varied from 25.9 kg to 422.3 kg per tow, with an average of 129.4 kg and a median of 108.4 kg. The per-tow average catch weight has declined from a series high in 2007 and was the second lowest seen since fall 2000 (Figure 9).

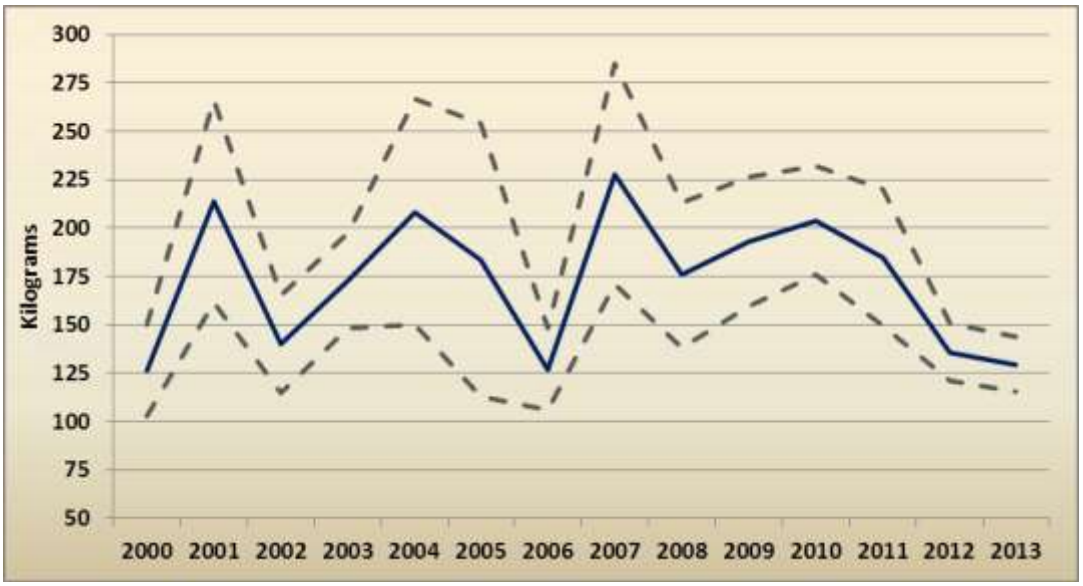

Figure 9. Average mixed catch weights per tow for fall surveys 2000-2013. The dashed lines represent 2 standard errors.

Figure 10 illustrates the top ten species by portion of the total survey catch for all fall surveys since 2000. American lobster, silver hake, and spiny dogfish are the predominant species by weight for all years and these three account for over 50% of the catch volume for 12 out of the 14 fall surveys.

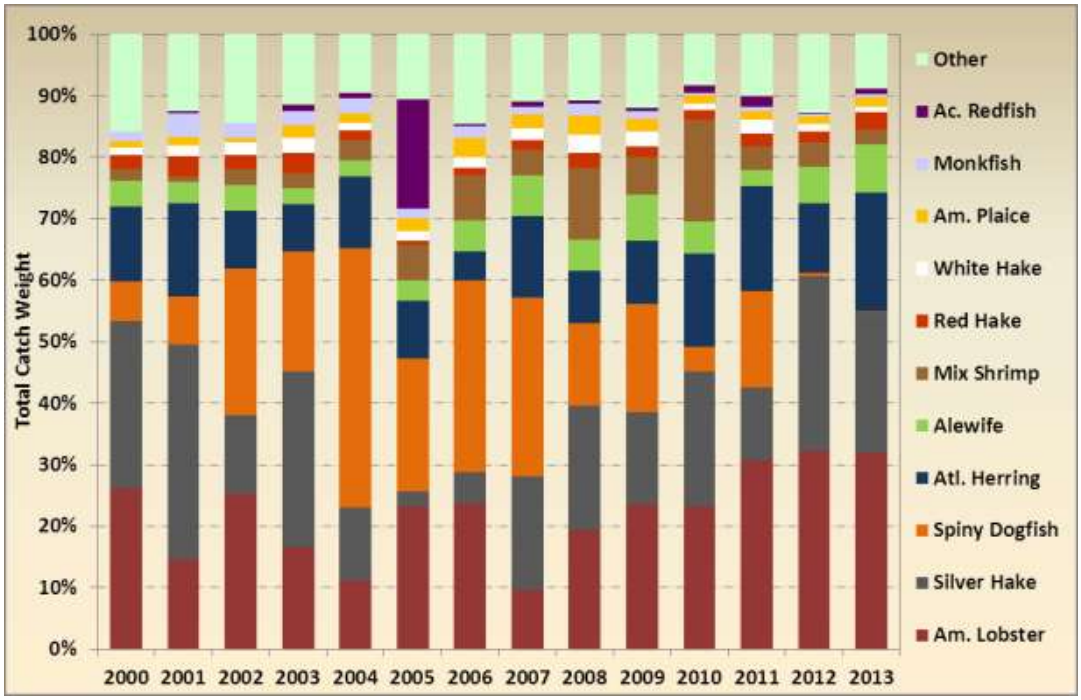

Figure 10. Top ten species by survey catch weight shown as a percent of total weight for fall surveys 2000-2013.

The total number of species caught was 92, with a low of 6 and high of 31 in any particular tow, and an average and median of 20 species. Standardized mean number per tow for all species seen in the fall 2013 survey is reported in Table 6.

Table 5 shows the numbers of biological samples taken for the fall 2013 survey. It doesn't include the samples taken for NOAA Fisheries.

Table 5. Fall 2013 species sampled for weights, sex, maturity, food habits, and aging.

Number of Biological Samples Fall 2013				
Species	**Lengths**	**Weights/Sex/ Maturity Stage**	**Otoliths**	**Food Habits**
Atlantic cod	12	11	11	NA
Haddock	1357	287	118	NA
Witch Flounder	250	190	107	NA
White Hake	1090	443	236	NA
Monkfish	79	66	NA	51
Atl. Halibut	14	1	1	NA

Other Fall 2013 Highlights
Several rare species were seen in fall 2013, silver rag, black-bellied rosefish, black sea bass, and beardfish. The numbers of mackerel, spiny dogfish, sea raven, and Atlantic cod were greatly reduced from previous falls. Juvenile haddock were more abundant in the fall 2013 than any other fall survey, with the index almost double the previous year (Appendix C). Rainbow smelt numbers were at a series low for fall.

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 2013										
5/6/2013	1	1	42.93425	-70.67320	2	07:30	00:20	27.2	5.6	32.26
5/6/2013	1	2	42.90712	-70.64753	2	09:00	00:20	33.2	5.3	32.36
5/6/2013	1	3	42.92923	-70.75467	1	10:30	00:20	14.5	6.0	32.09
5/6/2013	1	4	42.94960	-70.71228	1	11:36	00:20	20.9	5.9	32.10
5/6/2013	1	5	43.03263	-70.69445	1	13:14	00:19	8.6	9.6	30.42
5/7/2013	1	6	42.86605	-70.48073	4	08:15	00:20	59.3	4.9	32.60
5/7/2013	1	7	42.94150	-70.45930	3	09:45	00:20	57.0	4.8	32.50
5/7/2013	1	8	42.97955	-70.51050	3	11:25	00:15	48.1	4.9	32.47
5/7/2013	1	9	43.06173	-70.46210	3	12:48	00:20	46.1	4.9	32.35
5/7/2013	1	10	43.02848	-70.56163	2	14:15	00:12	31.3	5.2	32.34
5/8/2013	1	11	43.20845	-70.57450	1	07:44	00:17	12.6	5.9	31.94
5/8/2013	1	12	43.28545	-70.53257	1	09:32	00:18	18.3	5.5	32.10
5/8/2013	1	13	43.20332	-70.40908	3	11:14	00:20	40.7	5.0	32.33
5/8/2013	1	14	43.20403	-70.29257	4	13:04	00:15	56.5	4.8	30.71
5/8/2013	1	15	43.16960	-70.26775	4	14:12	00:20	68.3	5.0	32.72
5/9/2013	1	16	43.10773	-70.25767	4	08:13	00:20	79.5	5.2	32.97
5/9/2013	1	17	43.25397	-70.20768	4	10:06	00:20	66.0	5.0	32.70
5/9/2013	1	18	43.40352	-70.13353	4	12:15	00:20	59.5	4.9	32.49
5/9/2013	1	19	43.39837	-70.04308	4	13:25	00:20	73.4	5.0	32.64
5/10/2013	1	20	43.51200	-70.19247	2	06:52	00:21	32.9	5.1	32.18
5/10/2013	1	21	43.42488	-70.22600	3	08:23	00:20	48.6	4.9	32.06
5/10/2013	1	22	43.42457	-70.28762	2	09:42	00:16	33.0	5.2	32.23
5/10/2013	1	23	43.51730	-70.34255	1	11:19	00:20	6.9	12.0	30.01
5/10/2013	1	24	43.50507	-70.25325	2	12:32	00:20	23.9	5.5	32.00
5/13/2013	2	25	43.65765	-70.15780	1	06:19	00:20	16.3	6.7	31.52
5/13/2013	2	26	43.71595	-70.09688	1	08:06	00:12	13.8	7.0	31.47
5/13/2013	2	27	43.76018	-70.08513	1	09:53	00:20	9.8	9.0	31.09
5/13/2013	2	28	43.66125	-70.07612	1	11:34	00:17	21.8	6.2	31.87
5/14/2013	2	29	43.51817	-70.11115	3	07:24	00:20	41.3	5.1	32.31
5/14/2013	2	30	43.42505	-69.92465	4	09:27	00:20	83.8	5.2	31.99
5/14/2013	2	31	43.53933	-69.87363	4	11:10	00:17	56.8	4.9	32.45
5/14/2013	2	32	43.57912	-69.84532	3	12:24	00:15	50.3	4.9	32.39
5/14/2013	2	33	43.56422	-69.77980	4	13:30	00:20	61.5	4.9	29.33
5/14/2013	2	34	43.68418	-69.70978	3	15:23	00:15	39.5	5.1	32.27
5/15/2013	2	35	43.70805	-69.74367	1	08:29	00:20	16.4	5.6	32.13
5/15/2013	2	36	43.66067	-69.81482	1	09:41	00:20	15.8	5.6	32.14
5/15/2013	2	37	43.60822	-69.86310	3	10:53	00:19	44.8	4.9	32.23

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
5/15/2013	2	38	43.66173	-69.91063	2	12:10	00:20	26.4	5.5	32.14
5/15/2013	2	39	43.70950	-69.69098	2	14:19	00:14	37.0	5.5	32.10
5/16/2013	2	40	43.56148	-69.62628	4	08:14	00:20	73.7	5.5	32.94
5/16/2013	2	41	43.54213	-69.57300	4	09:17	00:20	86.3	5.6	32.95
5/16/2013	2	42	43.62727	-69.59702	3	10:59	00:15	57.9	5.0	32.51
5/16/2013	2	43	43.68172	-69.51360	4	12:22	00:20	68.9	5.1	30.48
5/16/2013	2	44	43.71603	-69.55010	3	13:27	00:20	49.6	5.0	32.29
5/17/2013	2	45	43.82030	-69.52910	2	06:52	00:15	30.4	5.3	32.18
5/17/2013	2	46	43.83702	-69.48637	2	08:11	00:20	35.0	5.1	32.20
5/17/2013	2	47	43.76297	-69.35773	3	11:31	00:15	45.0	5.1	32.43
5/17/2013	2	48	43.73592	-69.66337	2	14:00	00:20	34.5	5.2	32.18
5/17/2013	2	49	43.79032	-69.64802	1	16:02	00:17	20.9	5.4	32.08
5/20/2013	3	50	43.75963	-69.21268	3	09:21	00:16	49.6	5.2	32.22
5/20/2013	3	51	43.74367	-69.15395	3	10:51	00:17	55.5	5.0	31.79
5/20/2013	3	52	43.77257	-69.15408	3	11:56	00:22	49.2	5.2	32.23
5/20/2013	3	53	43.88417	-69.22850	2	13:44	00:20	31.4	6.4	31.88
5/20/2013	3	54	43.96235	-69.15322	1	16:55	00:19	16.5	7.1	31.67
5/21/2013	3	55	44.19535	-68.87232	1	07:12	00:12	15.2	6.8	31.81
5/21/2013	3	56	44.24498	-68.72067	1	09:14	00:15	7.0	8.1	30.80
5/21/2013	3	57	44.29317	-68.75542	1	10:20	00:20	13.8	5.7	31.44
5/21/2013	3	58	44.22513	-68.91328	2	12:04	00:19	27.5	6.2	31.57
5/21/2013	2	59	44.18818	-69.01810	2	13:38	00:20	28.5	5.6	30.00
5/21/2013	3	60	44.13565	-69.04050	1	15:01	00:20	22.9	6.0	30.96
5/22/2013	3	61	43.86185	-69.06042	2	08:22	00:20	35.8	5.5	32.06
5/22/2013	3	62	43.79352	-69.07842	3	09:55	00:16	46.1	5.2	32.10
5/22/2013	3	63	43.64592	-69.13185	4	11:46	00:20	72.8	5.3	32.75
5/22/2013	3	64	43.53822	-68.96157	4	14:17	00:20	59.3	5.1	32.60
5/22/2013	3	65	43.60595	-68.94470	4	15:28	00:19	67.4	5.1	32.53
5/23/2013	3	66	43.85472	-68.59168	4	10:36	00:11	58.9	5.5	32.60
5/23/2013	3	67	43.79422	-68.62847	4	11:52	00:20	64.7	5.6	32.66
5/23/2013	3	68	43.85143	-68.74118	3	13:36	00:15	53.4	5.5	32.18
5/23/2013	3	69	43.89305	-68.67483	3	14:48	00:20	50.5	5.4	32.22
5/23/2013	3	70	43.90465	-68.75670	3	16:07	00:20	47.1	5.6	32.08
5/24/2013	3	71	44.13488	-68.75653	2	08:45	00:15	30.2	7.7	31.14
5/27/2013	4	72	44.05547	-68.39343	2	08:01	00:19	36.8	6.7	31.86
5/27/2013	4	73	43.99977	-68.40340	3	09:50	00:15	48.6	6.2	32.20
5/27/2013	4	74	43.90785	-68.36405	4	11:34	00:10	69.0	5.8	32.74
5/27/2013	4	75	43.90990	-68.42265	4	12:58	00:19	60.3	6.0	31.72
5/27/2013	4	76	43.95915	-68.40913	3	14:01	00:20	52.3	6.1	32.37

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
5/28/2013	4	77	44.24610	-68.46327	1	07:26	00:18	12.6	8.6	31.10
5/28/2013	4	78	44.36448	-68.54178	1	09:37	00:15	12.4	9.3	31.60
5/28/2013	4	79	44.36150	-68.45550	1	11:15	00:16	17.8	8.3	31.55
5/29/2013	4	80	44.05708	-68.12555	3	09:09	00:15	54.0	6.4	32.32
5/29/2013	4	81	44.05612	-68.05892	4	10:26	00:15	60.0	6.5	32.64
5/29/2013	4	82	43.99333	-68.05732	4	11:52	00:14	70.3	6.6	32.85
5/29/2013	4	83	44.10433	-68.00643	3	14:13	00:16	54.2	6.5	32.19
5/29/2013	4	84	44.12687	-68.01643	3	15:10	00:23	52.8	6.4	32.29
5/30/2013	4	85	44.21675	-68.06902	3	07:25	00:20	41.0	6.5	31.89
5/30/2013	4	86	44.26465	-68.02188	2	08:59	00:20	36.2	6.4	31.98
5/30/2013	4	87	44.14513	-67.91397	3	11:17	00:20	52.5	6.7	32.63
5/30/2013	4	88	44.18722	-67.97313	3	12:44	00:20	44.9	6.4	32.23
5/30/2013	4	89	44.22878	-68.13347	2	14:37	00:20	38.0	6.5	31.83
5/31/2013	4	90	44.28505	-68.13067	2	08:08	00:15	35.5	6.6	31.45
5/31/2013	4	91	44.33440	-68.11610	2	09:13	00:20	30.4	6.7	31.87
5/31/2013	4	92	44.43877	-68.15363	1	10:52	00:14	16.3	7.9	29.24
5/31/2013	4	93	44.44065	-68.18635	2	12:19	00:16	22.5	7.3	31.74
5/31/2013	4	94	44.43925	-68.24292	1	13:47	00:18	18.8	7.4	31.73
6/3/2013	5	95	44.24613	-67.91740	2	09:45	00:15	39.5	6.7	32.17
6/3/2013	5	96	44.38007	-67.91152	1	12:21	00:20	20.2	7.0	31.78
6/3/2013	5	97	44.40220	-67.75153	2	15:02	00:15	24.7	6.9	31.73
6/4/2013	5	98	44.45222	-67.72172	1	06:41	00:15	20.0	7.2	31.67
6/4/2013	5	99	44.37210	-67.65898	2	08:26	00:13	35.5	6.8	31.99
6/4/2013	5	100	44.25655	-67.66745	4	10:52	00:20	55.7	6.9	32.61
6/4/2013	5	101	44.27578	-67.66455	3	12:04	00:20	53.9	6.8	32.58
6/4/2013	5	102	44.30362	-67.68788	3	13:24	00:20	43.9	6.7	32.35
6/5/2013	5	103	44.27563	-67.57067	4	07:47	00:20	65.4	7.7	33.59
6/5/2013	5	104	44.29288	-67.51002	4	09:02	00:20	61.6	7.0	32.82
6/5/2013	5	105	44.28267	-67.49700	4	10:15	00:20	70.4	7.2	33.25
6/5/2013	5	106	44.31685	-67.37418	4	12:07	00:20	97.8	8.0	34.00
6/5/2013	5	107	44.34212	-67.50638	3	13:43	00:20	54.3	6.8	32.51
6/6/2013	5	108	44.50153	-67.29643	2	08:06	00:13	37.6	6.8	32.00
6/6/2013	5	109	44.42832	-67.20368	3	09:39	00:17	62.5	7.1	32.58
6/6/2013	5	110	44.42627	-67.15370	3	10:38	00:20	58.0	7.2	32.90
6/6/2013	5	111	44.59168	-67.29000	2	13:04	00:20	29.7	6.8	31.87
6/6/2013	5	112	44.57705	-67.29685	2	14:11	00:15	31.8	6.7	31.93
6/6/2013	5	113	44.62267	-67.32742	1	15:16	00:17	11.9	9.4	31.94

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
Fall 2013										
9/23/2013	1	1	42.94033	-70.66058	2	07:51	00:20	25.9	8.5	32.46
9/23/2013	1	2	42.91317	-70.64128	2	09:05	00:20	31.7	8.3	32.51
9/23/2013	1	3	42.93513	-70.74645	1	10:38	00:20	15.0	9.3	32.37
9/24/2013	1	4	42.87113	-70.47702	4	09:07	00:20	57.5	6.8	32.33
9/24/2013	1	5	42.94160	-70.45175	3	10:30	00:20	56.2	7.0	32.80
9/24/2013	1	6	42.92557	-70.50698	3	11:45	00:20	52.0	6.9	32.80
9/24/2013	1	7	42.97825	-70.51600	3	13:15	00:20	47.1	7.4	32.78
9/25/2013	1	8	43.19713	-70.54535	1	07:57	00:18	17.2	10.1	32.30
9/25/2013	1	9	43.26973	-70.57185	1	09:13	00:16	6.8	12.6	31.94
9/25/2013	1	10	43.28837	-70.53223	1	10:17	00:20	16.8	9.7	32.37
9/25/2013	1	11	43.20210	-70.40910	3	12:07	00:20	39.4	8.4	32.64
9/25/2013	1	12	43.15408	-70.37957	3	13:24	00:15	48.4	7.9	32.78
9/25/2013	1	13	43.06317	-70.46053	3	14:48	00:20	46.3	7.8	32.73
9/26/2013	1	14	43.10893	-70.25717	4	08:53	00:20	79.1	6.5	32.30
9/26/2013	1	15	43.16440	-70.27735	4	11:10	00:20	68.7	6.6	33.03
9/26/2013	1	16	43.23438	-70.21240	4	12:37	00:20	63.8	7.2	32.95
9/26/2013	1	17	43.39757	-70.12318	4	14:45	00:20	59.7	7.5	32.87
9/26/2013	1	18	43.40002	-70.04338	4	16:06	00:20	69.7	7.0	33.07
9/27/2013	1	19	43.51285	-70.19217	2	07:33	00:20	33.3	9.1	32.85
9/27/2013	1	20	43.42255	-70.22857	3	08:58	00:20	47.9	8.4	28.55
9/27/2013	1	21	43.50377	-70.35195	1	10:59	00:20	6.6	13.3	31.80
9/27/2013	1	22	43.53208	-70.26377	1	12:06	00:18	13.0	10.9	32.55
9/27/2013	1	23	43.51743	-70.24075	2	13:05	00:20	21.6	10.4	32.66
9/30/2013	2	24	43.54908	-69.96438	3	10:24	00:20	58.1	8.1	33.04
9/30/2013	2	25	43.50907	-70.11703	3	12:04	00:20	42.3	9.8	32.88
10/1/2013	2	26	43.43668	-69.91945	4	08:41	00:20	86.5	6.7	33.43
10/1/2013	2	27	43.54098	-69.87280	4	10:40	00:20	56.9	8.2	33.00
10/1/2013	2	28	43.55910	-69.78602	4	12:03	00:19	60.1	8.1	33.10
10/1/2013	2	29	43.58042	-69.84628	3	13:25	00:20	48.8	8.7	31.71
10/1/2013	2	30	43.60097	-69.87247	3	14:34	00:20	45.2	9.2	32.79
10/1/2013	2	31	43.66615	-69.90788	2	16:06	00:20	24.6	11.3	32.57
10/2/2013	2	32	43.71185	-69.69232	2	08:03	00:20	36.6	9.8	32.50
10/2/2013	2	33	43.73783	-69.73825	1	09:16	00:20	11.9	12.1	32.19
10/2/2013	2	34	43.69780	-69.74838	1	10:45	00:13	19.1	11.6	32.45
10/2/2013	2	35	43.65868	-69.81033	1	12:08	00:20	17.5	11.2	32.58
10/2/2013	2	36	43.62512	-69.71440	3	13:51	00:19	51.1	8.8	33.01
10/2/2013	2	37	43.78685	-69.64738	1	15:53	00:15	20.7	10.5	32.45

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
10/3/2013	2	38	43.68260	-69.51273	4	08:03	00:20	69.7	7.6	33.11
10/3/2013	2	39	43.63195	-69.47723	4	09:56	00:20	74.6	7.6	33.33
10/3/2013	2	40	43.61983	-69.40638	4	11:01	00:20	76.6	7.9	33.31
10/3/2013	2	41	43.75453	-69.36032	3	12:48	00:19	46.6	9.5	33.04
10/3/2013	2	42	43.71873	-69.45335	3	14:15	00:20	55.6	8.9	33.01
10/4/2013	2	43	43.81897	-69.52815	2	07:46	00:15	29.9	9.3	32.76
10/4/2013	2	44	43.83782	-69.48415	2	09:02	00:20	35.0	8.7	32.88
10/4/2013	2	45	43.82043	-69.34965	2	10:57	00:19	41.2	10.5	32.82
10/7/2013	3	46	43.76212	-69.21283	3	09:03	00:20	47.9	10.8	33.16
10/7/2013	3	47	43.74548	-69.17042	3	10:28	00:17	57.4	10.4	33.27
10/7/2013	3	48	43.77472	-69.15308	3	11:40	00:16	49.5	10.7	33.14
10/7/2013	3	49	43.88638	-69.22805	2	13:35	00:16	32.8	11.3	32.52
10/8/2013	3	50	44.18182	-69.02042	2	07:41	00:20	26.4	12.3	32.39
10/8/2013	3	51	44.25717	-68.78738	1	10:04	00:20	13.5	12.9	31.85
10/8/2013	3	52	44.24422	-68.71963	1	11:24	00:15	6.2	13.0	31.96
10/8/2013	3	53	44.29395	-68.75408	1	12:31	00:20	13.3	12.7	31.98
10/8/2013	3	54	44.29543	-68.96822	2	15:21	00:17	28.2	12.4	32.21
10/9/2013	3	55	43.85258	-69.06005	2	07:58	00:20	33.6	11.1	32.94
10/9/2013	3	56	43.58167	-69.08260	4	11:08	00:20	76.8	9.8	32.94
10/9/2013	3	57	43.60972	-68.94223	4	12:37	00:20	72.6	10.5	33.44
10/9/2013	3	58	43.61478	-68.85023	4	13:58	00:20	65.9	10.5	33.47
10/9/2013	3	59	43.67957	-68.85778	4	15:14	00:18	63.2	10.7	33.45
10/10/2013	3	60	43.90747	-68.75755	3	07:43	00:20	48.8	10.8	33.27
10/10/2013	3	61	43.89535	-68.67220	3	09:10	00:20	50.0	10.8	33.39
10/10/2013	3	62	43.85228	-68.62605	3	10:56	00:11	53.5	10.7	33.43
10/10/2013	3	63	43.78513	-68.65913	4	12:24	00:16	60.2	10.4	33.47
10/10/2013	3	64	43.85313	-68.73875	3	13:43	00:12	55.2	10.7	33.44
10/11/2013	3	65	44.14697	-68.75983	2	08:31	00:13	26.0	12.7	32.26
10/11/2013	3	66	44.15430	-68.78627	1	10:12	00:20	9.0	13.0	31.69
10/14/2013	4	67	43.90375	-68.36913	4	09:57	00:20	66.4	10.2	33.62
10/14/2013	4	68	44.05573	-68.39327	2	12:37	00:18	36.6	11.9	32.87
10/14/2013	4	69	44.01262	-68.39428	3	14:02	00:20	45.9	11.6	33.10
10/15/2013	4	70	44.34588	-68.53927	1	09:24	00:18	7.5	13.0	32.40
10/15/2013	4	71	44.39073	-68.49515	1	10:40	00:20	14.0	12.9	32.46
10/15/2013	4	72	44.36988	-68.44577	1	12:04	00:22	14.6	13.0	32.38
10/16/2013	4	73	44.04055	-68.26532	3	09:03	00:20	52.0	11.3	33.30
10/16/2013	4	74	43.99830	-68.09865	3	12:00	00:17	60.3	10.4	32.68
10/16/2013	4	75	43.99458	-68.05595	4	13:19	00:20	71.3	10.2	33.76
10/16/2013	4	76	44.02223	-67.99077	4	15:01	00:20	84.2	10.1	33.72

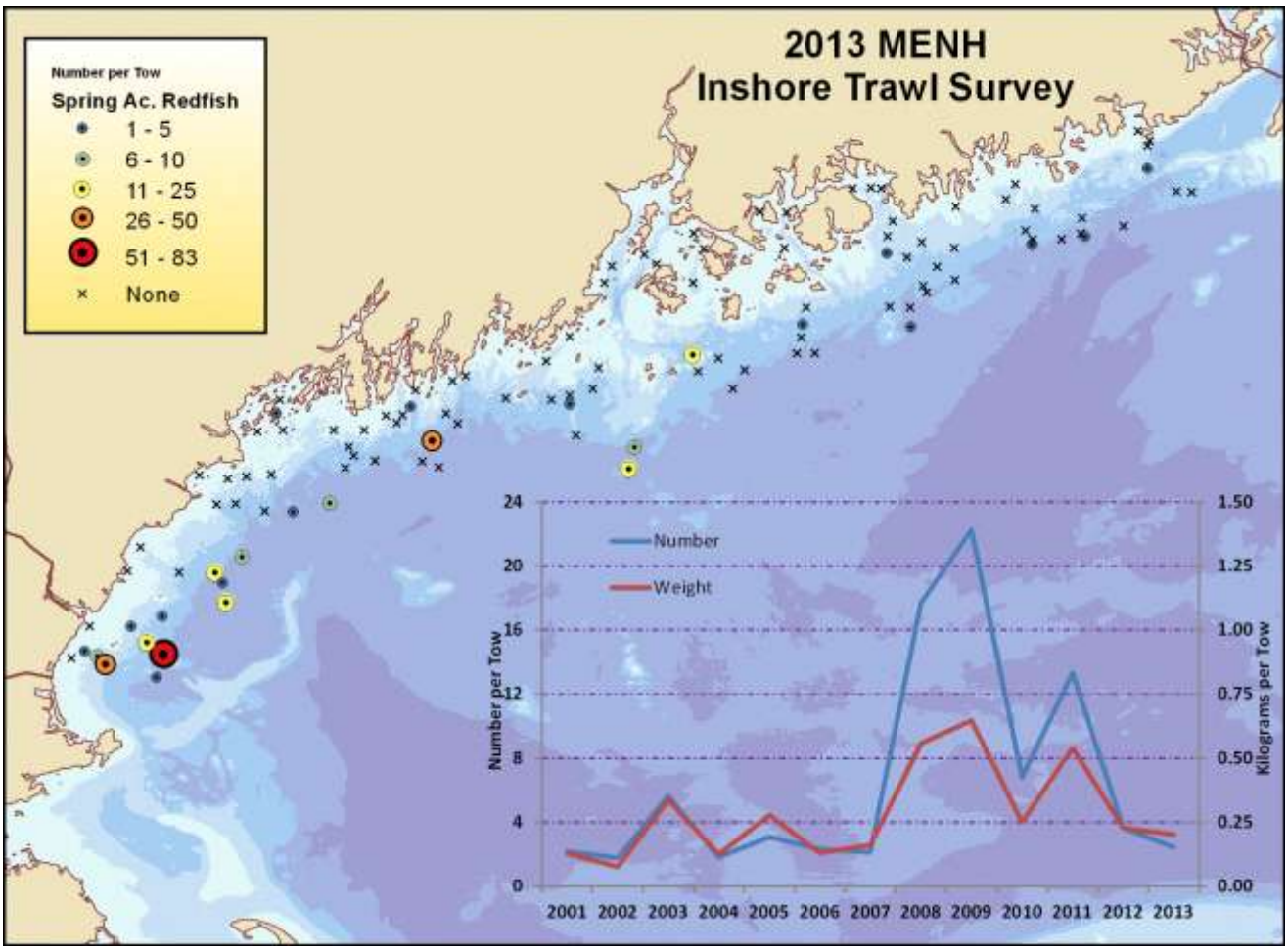
Appendix B
Individual Station Descriptors for Start of Tow

DATE	REGION	TOWID	LAT decimal degrees	LON decimal degrees	Stratum	Time	Tow Duration	Depth (FA)	Temp C°	Salinity ppt
10/17/2013	4	77	44.22805	-68.13298	2	07:52	00:20	36.1	11.6	33.05
10/17/2013	4	78	44.12893	-68.00710	3	10:27	00:15	50.1	11.1	31.89
10/17/2013	4	79	44.15075	-67.90928	3	11:51	00:20	52.0	11.2	33.23
10/17/2013	4	80	44.18815	-68.02987	3	13:26	00:20	44.0	11.2	33.03
10/17/2013	4	81	44.26607	-68.02540	2	15:15	00:20	35.5	11.6	33.07
10/18/2013	4	82	44.28517	-68.13085	2	08:13	00:20	36.1	11.8	32.70
10/18/2013	4	83	44.44842	-68.15785	1	10:20	00:17	19.0	12.5	32.62
10/18/2013	4	84	44.43828	-68.24313	1	11:40	00:20	18.4	12.4	32.65
10/18/2013	4	85	44.36823	-68.16723	2	13:11	00:20	25.6	12.2	32.88
10/21/2013	5	86	44.24707	-67.91765	2	09:48	00:20	39.8	11.3	32.88
10/21/2013	5	87	44.19792	-67.76477	4	12:17	00:20	77.6	10.4	33.42
10/22/2013	5	88	44.36998	-67.67040	2	09:04	00:11	33.4	11.7	32.94
10/22/2013	5	89	44.34367	-67.75350	2	11:38	00:20	36.0	11.6	32.92
10/22/2013	5	90	44.46157	-67.85507	1	14:03	00:20	5.8	12.2	32.77
10/23/2013	5	91	44.32137	-67.36763	4	09:42	00:20	93.0	9.5	34.58
10/23/2013	5	92	44.34795	-67.50877	3	11:28	00:13	51.0	11.2	33.16
10/23/2013	5	93	44.27687	-67.50478	4	12:50	00:20	71.3	10.7	33.51
10/23/2013	5	94	44.28000	-67.56985	4	14:40	00:20	60.3	10.0	34.07
10/24/2013	5	95	44.42570	-67.15408	3	10:25	00:16	56.8	11.5	33.04
10/25/2013	5	96	44.59352	-67.45217	1	08:56	00:20	8.0	10.9	32.54

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*

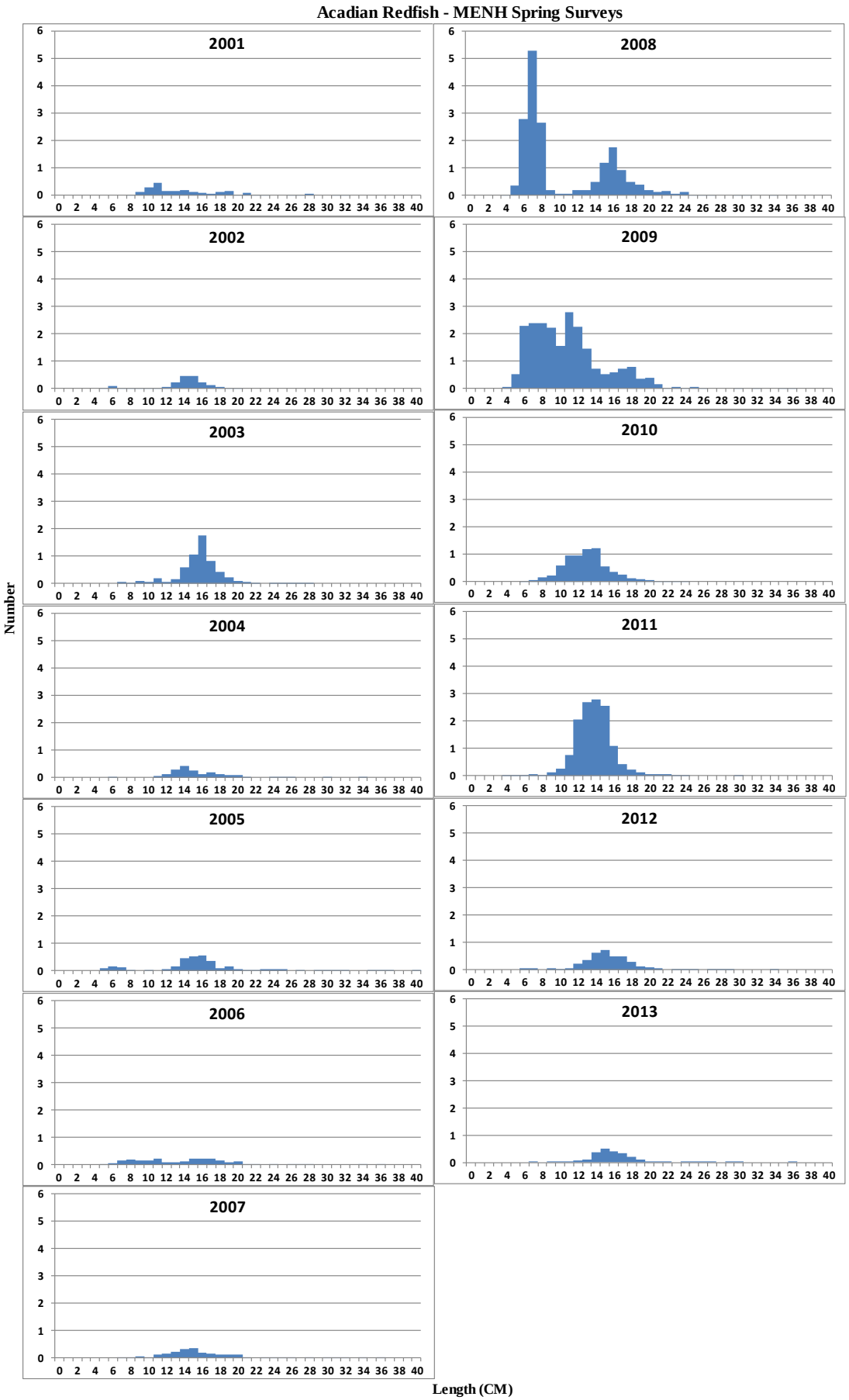


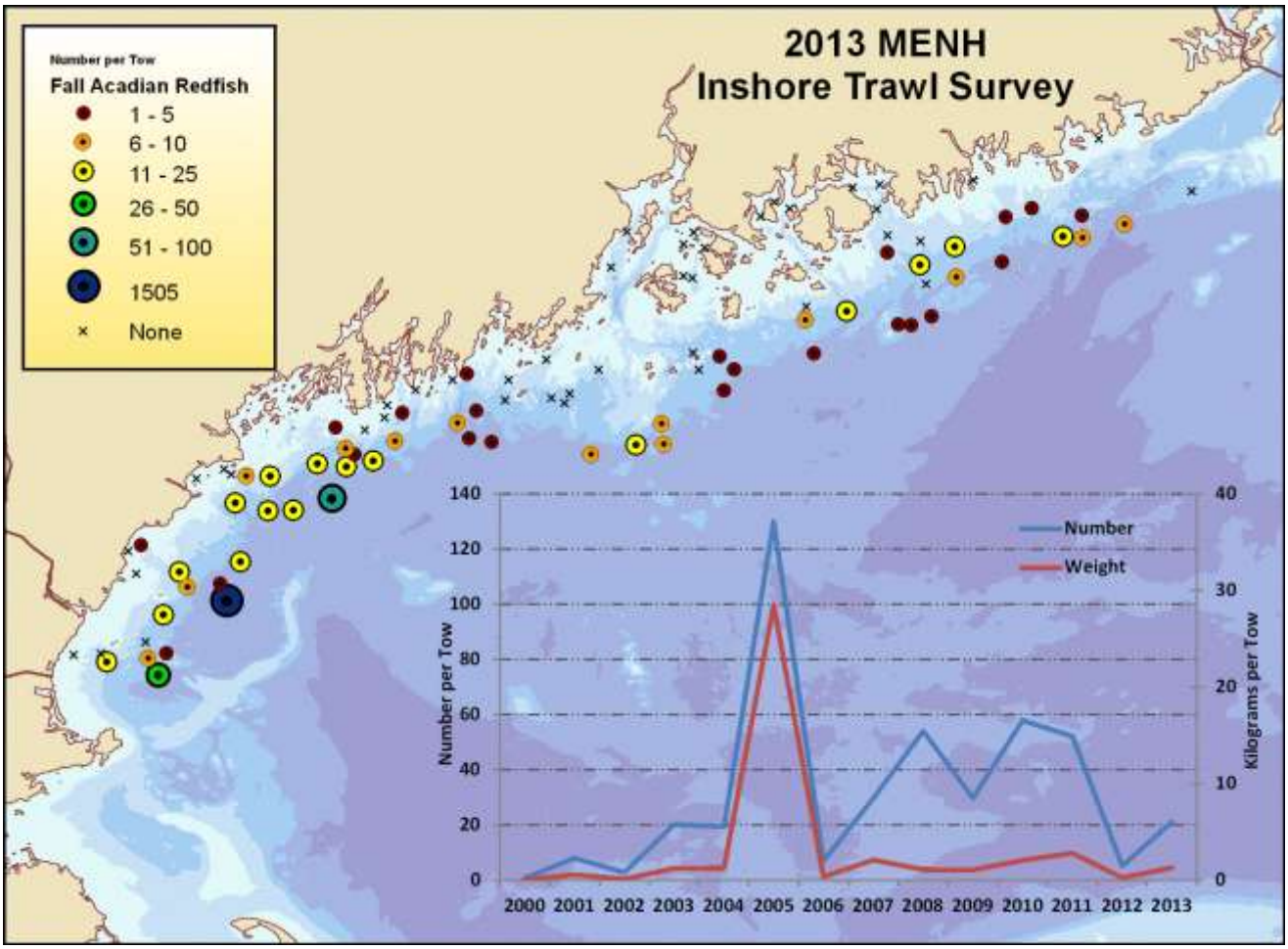
Means and coefficients of variance for the graph overlain on the above map
fixed stations not included
for redfish, indices calculated for regions 1 through 5, strata 1 through 4

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
2013	2.46	0.85	0.20	0.92


Acadian Redfish - MENH Spring Surveys
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
2007
Number
Length (CM)

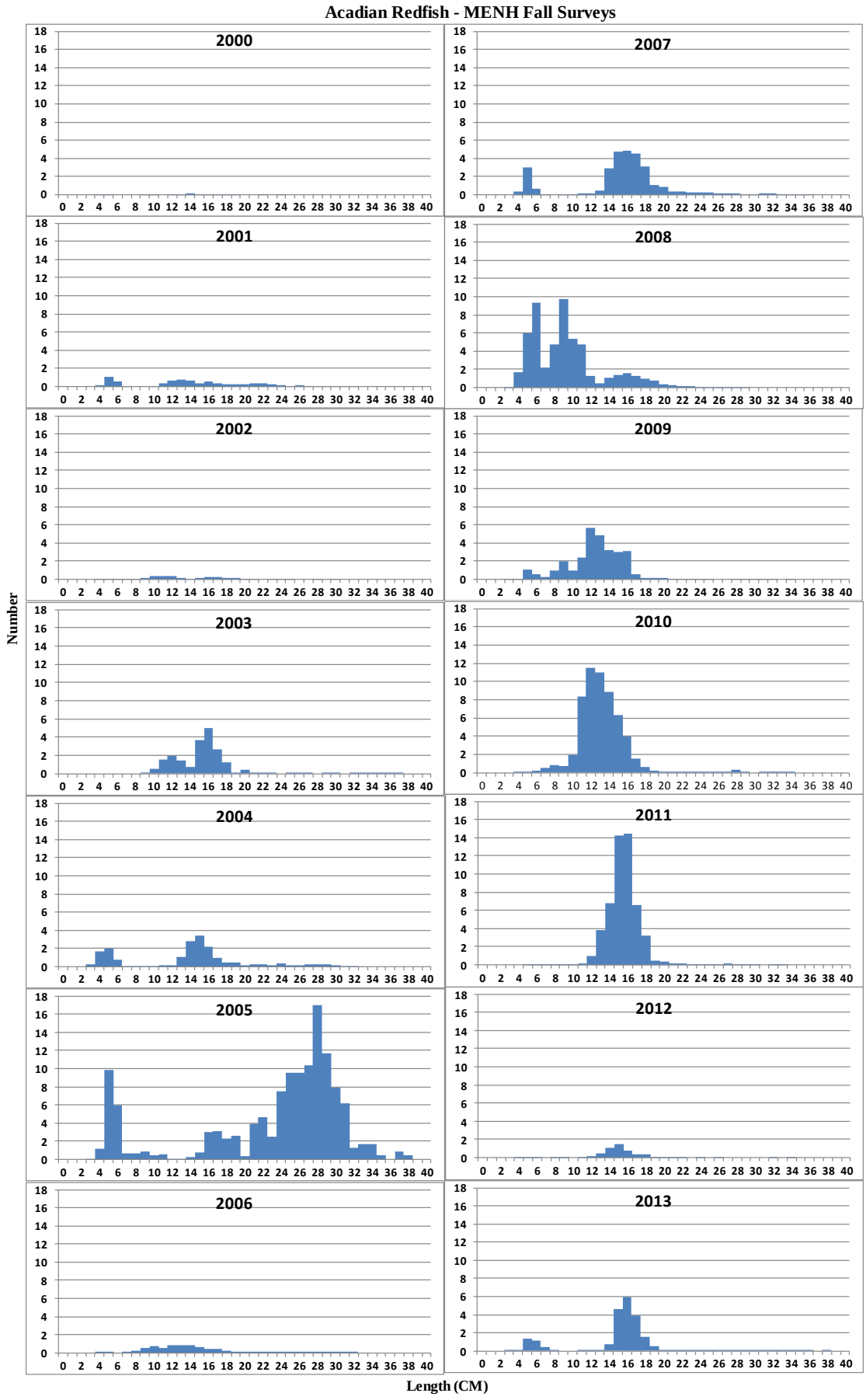


Means and coefficients of variance for the graph overlain on the above map
fixed stations not included
for redfish, indices calculated for regions 1 through 5, strata 1 through 4

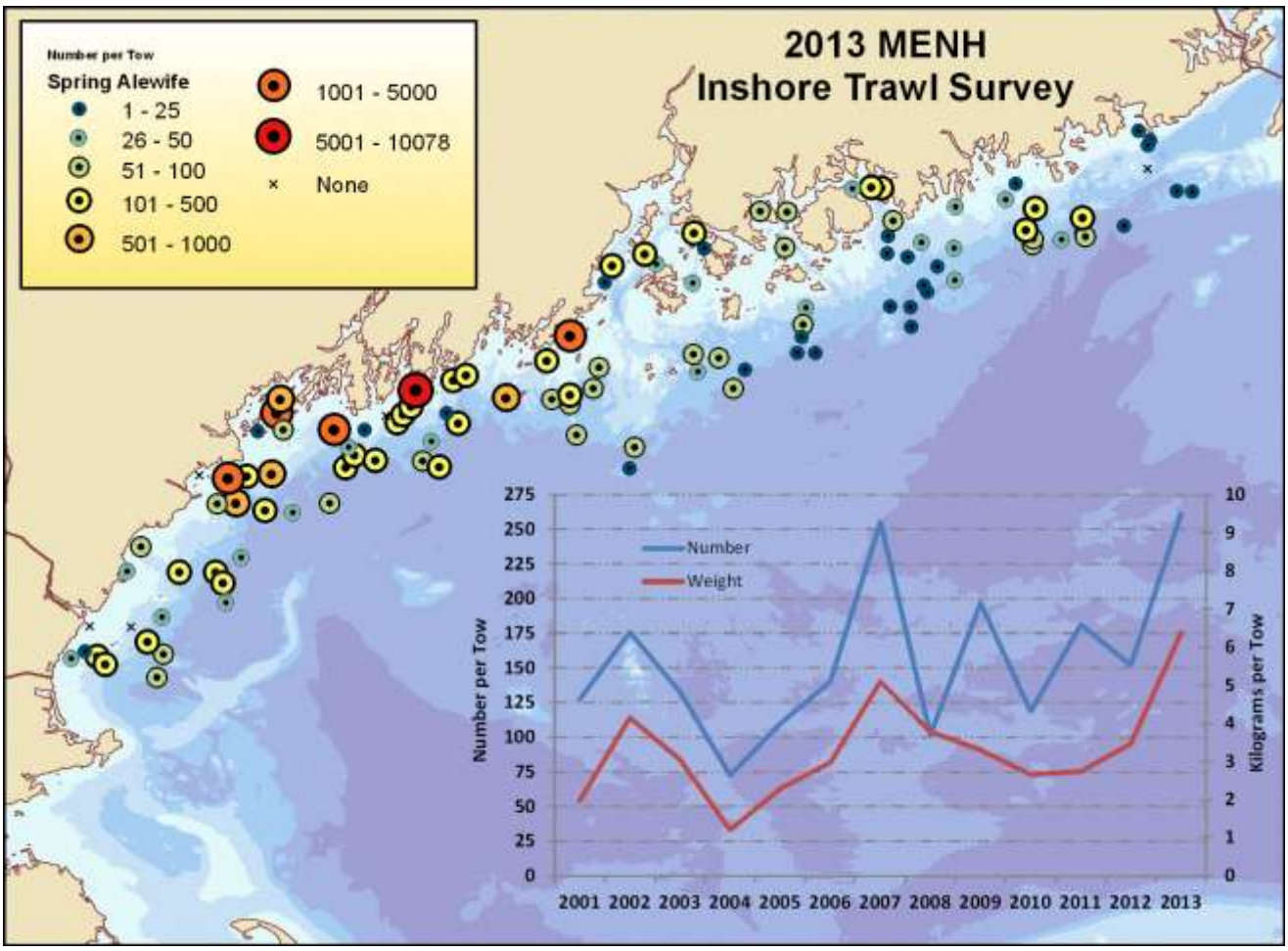
FALL

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
2013	21.15	1.69	1.27	1.73

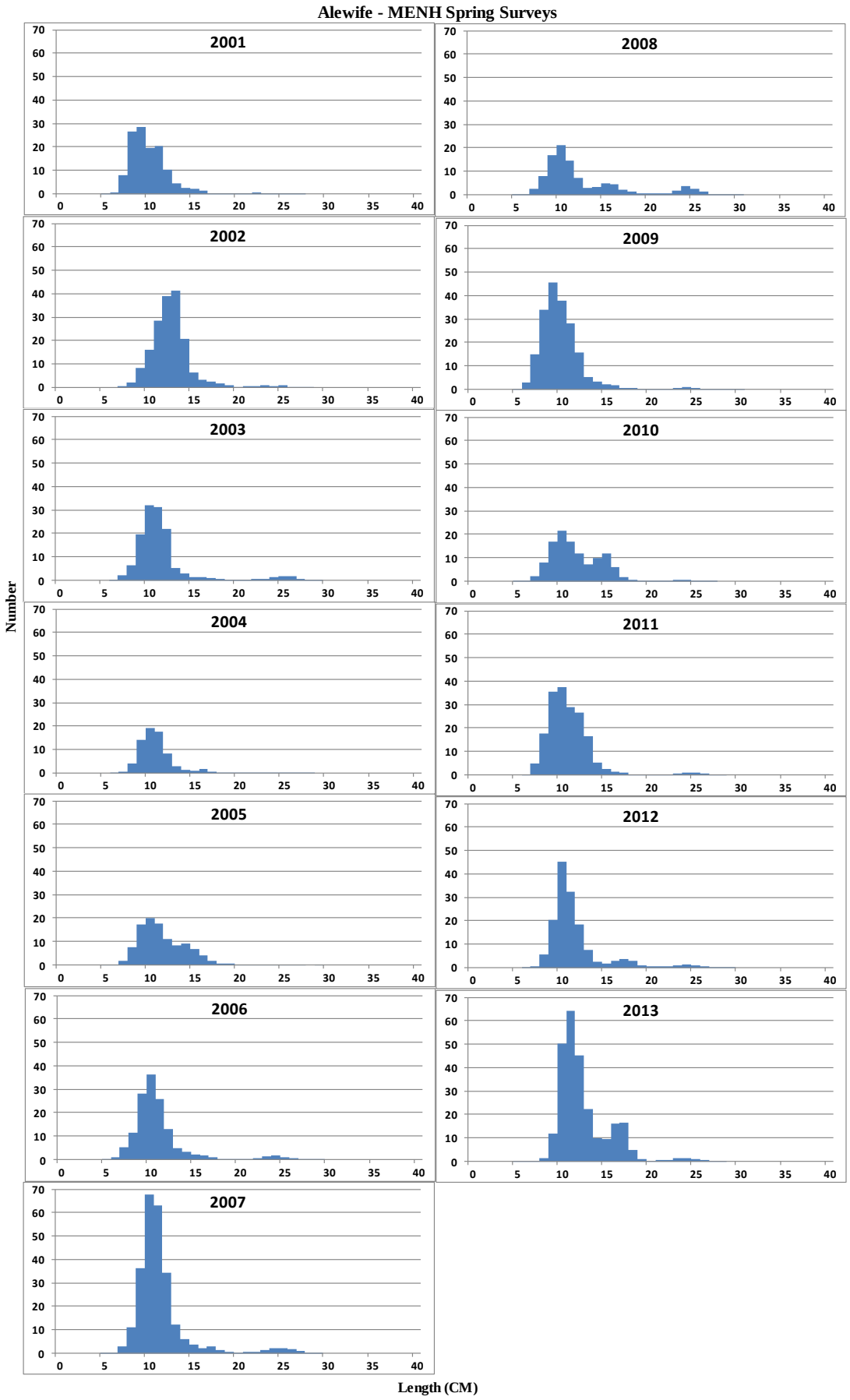

Acadian Redfish - MENH Fall Surveys
2000
2007
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
Number
Length (CM)

Alewife, *Alosa pseudoharengus*



Mean and coefficients of variance for the graph overlain on the above map
no fixed stations
Regions 1 through 5 **Strata 1 through 4**
SPRING
Stratified Mean

	Number		Weight	
	Mean	**CV**	**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
2013	261.11	0.88	6.38	0.74


Alewife - MENH Spring Surveys
2001
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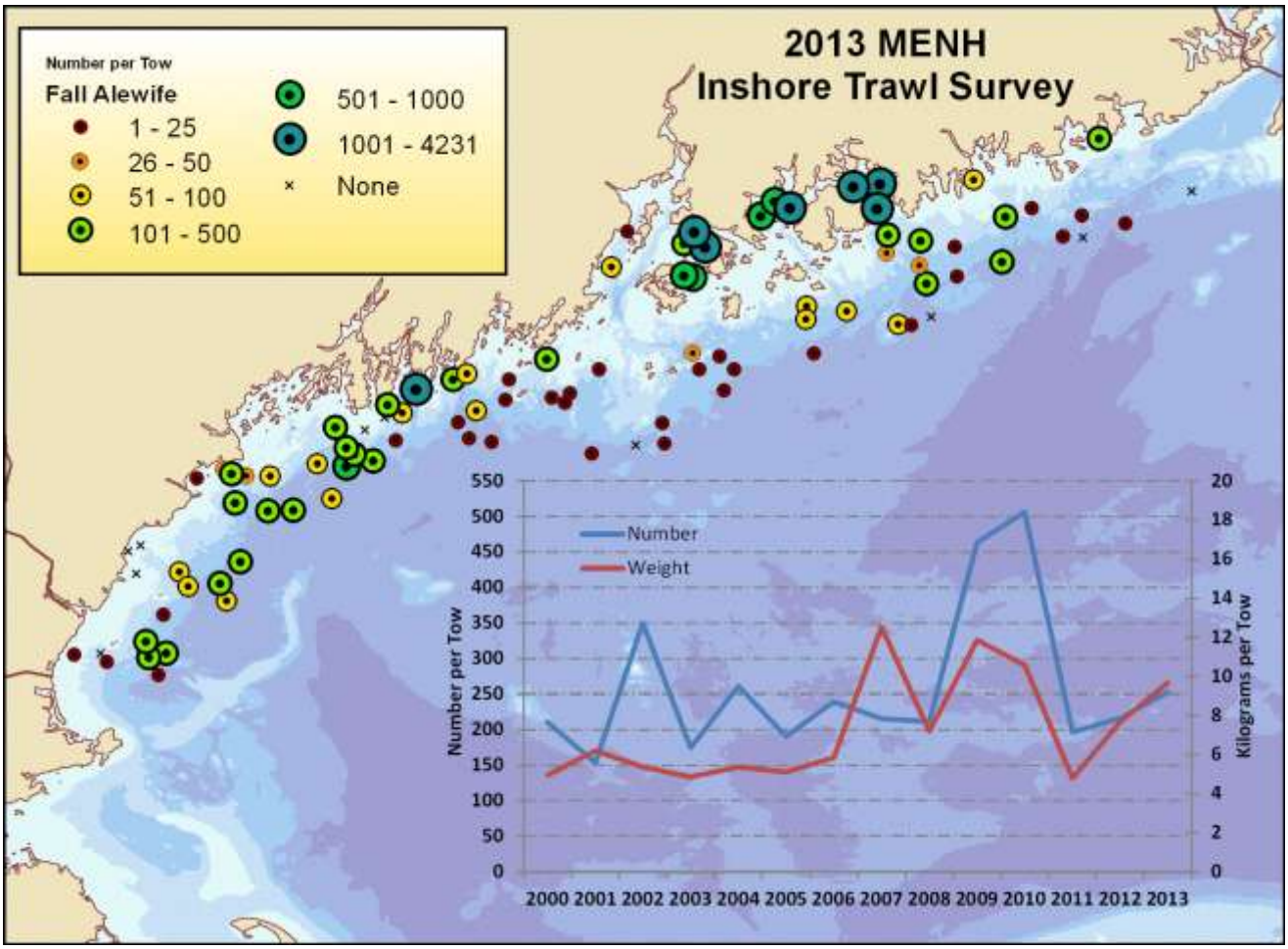
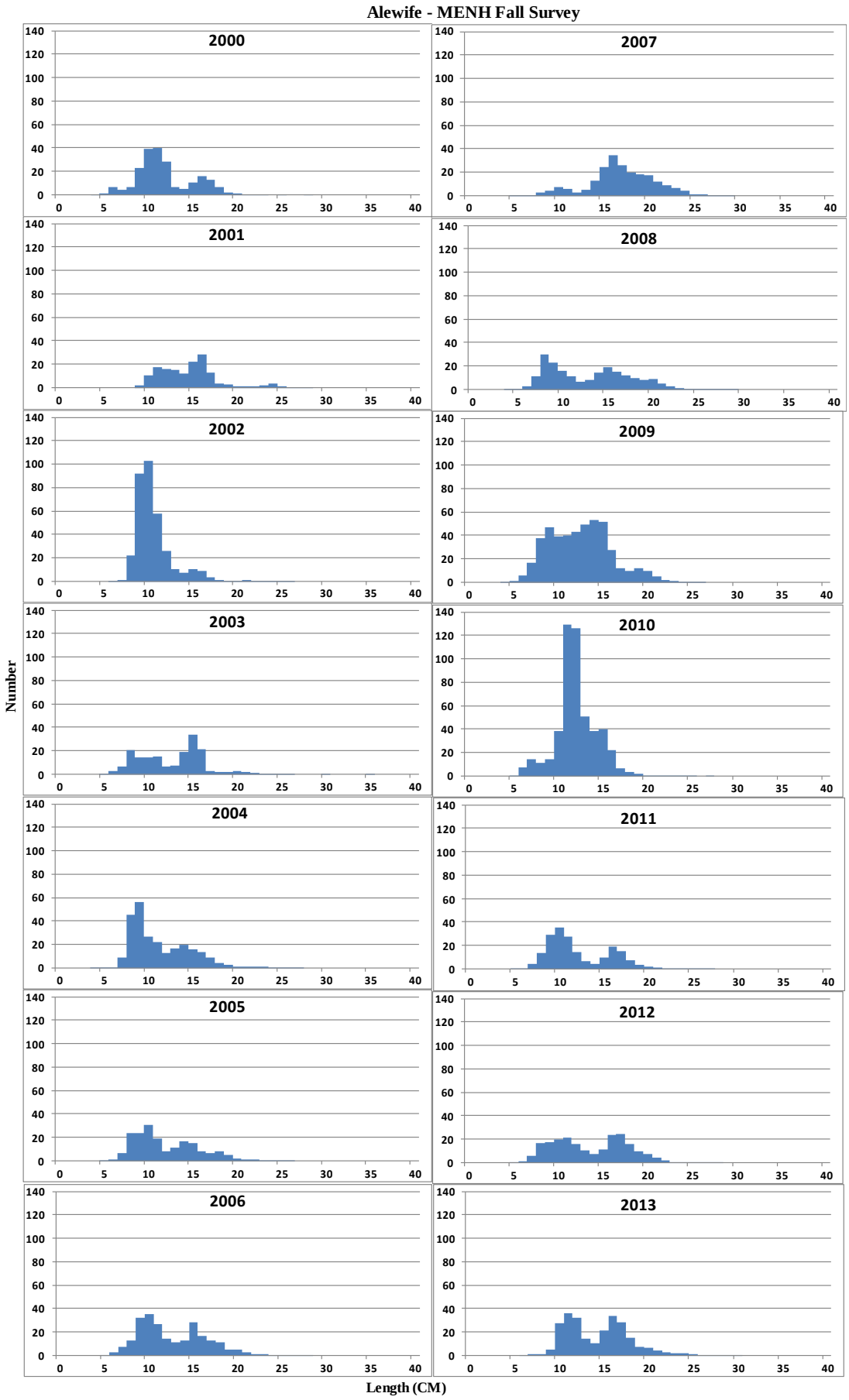
2013
2007
Number
Length (CM)



Mean and coefficients of variance for the graph overlain on the above map
no fixed stations
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
2013	252.91	0.37	9.67	0.27


Alewife - MENH Fall Survey
2000
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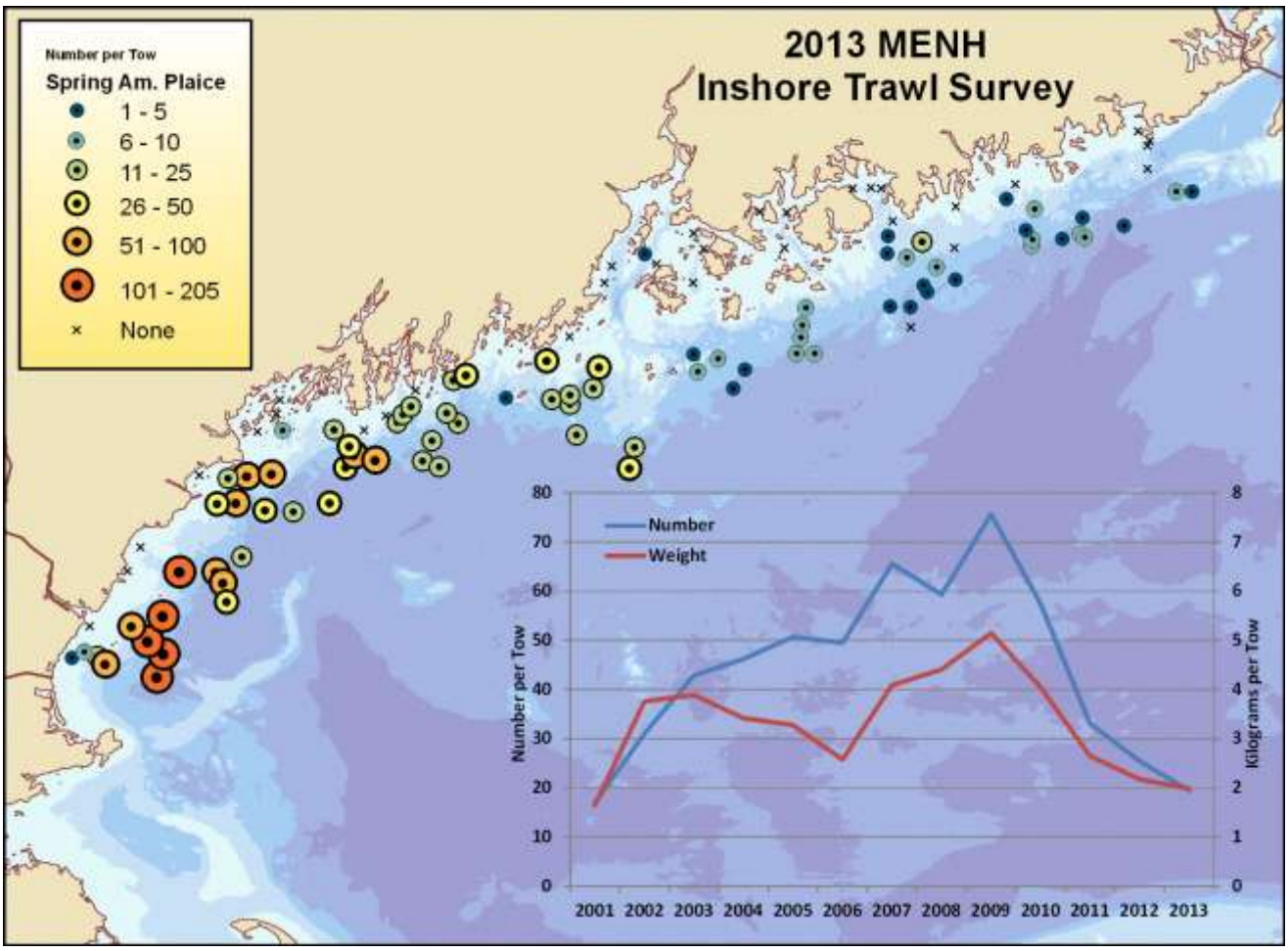
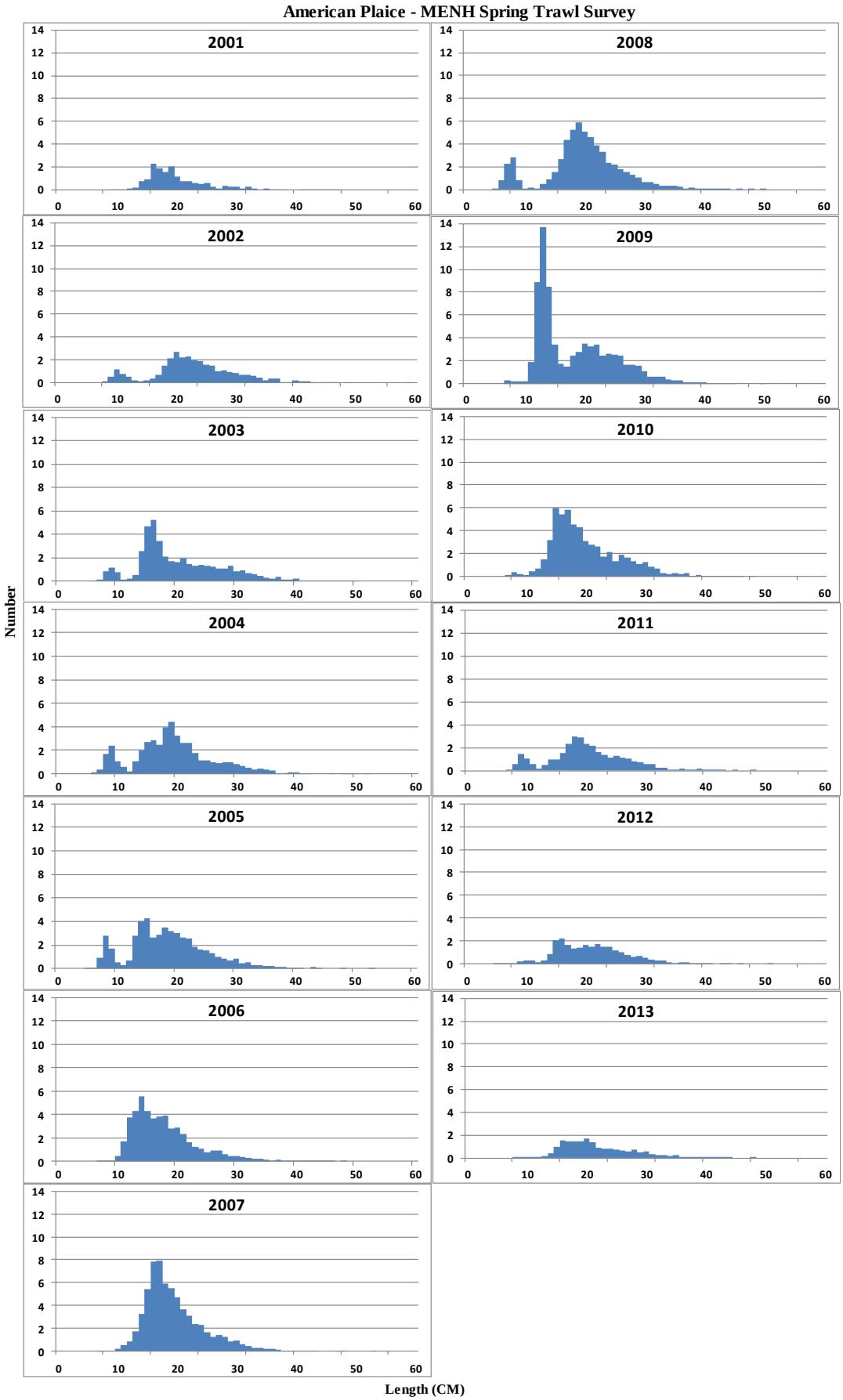
2012
2006
2013
Number
Length (CM)

American plaice, *Hippoglossoides platessoides*



Mean and coefficients of variance for the graph overlain on the above map
fixed stations <u>not</u> included
for plaice, indices 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
2013	19.47	0.22	1.98	0.22


American Plaice - MENH Spring Trawl Survey
2001
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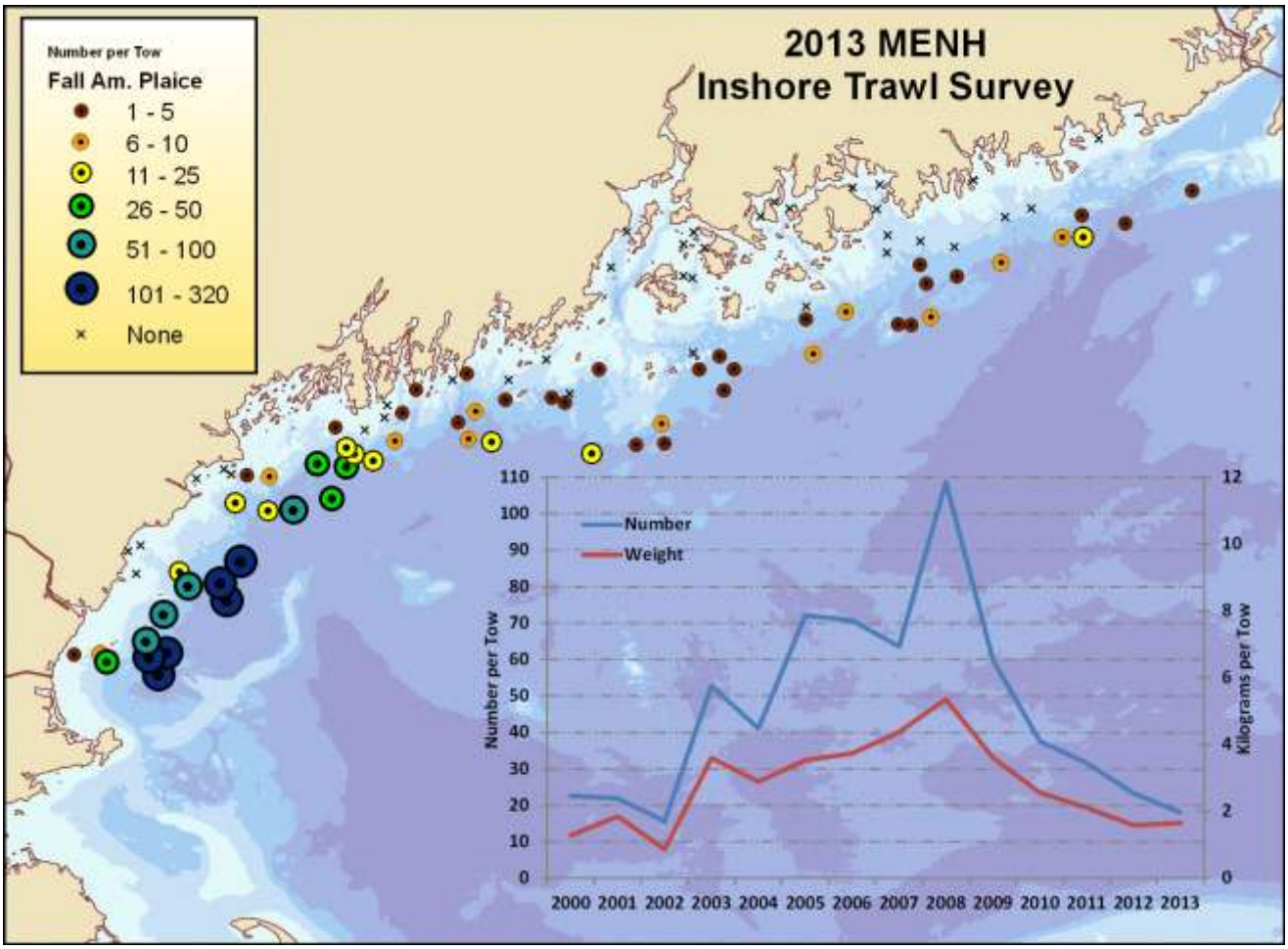
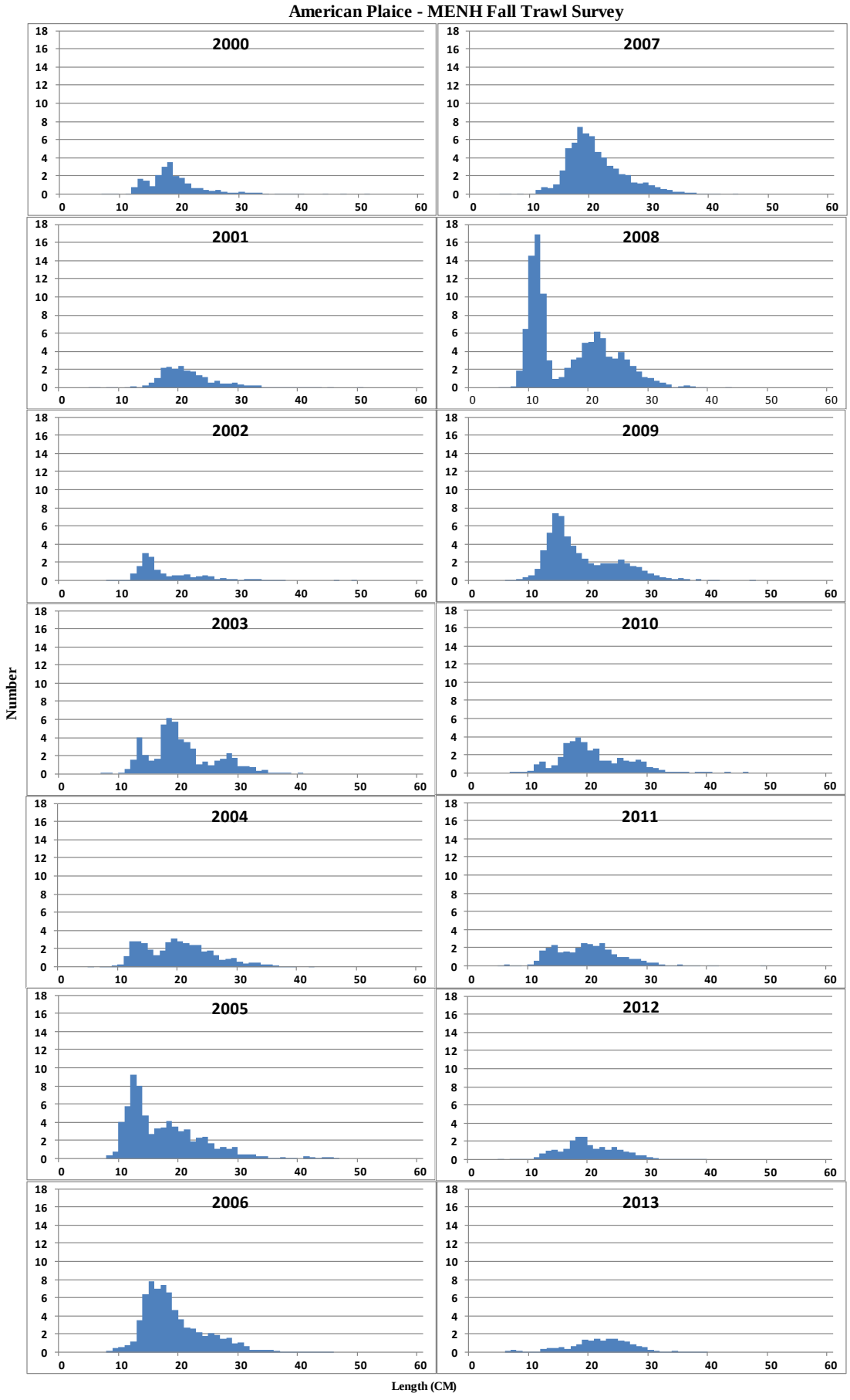
2012
2006
2013
2007
Number
Length (CM)



Mean and coefficients of variance for the graph overlain on the above map
fixed stations <u>not</u> included
for plaice, indices 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
2013	18.08	0.43	1.66	0.44


American Plaice - MENH Fall Trawl Survey
2000
2007
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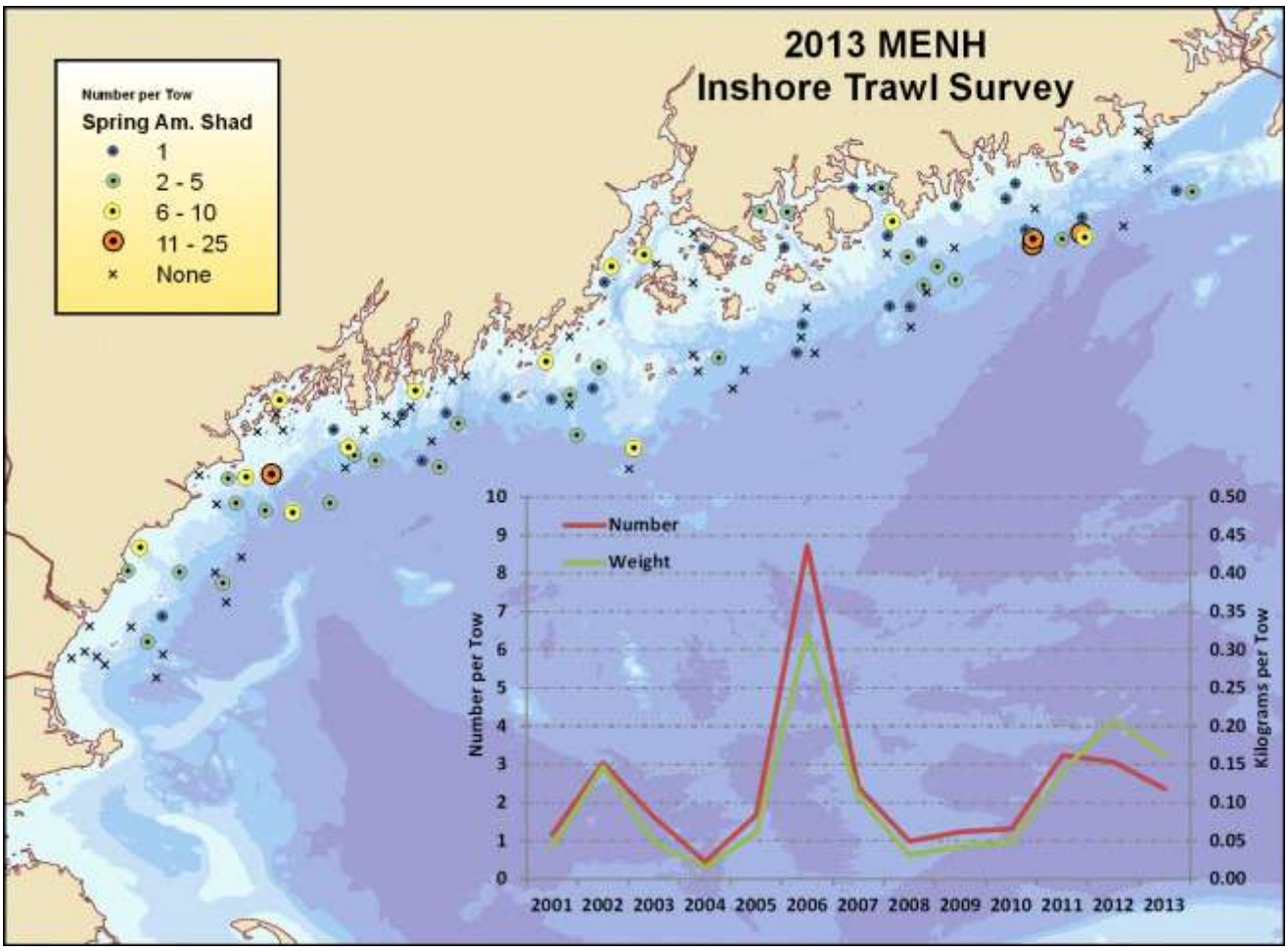
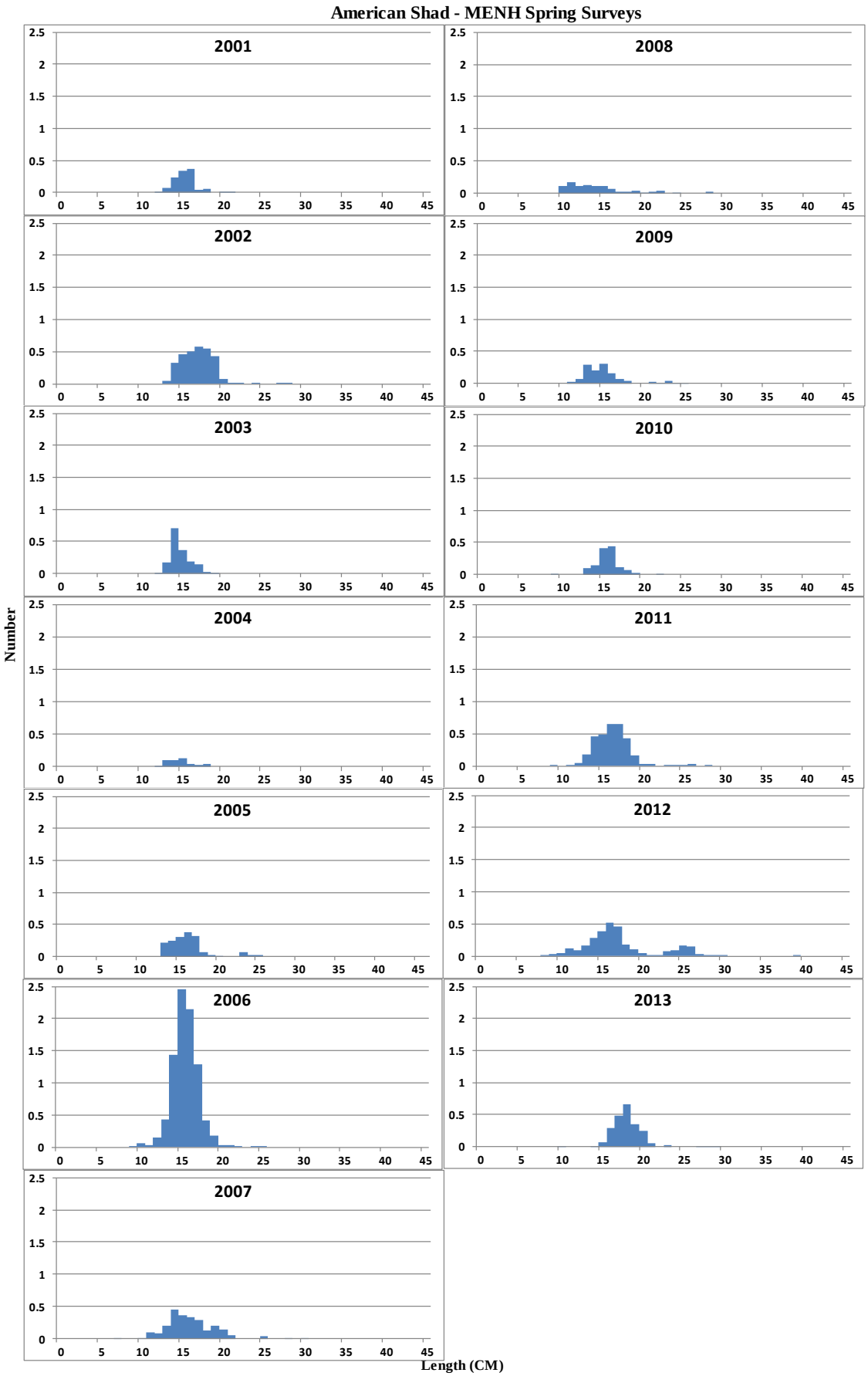
2012
2006
2013
Number
Length (CM)

American shad, *Alosa sapidissima*



Mean and coefficients of variance for the graph overlain on the above map
fixed stations <u>not</u> included
for shad, indices 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
2013	2.36	0.43	0.16	0.57


American Shad - MENH Spring Surveys
2001
2008
2002
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2003
2010
2004
2011
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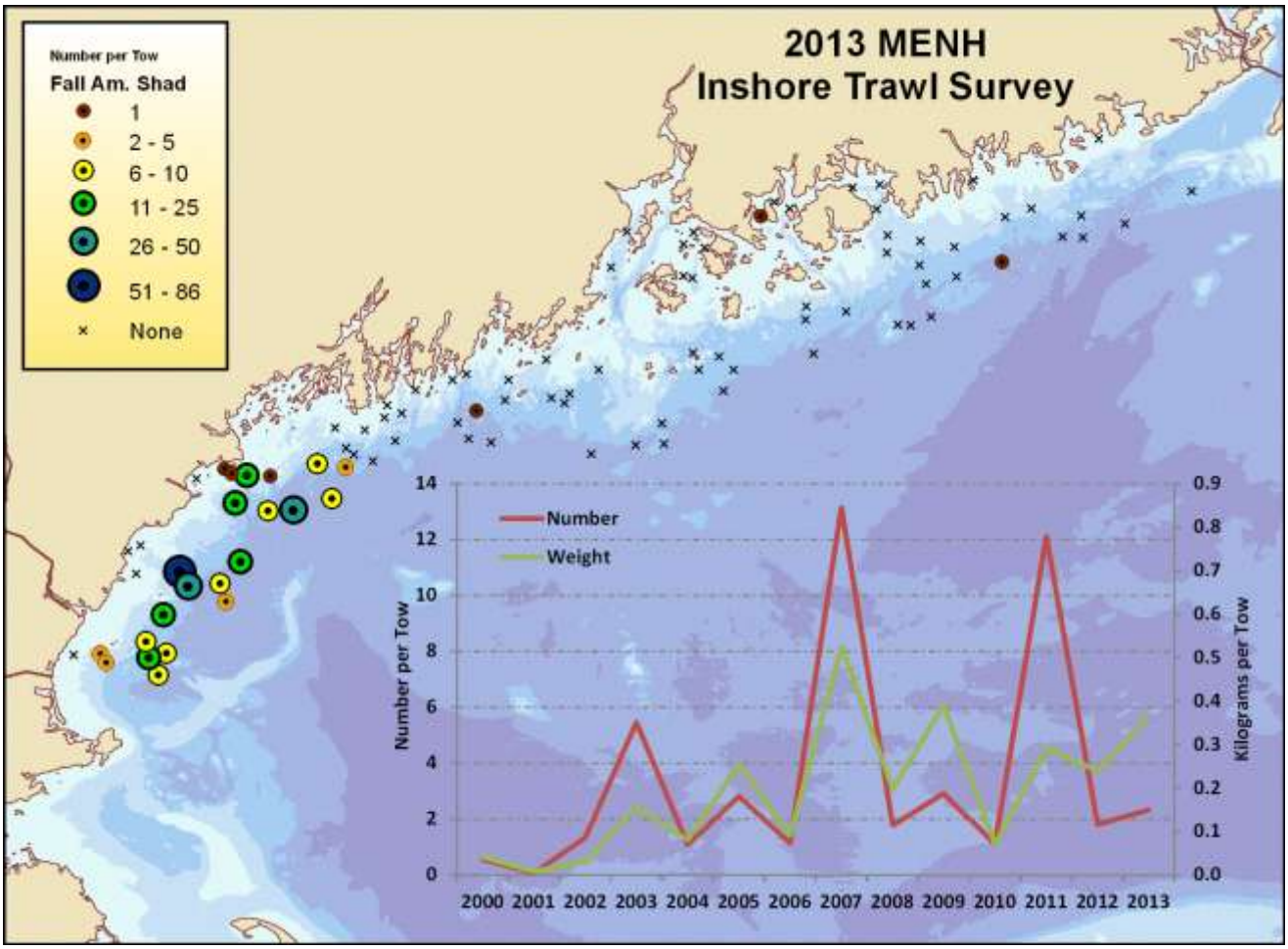
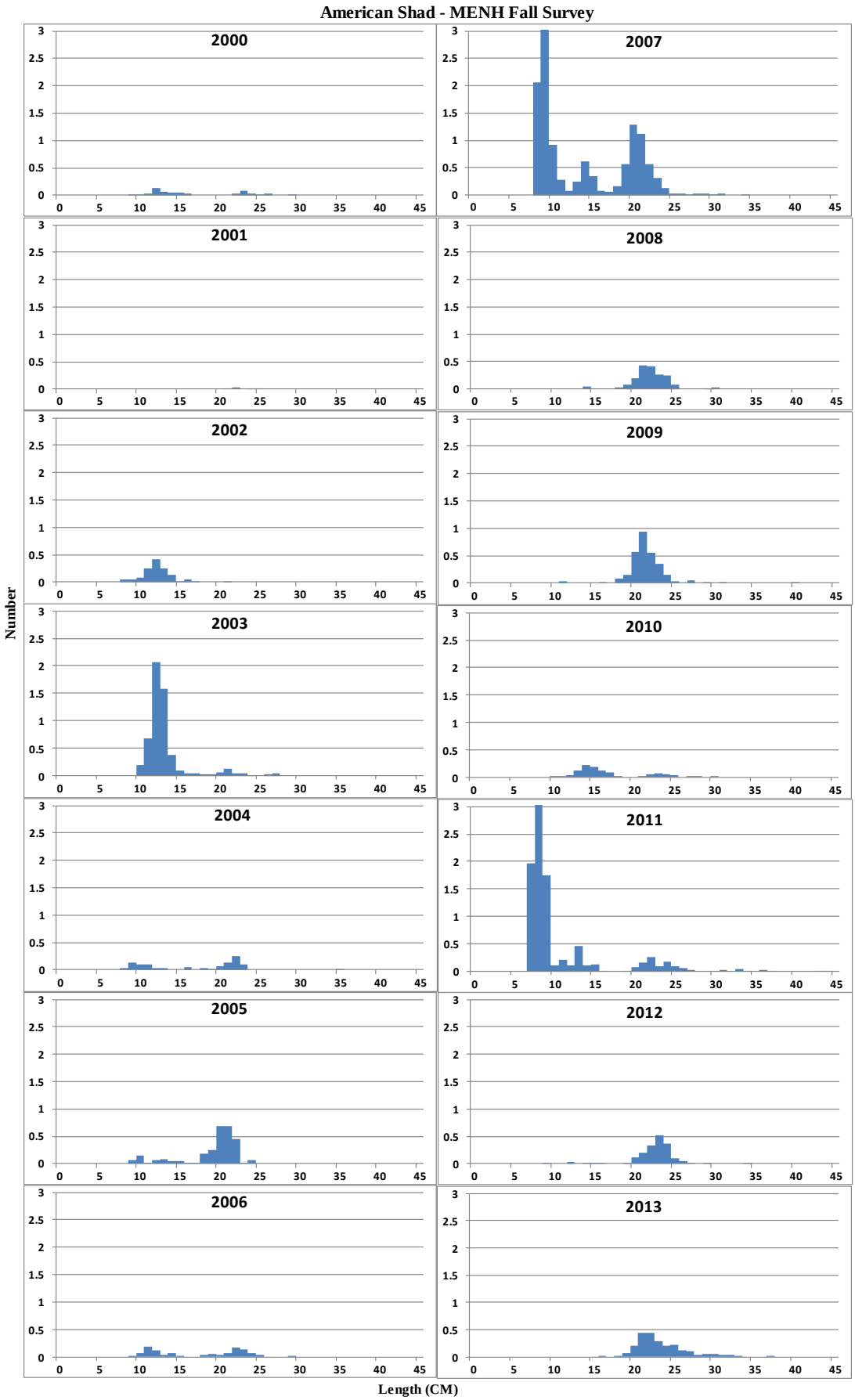
2012
2006
2013
2007
Number
Length (CM)



Mean and coefficients of variance for the graph overlain on the above map
fixed stations <u>not</u> included
for shad, indices 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
2013	2.33	0.71	0.37	0.57


American Shad - MENH Fall Survey
2000
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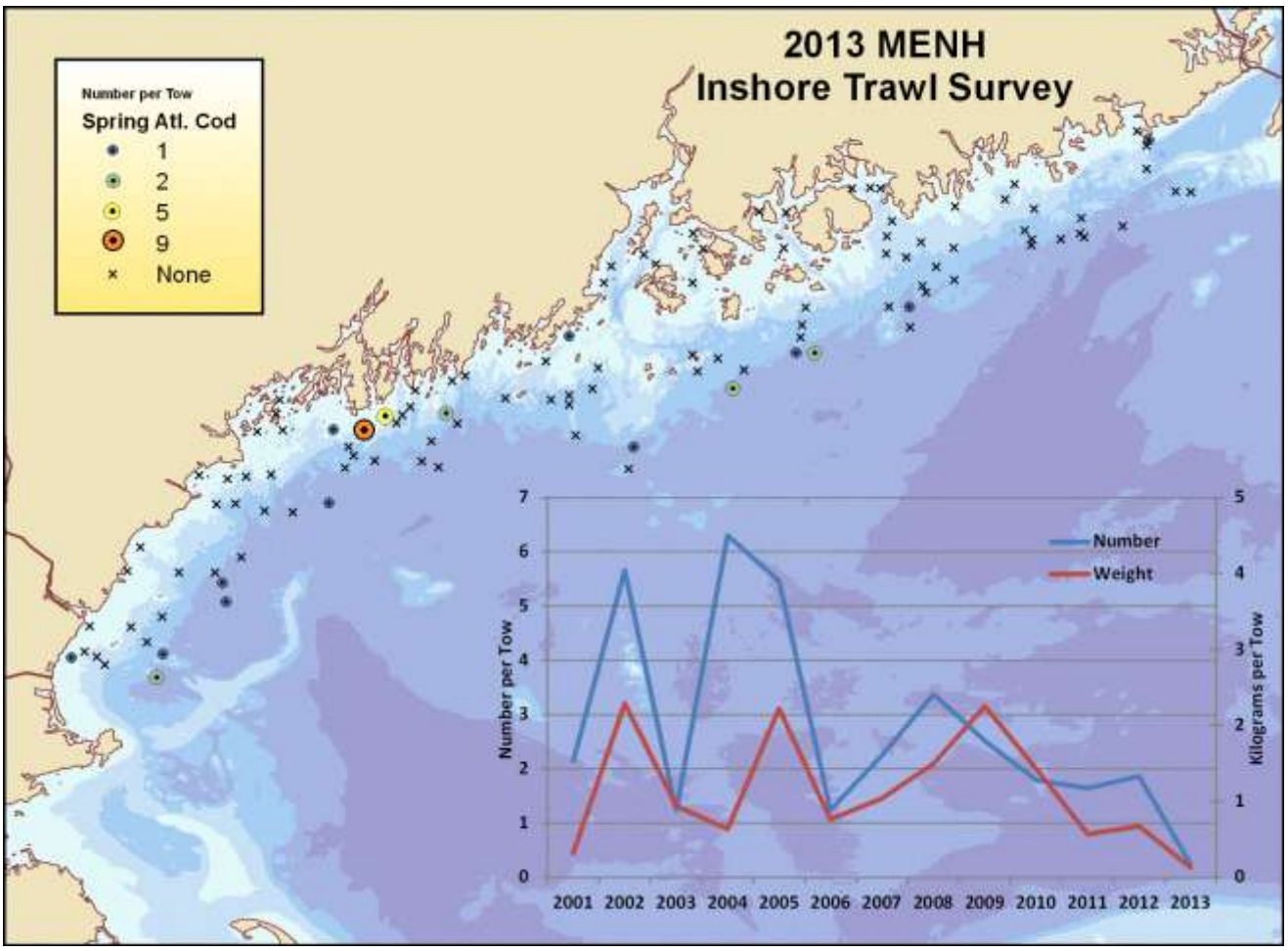
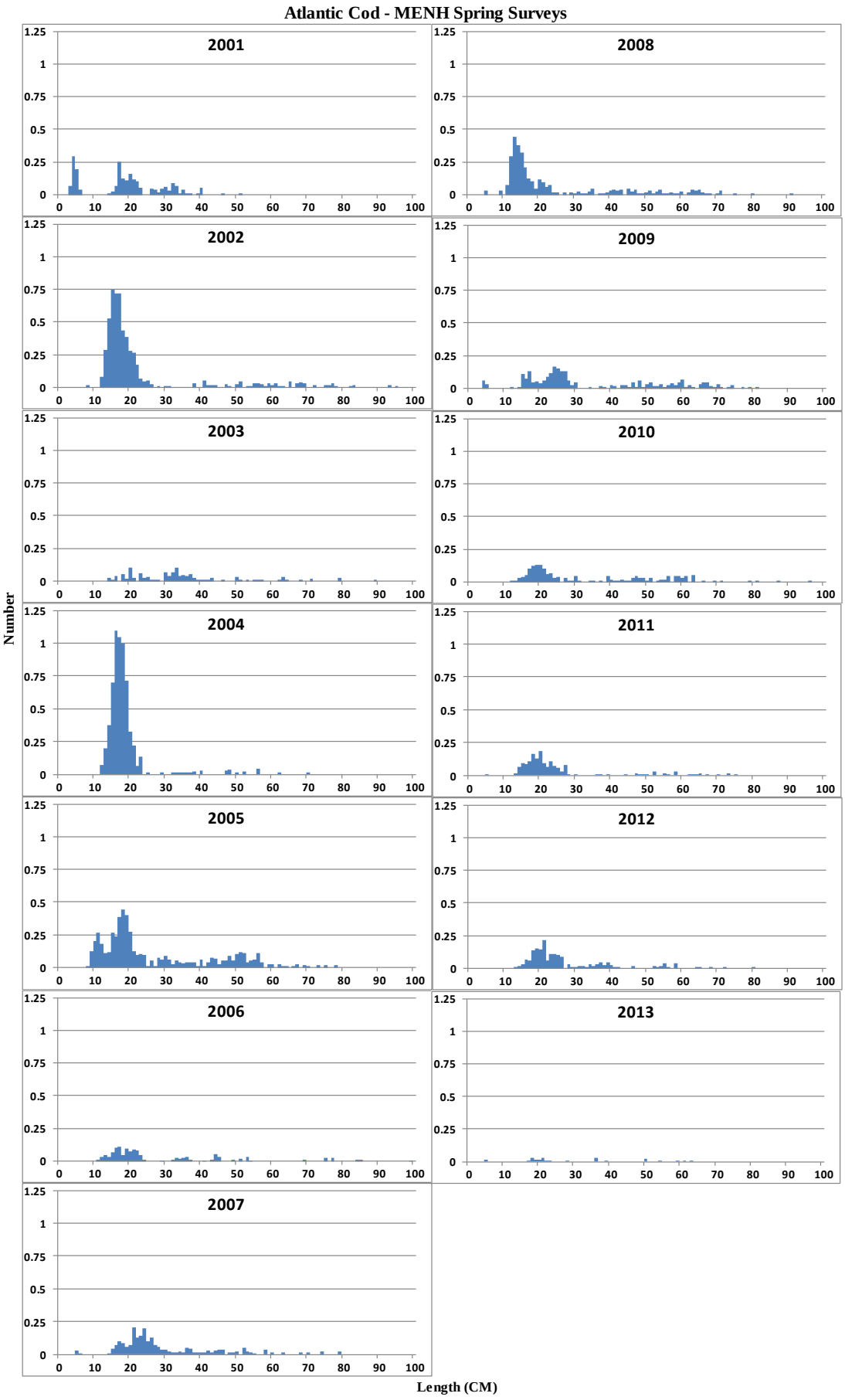
2012
2006
2013
Number
Length (CM)

Atlantic cod, *Gadus morhua*



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

	Number		Weight	
	Mean	**CV**	**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
2013	0.24	0.96	0.13	0.75


Atlantic Cod - MENH Spring Surveys
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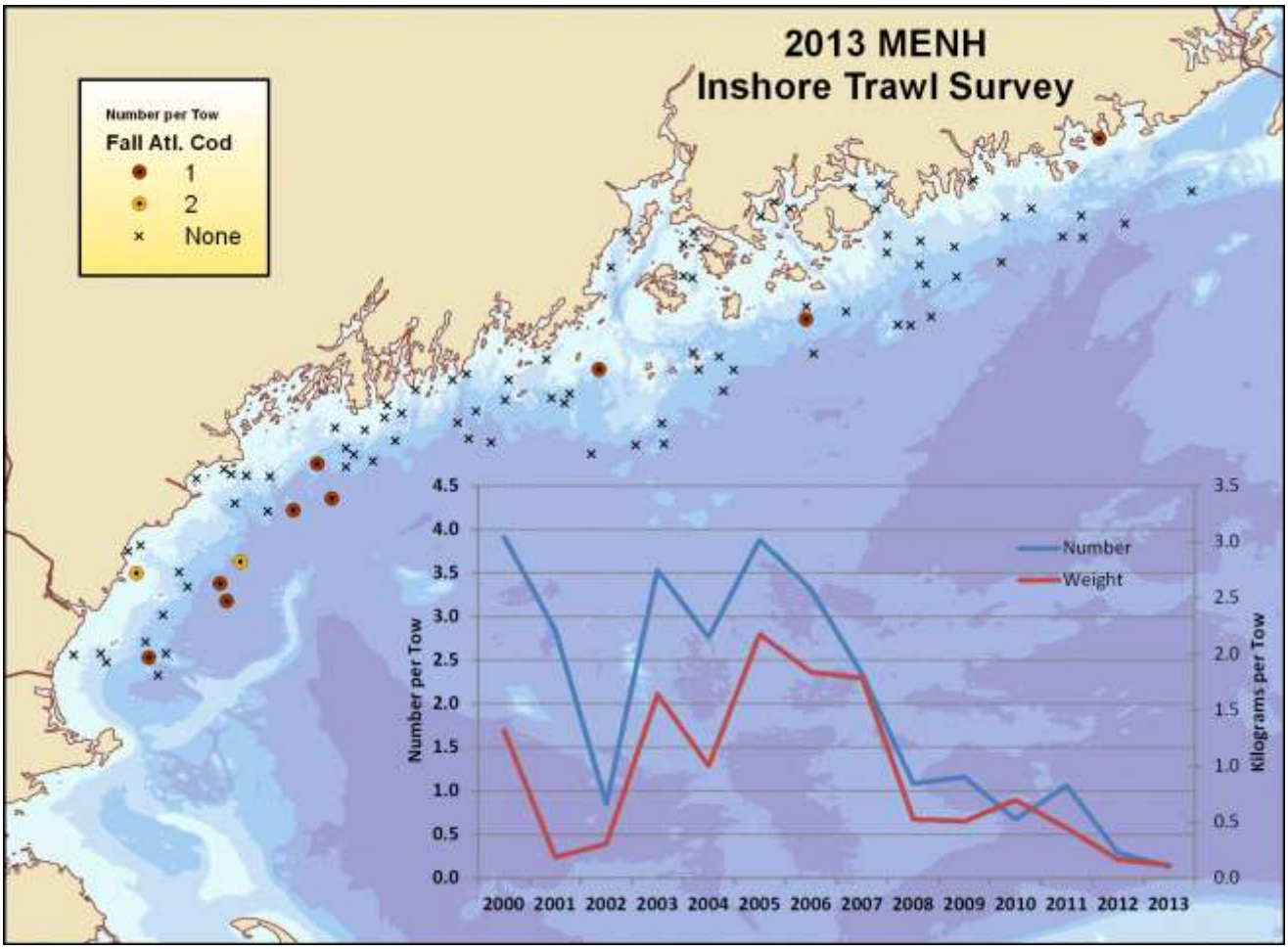
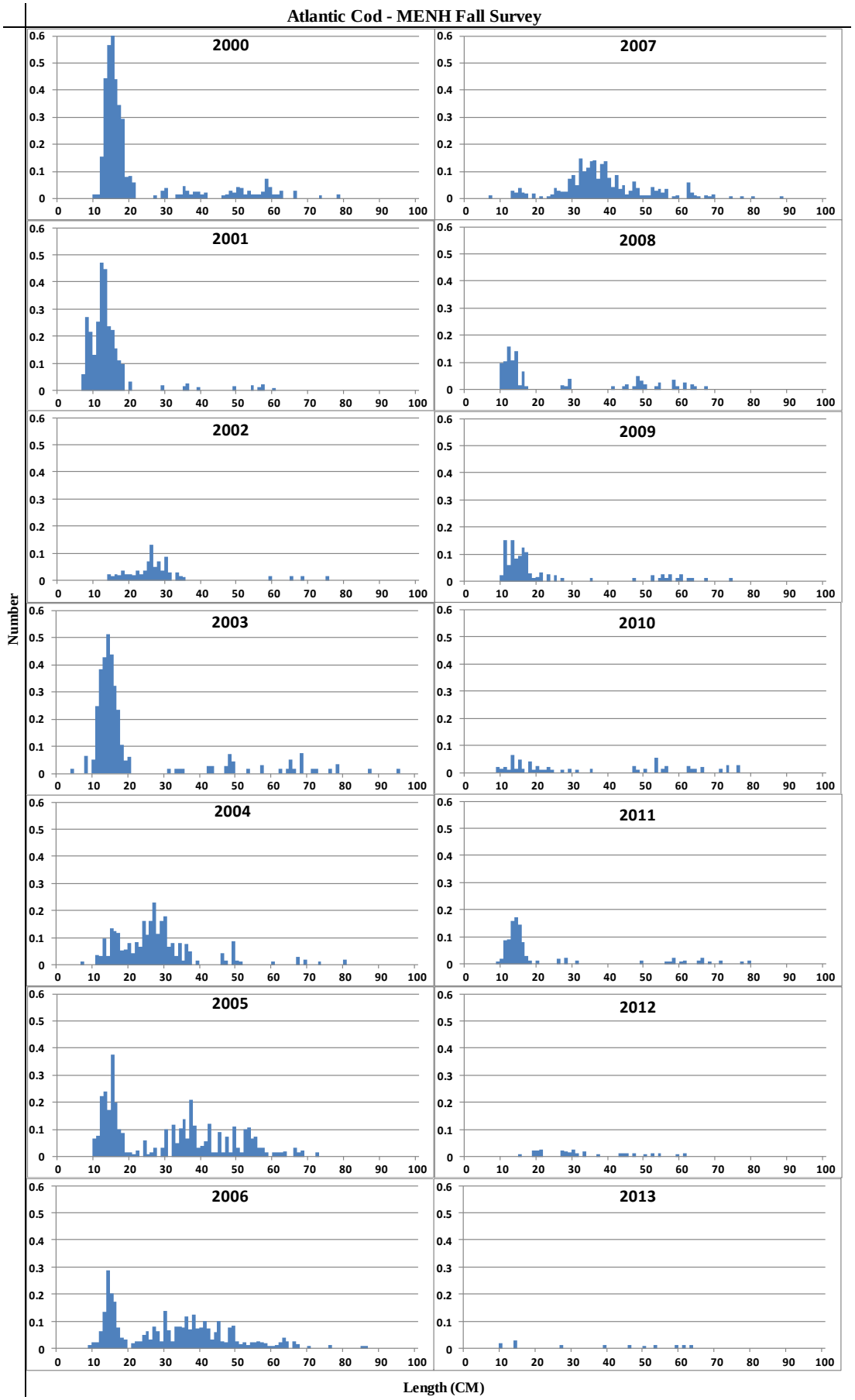
2012
2006
2013
2007
Number
Length (CM)



Mean and coefficients of variance for the graph overlain on the above map
fixed stations <u>not</u> included
for Atlantic cod, 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
2013	0.13	0.55	0.11	0.80


Atlantic Cod - MENH Fall Survey
2000
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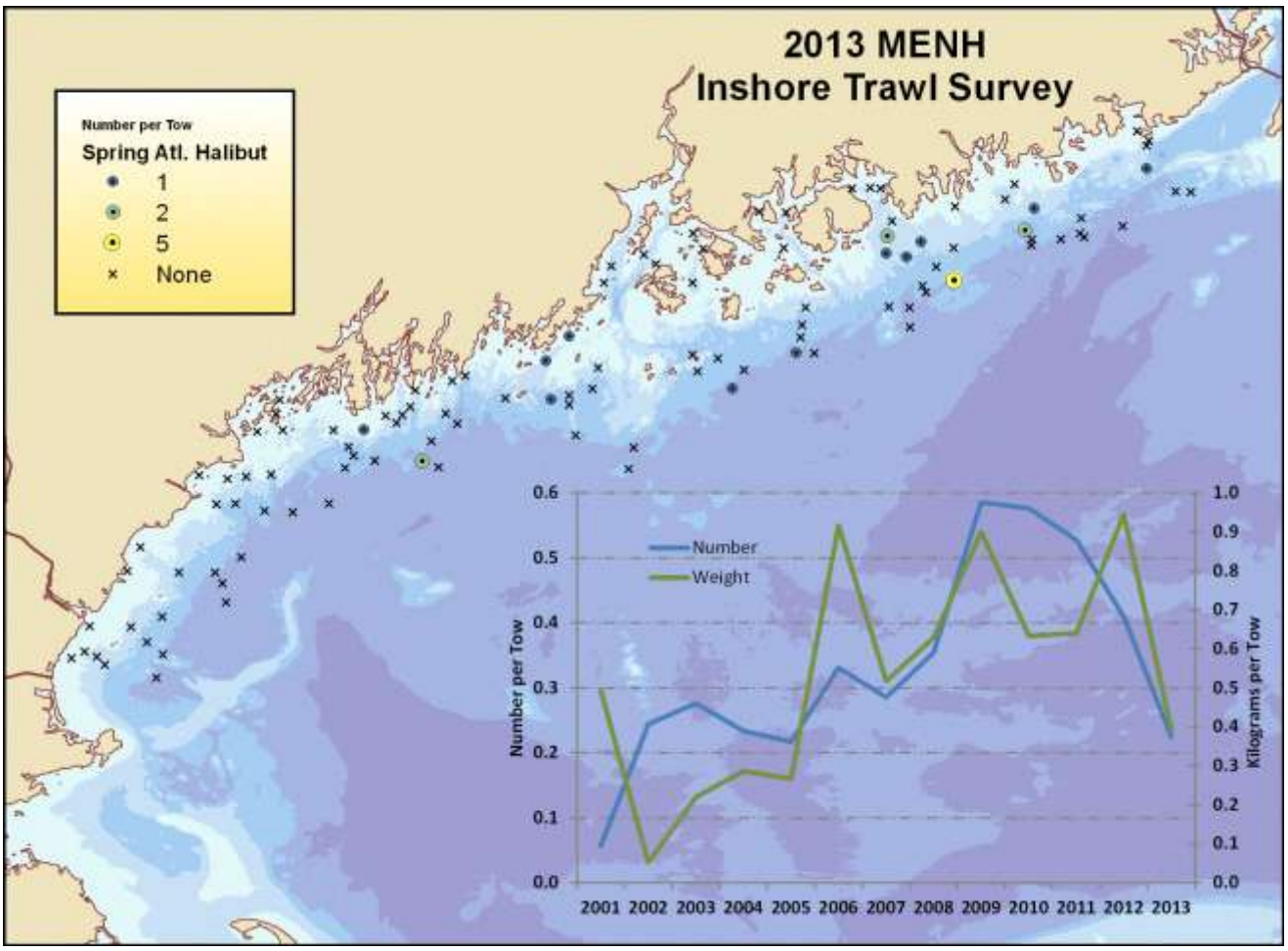
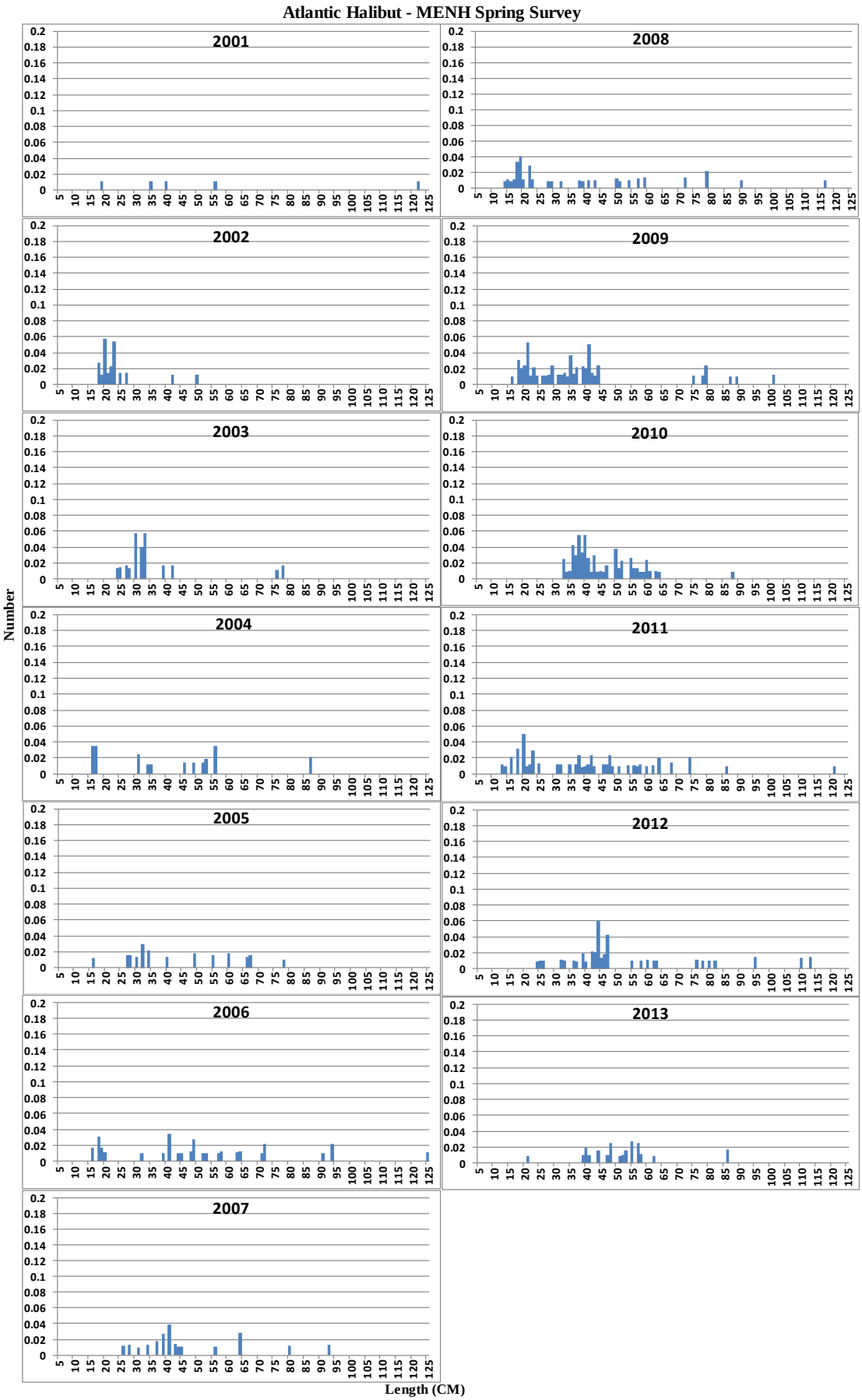
2013
Number
Length (CM)

Atlantic halibut, *Hippoglossus hippoglossus*



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

	Number		Weight	
	Mean	**CV**	**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
2013	0.22	0.78	0.39	0.73


Atlantic Halibut - MENH Spring Survey
2001
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2003
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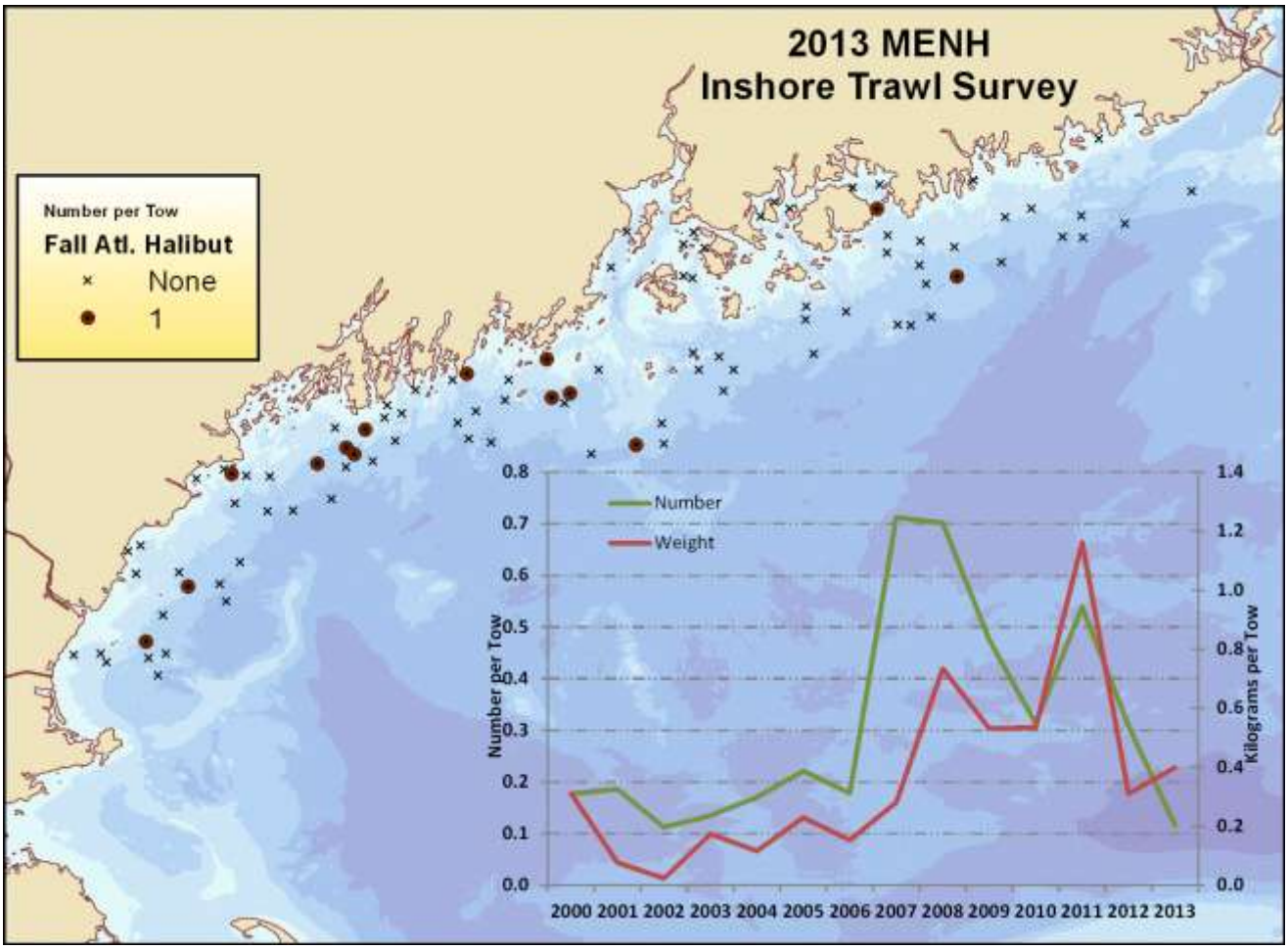
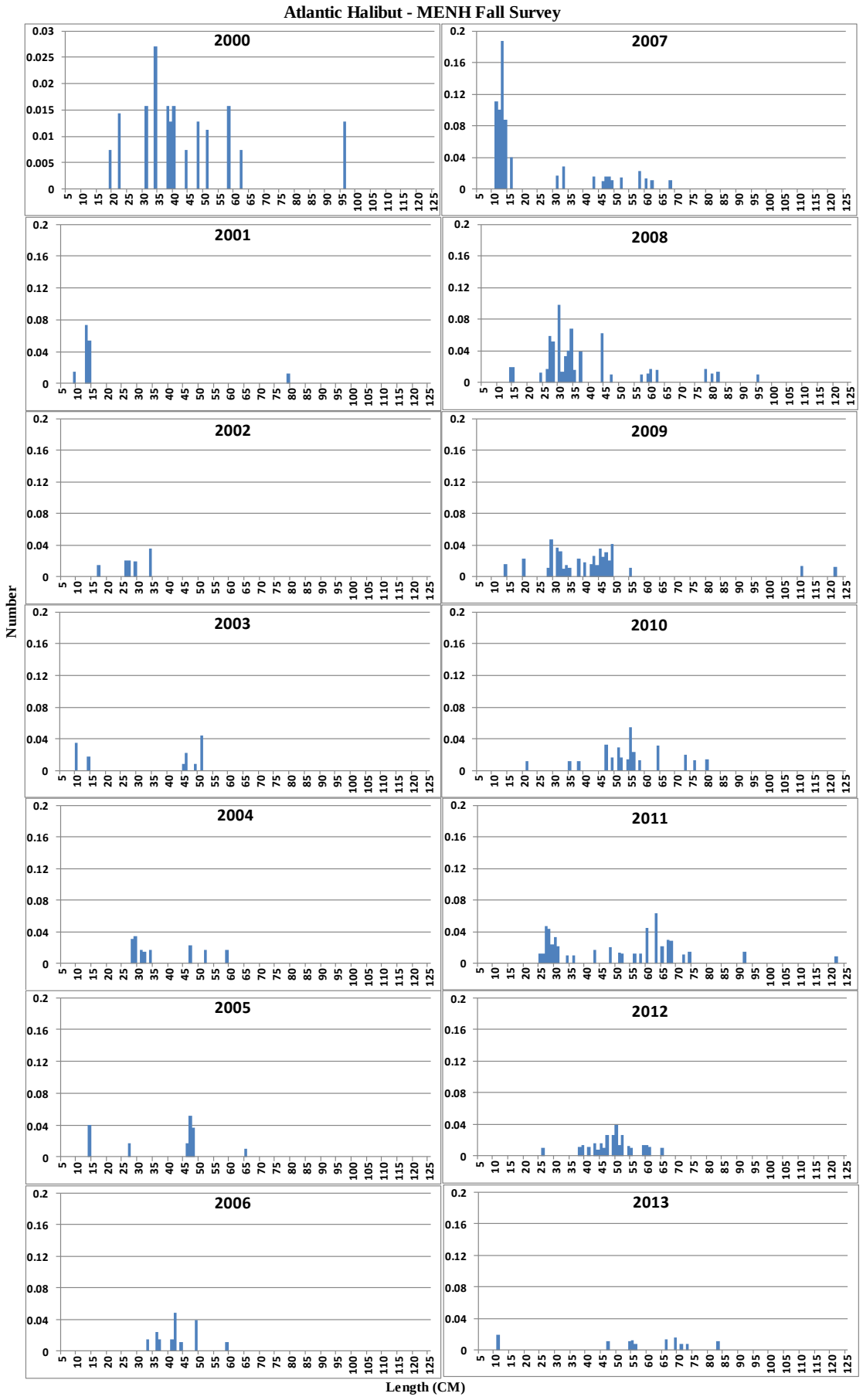
2011
2012
2013
Number
Length (CM)



Means and coefficients of variance for graphs overlain on above map
fixed stations not included
for halibut, 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
2013	0.12	0.68	0.40	0.86


Atlantic Halibut - MENH Fall Survey
2000
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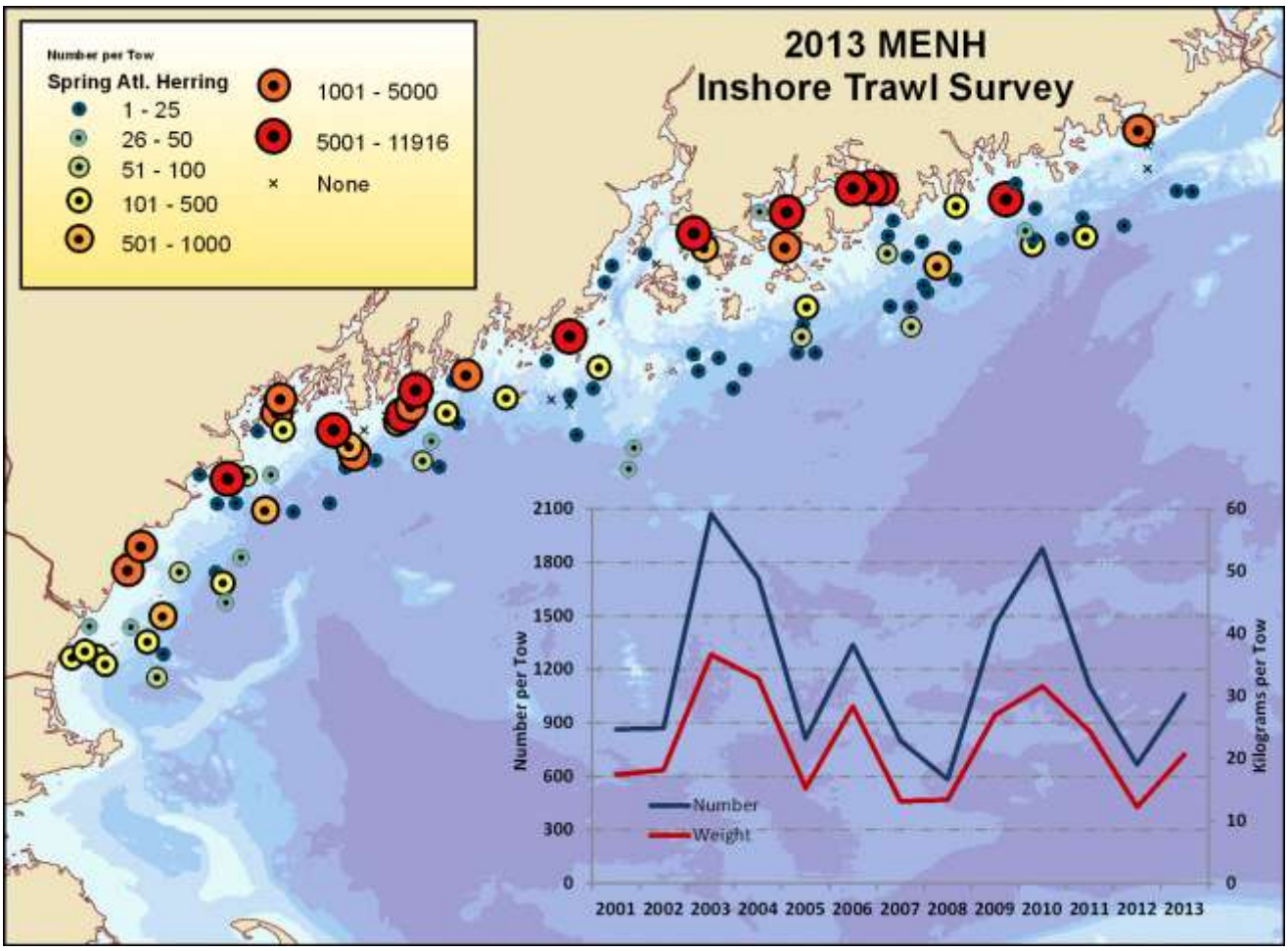
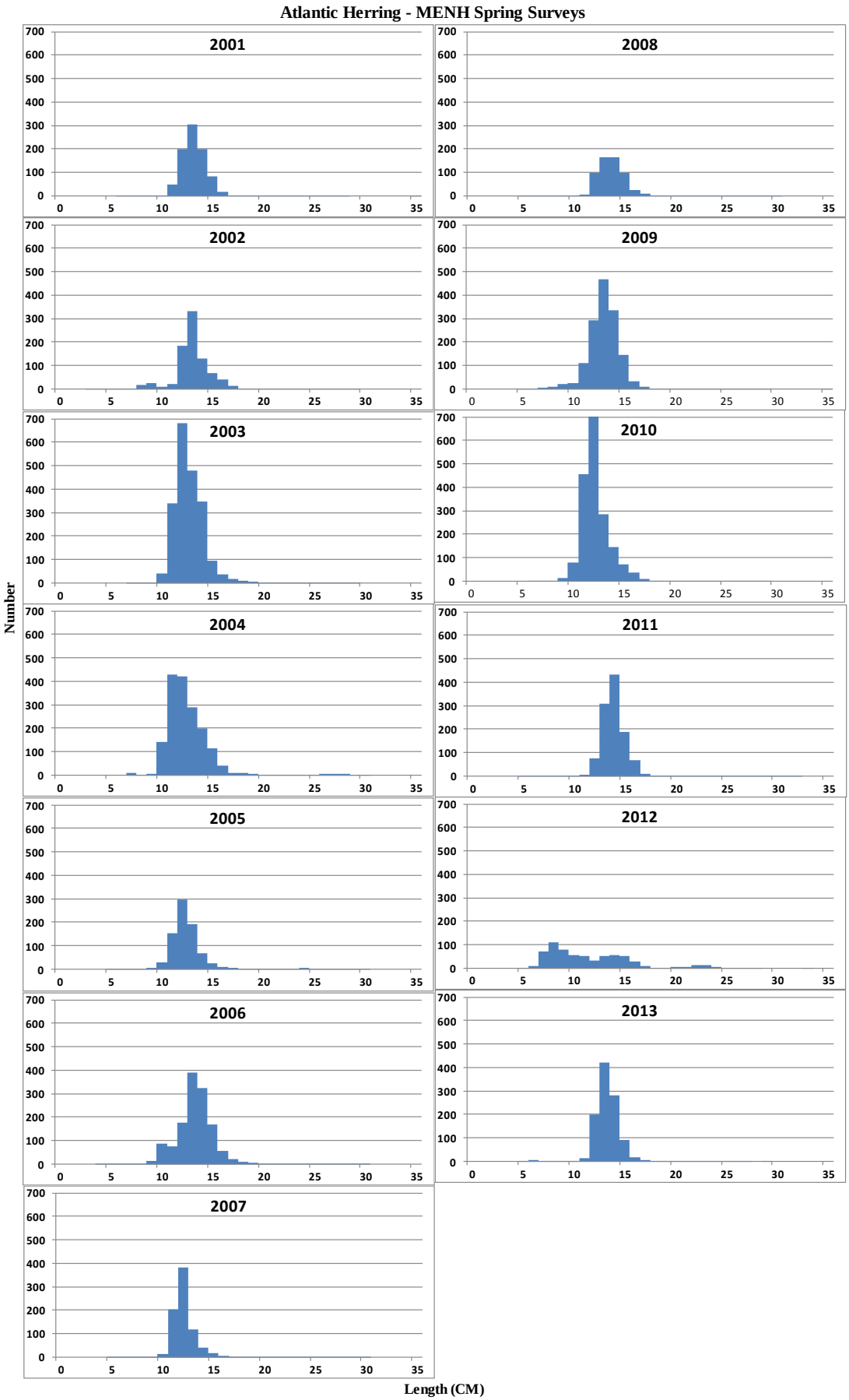
2006
2013
Number
Length (CM)

Atlantic herring, *Clupea harengus*



Means and Coefficients of variance for graphs overlaid on above map
fixed stations <u>not</u> included
for herring, for regions 1 through 5; Strata 1 through 4
SPRING
Stratified Mean

	Number		Weight	
	Mean	**CV**	**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
2013	1059.00	0.42	20.66	0.42


Atlantic Herring - MENH Spring Surveys
2001
2002
2003
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2005
2006
2007
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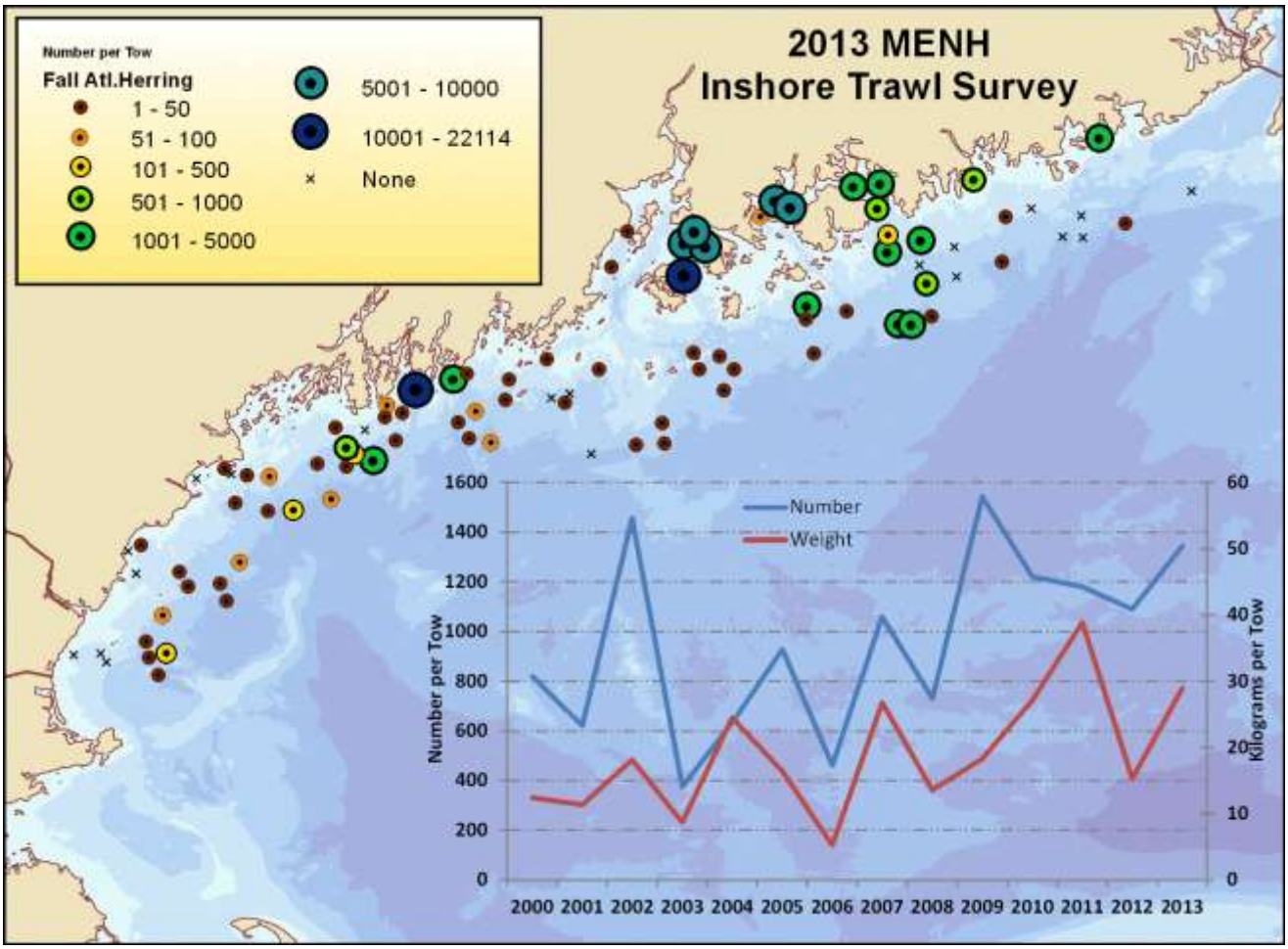
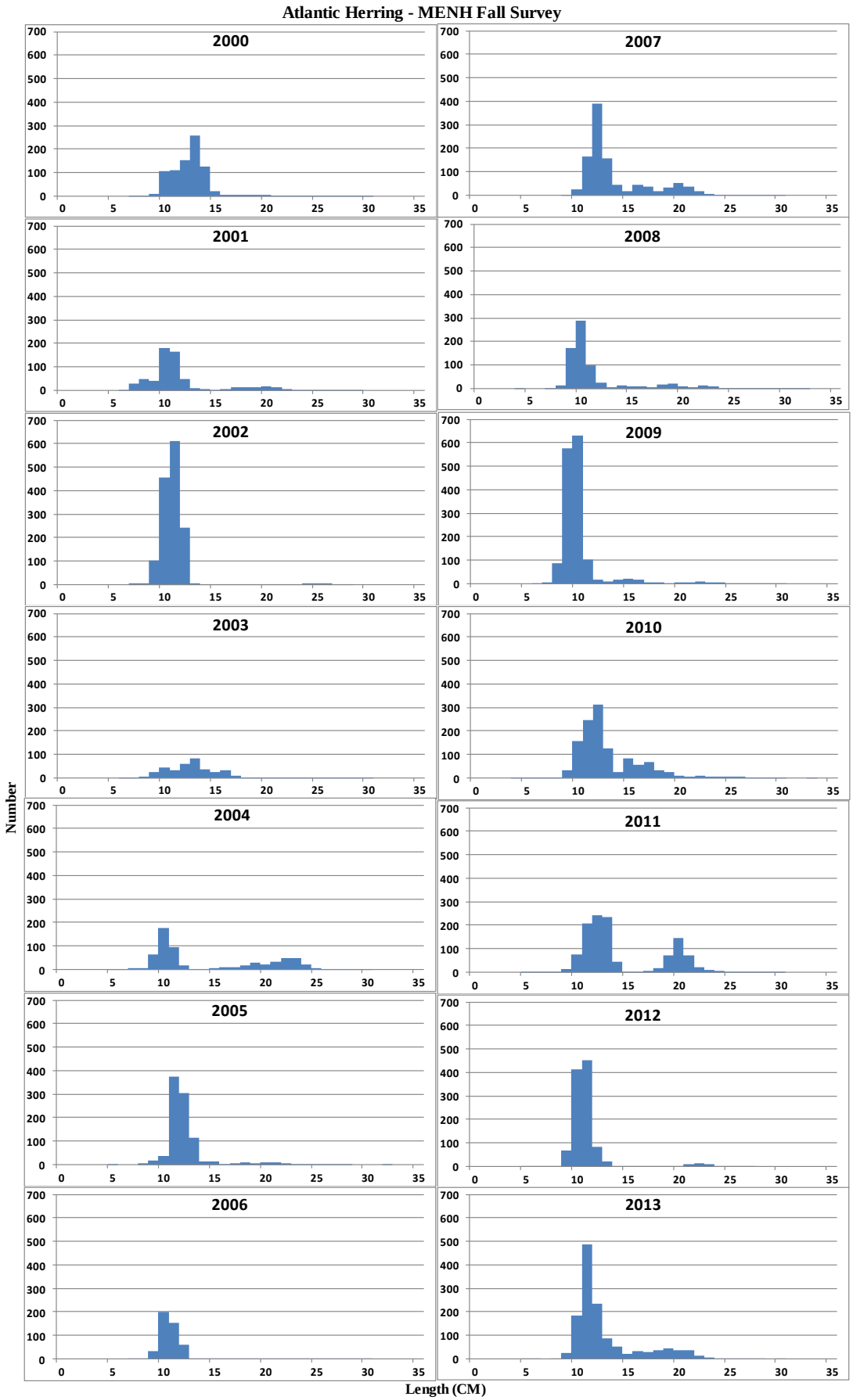
2011
2012
2013
Number
Length (CM)



Means and Coefficients of variance for graphs overlaid on above map
fixed stations <u>not</u> included
for herring, 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
2013	1344.14	0.58	28.95	0.48


Atlantic Herring - MENH Fall Survey
2000
2001
2002
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2004
2005
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2007
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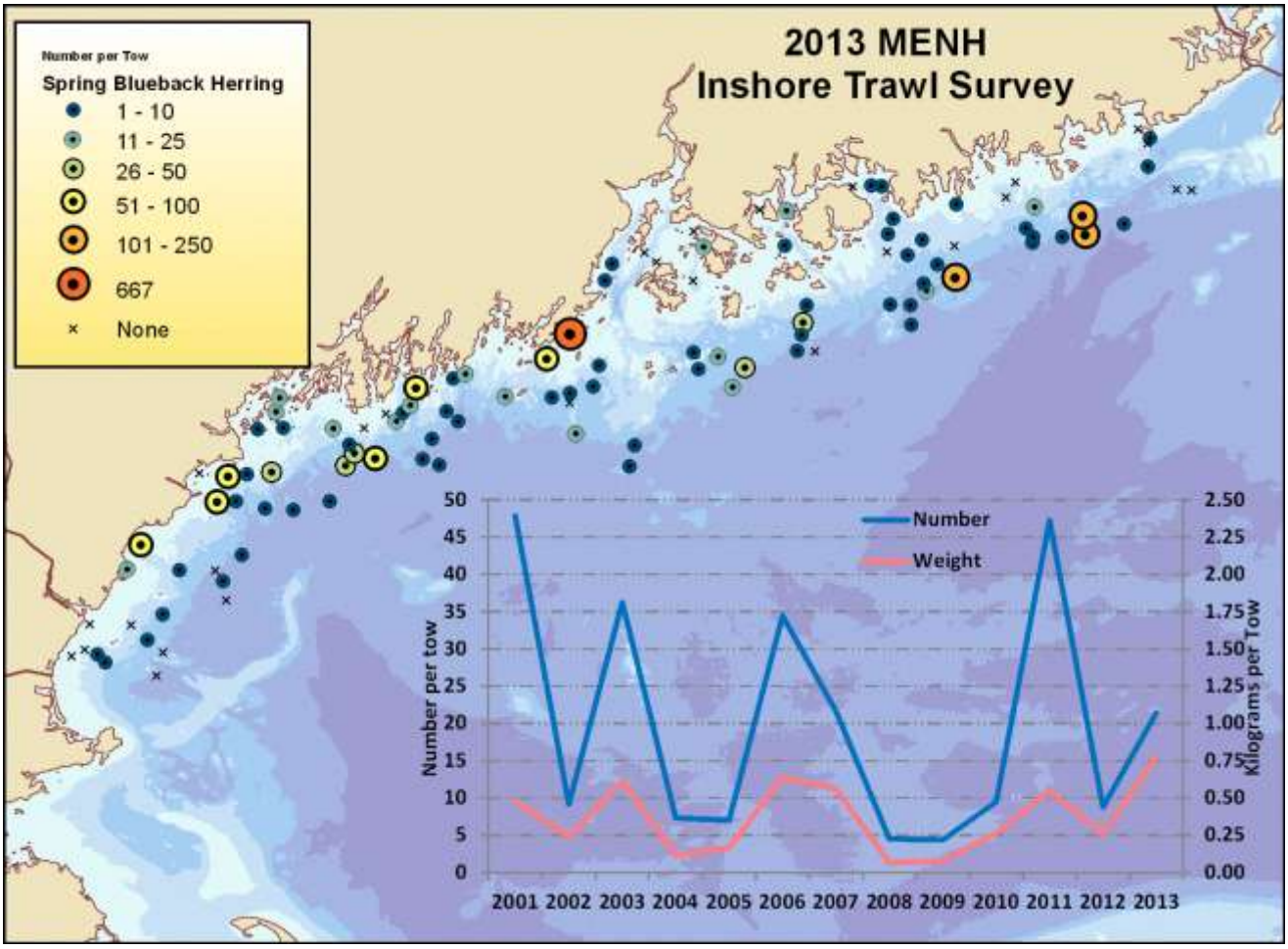
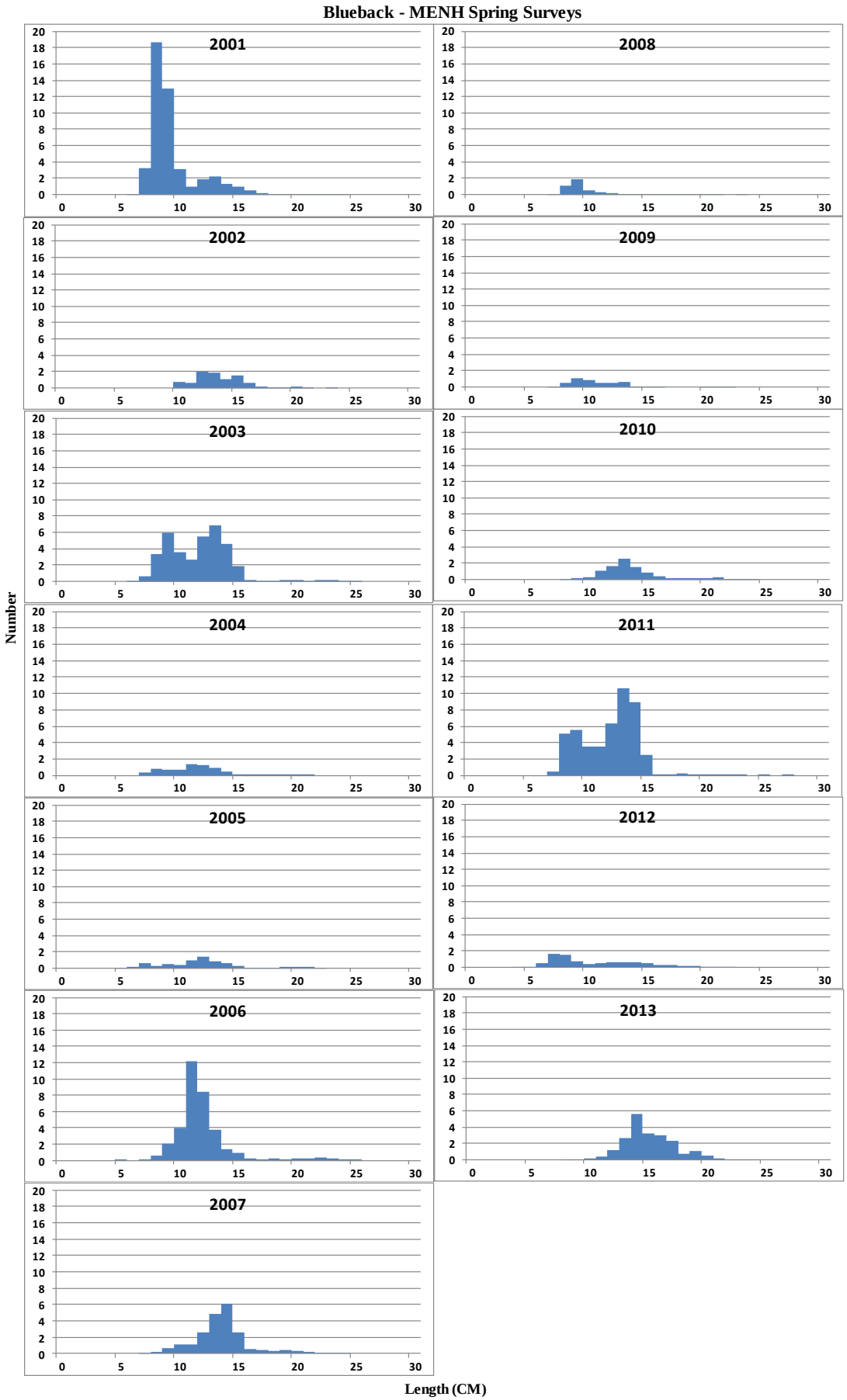
2011
2012
2013
Number
Length (CM)

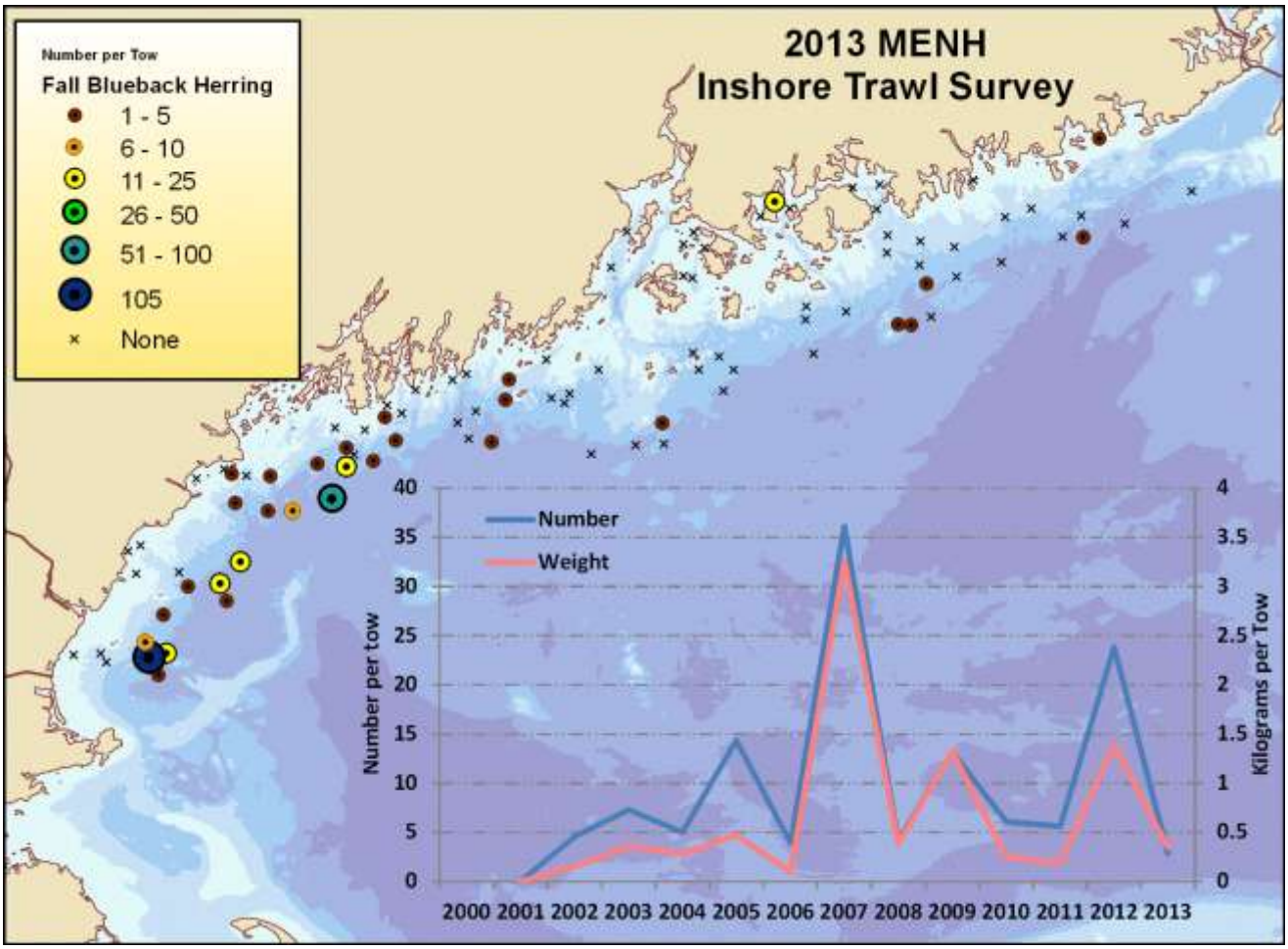
Blueback Herring, *Alosa aestivalis* (blueback and alewives were not separated in fall 2000)



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

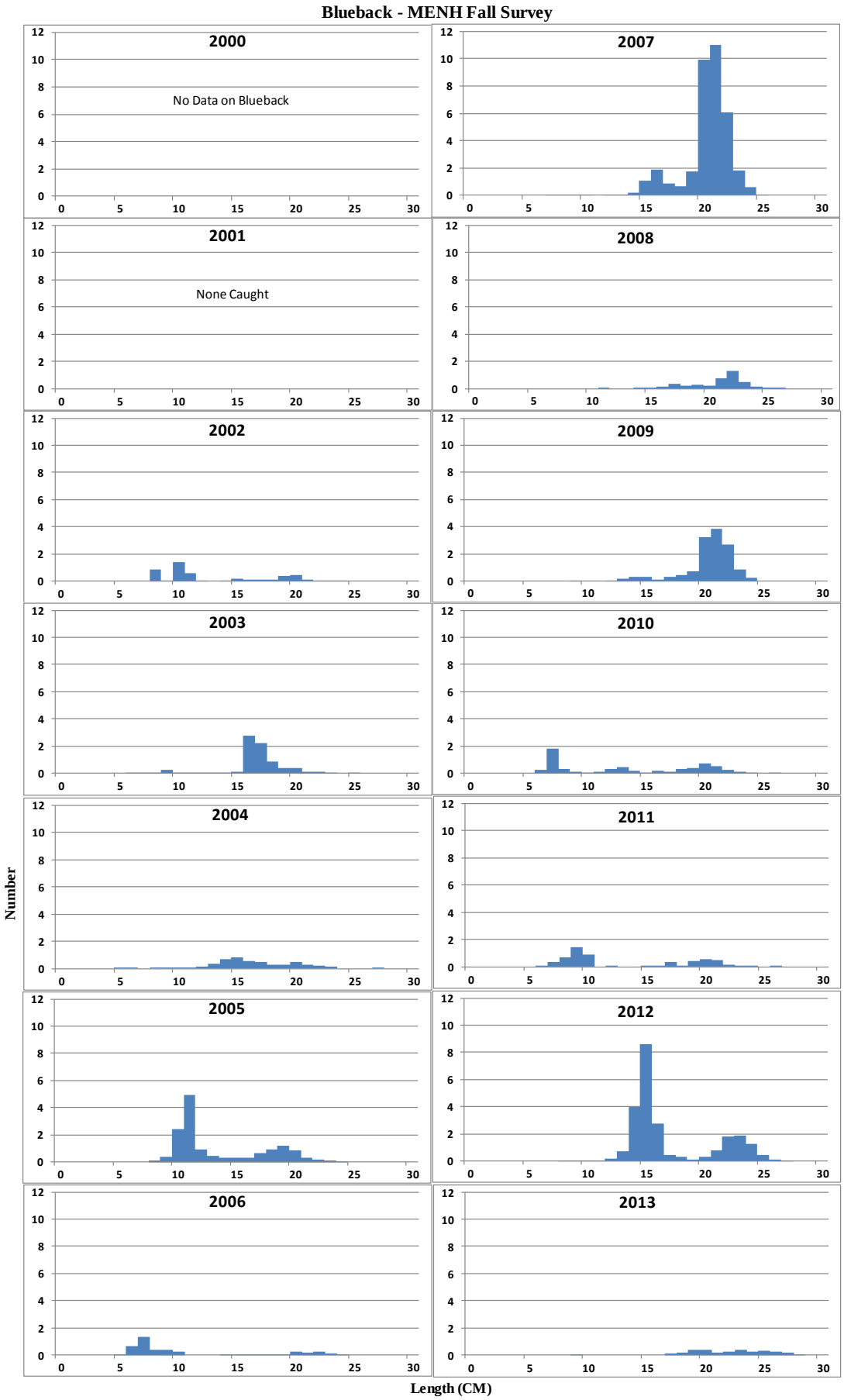
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	47.87	1.02	0.48	0.74
2002	9.15	1.32	0.24	1.30
2003	36.25	0.51	0.61	0.54
2004	7.31	0.50	0.12	0.39
2005	7.02	0.42	0.17	0.38
2006	34.45	0.75	0.63	0.64
2007	21.66	0.67	0.56	0.70
2008	4.52	0.52	0.07	0.42
2009	4.34	1.20	0.08	1.28
2010	9.50	0.36	0.26	0.35
2011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


Blueback - MENH Spring Surveys
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Number
Length (CM)

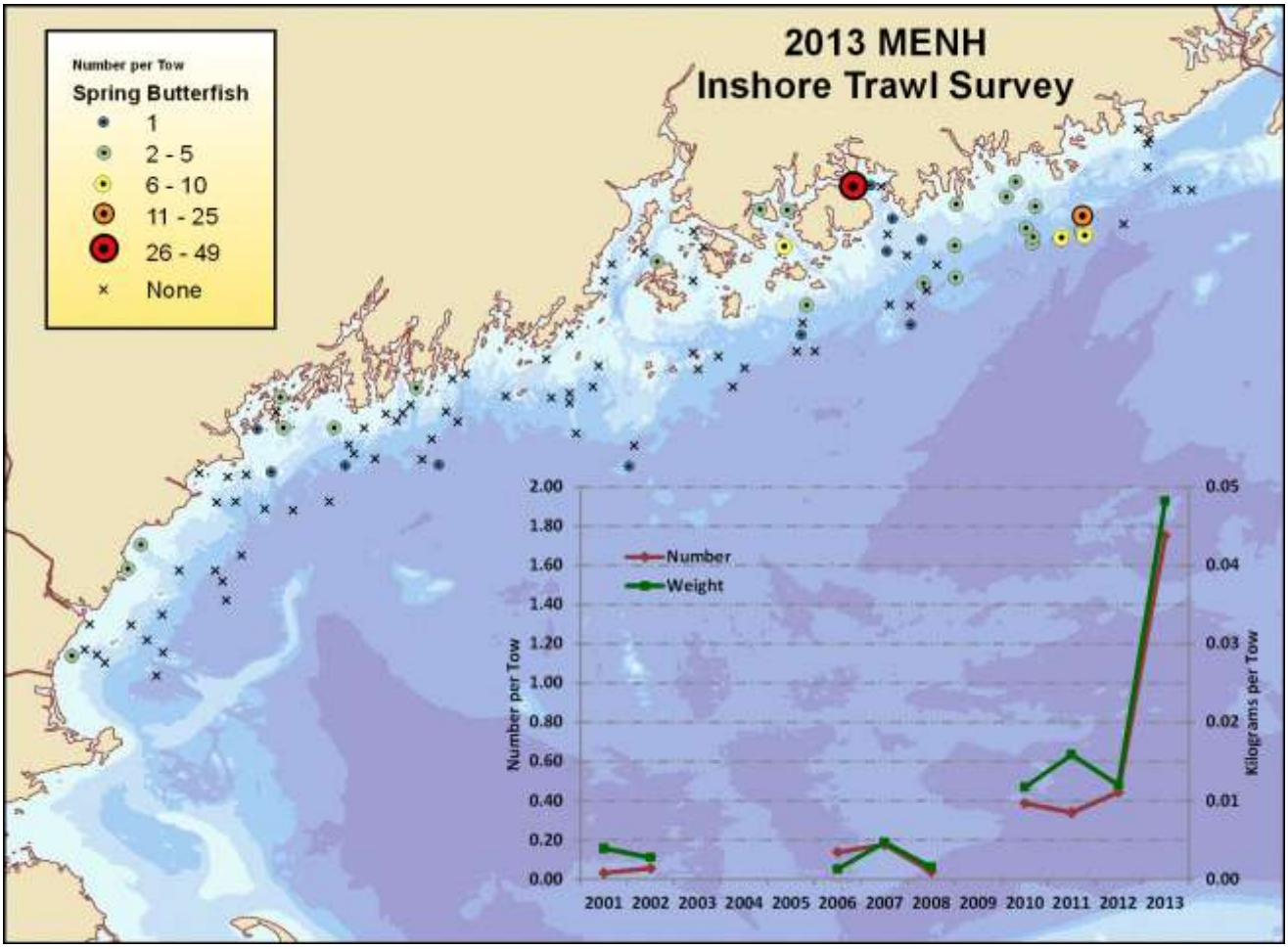


Means and coefficients of variance for graphs overlaid on above map
fixed stations <u>not</u> included
for blueback herring, for regions 1 through 5; Strata 1 through 4
FALL
Stratified Mean

	Number		Weight	
	Mean	**CV**	**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
2013	2.84	0.86	0.35	0.87

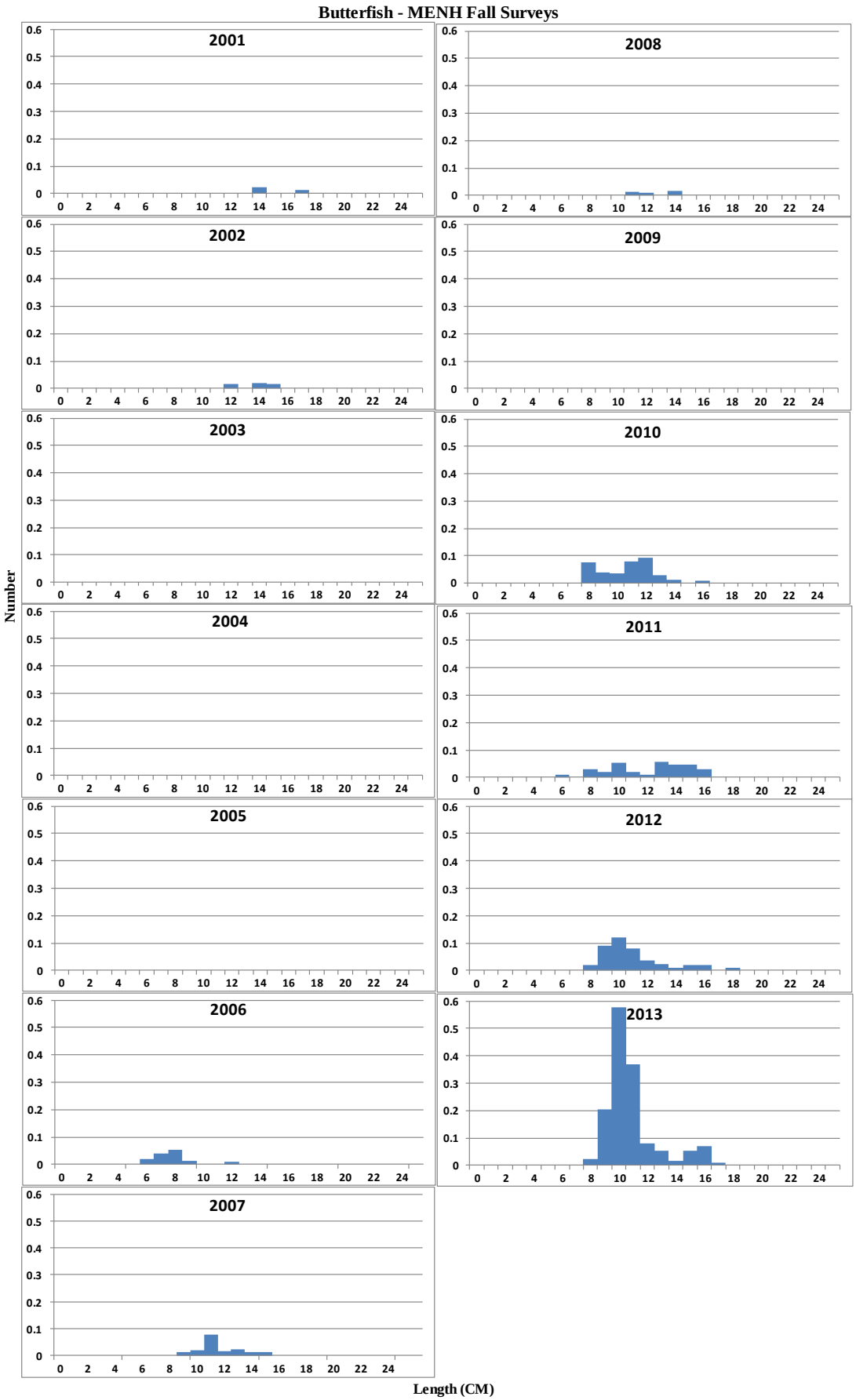

Blueback - MENH Fall Survey
2000
No Data on Blueback
2007
2001
None Caught
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
Number
Length (CM)

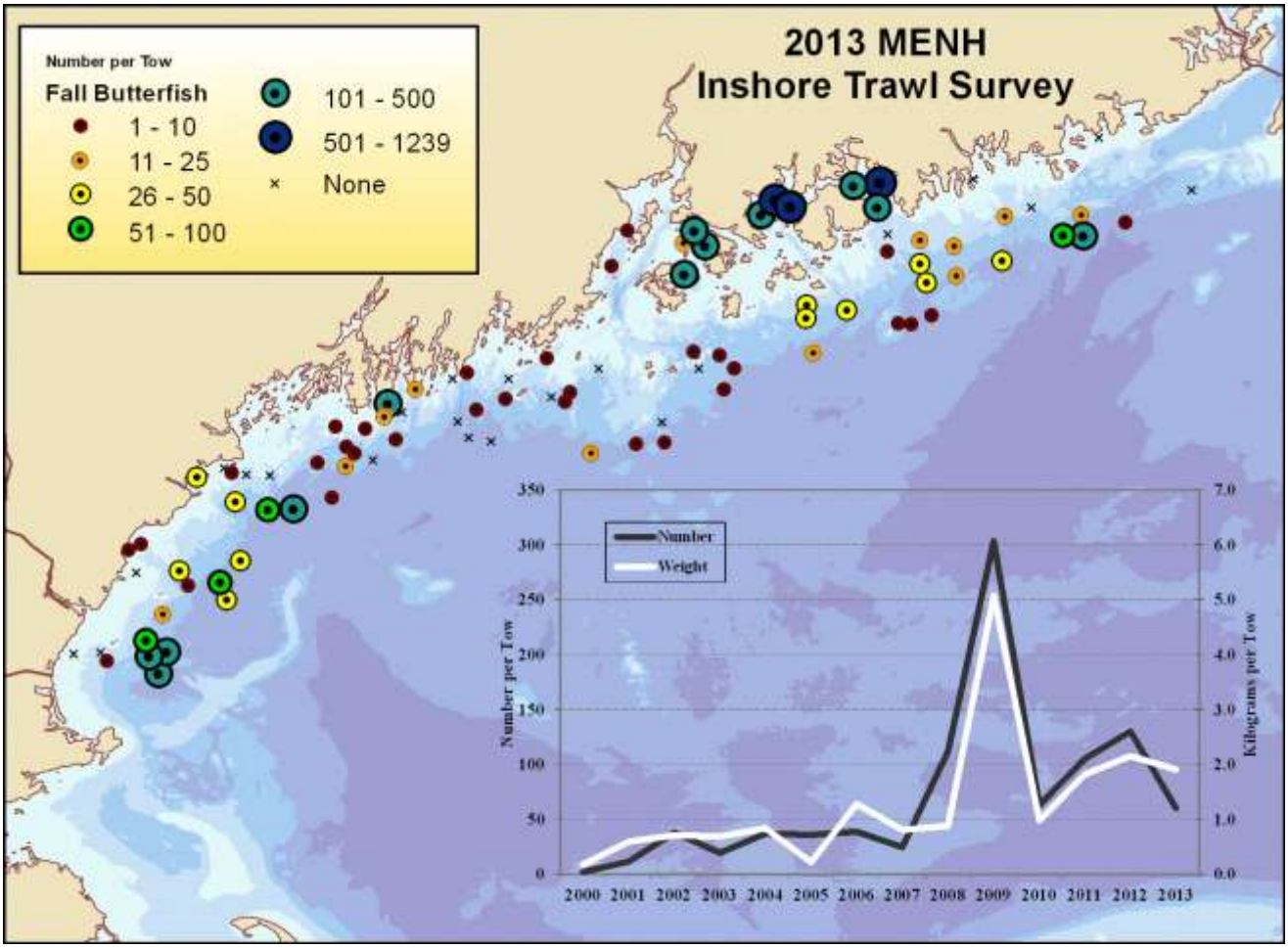
Butterfish, *Peprilus tricanthus*,



Means and coefficients of Variance for graph overlain on above map
Fixed stations <u>not</u> included
for butterfish, indices calculated for regions 1 through 5; strata 1 through 4
SPRING
Stratified Mean

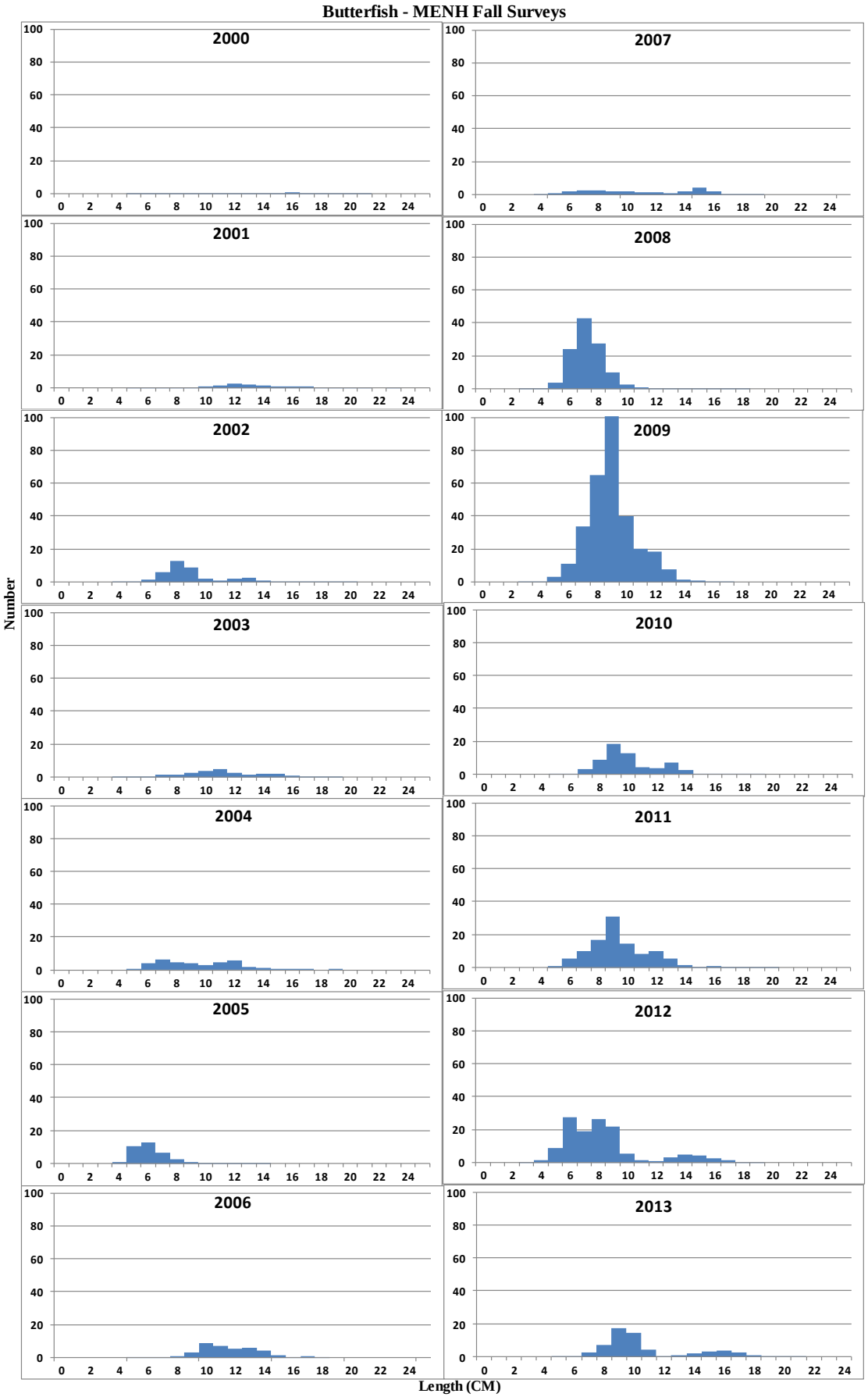
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	0.03	1.65	0.004	1.69
2002	0.06	1.46	0.003	1.46
2003				
2004				
2005				
2006	0.14	0.67	0.001	0.88
2007	0.18	0.62	0.005	0.63
2008	0.04	0.96	0.002	1.15
2009				
2010	0.39	0.53	0.012	0.69
2011	0.34	0.69	0.016	0.75
2012	0.44	0.47	0.012	0.58
2013	1.75	0.61	0.048	0.57


Butterfish - MENH Fall Surveys
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
2007
Number
Length (CM)

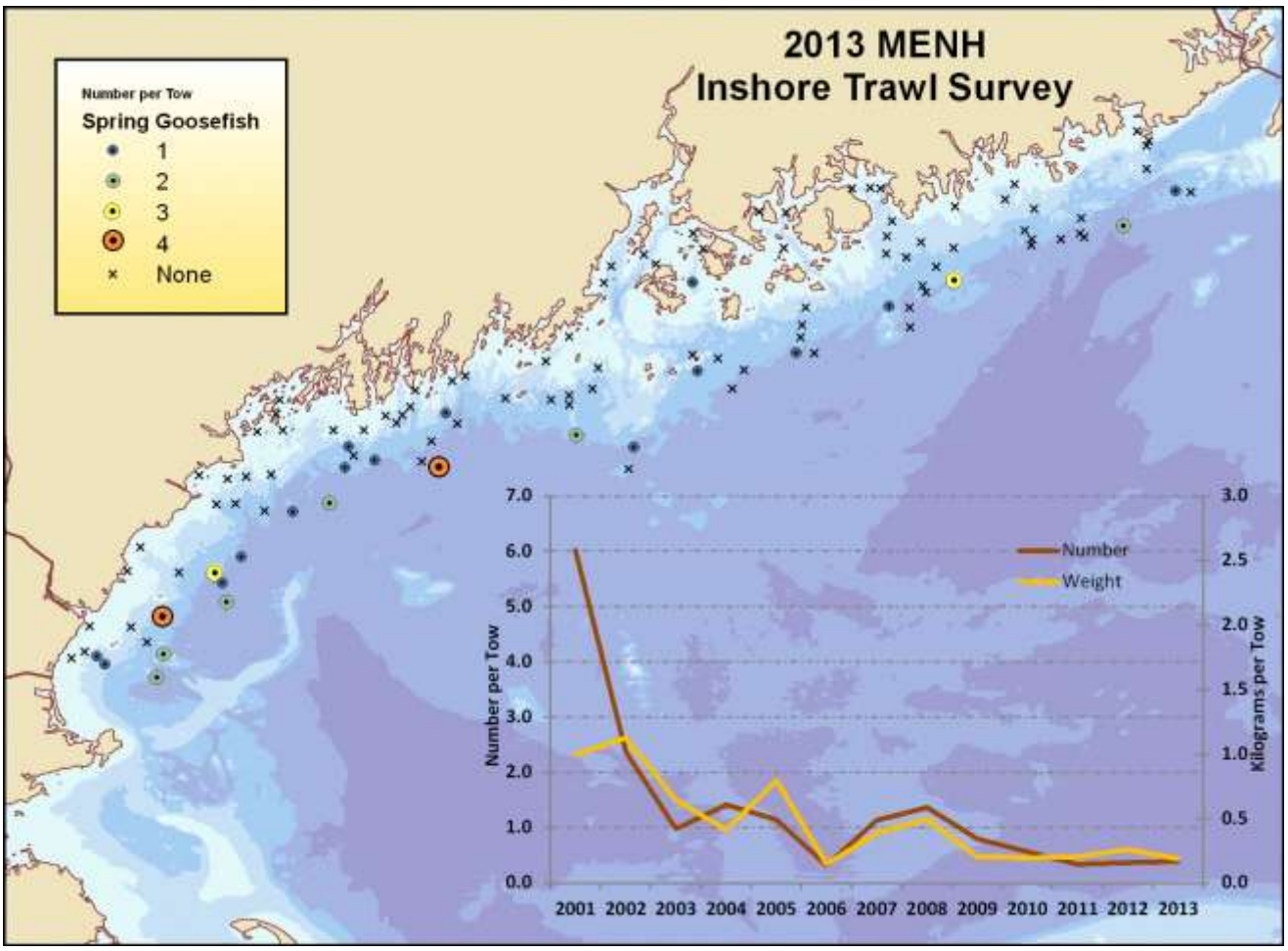


Means and coefficients of Variance for graph overlain on above map
Fixed stations <u>not</u> included
for butterfish, indices calculated for regions 1 through 5; strata 1 through 4
FALL
Stratified Mean

	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2000	2.26	0.87	0.18	0.92
2001	11.73	0.65	0.60	0.68
2002	37.90	0.63	0.71	0.53
2003	19.65	0.40	0.69	0.24
2004	37.24	0.30	0.84	0.47
2005	36.16	0.84	0.22	0.63
2006	38.91	0.66	1.28	0.80
2007	24.85	0.29	0.81	0.24
2008	112.10	0.64	0.88	0.55
2009	303.59	0.36	5.08	0.30
2010	63.24	0.38	0.98	0.30
2011	105.37	0.58	1.82	0.45
2012	130.68	0.48	2.16	0.42
2013	60.07	0.39	1.91	0.29

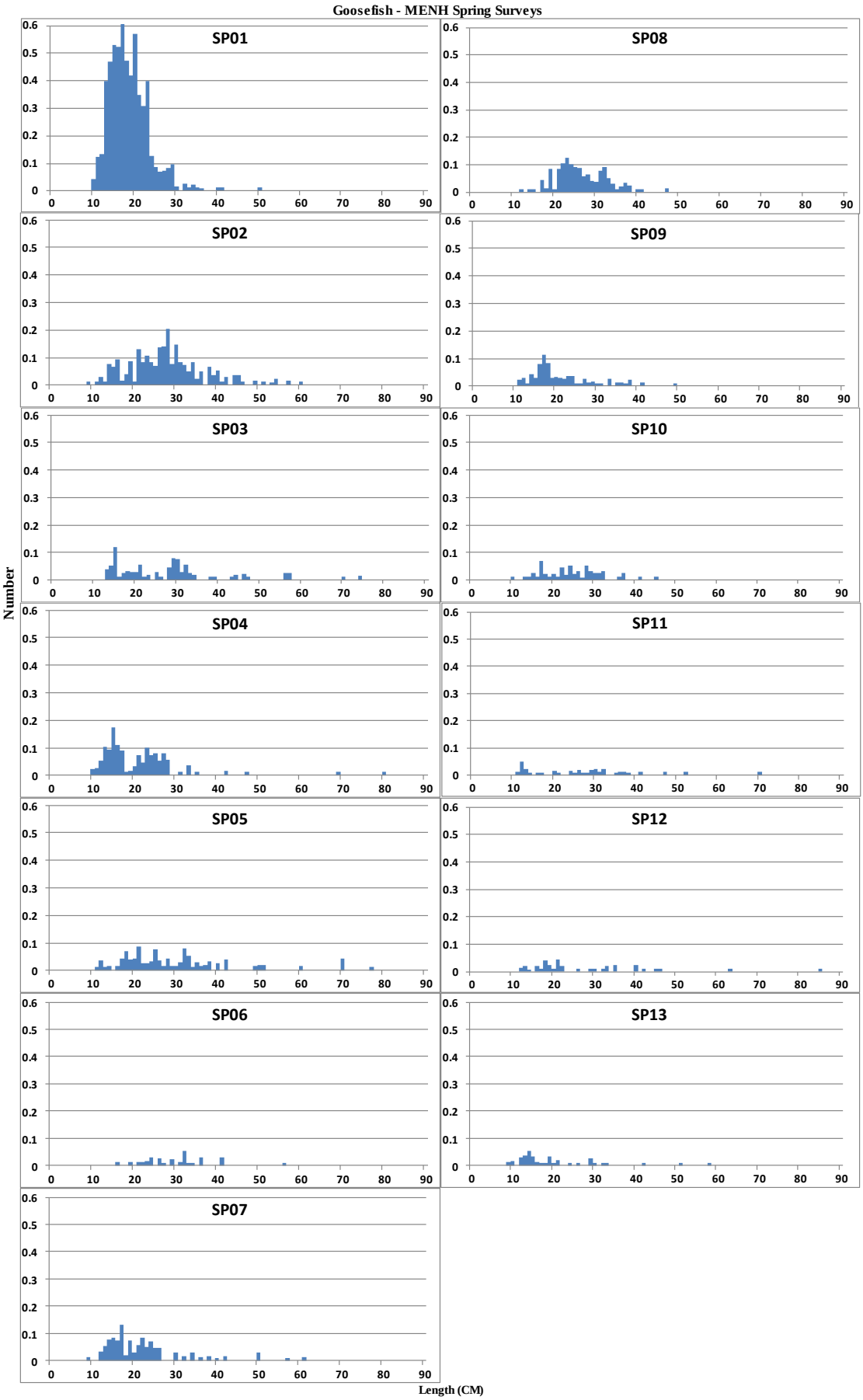

Butterfish - MENH Fall Surveys
2000
2007
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
Number
Length (CM)

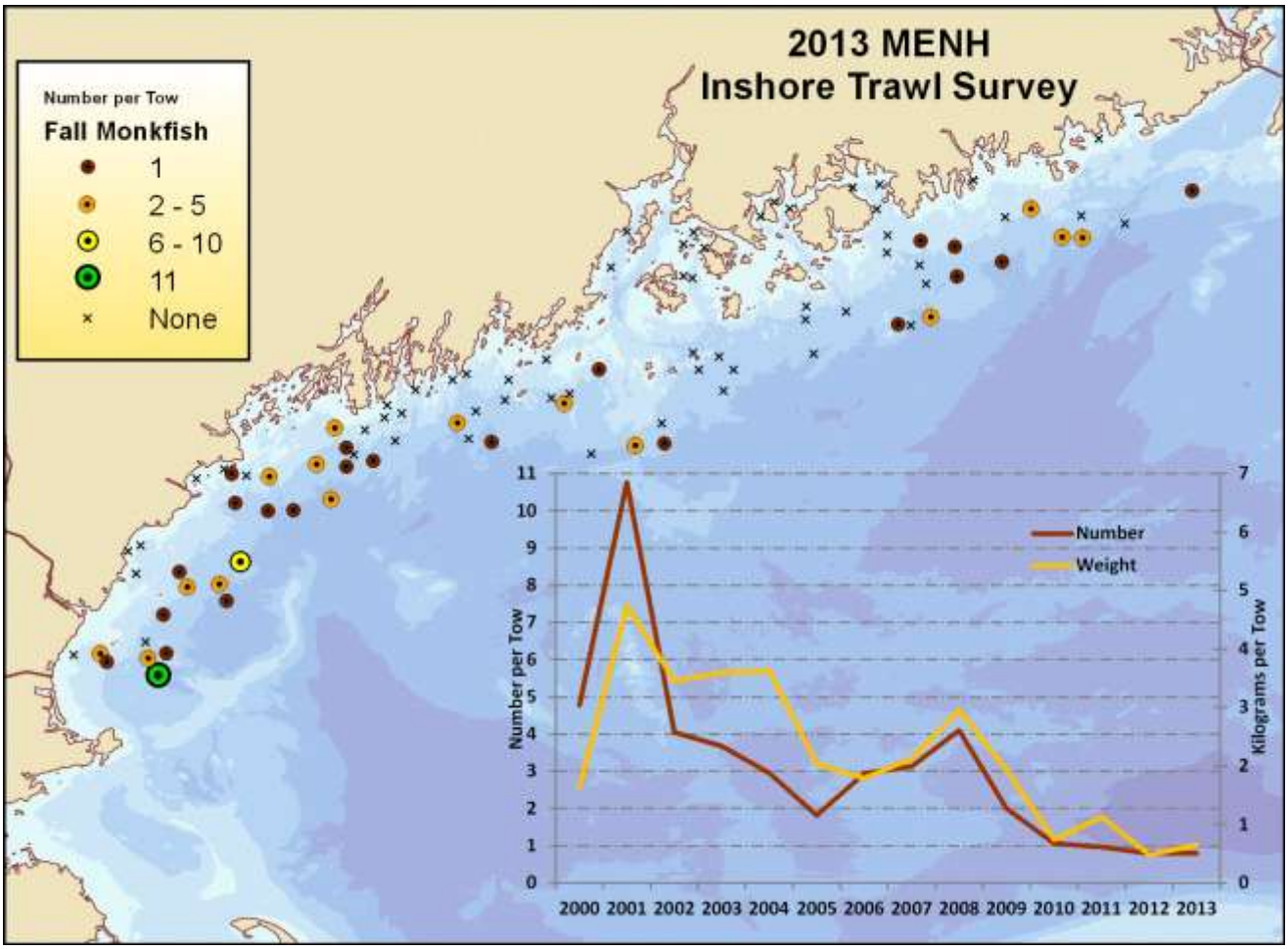
Goosefish, *Lophius americanus*



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

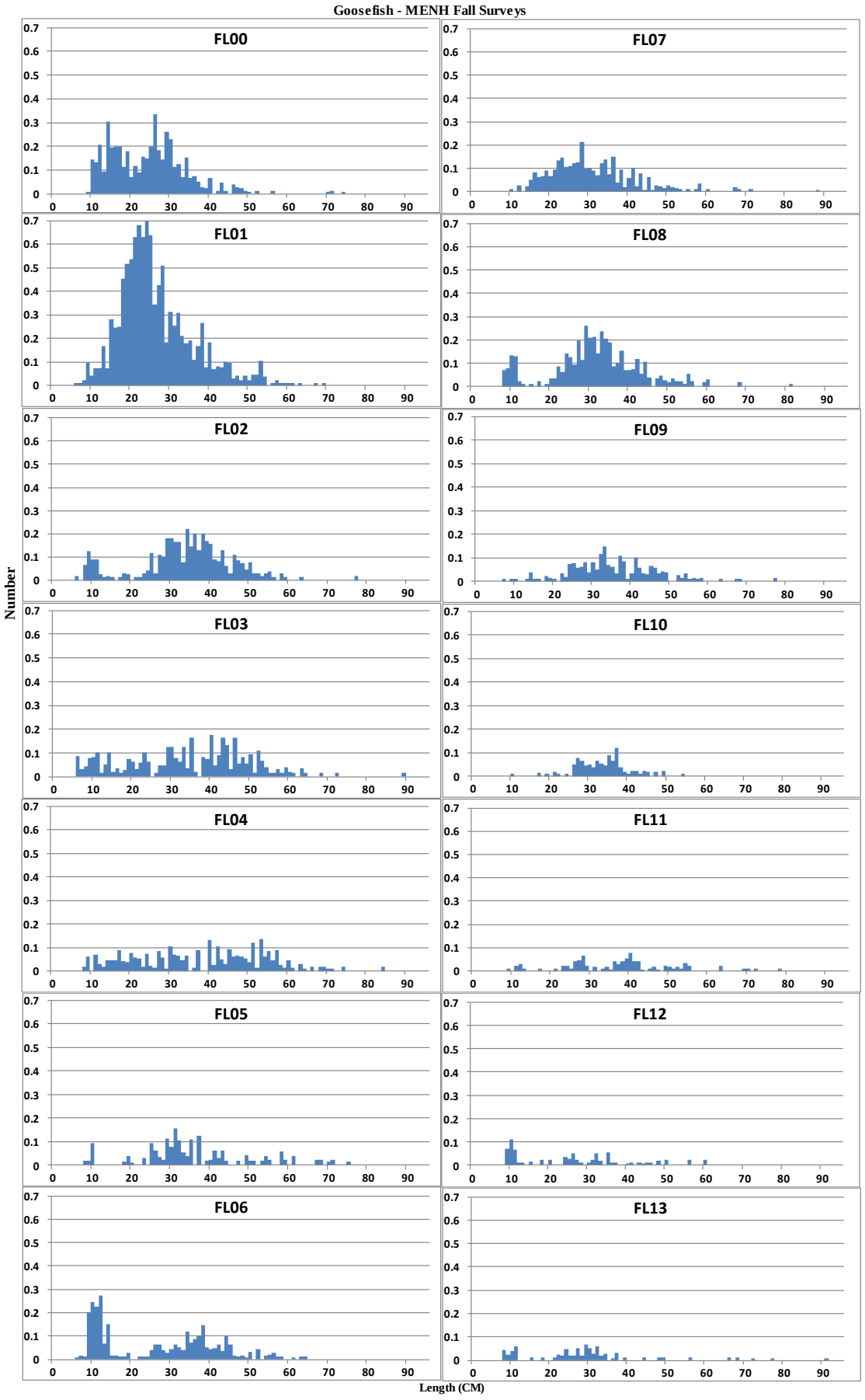
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	6.02	0.35	0.99	0.35
2002	2.37	0.31	1.12	0.37
2003	0.98	0.26	0.64	0.52
2004	1.41	0.23	0.41	0.60
2005	1.14	0.22	0.79	0.36
2006	0.32	0.42	0.15	0.45
2007	1.13	0.30	0.38	0.49
2008	1.37	0.26	0.49	0.30
2009	0.80	0.31	0.20	0.44
2010	0.57	0.41	0.20	0.49
2011	0.33	0.35	0.20	0.70
2012	0.37	0.36	0.26	0.95
2013	0.39	0.45	0.19	1.01


Goosefish - MENH Spring Surveys
SP01
SP08
SP02
SP09
SP03
SP10
SP04
SP11
SP05
SP12
SP06
SP13
SP07
Number
Length (CM)

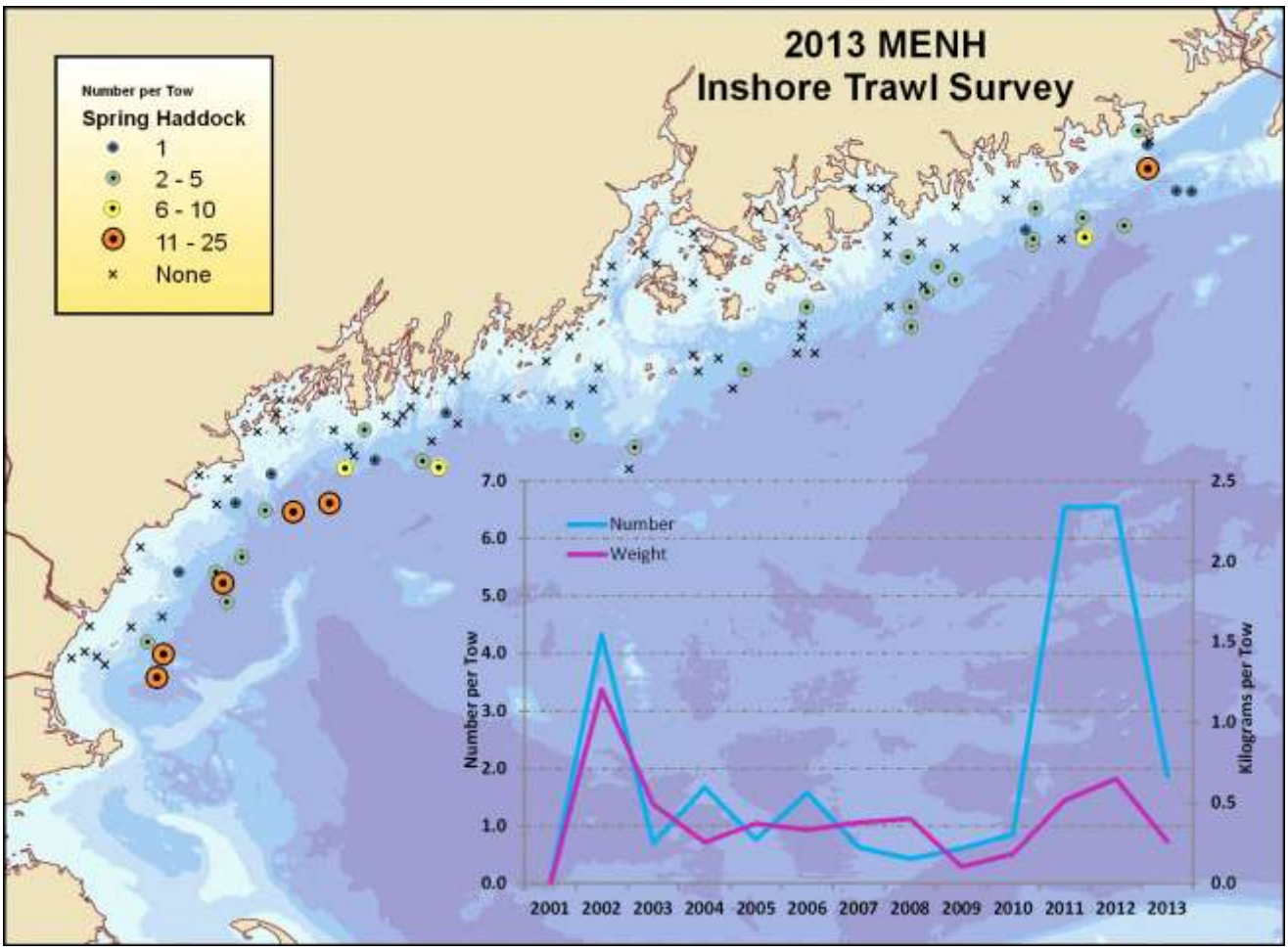


Means and coefficients of variance for graph overlain on above map
fixed stations not included
for goosefish, for regions 1 through 5; Strata 1 through 4
FALL
Stratified Mean

	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
2013	0.80	0.39	0.65	0.59

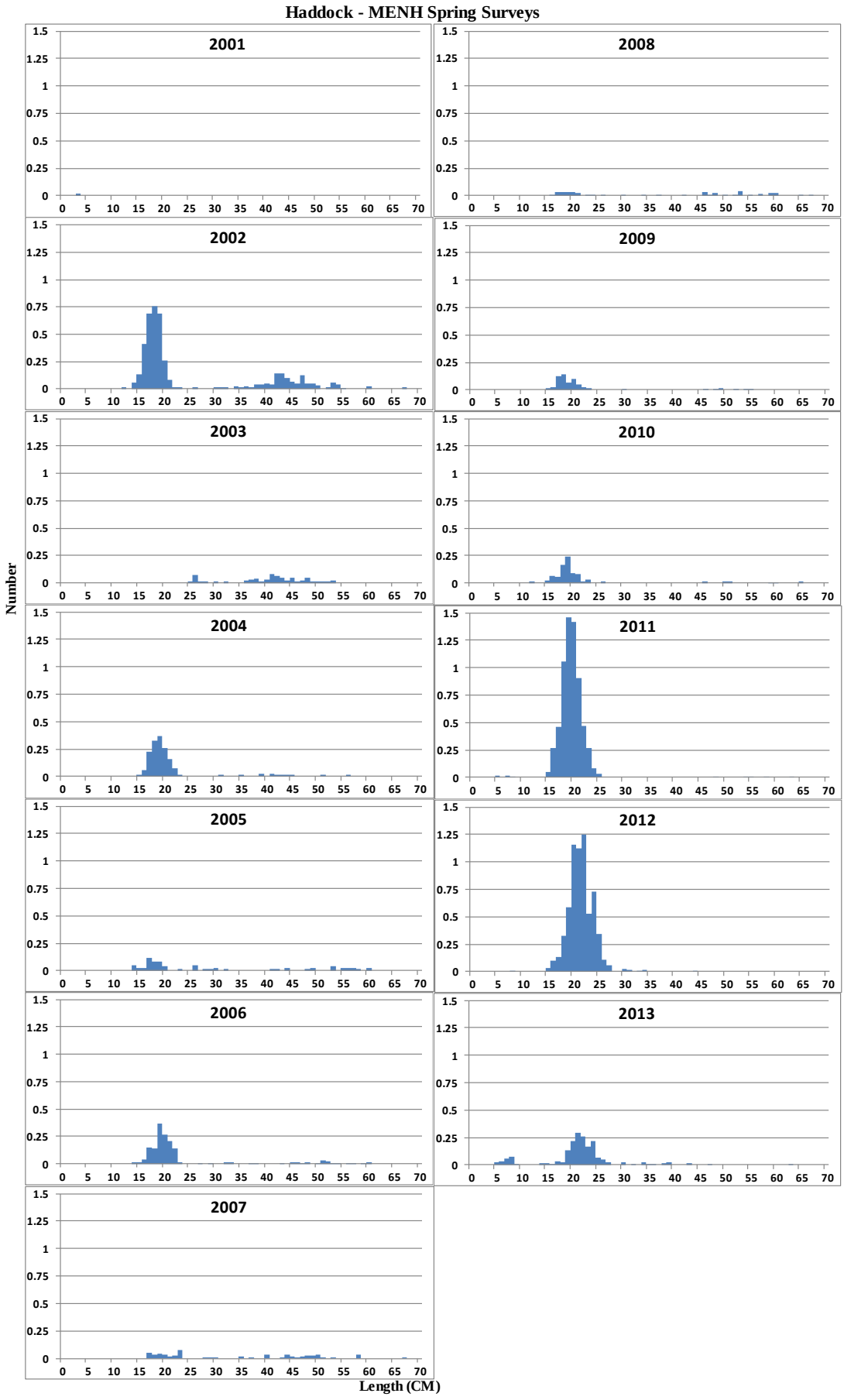

Goosefish - MENH Fall Surveys
FL00
FL07
FL01
FL08
FL02
FL09
FL03
FL10
FL04
FL11
FL05
FL12
FL06
FL13
Number
Length (CM)

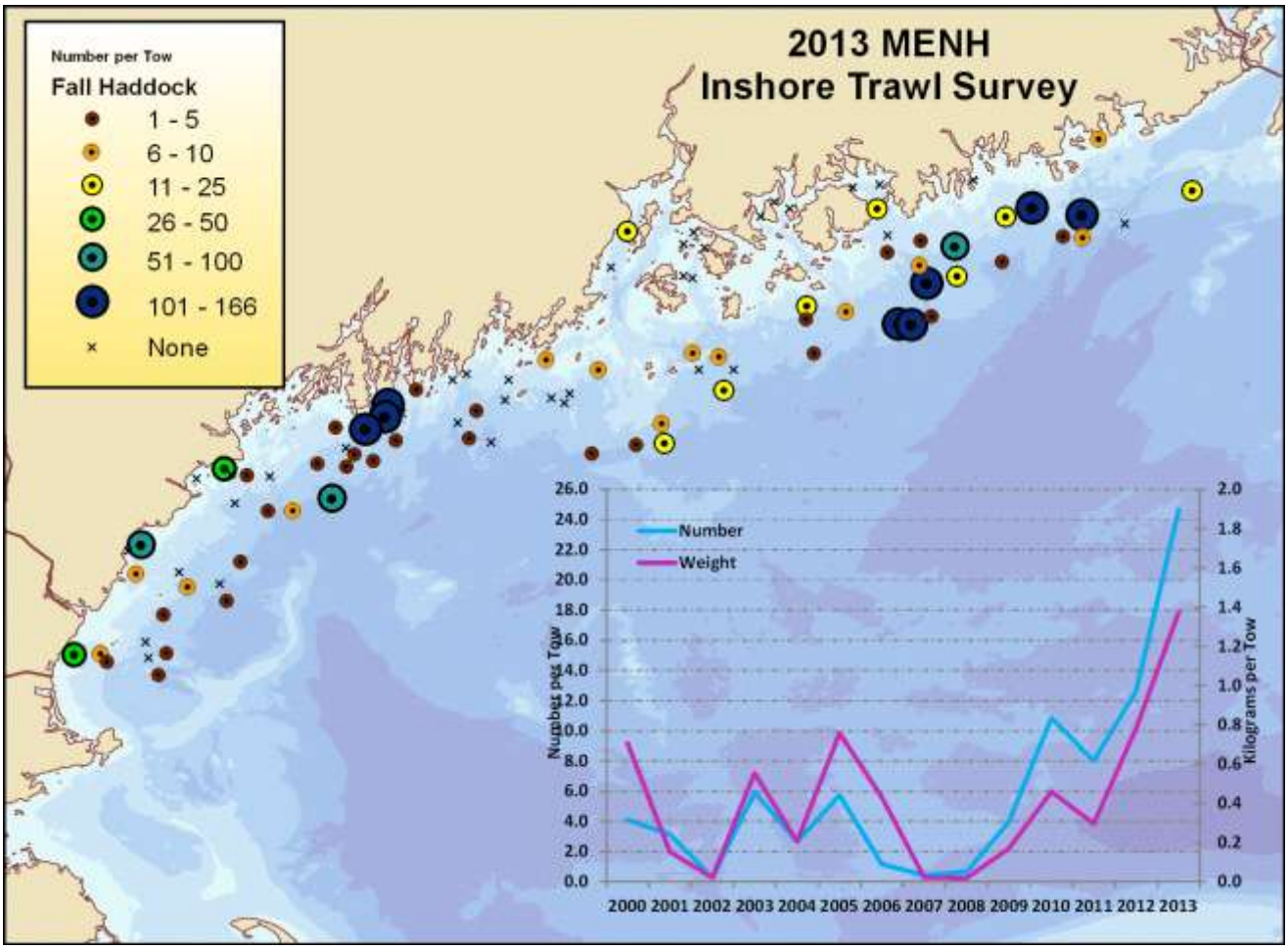
Haddock, *Melanogrammus aeglefinus*



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

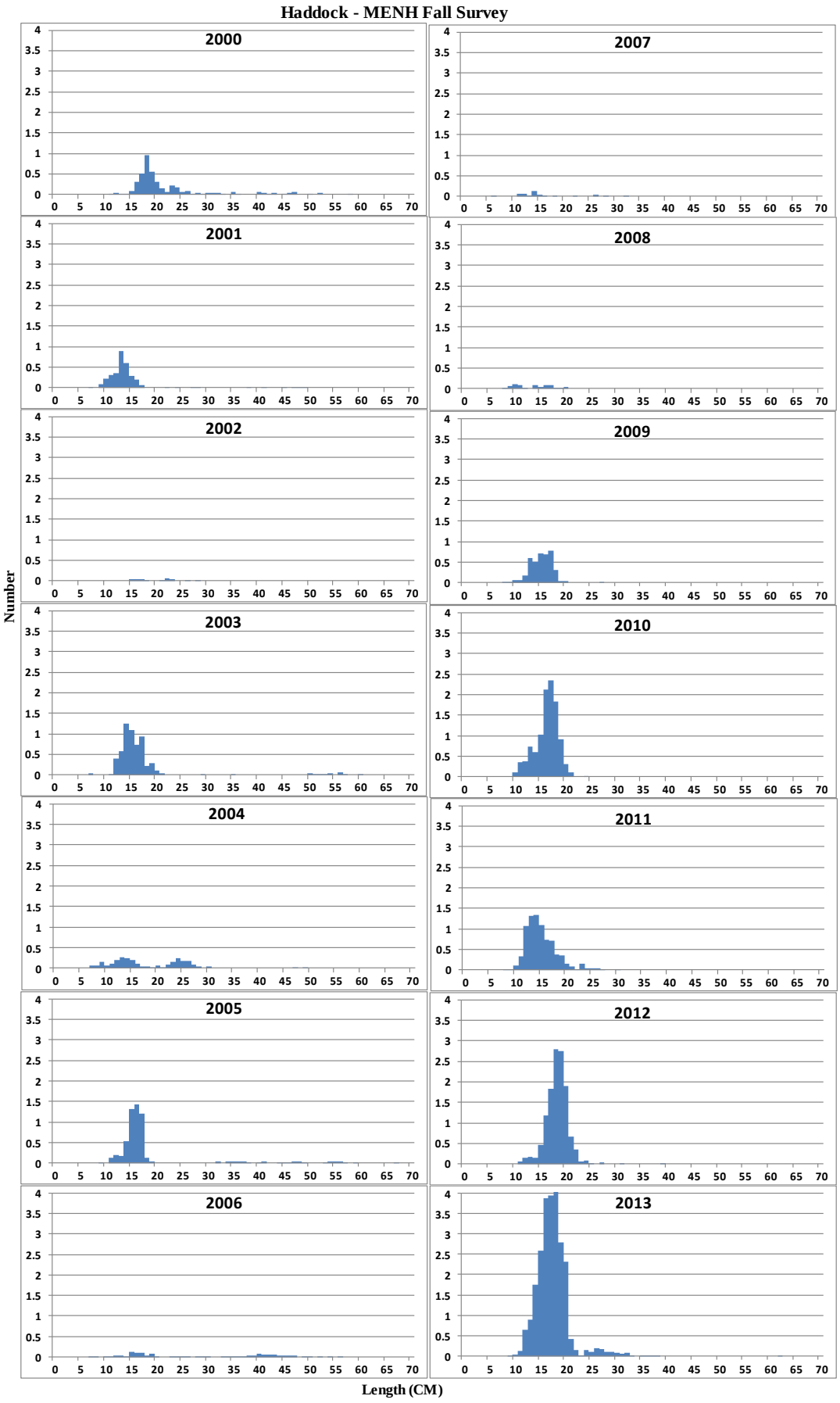
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	0.02	2.00	0.00	2.00
2002	4.33	0.71	1.20	0.58
2003	0.70	0.92	0.49	1.04
2004	1.67	0.71	0.26	0.60
2005	0.77	0.66	0.37	0.71
2006	1.58	1.47	0.33	0.81
2007	0.63	0.50	0.38	0.66
2008	0.43	0.75	0.40	0.75
2009	0.61	0.60	0.10	0.70
2010	0.85	0.69	0.19	0.71
2011	6.54	1.00	0.52	0.88
2012	6.56	2.18	0.65	2.29
2013	1.88	0.41	0.26	0.60


Haddock - MENH Spring Surveys
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
2007
Number
Length (CM)

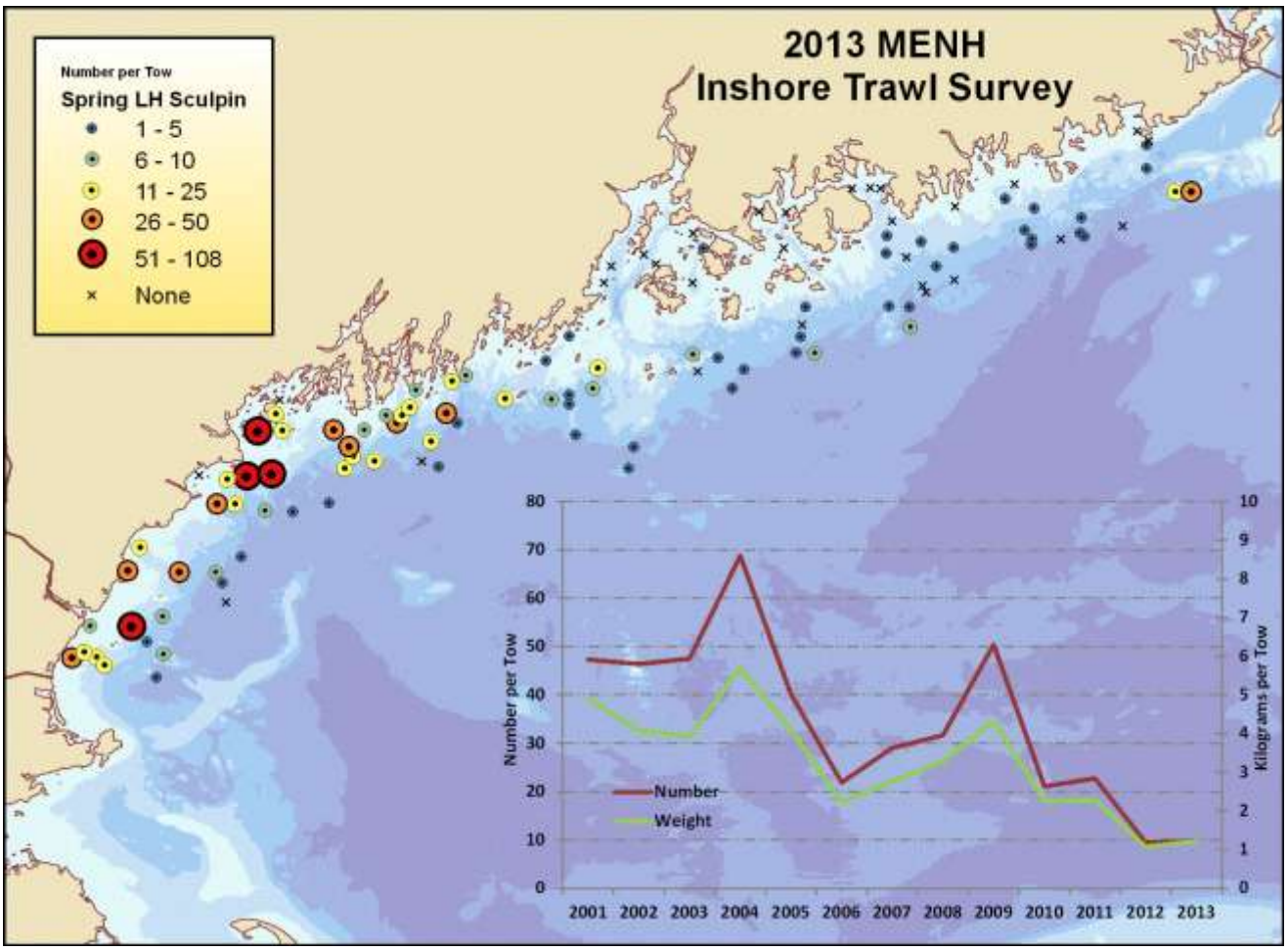


Means and coefficients of variance for graphs overlain on distribution maps
fixed stations not included
for haddock, calculated for regions 1 through 5; Strata 1 through 4
FALL
Stratified Mean

	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
2013	24.63	0.46	1.37	0.57

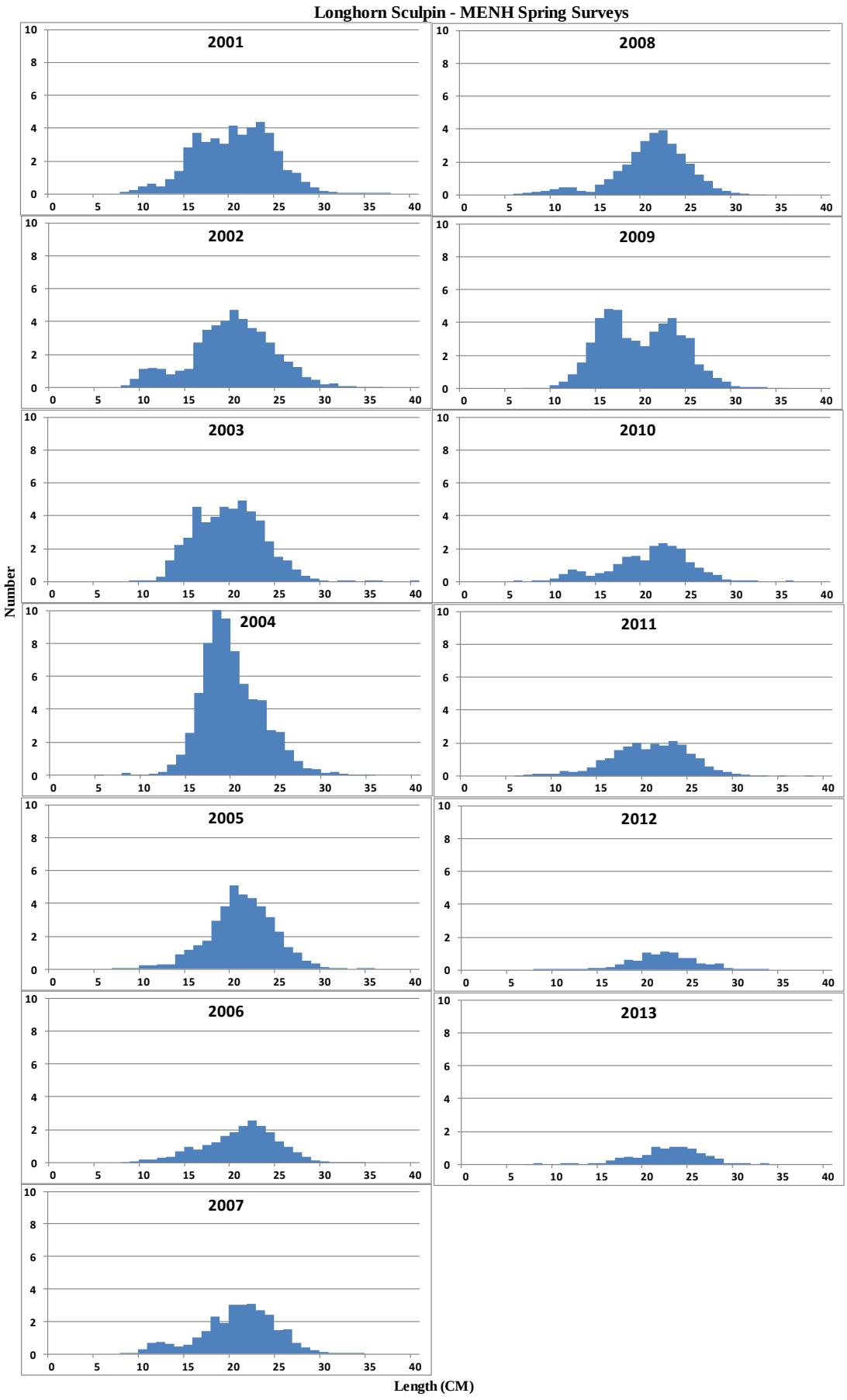

Haddock - MENH Fall Survey
2000
2007
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
Number
Length (CM)

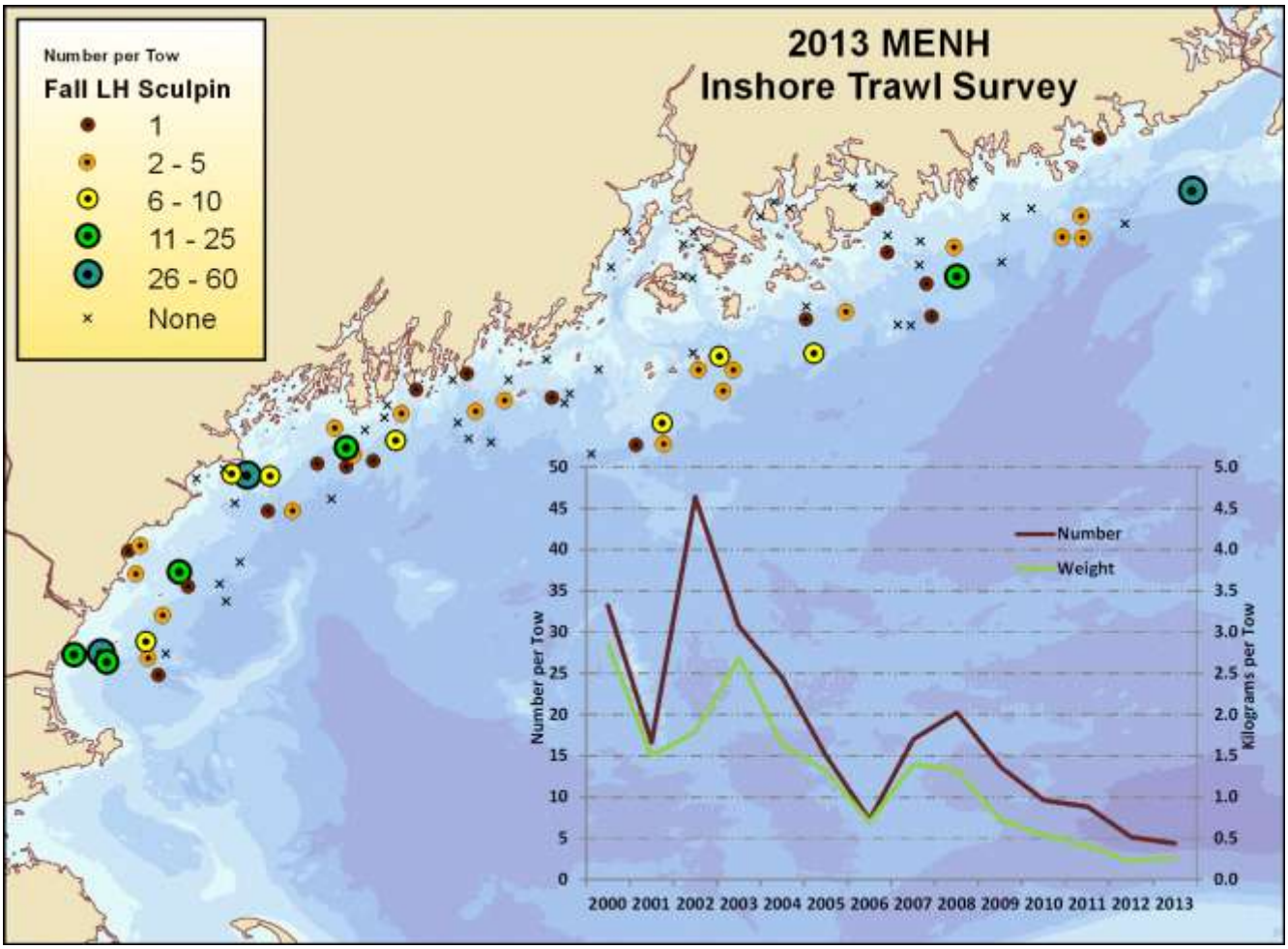
Longhorn sculpin, *Myoxocephalus octodecemspinosus*



Means and coefficients of variance for graph overlain on above map
fixed stations <u>not</u> included
for LH Sculpin, calculated for regions 1 through 5; Strata 1 through 4
SPRING
Stratified Mean

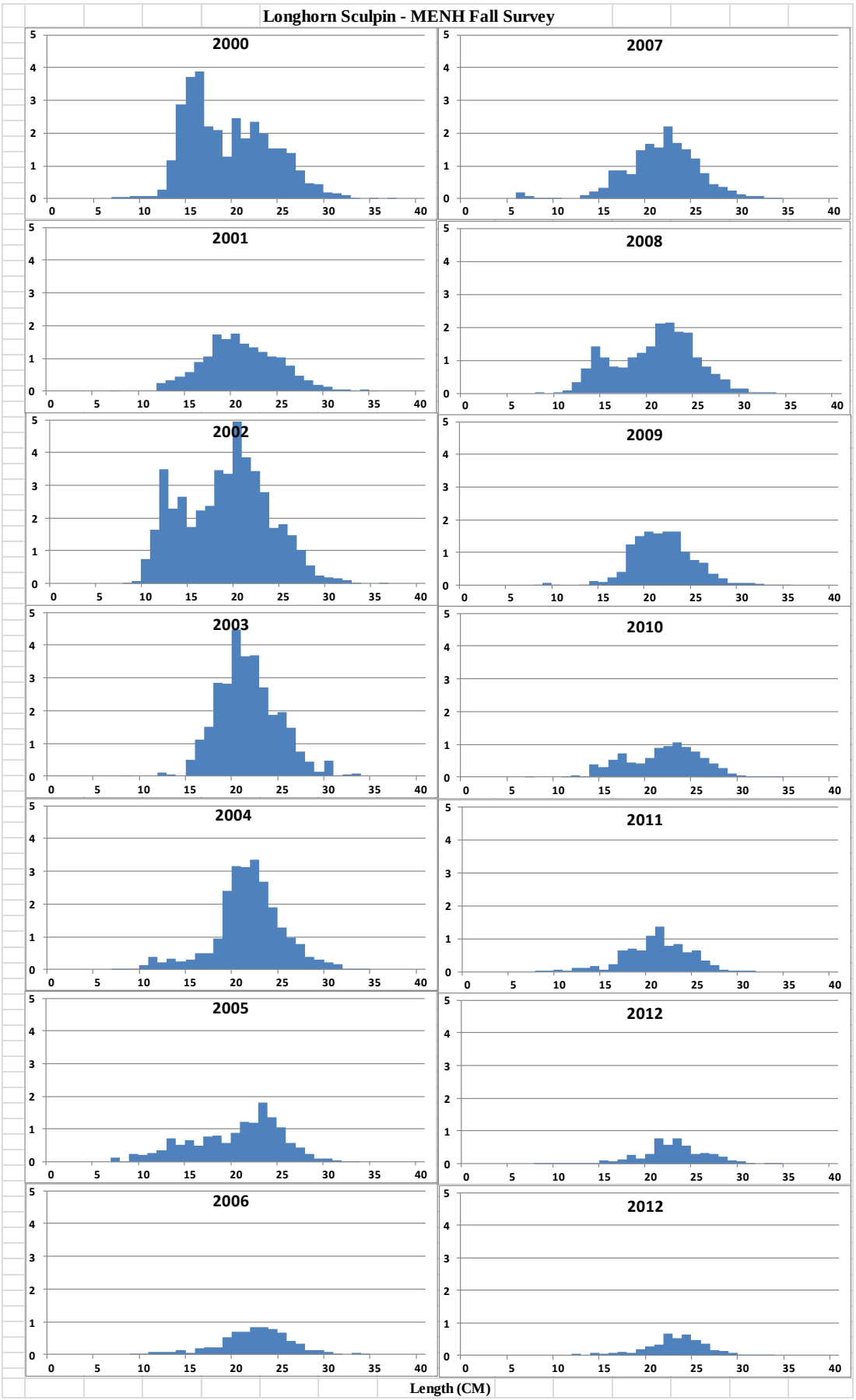
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	47.28	0.26	4.91	0.24
2002	46.32	0.33	4.07	0.29
2003	47.45	0.21	3.93	0.24
2004	68.71	0.17	5.70	0.17
2005	40.17	0.18	4.10	0.18
2006	21.86	0.38	2.22	0.33
2007	29.00	0.43	2.77	0.41
2008	31.61	0.25	3.28	0.27
2009	50.37	0.33	4.33	0.27
2010	21.08	0.34	2.25	0.33
2011	22.69	0.34	2.28	0.32
2012	9.47	0.28	1.07	0.27
2013	9.71	0.32	1.22	0.28


Longhorn Sculpin - MENH Spring Surveys
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Number
Length (CM)

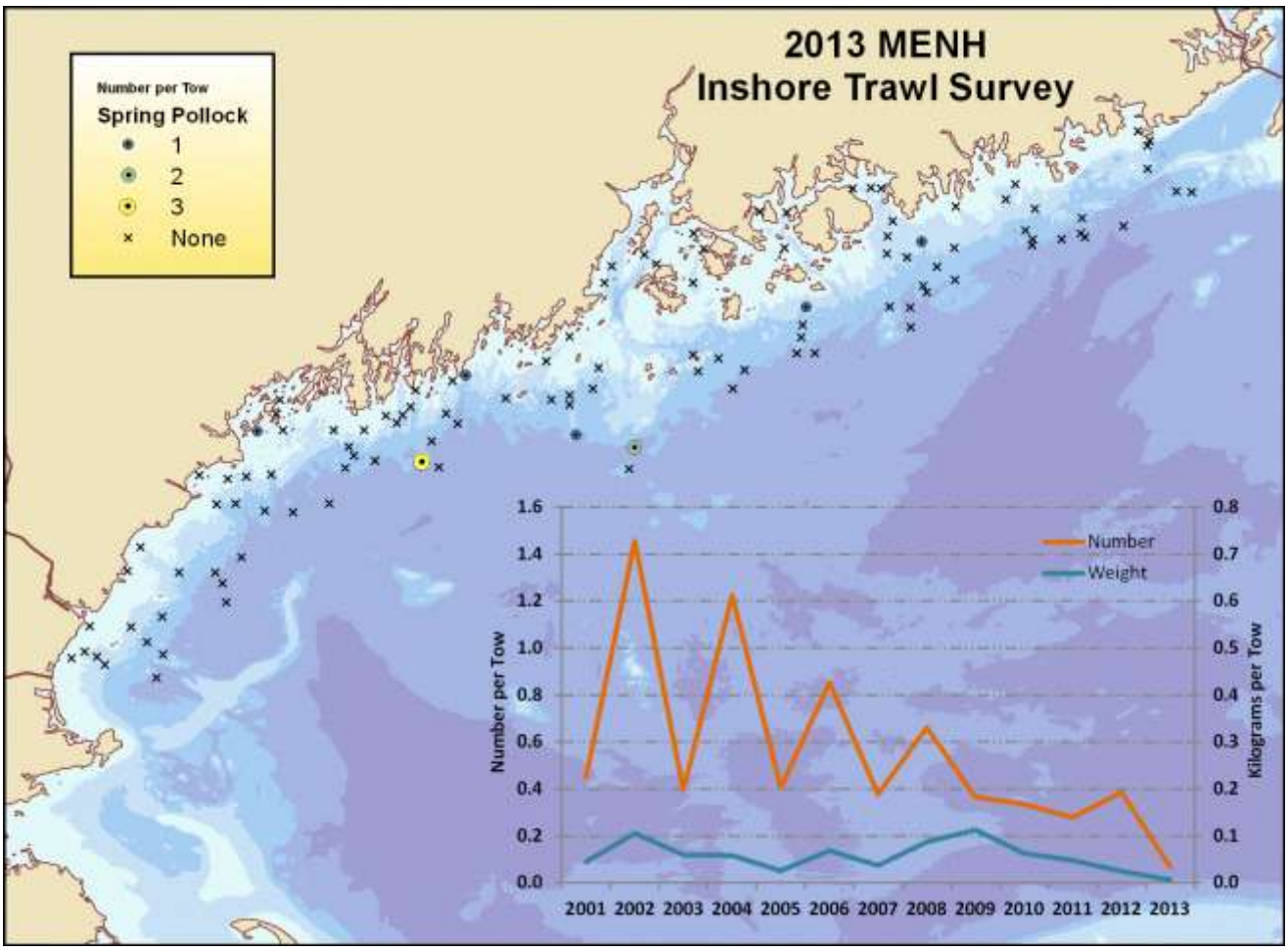


Means and coefficients of variance for graph overlain on above map
fixed stations <u>not</u> included
for LH Sculpin, calculated for regions 1 through 5; Strata 1 through 4
FALL
Stratified Mean

	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
2013	4.40	0.52	0.27	0.37

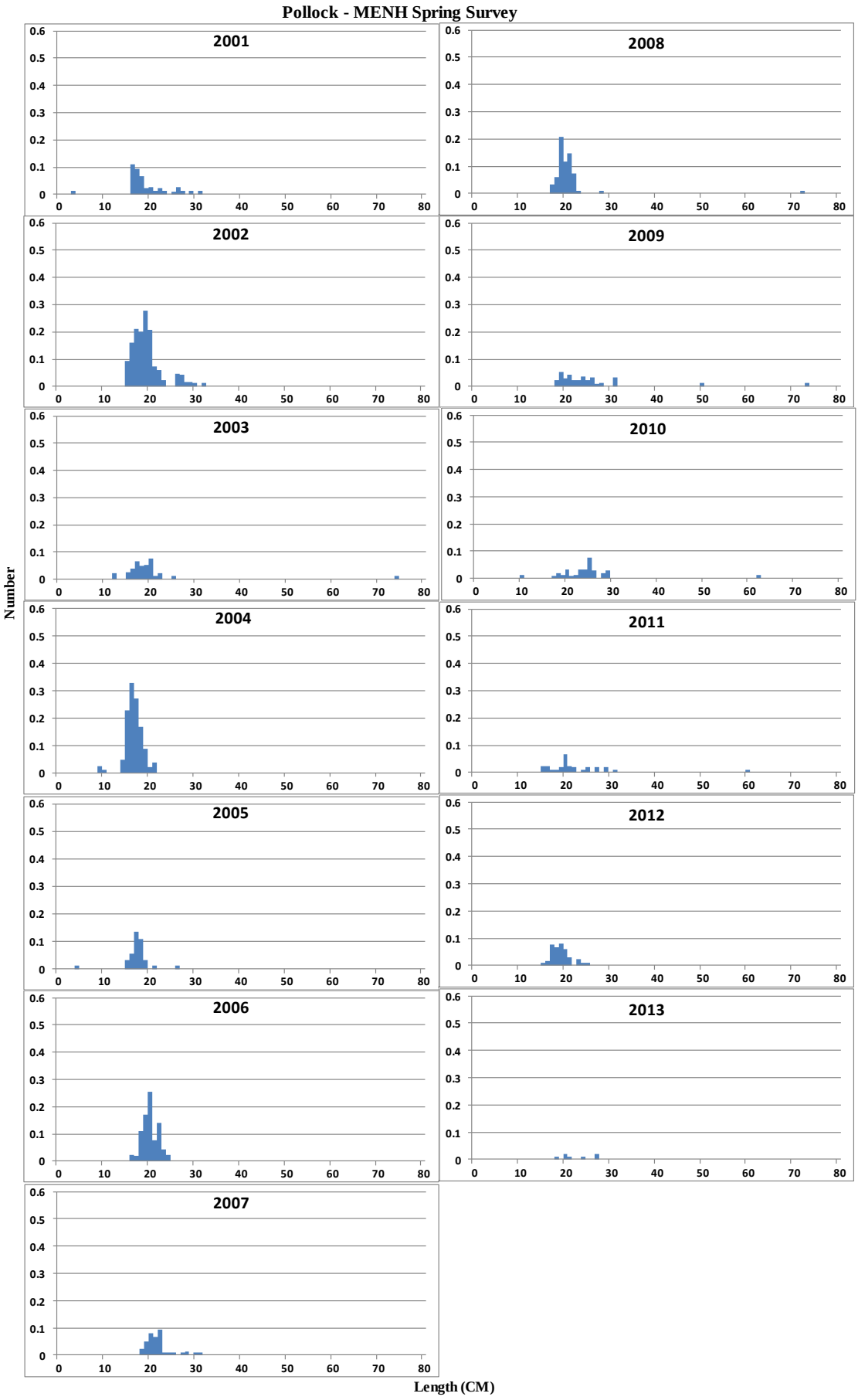

Longhorn Sculpin - MENH Fall Survey
2000
2007
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2012
Length (CM)

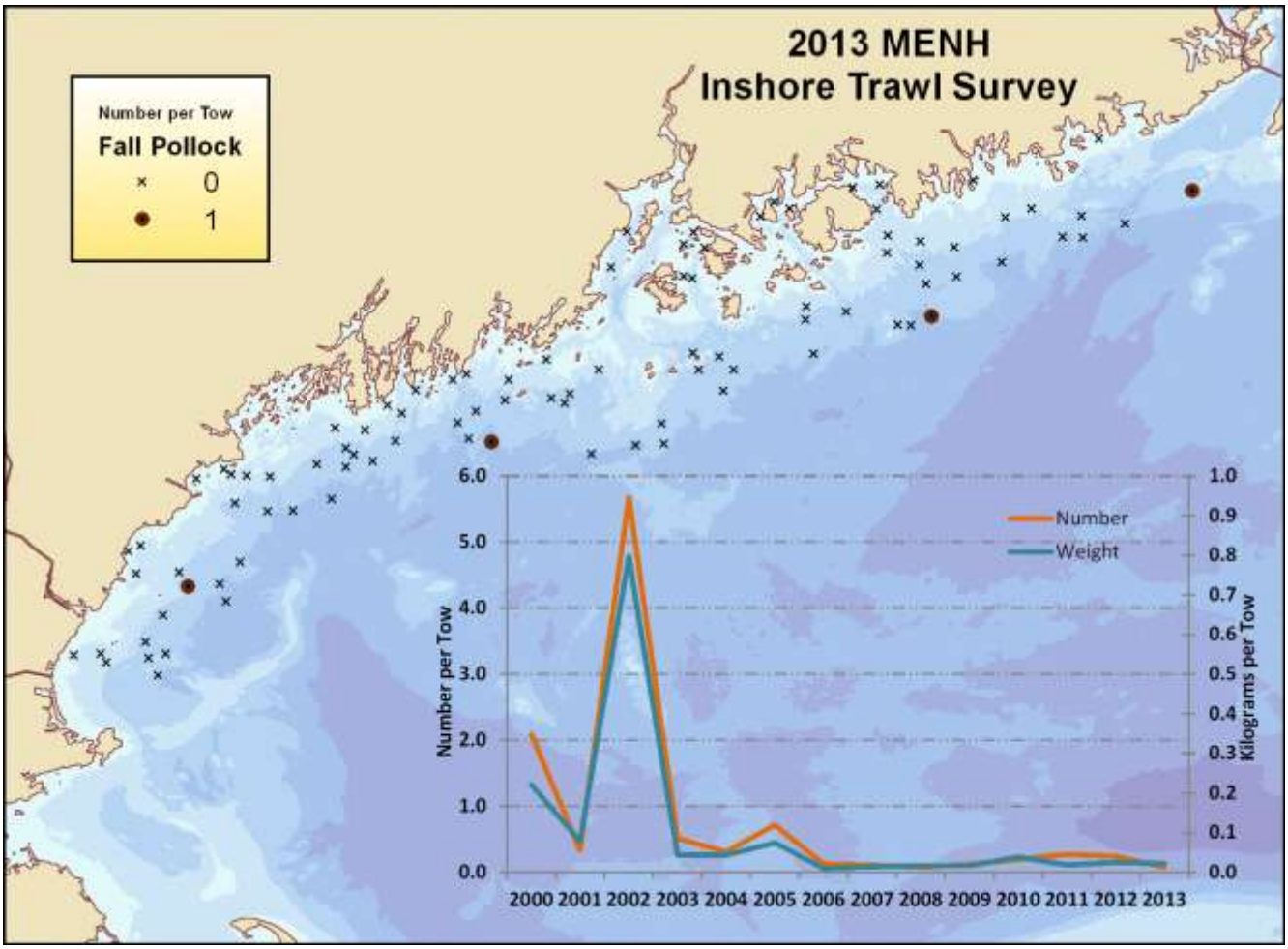
Pollock, *Pollachius virens*



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

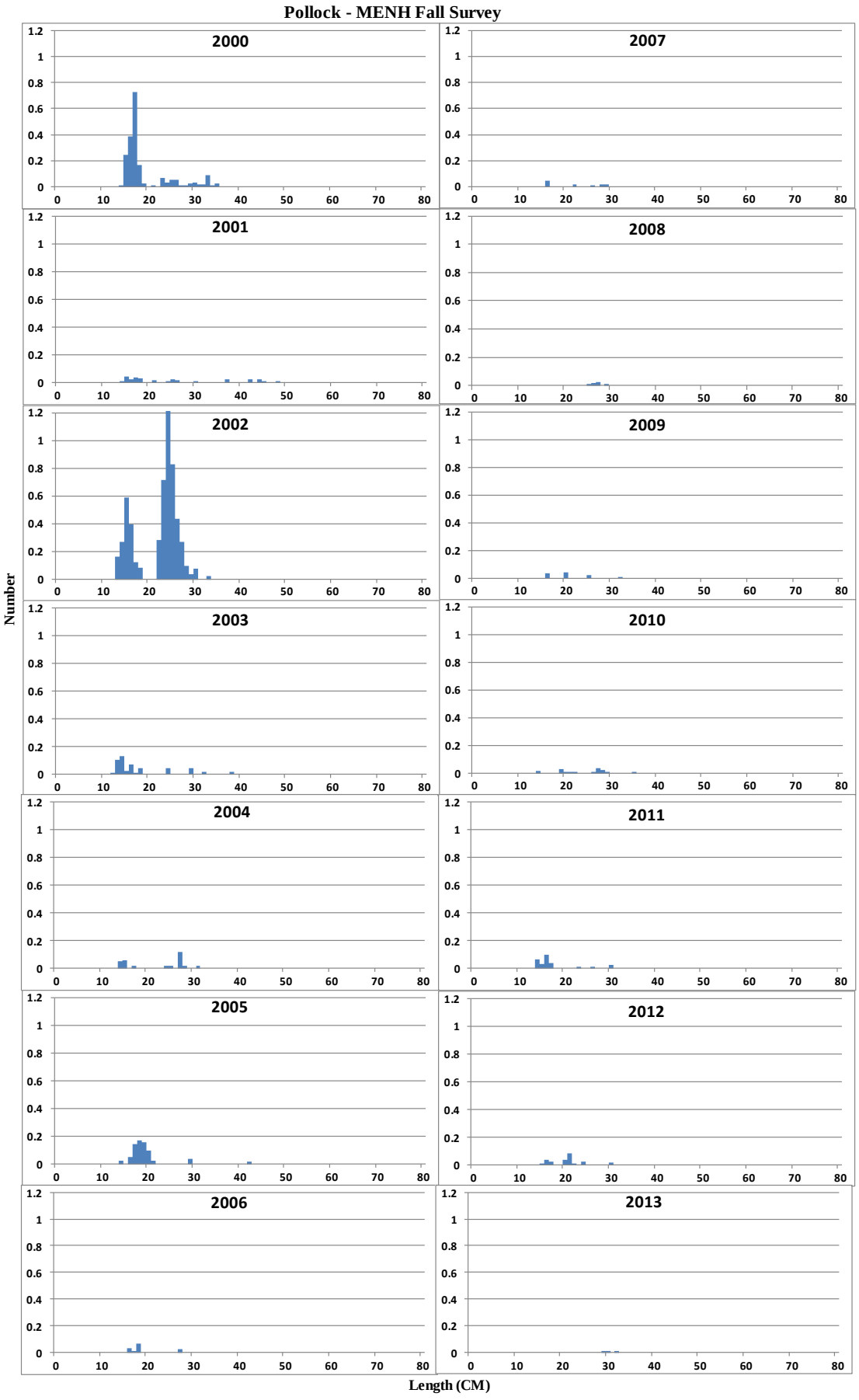
	Number		Weight	
	Mean	CV	Mean	CV
2001	0.45	0.81	0.05	0.89
2002	1.46	0.56	0.11	0.59
2003	0.40	0.56	0.06	1.03
2004	1.22	0.54	0.06	0.48
2005	0.41	2.08	0.03	1.95
2006	0.85	1.28	0.07	1.30
2007	0.38	1.44	0.04	1.22
2008	0.66	1.76	0.09	1.44
2009	0.37	0.79	0.11	1.26
2010	0.34	0.88	0.06	1.15
2011	0.28	0.88	0.05	1.03
2012	0.39	1.33	0.03	1.23
2013	0.07	1.16	0.01	1.08


Pollock - MENH Spring Survey
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
2007
Number
Length (CM)

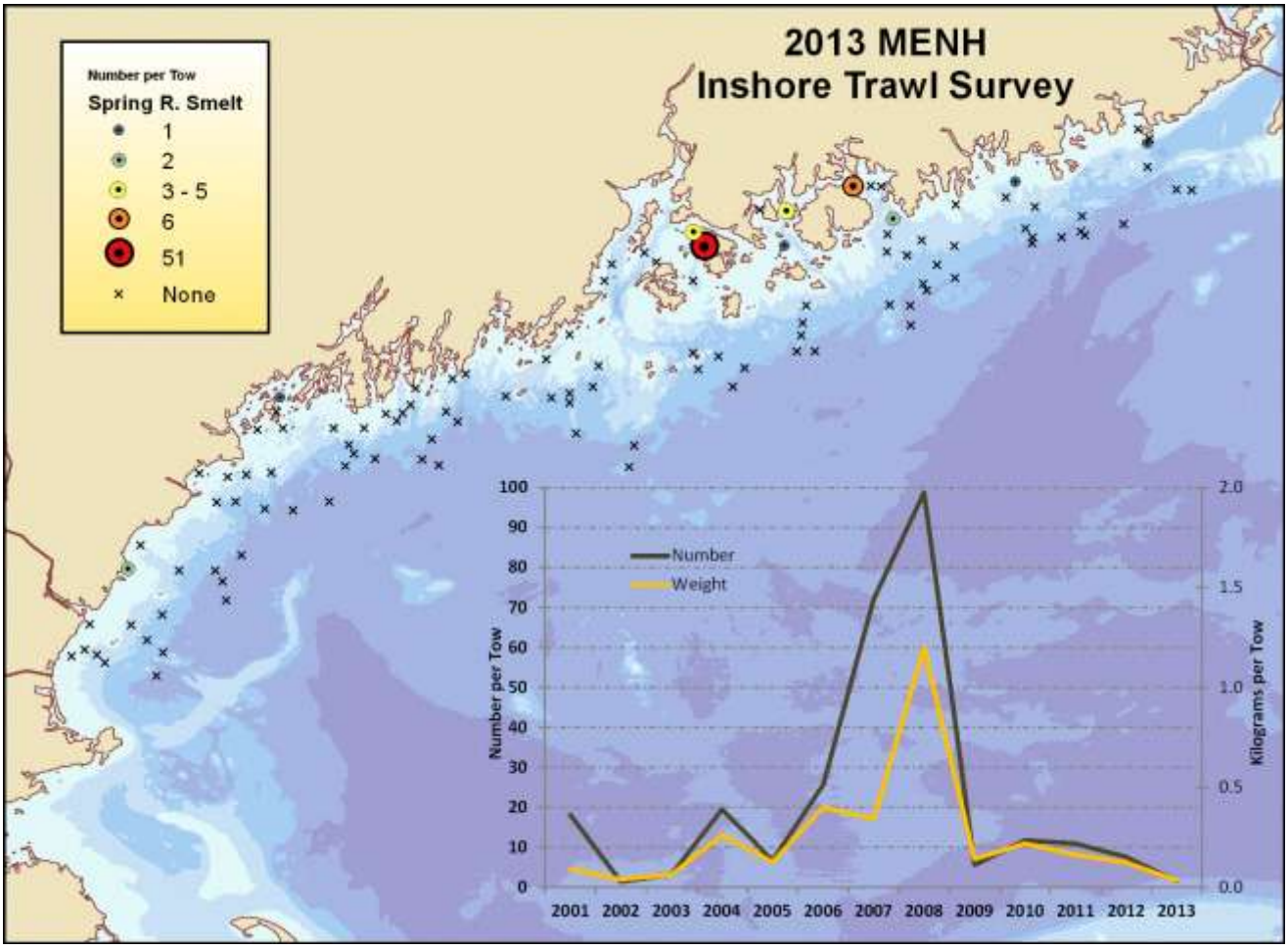


Means and coefficients of variance for graph overlain on above map
fixed stations not included
for pollock, calculated for regions 1 through 5; Strata 1 through 4
FALL
Stratified Mean

	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
2013	0.07	1.05	0.02	1.04

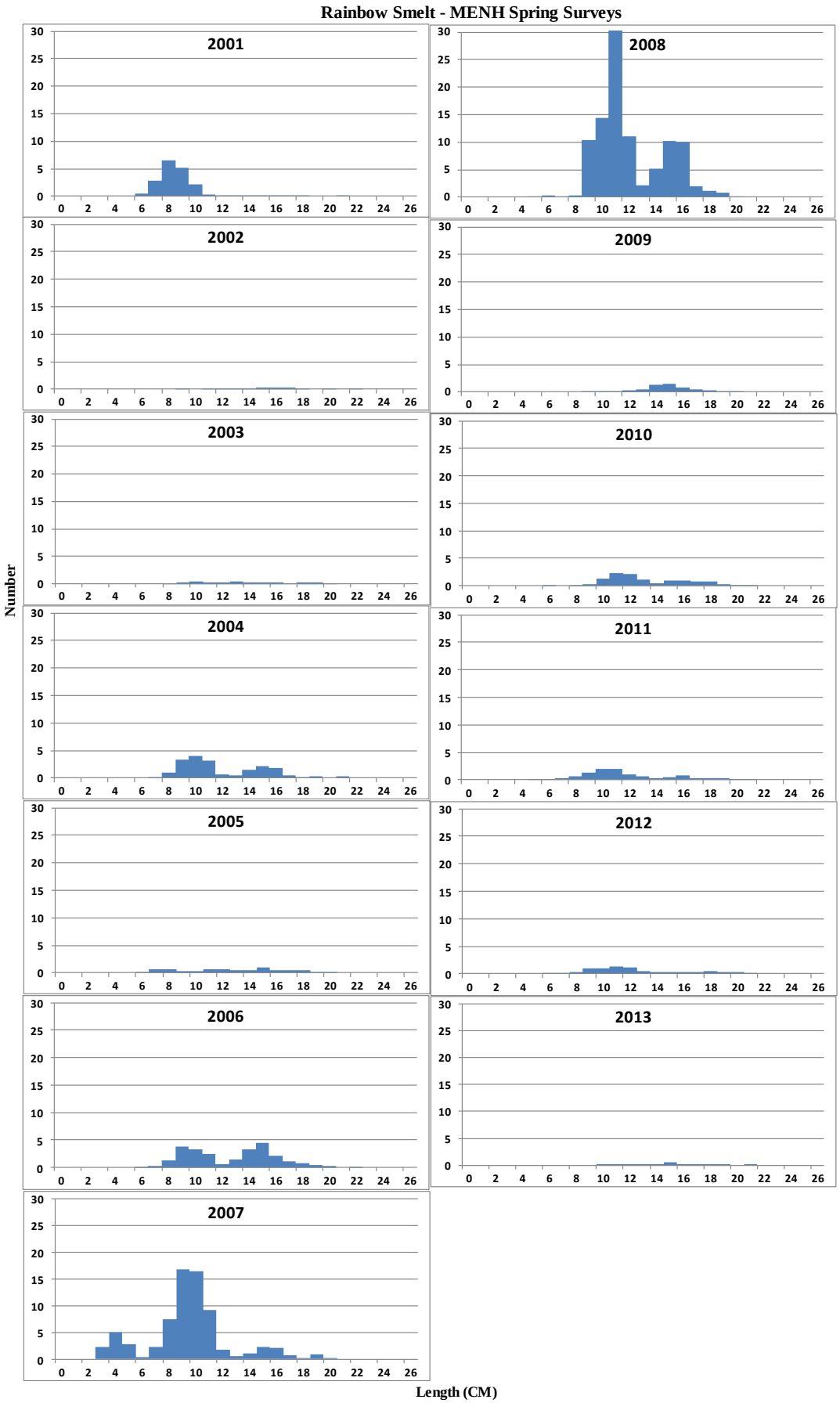

Pollock - MENH Fall Survey
2000
2007
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
Number
Length (CM)

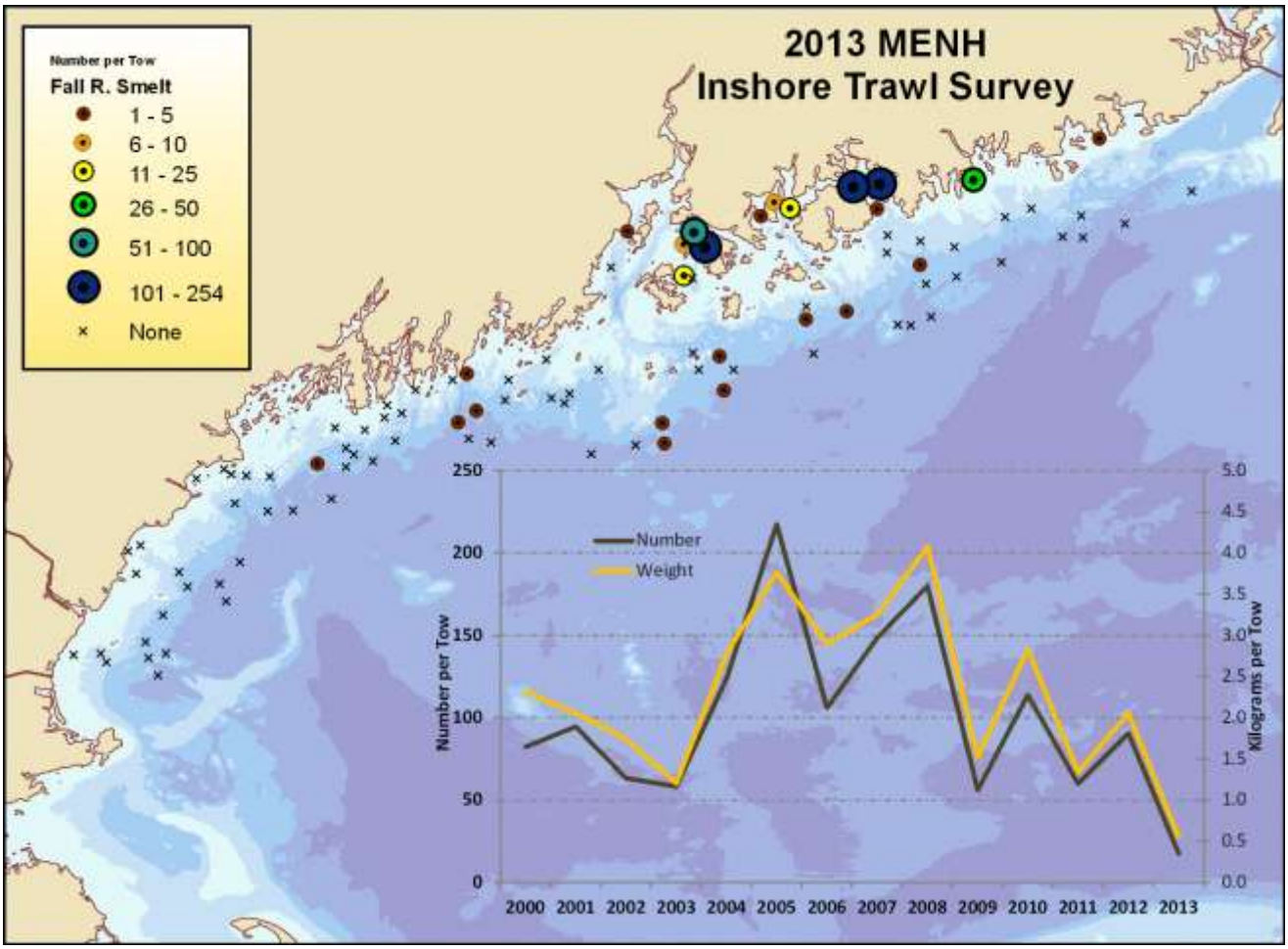
Rainbow smelt, *Osmerus mordax* **(only strata 1and 2 were used for smelt indices)**



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

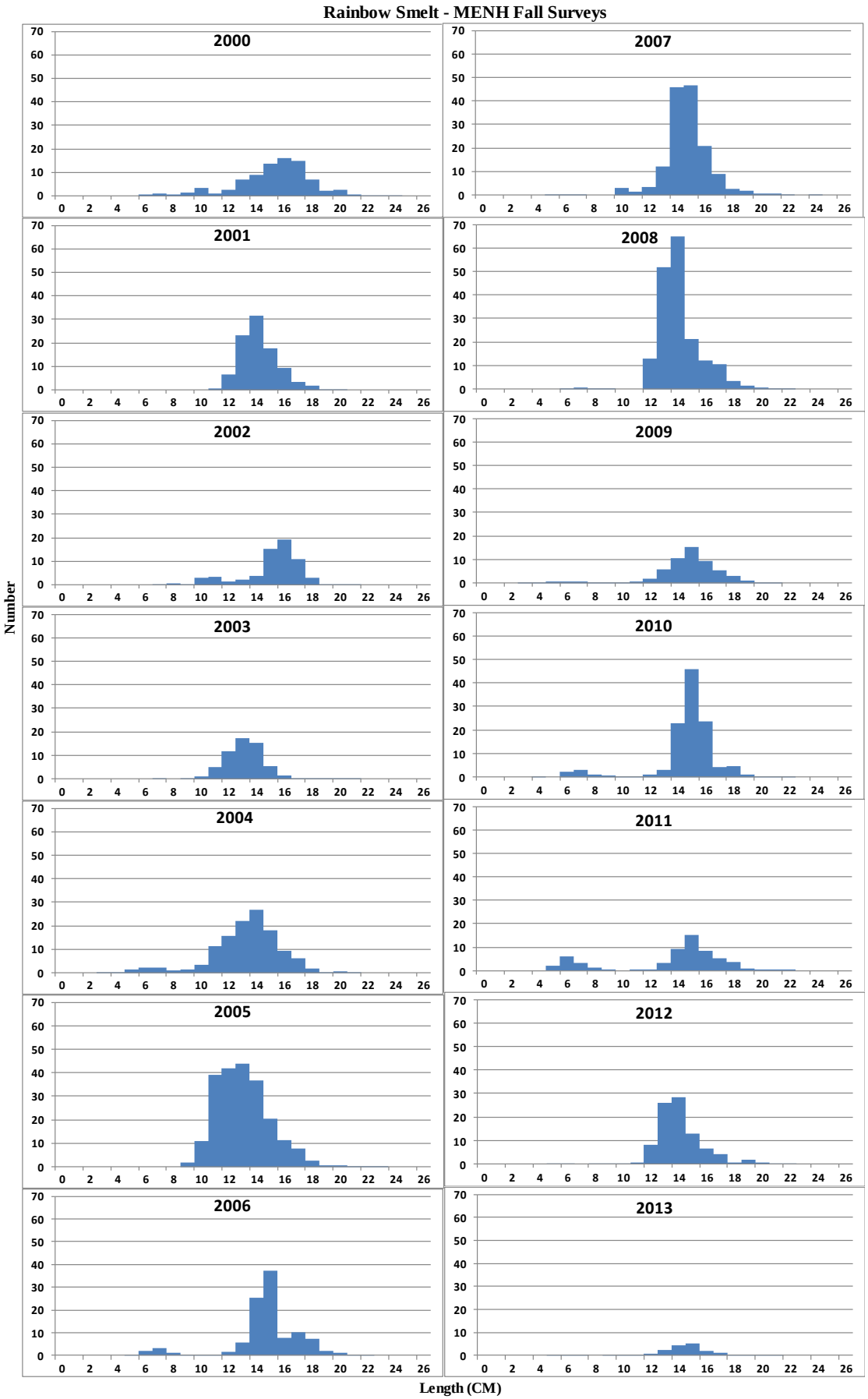
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	18.07	1.48	0.09	1.19
2002	1.34	0.82	0.04	0.83
2003	3.20	0.62	0.06	0.55
2004	19.50	1.25	0.26	0.99
2005	6.72	0.63	0.13	0.98
2006	25.62	0.86	0.40	0.83
2007	72.07	1.17	0.34	0.93
2008	98.81	1.79	1.20	1.70
2009	5.59	0.89	0.14	0.86
2010	11.74	1.21	0.22	1.12
2011	10.91	1.05	0.16	0.83
2012	7.56	1.19	0.12	0.92
2013	1.53	1.57	0.03	1.36


Rainbow Smelt - MENH Spring Surveys
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Number
Length (CM)

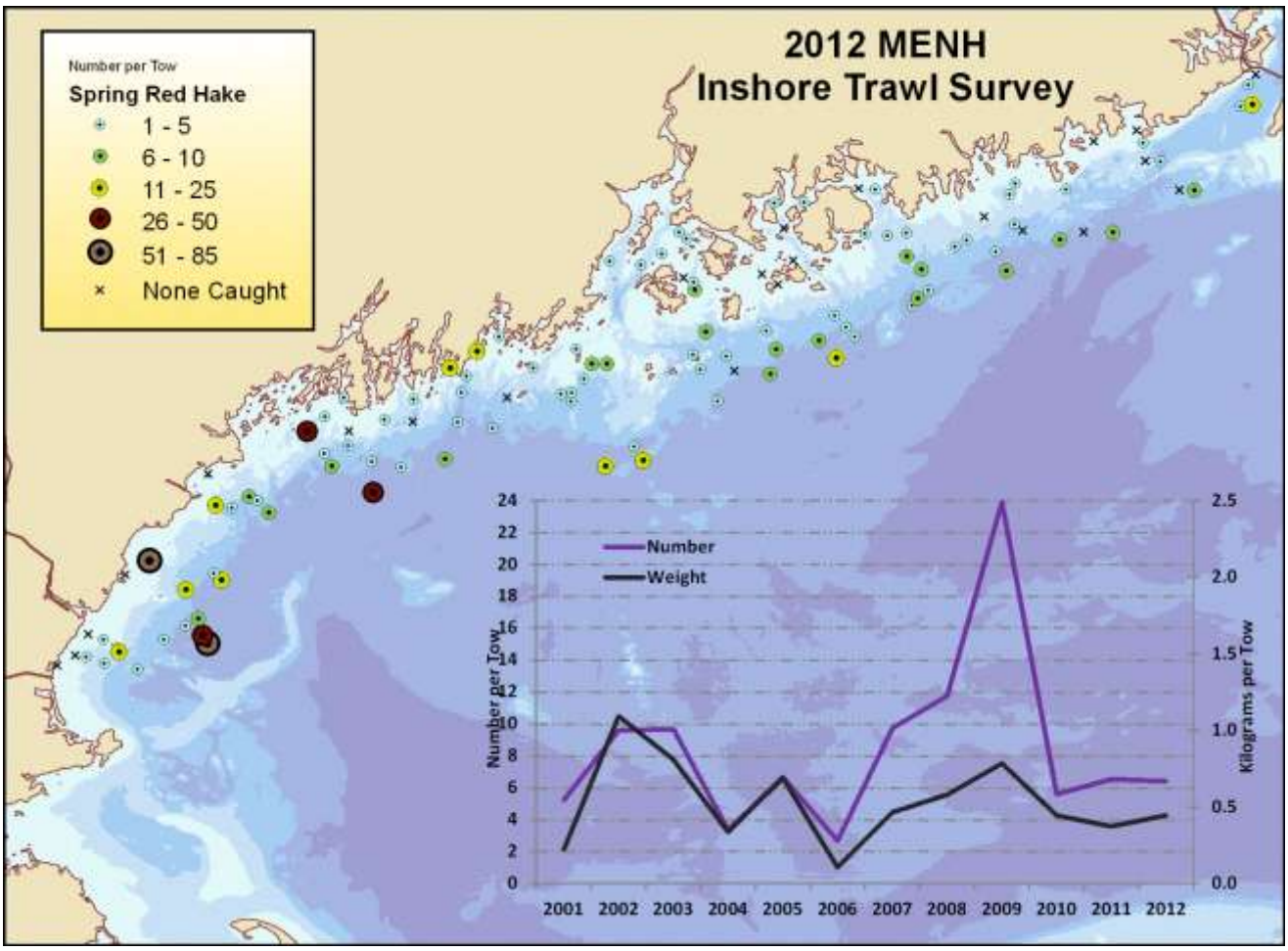


Mean and coefficients of variance for graph overlain on above map
fixed stations not included
for smelt, indices calculated for regions 1 through 5; Strata 1 and 2
FALL
Stratified Mean

	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
2013	17.62	0.83	0.55	1.08

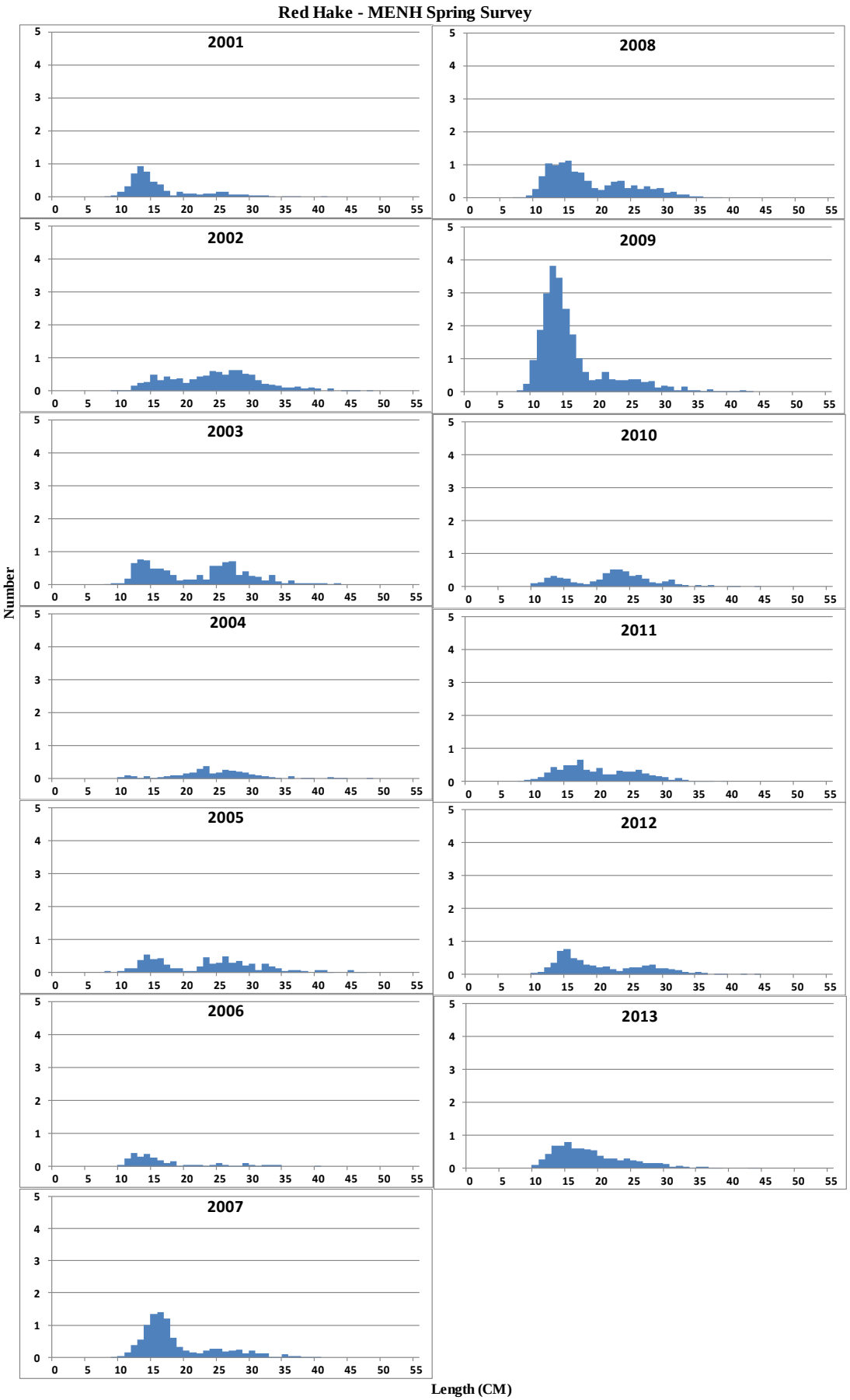

Rainbow Smelt - MENH Fall Surveys
2000
2007
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
Number
Length (CM)

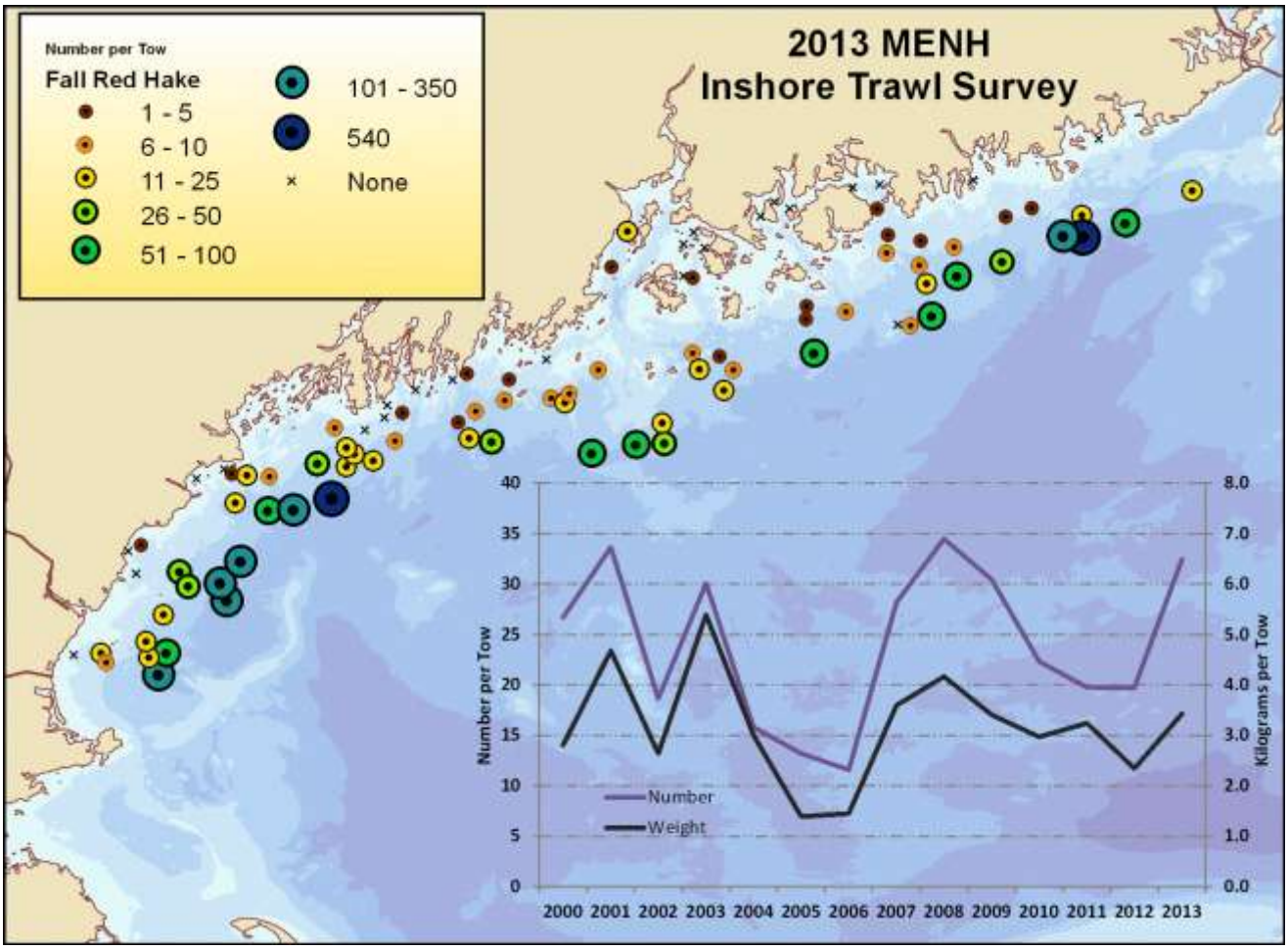
Red hake, *Urophycis chuss*



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

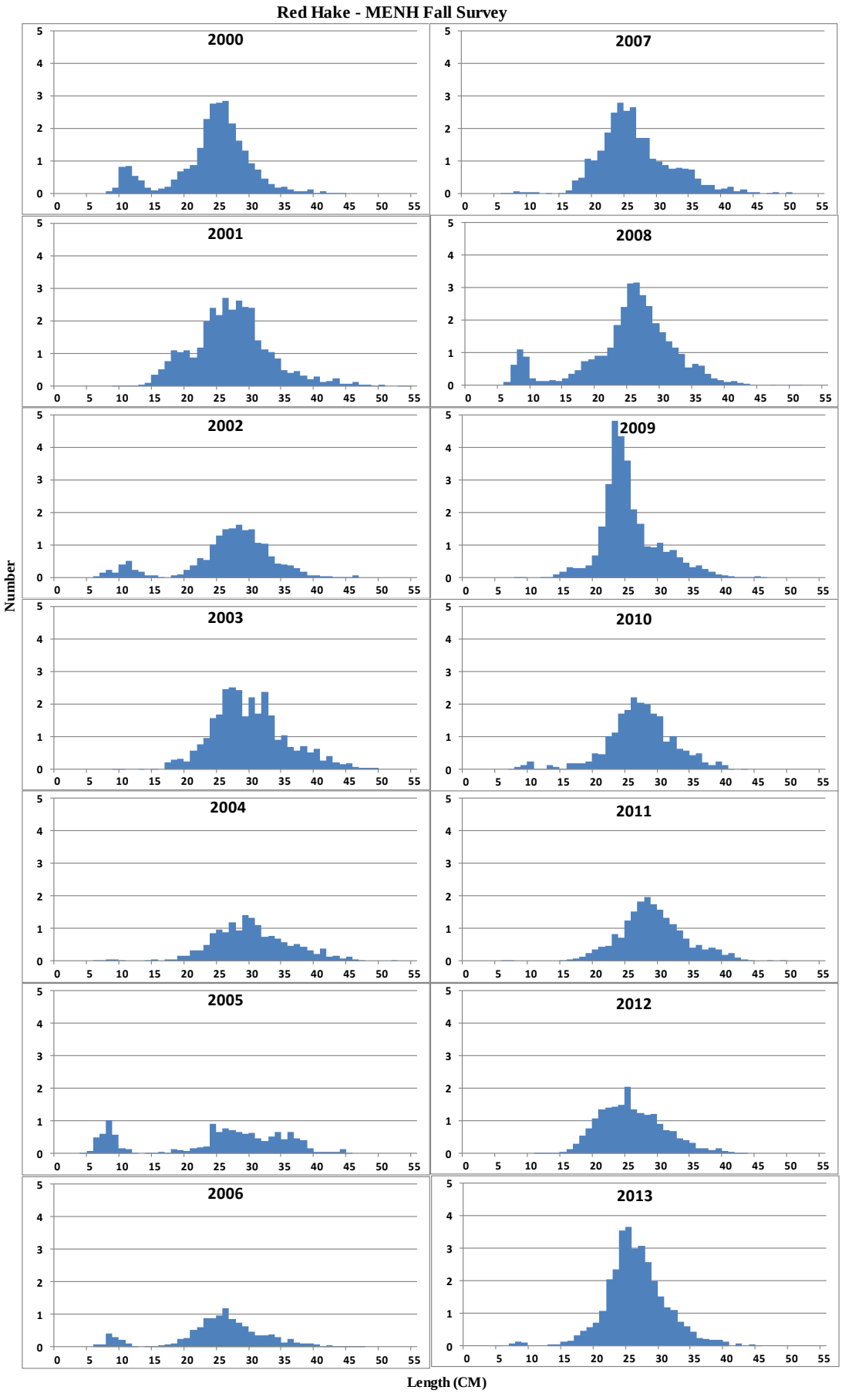
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	5.24	0.46	0.22	0.76
2002	9.59	0.26	1.09	0.26
2003	9.69	0.28	0.81	0.40
2004	3.37	0.20	0.34	0.27
2005	6.68	0.19	0.69	0.14
2006	2.69	0.40	0.11	0.43
2007	9.75	0.28	0.47	0.36
2008	11.76	0.34	0.58	0.27
2009	23.89	0.21	0.78	0.14
2010	5.60	0.17	0.45	0.25
2011	6.55	0.38	0.37	0.45
2012	6.42	0.38	0.45	0.65
2013	8.10	0.23	0.40	0.29


Red Hake - MENH Spring Survey
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
2007
Number
Length (CM)

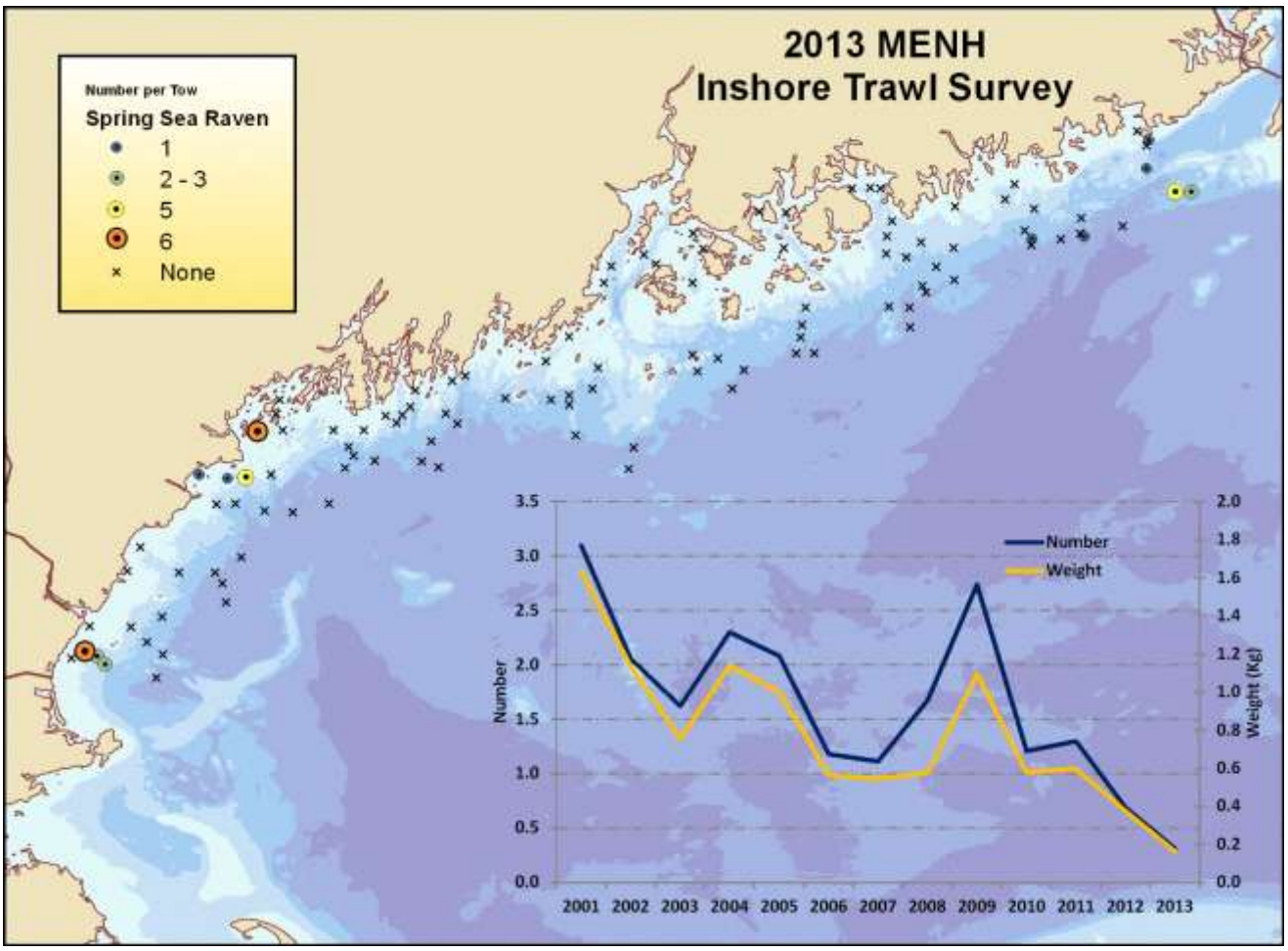


Mean and coefficients of variance for graph overlain on above map
fixed stations <u>not</u> included
for red hake, calculated for regions 1 through 5; Strata 1 through 4
FALL
Stratified Mean

	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
2013	32.50	0.43	3.43	0.35

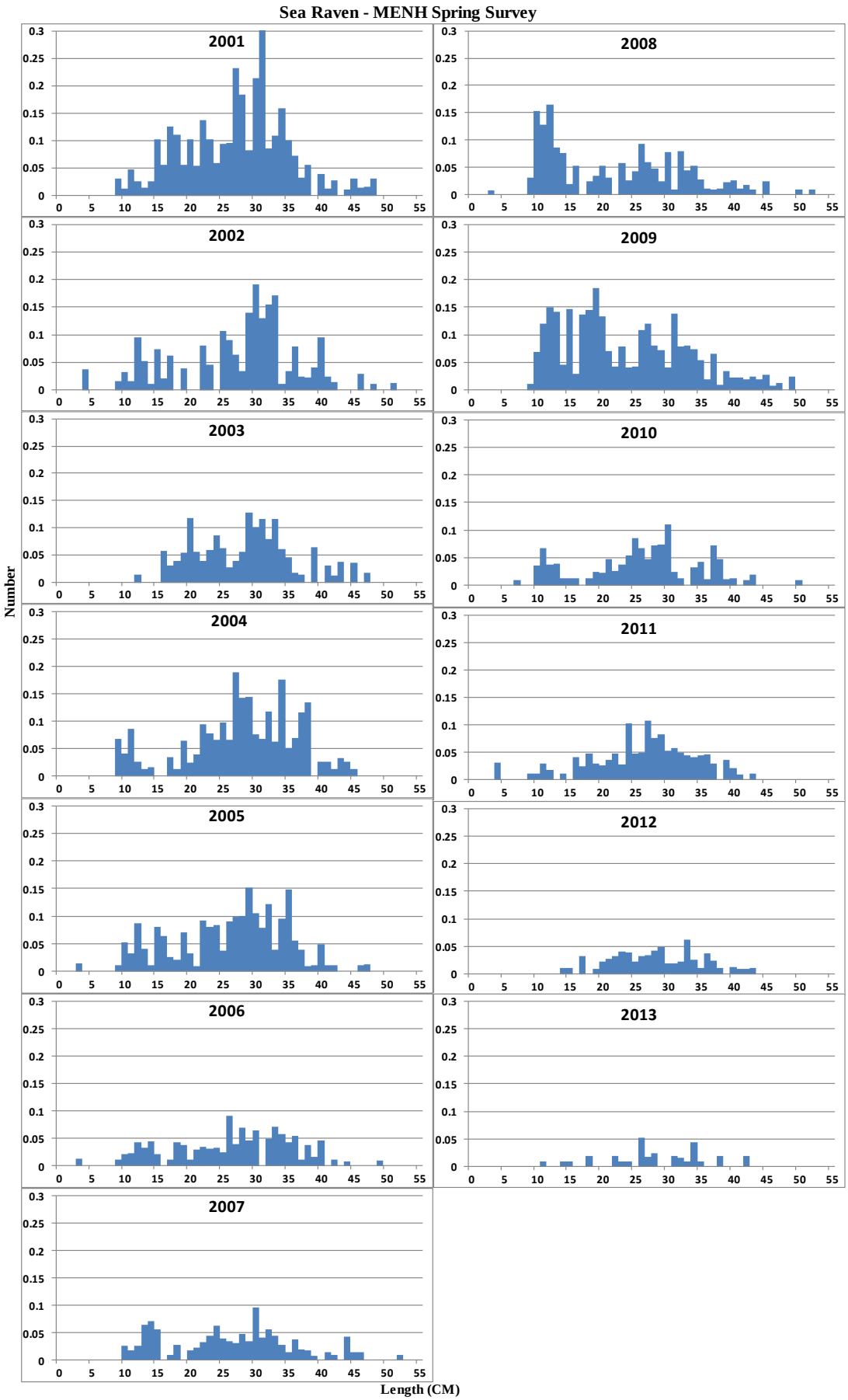

Red Hake - MENH Fall Survey
2000
2007
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
Number
Length (CM)

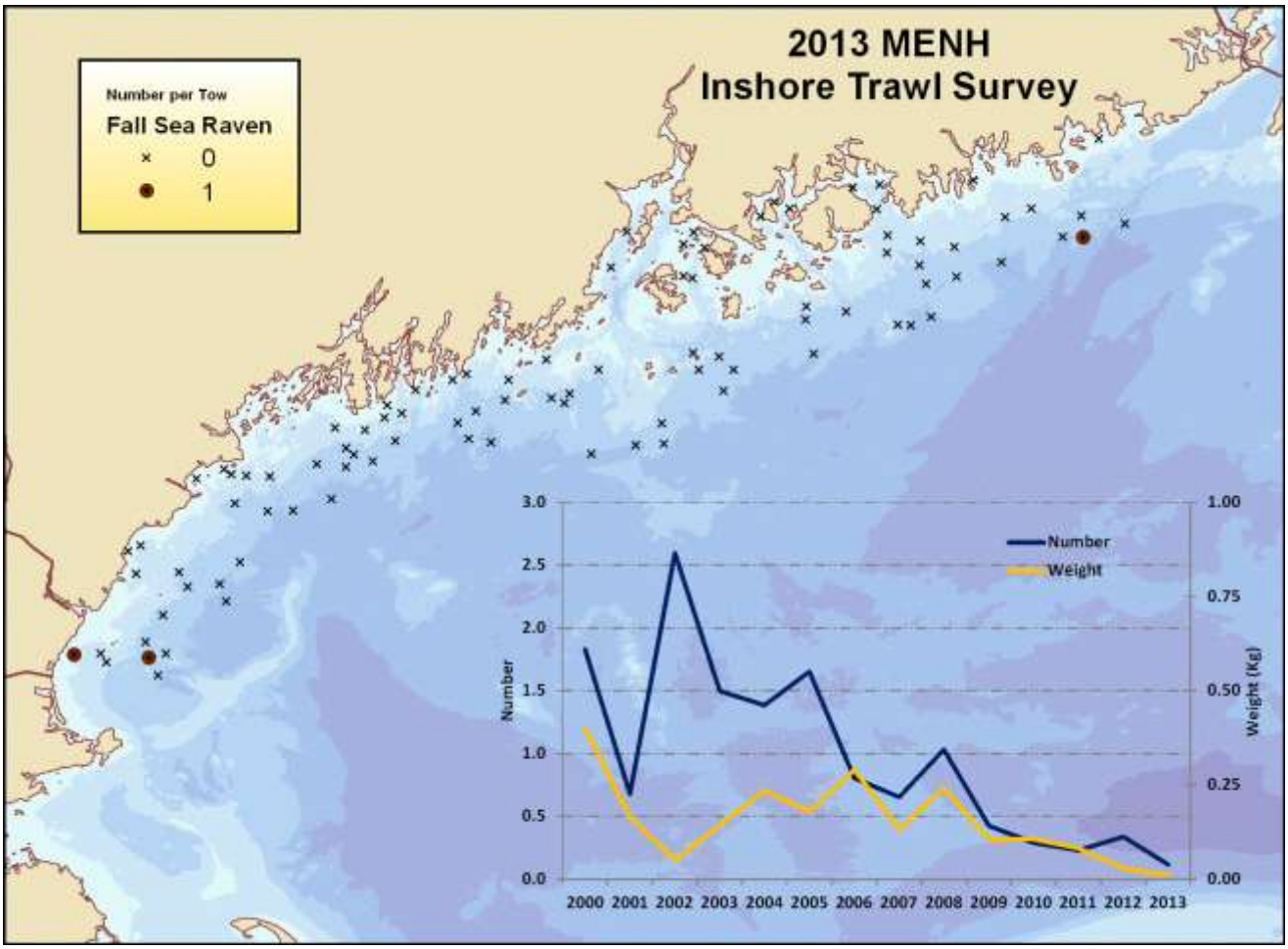
Sea raven, *Hemitripterus americanus*



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

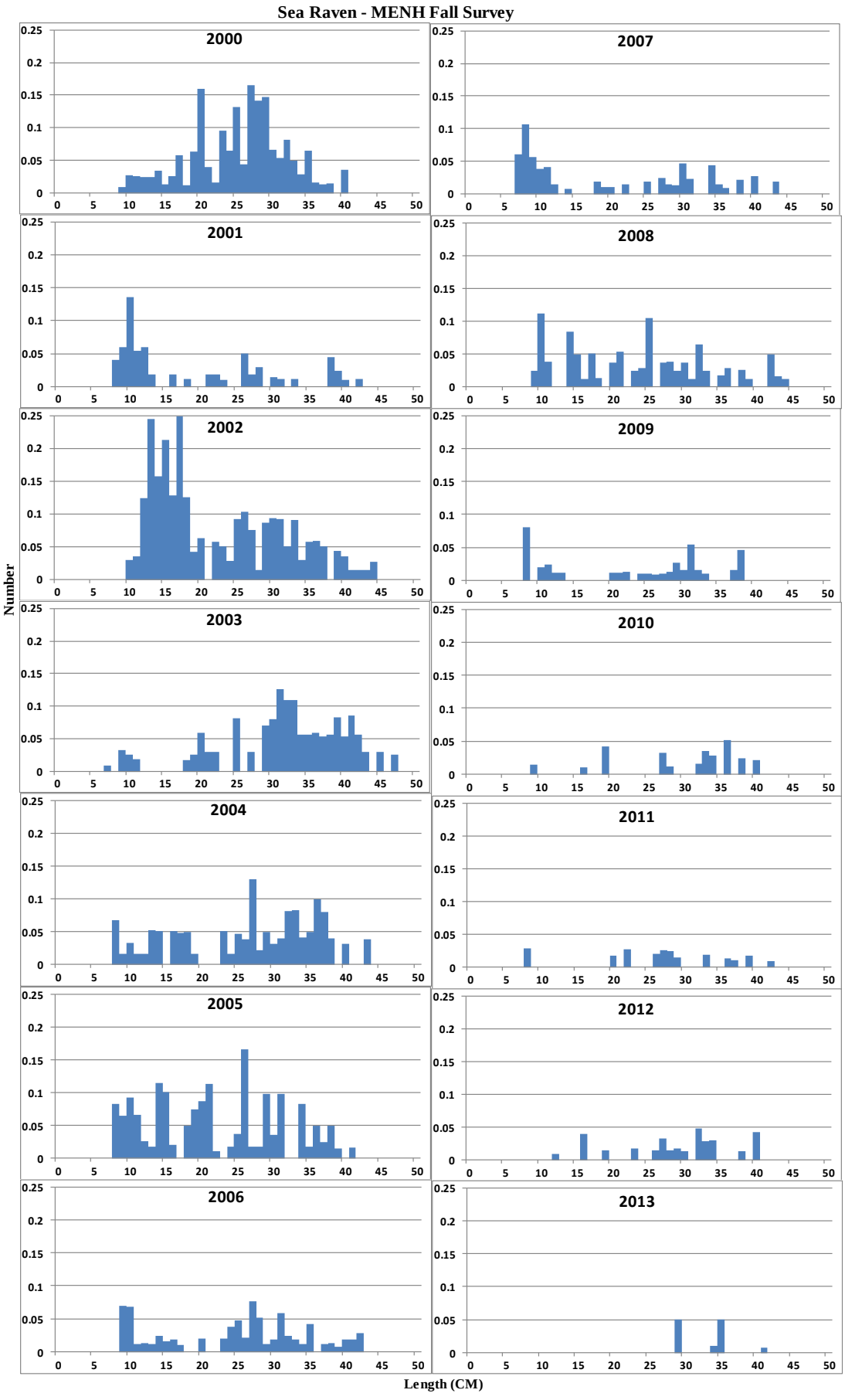
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	3.09	0.73	1.63	0.77
2002	2.06	0.38	1.14	0.48
2003	1.62	0.38	0.75	0.39
2004	2.30	0.51	1.14	0.61
2005	2.08	0.31	1.00	0.33
2006	1.18	0.48	0.56	0.59
2007	1.11	0.40	0.54	0.39
2008	1.68	0.41	0.58	0.42
2009	2.74	0.38	1.09	0.46
2010	1.21	0.54	0.58	0.57
2011	1.30	0.57	0.60	0.53
2012	0.69	0.71	0.37	0.63
2013	0.31	0.71	0.16	0.65


Sea Raven - MENH Spring Survey
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Number
Length (CM)

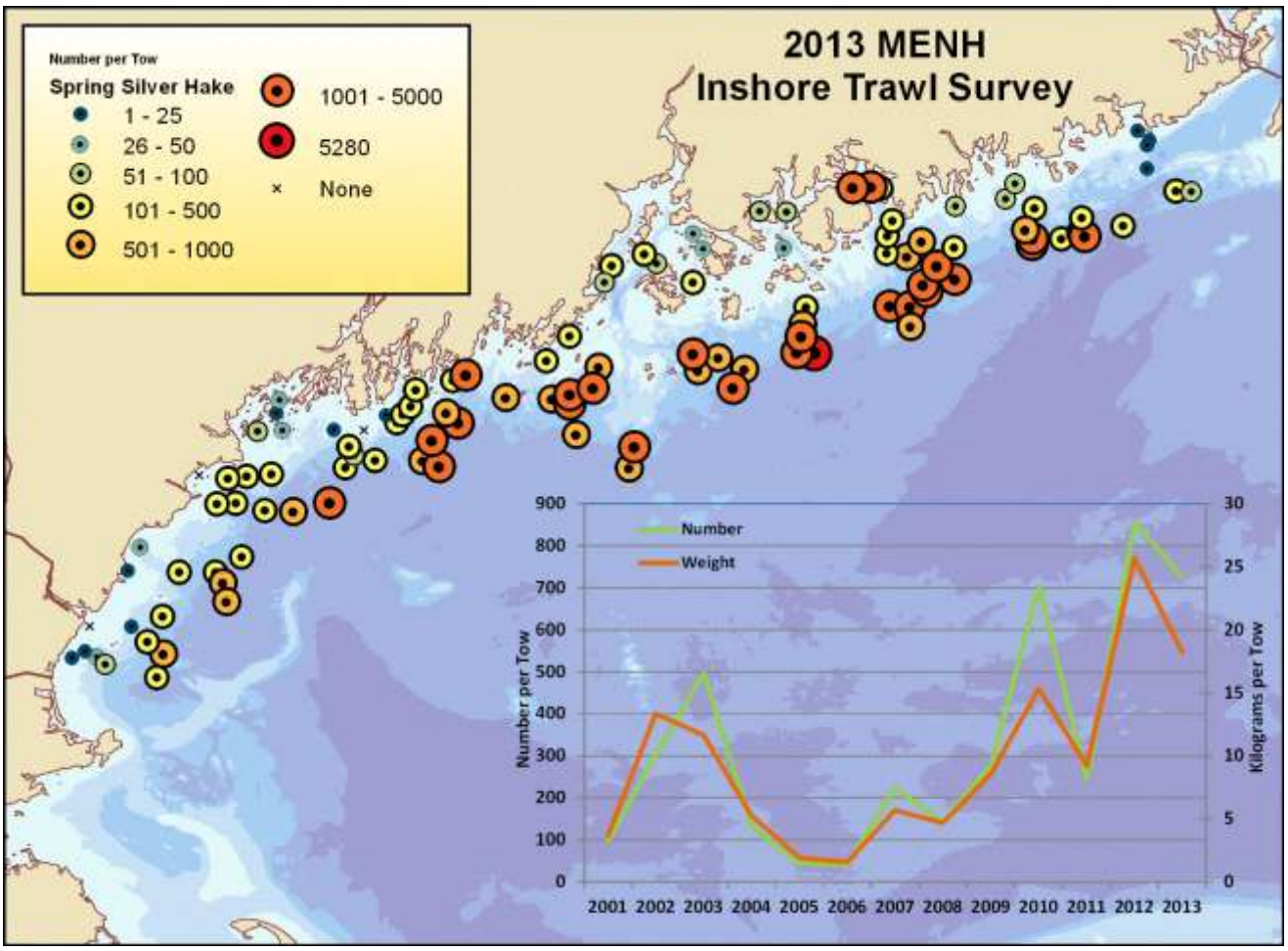


Mean and coefficients of variance for graph overlain on above map
fixed stations <u>not</u> included
for sea raven, calculated for regions 1 through 5; strata 1 through 4
FALL
Stratified Mean

	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
2013	0.12	1.22	0.01	2.45

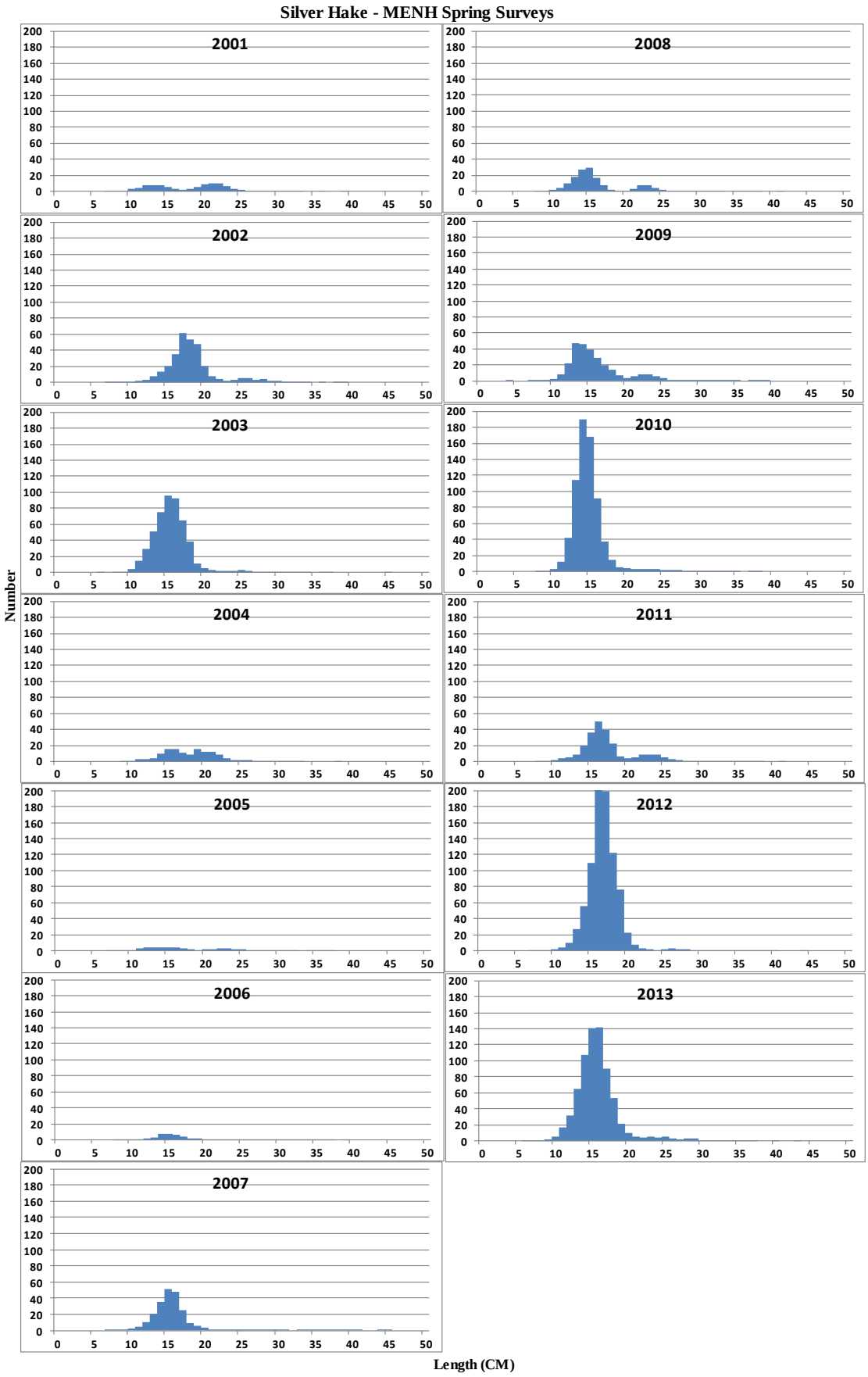

Sea Raven - MENH Fall Survey
2000
2007
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
Number
Length (CM)

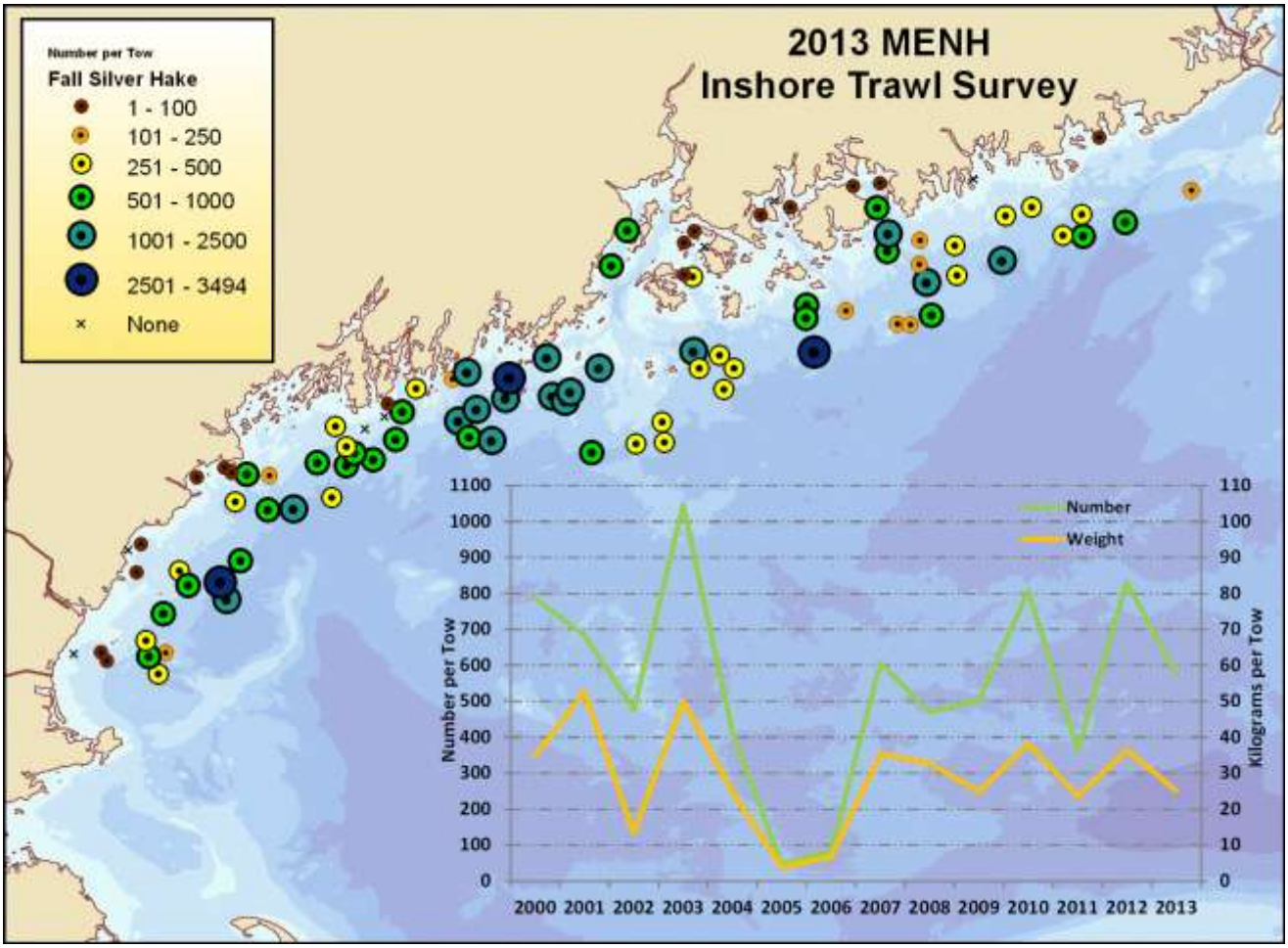
Silver hake, *Merluccius bilinearis*



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

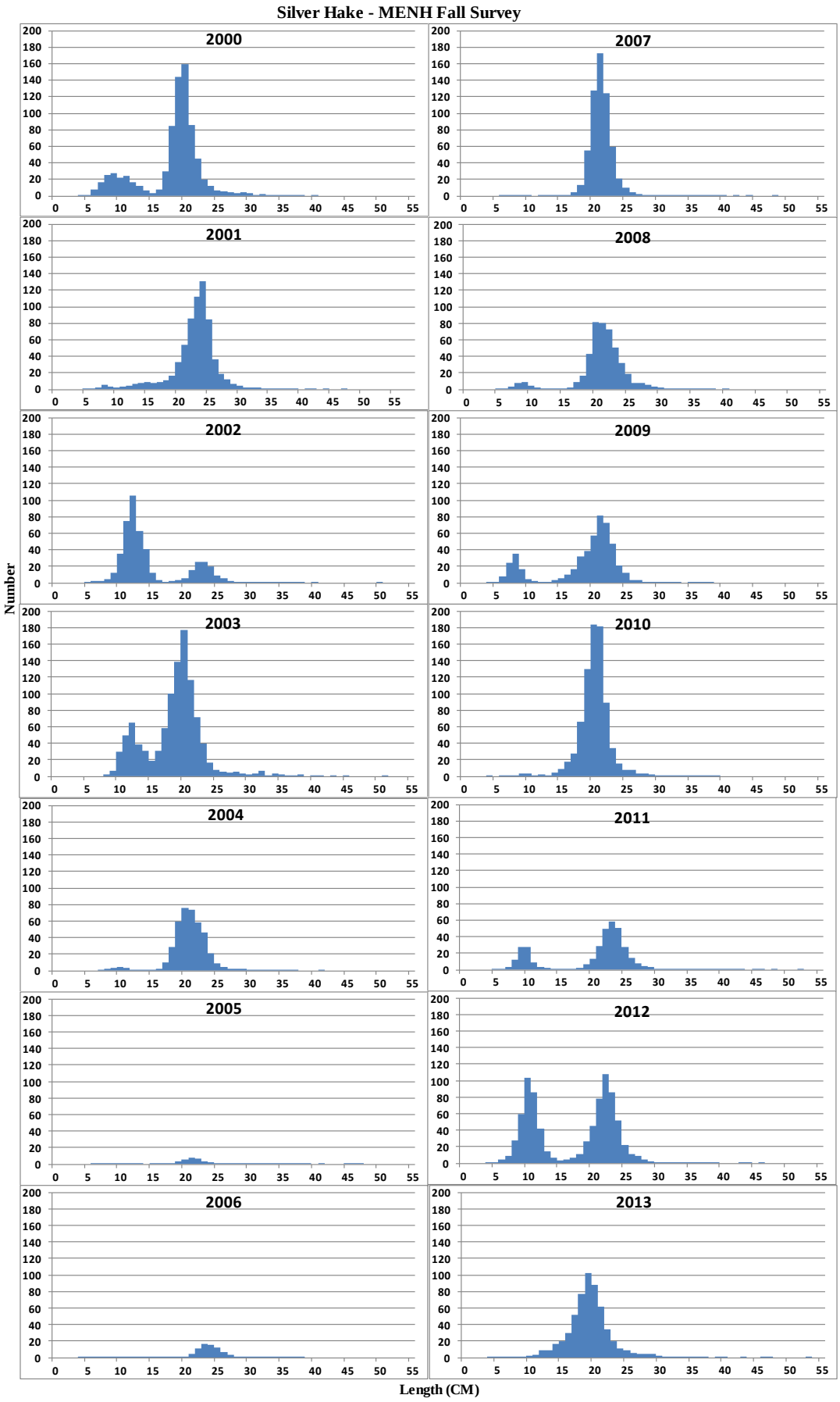
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	97.62	0.34	3.68	0.35
2002	302.18	1.00	13.34	0.99
2003	497.84	0.30	11.63	0.31
2004	131.82	0.17	5.26	0.22
2005	43.34	0.19	1.91	0.17
2006	40.60	0.37	1.58	0.41
2007	223.16	0.76	5.68	0.79
2008	142.90	0.27	4.67	0.32
2009	277.91	0.27	8.59	0.29
2010	702.43	0.37	15.33	0.33
2011	243.92	0.22	9.21	0.23
2012	854.53	0.84	25.68	0.69
2013	723.26	0.23	18.23	0.24


Silver Hake - MENH Spring Surveys
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
2007
Number
Length (CM)

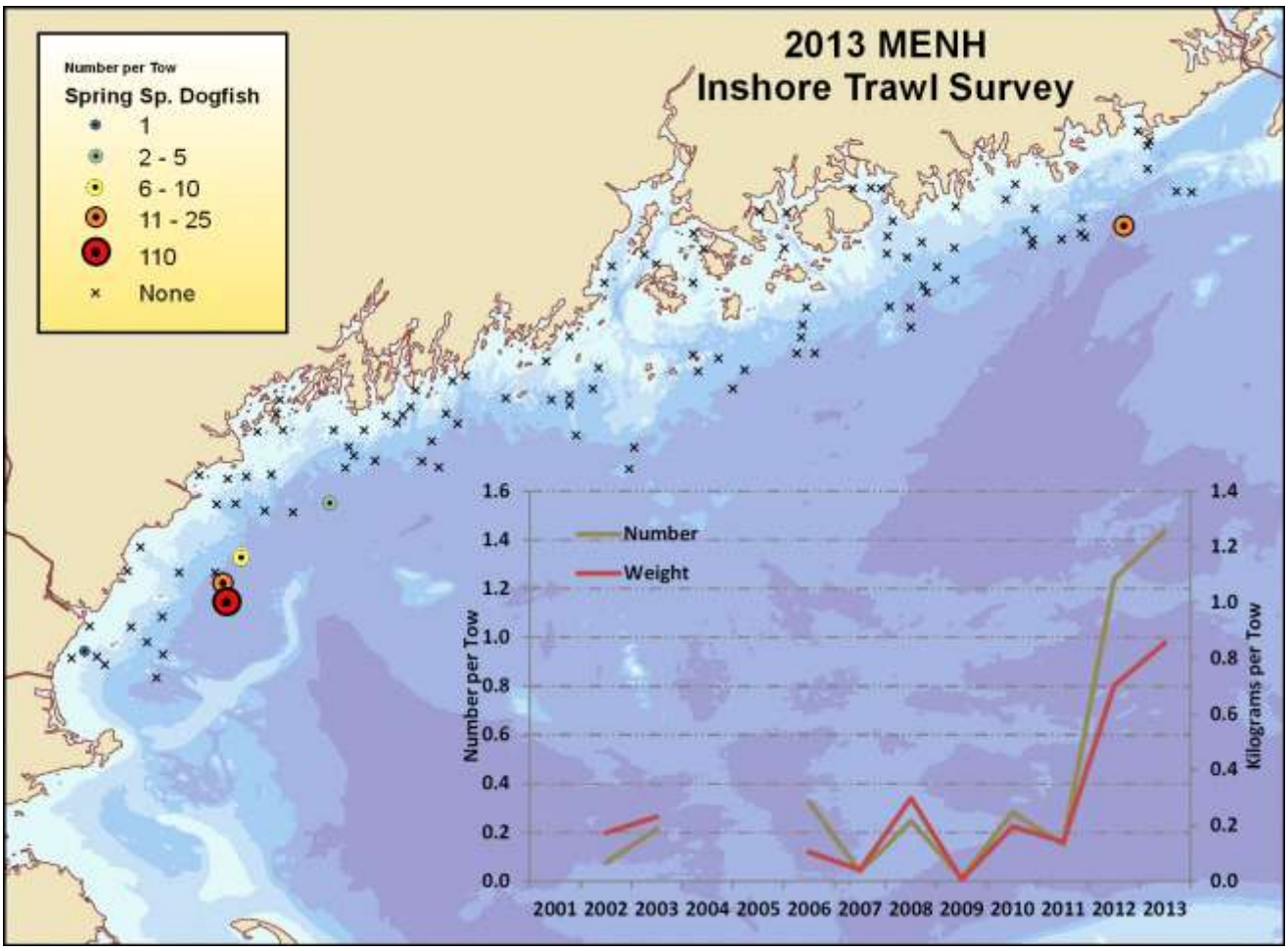


Mean and coefficients of variance for graph overlain on above map
fixed stations <u>not</u> included
for silver hake, calculated for regions 1 through 5; strata 1 through 4
FALL
Stratified Mean

	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
2013	573.64	0.24	25.10	0.23


Silver Hake - MENH Fall Survey
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Number
Length (CM)

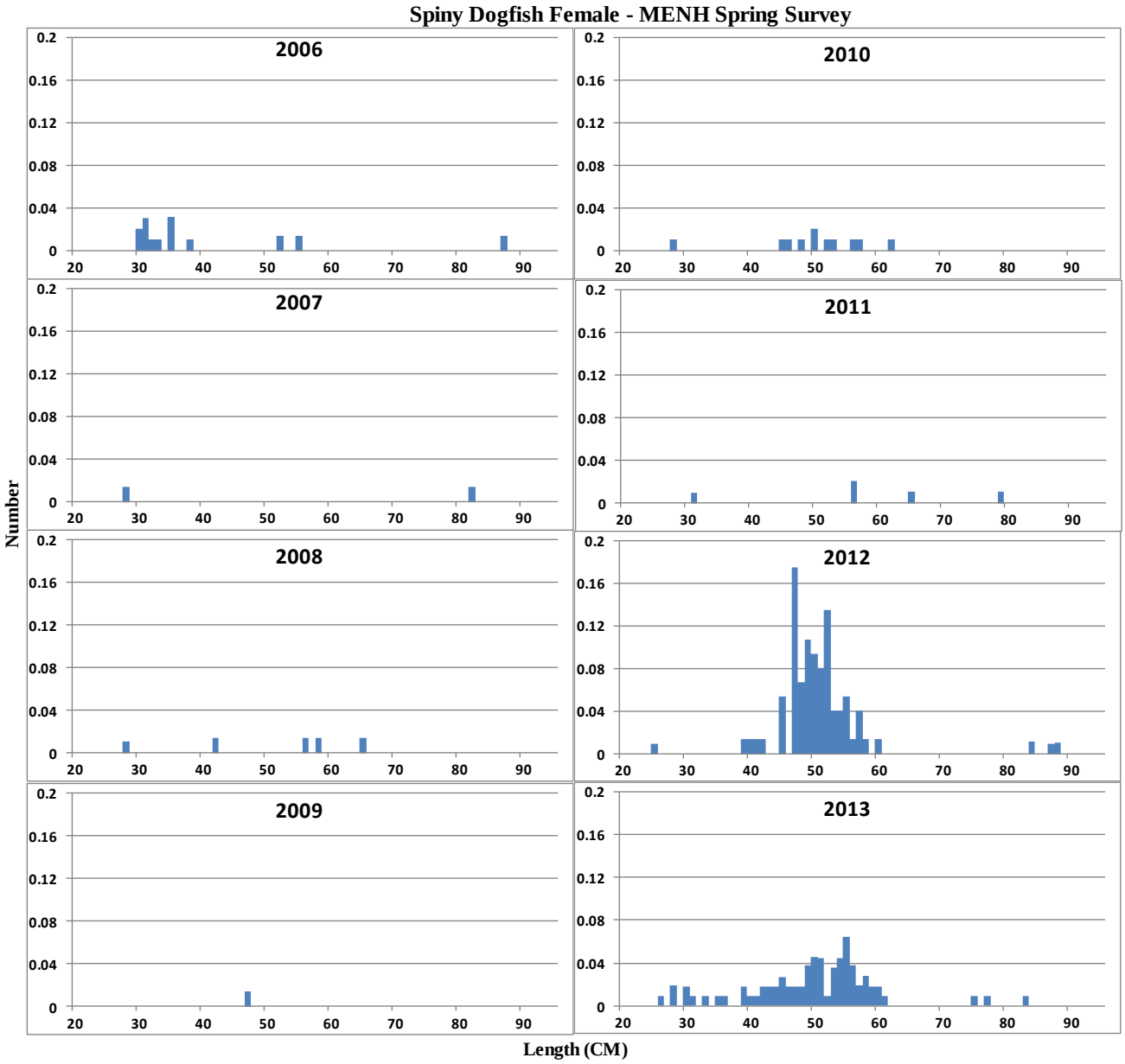
Spiny dogfish, *Squalus acanthias*

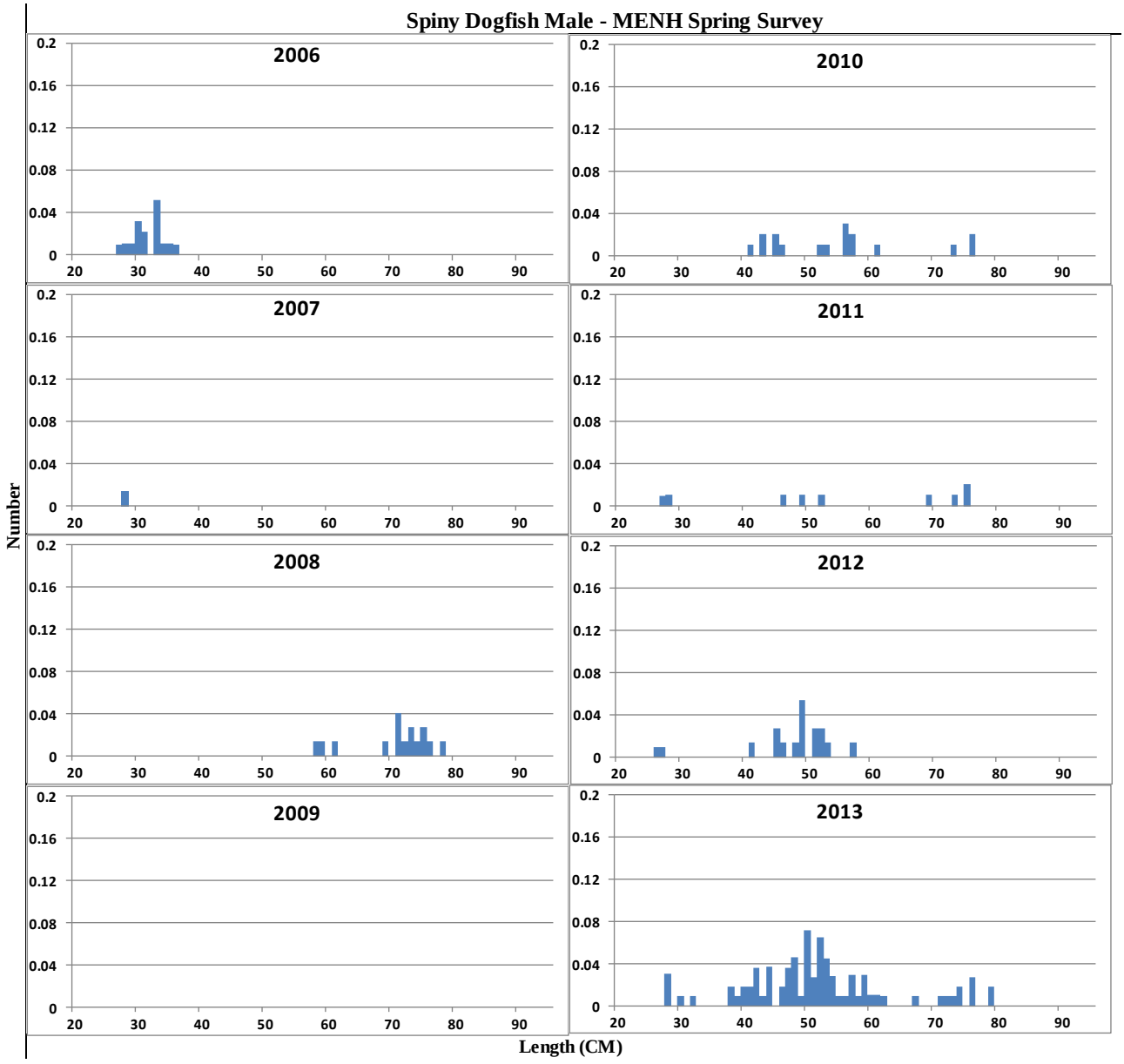


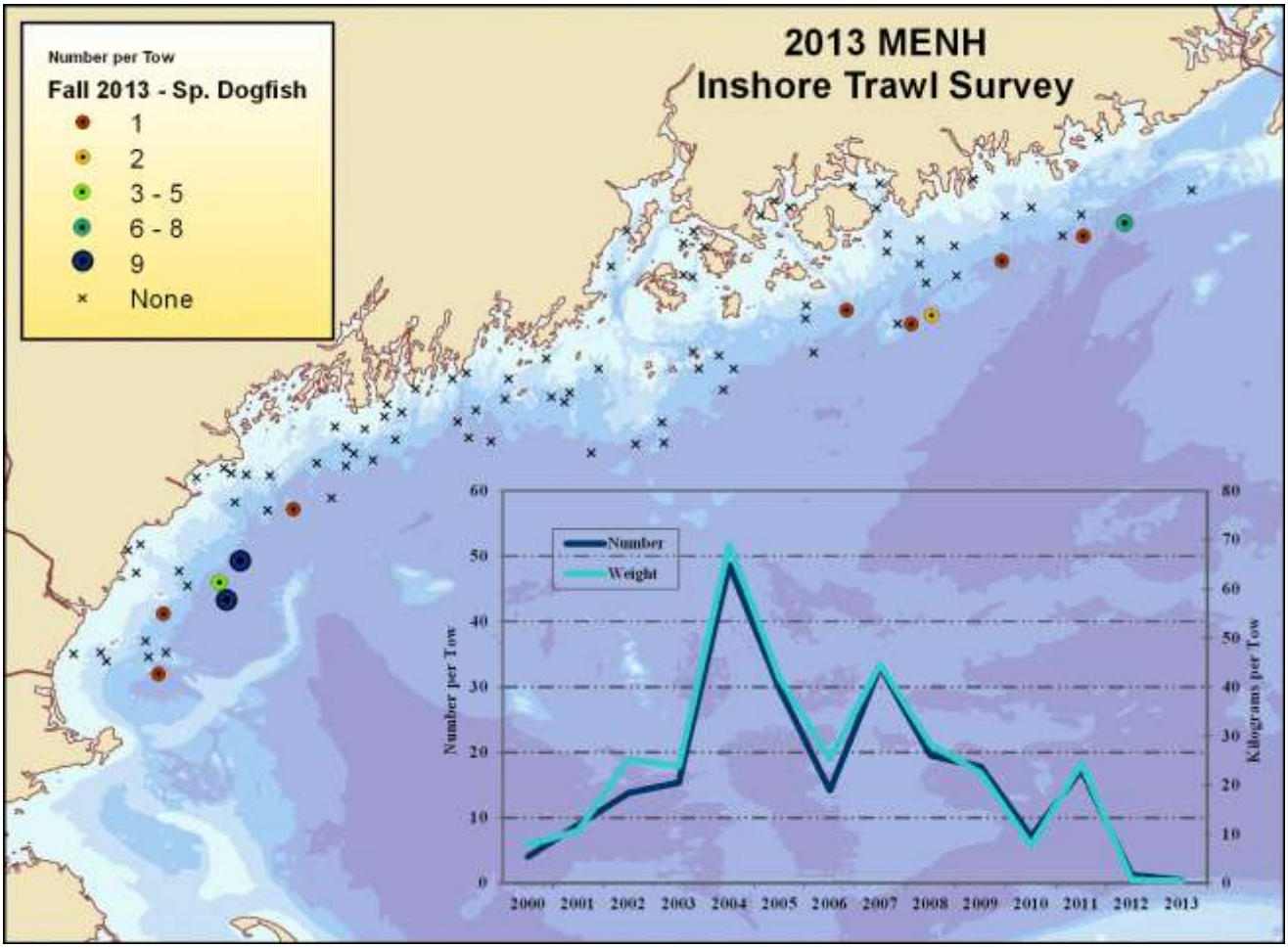
Mean and coefficients of variance for graph overlain on above map
fixed stations <u>not</u> included
for dogs, indices calculated for regions 1 through 5; strata 1 through 4
SPRING
Stratified Mean

	Number		Weight	
	Mean	**CV**	**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
2013	1.44	1.64	0.86	1.67

Spiny dogfish have been separated by sex since 2006 in the spring surveys. Length data before that was sexes combined and is not shown.



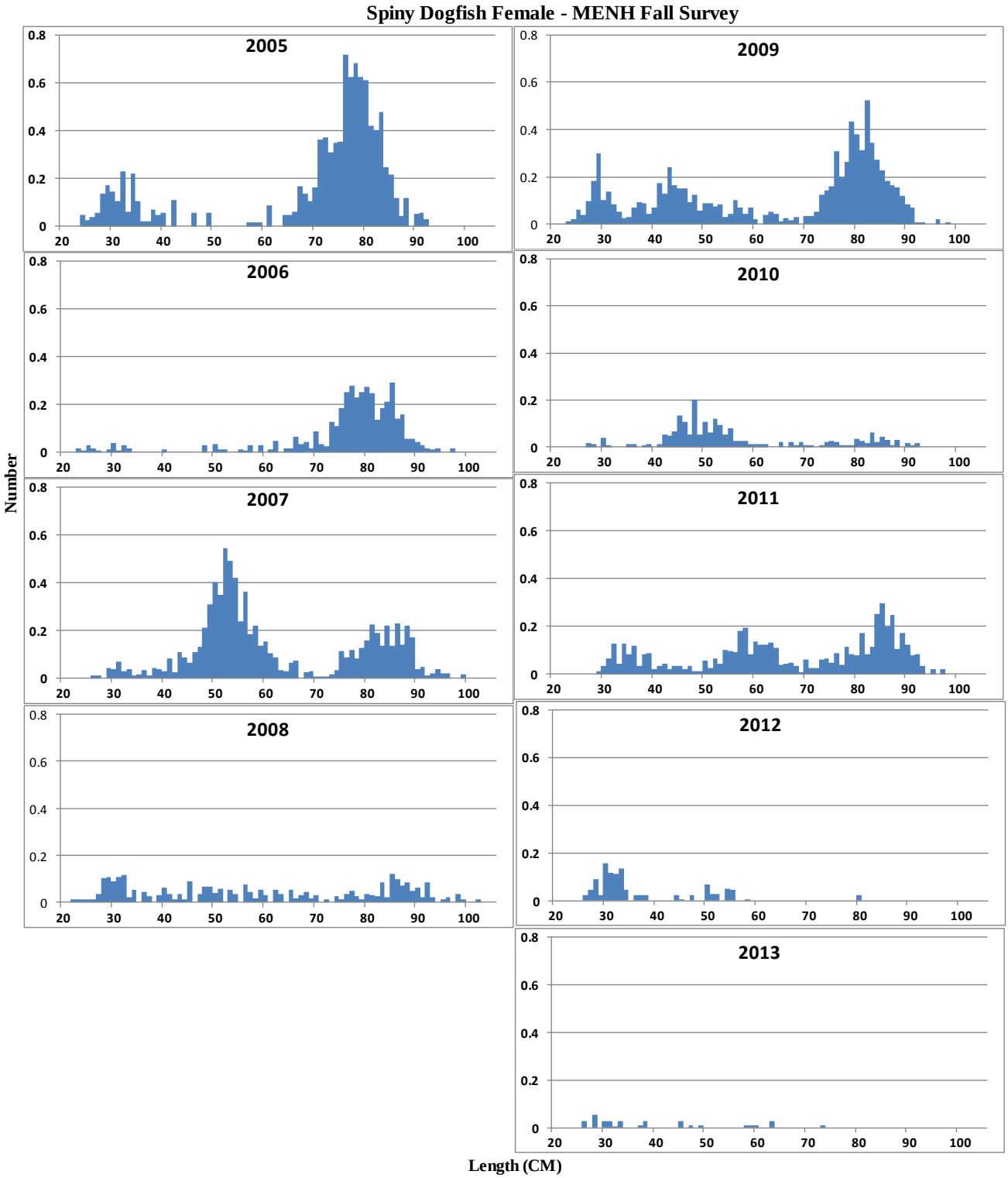

Spiny Dogfish Male - MENH Spring Survey
2006
2010
2007
2011
2008
2012
2009
2013
Number
Length (CM)
0.2
0.16
0.12
0.08
0.04
0
20
30
40
50
60
70
80
90



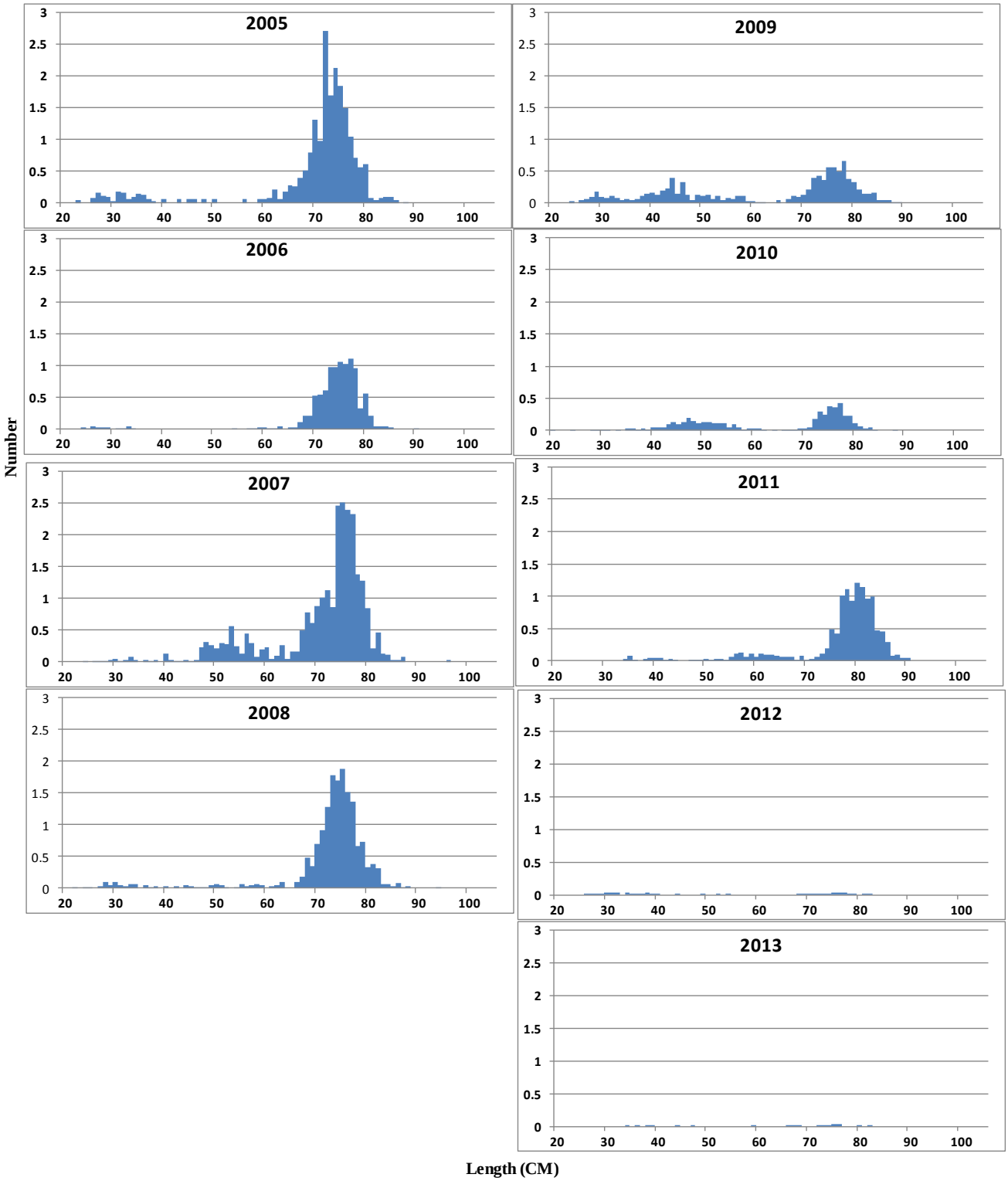
Mean and coefficients of variance for graph overlain on above map
fixed stations <u>not</u> included
for dogs, calculated for regions 1 through 5; strata 1 through 4
FALL
Stratified Mean

	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
2013	0.43	0.62	0.39	0.52

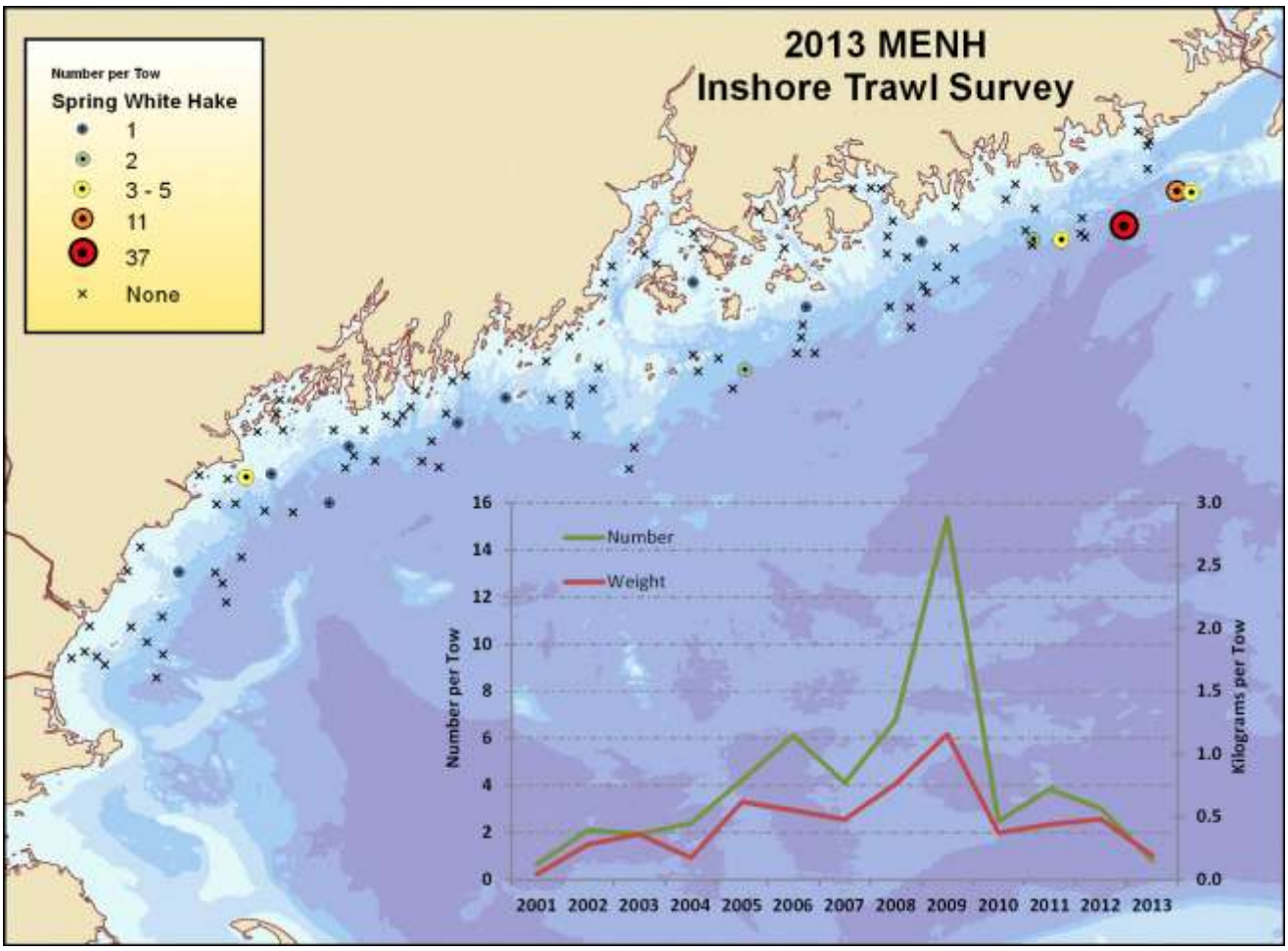
Spiny dogfish have been separated by sex since 2005 in fall surveys. Plots show catch at length, note the scale is different for the sexes. Length data before that was combined and is not shown.



Spiny Dogfish Male - MENH Fall Survey

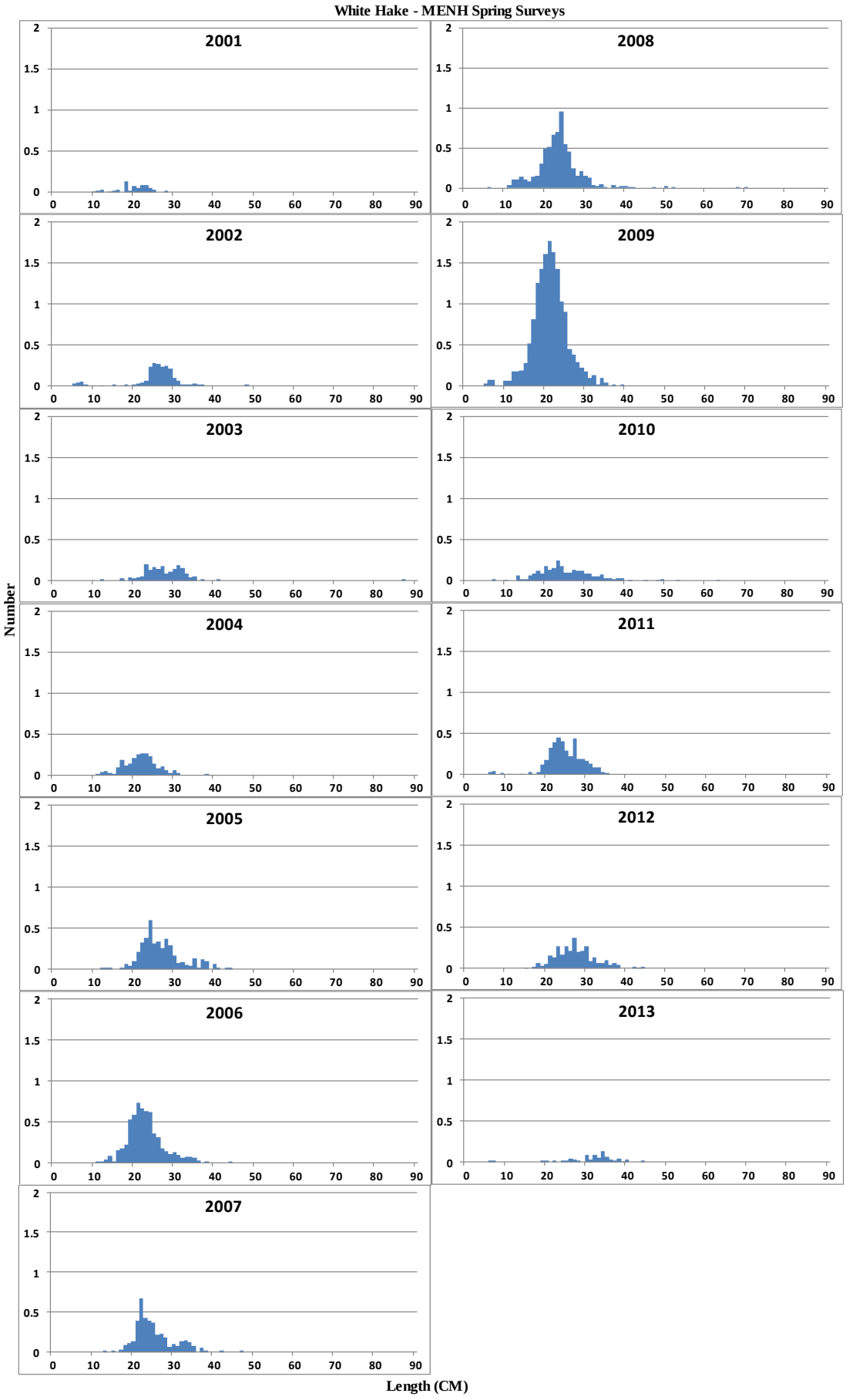


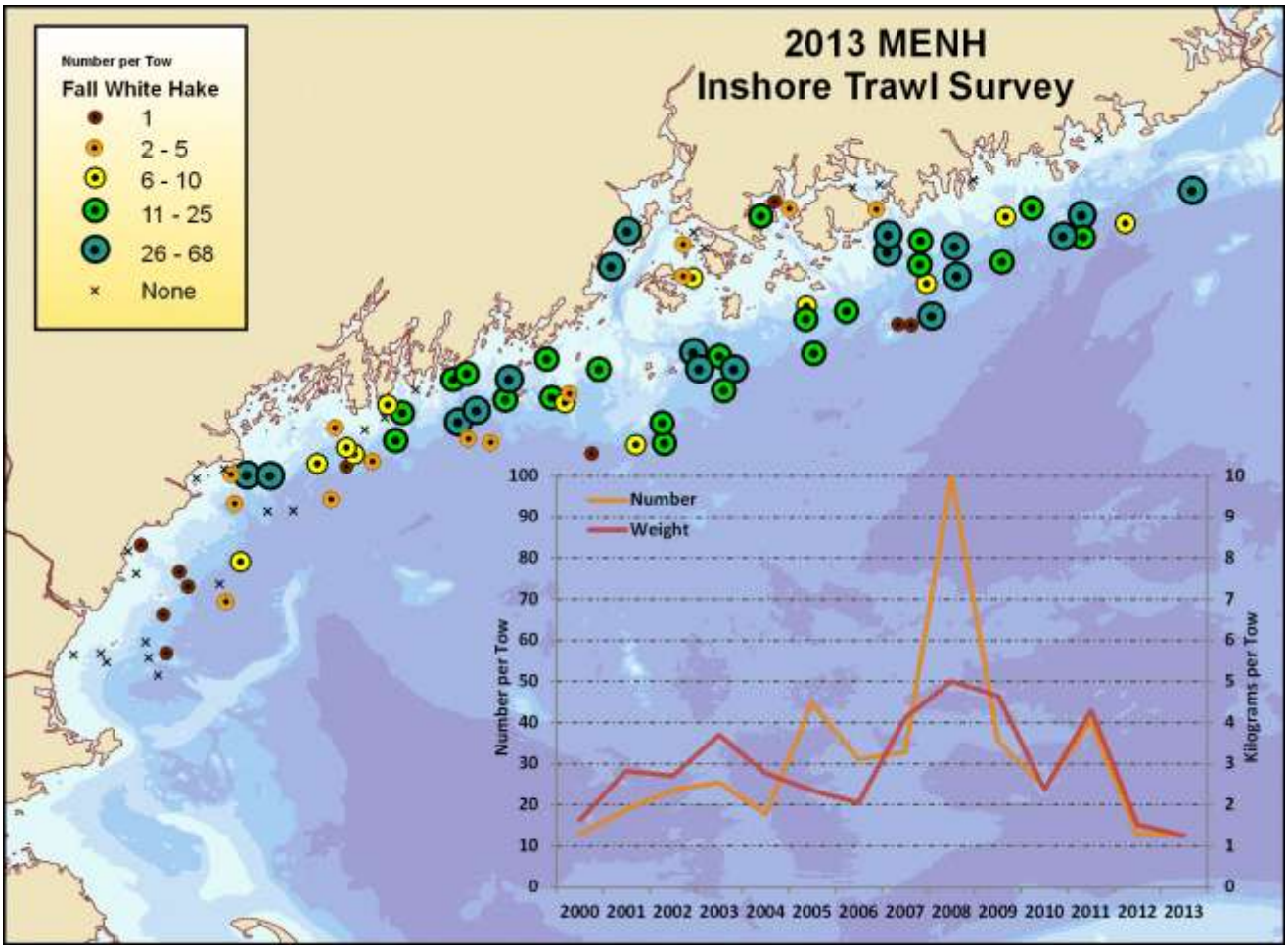
White hake, *Urophycis tenuis*



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

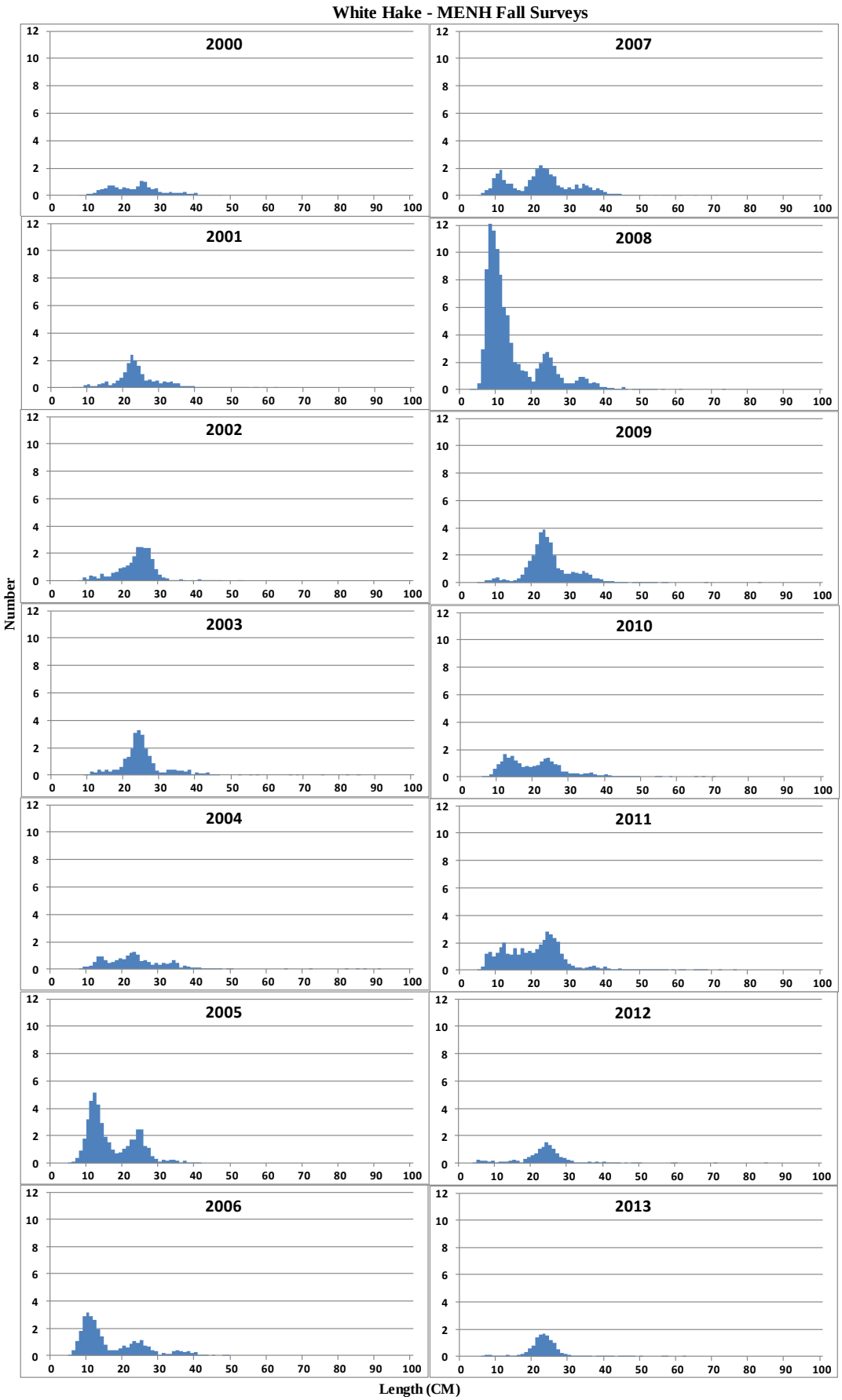
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	0.65	0.49	0.04	0.52
2002	2.10	0.49	0.28	0.51
2003	1.94	0.44	0.36	0.53
2004	2.39	0.32	0.17	0.30
2005	4.23	0.31	0.62	0.33
2006	6.12	0.25	0.55	0.27
2007	4.11	0.38	0.48	0.52
2008	6.79	0.26	0.76	0.31
2009	15.38	0.19	1.16	0.24
2010	2.49	0.30	0.37	0.78
2011	3.85	0.29	0.44	0.30
2012	3.02	0.25	0.48	0.31
2013	0.80	1.01	0.19	1.27


White Hake - MENH Spring Surveys
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
2007
Number
Length (CM)

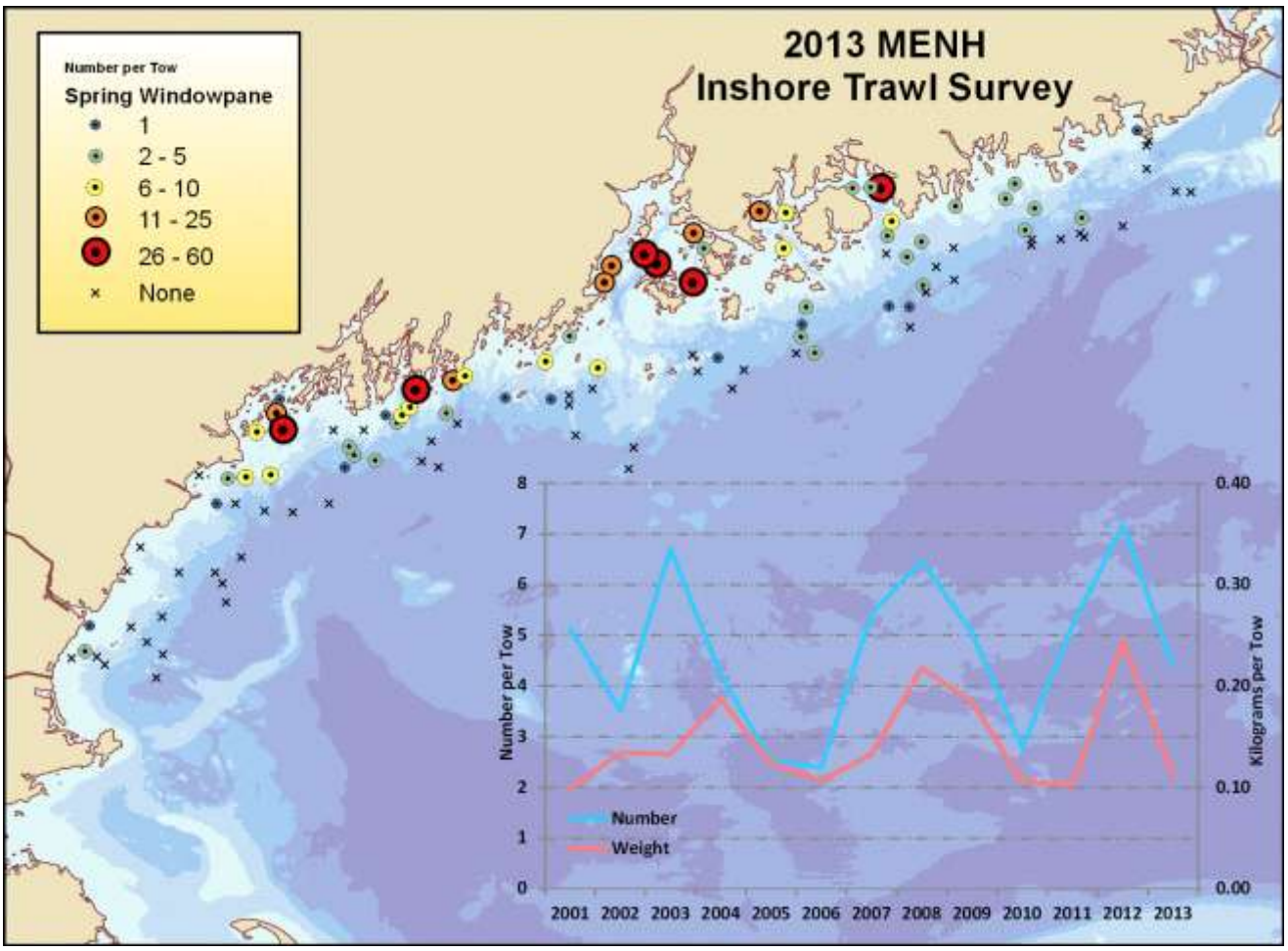


Means and coefficients of variance for the graph overlain on above map
fixed stations <u>not</u> included
for white hake, calculated for regions 1 through 5; strata 1 through 4
Stratified Mean
FALL

	Number		Weight	
	Mean	**CV**	**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
2013	12.70	0.17	1.25	0.18

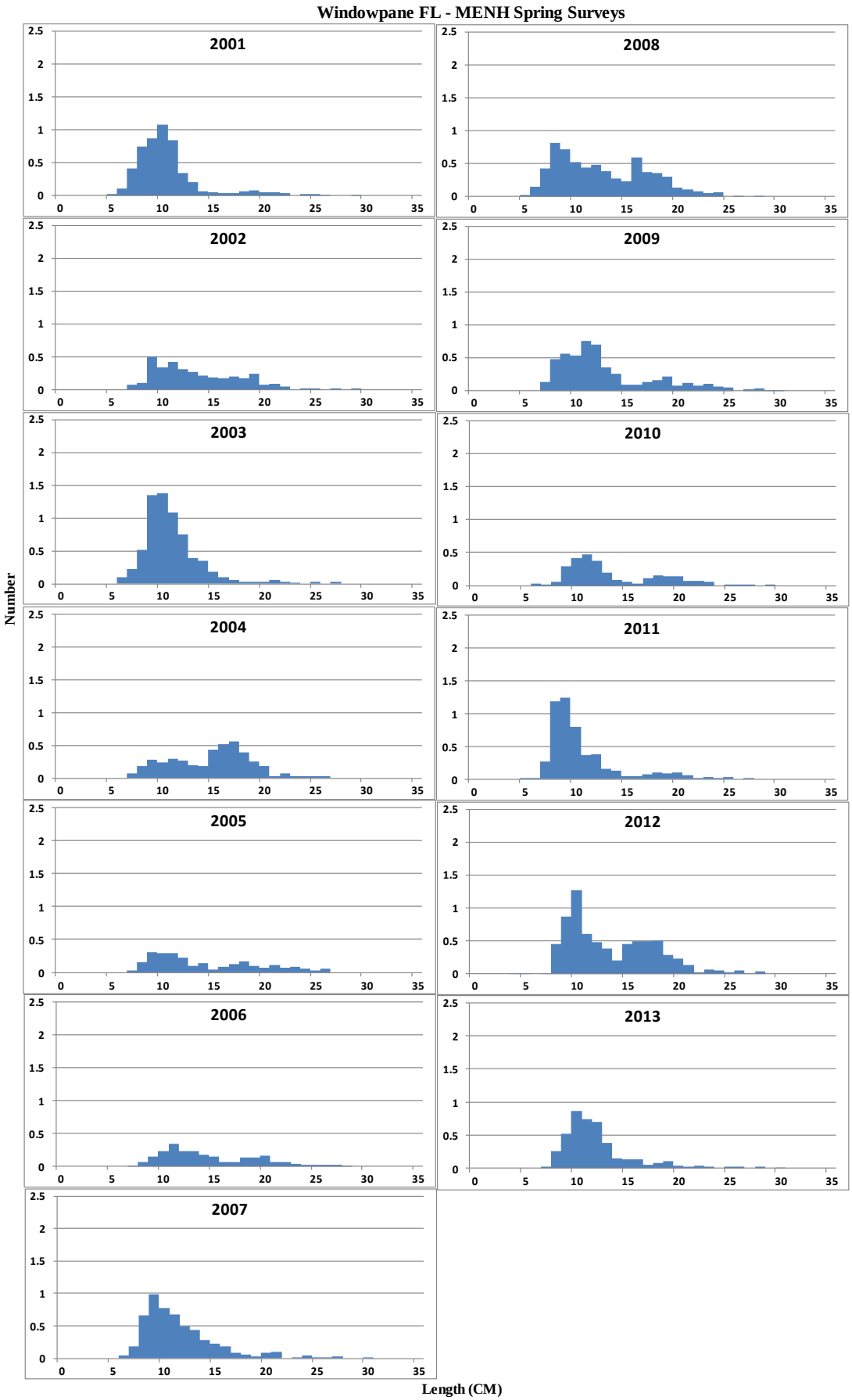

White Hake - MENH Fall Surveys
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Number
Length (CM)

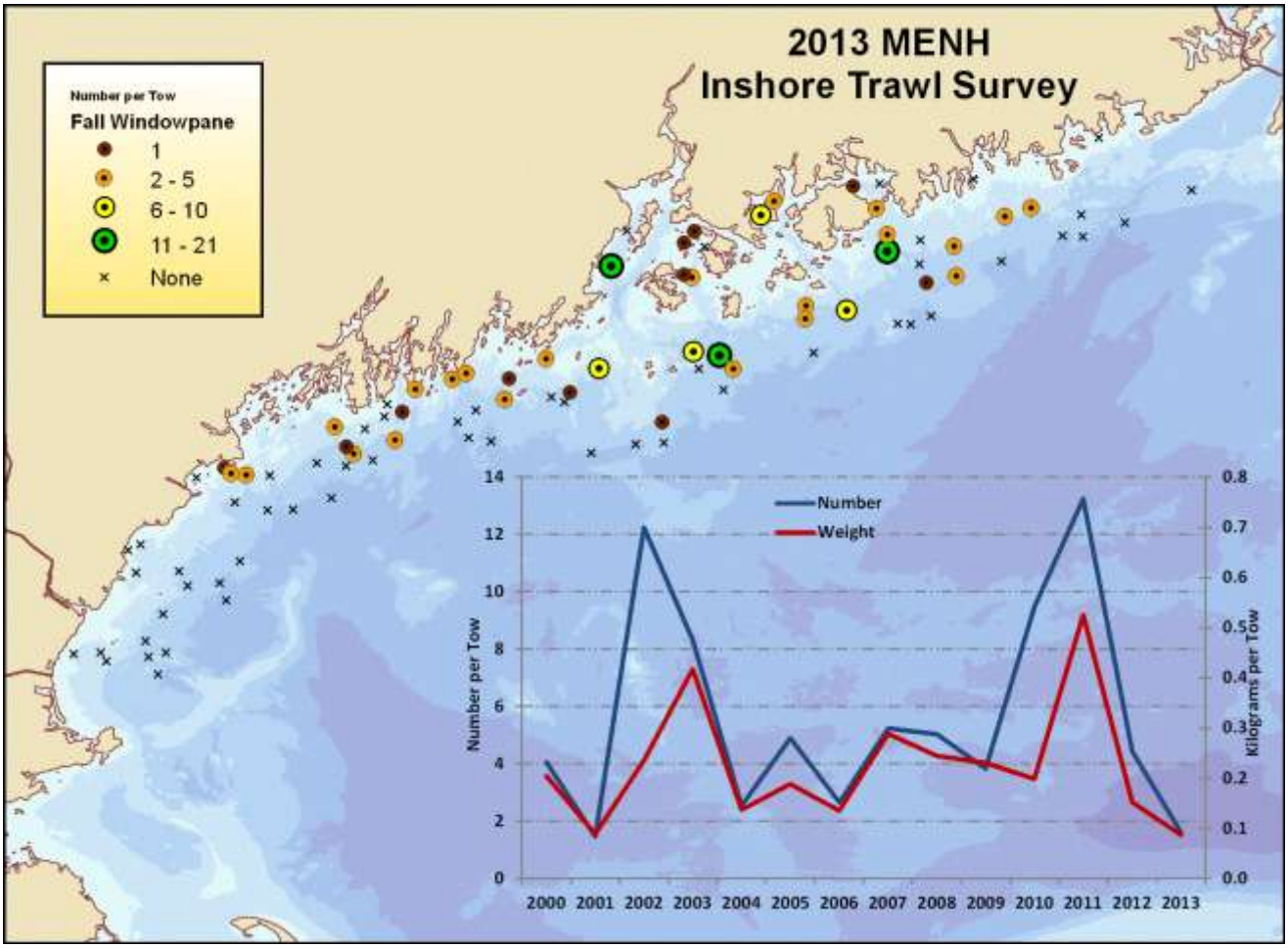
Windowpane flounder, *Scophthalmus aquosus*



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

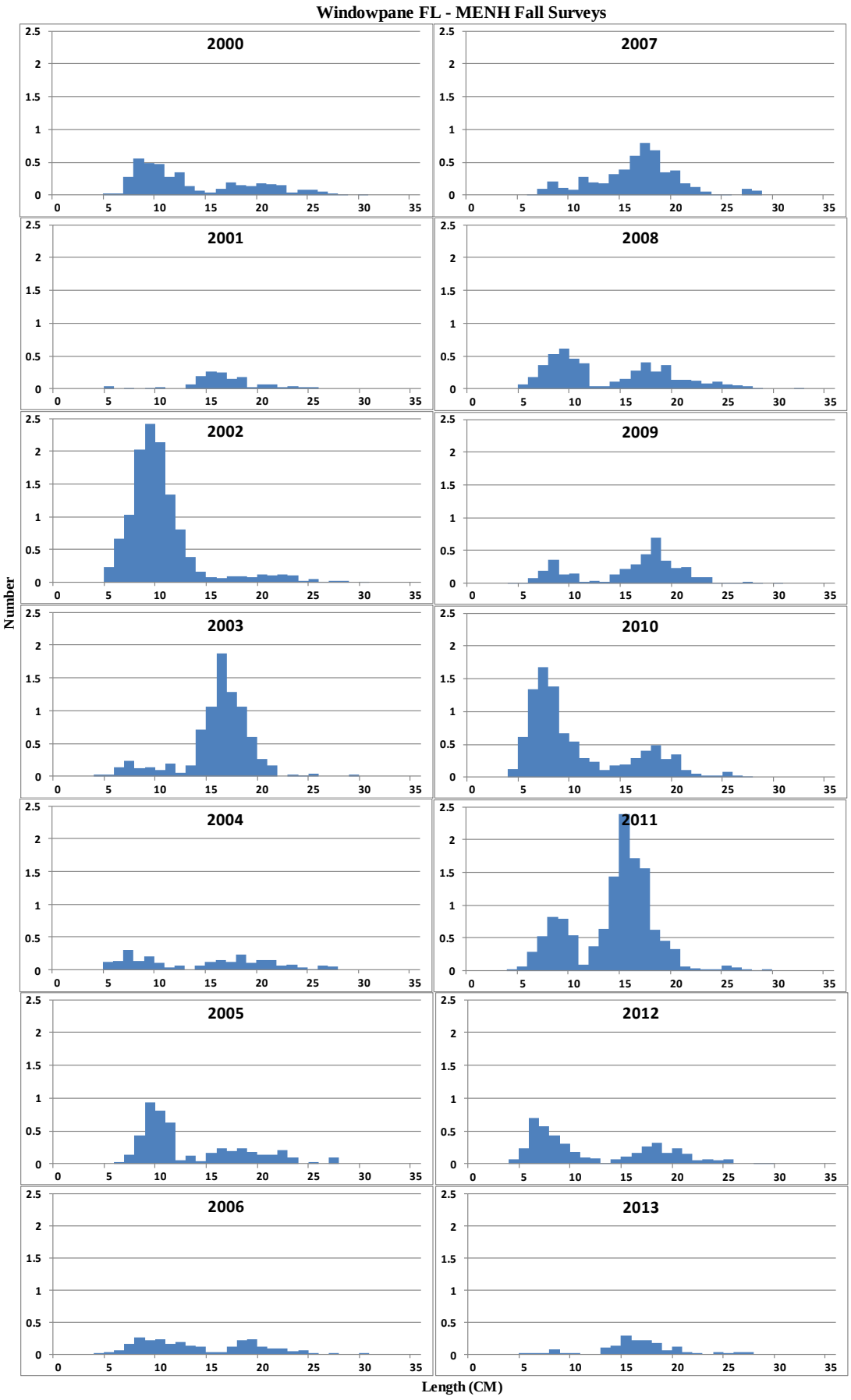
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	5.12	0.63	0.10	0.40
2002	3.51	0.33	0.13	0.37
2003	6.70	0.30	0.13	0.30
2004	4.20	0.30	0.19	0.27
2005	2.51	0.35	0.12	0.34
2006	2.39	0.44	0.11	0.33
2007	5.42	0.40	0.13	0.28
2008	6.47	0.43	0.22	0.26
2009	5.05	0.34	0.18	0.27
2010	2.78	0.36	0.11	0.32
2011	5.19	0.43	0.10	0.33
2012	7.18	0.44	0.24	0.33
2013	4.40	0.37	0.11	0.36


Windowpane FL - MENH Spring Surveys
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
2007
Number
Length (CM)

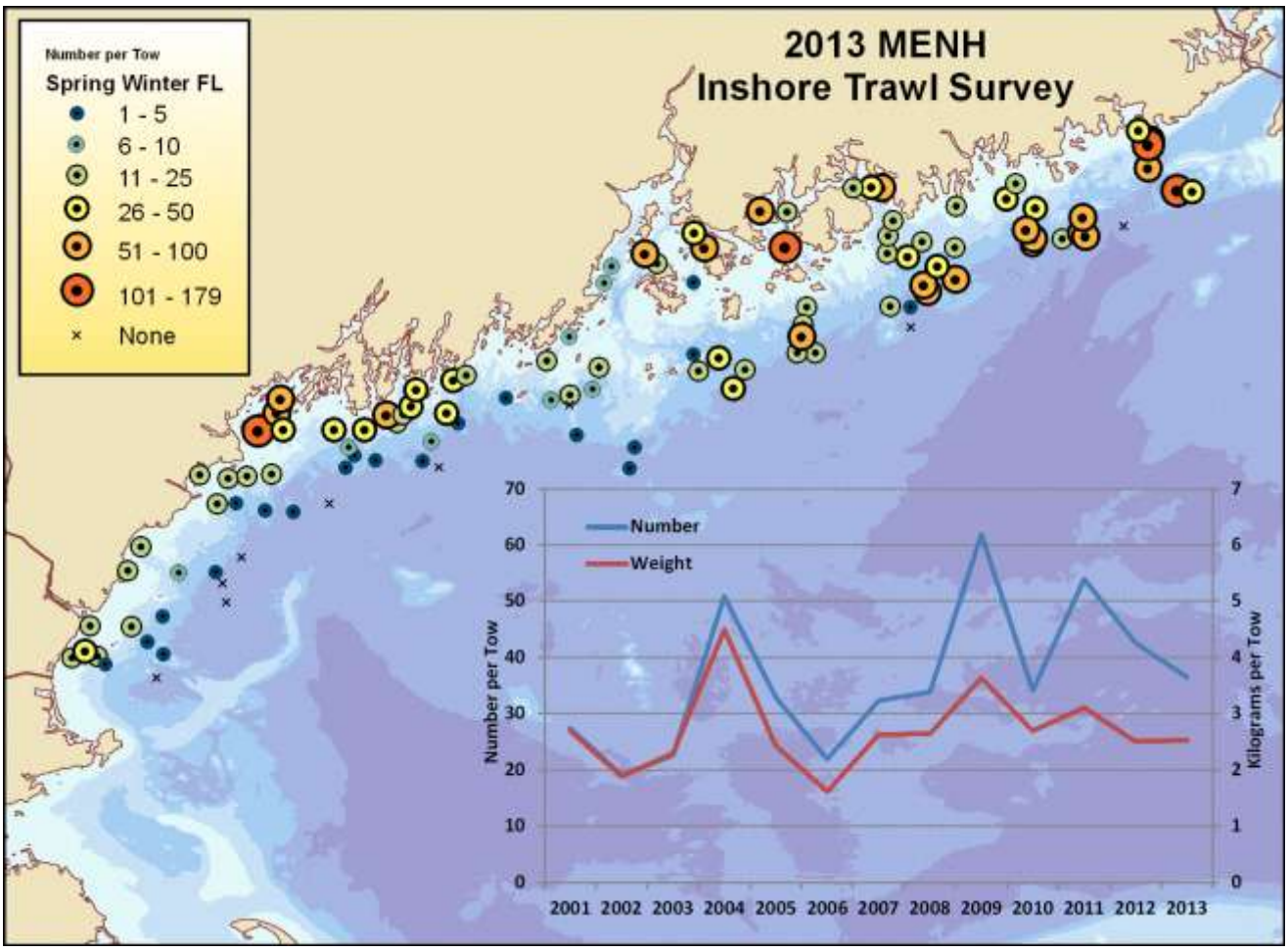


Means and coefficients of variance for the graph overlain on above map
fixed stations <u>not</u> included
for windowpane, calculated for regions 1 through 5; strata 1 through 4
FALL
Stratified Mean

	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
2013	1.60	0.46	0.09	

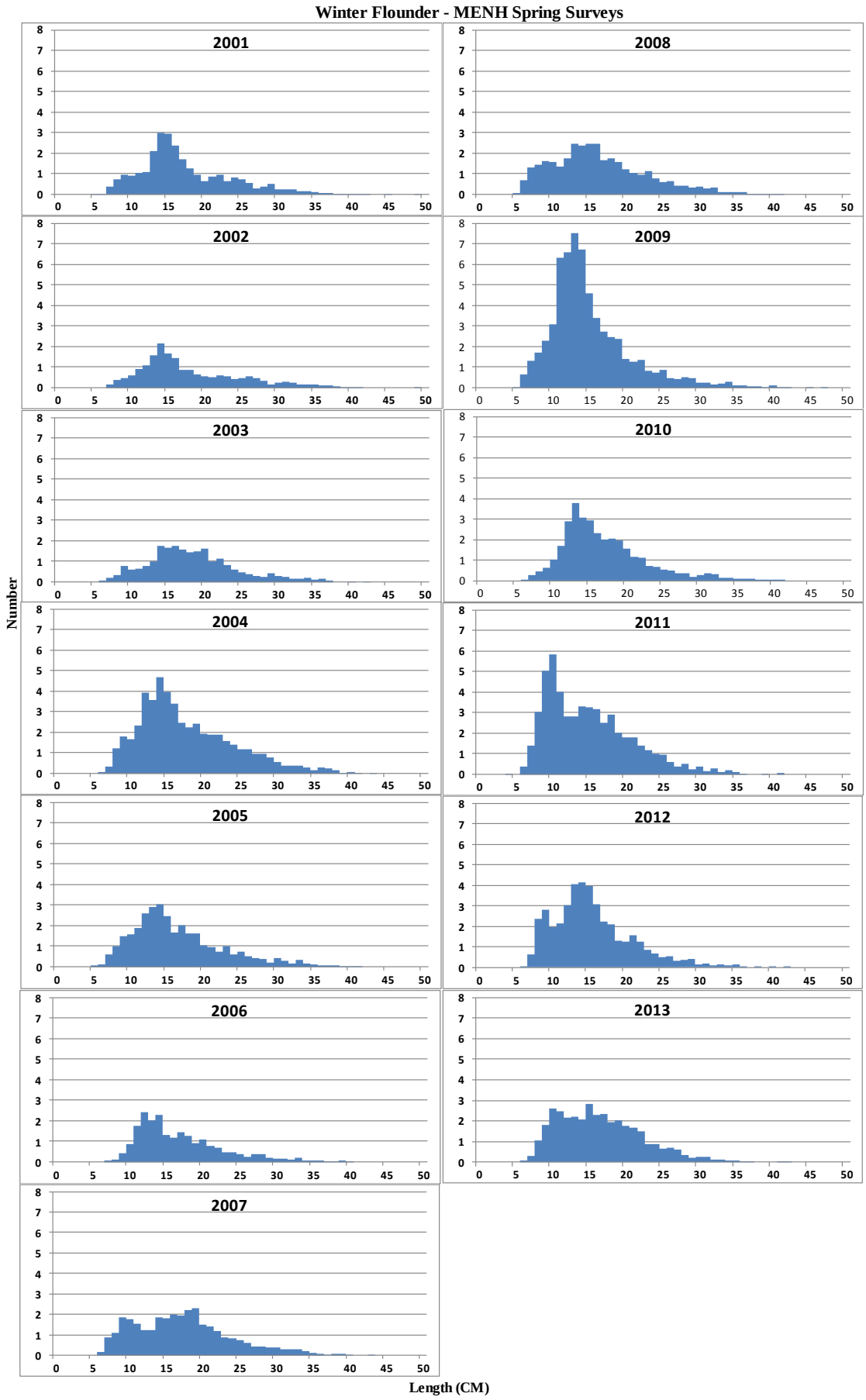

Windowpane FL - MENH Fall Surveys
2000
2007
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
Number
Length (CM)

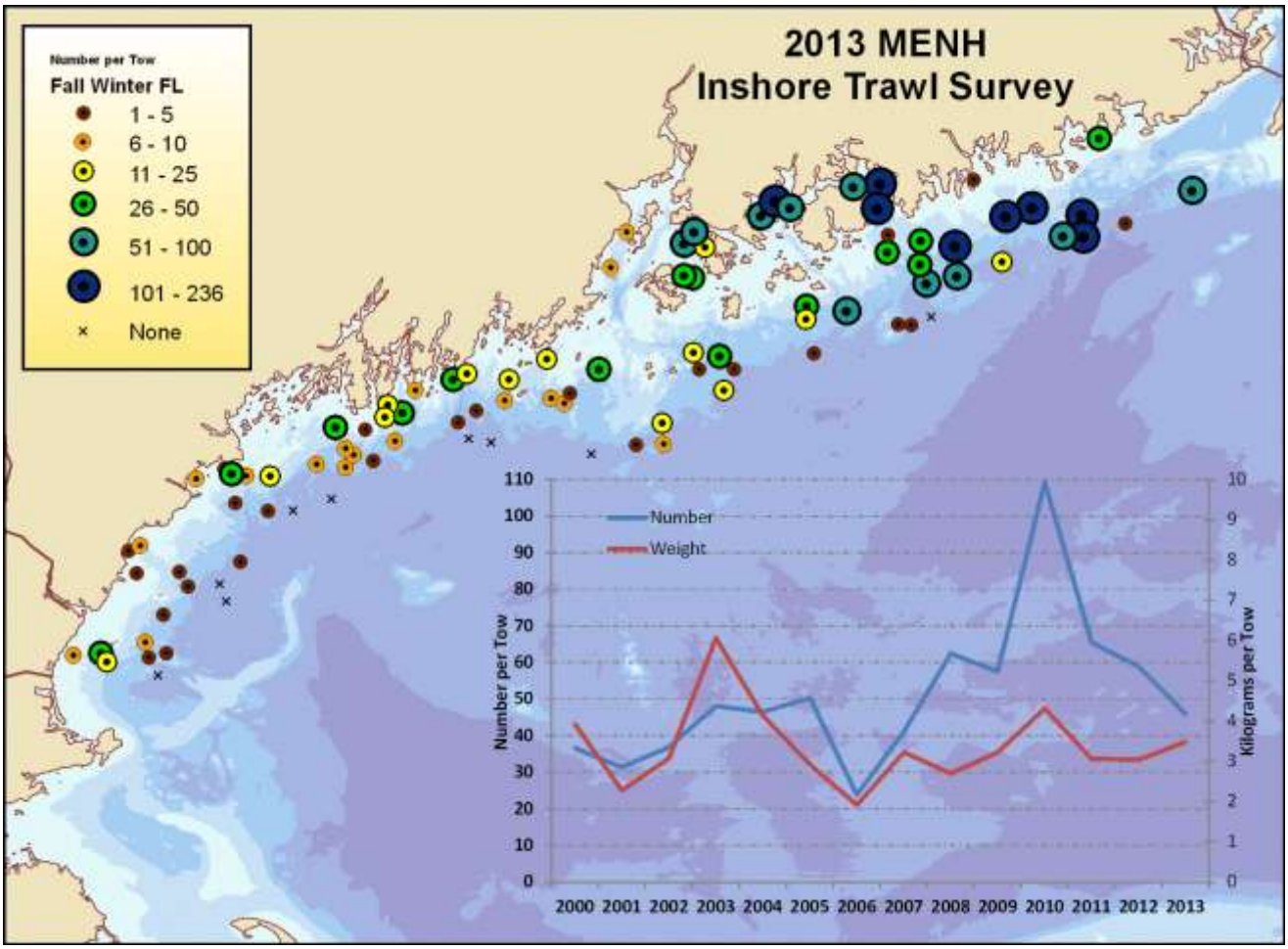
Winter flounder, *Pseudopleuronectes americanus* (strata 1 through 3 were used for WF indices)



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

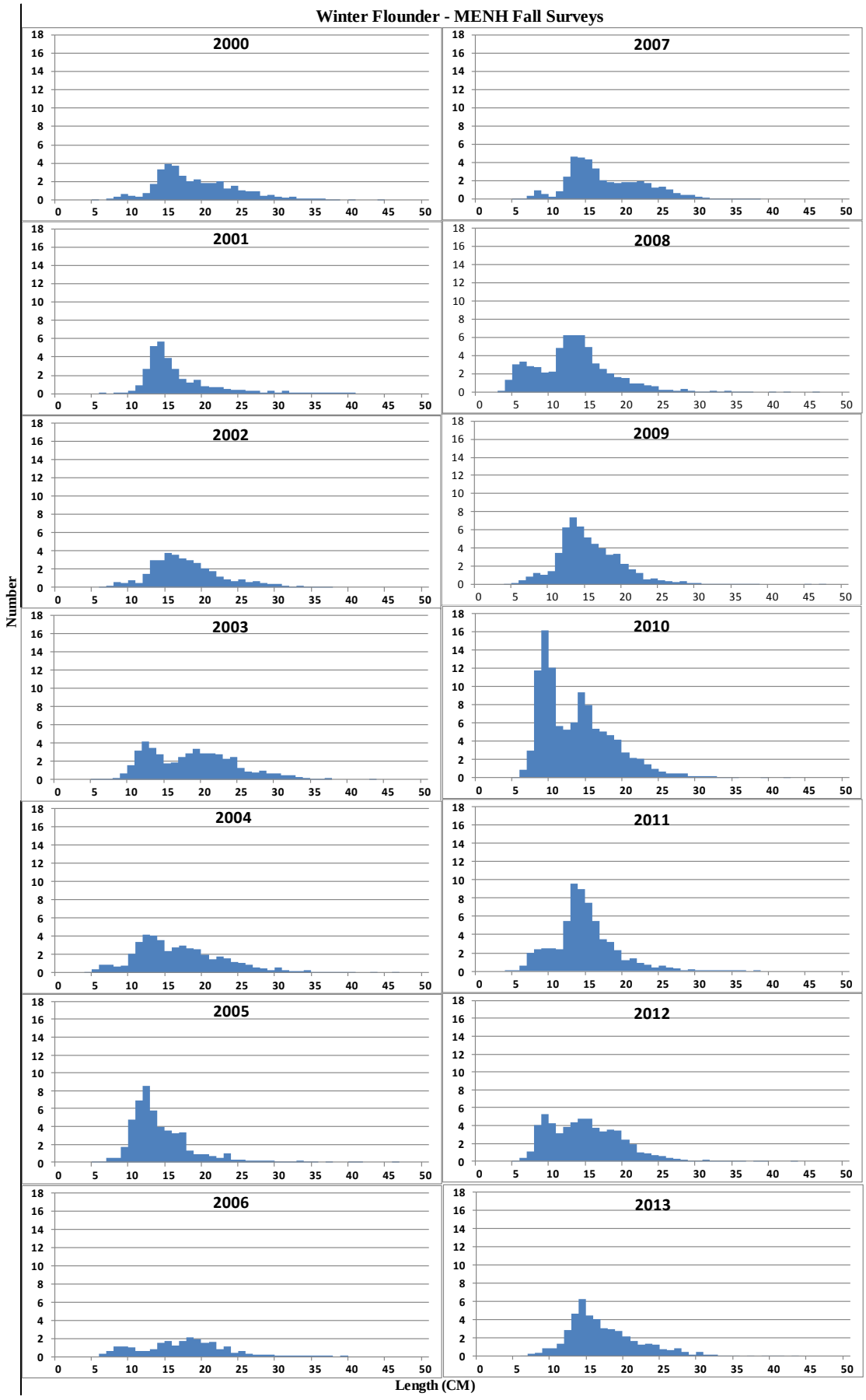
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	27.40	0.31	2.69	0.29
2002	19.04	0.31	1.88	0.33
2003	22.57	0.29	2.30	0.42
2004	50.83	0.26	4.50	0.40
2005	32.88	0.22	2.43	0.19
2006	21.94	0.50	1.62	0.47
2007	32.29	0.28	2.63	0.24
2008	33.89	0.29	2.65	0.29
2009	61.85	0.34	3.64	0.24
2010	34.19	0.37	2.69	0.33
2011	53.90	0.23	3.11	0.43
2012	42.62	0.35	2.51	0.38
2013	36.48	0.21	2.53	0.21


Winter Flounder - MENH Spring Surveys
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Number
Length (CM)

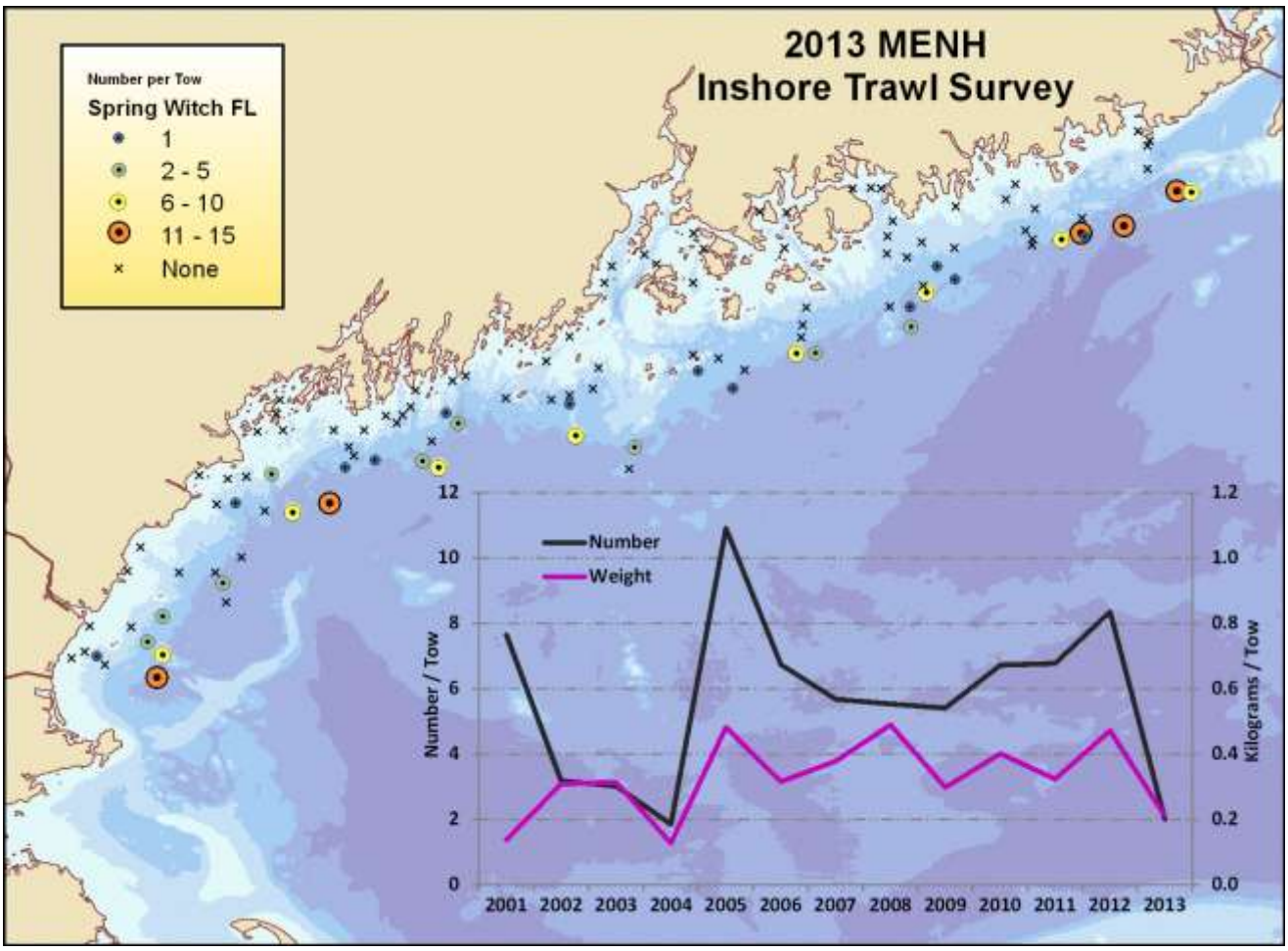


Means and coefficients of variance for the graph overlain on above map
fixed stations not included
for winter flounder, calculated for regions 1 through 5; strata 1through 4
FALL
Stratified Mean

	Number		Weight	
	Mean	**CV**	**Mean**	**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
2013	45.93	0.13	3.49	0.14

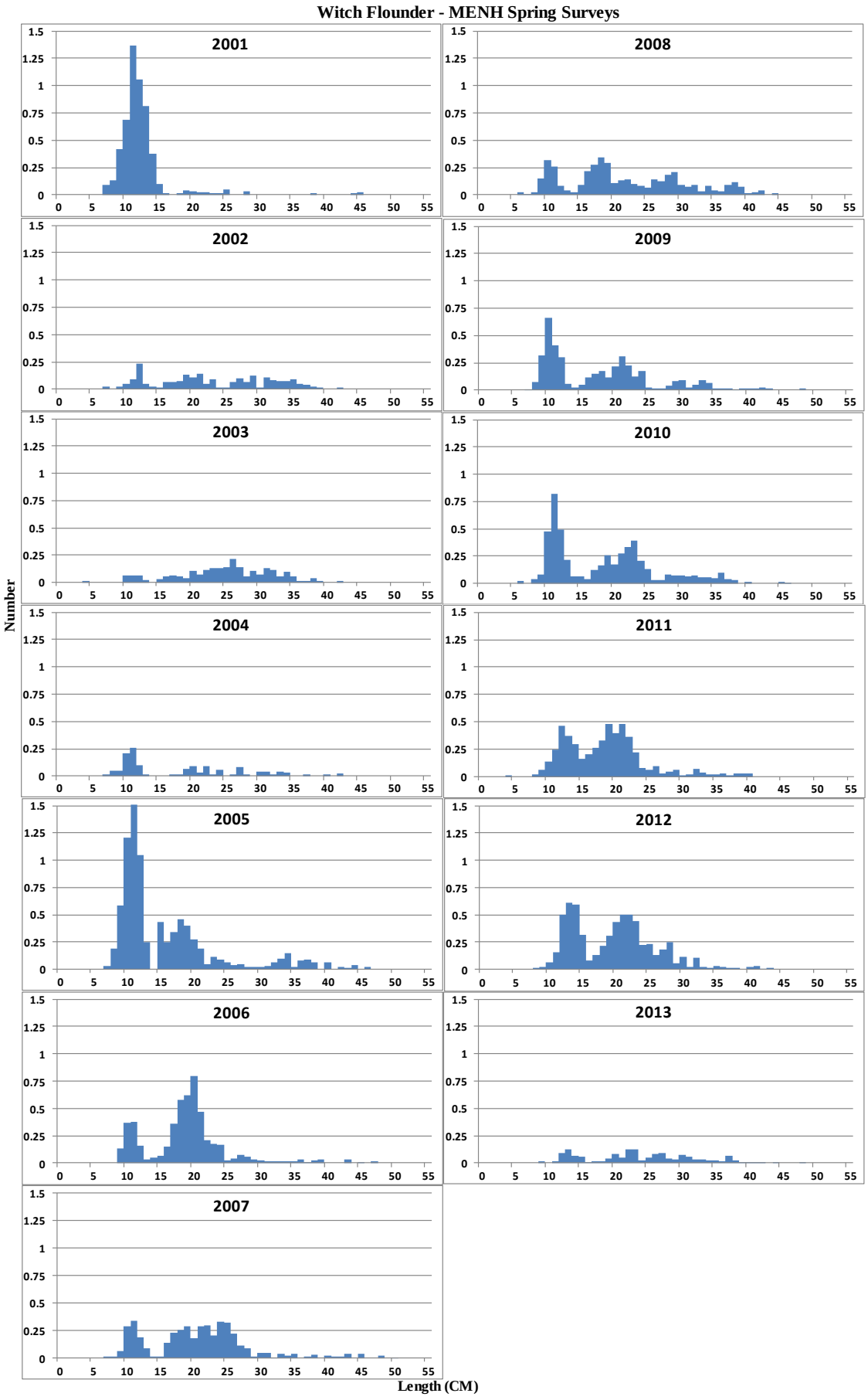

Winter Flounder - MENH Fall Surveys
2000
2007
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
Number
Length (CM)

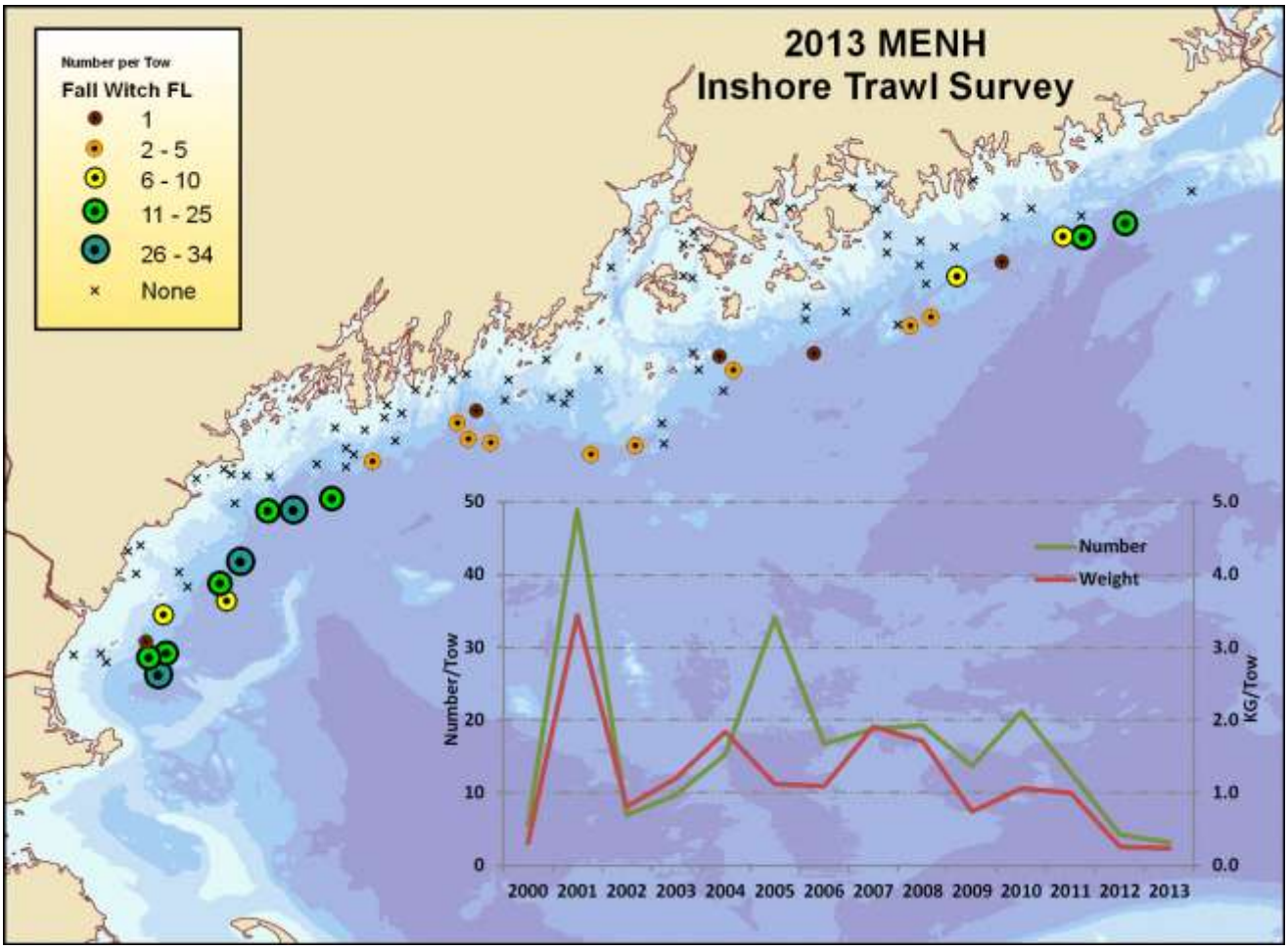
Witch flounder, *Glyptocephalus cynoglossus* (strata 2 through 4 were used for witch flounder indices)



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

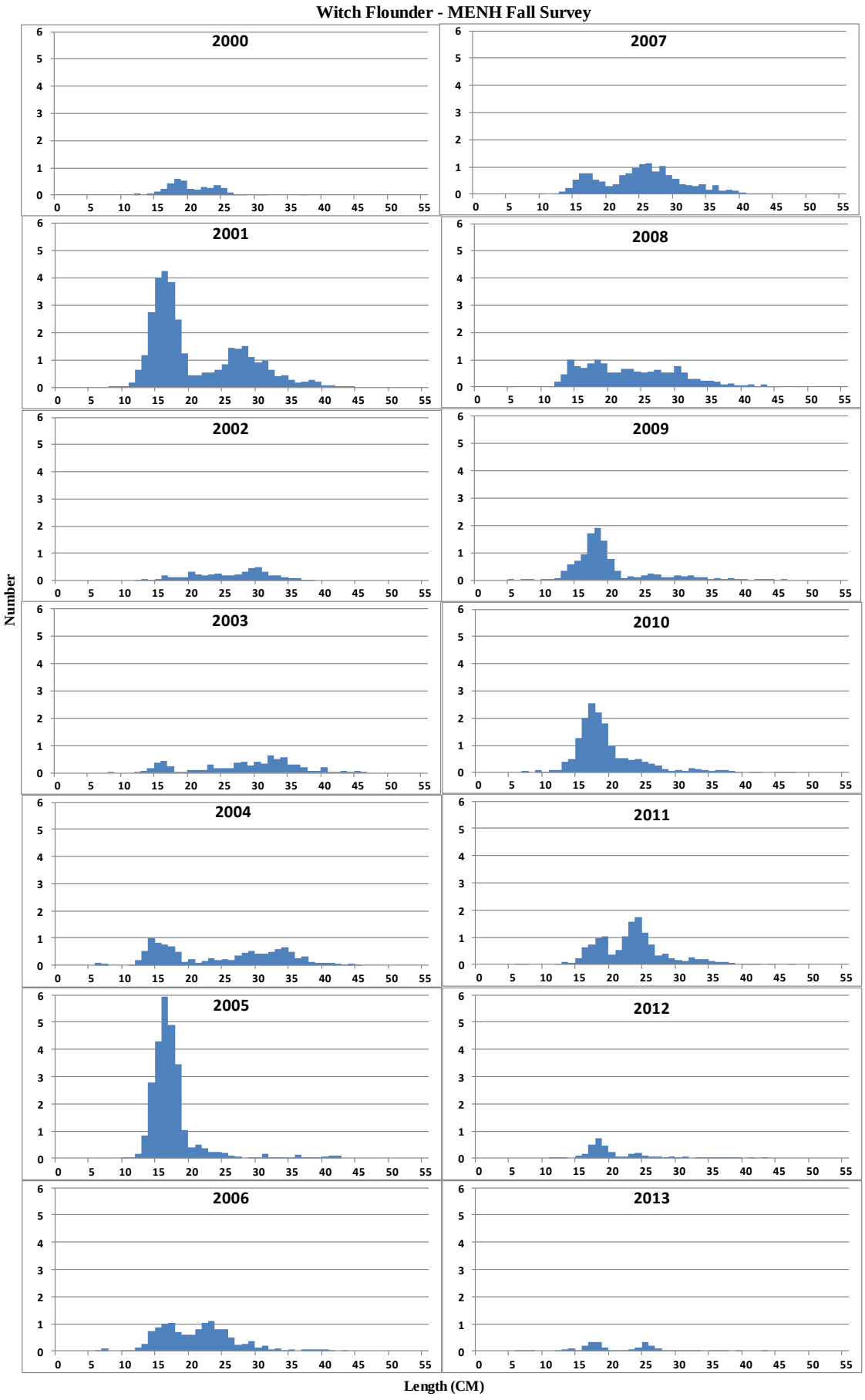
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	7.65	0.68	0.14	0.72
2002	3.18	1.17	0.31	1.73
2003	3.02	0.78	0.31	0.77
2004	1.86	0.43	0.13	0.53
2005	10.91	0.40	0.48	0.48
2006	6.74	0.61	0.32	0.75
2007	5.69	0.42	0.38	0.39
2008	5.54	0.43	0.49	0.57
2009	5.41	0.47	0.30	0.71
2010	6.72	0.52	0.40	0.62
2011	6.78	0.39	0.32	0.50
2012	8.36	0.51	0.47	0.67
2013	2.01	0.66	0.21	0.79


Witch Flounder - MENH Spring Surveys
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
2007
Number
Length (CM)

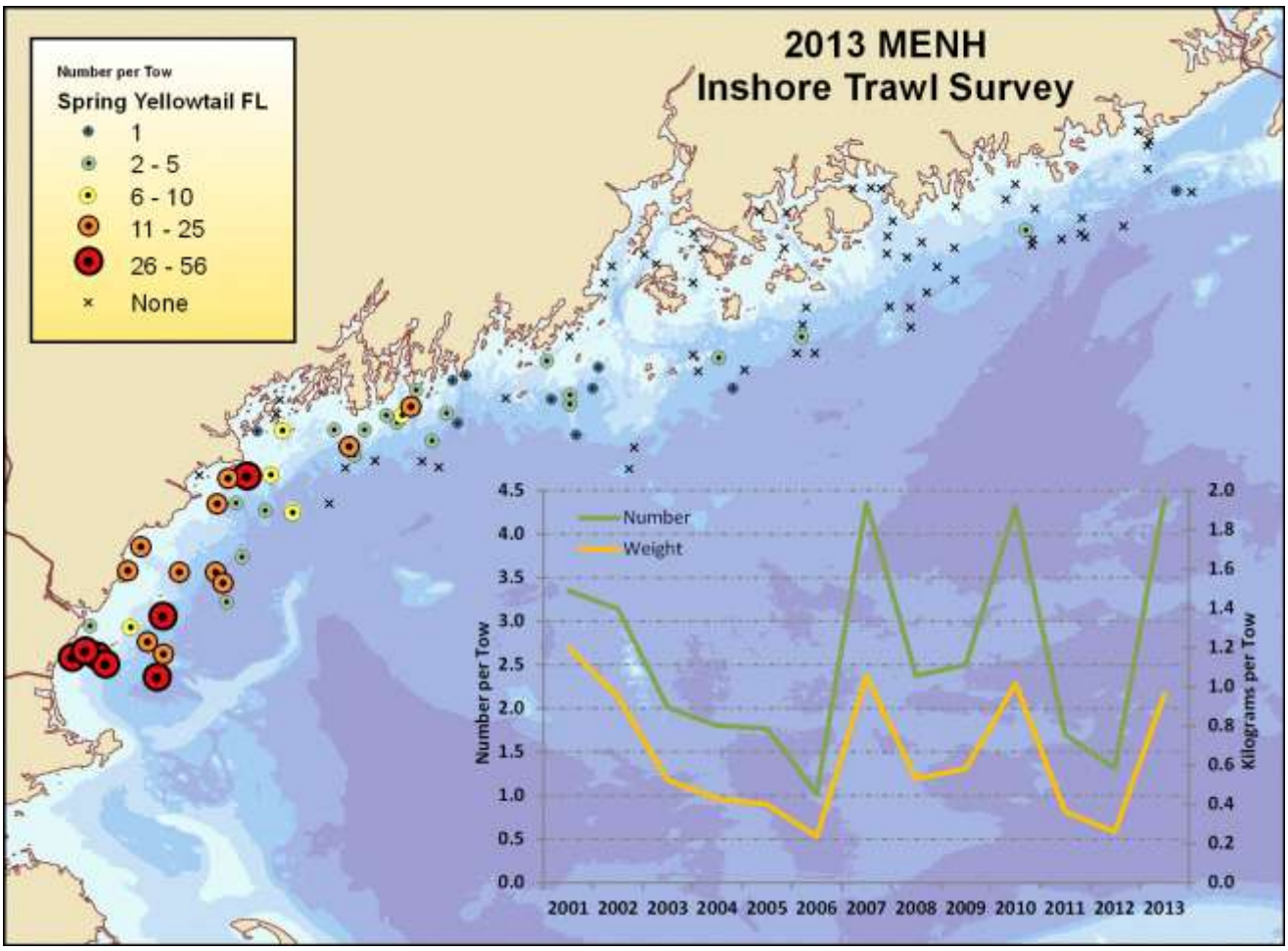


Means and coefficients of variance for the graph overlain on above map
fixed stations not included
for witch flounder, calculated for regions 1 through 5; strata 2 through 4
FALL
Stratified Mean

	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
2013	3.17	0.48	0.23	0.66

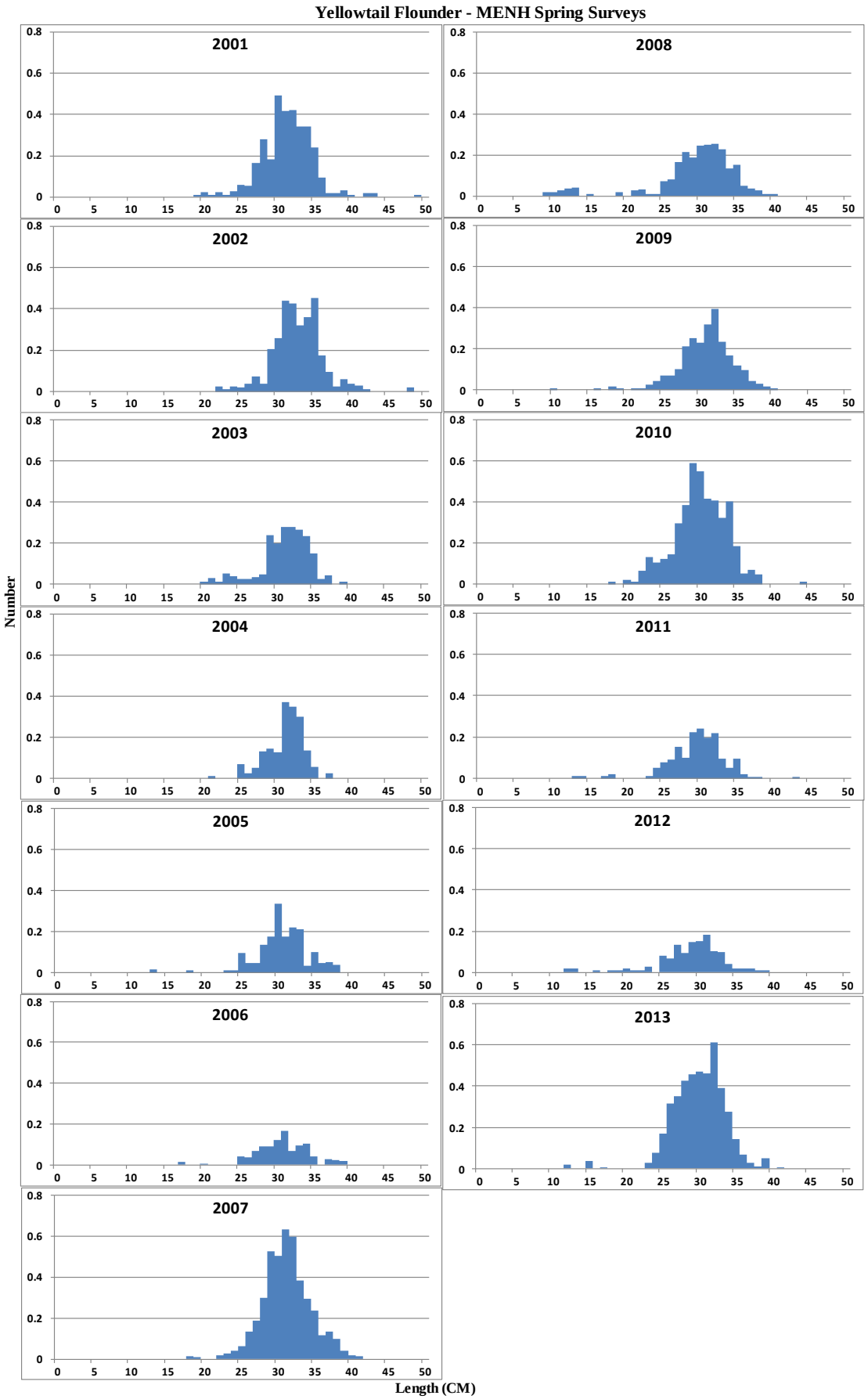

Witch Flounder - MENH Fall Survey
2000
2007
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
Number
Length (CM)

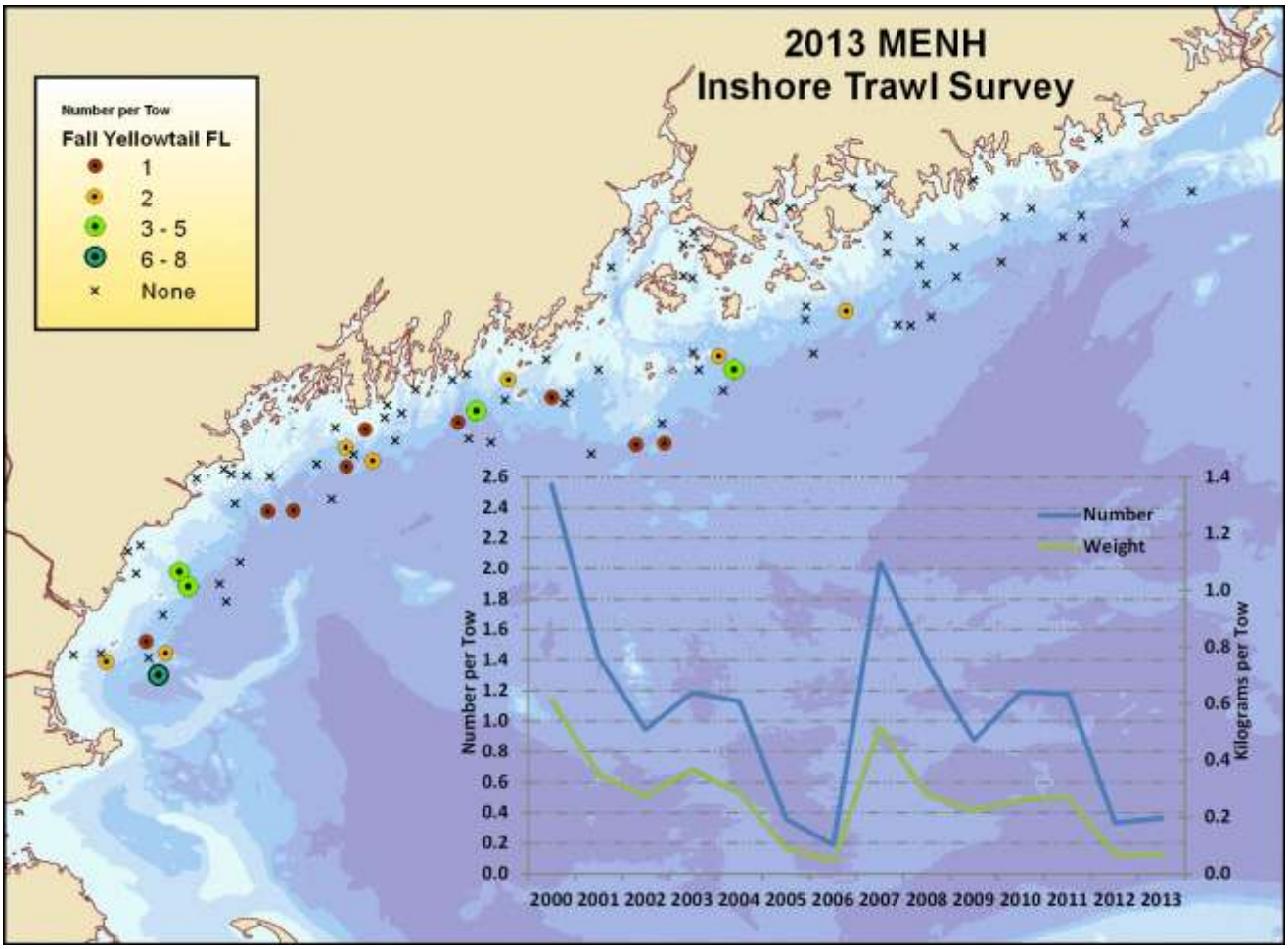
Yellowtail flounder, *Limanda ferruginea*



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

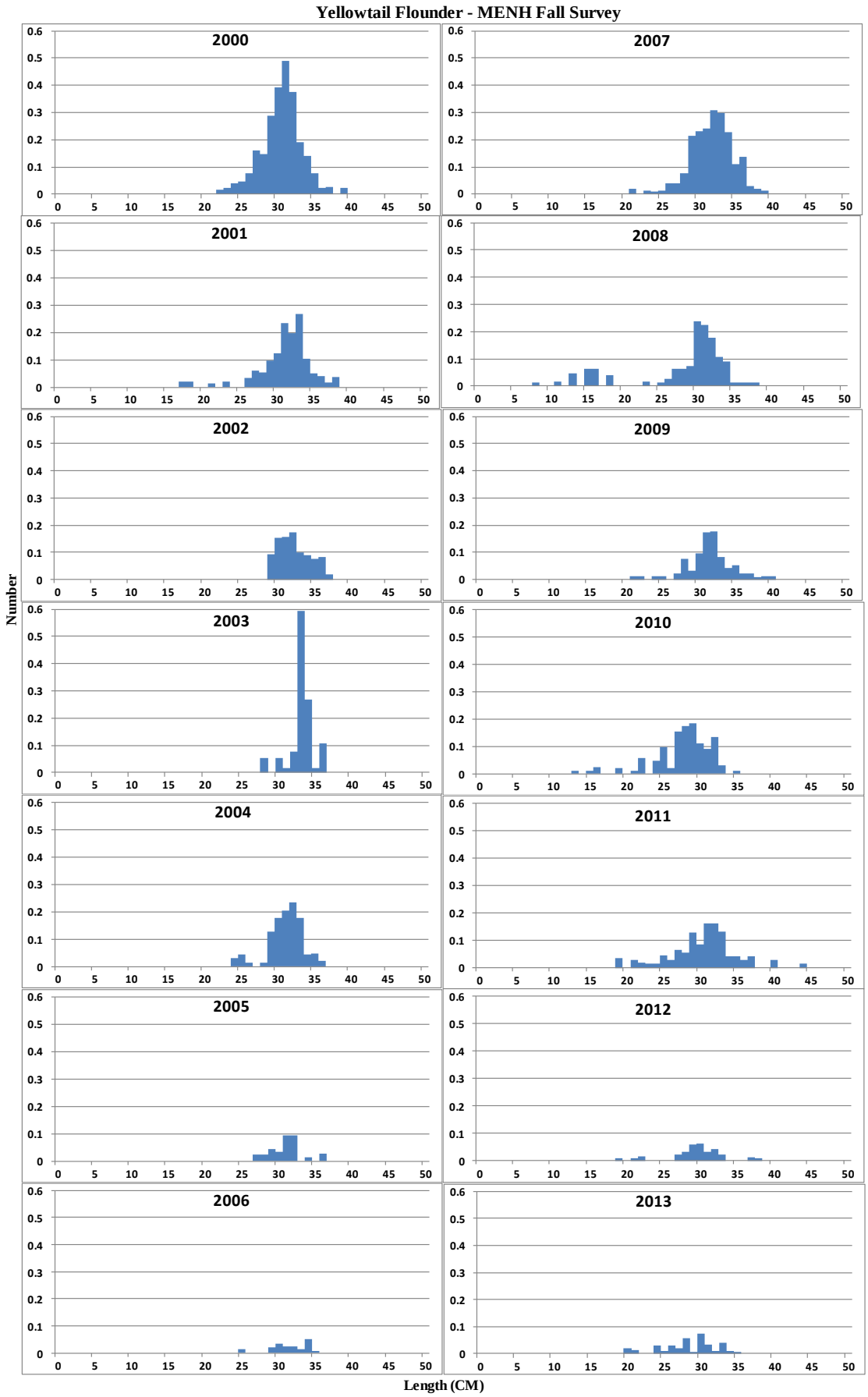
	Number		Weight	
	Mean	**CV**	**Mean**	**CV**
2001	3.35	1.40	1.20	1.52
2002	3.14	0.53	0.95	0.51
2003	2.01	0.42	0.52	0.40
2004	1.80	0.48	0.43	0.49
2005	1.77	0.50	0.40	0.49
2006	1.02	0.46	0.23	0.47
2007	4.36	0.61	1.05	0.60
2008	2.37	0.64	0.53	0.62
2009	2.50	0.55	0.58	0.59
2010	4.33	0.56	1.01	0.55
2011	1.70	0.56	0.36	0.60
2012	1.31	0.50	0.26	0.53
2013	4.41	0.36	0.96	0.37


Yellowtail Flounder - MENH Spring Surveys
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Number
Length (CM)

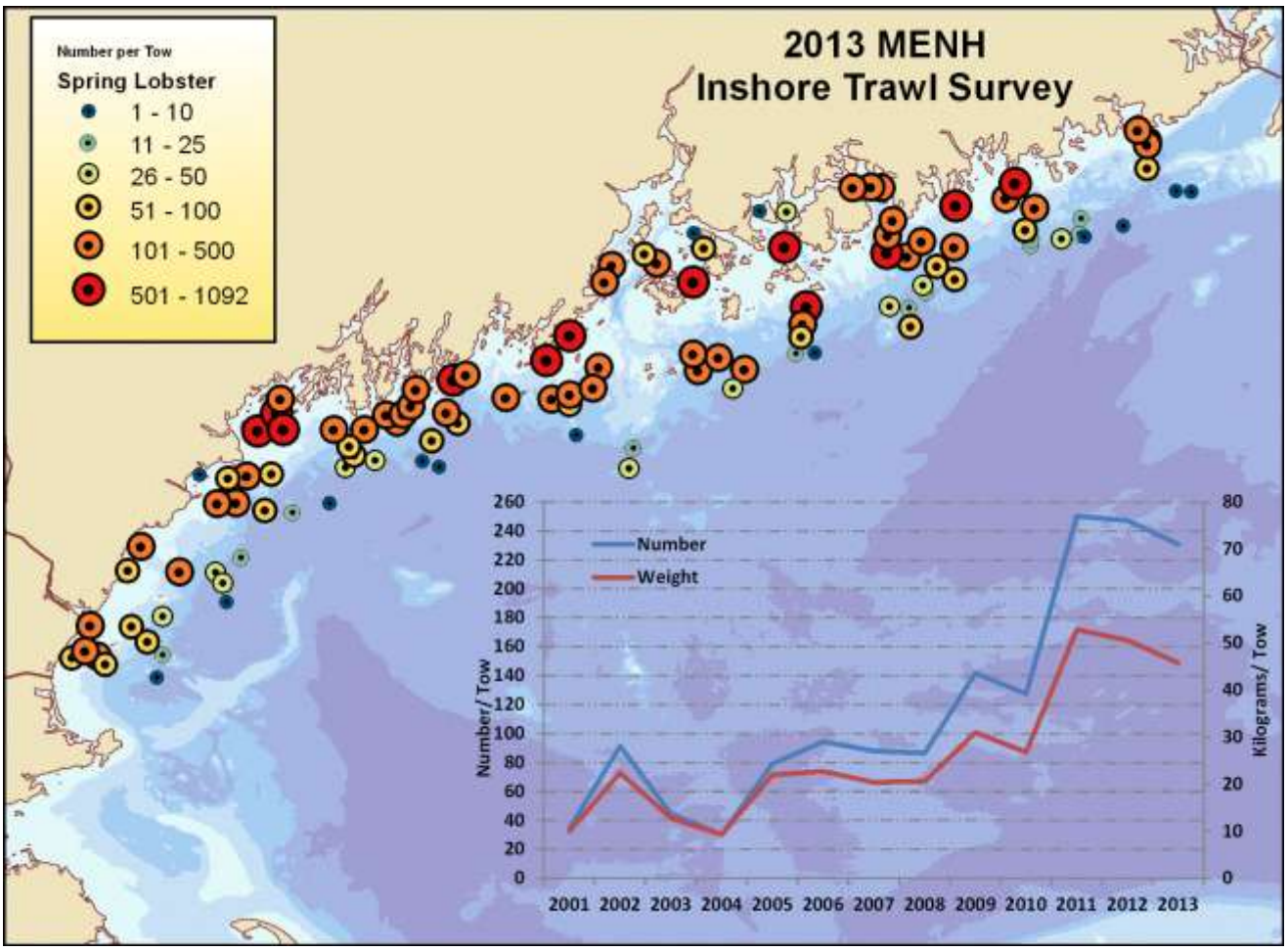


Mean and coefficients of variance for graph overlain on above map
fixed stations <u>not</u> included
for yellowtail, calculated for regions 1 through 5; Strata 1 through 4
FALL
Stratified Mean

	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
2013	0.36	0.70	0.06	0.73


Yellowtail Flounder - MENH Fall Survey
2000
2007
2001
2008
2002
2009
2003
2010
2004
2011
2005
2012
2006
2013
Number
Length (CM)

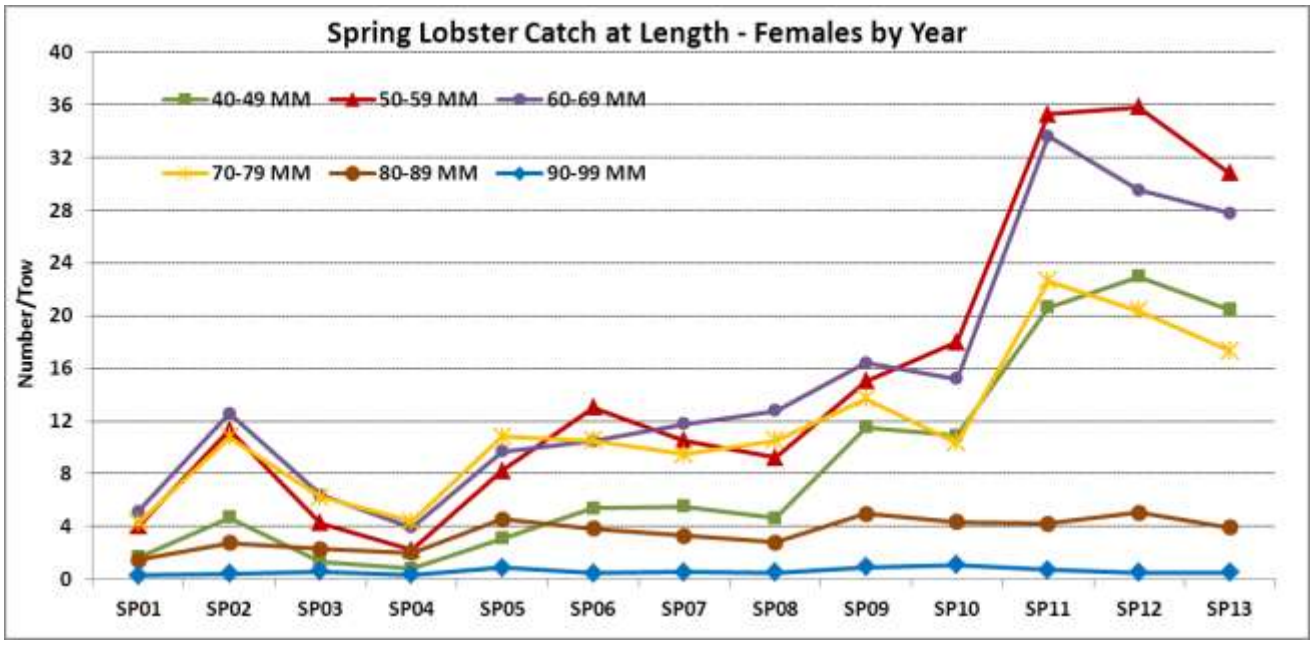
American lobster, *Homarus americanus* (Strata 1 through 3 were used for lobster indices)

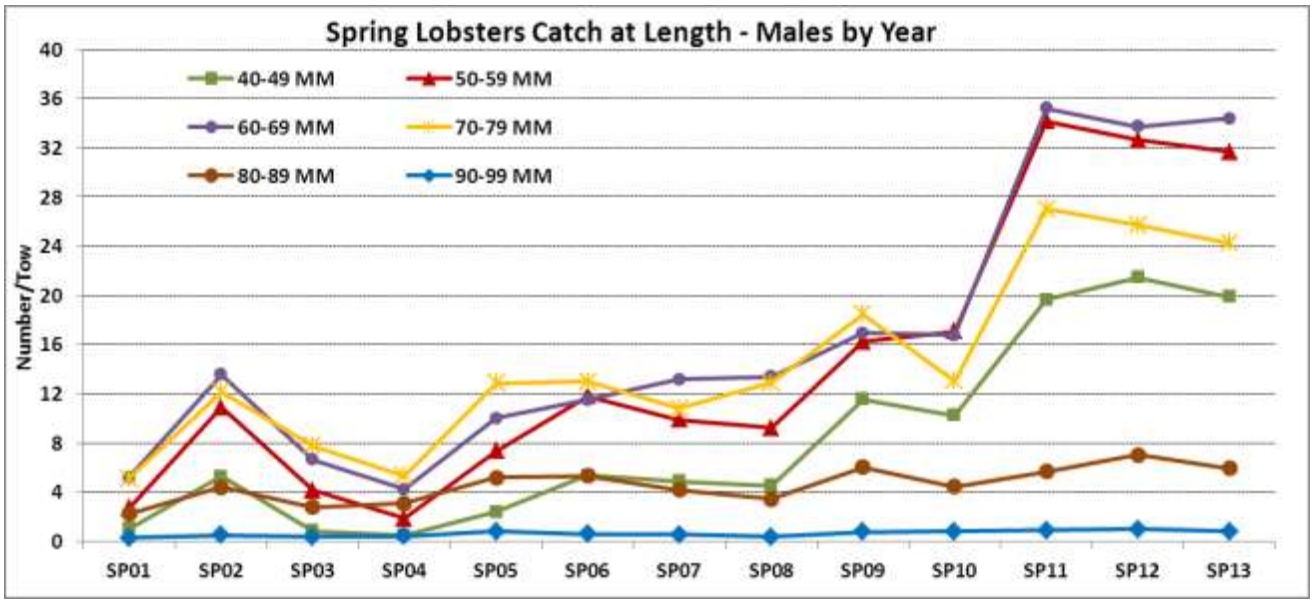


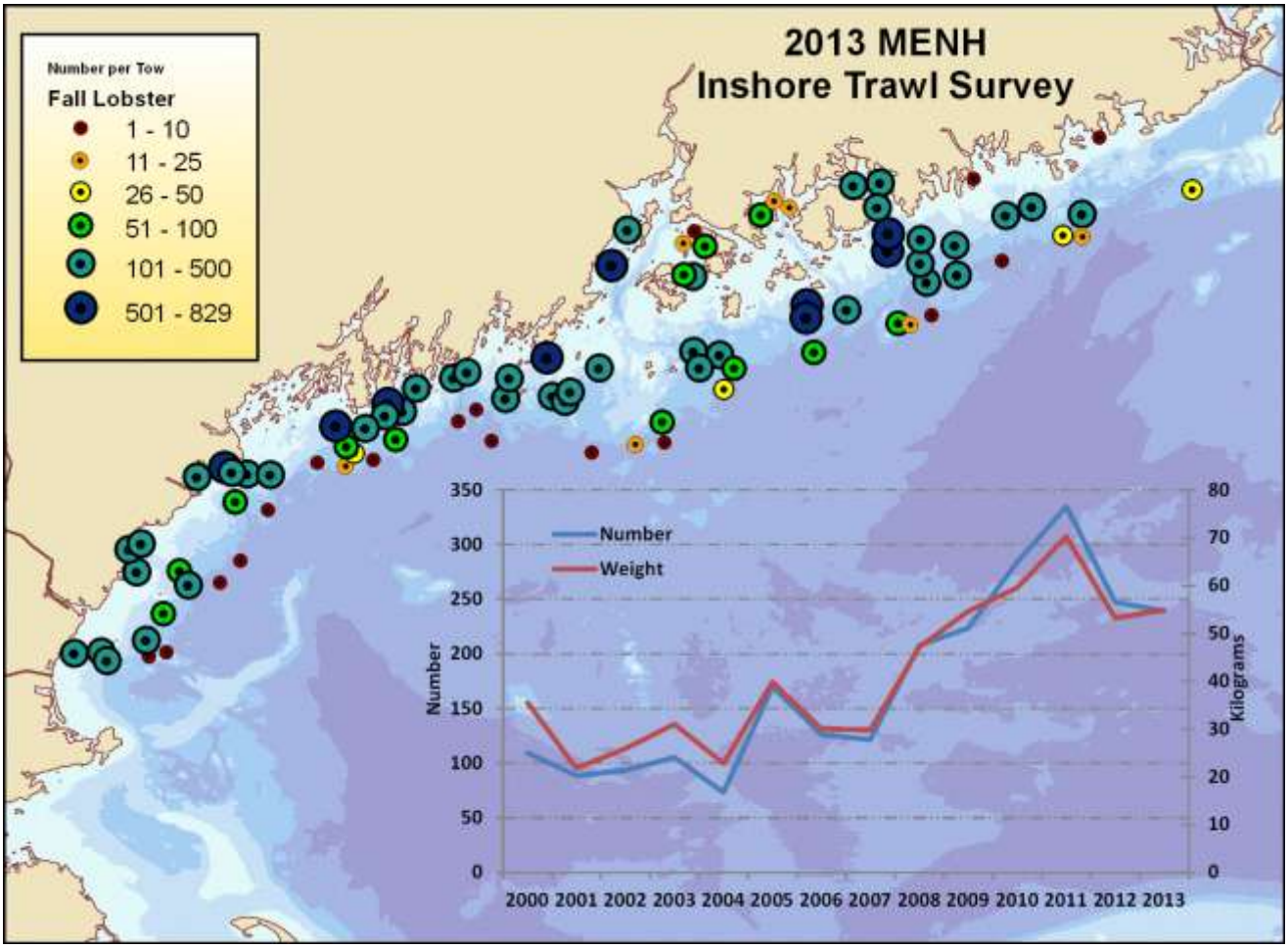
Means and coefficients of variance for graph overlain on above map
fixed stations not included
for lobster, calculated for regions 1 through 5; Strata 1 through 3
SPRING

	Stratified Mean Number		Stratified Mean Weight	
	Mean	**CV**	**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
2013	230.63	0.25	45.77	0.23

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



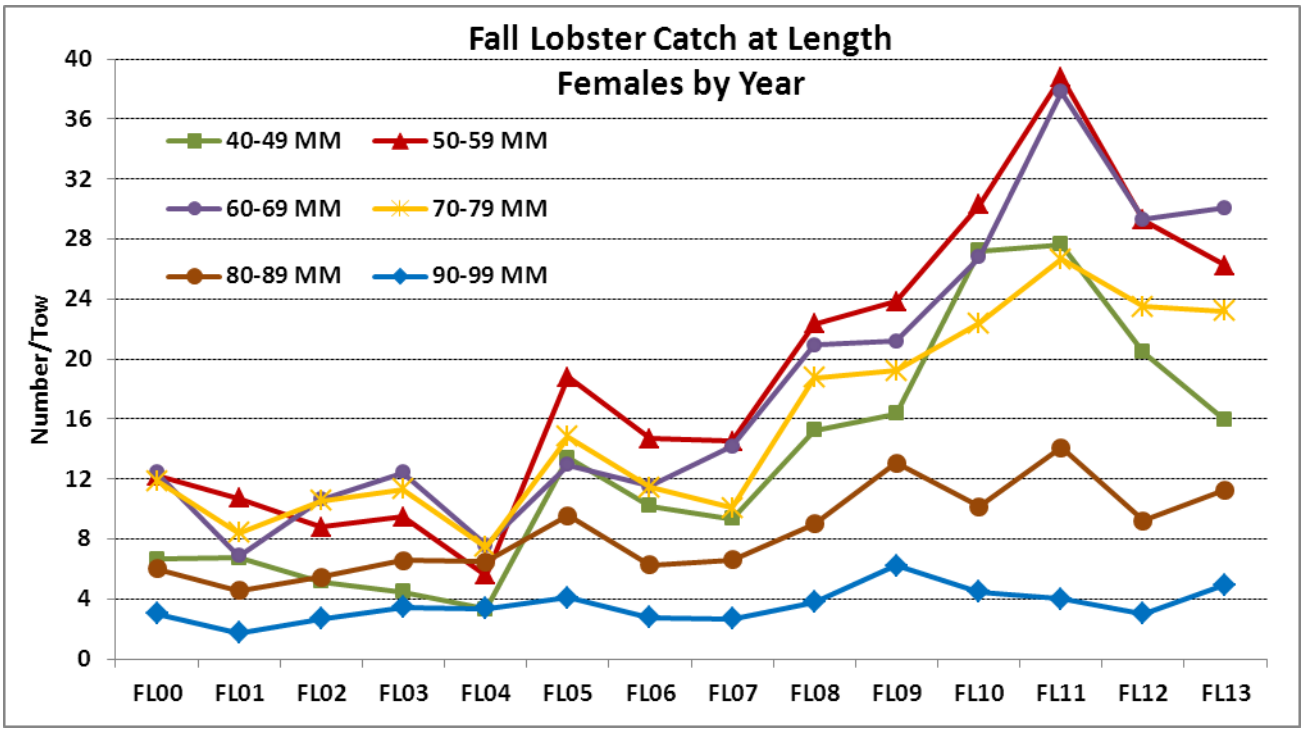


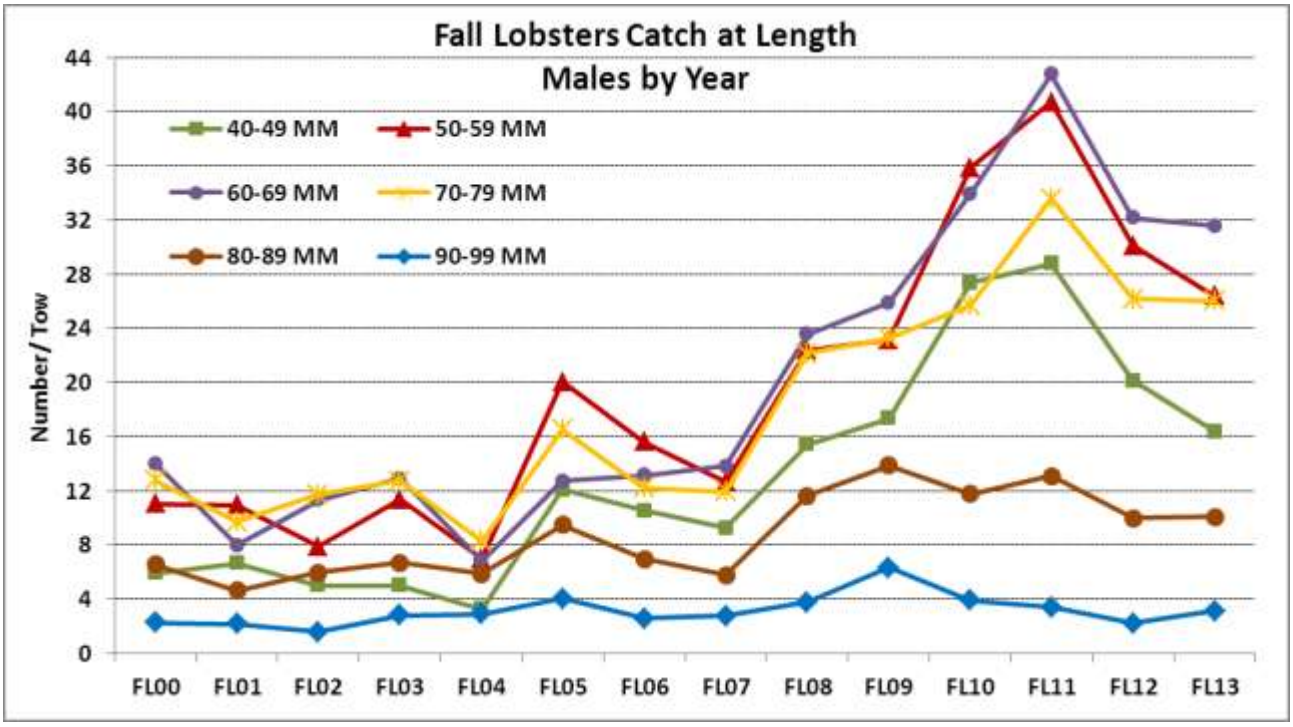


Means and coefficients of variance for graph overlain on above map
fixed stations not included
for lobster, calculated for regions 1 through 5; Strata 1 through 3
FALL

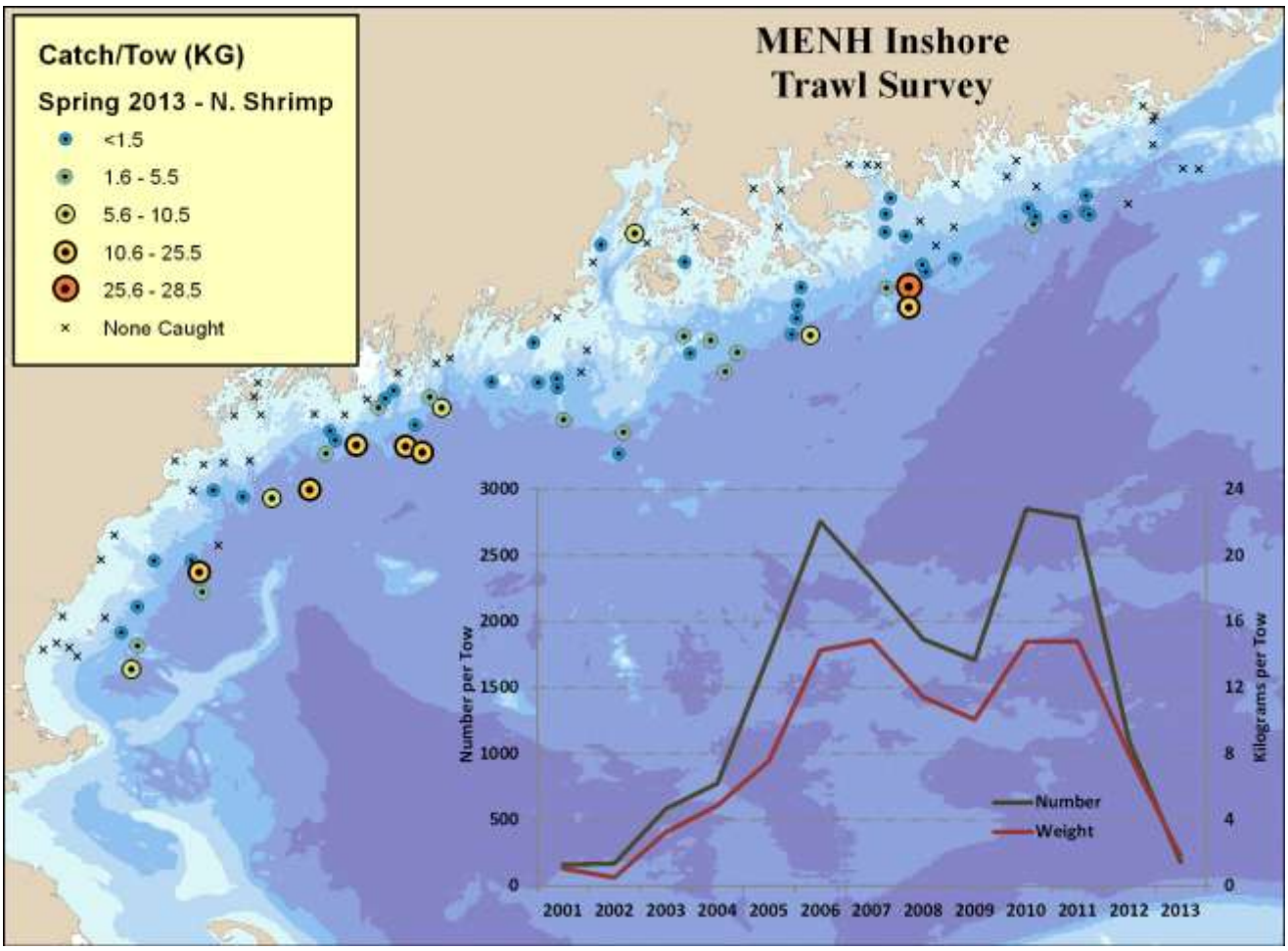
	Stratified Mean Number		Stratified Mean Weight	
	Mean	**CV**	**Mean**	**CV**
2000	109.43	0.39	35.44	0.30
2001	88.61	0.37	21.79	0.28
2002	93.61	0.23	25.97	0.19
2003	105.40	0.16	30.99	0.16
2004	73.21	0.36	22.84	0.28
2005	169.79	0.30	39.83	0.31
2006	126.31	0.33	30.02	0.31
2007	121.53	0.30	29.75	0.27
2008	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
2013	239.56	0.16	54.91	0.18

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



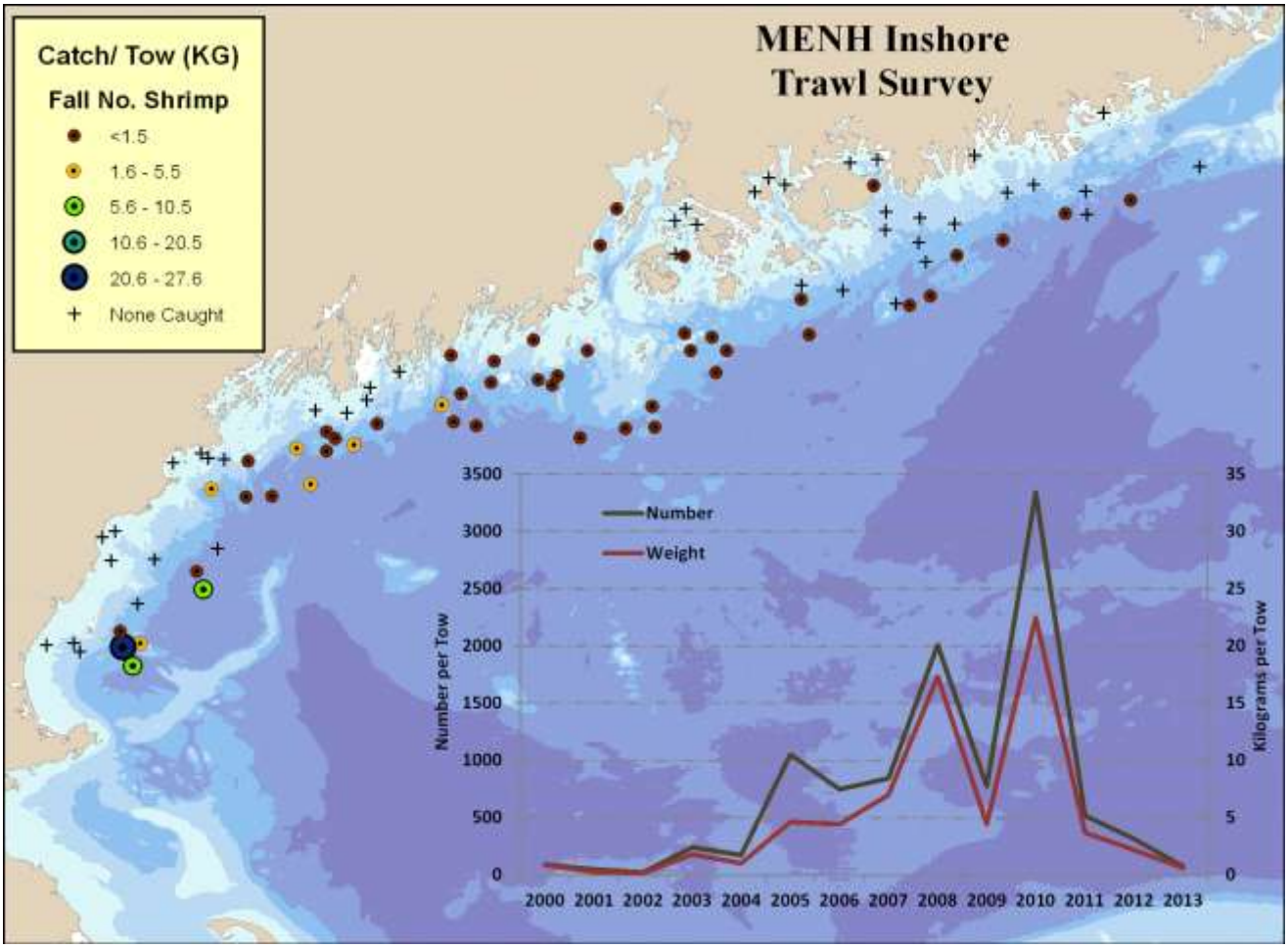


Northern shrimp, *Pandalus borealis* (**Note catches of shrimp displayed as kilograms per tow)**



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

	Number		Weight	
	Mean	**CV**	**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
2013	180.84	0.39	1.79	0.41

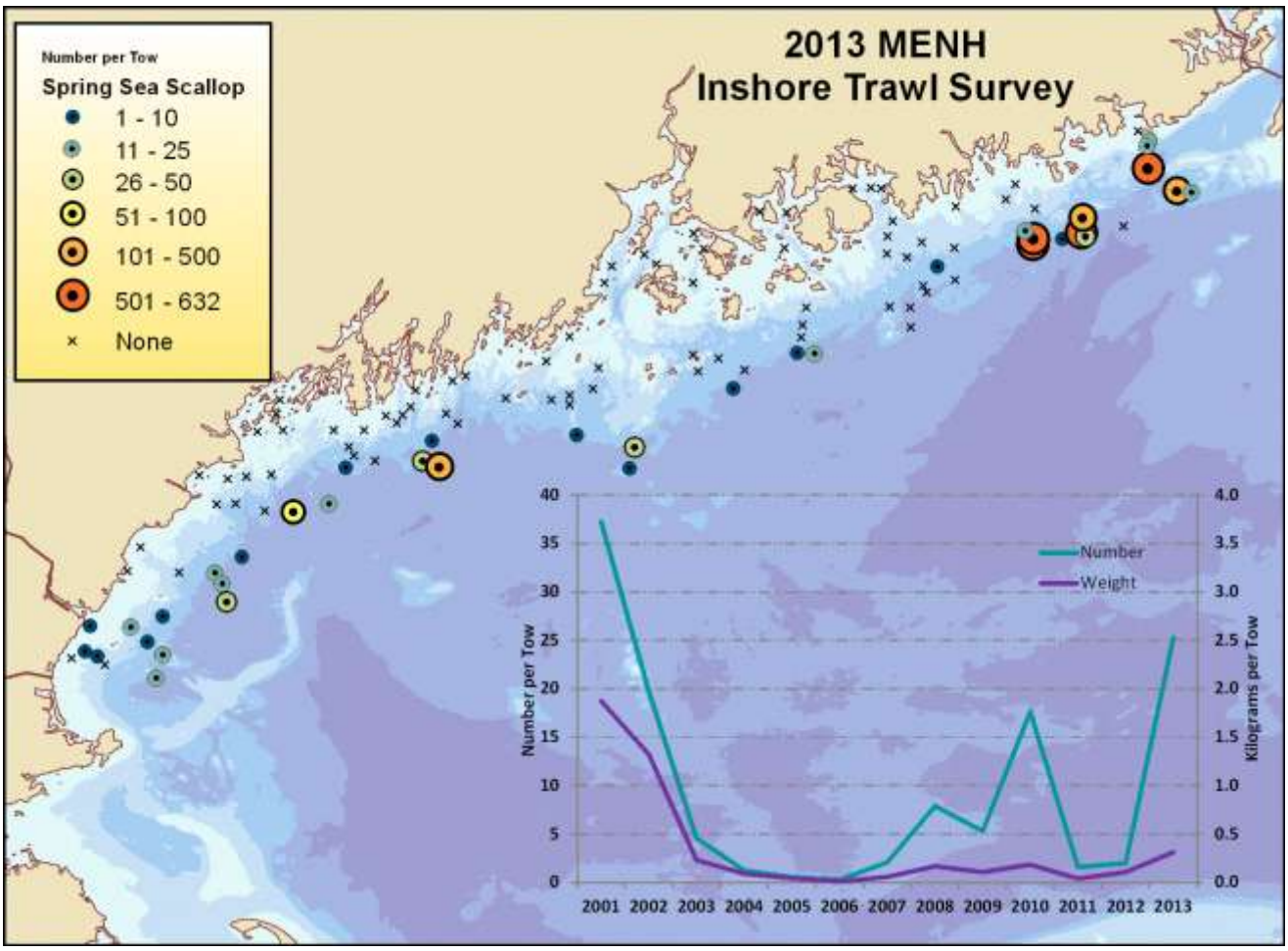


Mean and coefficients of variance for graph overlain on above map
fixed stations not included
for shrimp, calculated for regions 1 through 5; strata 1 through 4
FALL
Stratified Mean

	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
2013	76.62	0.88	0.61	0.94

Mean numbers and weights for fall 2010 northern shrimp are estimates, samples were lost.

Sea scallop, *Placopecten magelanicus*

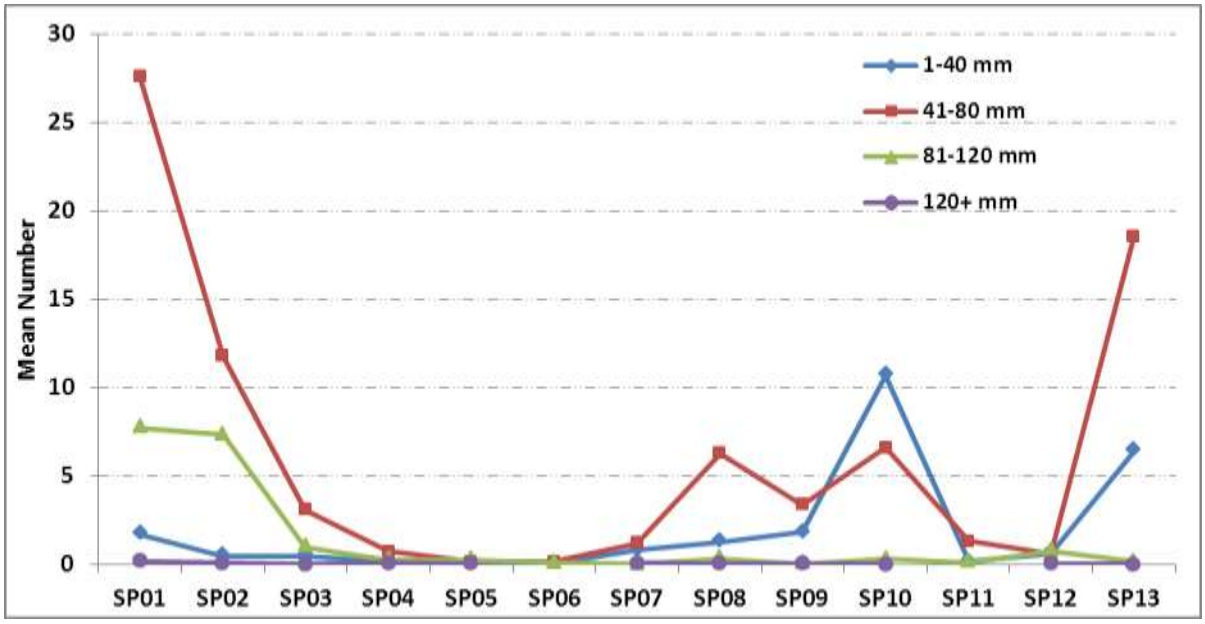


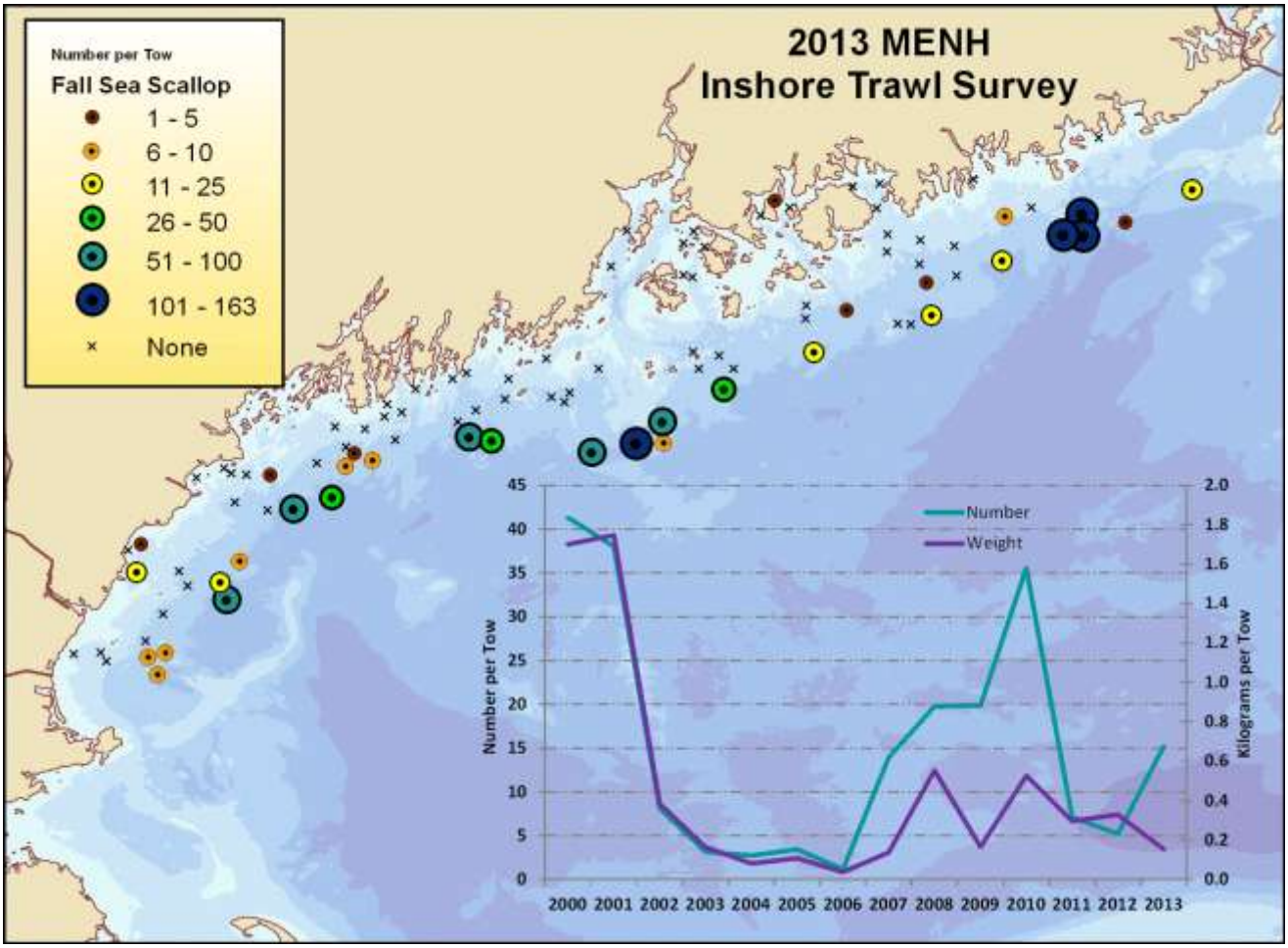
Mean and coefficients of variancefor graph overlain on above map
fixed stations not included
for scallop, calculated for regions 1 through 5; Strata 1 through 4
SPRING
Stratified Mean

	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
2013	25.27	0.76	0.31	0.85

Scallop catch at length is shown for all sizes in 4 length bins. Measurements are shell height to the nearest millimeter.

Spring





Mean and coefficients of variancefor graph overlain on 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
2013	15.17	0.51	0.15	0.39

Scallop catch at length is shown for all sizes in 4 length bins. Measurements are shell height to the nearest millimeter.

Fall