

**Annual Report on the
Maine-New Hampshire Inshore Trawl Survey
January 1, 2015-December 31, 2015**

Contract # NA13NMF4720104 (DMR #3025)

**Submitted to the NOAA Fisheries Northeast Region
Cooperative Research Partners Program**

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Red hake	58-C
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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, James Rich, and Dana Hammond. 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, Julie Neiland, Christine Lipsky, Mark Renkawitz , Ed Motyka, Calvin Diessner, and Jessica Devold. Thanks to Margaret Hunter for updating our website. We are especially grateful for the support provided by Colonel Jon Cornish, Lieutenants Dan White and Jay Carroll, boat captains Mike Neelon, Mike Forgues, Corrie Roberts, Sean Dow, 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.

EXECUTIVE SUMMARY

This report summarizes results from the 2015 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. 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 fourteen complete years and a fifteenth 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 fifteen years of biannual survey work, and the sixteenth 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. The large quantity of fixed gear, especially in the fall, still limits the number of tows that can be made, but continual and extensive public outreach has maintained a satisfactory level of tow completion. Despite the difficulties, the coverage this survey provides promises to be very valuable to better understanding marine ecosystems in the Gulf of Maine. We are confident that the northern Gulf of Maine can be successfully and consistently sampled via trawl survey indefinitely, with sustained funding.

Project Objectives:

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

Specific objectives are:

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

MATERIALS AND METHODS

Methods are described under separate cover in "Maine-New Hampshire Inshore Groundfish Trawl Survey Procedures and Protocols (2005)," available on-line at <http://www.maine.gov/dmr/rm/rawl/reports.htm>. The manual includes detailed descriptions of survey design, station selection, survey vessels, net design, public notification, sample collection and catch handling, and other information on survey methods and operations.

Figure 1 illustrates the survey design. The 12-mile limit approximates the survey's seaward extent, the black lines divide the regions and the depth strata are illustrated by the color gradient.

SURVEY STRATA

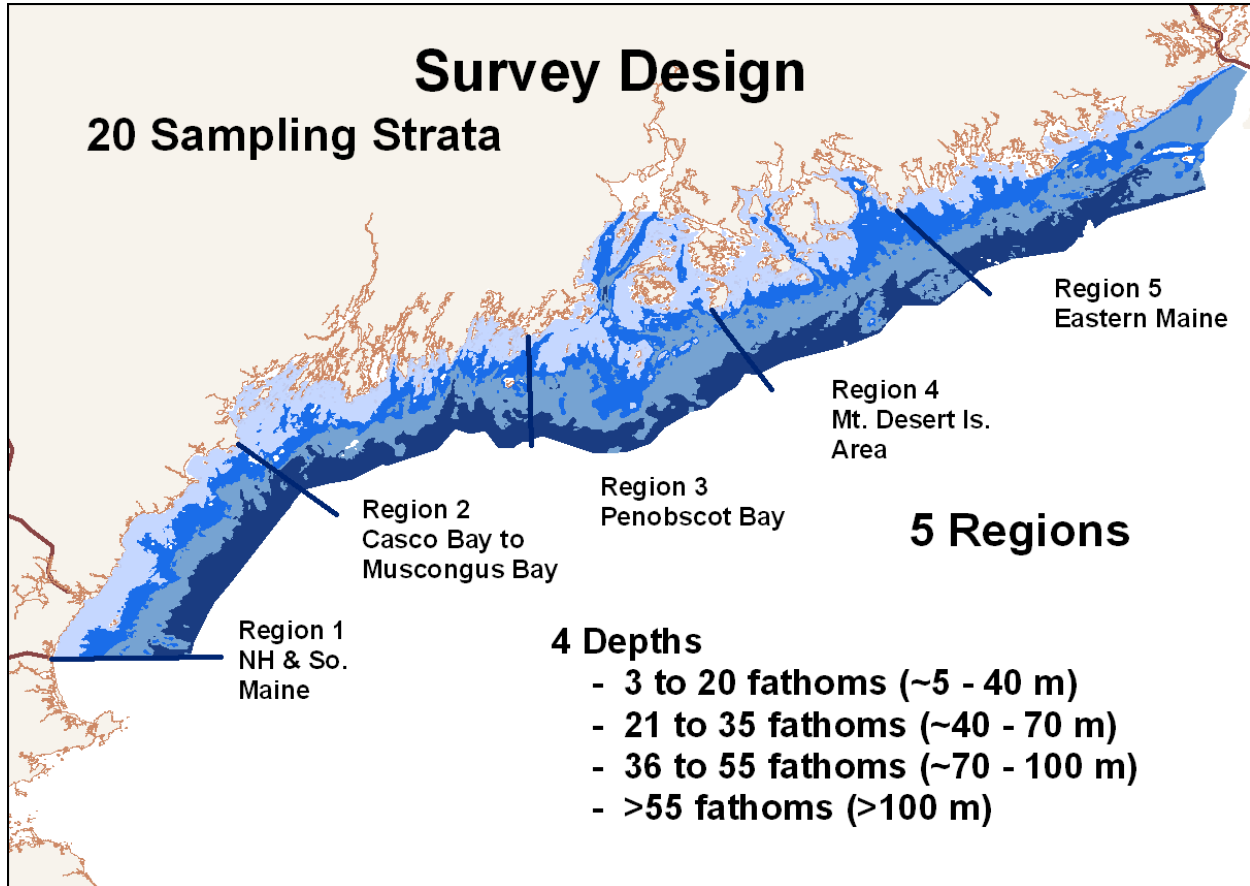


Figure 1. Sampling strata for the Maine-New Hampshire Inshore Trawl Survey

RESULTS

SPRING 2015 SUMMARY

The survey began May 4, 2015 in Portsmouth, New Hampshire and finished on June 5th off of Lubec, Maine. We completed 123 tows out of the scheduled 120. This translates to a 103% completion rate, with an average of 4.9 tows per day. Personnel from Maine DMR as well as New Hampshire F&G participated in the survey. Staff from NOAA's NMFS salmon and endangered species branch came along on the second and third week to continue a groundfish stomach sampling program looking for alosines as prey. Survey sampling locations are shown in Figure 2.

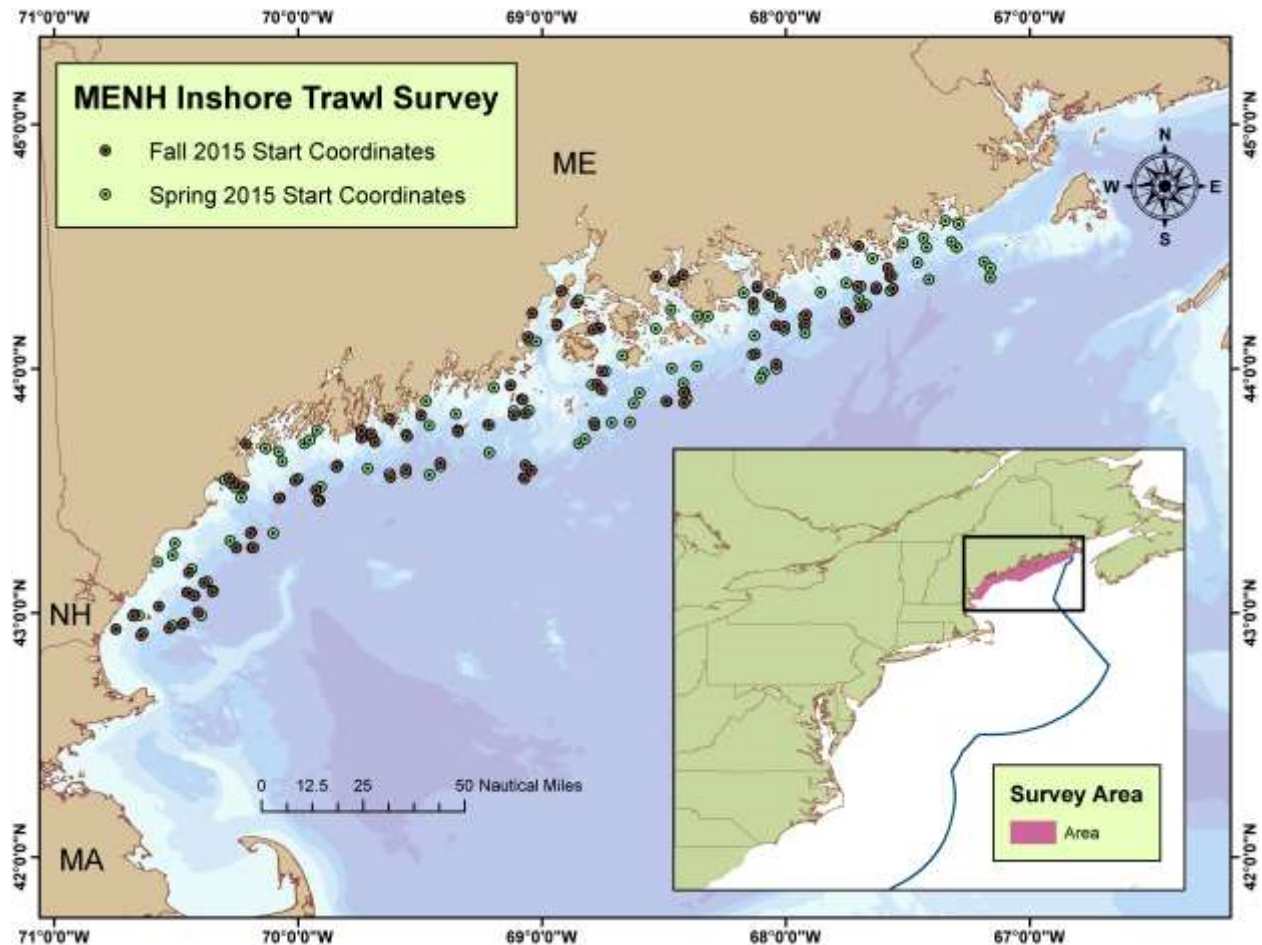


Figure 2. Start coordinates for the spring and fall survey tows for 2015

For the spring 2015 survey, bottom sea water temperatures ranged from 3.4°C to 8.8°C at any one particular site. The overall average sea bottom temperature was 4.9°C which is lower than spring 2014, 5.5°C, and the lowest since 2007 (Figure 3). Average sea surface temperature for spring 2015 was slightly lower at 7.1°C compared to 7.7°C the previous spring. The spring 2015 average near bottom water temperature by region and stratum with regional totals is shown in Table 1.

Table 1. Average near bottom temperature (°C) for the spring 2015 survey.

REGION					
STRATUM	1	2	3	4	5
1	4.8	5.0	6.1	6.8	5.5
2	3.9	4.3	4.9	4.7	5.3
3	3.6	4.1	4.3	5.0	5.5
4	3.6	3.9	4.4	5.4	6.5
Total	4.0	4.3	4.9	5.5	5.7

The average yearly sea surface and sea bottom temperatures from the MENH survey database show a slight positive trend over the time series (Figure 3) with the highest sea surface temperature occurring in 2013 and highest bottom temperature in 2012.

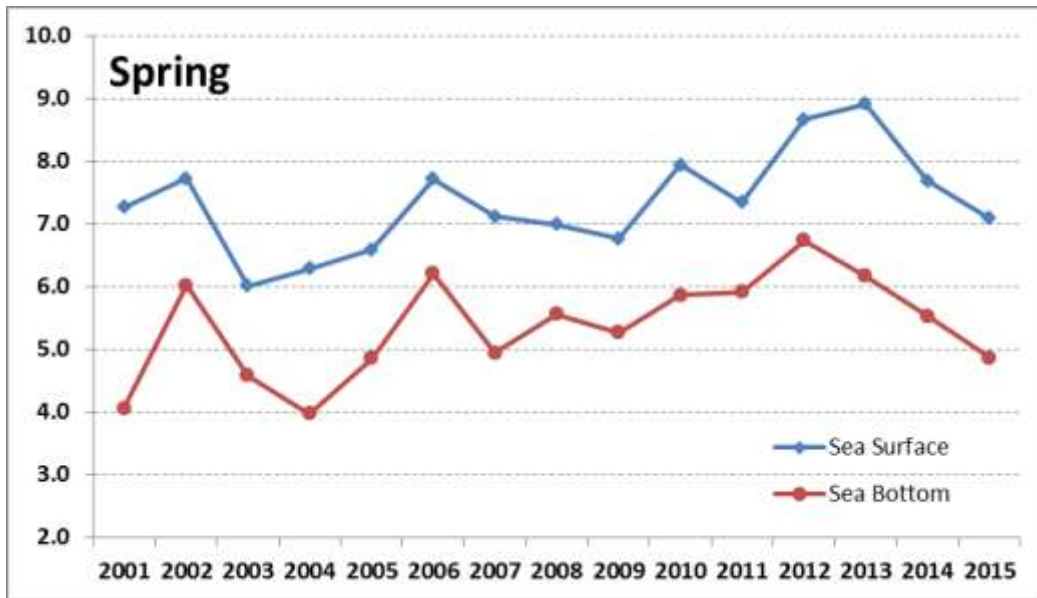


Figure 3. Average sea surface and near bottom water temperatures for 2001 through 2015.

The volume of total mixed catch varied from 1.3 kg to 559.6 kg per tow, with an average of 103.0 kg and a median of 77.0 kg per tow. Figure 4 shows the average catch weight per tow for spring surveys since 2001; the spring 2015 catch average was down from 2014 but at the 15-year average of 103.0 kg.

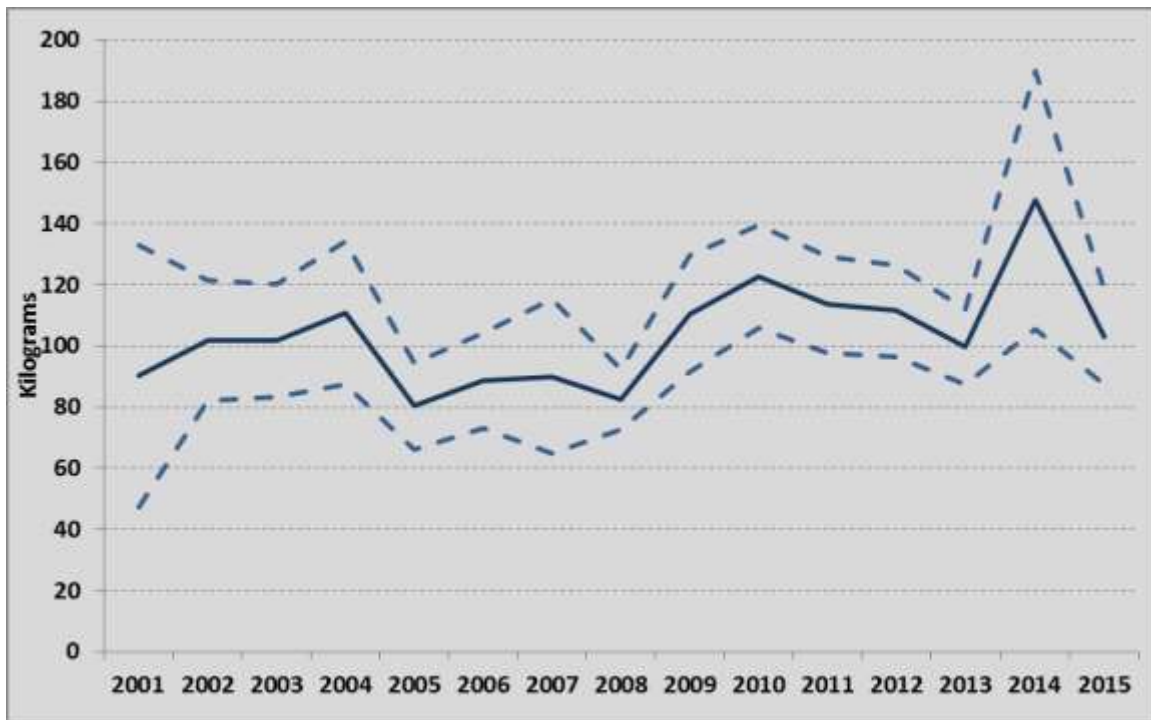


Figure 4. Average combined catch weights (kg) per tow for spring surveys for 2001-2015. The dashed lines represent 2 standard errors.

Figure 5 illustrates species groups by portion of the total catch by depth strata combined for all years. American lobster, which comprises 95% of the lobster and crab group, is the largest part of the catch overall at 30%, the largest proportion of lobsters is seen in stratum 2, 21-35 fathoms, and the least in stratum 4, greater than 55 fathoms. Lobster percent occurrence in the spring 2015 survey was at 100 %. The herring group, which is dominated by Atlantic herring and alewife, accounted for the second largest part of the overall catch, 27 %, and they are most abundant in the shallowest stratum. The gadoid fish group, which is 85 % silver hake, comprised 13 % of the total catch weight and is more common in the deeper strata.

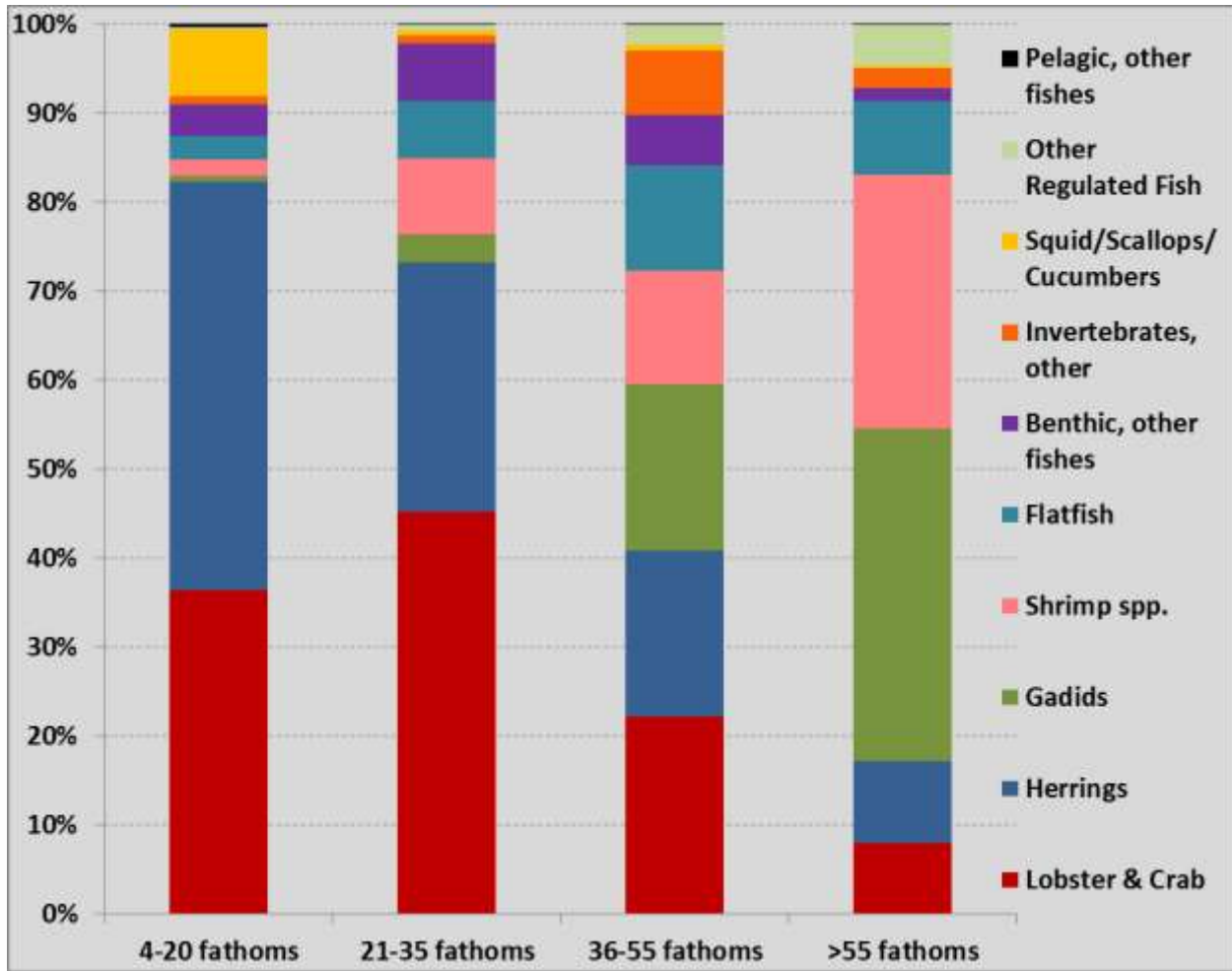


Figure 5. Percent of total catch weight apportioned by species groups for all spring surveys combined by depth stratum.

Figure 6 illustrates species groups by portion of the total catch by geographic region pooled for all years. There are regional differences in the catch composition for the survey area coupled with the above depth dependent distributions. Lobsters make up an increasingly larger proportion of the total catch towards the eastern parts of the survey area. Gadoid fish and flatfish, winter flounder and plaice largely, show a slightly greater proportion in the southwestern and northeastern sections along the coast. Shrimp, predominantly *Pandalid spp.*, are the least common in the eastern-most portion. The herrings show a slight affinity to the mid-coast to Penobscot Bay regions.

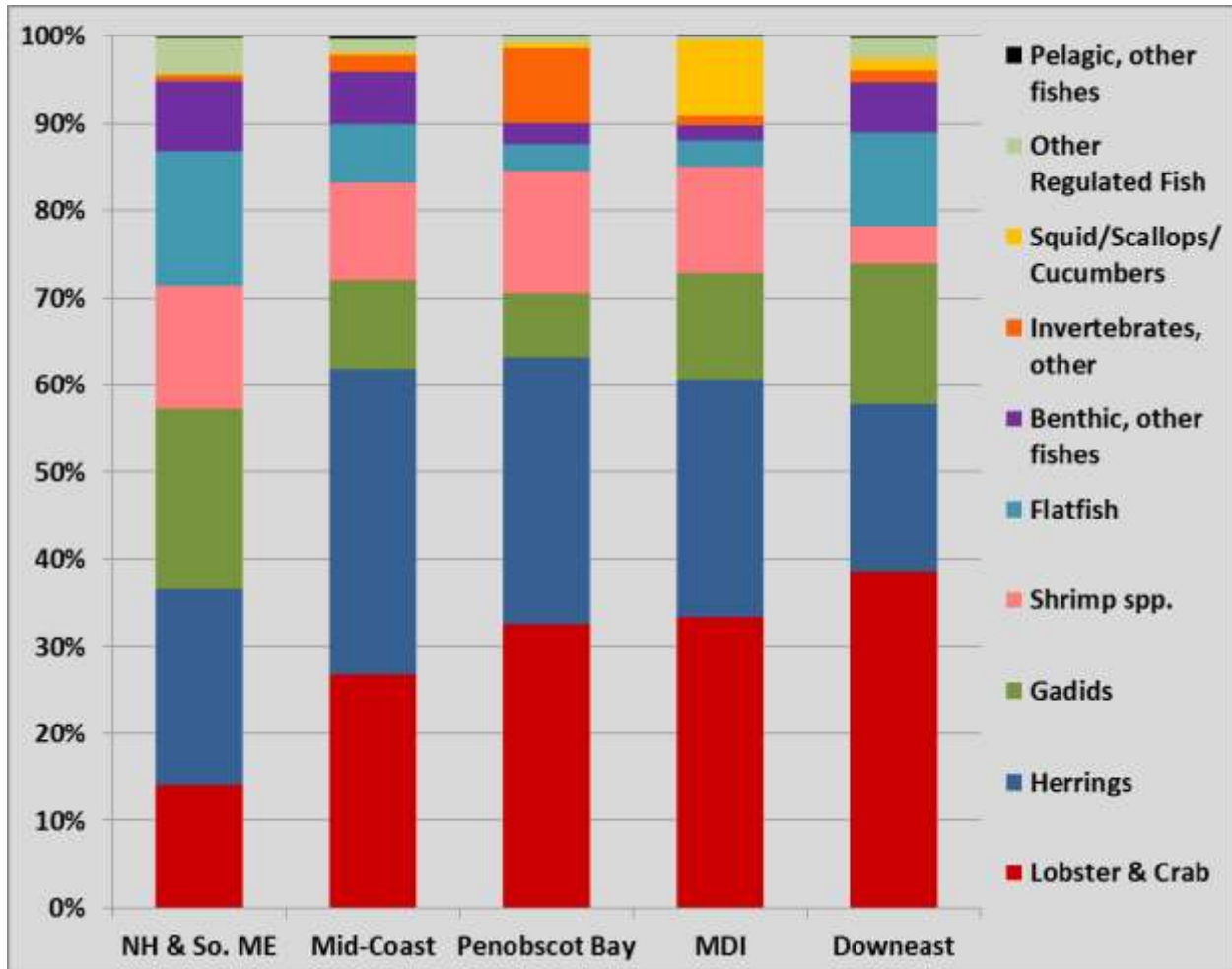


Figure 6. Percent of total catch weight apportioned by species groups for all spring surveys combined by geographic region.

For 2015, the total number of species caught was 92, with a low of 3 and high of 31 in any particular tow, and a per tow average of 20 species.

Biological samples are collected on selected finfish species, based on seasonal abundance and available time between tows. Approximately 150 winter flounder were tagged along the survey area in spring 2015. Alewife and blueback herring were collected studies being conducted for researchers at the University of Southern Maine. Table 2 shows the numbers of biological samples taken for the spring 2015 survey. It doesn't include the samples taken for other agencies.

Table 2. Spring 2015 species sampled for weights, sex, maturity, food habits, and aging.

Number of Biological Samples Spring 2015				
Species	Lengths	Weights/Sex/ Maturity Stage	Otoliths	Food Habits
Atlantic cod	100	98	71	NA
Haddock	779	290	176	NA
American plaice	2867	684	402	NA
Yellowtail flounder	223	123	NA	NA
Winter flounder	4073	750	480	NA
Goosefish	131	116	NA	88

Other spring 2015 Survey Highlights

Overall, spring 2015 catches were down from the previous year. For the third spring in a row, we saw 100% occurrence of American lobsters, they were caught in every tow conducted. The average number per tow for lobsters was down, mainly due to the lack of any unusually large catches that were unique to 2014. Notable increases in numbers were seen for Atlantic herring, alewife, shad, and blueback herring. Northern shrimp catch weights were up slightly from the previous spring. Numbers for the managed groundfish species were down or comparable to spring 2014. Two Atlantic sturgeons were caught in separate tows on the second week of the survey. All were released alive and in good condition. Catch locations, date, time, length, and weights were supplied to NMFS' protected species branch.

FALL 2015 SUMMARY

The survey began September 28, 2015 in Portsmouth, New Hampshire and finished on October 30 off of Jonesport, Maine. We completed 80 tows out of the scheduled 120. This translates to a 67% completion rate, with an average of 3.5 tows per day. With lobster prices and catch rates up, the cooperation from the fixed gear fishery was fairly low this fall. This combined with bad weather throughout the survey accounted for the low tow completion rate. Sample locations for the 2015 fall survey can be seen in Figure 2.

Table 4 shows the average near bottom water temperature by stratum for the fall 2015 survey with totals for each region along the coast. Temperatures ranged from 5.5°C to 14.2°C in any one cast for the fall 2015 survey. The overall average sea bottom temperature was 10.3°C which is 0.7°C lower than fall 2014.

Table 4. Average near bottom water temperatures (°C) for fall 2015

REGION					
STRATUM	1	2	3	4	5
1	11.6	12.3	12.4	12.3	10.8
2	10.1	10.9	11.9	11.5	11.0
3	7.5	9.6	11.1	11.2	11.1
4	7.2	7.6	9.3	9.7	10.5
Total	8.8	9.8	11.4	11.1	10.9

The average sea surface temperatures recorded in the fall surveys depicts a slight positive trend since 2000, but the sea bottom temperatures have a more level trend (Figure 7).

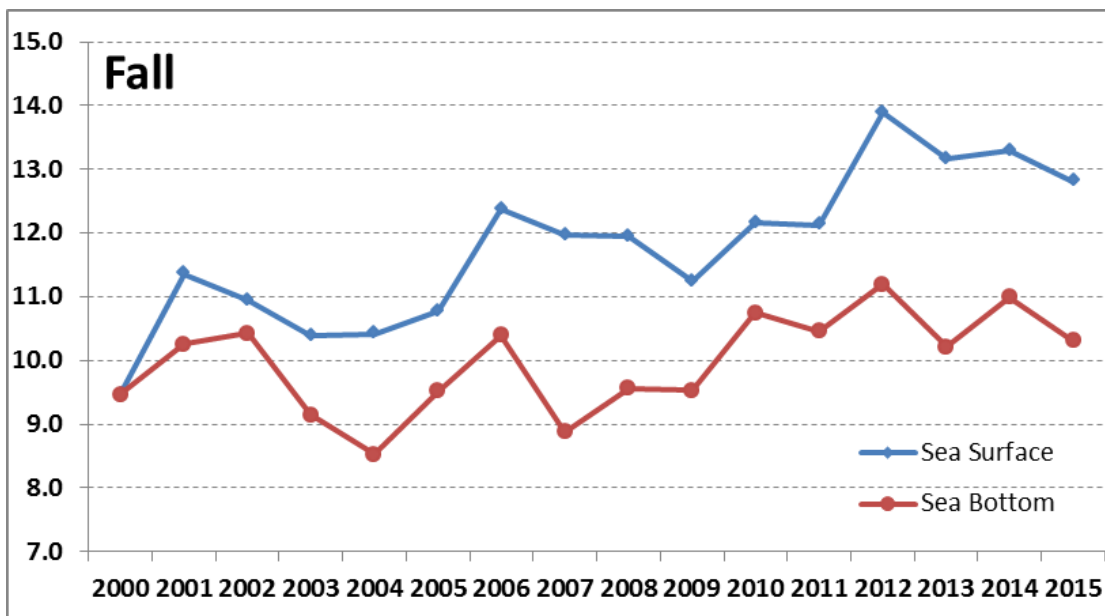


Figure 7. Yearly average sea bottom and sea surface water temperature for the MENH survey tows 2000 through 2015.

The volume of mixed catch varied from 37.3 kg to 1180.9 kg per tow, with an average of 179.0 kg and a median of 148.1 kg. The per-tow average catch weight increased from the previous fall and the catches were somewhat more variable (Figure 8).

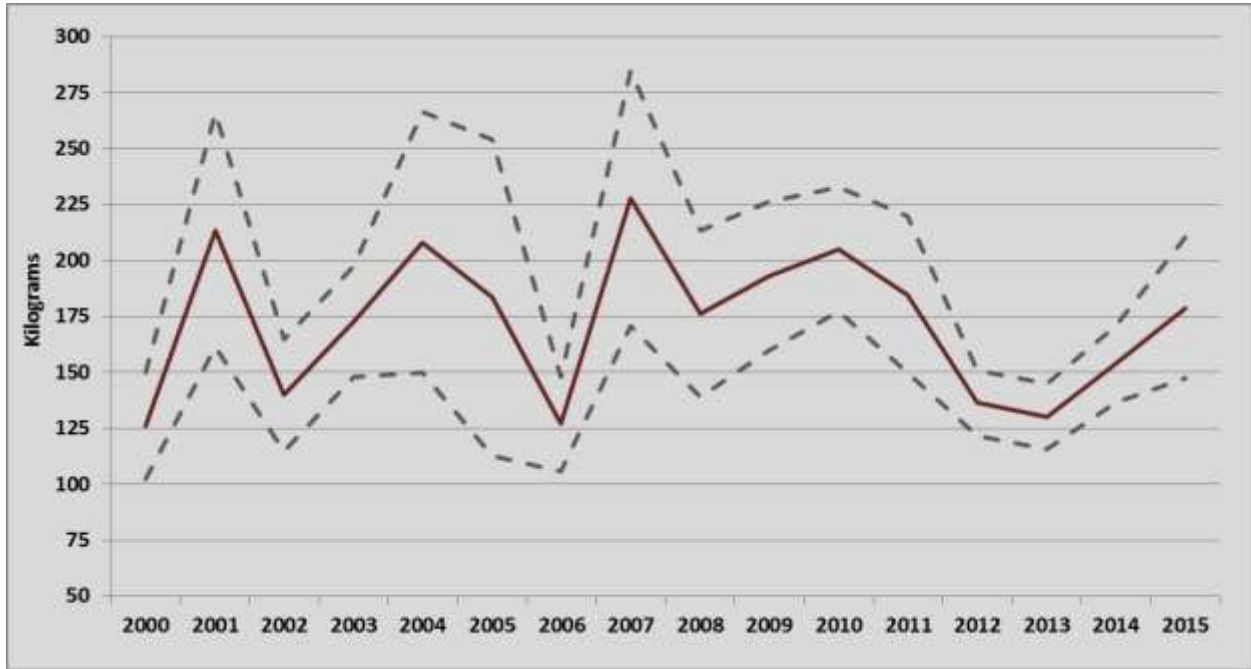


Figure 8. Average mixed catch weights per tow for fall surveys 2000-2015.

The dashed lines represent 2 standard errors.

Figure 9 illustrates species groups by portion of the total catch by depth strata combined for all years. The gadoid fish group, which is predominantly silver hake, comprised 25 % of the total catch weight and is more abundant in the deeper strata. American lobster, which comprises 95% of the lobster and crab group, is the next largest part of the catch overall at 23%, the largest proportion of lobsters is seen in strata 1 and 2, <=35 fathoms. Other regulated fish, which is dominated by spiny dogfish and monkfish, accounted for the third largest part of the overall catch, 19 %, and they are most abundant in the deepest stratum. The herrings are still fairly abundant in the fall being caught mostly in the 2 shallowest strata.

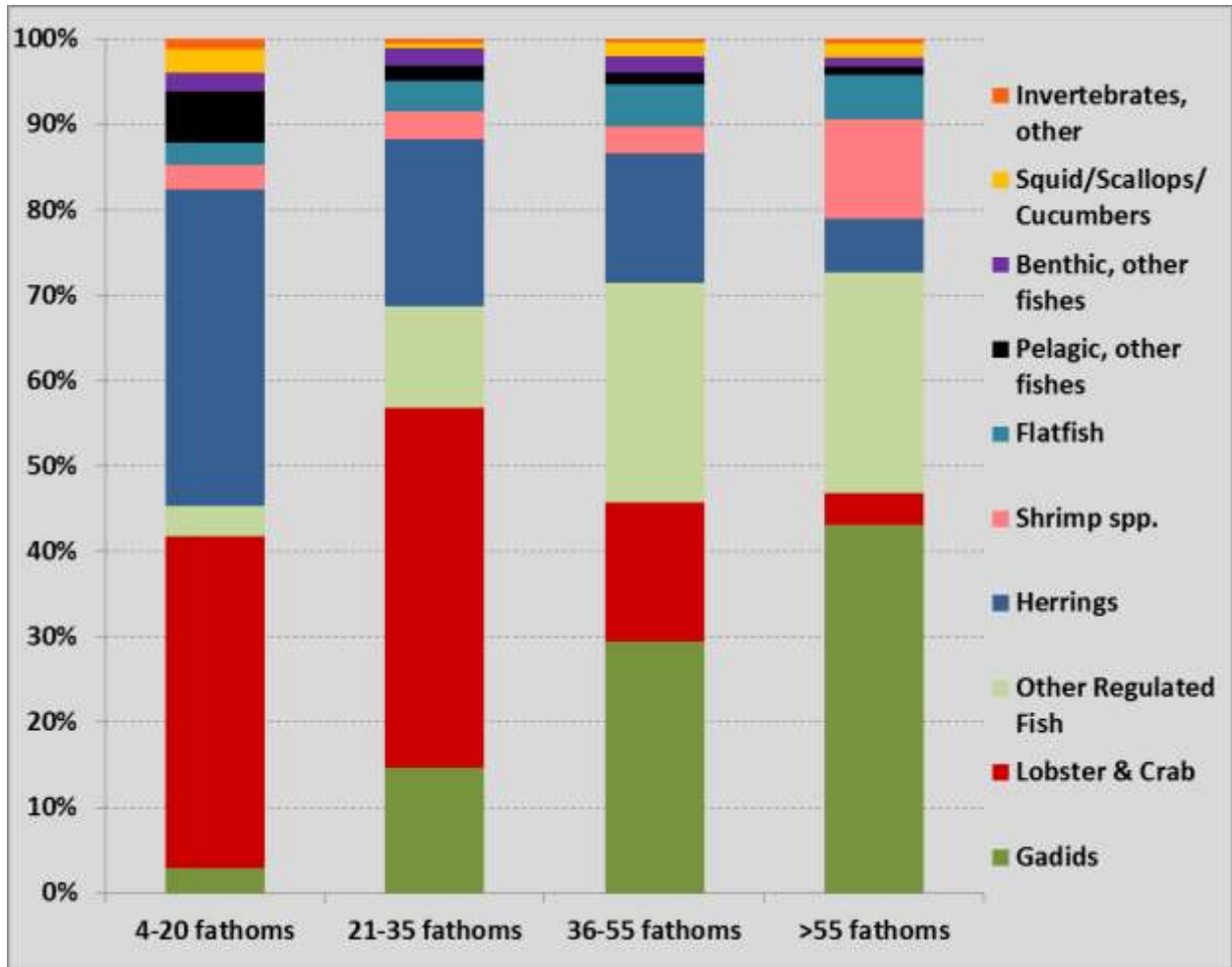


Figure 9. Percent of total catch weight apportioned by species groups and depth stratum for all fall surveys.

Figure 10 illustrates fall species groups by portion of the total catch by geographic region pooled for all years. The regional differences are perhaps a little less defined in the fall. Lobsters abundance still increases towards the eastern parts of the survey area. Other regulated fish, specifically spiny dogfish, are more frequently caught in the southern portion of the survey area. The remainder of the species groups seems more uniformly distributed along the coasts.

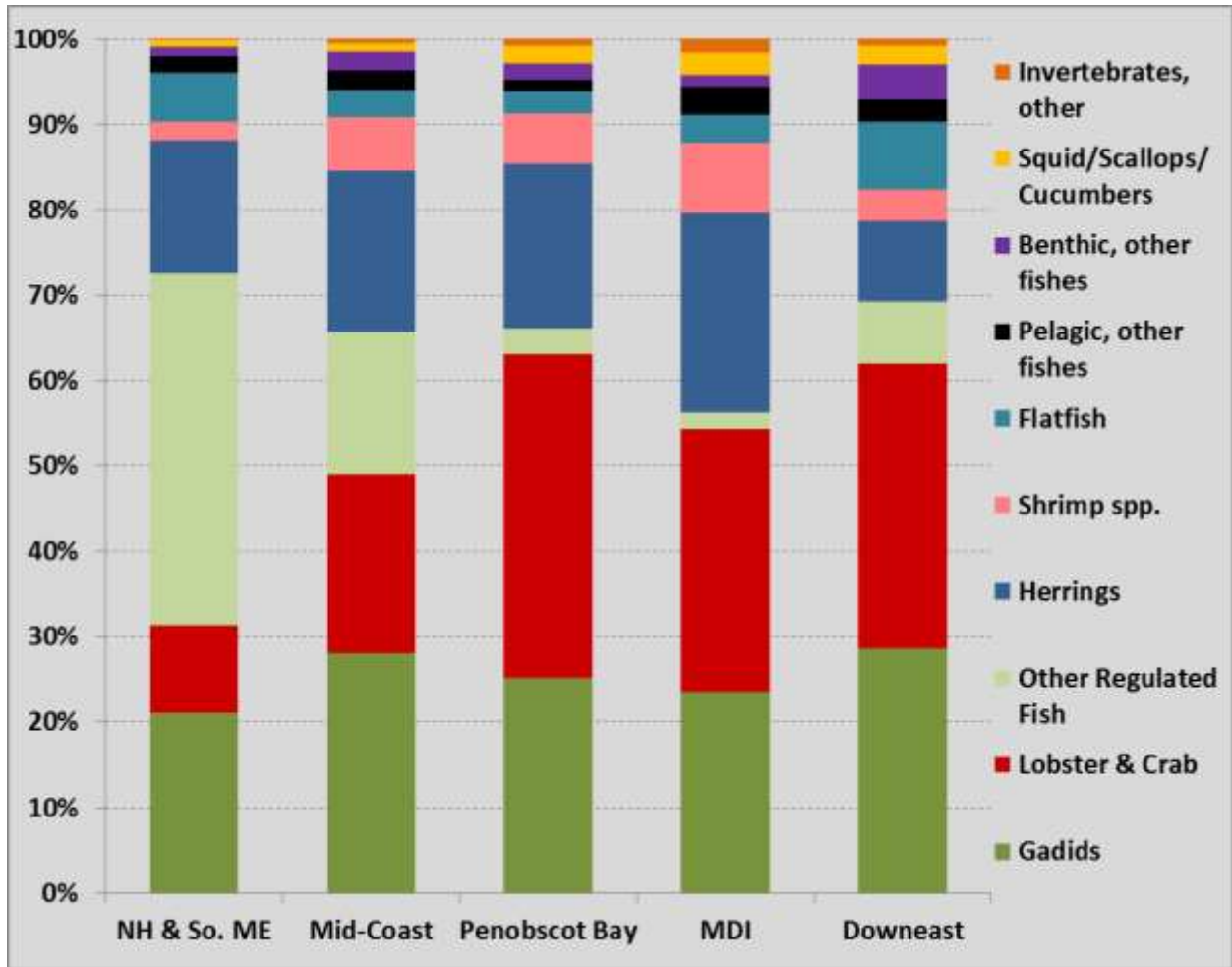


Figure 10. Percent of total catch weight apportioned by species groups for all fall surveys combined by geographic region.

Table 5 shows the numbers of biological samples taken for the fall 2015 survey. Samples of selected species were collected for the Department of Environmental Protection’s National Coastal Condition Assessment in the fall survey. It doesn’t include the samples taken for other agencies.

The total number of species caught was 90, with a low of 14 and high of 33 in any particular tow, and an average and median of 23 species.

Table 5. Fall 2015 species sampled for weights, sex, maturity, food habits, and aging.

Number of Biological Samples Fall 2015				
Species	Lengths	Weights/Sex/ Maturity Stage	Otoliths	Food Habits
Atlantic cod	69	42	25	5
Haddock	991	210	117	NA
Witch Flounder	1142	177	160	NA
White Hake	5279	566	359	NA
Monkfish	547	240	NA	208

Other fall 2015 Highlights

Rare species caught were northern puffer (1), northern kingfish (1), and Atlantic moonfish (several in a tow in Casco Bay and a dozen in Saco Bay). Three Atlantic sturgeons were caught in the fall survey. Two sturgeons were caught in a single tow in the second week and one in another in the third week. All were released alive and in good condition. Catch locations, date, time, length, and weights were supplied to NMFS' protected species branch. American lobster catches were noticeably higher than the previous fall. Catches of silver hake, haddock, butterfish, and longfin squid were down. For the fourth fall, catches of spiny dogfish were extremely low.

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 2015										
5/4/2015	1	1	42.95858	-70.46448	3	08:19	54.9	00:15	3.5	32.76
5/4/2015	1	2	42.93505	-70.52648	3	09:38	46.5	00:21	3.7	32.75
5/4/2015	1	3	42.908	-70.64838	2	11:28	33.1	00:20	3.9	32.64
5/4/2015	1	4	42.97902	-70.66422	1	14:43	14.2	00:20	4.5	32.15
5/4/2015	1	5	42.98737	-70.67817	1	15:47	16.5	00:13	4.5	32.29
5/5/2015	1	6	42.99963	-70.40678	4	08:14	59.5	00:20	3.6	32.88
5/5/2015	1	7	43.07908	-70.36093	4	10:05	54.9	00:20	3.4	32.5
5/5/2015	1	8	43.1206	-70.38718	3	11:30	54.1	00:20	3.4	32.74
5/5/2015	1	9	43.08045	-70.41273	3	12:46	50.5	00:20	3.6	32.64
5/5/2015	1	10	43.08918	-70.44603	3	13:47	43.8	00:14	3.8	32.64
5/6/2015	1	11	43.1672	-70.44475	2	07:40	33.4	00:20	3.6	32.55
5/6/2015	1	12	43.28395	-70.28507	3	09:51	48.8	00:20	3.6	32.7
5/6/2015	1	13	43.29515	-70.4967	1	11:57	19.8	00:17	4.1	32.3
5/6/2015	1	14	43.24607	-70.50288	2	12:47	25.7	00:20	4	32.4
5/6/2015	1	15	43.19472	-70.57968	1	14:01	14.6	00:20	4.5	32.05
5/7/2015	1	16	43.25615	-70.26095	3	08:56	54.5	00:19	3.6	32.68
5/7/2015	1	17	43.25742	-70.20088	4	10:00	66.1	00:20	3.7	32.72
5/7/2015	1	18	43.31958	-70.20403	4	11:11	57.2	00:20	3.6	32.67
5/7/2015	1	19	43.31568	-70.1146	4	12:22	74.4	00:20	3.7	32.83
5/7/2015	1	20	43.45773	-70.08183	4	14:04	66.5	00:20	3.4	32.5
5/8/2015	1	21	43.4792	-70.21788	2	08:08	35.6	00:20	3.6	32.48
5/8/2015	1	22	43.55033	-70.28458	1	10:09	4.4	00:20	7.4	30.53
5/8/2015	1	23	43.53305	-70.25837	1	11:02	13.5	00:17	3.8	32.24
5/8/2015	1	24	43.51632	-70.24293	2	11:56	21.6	00:16	4.3	31.83
5/11/2015	2	25	43.63235	-70.05827	2	08:04	31.4	00:20	4.4	32.16
5/11/2015	2	26	43.68473	-69.9859	2	09:41	24.1	00:19	3.9	32.13
5/11/2015	2	27	43.75853	-69.91493	1	11:06	9.5	00:17	4.8	31.72
5/11/2015	2	28	43.7028	-69.93277	1	12:03	18.6	00:20	4	32.11
5/11/2015	2	29	43.67122	-70.06982	1	13:25	19.6	00:20	4.5	32.05
5/11/2015	2	30	43.66258	-70.13007	1	14:37	15.6	00:17	5	31.59
5/12/2015	2	31	43.5389	-70.0117	3	07:47	53	00:20	3.8	32.5
5/12/2015	2	32	43.44953	-69.93035	4	09:33	81.9	00:20	3.6	30.28
5/12/2015	2	33	43.50683	-69.91887	4	10:53	63.4	00:20	3.7	29.26
5/12/2015	2	34	43.5922	-69.84828	3	12:23	48.3	00:20	4	32.39
5/12/2015	2	35	43.60375	-69.70812	3	14:06	53.3	00:20	4	32.4
5/13/2015	2	36	43.78725	-69.61425	1	07:21	23.1	00:20	4.7	29.95
5/13/2015	2	37	43.75338	-69.7341	1	08:58	11.2	00:20	6.3	31.9
5/13/2015	2	38	43.7163	-69.73462	1	09:48	18.5	00:20	5.5	31.91
5/13/2015	2	39	43.72972	-69.69877	2	10:42	33.4	00:20	4.5	32.17

Appendix A
Individual Station Descriptors for Start of Tow

DATE	REGION	TOWID	LAT	LON	Stratum	Time	Tow	Depth	Temp	Salinity
			decimal degrees	decimal degrees			Duration	(FA)	C °	ppt
5/14/2015	2	40	43.72018	-69.55032	3	07:24	51.6	00:18	4.2	27.62
5/14/2015	2	41	43.60958	-69.41302	4	09:36	84.8	00:15	3.9	32.77
5/14/2015	2	42	43.5775	-69.4548	4	11:10	88.8	00:20	4.1	28.71
5/14/2015	2	43	43.58653	-69.55565	4	12:38	76.6	00:20	4	32.69
5/14/2015	2	44	43.55465	-69.6213	4	13:53	77.8	00:20	4.1	30.81
5/15/2015	2	45	43.81577	-69.48515	3	07:53	40.5	00:15	4.3	32.24
5/15/2015	2	46	43.87983	-69.46857	2	09:26	23.1	00:20	4.3	32.09
5/15/2015	2	47	43.80225	-69.3608	2	11:45	40.7	00:20	4.4	32.16
5/15/2015	2	48	43.73418	-69.34048	3	13:23	51.5	00:20	4.3	32.12
5/15/2015	2	49	43.75812	-69.46835	3	15:04	44.6	00:15	4.2	32.25
5/18/2015	3	50	43.75787	-69.21068	3	08:57	49.5	00:20	4	32.23
5/18/2015	3	51	43.81167	-69.11563	3	10:40	44.2	00:20	4.1	32.14
5/18/2015	3	52	43.8617	-69.08253	2	12:42	36.1	00:20	5	31.79
5/18/2015	3	53	43.92997	-69.18222	2	14:21	23.1	00:20	5.4	31.53
5/18/2015	3	54	43.93918	-69.1215	1	15:48	20.5	00:16	5.5	31.51
5/19/2015	3	55	44.1306	-69.053	1	06:39	17.2	00:20	4.4	29.67
5/19/2015	3	56	44.21583	-69.03937	1	08:23	6.5	00:17	5.6	31.06
5/19/2015	3	57	44.30767	-68.93107	1	09:47	10	00:20	8.8	28.34
5/19/2015	3	58	44.16867	-68.9468	2	11:52	28.9	00:20	4.8	31.04
5/19/2015	3	59	44.26933	-68.85928	1	13:11	15	00:20	5.3	31.42
5/19/2015	3	60	44.12475	-69.01983	2	15:42	30	00:20	4.4	31.62
5/20/2015	3	61	43.82003	-69.06168	3	07:19	42.1	00:15	4.4	31.99
5/20/2015	3	62	43.64283	-69.22143	4	09:55	77.3	00:20	4.1	32.47
5/20/2015	3	63	43.56218	-69.0861	4	11:50	79.1	00:20	4.2	32.66
5/20/2015	3	64	43.6805	-68.85823	4	15:03	63.3	00:20	4.5	32.67
5/20/2015	3	65	43.7232	-68.81102	4	16:13	61.3	00:20	4.5	32.33
5/21/2015	3	66	43.91132	-68.58785	3	07:38	51.6	00:20	4.3	32.29
5/21/2015	3	67	43.84402	-68.62865	3	09:23	54.4	00:20	4.3	32.43
5/21/2015	3	68	43.77015	-68.65142	4	11:07	66.3	00:20	4.5	32.7
5/21/2015	3	69	43.77045	-68.72107	3	12:32	59.4	00:15	4.4	32.67
5/21/2015	3	70	43.76533	-68.78353	3	13:43	56.6	00:20	4.3	32.52
5/22/2015	3	71	43.93398	-68.77642	3	08:21	47.9	00:20	4.8	32.01
5/22/2015	3	72	43.987	-68.75417	2	09:40	36.4	00:18	4.8	31.94
5/22/2015	3	73	44.04253	-68.67763	2	10:58	25.8	00:17	5.2	31.76
5/22/2015	3	74	44.15828	-68.7675	1	12:51	18.5	00:17	6.7	31.22
5/25/2015	4	75	44.00513	-68.48405	3	07:27	47	00:20	4.7	32.26
5/25/2015	4	76	44.01643	-68.34947	3	09:13	47.3	00:20	4.7	32.15
5/25/2015	4	77	43.94917	-68.4069	3	10:28	53.9	00:20	4.7	31.83
5/25/2015	4	78	43.89327	-68.42633	4	11:40	61.8	00:20	4.5	32.56
5/25/2015	4	79	43.86333	-68.41358	4	12:49	71.5	00:20	4.6	32.42
5/25/2015	4	80	43.85332	-68.4949	4	14:22	66.6	00:20	4.5	32.52

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
5/26/2015	4	81	44.15648	-68.54283	1	07:15	13.5	00:16	7.2	31.61
5/26/2015	4	82	44.22998	-68.46022	1	08:40	12.4	00:20	7	31.61
5/26/2015	4	83	44.36788	-68.45048	1	10:25	16.2	00:20	6.8	31.54
5/26/2015	4	84	44.38752	-68.40415	1	11:28	12.3	00:20	7.1	31.9
5/26/2015	4	85	44.2048	-68.3652	1	13:58	15.4	00:17	6.9	31.66
5/27/2015	4	86	44.20673	-68.3118	1	07:03	16.4	00:13	5.8	31.75
5/27/2015	4	87	44.05677	-68.11775	4	09:28	55.1	00:20	5.6	29.77
5/27/2015	4	88	44.01353	-68.03802	4	11:08	92.3	00:20	7.2	33.83
5/27/2015	4	89	43.99437	-68.08677	4	12:20	60.4	00:20	6	33.06
5/27/2015	4	90	43.95372	-68.11397	3	13:25	43	00:15	5.5	32.65
5/28/2015	4	91	44.14393	-68.11362	3	08:17	48.7	00:20	4.8	32.2
5/28/2015	4	92	44.17105	-68.00452	3	10:03	50.8	00:20	5	32.27
5/28/2015	4	93	44.1896	-67.91645	3	11:36	44.7	00:20	5.4	32.34
5/28/2015	4	94	44.1478	-67.90198	3	12:44	52.2	00:20	5.5	32.65
5/29/2015	4	95	44.31758	-68.15727	2	08:02	30	00:20	4.8	31.88
5/29/2015	4	96	44.34533	-68.11455	2	09:13	33.4	00:20	4.8	31.9
5/29/2015	4	97	44.3017	-68.06657	2	10:32	33.1	00:20	4.7	31.89
5/29/2015	4	98	44.26763	-68.02318	2	12:08	36.8	00:20	4.6	32.01
5/29/2015	4	99	44.2273	-68.13418	2	14:16	35.8	00:20	4.7	31.24
6/1/2015	5	100	44.2206	-67.91557	3	10:14	42.9	00:20	5.6	32.52
6/1/2015	5	101	44.323	-67.85372	2	12:24	32.3	00:17	5.5	31.98
6/1/2015	5	102	44.3578	-67.73745	2	14:18	33.4	00:20	5.3	32.16
6/1/2015	5	103	44.46445	-67.64192	1	16:21	16.8	00:20	5.7	31.78
6/2/2015	5	104	44.32967	-67.70738	3	08:23	39.8	00:20	5.3	32
6/2/2015	5	105	44.27317	-67.70163	3	09:51	45	00:20	5.3	32.24
6/2/2015	5	106	44.25012	-67.68033	4	11:11	61.7	00:20	6.4	33.3
6/5/2015	5	107	44.23682	-67.74373	4	12:34	61.2	00:20	6.1	33.01
6/2/2015	5	108	44.1992	-67.7426	4	14:00	74.1	00:20	6.4	33.35
6/3/2015	5	109	44.5228	-67.52783	1	07:05	11.7	00:17	5.7	31.61
6/3/2015	5	110	44.42347	-67.4744	3	08:39	45.8	00:20	5.3	31.96
6/3/2015	5	111	44.35215	-67.42058	4	10:22	62.7	00:20	5.8	32.63
6/3/2015	5	112	44.32687	-67.554	3	12:19	49.5	00:20	5.7	32.39
6/3/2015	5	113	44.33717	-67.62053	3	13:34	43.3	00:20	5.5	32.27
6/3/2015	5	114	44.38312	-67.55642	3	15:13	45.6	00:20	5.4	32.12
6/4/2015	5	115	44.49182	-67.44165	2	07:37	32.1	00:20	5.2	31.82
6/4/2015	5	116	44.42985	-67.19948	3	09:52	66.2	00:18	5.5	32.09
6/4/2015	5	117	44.40365	-67.17393	3	11:05	64.5	00:18	6.5	33.13
6/4/2015	5	118	44.3669	-67.17998	4	12:19	87	00:20	7.6	33.94
6/4/2015	5	119	44.50138	-67.28683	3	14:31	39.9	00:16	5.3	32.05
6/4/2015	5	120	44.52757	-67.30727	2	15:41	35	00:16	5	31.79
6/5/2015	5	121	44.60663	-67.36553	1	08:28	10.7	00:20	5.1	31.72

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
6/5/2015	5	122	44.58498	-67.30383	2	10:24	28.8	00:15	5	31.72
6/5/2015	5	123	44.52617	-67.44842	2	12:32	27.1	00:20	5.2	31.76

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 2015										
9/28/2015	1	1	42.95777	-70.46697	08:37	3	54.3	00:20	6.1	32.53
9/28/2015	1	2	42.93598	-70.52715	10:13	3	46	00:20	7.3	32.48
9/28/2015	1	3	42.90777	-70.6421	12:13	2	34	00:18	8.3	32.31
9/28/2015	1	4	42.93183	-70.74577	13:43	1	16.1	00:20	9.9	32.15
9/28/2015	1	5	42.9867	-70.67583	15:04	1	15.6	00:18	10.7	32.16
9/29/2015	1	6	43.025	-70.57028	07:59	2	28.3	00:18	8.7	32.46
9/29/2015	1	7	43.08215	-70.45065	09:55	3	43.2	00:16	7.9	32.66
9/29/2015	1	8	43.06782	-70.42472	10:57	3	49.8	00:20	6.9	32.7
9/29/2015	1	9	43.08562	-70.35065	12:23	4	57.9	00:20	6.2	32.79
9/29/2015	1	10	43.0019	-70.4103	13:47	4	59.4	00:20	5.5	32.49
9/30/2015	1	11	43.1228	-70.3851	08:53	3	50.5	00:20	8.1	32.61
9/30/2015	1	12	43.16457	-70.44707	10:27	2	33	00:12	9.3	32.55
10/1/2015	1	13	43.2652	-70.25262	09:24	3	55.1	00:19	8.6	32.86
10/1/2015	1	14	43.26653	-70.18188	11:09	4	68.1	00:20	7.8	32.94
10/1/2015	1	15	43.32493	-70.19433	13:04	4	55.8	00:20	8.5	32.87
10/1/2015	1	16	43.46863	-70.07708	16:14	4	61.8	00:20	8.1	32.95
10/2/2015	1	17	43.51513	-70.22223	09:04	2	24.2	00:13	12.5	32.04
10/2/2015	1	18	43.53237	-70.26228	10:24	1	13.5	00:20	11.9	32.16
10/2/2015	1	19	43.55288	-70.28105	11:46	1	3.9	00:18	14.2	31.51
10/5/2015	2	20	43.6921	-70.214	12:31	1	2.5	00:20	13.5	30.76
10/6/2015	2	21	43.5411	-70.0113	07:50	3	53.6	00:15	9.2	32.81
10/6/2015	2	22	43.45792	-69.91638	09:48	4	77	00:20	6.6	33.31
10/6/2015	2	23	43.5012	-69.92627	11:08	4	63.8	00:20	8.2	32.99
10/6/2015	2	24	43.59737	-69.8426	12:51	3	46.2	00:16	9.4	32.76
10/7/2015	2	25	43.72273	-69.5511	07:38	3	50.2	00:14	9.6	32.71
10/7/2015	2	26	43.61318	-69.41572	09:39	4	80.3	00:20	7.8	32.96
10/7/2015	2	27	43.58752	-69.55592	11:26	4	77.3	00:20	7.7	33.3
10/7/2015	2	28	43.55497	-69.62072	12:41	4	78.9	00:20	7.7	33.24
10/8/2015	2	29	43.7881	-69.6183	07:48	1	21.8	00:19	11	32.32
10/8/2015	2	30	43.71432	-69.73897	10:03	1	17.5	00:15	11.9	32.32
10/8/2015	2	31	43.7471	-69.73915	11:34	1	10	00:20	12.8	31.9
10/8/2015	2	32	43.69937	-69.68463	13:05	2	37.4	00:19	10.9	32.57
10/8/2015	2	33	43.73298	-69.69993	14:05	2	31.7	00:20	10.8	32.58
10/9/2015	2	34	43.80708	-69.49535	07:58	3	42.7	00:20	9.2	32.68
10/9/2015	2	35	43.74015	-69.34357	11:05	3	52.1	00:20	10.7	32.89
10/12/2015	3	36	43.7692	-69.21598	09:26	3	47.5	00:20	10.6	33.01
10/12/2015	3	37	43.80813	-69.11517	11:04	3	44.3	00:20	10.6	32.84
10/12/2015	3	38	43.81598	-69.06687	12:34	3	45	00:20	10.9	32.96
10/12/2015	3	39	43.8726	-69.07715	14:00	2	32.9	00:20	10.8	32.93

Appendix B
Individual Station Descriptors for Start of Tow

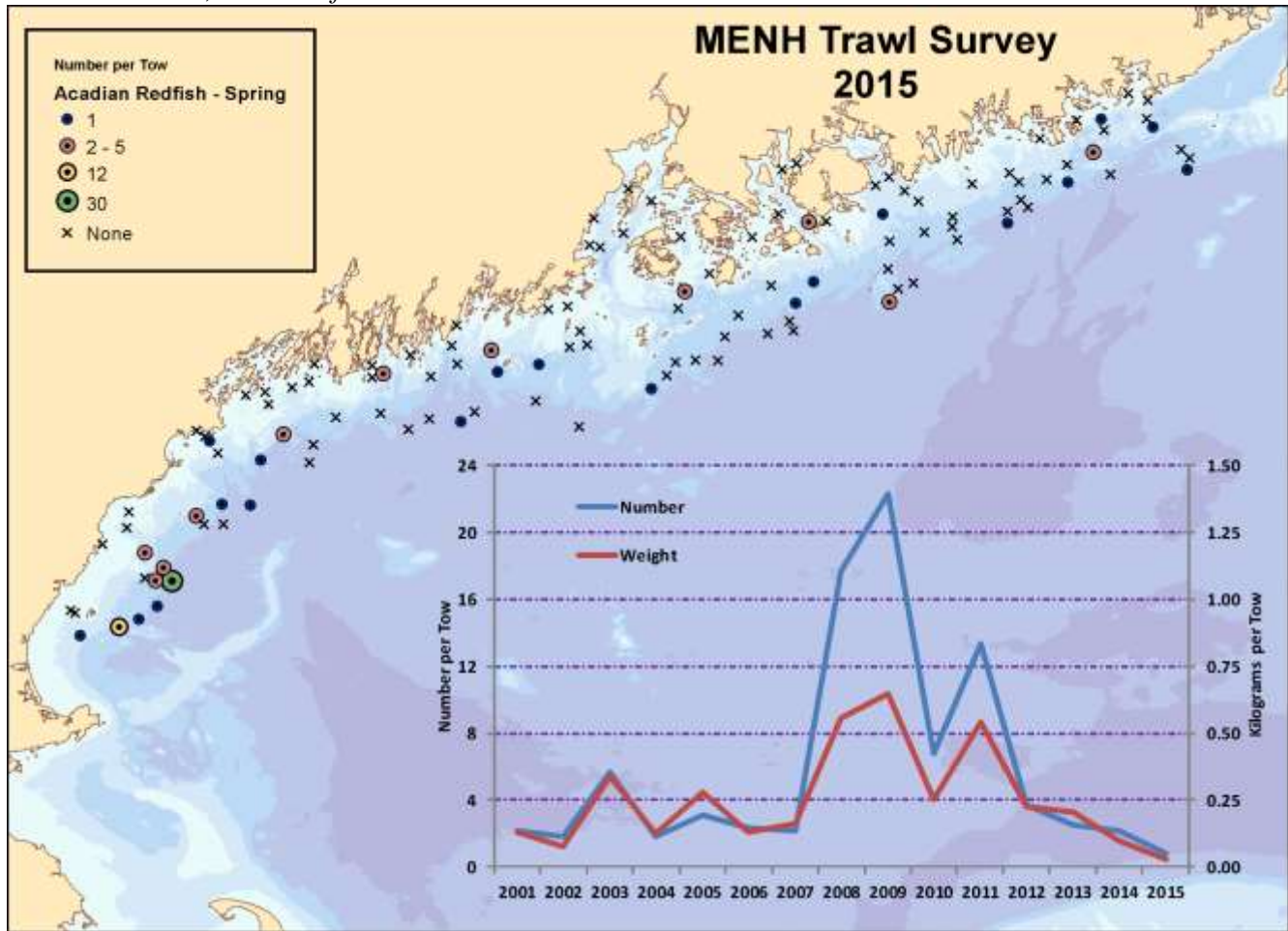
DATE	REGION	TOWID	LAT decimal degrees	LON decimal degrees	Stratum	Time	Tow Duration	Depth (FA)	Temp C °	Salinity ppt
10/12/2015	3	40	43.93213	-69.128	15:42	1	18.9	00:20	11.5	32.56
10/13/2015	3	41	44.1768	-68.93932	08:22	2	29.9	00:20	12.3	32.08
10/13/2015	3	42	44.26823	-68.85942	09:47	1	14.4	00:20	12.4	32.28
10/13/2015	3	43	44.31595	-68.92048	12:21	1	11.7	00:15	12.6	32.12
10/13/2015	3	44	44.2263	-69.03887	14:05	1	7	00:15	12.8	31.87
10/13/2015	3	45	44.12993	-69.05502	15:17	1	17.9	00:18	12.5	32.04
10/14/2015	3	46	43.58218	-69.0424	10:38	4	72.3	00:20	9.6	32.93
10/14/2015	3	47	43.5497	-69.07025	11:50	4	74.9	00:20	8.6	33.39
10/14/2015	3	48	43.60442	-69.06742	13:09	4	68	00:20	9.8	33.43
10/15/2015	3	49	43.93615	-68.77343	07:53	3	44.1	00:20	11.8	33.07
10/15/2015	3	50	43.76653	-68.7835	10:07	3	54.6	00:15	10.6	38.77
10/15/2015	3	51	43.91283	-68.75557	15:20	3	50.4	00:20	11.8	33.09
10/16/2015	3	52	43.98758	-68.75225	08:44	2	36.3	00:15	11.9	33.11
10/16/2015	3	53	44.16527	-68.76067	11:14	2	29.5	00:13	12.4	32.13
10/16/2015	3	54	44.15997	-68.79008	12:23	1	11.8	00:20	12.6	31.62
10/19/2015	4	55	43.86558	-68.49002	10:00	4	69.2	00:20	10	31.19
10/19/2015	4	56	43.85985	-68.41665	11:32	4	68.7	00:20	9.6	33.08
10/19/2015	4	57	43.90125	-68.41797	13:04	4	60.6	00:20	10.1	33.68
10/20/2015	4	58	44.37607	-68.53143	10:27	1	15.2	00:20	12.2	32.07
10/20/2015	4	59	44.3571	-68.45653	11:47	1	16.6	00:20	12.5	32.28
10/20/2015	4	60	44.38297	-68.41975	13:06	1	13.4	00:20	12.3	31.86
10/21/2015	4	61	44.01885	-68.03863	11:52	4	85.2	00:20	8.9	33.91
10/21/2015	4	62	44.06005	-68.12505	13:28	3	54	00:20	10.4	33.44
10/22/2015	4	63	44.17703	-68.04043	09:28	3	47	00:20	11.4	33.28
10/22/2015	4	64	44.17253	-68.00598	10:57	3	48.7	00:20	11.4	33.27
10/22/2015	4	65	44.18487	-67.91895	12:32	3	44.9	00:11	11.2	33.47
10/23/2015	4	66	44.27085	-68.13278	09:05	3	35.5	00:20	11.5	33.1
10/23/2015	4	67	44.30212	-68.0702	11:02	2	32.3	00:20	11.5	33.05
10/23/2015	4	68	44.26948	-68.0238	12:48	2	35.6	00:20	11.4	33.13
10/23/2015	4	69	44.33487	-68.11618	14:29	2	30.4	00:20	11.5	33.03
10/26/2015	5	70	44.22	-67.91622	09:26	3	42.4	00:20	11.2	33.36
10/26/2015	5	71	44.46923	-67.79635	13:46	1	14.6	00:16	11	32.83
10/26/2015	5	72	44.50125	-67.70075	15:25	1	5.5	00:15	10.5	32.54
10/27/2015	5	73	44.33673	-67.70512	09:14	3	39.6	00:13	11.1	33.22
10/27/2015	5	74	44.25113	-67.69343	11:15	4	63.5	00:20	10.5	33.05
10/27/2015	5	75	44.20088	-67.74083	12:43	4	70	00:21	10.6	33.83
10/27/2015	5	76	44.22733	-67.75467	14:07	4	74.4	00:20	10.5	33.88
10/28/2015	5	77	44.37913	-67.56573	08:55	3	46.6	00:17	11	32.96
10/28/2015	5	78	44.32805	-67.56002	10:49	3	49.4	00:15	10.9	33.33
10/28/2015	5	79	44.33345	-67.62823	12:03	3	42.8	00:15	11.1	33.14
10/28/2015	5	80	44.41215	-67.58145	13:53	2	36.8	00:11	11	32.91

Appendix C

SELECTED SPECIES

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

Acadian redfish, *Sebastes fasciatus*



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

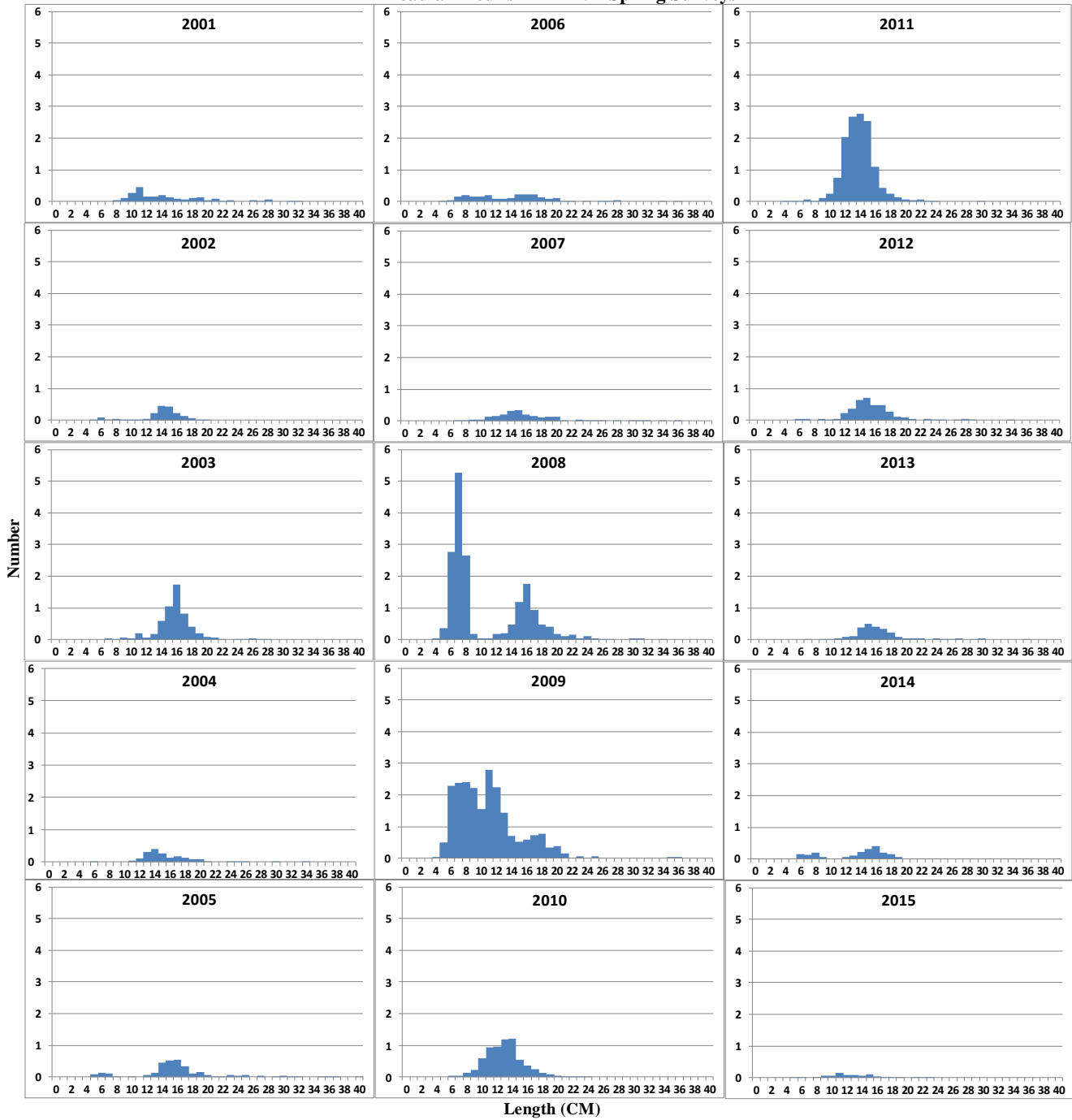
SPRING

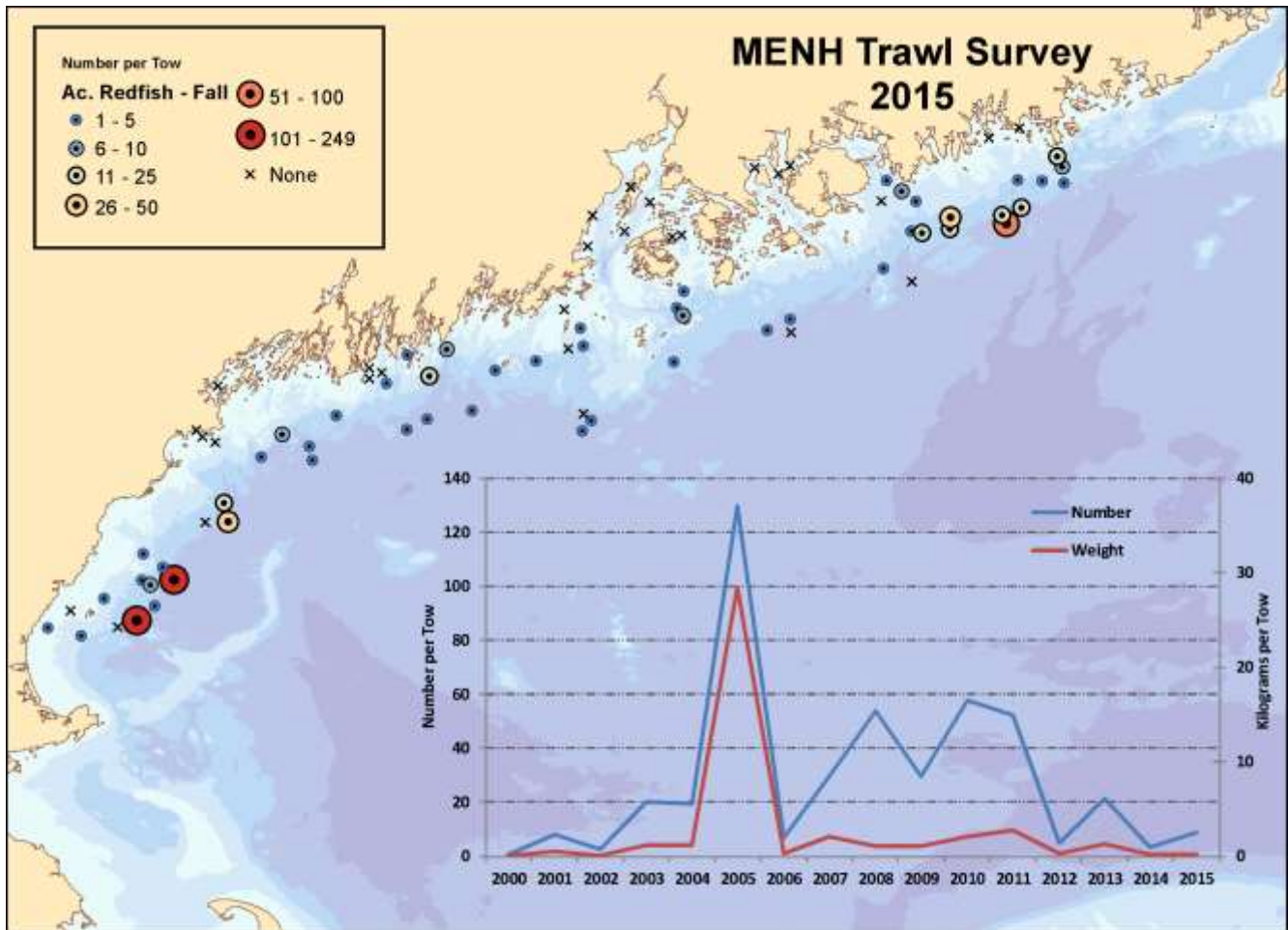
Stratified Mean

	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
2014	2.15	1.20	0.10	1.15
2015	0.79	0.95	0.03	0.89

Appendix C

Acadian Redfish - MENH Spring Surveys





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

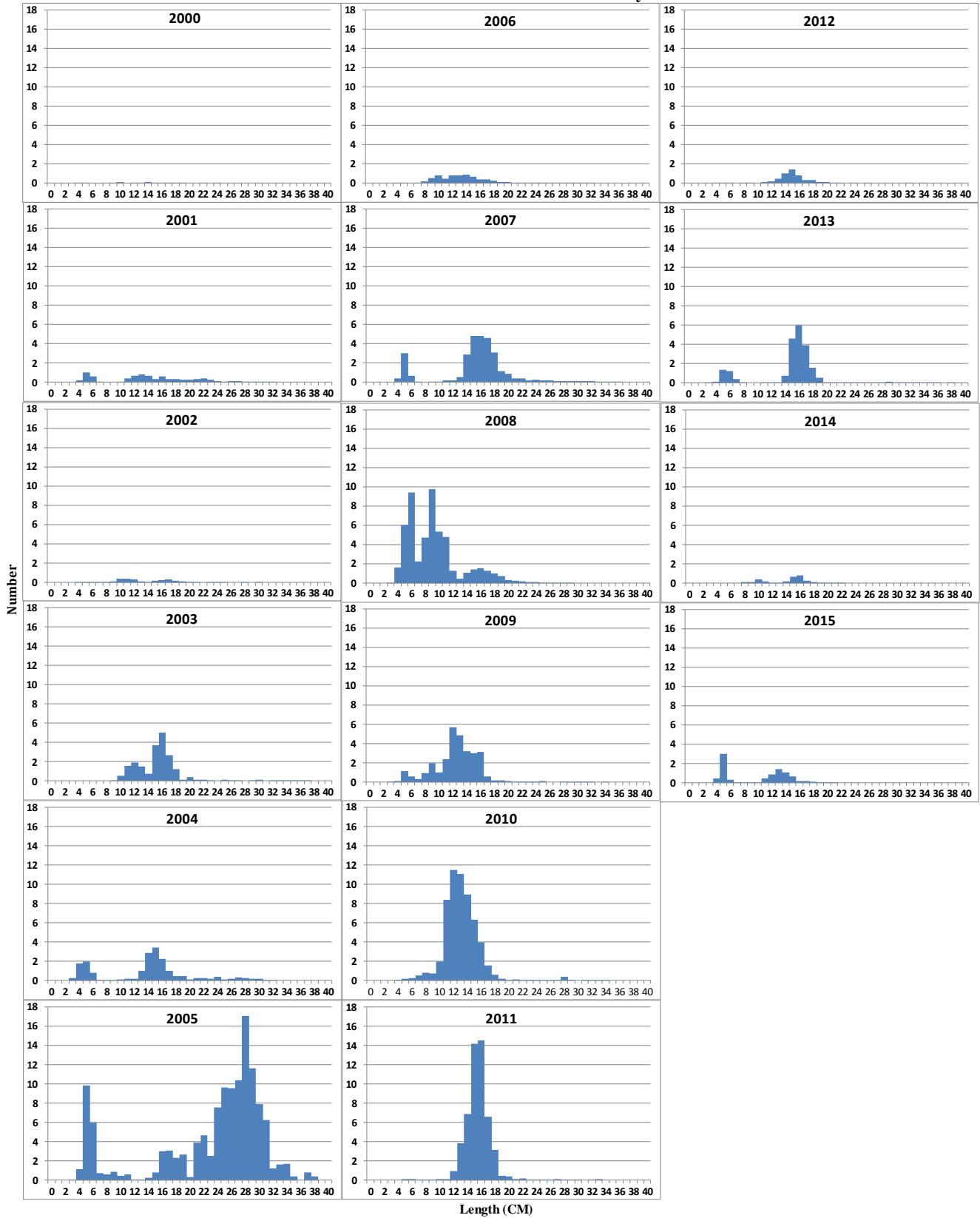
FALL

Stratified Mean

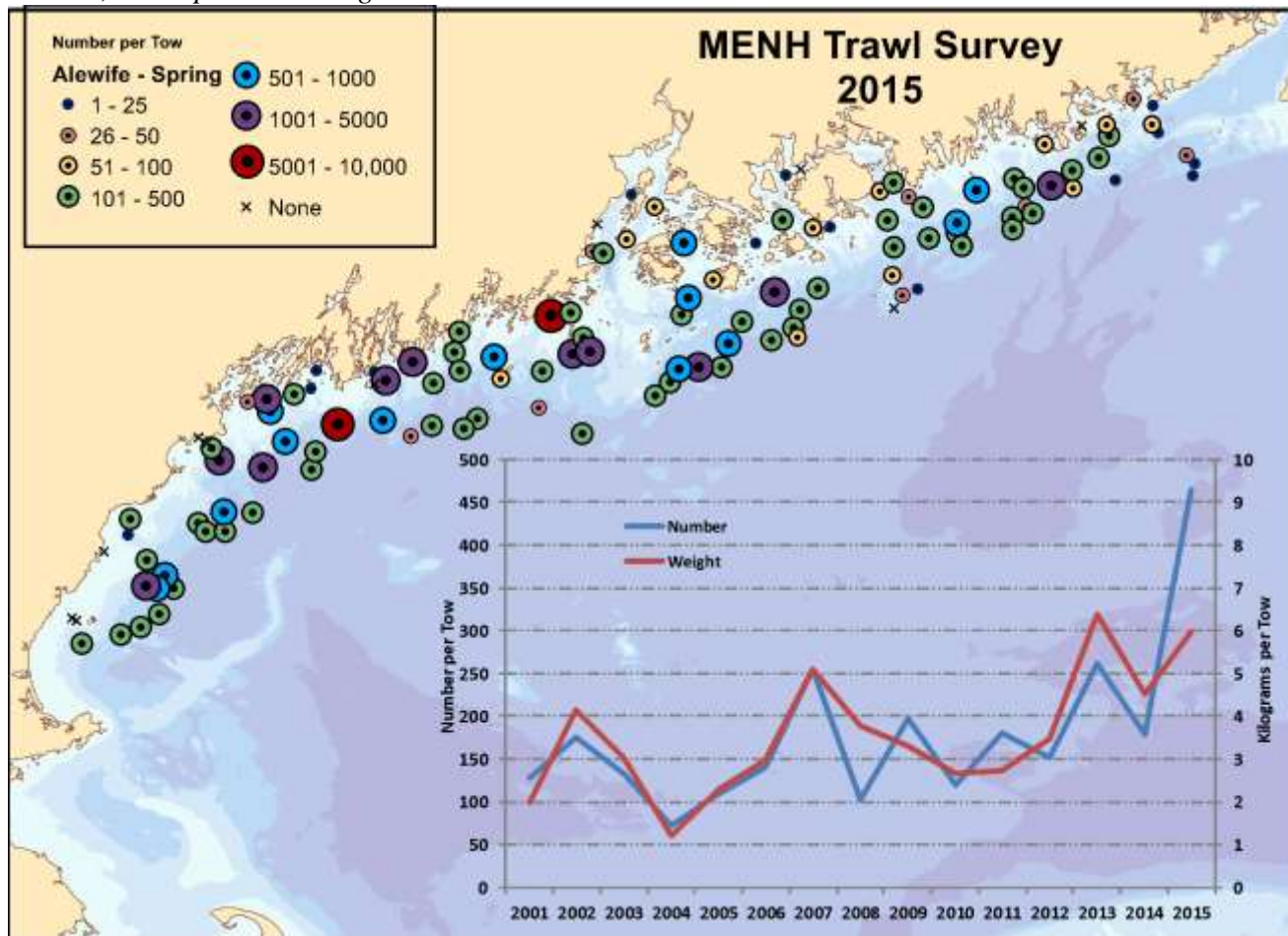
	Number		Weight	
	Mean	CV	Mean	CV
2000	0.65	0.72	0.03	0.74
2001	7.95	0.84	0.54	1.50
2002	2.70	0.93	0.07	1.60
2003	20.07	1.53	1.19	1.28
2004	19.42	0.50	1.22	0.65
2005	129.96	1.41	28.50	1.70
2006	6.95	0.61	0.32	0.58
2007	29.62	0.84	2.07	0.63
2008	53.93	0.45	1.06	0.52
2009	29.73	1.16	1.03	1.21
2010	57.78	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
2014	3.17	1.05	0.17	1.09
2015	8.91	0.72	0.19	1.25

Appendix C

Acadian Redfish - MENH Fall Surveys



Alewife, *Alosa pseudoharengus*

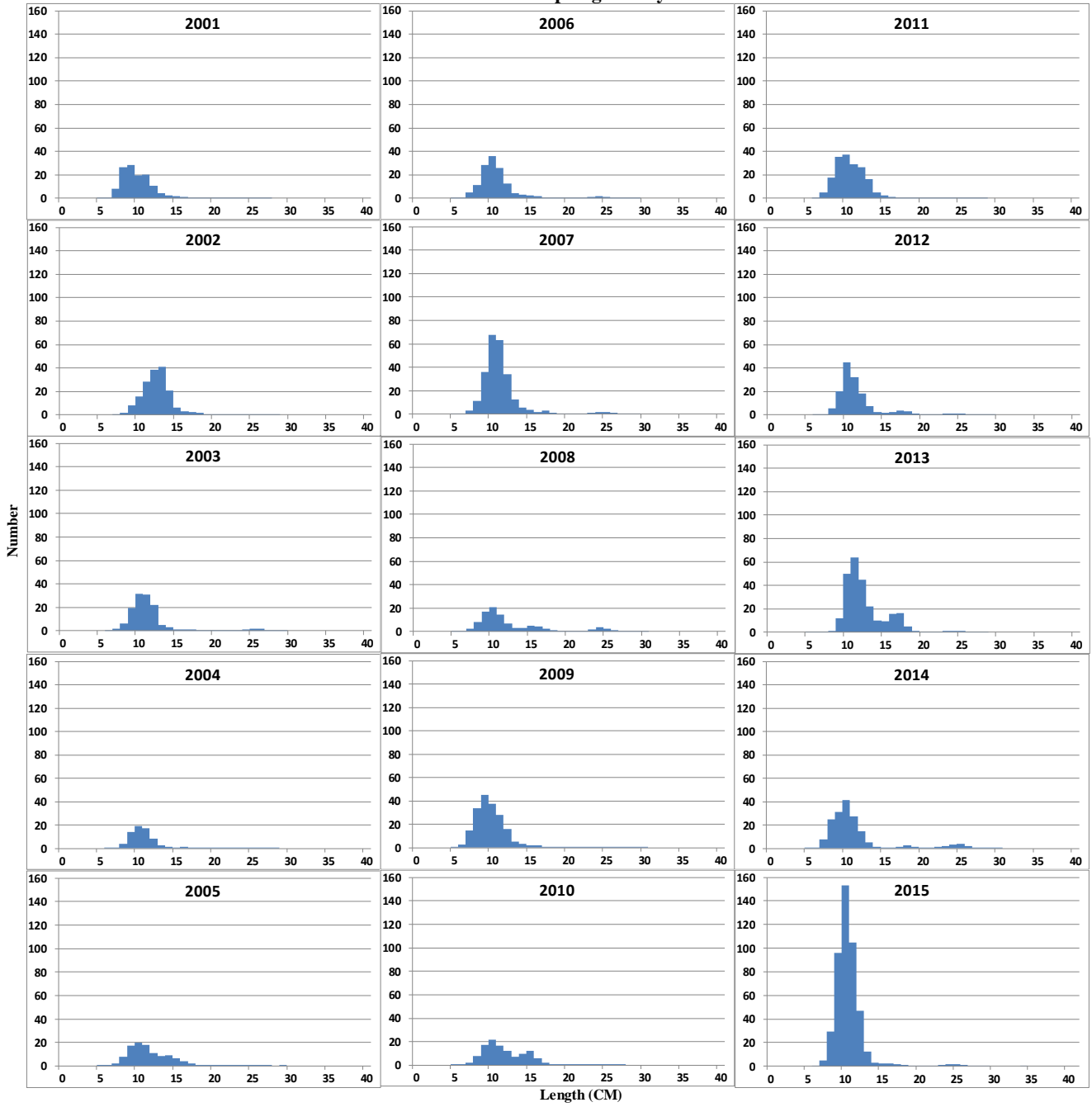


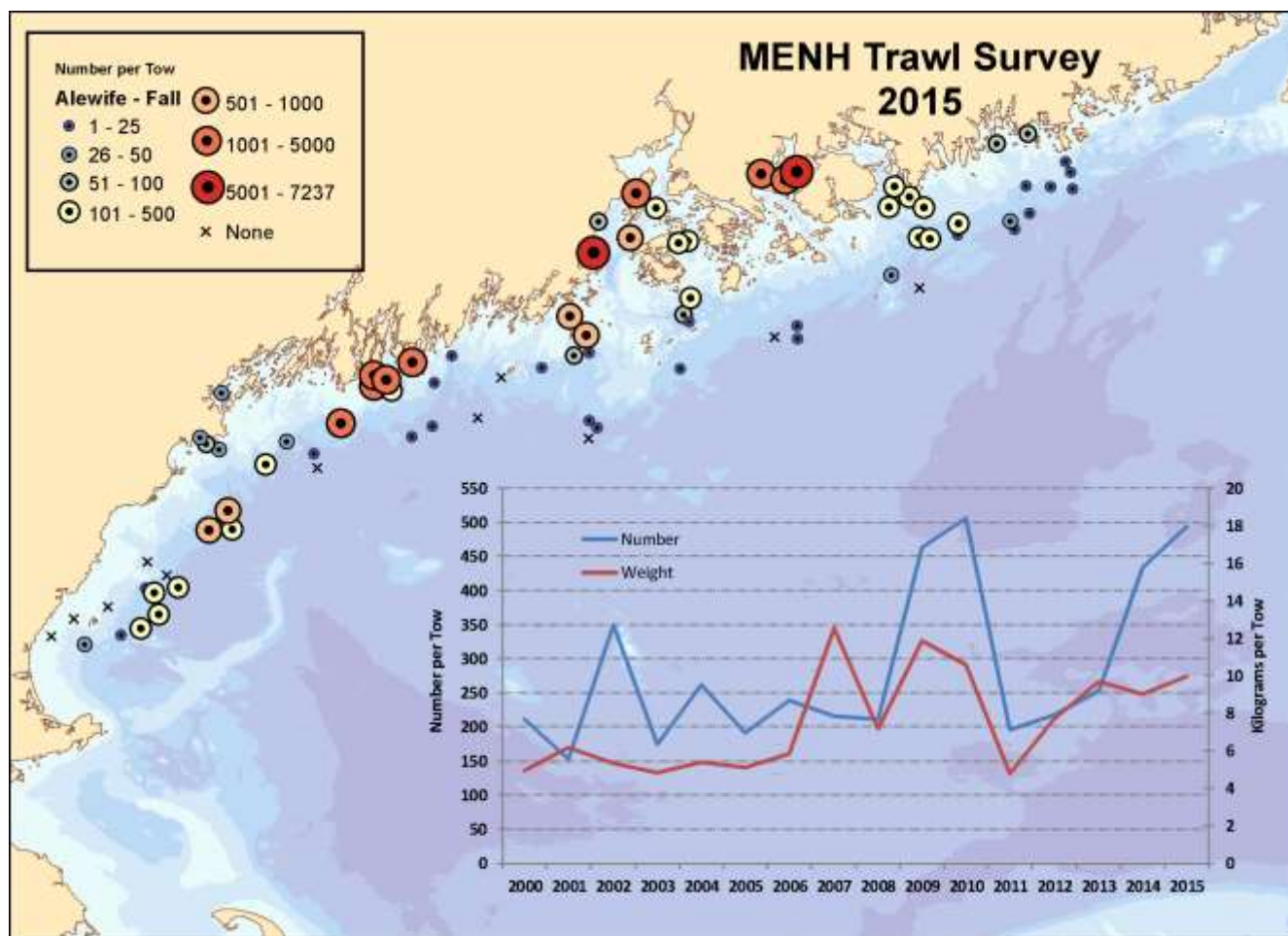
Means and coefficients of variance for the graph overlain on the above map
no fixed stations
for Alewife, all strata
SPRING

	Stratified Mean			
	Number Mean	CV	Weight Mean	CV
2001	127.26	0.52	1.97	0.47
2002	175.75	0.64	4.15	0.45
2003	132.75	0.41	3.05	0.43
2004	72.67	0.28	1.20	0.24
2005	109.69	0.24	2.29	0.24
2006	140.15	0.28	2.97	0.29
2007	255.32	0.64	5.10	0.47
2008	101.86	0.24	3.78	0.69
2009	196.87	0.42	3.30	0.33
2010	118.67	0.39	2.66	0.36
2011	181.09	0.38	2.74	0.28
2012	152.02	0.39	3.47	0.26
2013	261.24	0.88	6.39	0.74
2014	178.06	0.46	4.53	0.46
2015	464.59	0.55	5.97	0.45

Appendix C

Alewife - MENH Spring Surveys





Means and coefficients of variance for the graph overlain on the above map
no fixed
stations
for Alewife, all strata

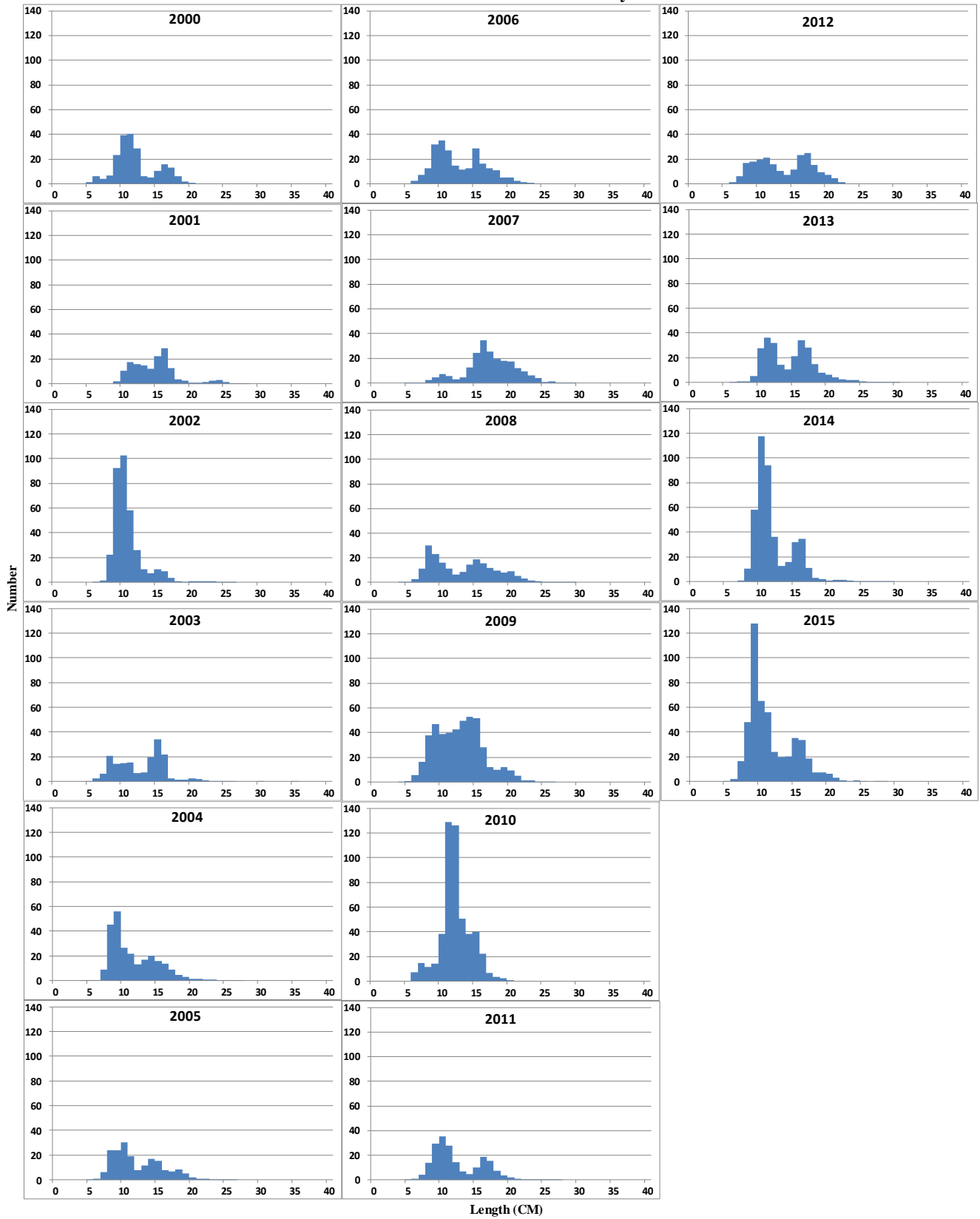
FALL

Stratified Mean

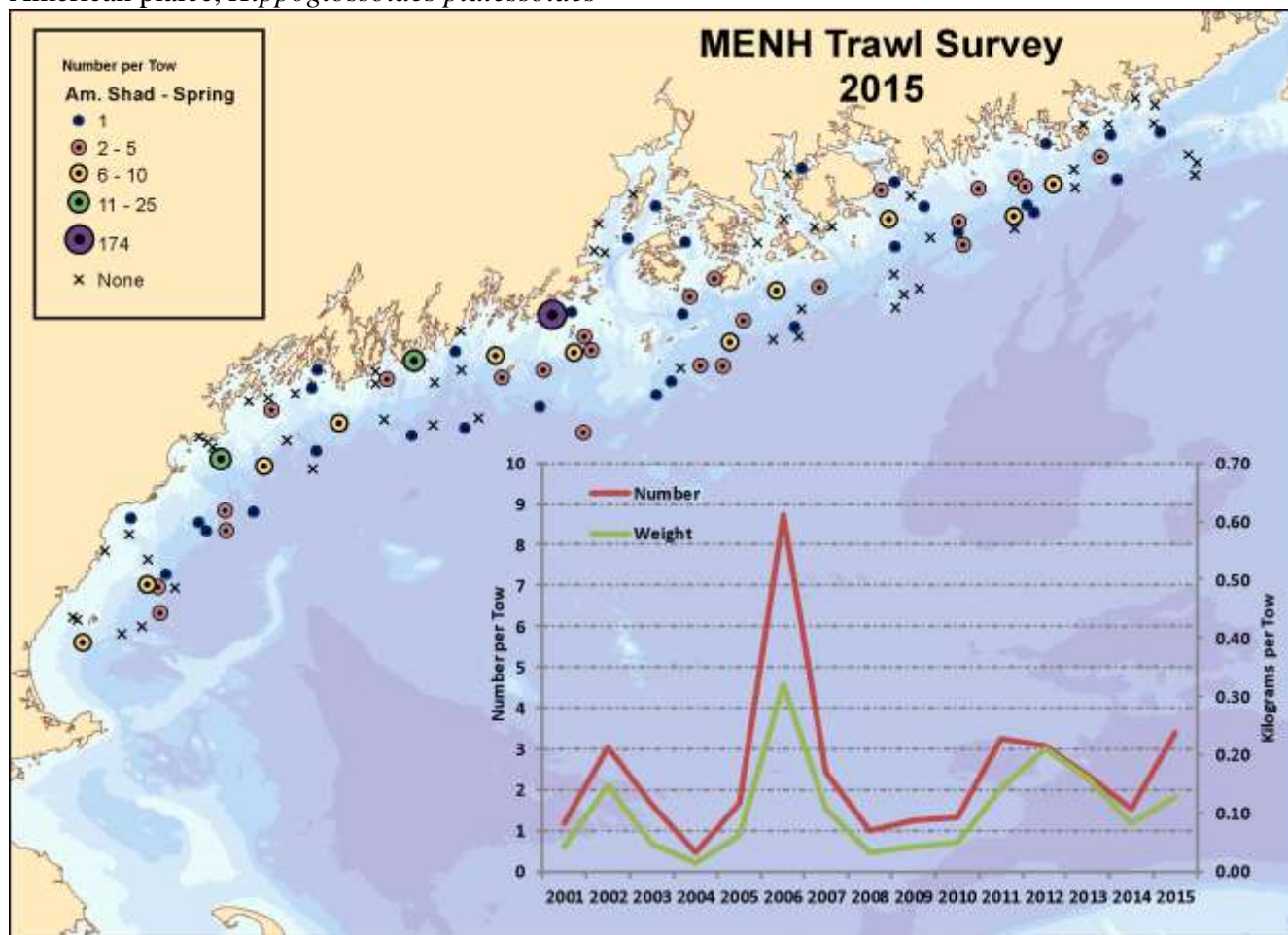
	Number		Weight	
	Mean	CV	Mean	CV
2000	210.69	0.71	4.94	0.66
2001	153.29	0.93	6.18	0.87
2002	349.73	0.79	5.36	0.56
2003	174.43	0.50	4.85	0.74
2004	261.39	0.45	5.36	0.23
2005	190.51	0.24	5.10	0.21
2006	239.46	0.48	5.85	0.50
2007	215.24	0.41	12.52	0.53
2008	211.32	0.36	7.18	0.23
2009	463.63	0.51	11.85	0.27
2010	506.39	0.45	10.58	0.41
2011	196.28	0.44	4.78	0.26
2012	216.86	0.34	7.66	0.33
2013	252.91	0.37	9.67	0.27
2014	434.19	0.35	9.05	0.34
2015	493.35	0.42	9.98	0.35

Appendix C

Alewife - MENH Fall Survey



American plaice, *Hippoglossoides platessoides*



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

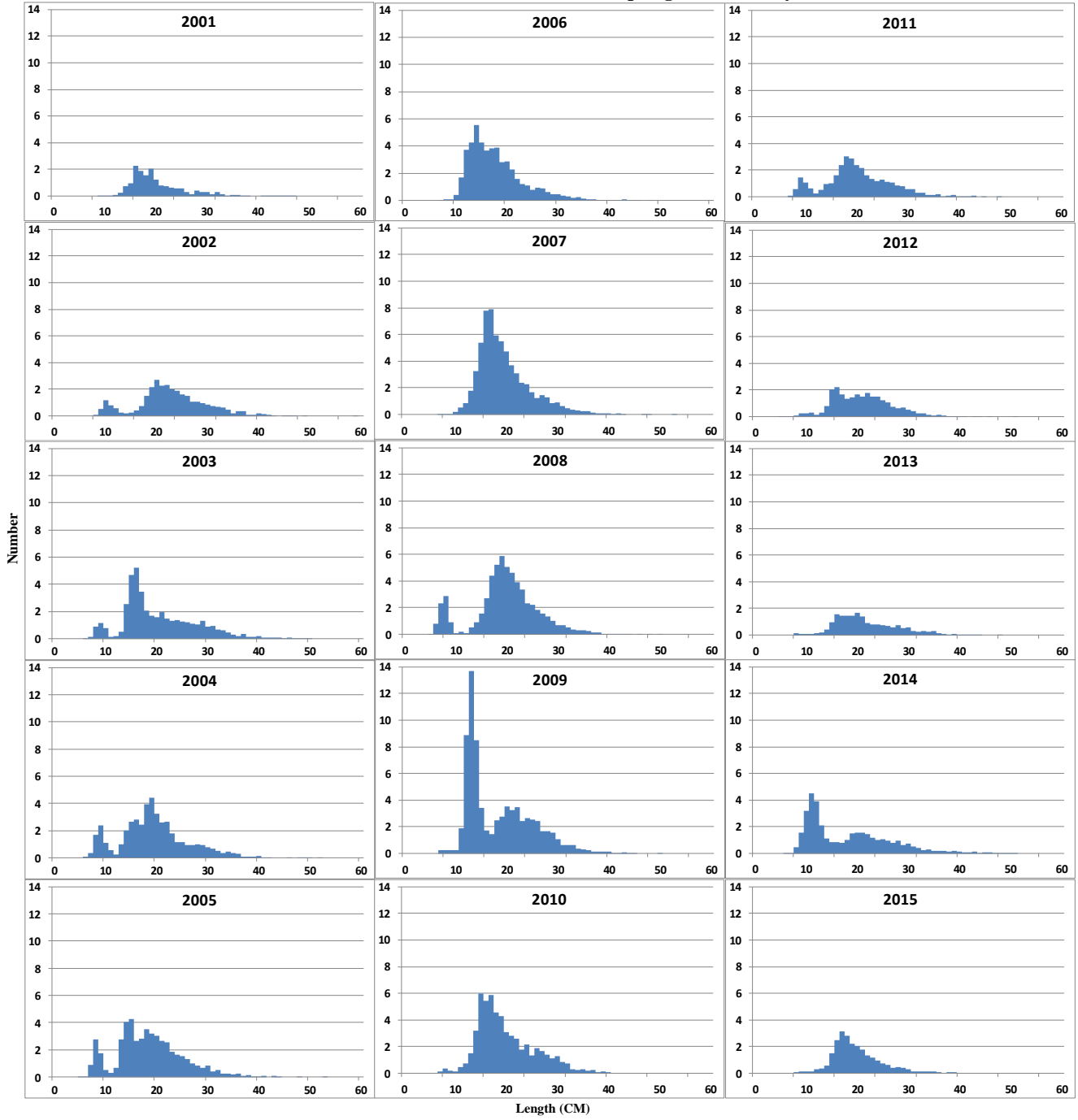
SPRING

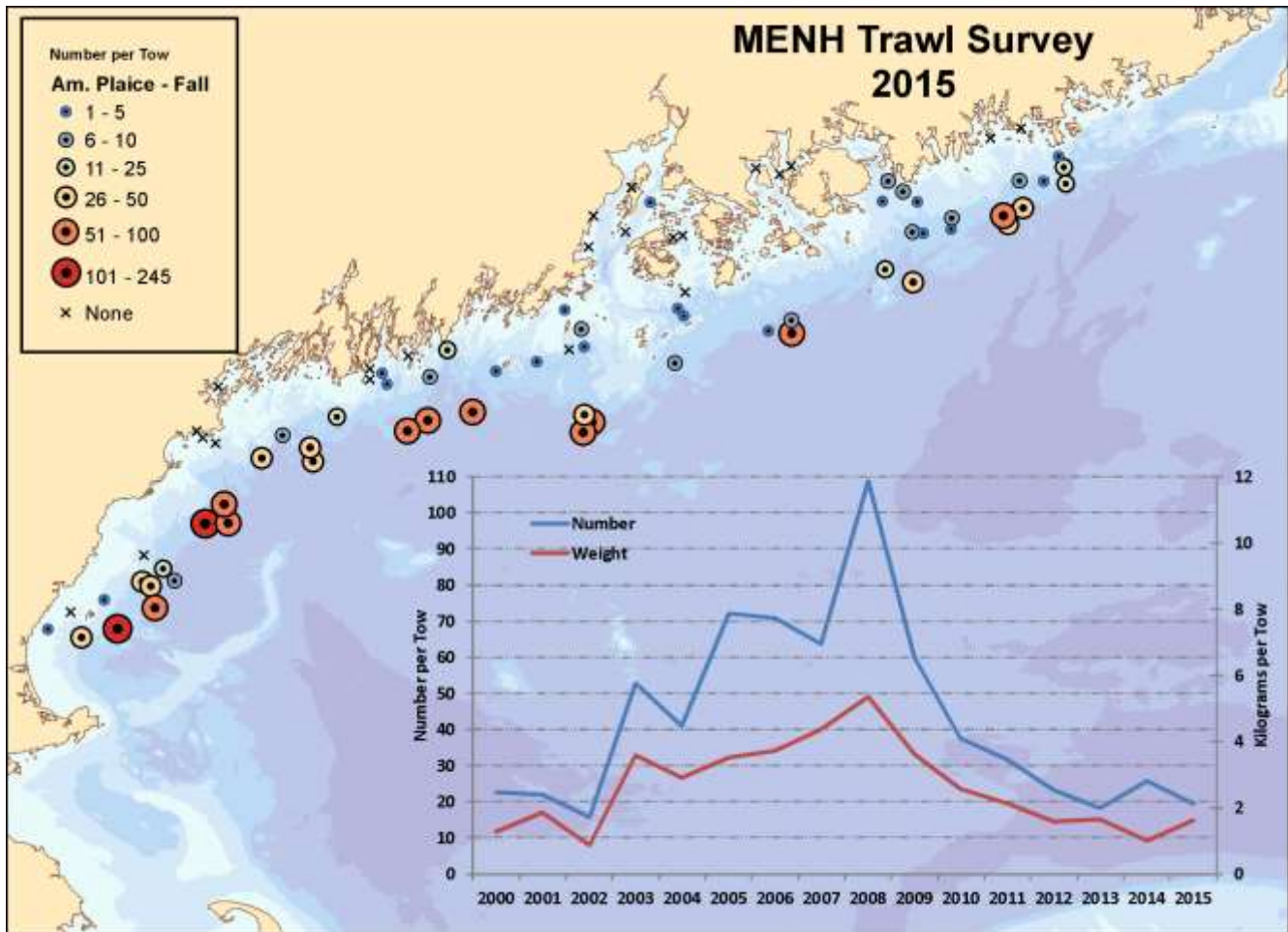
Stratified Mean

	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
2014	36.88	0.29	3.04	0.26
2015	25.40	0.22	1.89	0.23

Appendix C

American Plaice - MENH Spring Trawl Survey





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

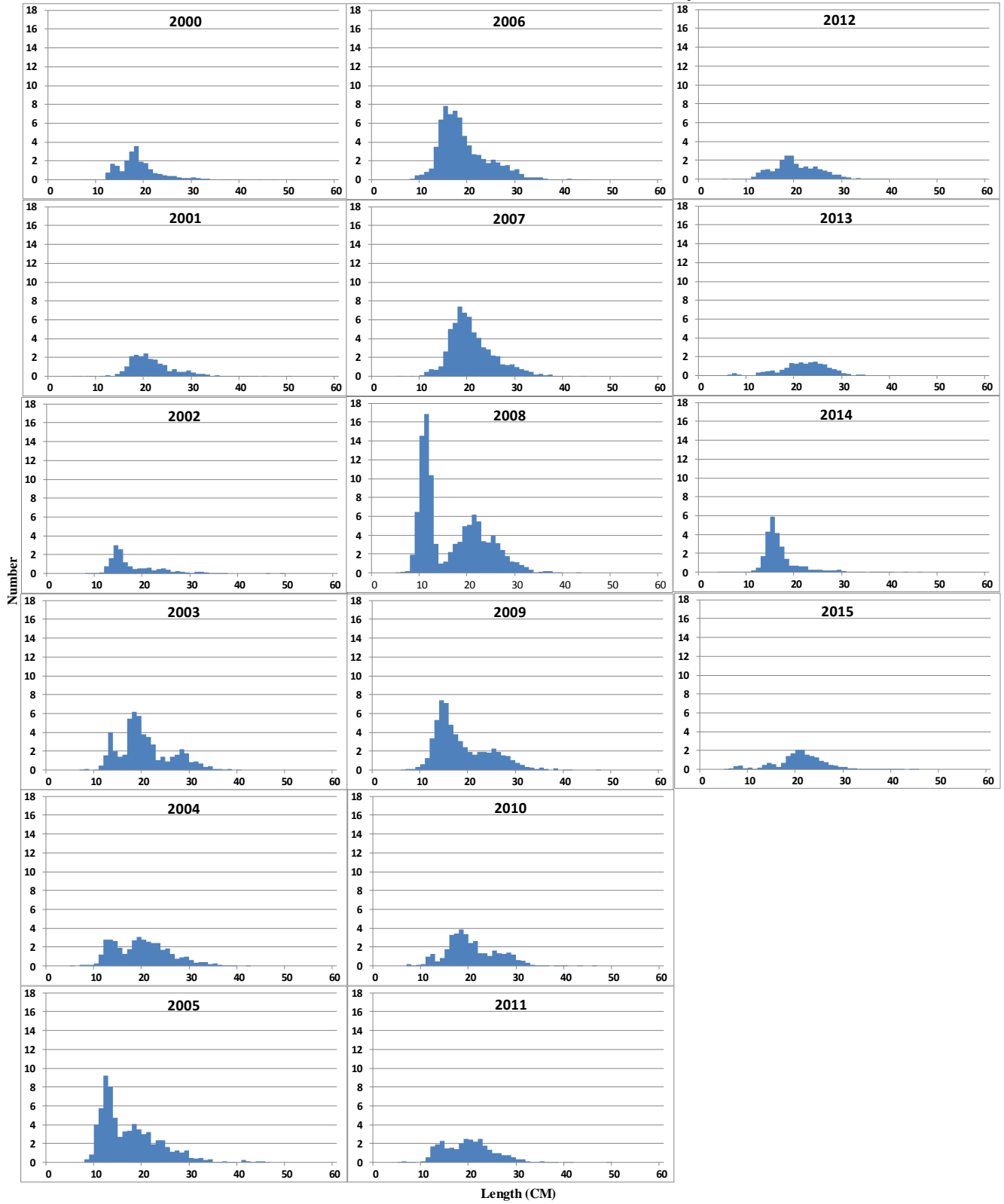
FALL

Stratified Mean

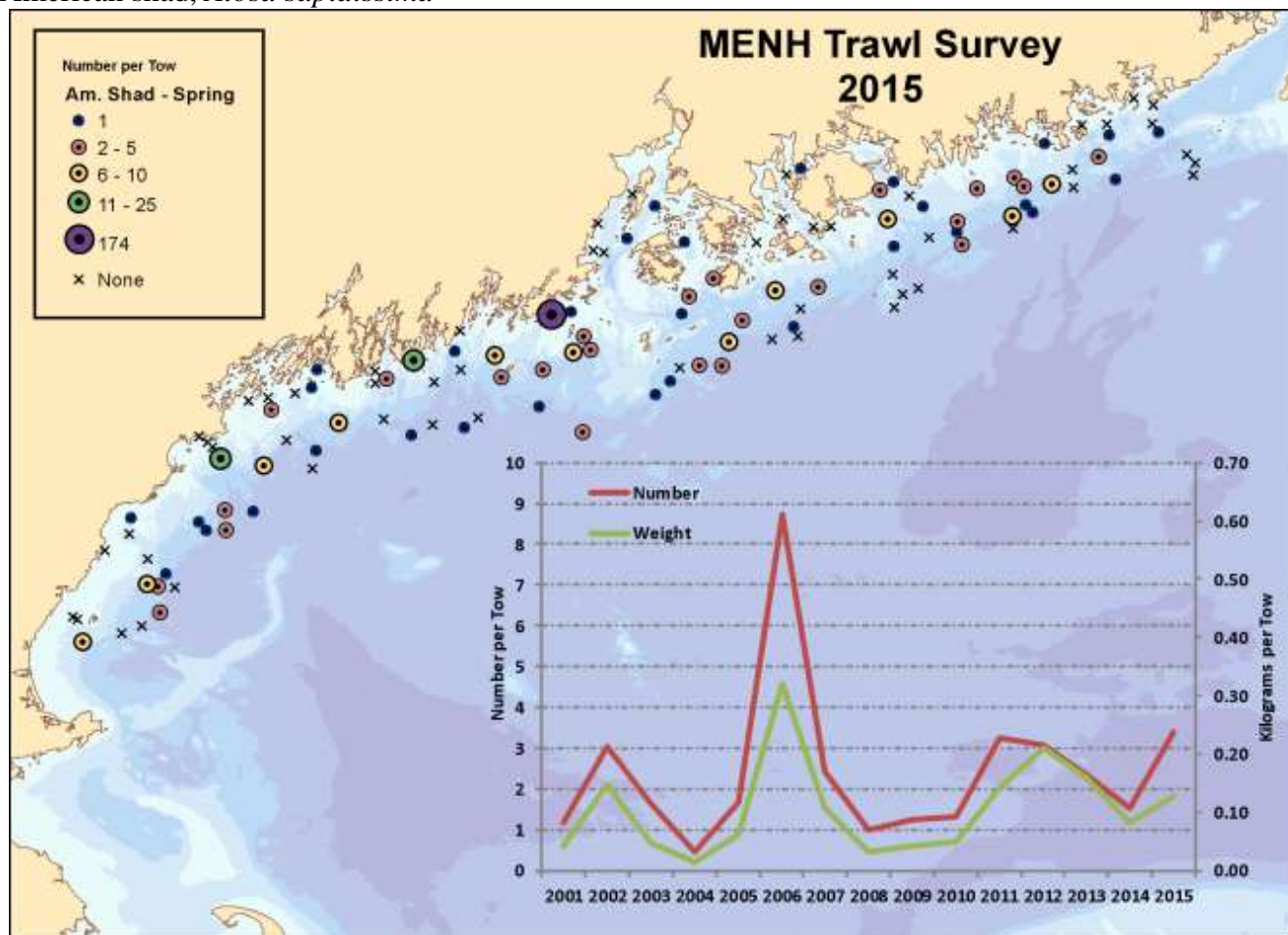
	Number		Weight	
	Mean	CV	Mean	CV
2000	22.66	0.62	1.28	0.48
2001	21.96	0.23	1.85	0.25
2002	15.62	0.47	0.87	0.40
2003	52.82	0.23	3.60	0.18
2004	41.09	0.19	2.89	0.17
2005	72.08	0.23	3.53	0.15
2006	70.75	0.22	3.74	0.16
2007	63.60	0.26	4.38	0.21
2008	108.74	0.21	5.35	0.17
2009	59.88	0.23	3.61	0.19
2010	37.58	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
2014	25.70	0.31	1.01	0.44
2015	19.53	0.27	1.60	0.26

Appendix C

American Plaice - MENH Fall Trawl Survey



American shad, *Alosa sapidissima*

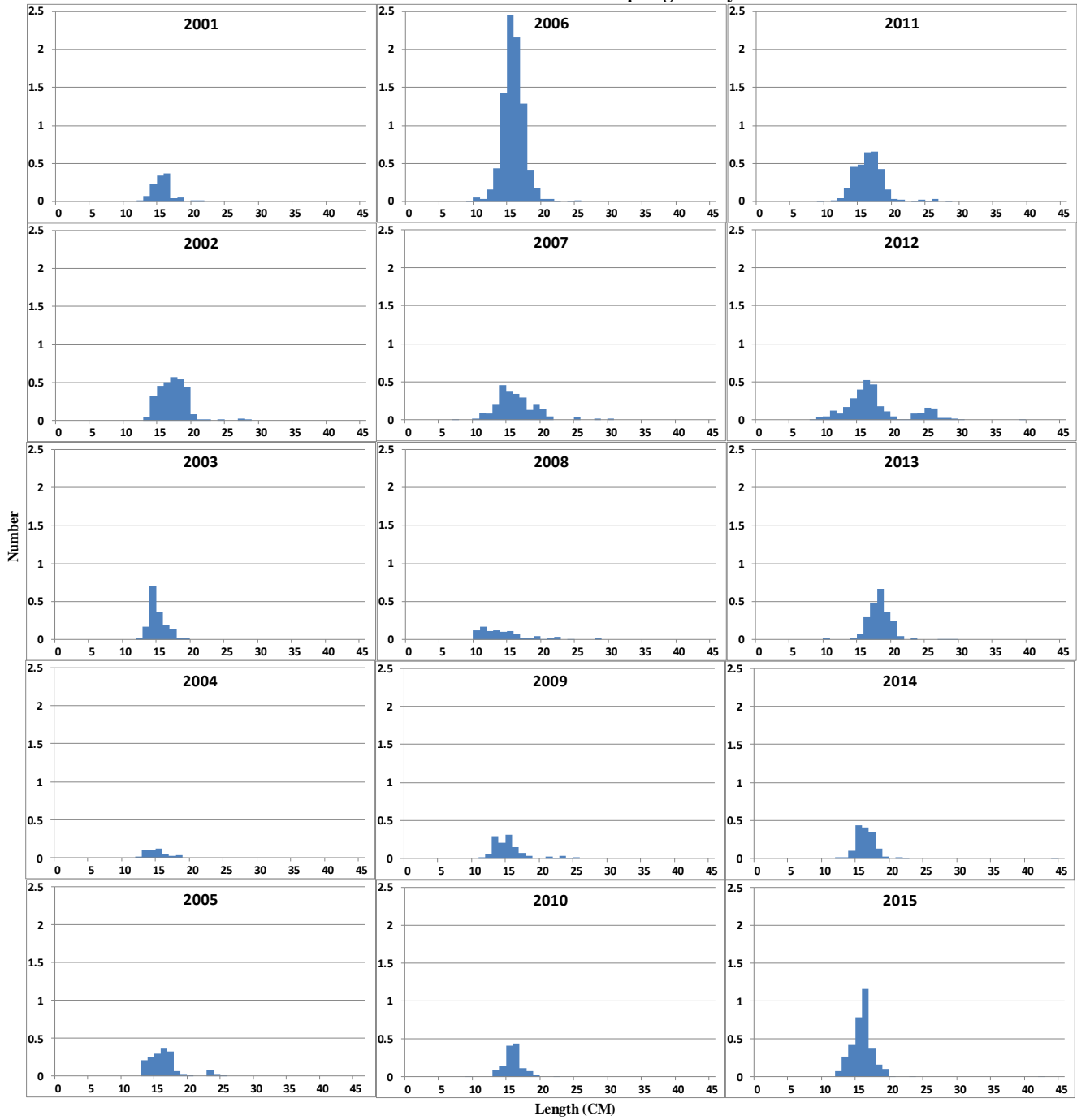


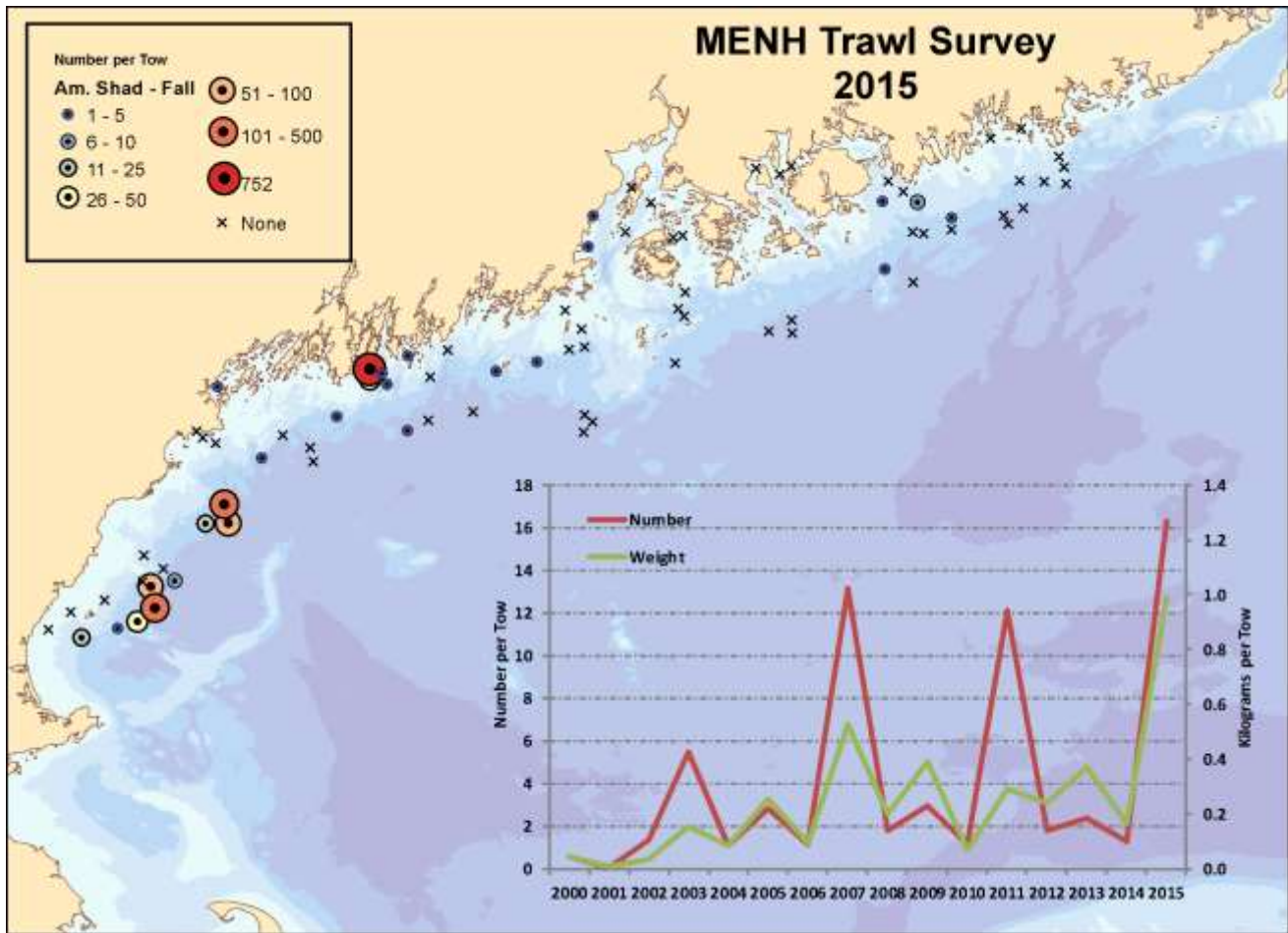
Means and coefficients of variance for the graph overlain on the above map
 fixed stations not included
 for shad, indices calculated for regions 1 through 5, strata 1 through 4
 SPRING

	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
2014	1.53	0.57	0.08	0.63
2015	3.38	1.06	0.13	0.96

Appendix C

American Shad - MENH Spring Surveys





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

for shad, indices calculated for regions 1 through 5, strata 1 through 4

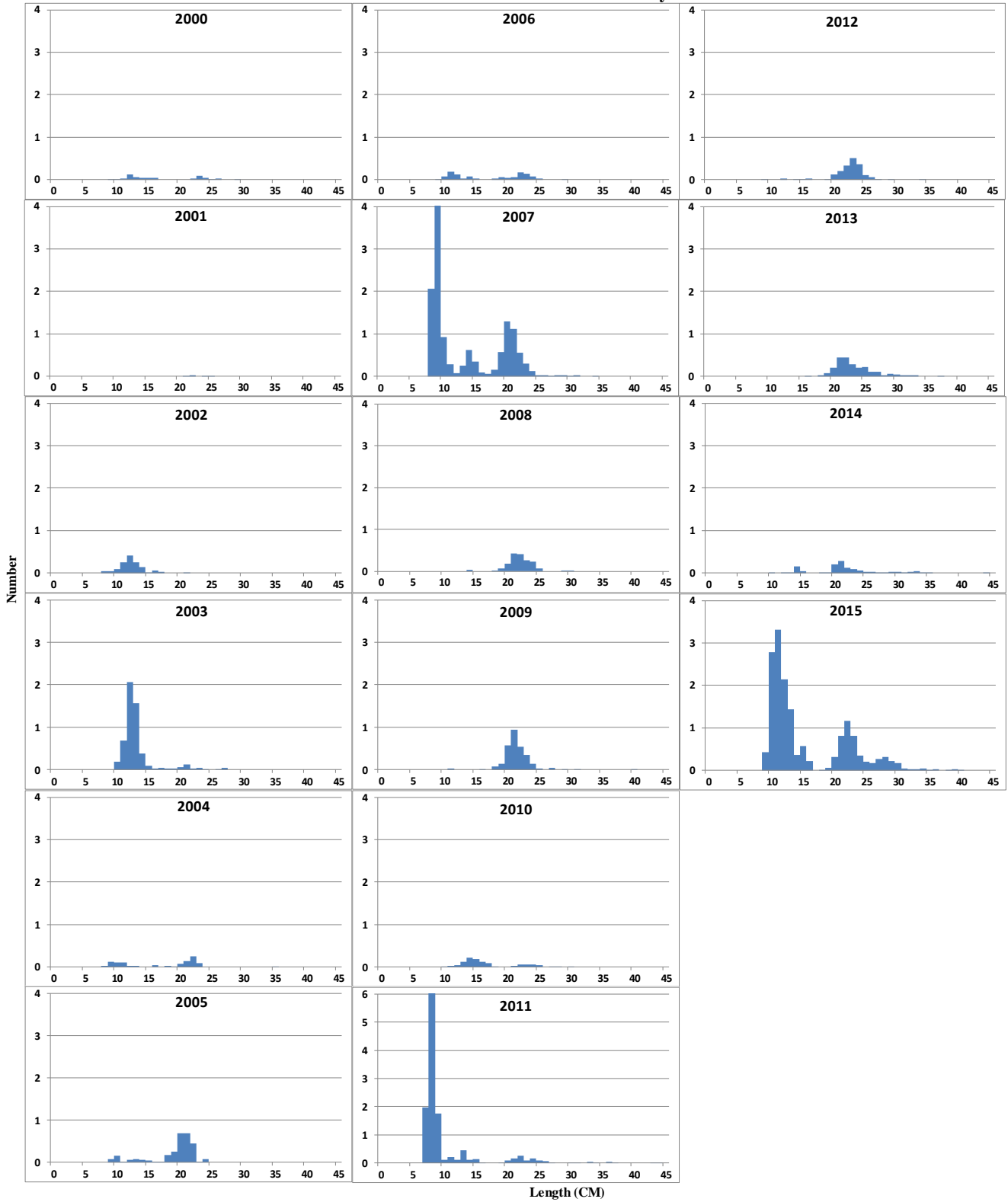
FALL

Stratified Mean

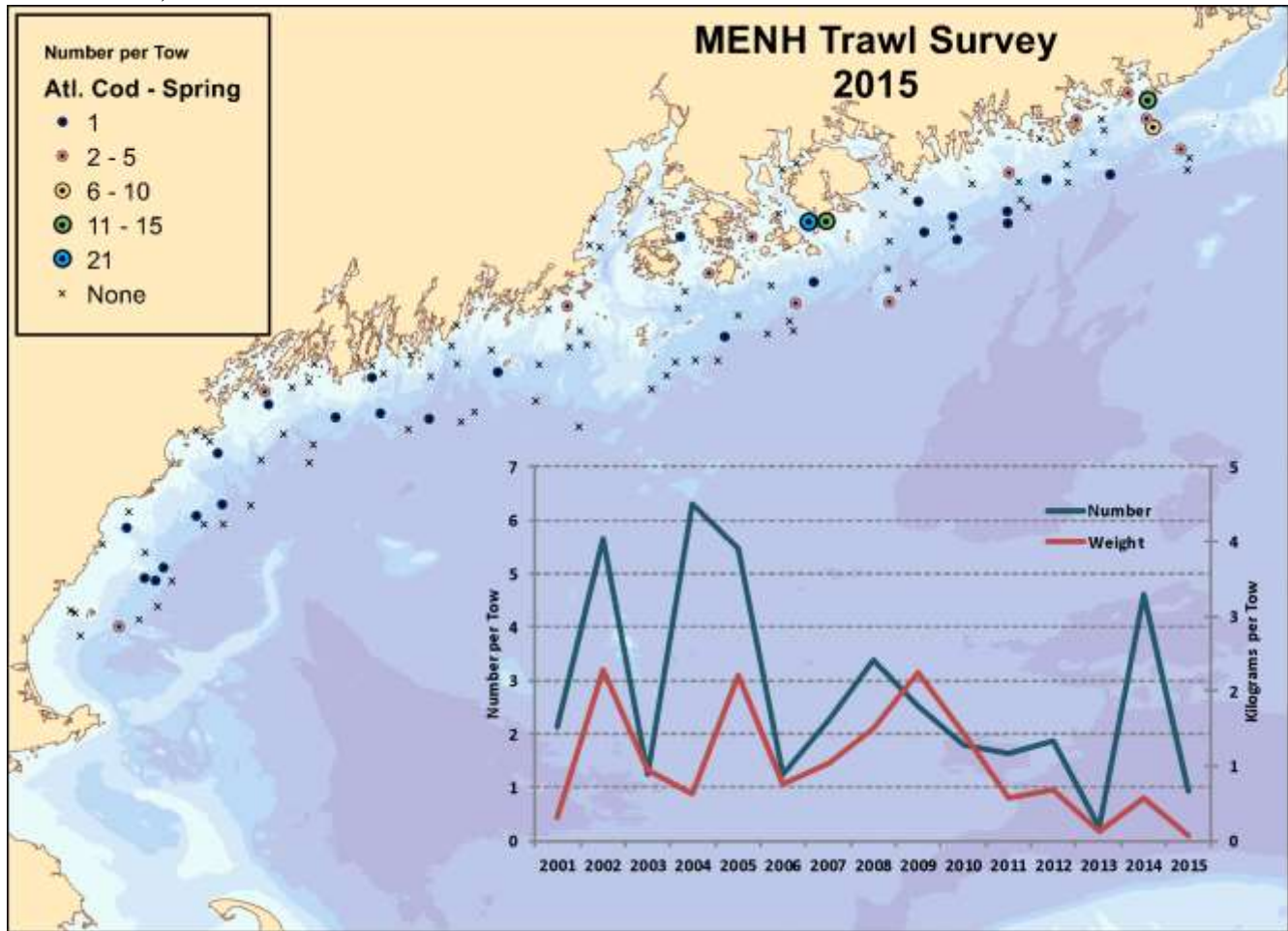
	Number		Weight	
	Mean	CV	Mean	CV
2000	0.56	0.75	0.04	0.79
2001	0.06	1.37	0.01	1.30
2002	1.33	0.81	0.03	0.68
2003	5.45	1.43	0.16	1.00
2004	1.08	0.81	0.08	0.65
2005	2.81	0.21	0.25	0.18
2006	1.14	0.94	0.09	0.51
2007	13.15	1.11	0.53	0.67
2008	1.78	0.47	0.20	0.46
2009	2.91	1.22	0.39	1.17
2010	1.10	0.93	0.07	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
2014	1.26	0.64	0.16	0.64
2015	16.33	1.31	0.99	0.69

Appendix C

American Shad - MENH Fall Survey



Atlantic cod, *Gadus morhua*



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

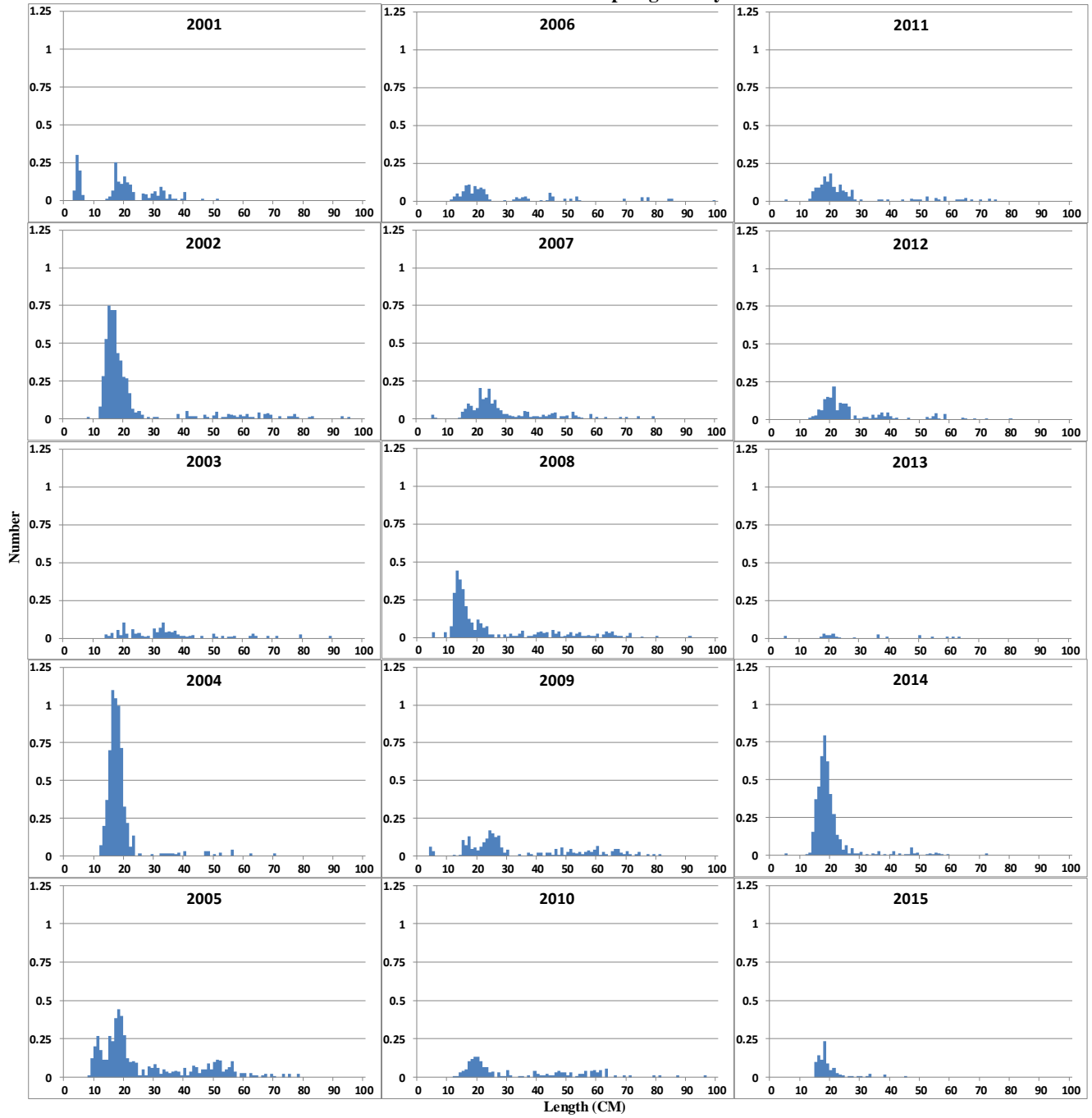
SPRING

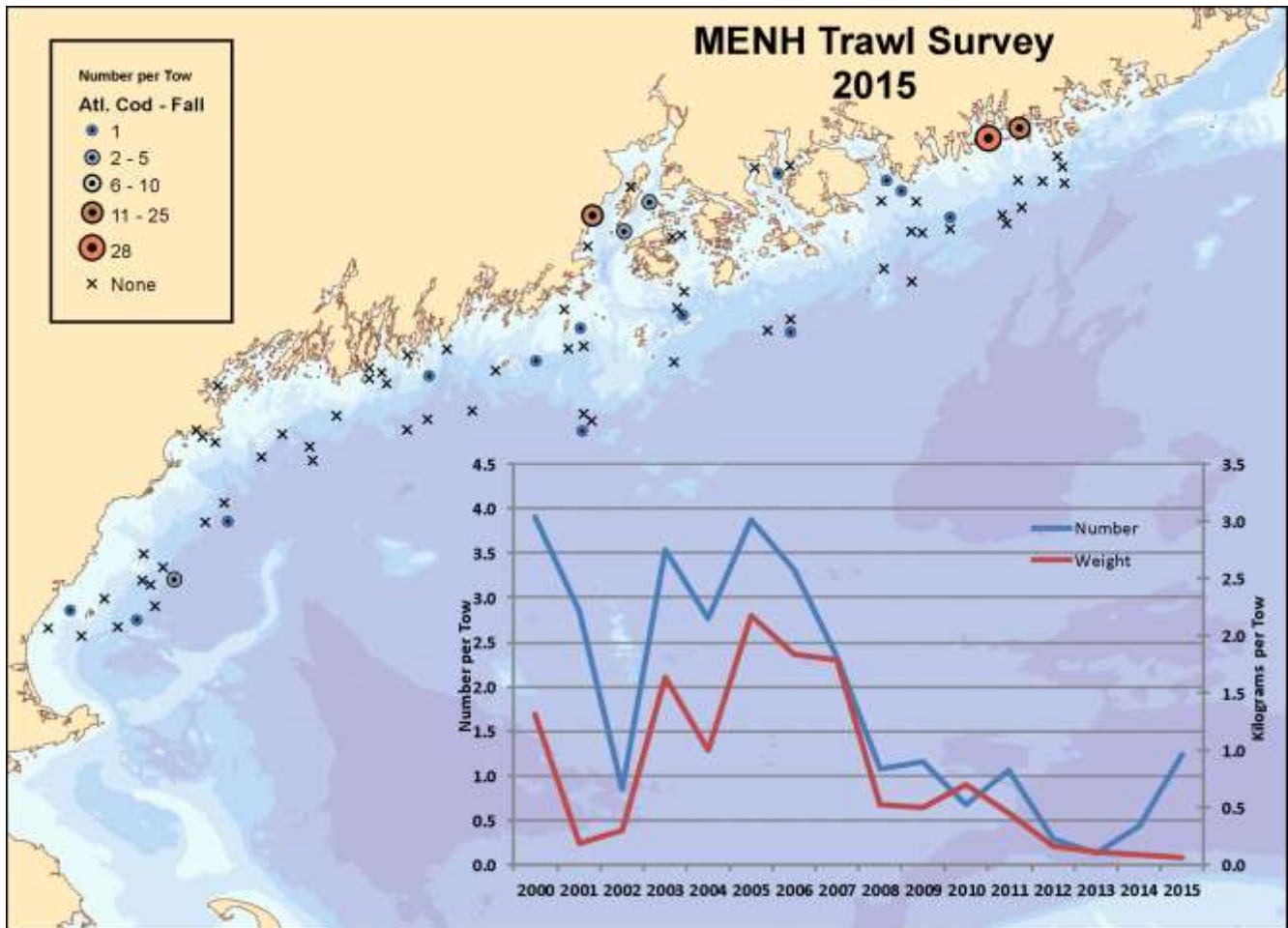
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2001	2.14	0.51	0.32	0.63
2002	5.66	0.91	2.29	0.74
2003	1.23	0.43	0.94	0.53
2004	6.30	0.57	0.63	0.55
2005	5.46	0.89	2.22	1.30
2006	1.24	0.59	0.76	1.20
2007	2.25	0.65	1.04	0.39
2008	3.38	0.97	1.49	0.90
2009	2.52	0.58	2.25	0.74
2010	1.79	0.52	1.43	0.78
2011	1.64	1.11	0.57	0.56
2012	1.86	0.64	0.68	0.50
2013	0.24	0.96	0.13	0.75
2014	4.62	0.93	0.57	0.50
2015	0.93	0.58	0.07	0.64

Appendix C

Atlantic Cod - MENH Spring Surveys





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

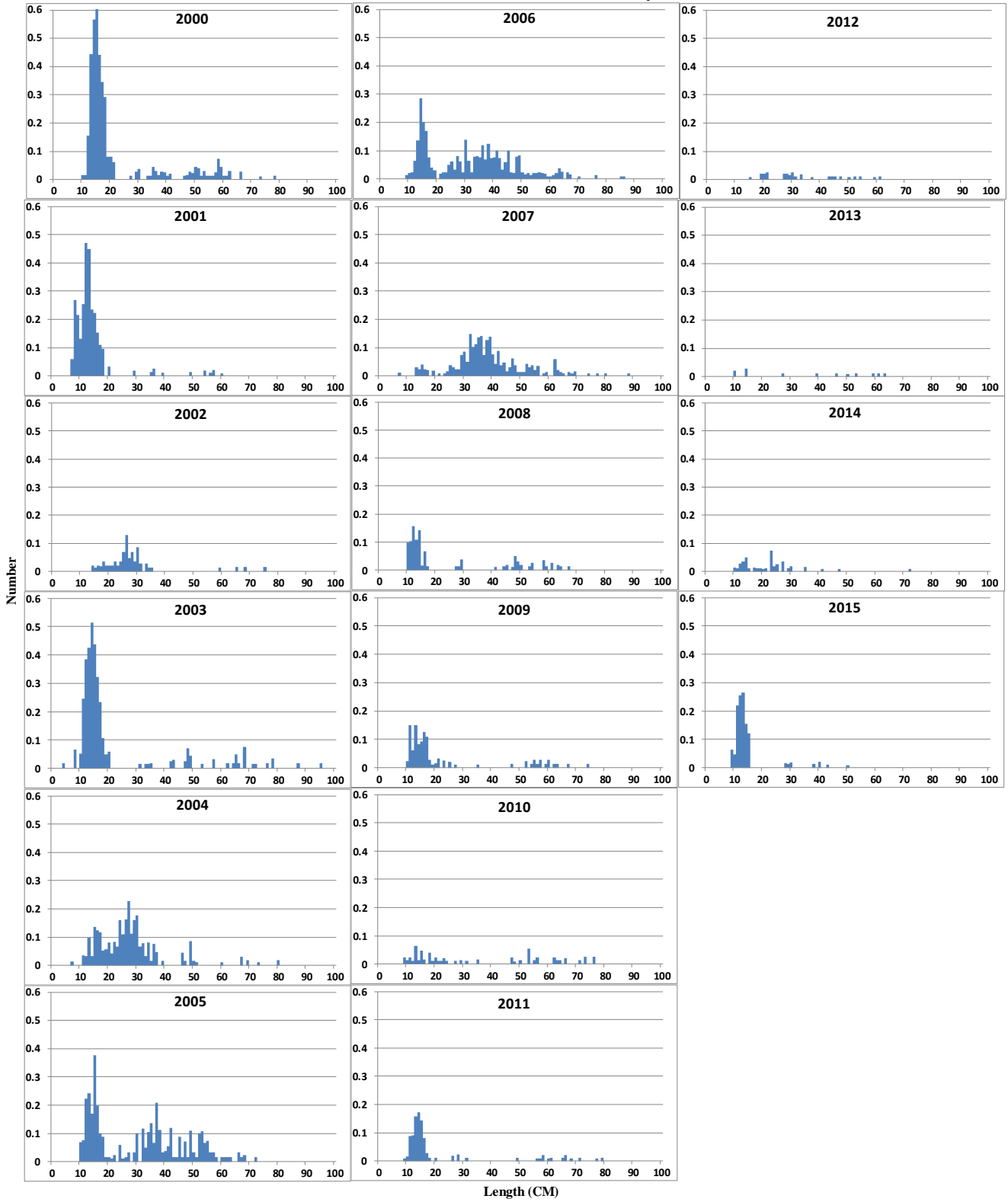
FALL

Stratified Mean

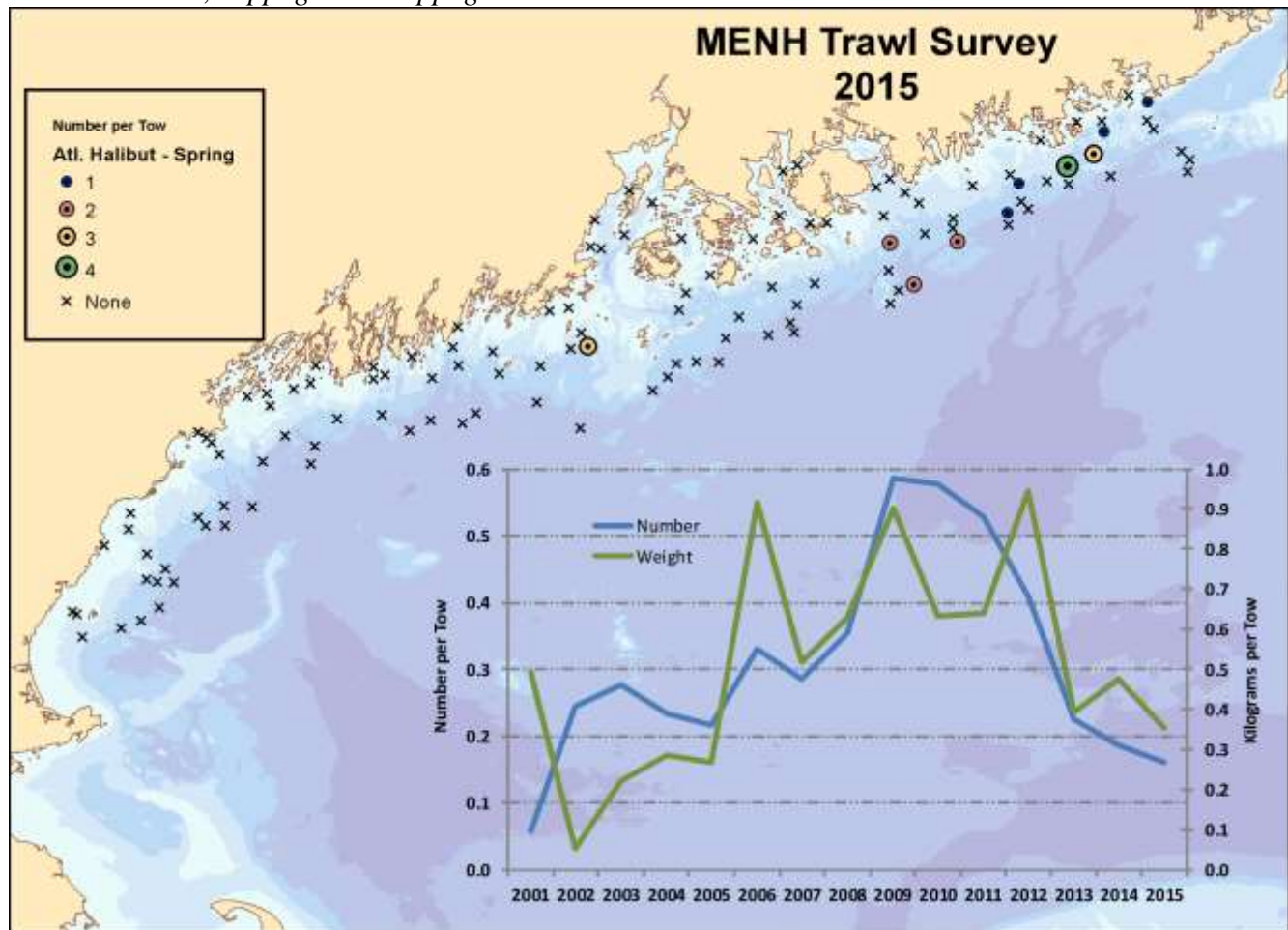
	Number		Weight	
	Mean	CV	Mean	CV
2000	3.91	0.47	1.32	1.49
2001	2.84	0.28	0.18	0.57
2002	0.85	0.23	0.30	0.65
2003	3.53	0.23	1.64	0.32
2004	2.76	0.40	1.00	0.59
2005	3.88	0.48	2.17	1.23
2006	3.31	0.48	1.84	1.28
2007	2.34	0.51	1.78	1.26
2008	1.08	0.41	0.52	0.76
2009	1.16	0.23	0.51	0.17
2010	0.67	0.17	0.70	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
2014	0.44	0.45	0.09	1.03
2015	1.23	0.21	0.07	0.67

Appendix C

Atlantic Cod - MENH Fall Survey



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

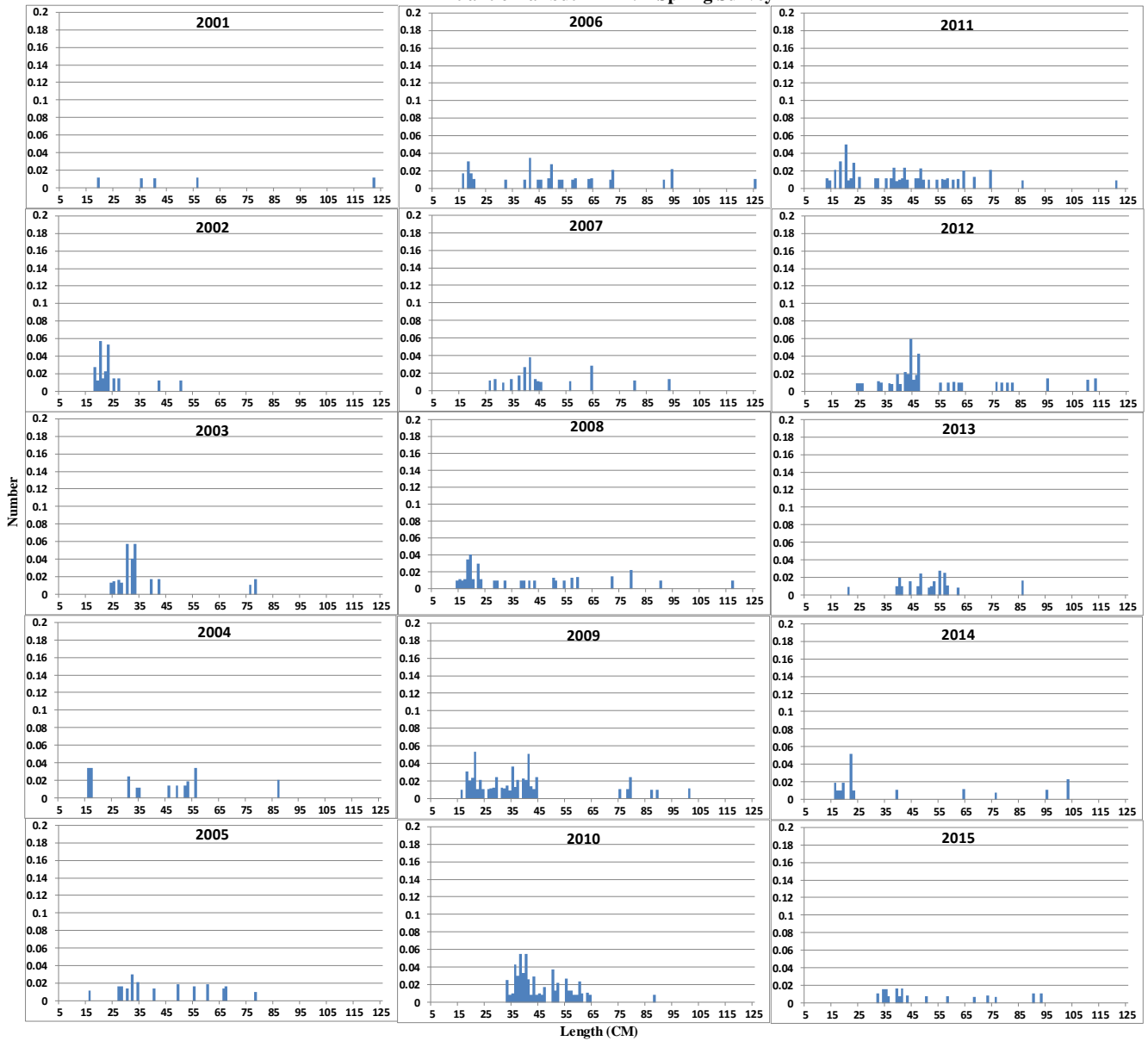
SPRING

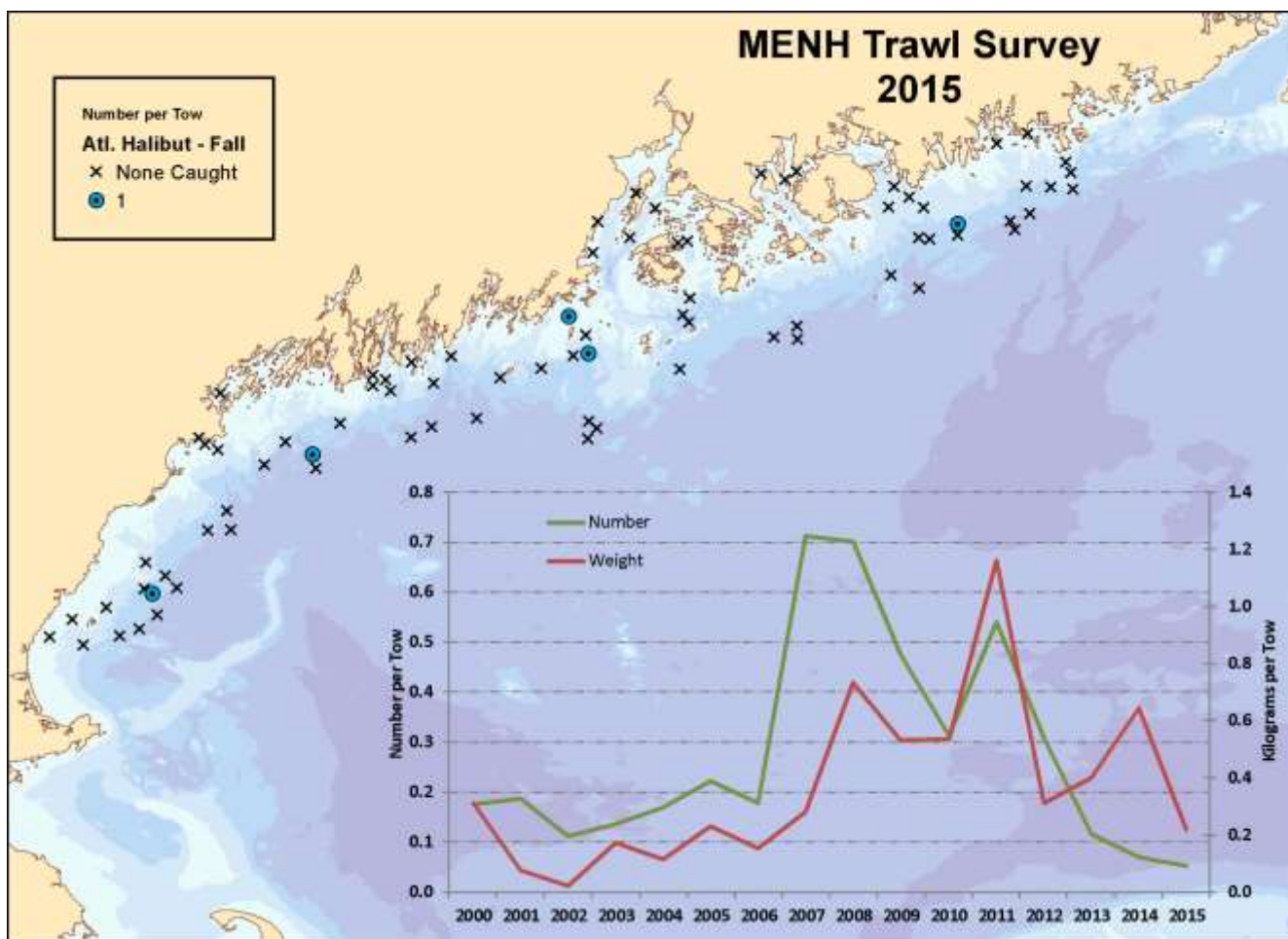
Stratified Mean

	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
2014	0.19	0.84	0.48	1.04
2015	0.16	0.96	0.35	1.62

Appendix C

Atlantic Halibut - MENH Spring Survey





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

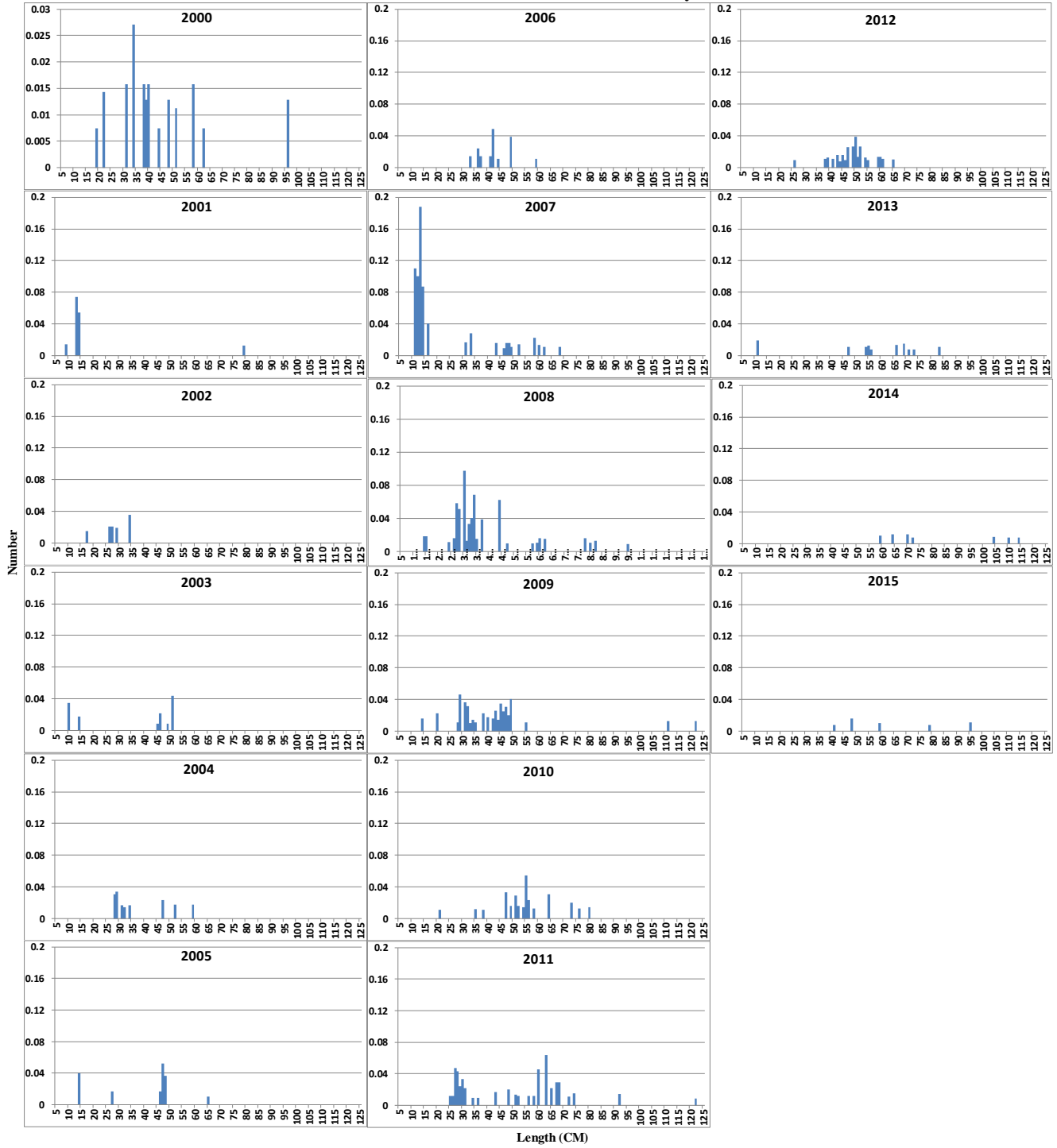
FALL

Stratified Mean

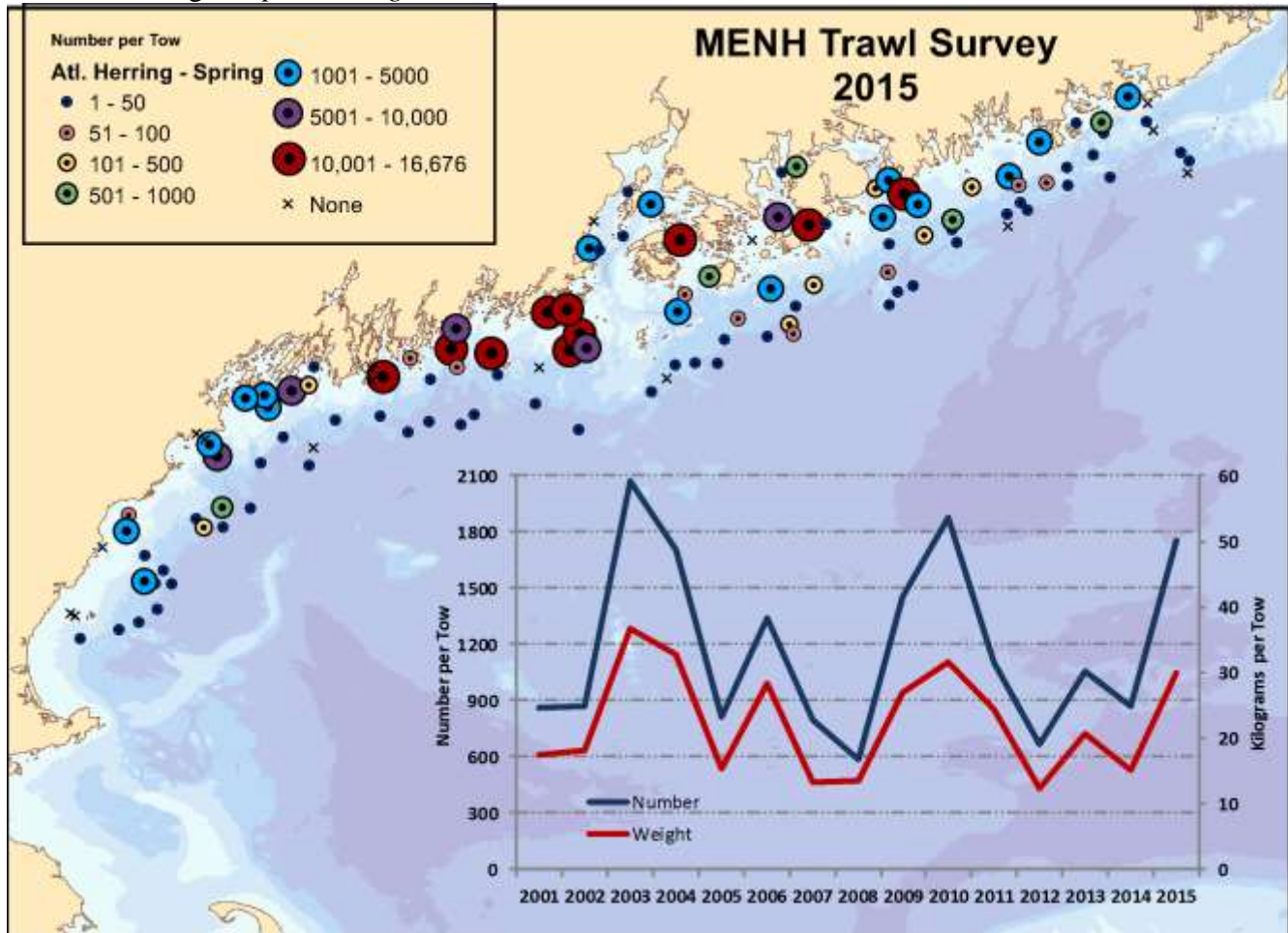
Year	Number		Weight	
	Mean	CV	Mean	CV
2000	0.18	0.96	0.31	1.32
2001	0.19	1.12	0.08	2.49
2002	0.11	0.79	0.02	0.84
2003	0.14	0.77	0.17	0.83
2004	0.17	0.92	0.12	0.65
2005	0.22	0.38	0.23	0.37
2006	0.18	0.84	0.15	0.88
2007	0.71	1.09	0.28	0.62
2008	0.70	0.40	0.73	0.64
2009	0.48	0.44	0.53	0.92
2010	0.31	0.43	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
2014	0.07	0.94	0.64	1.05
2015	0.05	1.08	0.22	1.49

Appendix C

Atlantic Halibut - MENH Fall Survey



Atlantic herring, *Clupea harengus*



Means and Coefficients of variance for graphs overlaid on above map

fixed stations not included

for herring, for regions 1 through 5; Strata 1 through 4

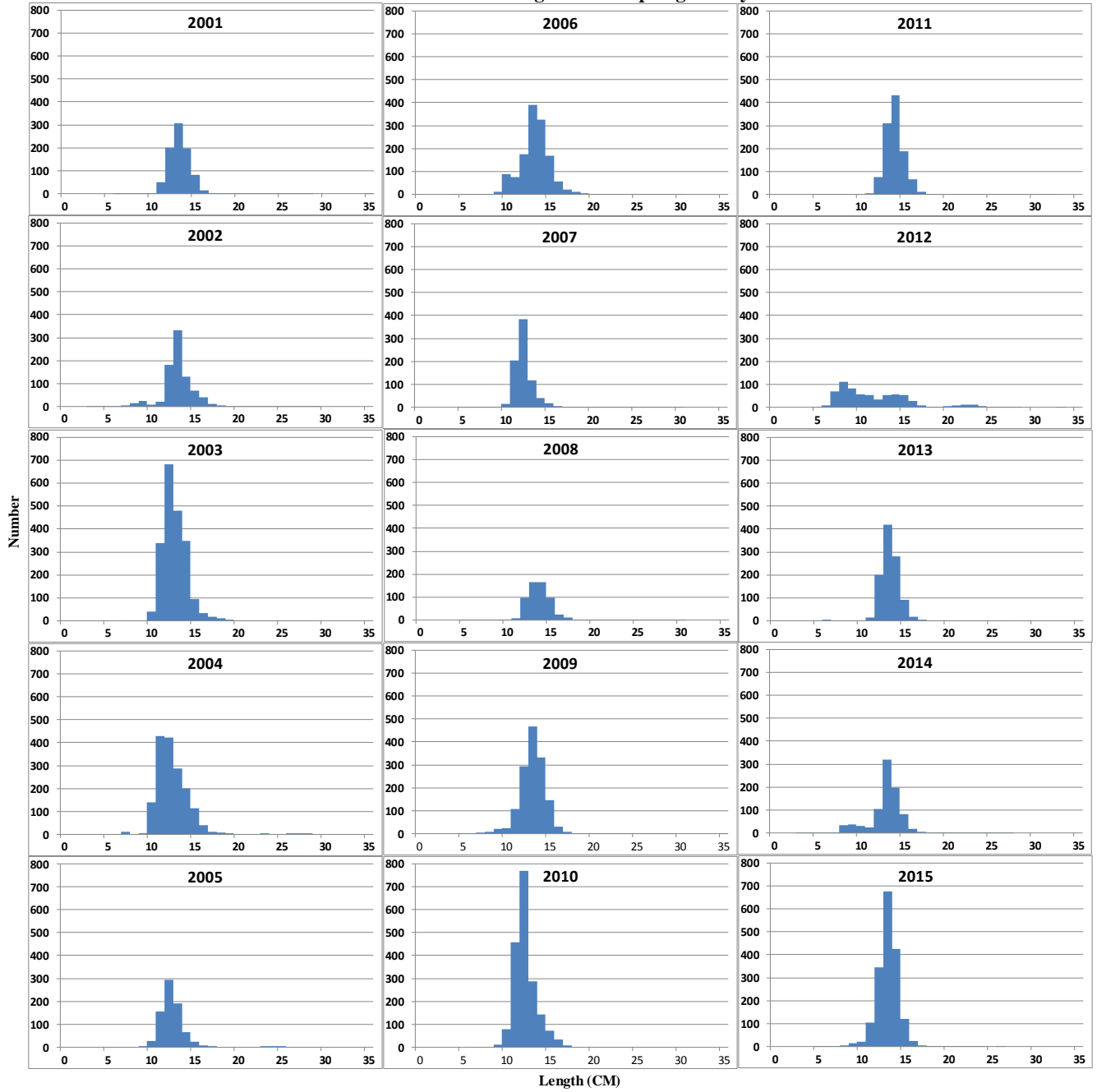
SPRING

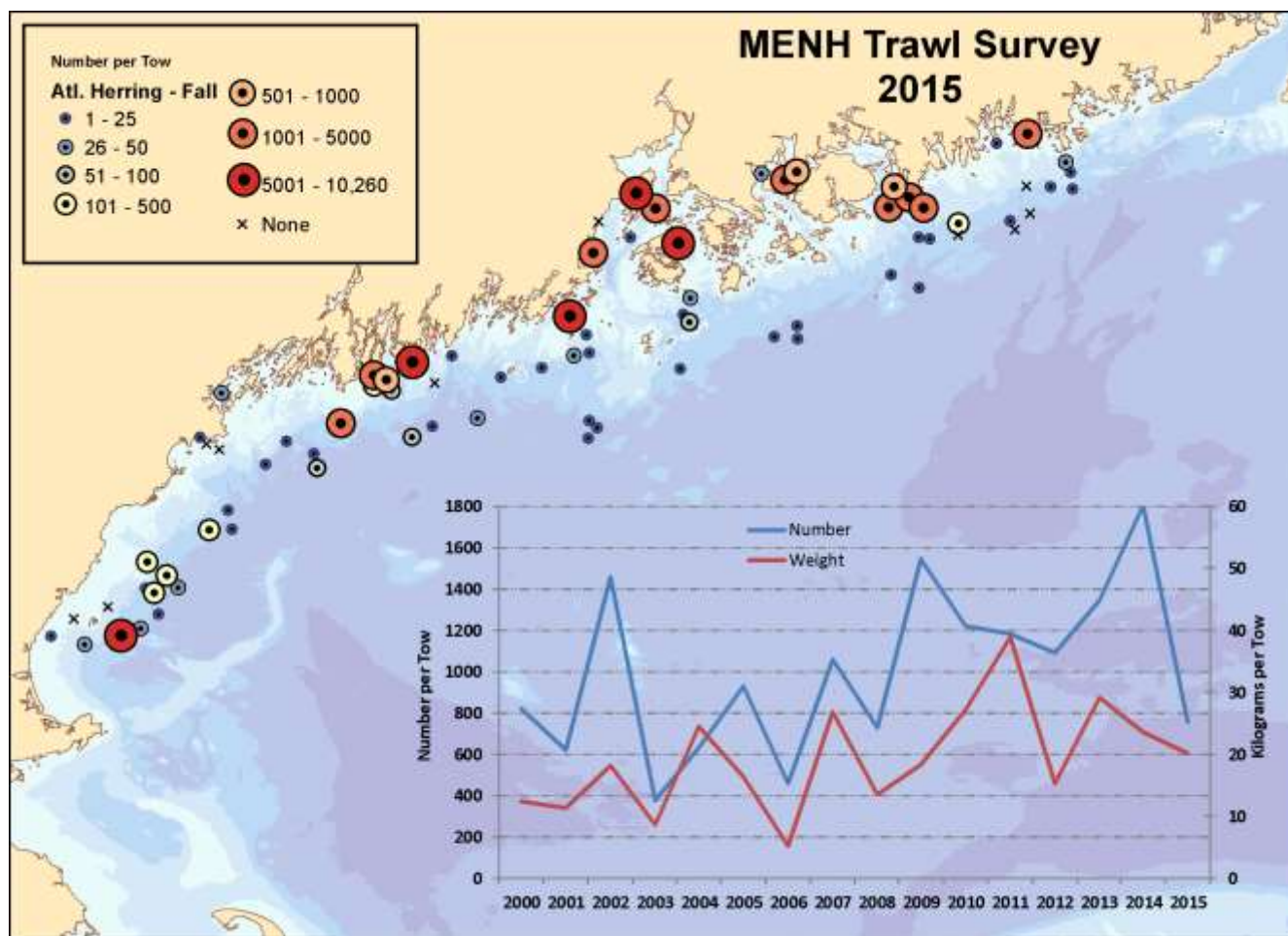
Stratified Mean

	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	665.99	0.54	12.23	0.50
2013	1059.00	0.42	20.66	0.42
2014	870.46	0.66	15.12	0.58
2015	1750.75	0.41	29.92	0.43

Appendix C

Atlantic Herring - MENH Spring Surveys





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

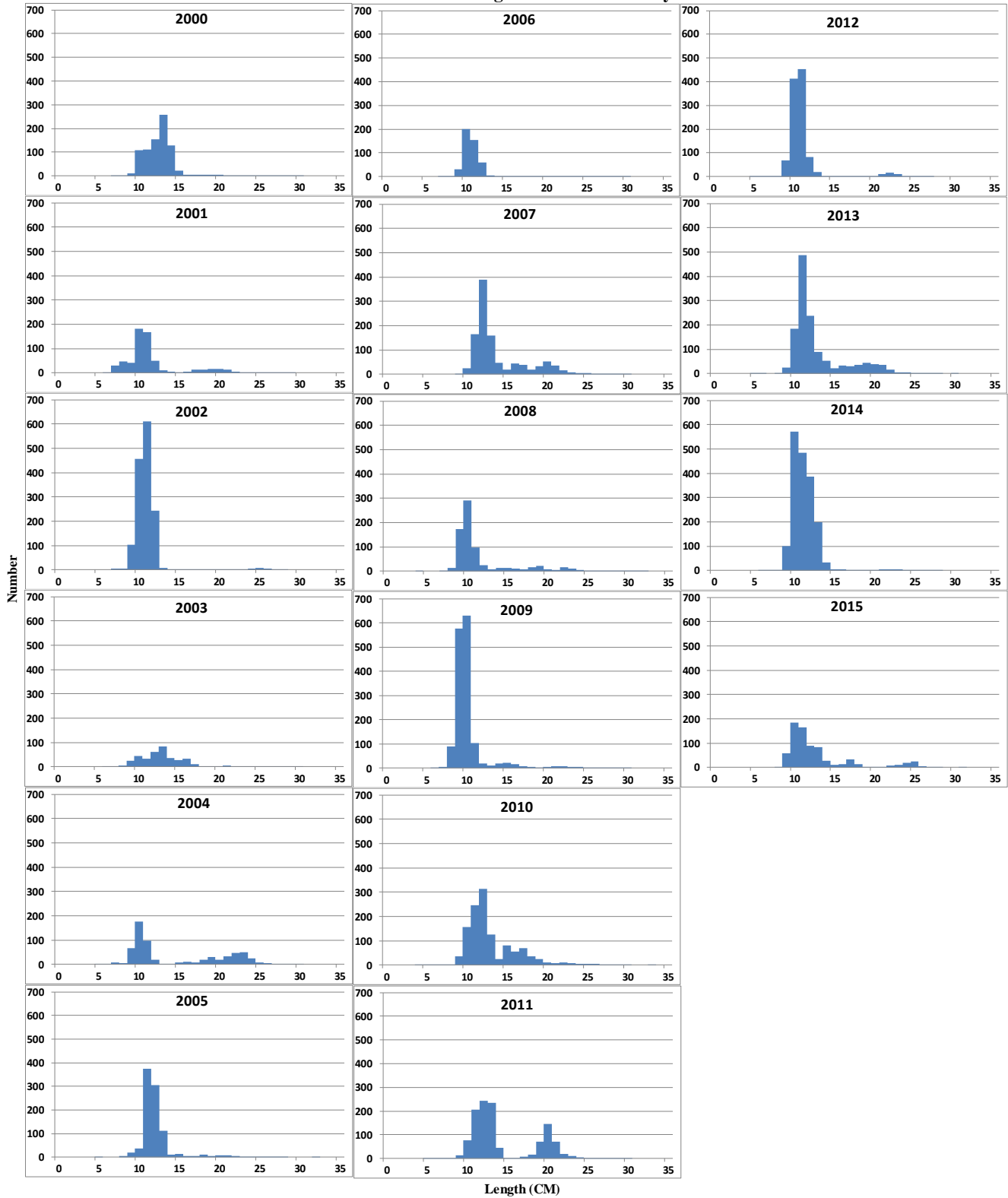
FALL

Stratified Mean

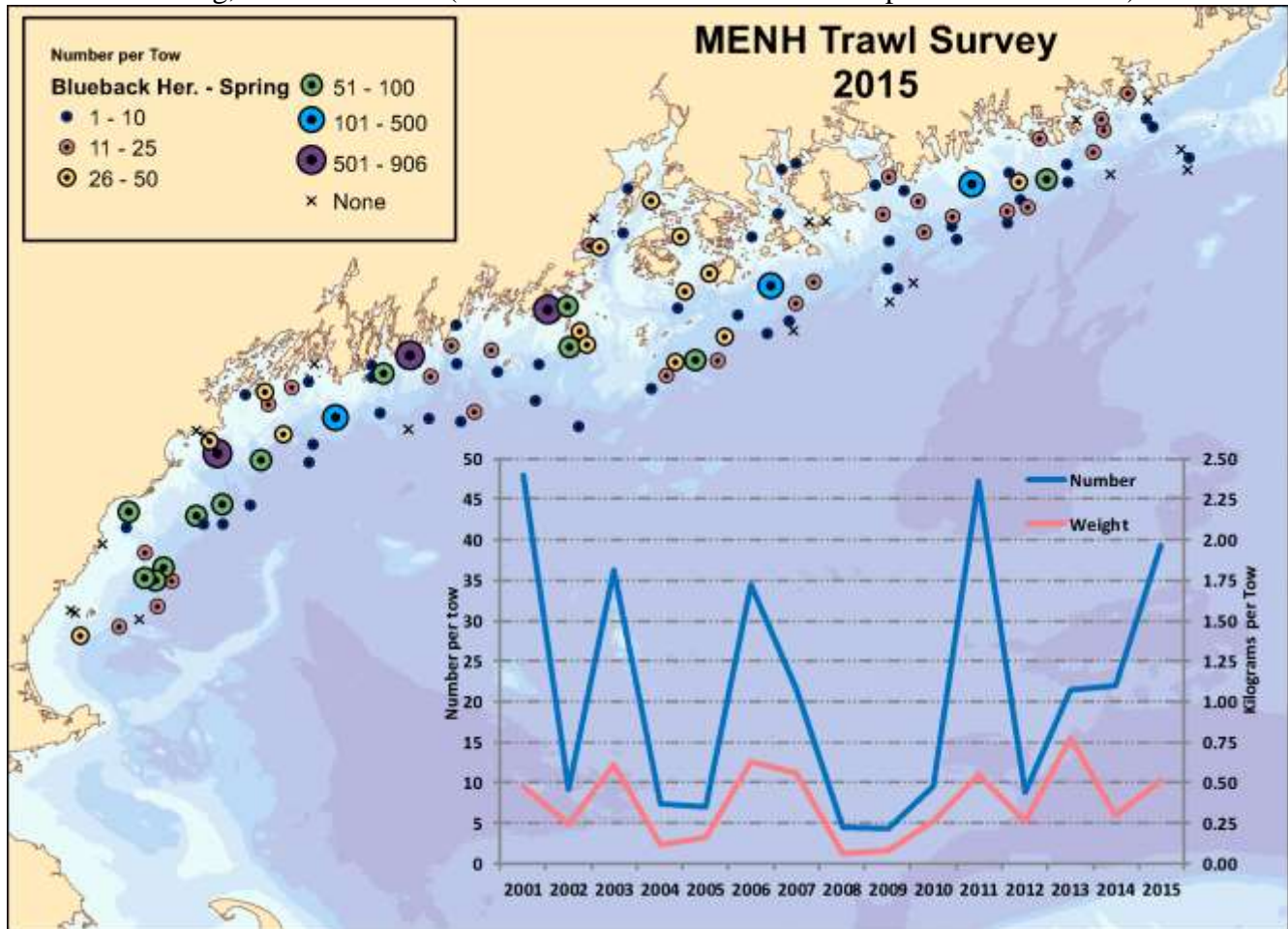
	Number		Weight	
	Mean	CV	Mean	CV
2000	820.02	0.77	12.42	0.55
2001	621.33	0.62	11.34	0.62
2002	1457.21	0.60	18.15	0.55
2003	376.73	0.97	8.71	0.90
2004	633.36	0.58	24.47	0.71
2005	928.07	0.48	16.44	0.52
2006	461.44	0.41	5.26	0.39
2007	1059.37	0.55	26.78	0.82
2008	730.86	0.48	13.58	0.59
2009	1542.49	0.37	18.32	0.34
2010	1221.33	0.51	27.12	0.39
2011	1180.79	0.52	38.89	0.29
2012	1089.80	0.58	15.30	0.47
2013	1344.14	0.58	29.12	0.48
2014	1805.00	0.49	23.59	0.38
2015	755.49	0.45	20.11	1.11

Appendix C

Atlantic Herring - MENH Fall Survey



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

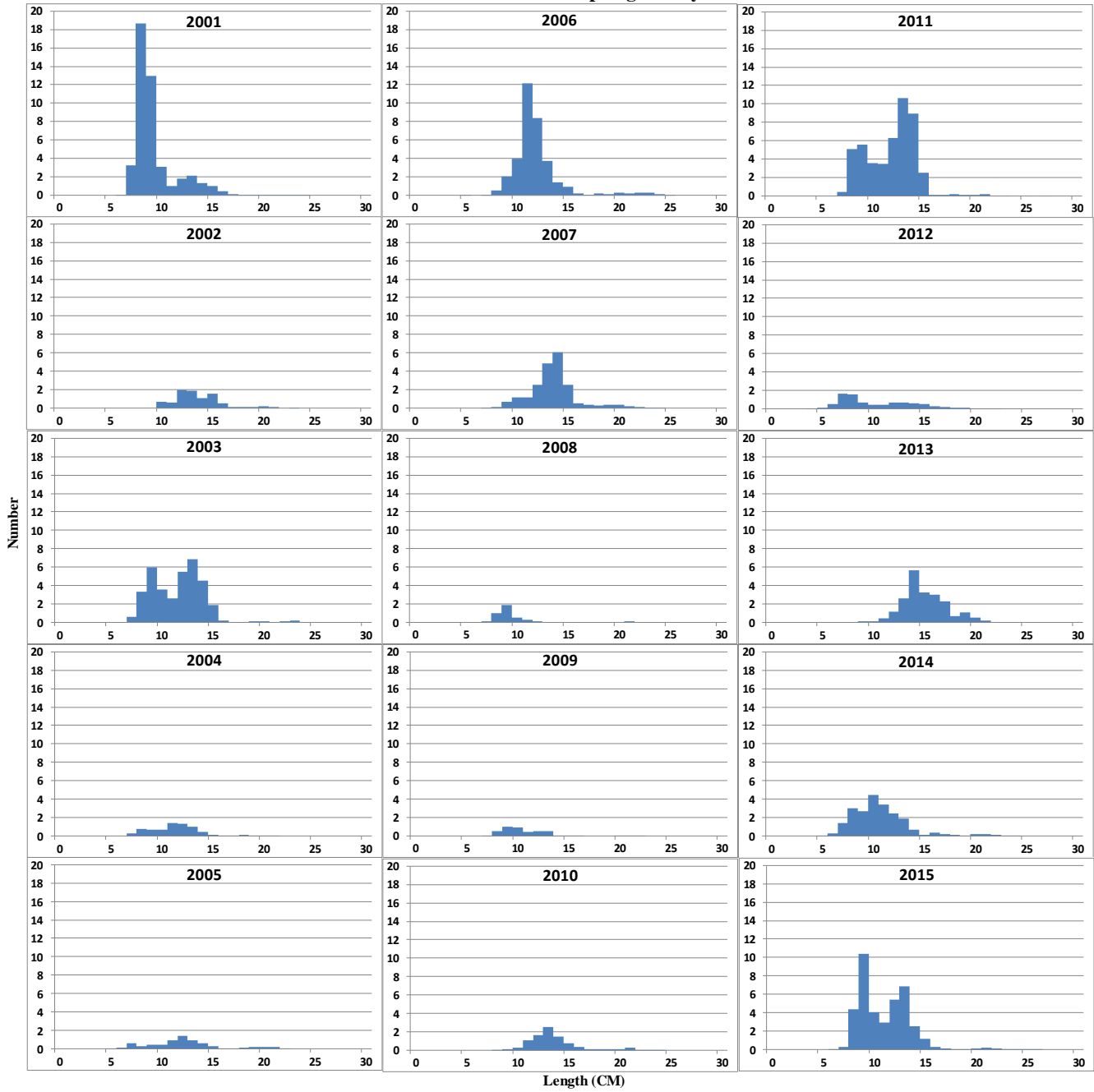


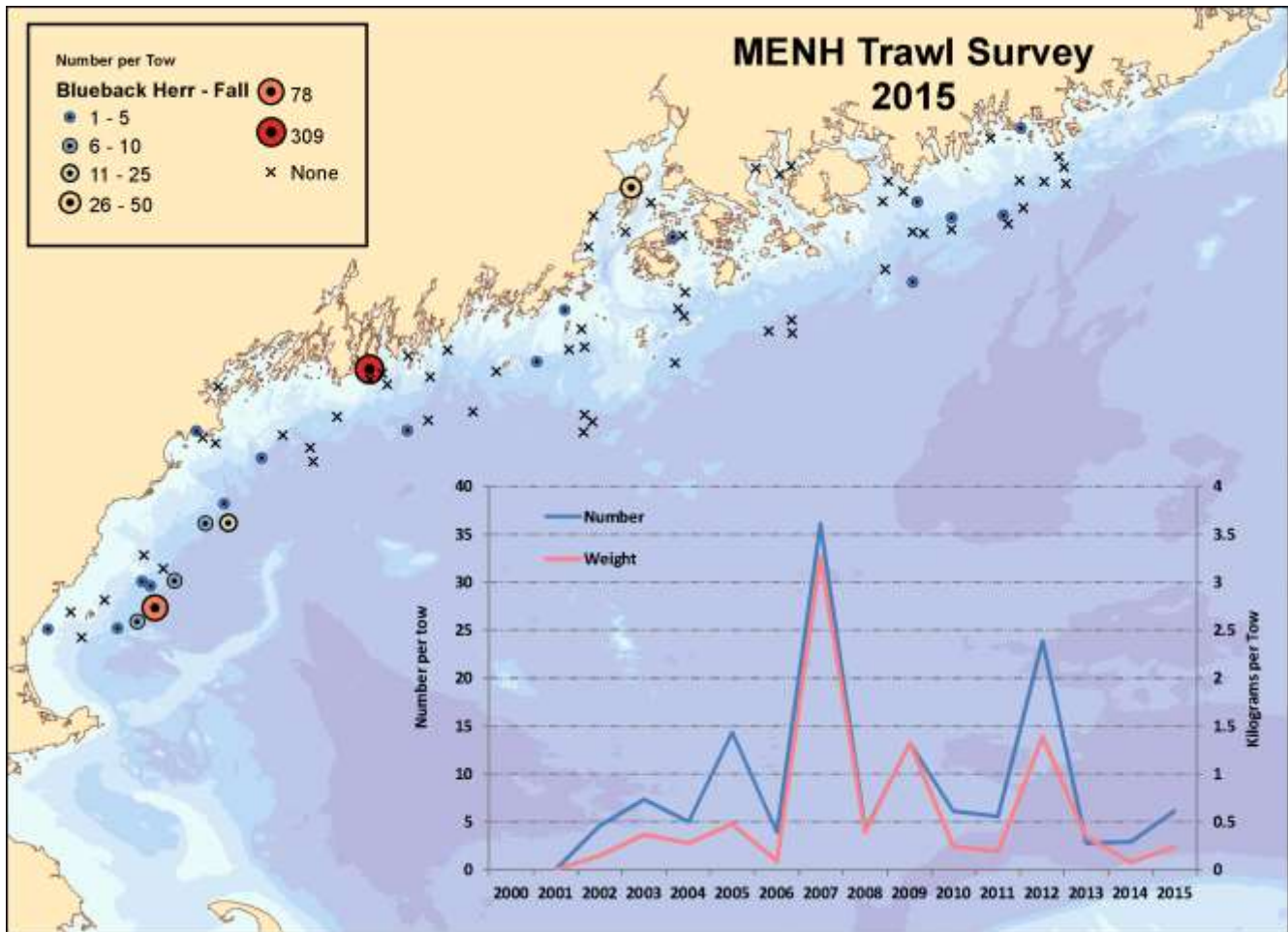
Means and Coefficients of variance for graphs overlaid on above map
 fixed stations not included
 for blueback herring, for regions 1 through 5; Strata 1 through 4
SPRING

	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
2014	21.90	0.49	0.30	0.40
2015	39.23	0.68	0.52	0.55

Appendix C

Blueback - MENH Spring Surveys





Means and Coefficients of variance for graphs overlaid on above map
fixed stations not included

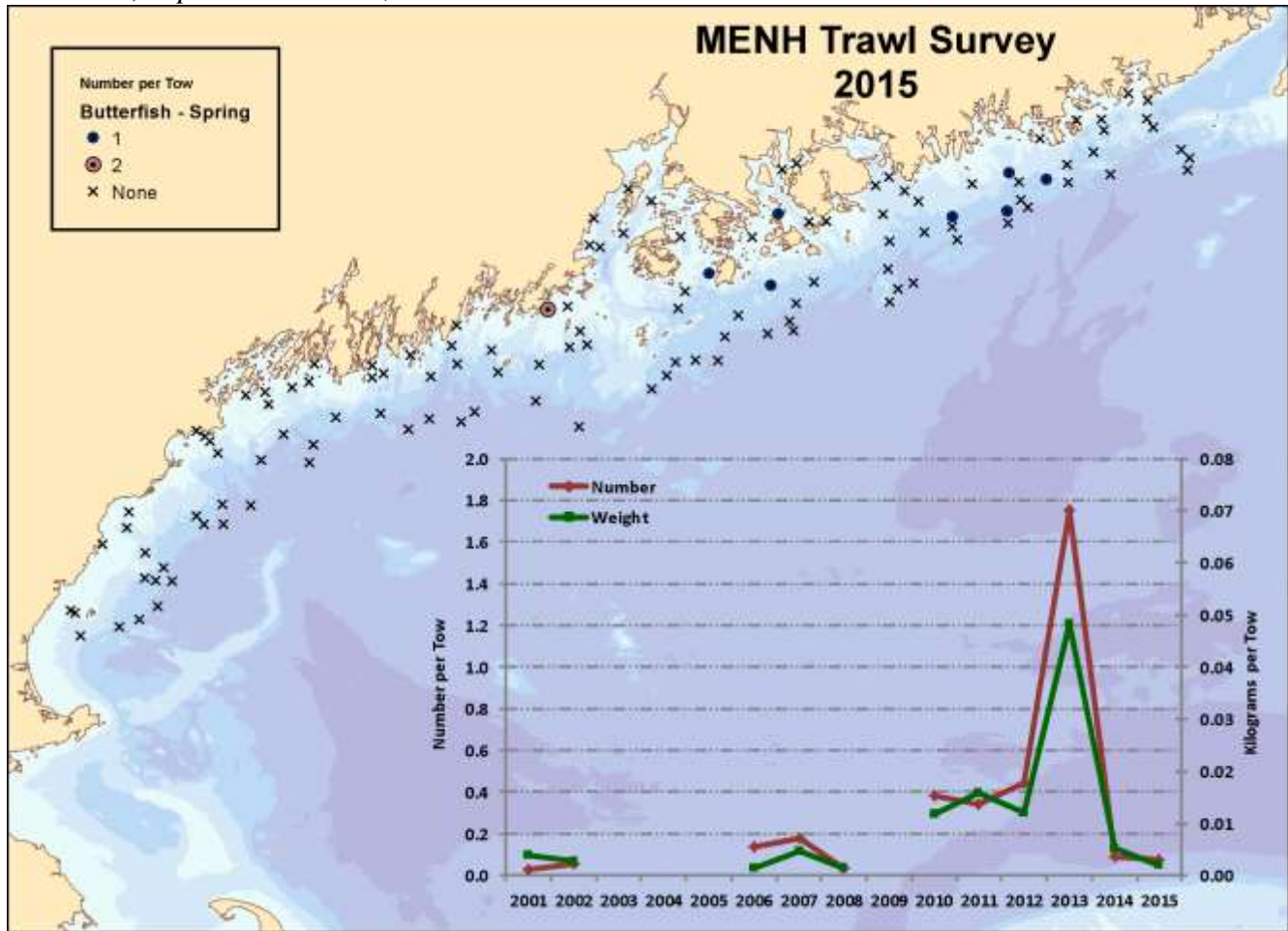
for blueback herring, for regions 1 through 5; Strata 1 through 4

FALL

Stratified Mean

	Number Mean	CV	Weight Mean	CV
2000				
2001	0		0	
2002	4.57	0.90	0.15	0.91
2003	7.30	0.70	0.36	0.69
2004	5.02	0.65	0.28	0.43
2005	14.34	0.88	0.48	0.51
2006	3.91	1.05	0.09	1.06
2007	36.09	1.27	3.26	1.31
2008	4.12	0.97	0.39	1.19
2009	13.21	1.30	1.32	1.28
2010	6.08	0.68	0.25	0.38
2011	5.62	1.20	0.19	0.46
2012	23.82	1.62	1.39	1.05
2013	2.84	0.86	0.35	0.87
2014	2.91	0.82	0.08	0.60
2015	6.16	1.46	0.24	1.16

Butterfish, *Peprilus tricanthus*,

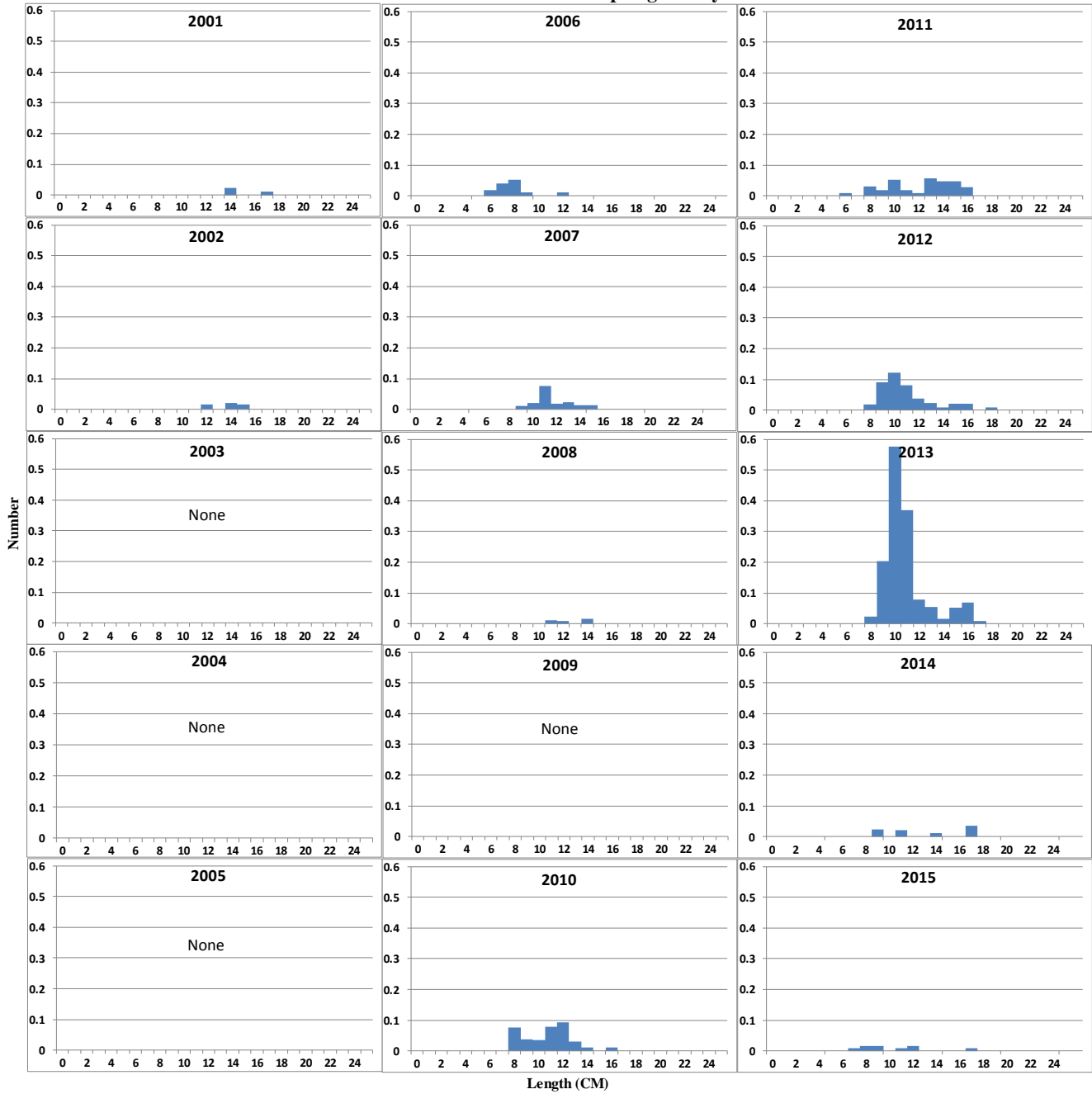


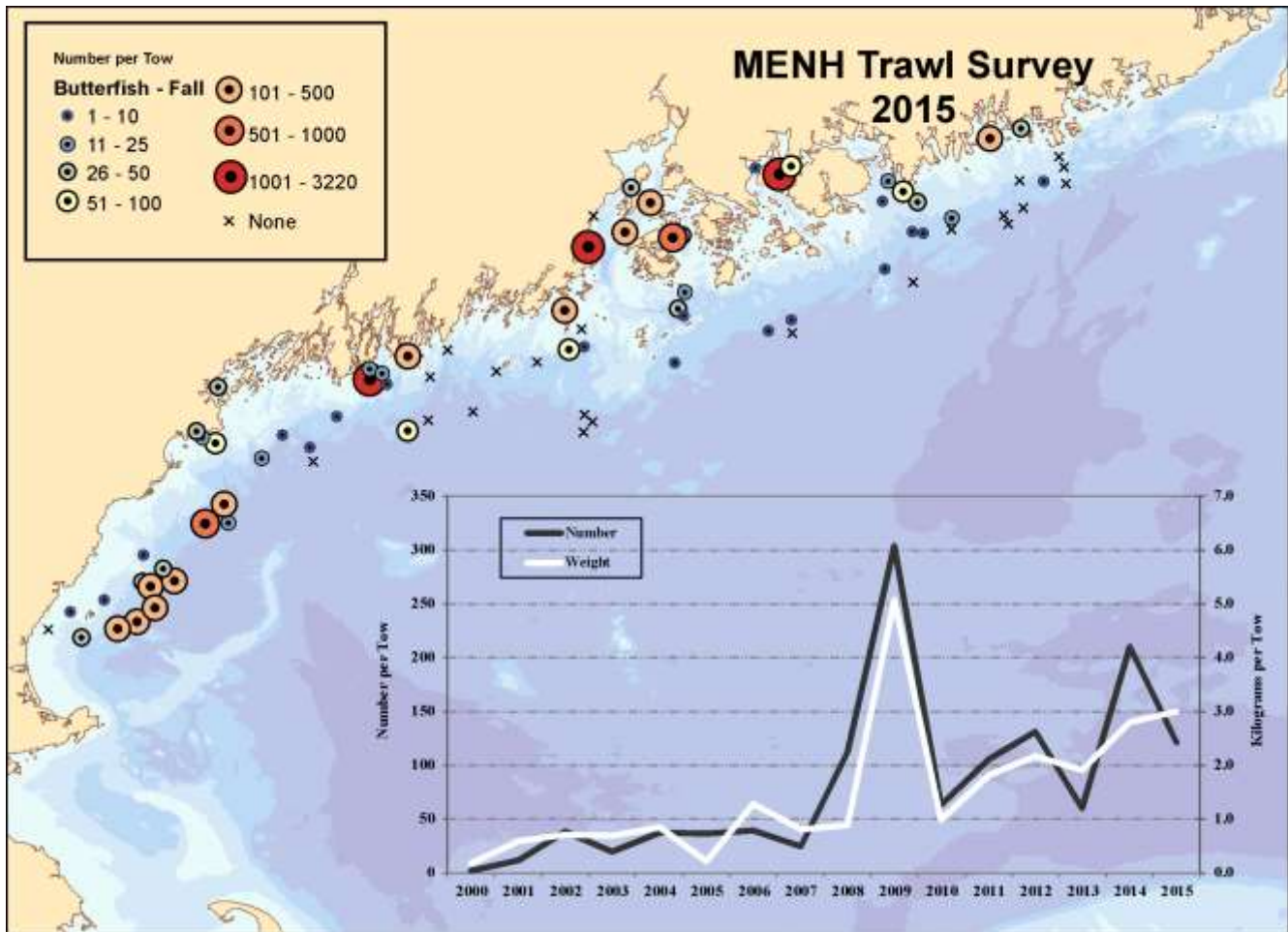
Means and coefficients of variance for graph overlain on above map for butterfish, indices calculated for regions 1 through 5 strata 1 through 4 (2003 and up)

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
2014	0.09	0.74	0.005	0.95
2015	0.07	0.91	0.002	1.15

Appendix C

Butterfish - MENH Spring Surveys





Means and coefficients of variance for graph overlain on above map

fixed stations not included

for butterfish, indices calculated for all regions and strata

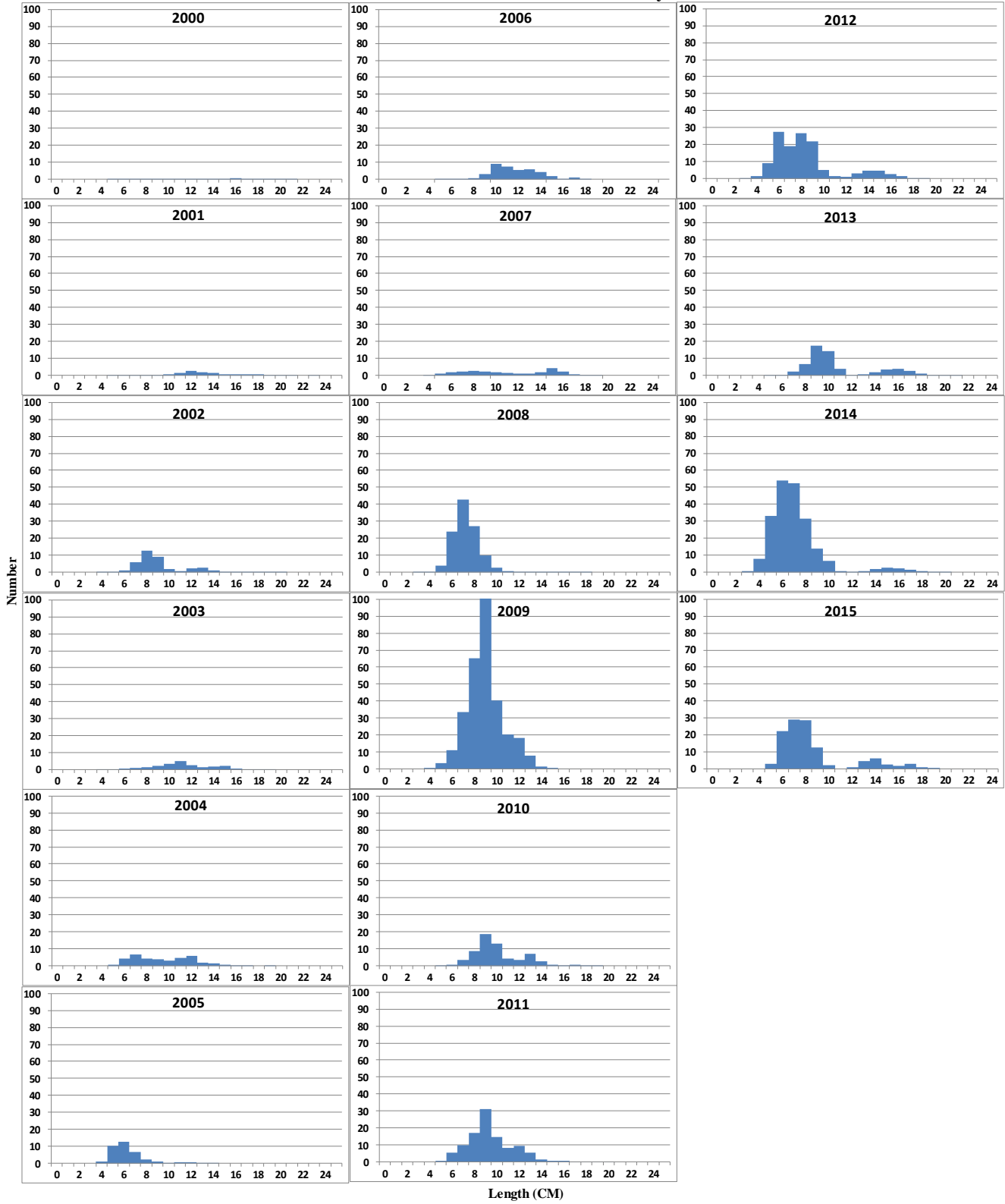
FALL

Stratified Mean

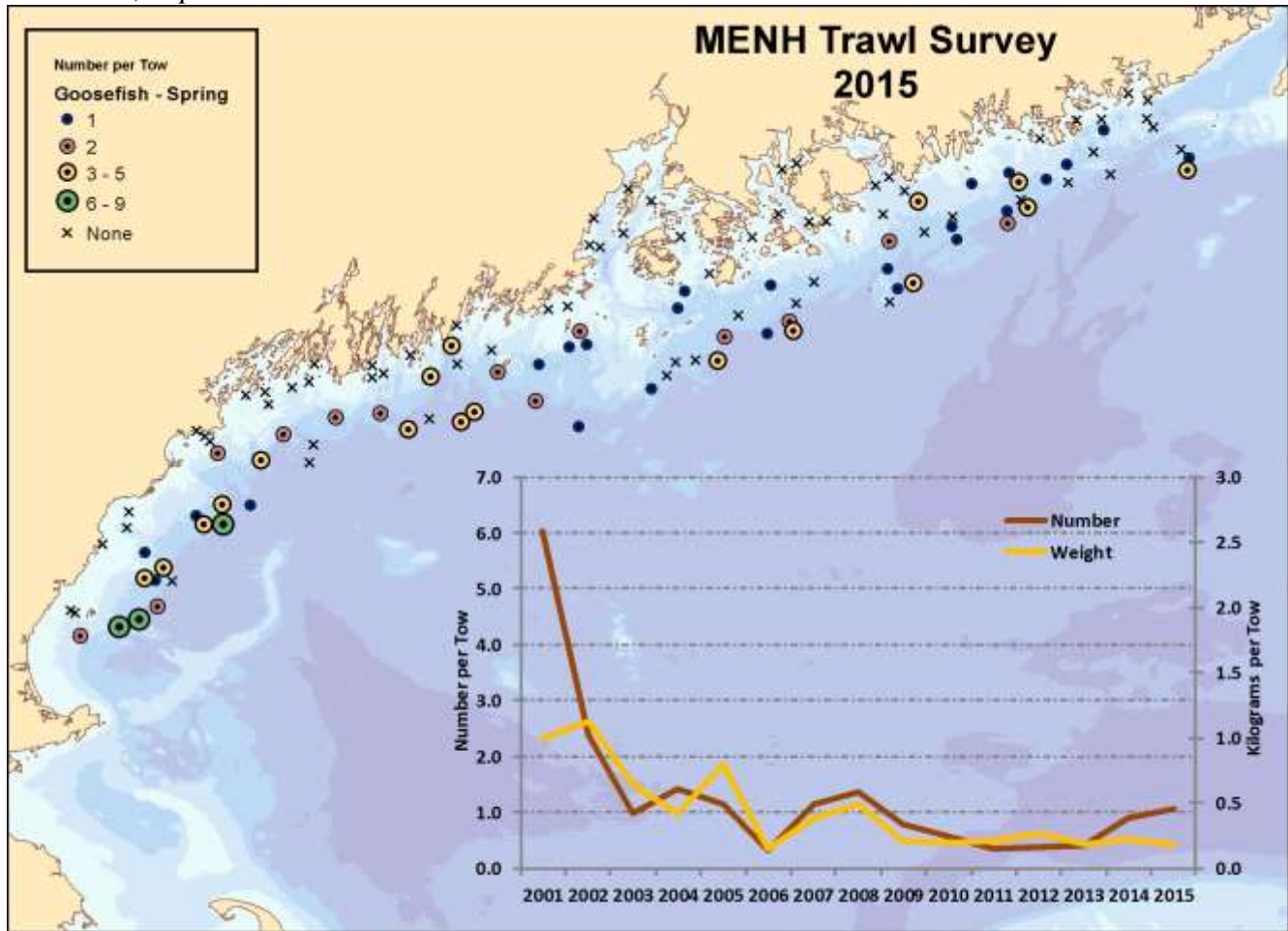
	Number		Weight	
	Mean	CV	Mean	CV
2000	2.26	0.87	0.18	0.92
2001	11.73	0.65	0.60	0.68
2002	37.90	0.63	0.71	0.53
2003	19.65	0.40	0.69	0.24
2004	37.24	0.30	0.84	0.47
2005	36.16	0.84	0.22	0.63
2006	38.91	0.66	1.28	0.80
2007	24.85	0.29	0.81	0.24
2008	112.10	0.64	0.88	0.55
2009	303.59	0.36	5.08	0.30
2010	63.24	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
2014	209.94	0.75	2.81	0.52
2015	121.47	0.74	3.01	0.63

Appendix C

Butterfish - MENH Fall Surveys



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

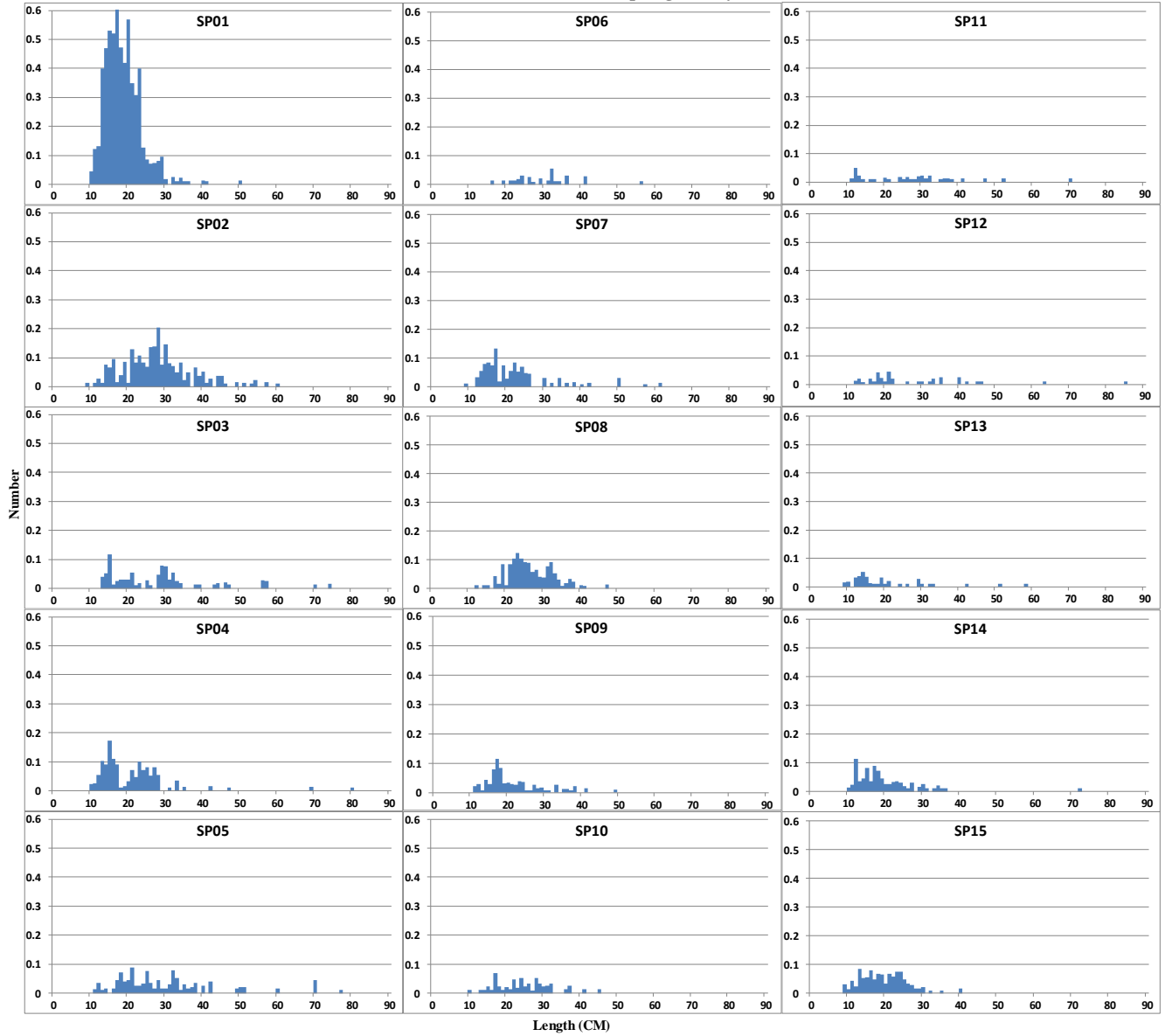
SPRING

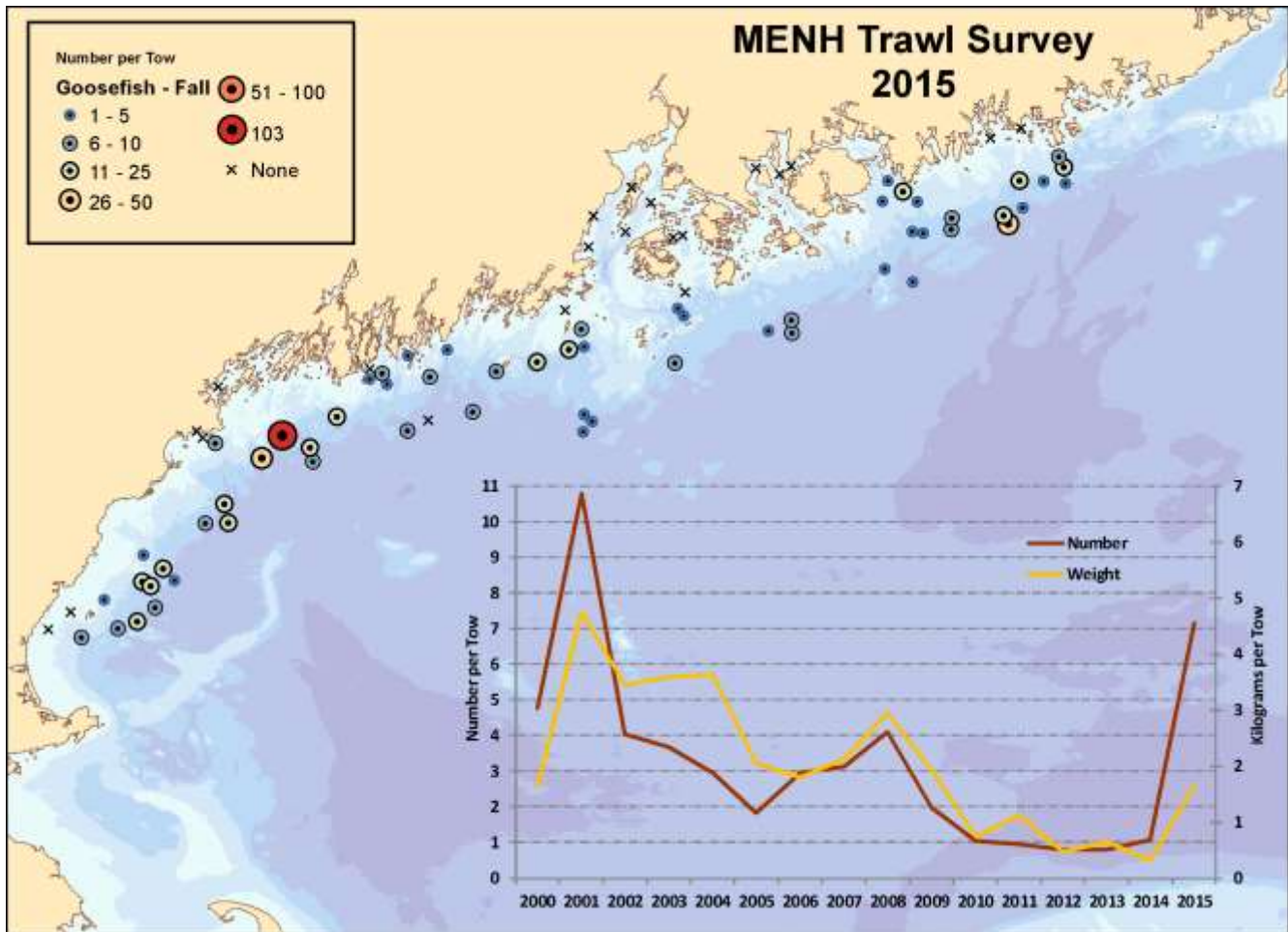
Stratified Mean

	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
2014	0.89	0.37	0.21	0.93
2015	1.07	0.29	0.18	0.33

Appendix C

Goosefish - MENH Spring Surveys





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

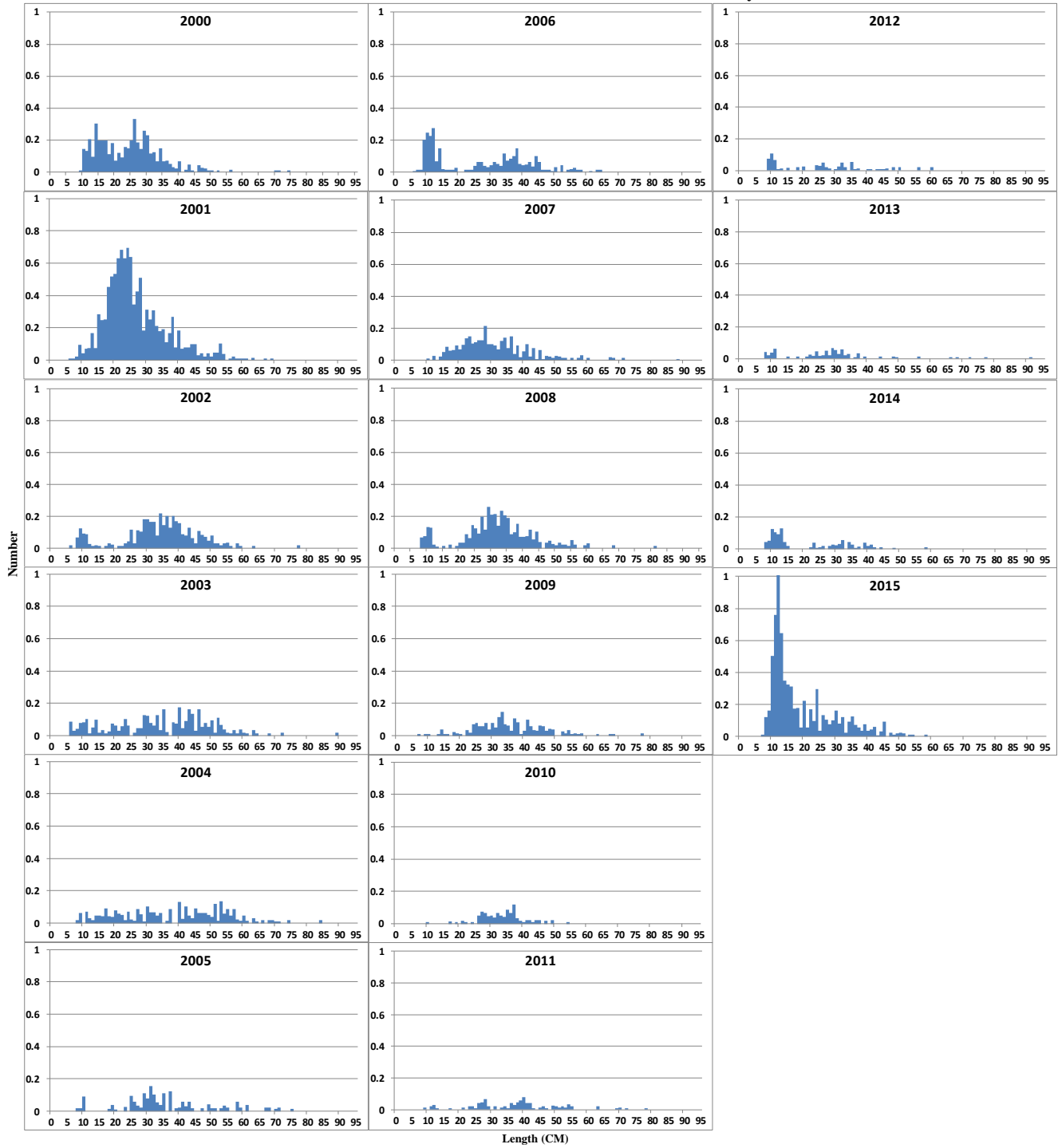
FALL

Stratified Mean

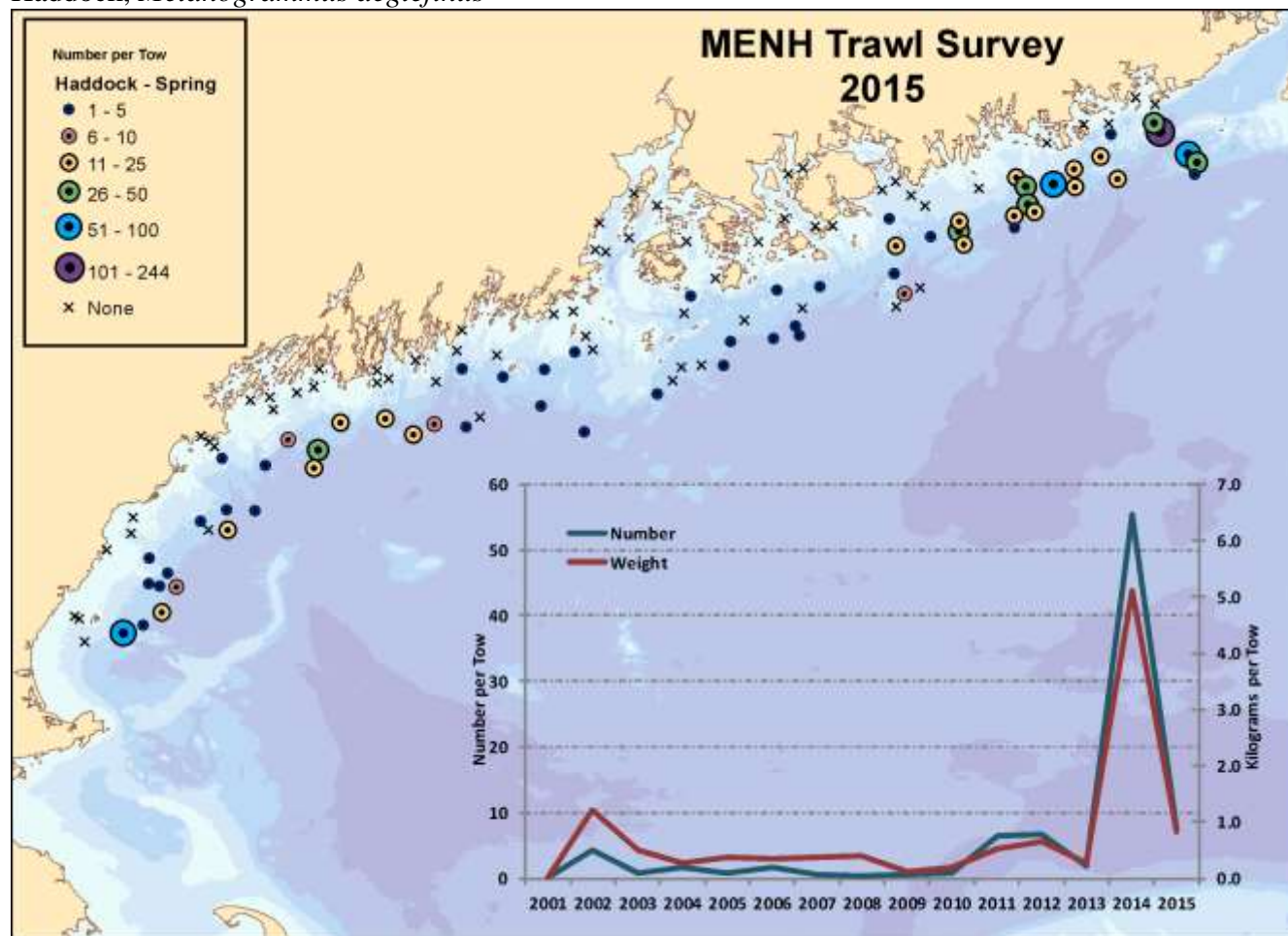
	Number		Weight	
	Mean	CV	Mean	CV
2000	4.78	0.29	1.65	0.39
2001	10.77	0.21	4.75	0.20
2002	4.05	0.56	3.45	0.66
2003	3.68	0.31	3.60	0.38
2004	2.96	0.31	3.63	0.40
2005	1.82	0.22	2.04	0.35
2006	2.94	0.22	1.79	0.23
2007	3.13	0.26	2.13	0.32
2008	4.10	0.33	2.96	0.27
2009	2.00	0.45	1.93	0.59
2010	1.06	0.32	0.74	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
2014	1.06	0.32	0.32	0.43
2015	7.14	0.33	1.65	0.30

Appendix C

Goosefish - MENH Fall Surveys



Haddock, *Melanogrammus aeglefinus*



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

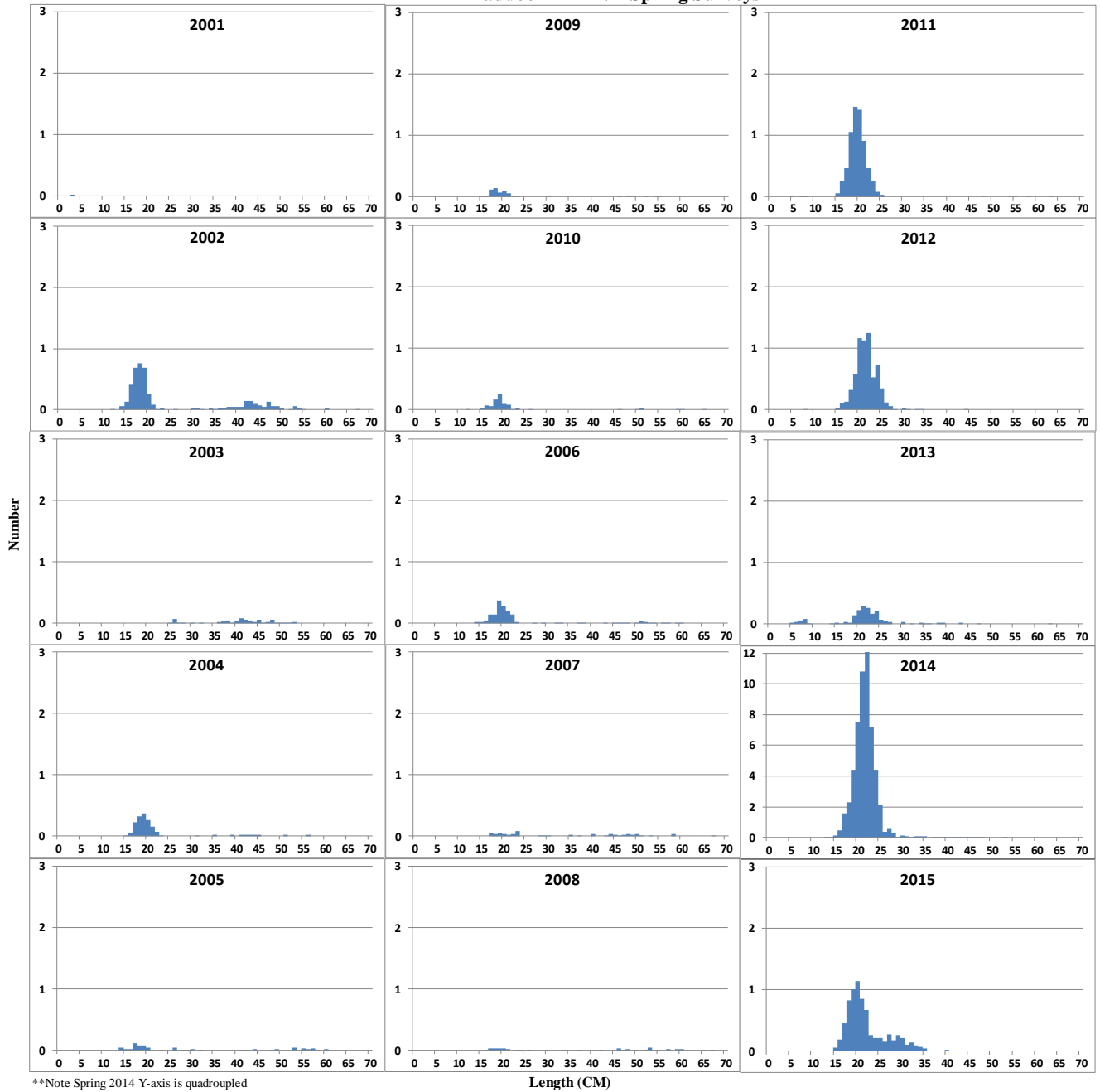
SPRING

Stratified Mean

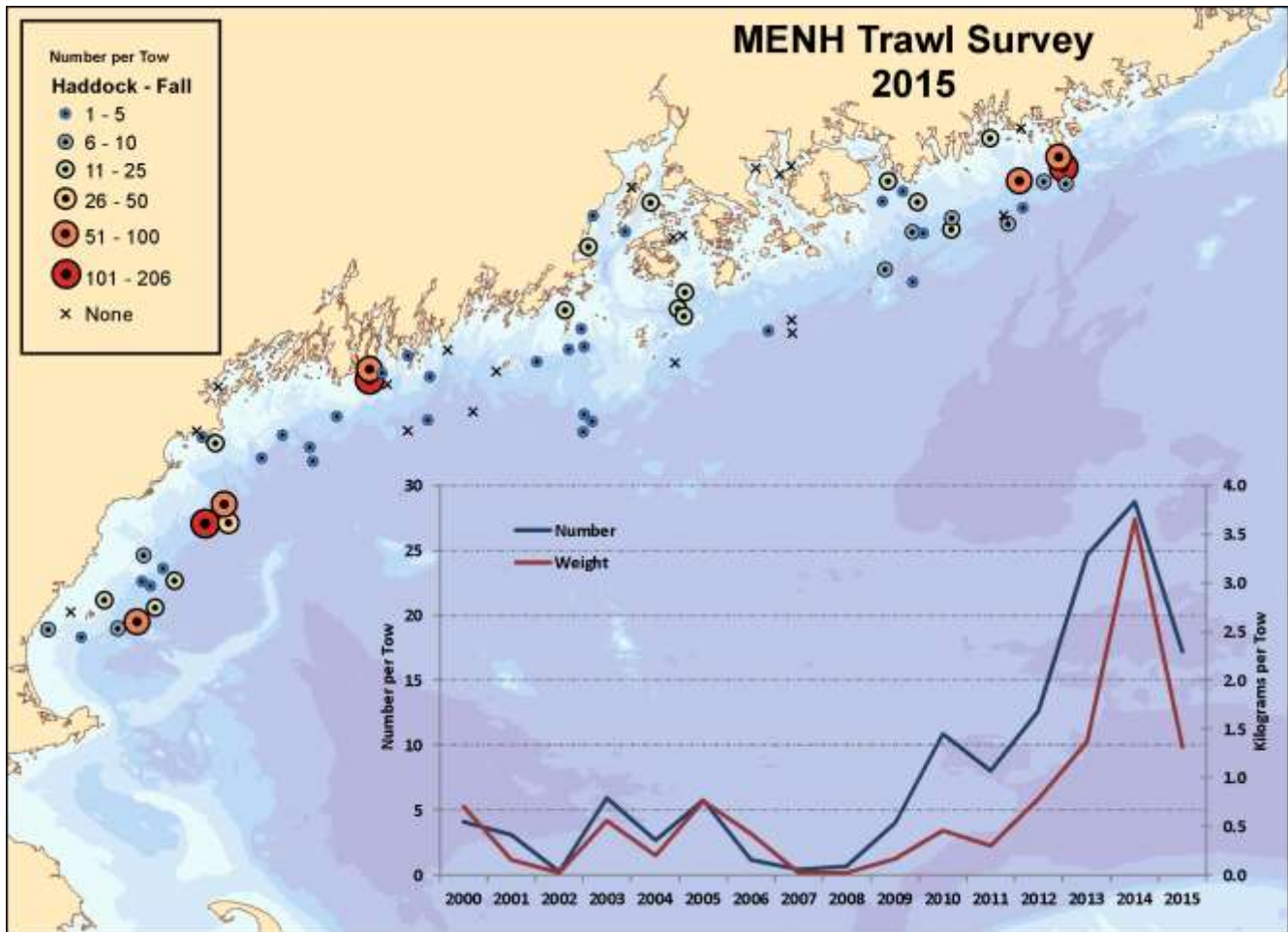
	Number		Weight	
	Mean	CV	Mean	CV
2001	0.02	2.00	0.00	2.00
2002	4.33	0.71	1.20	0.58
2003	0.70	0.92	0.49	1.04
2004	1.67	0.71	0.26	0.60
2005	0.77	0.66	0.37	0.71
2006	1.58	1.47	0.33	0.81
2007	0.63	0.50	0.38	0.66
2008	0.43	0.75	0.40	0.75
2009	0.61	0.60	0.10	0.70
2010	0.85	0.69	0.19	0.71
2011	6.54	1.00	0.52	0.88
2012	6.56	2.18	0.65	2.29
2013	1.88	0.41	0.26	0.60
2014	55.34	1.09	5.12	1.16
2015	7.48	0.77	0.83	0.58

Appendix C

Haddock - MENH Spring Surveys



**Note Spring 2014 Y-axis is quadrupled



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

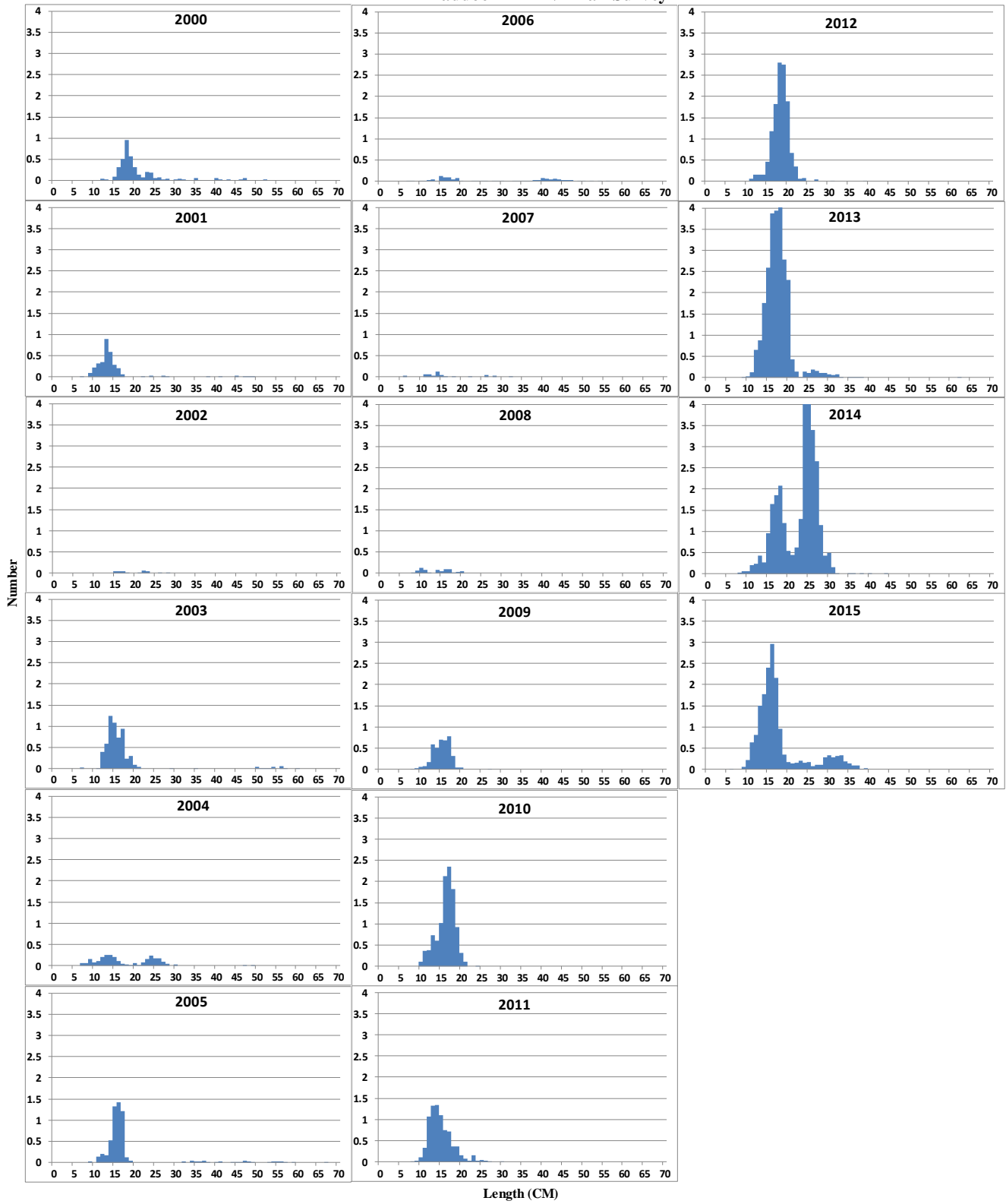
FALL

Stratified Mean

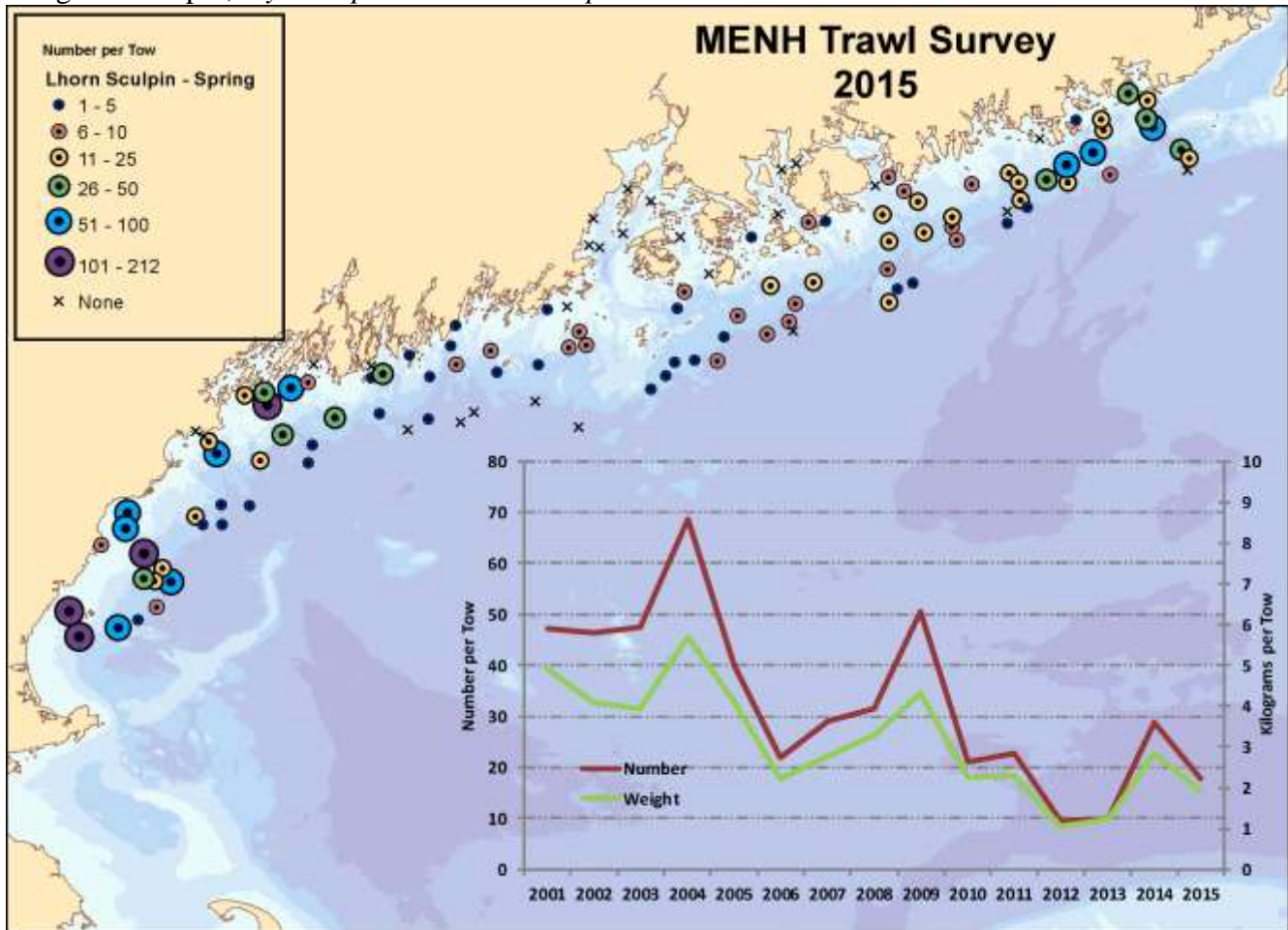
	Number		Weight	
	Mean	CV	Mean	CV
2000	4.12	0.71	0.71	1.74
2001	3.14	1.02	0.15	1.06
2002	0.29	0.92	0.02	1.23
2003	5.94	0.94	0.55	0.73
2004	2.65	0.71	0.21	0.80
2005	5.75	0.18	0.76	1.34
2006	1.18	1.27	0.43	2.22
2007	0.44	1.08	0.02	0.53
2008	0.68	0.59	0.02	0.53
2009	3.99	0.67	0.17	0.56
2010	10.86	0.64	0.46	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
2014	28.76	0.88	3.65	1.08
2015	17.20	0.49	1.32	0.68

Appendix C

Haddock - MENH Fall Survey



Longhorn sculpin, *Myoxocephalus octodecemspinosus*

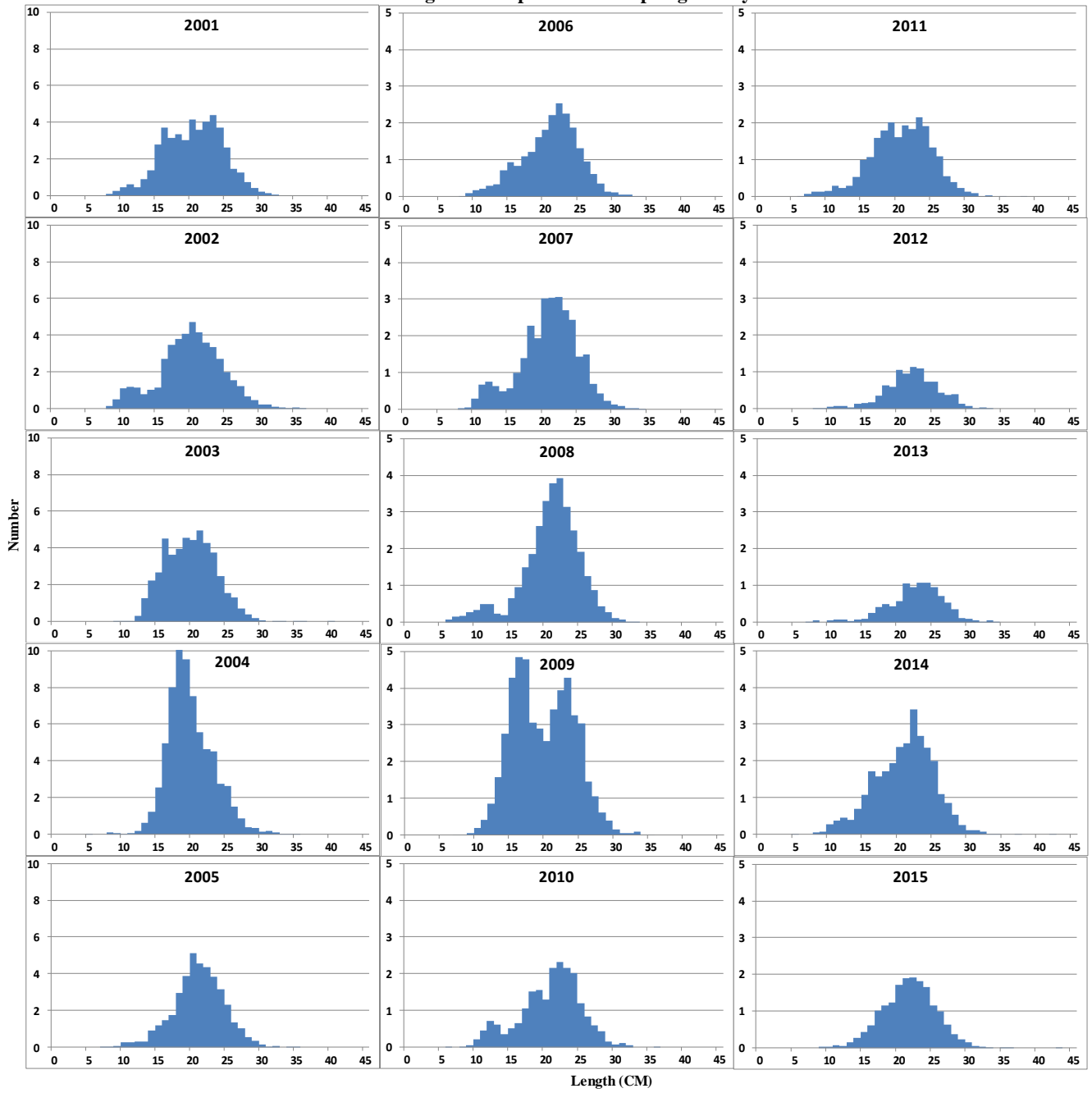


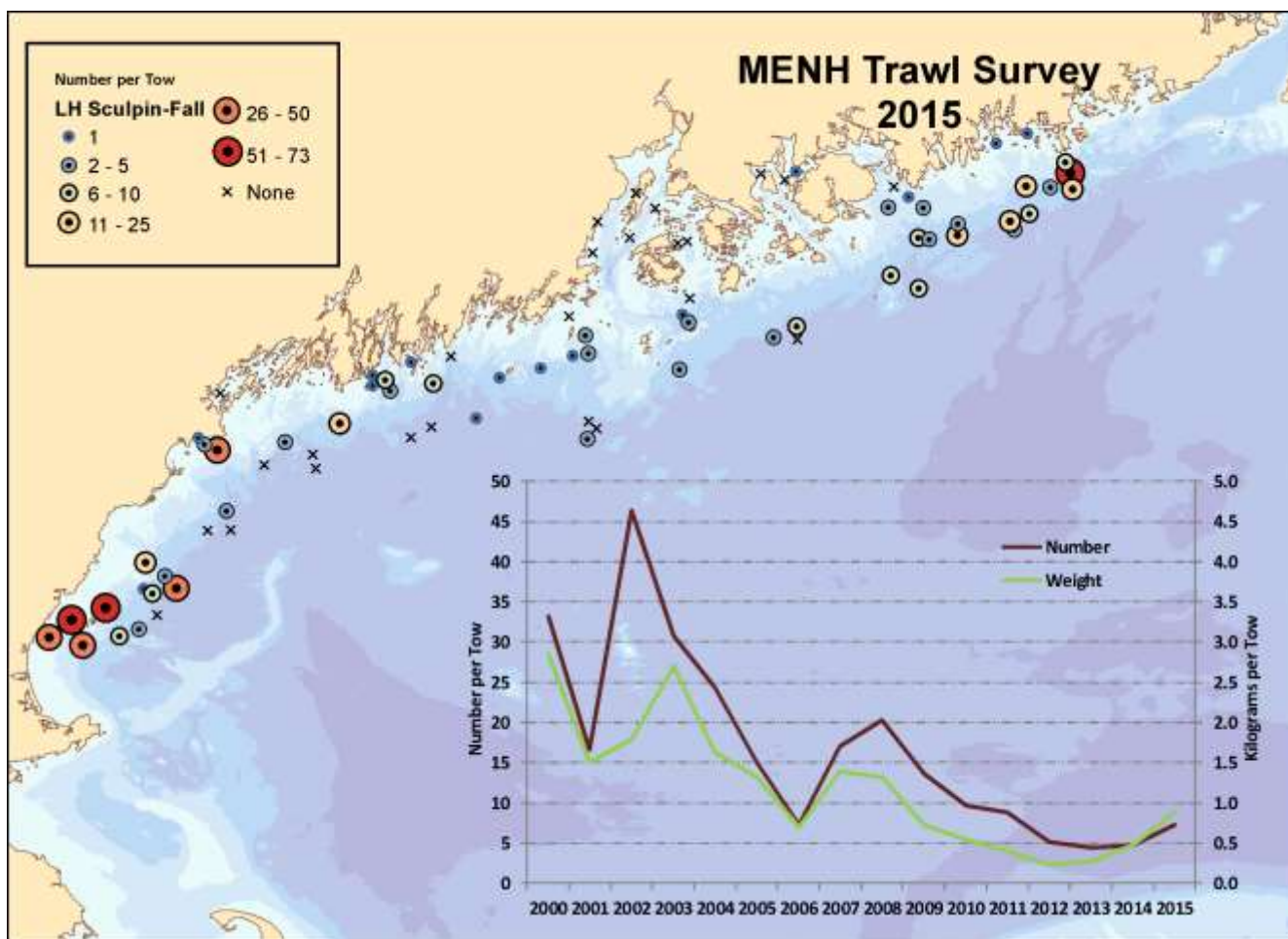
Means and coefficients of variance for graph overlain on above map
 fixed stations not included
 for LH Sculpin, calculated for regions 1 through 5; Strata 1 through 4
SPRING

	Stratified Mean			
	Number Mean	CV	Weight 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
2014	28.73	0.24	2.84	0.25
2015	17.79	0.32	1.92	0.30

Appendix C

Longhorn Sculpin - MENH Spring Surveys**



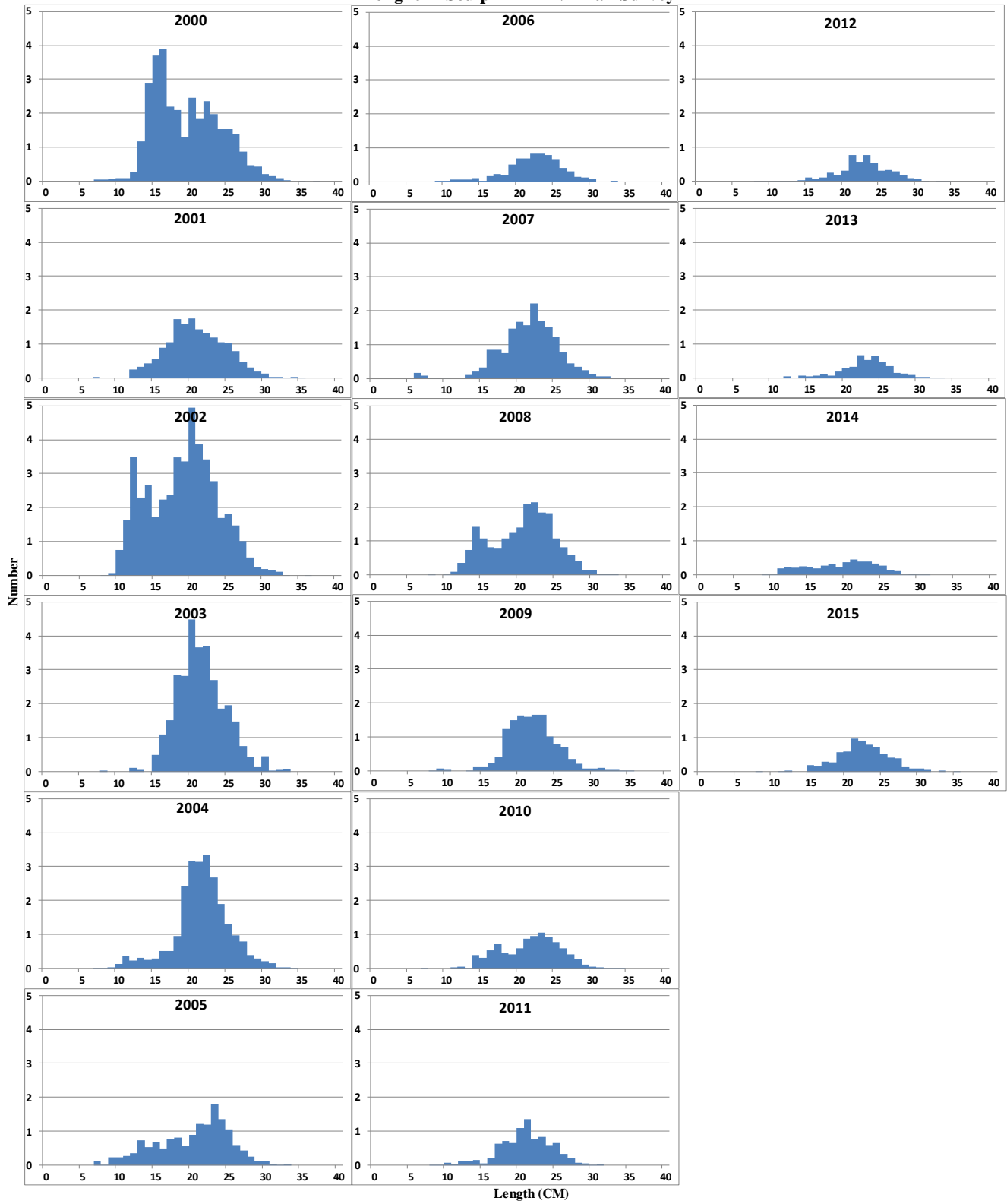


Means and coefficients of variance for graph overlain on above map
 fixed stations not included
 for LH Sculpin, calculated for regions 1 through 5; Strata 1 through 4

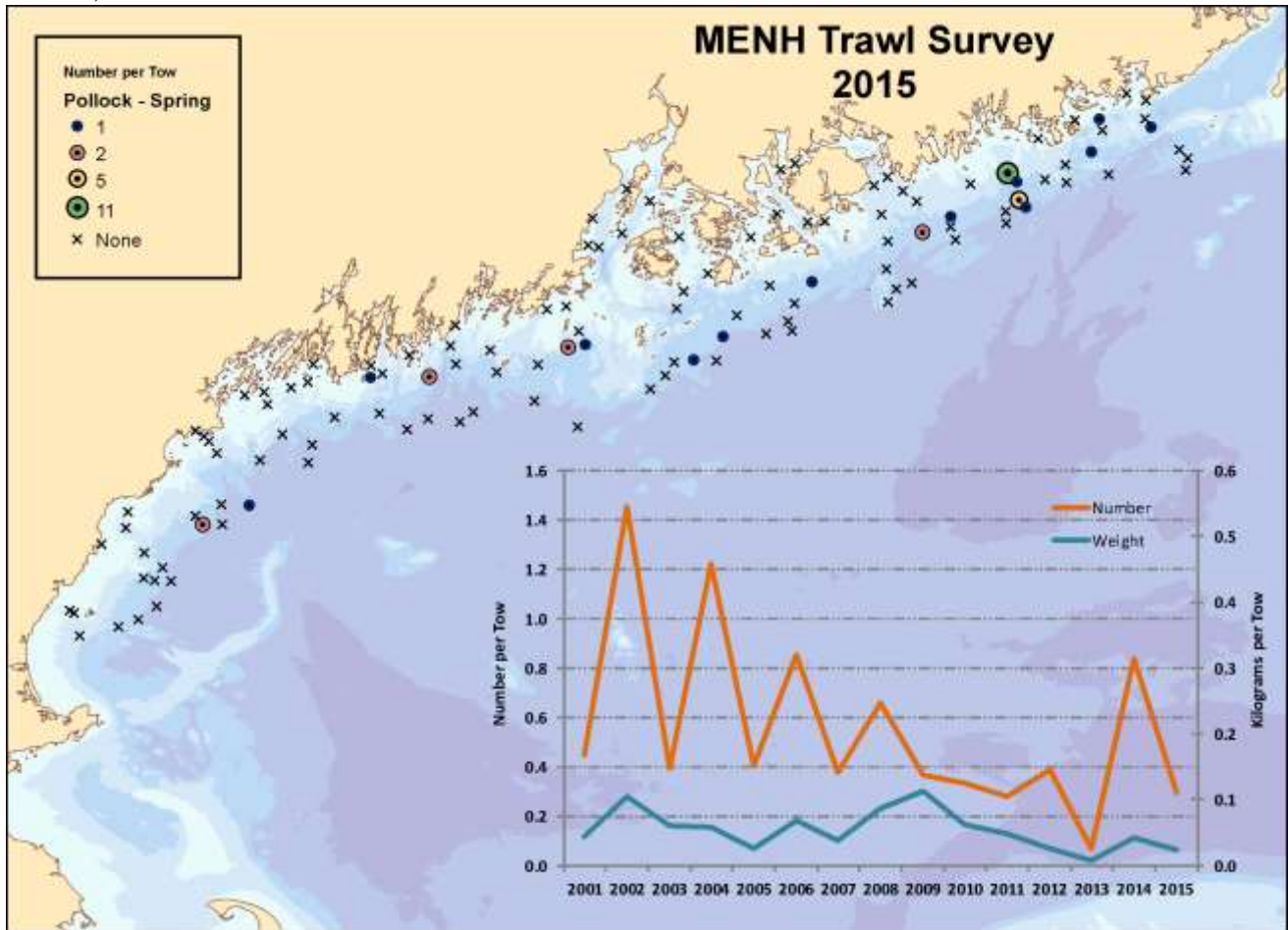
FALL	Stratified Mean			
	Number		Weight	
	Mean	CV	Mean	CV
2000	33.20	0.48	2.84	0.27
2001	16.66	0.46	1.50	0.42
2002	46.40	0.36	1.79	0.63
2003	30.75	0.11	2.69	0.13
2004	24.45	0.39	1.64	0.32
2005	15.01	0.28	1.32	0.32
2006	7.27	0.29	0.70	0.31
2007	17.00	0.39	1.40	0.35
2008	20.25	0.26	1.32	0.35
2009	13.68	0.25	0.72	0.39
2010	9.62	0.26	0.54	0.33
2011	8.84	0.27	0.41	0.15
2012	5.16	0.56	0.23	0.26
2013	4.40	0.52	0.27	0.37
2014	4.71	0.42	0.47	0.31

Appendix C

Longhorn Sculpin - MENH Fall Survey



Pollock, *Pollachius virens*

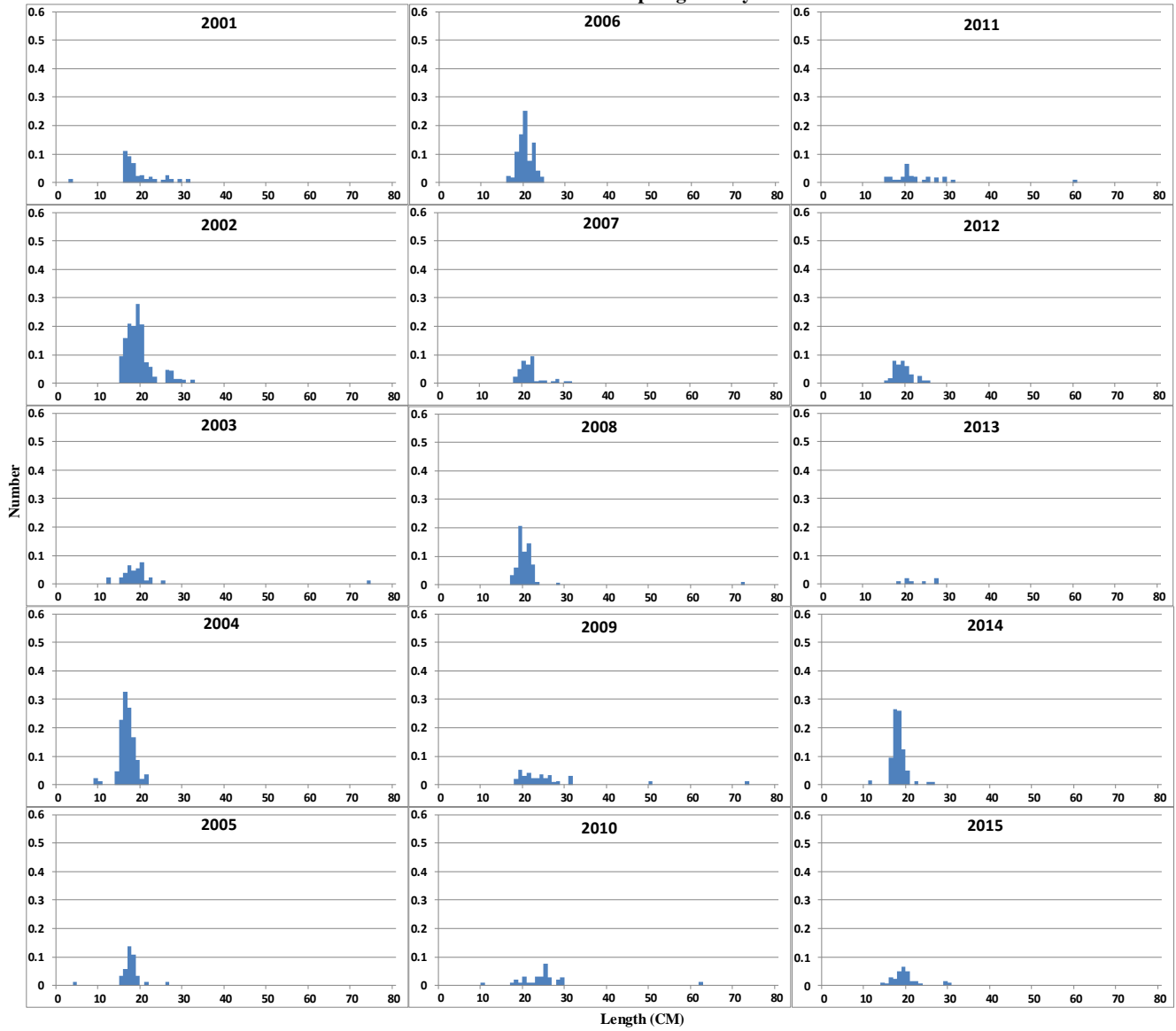


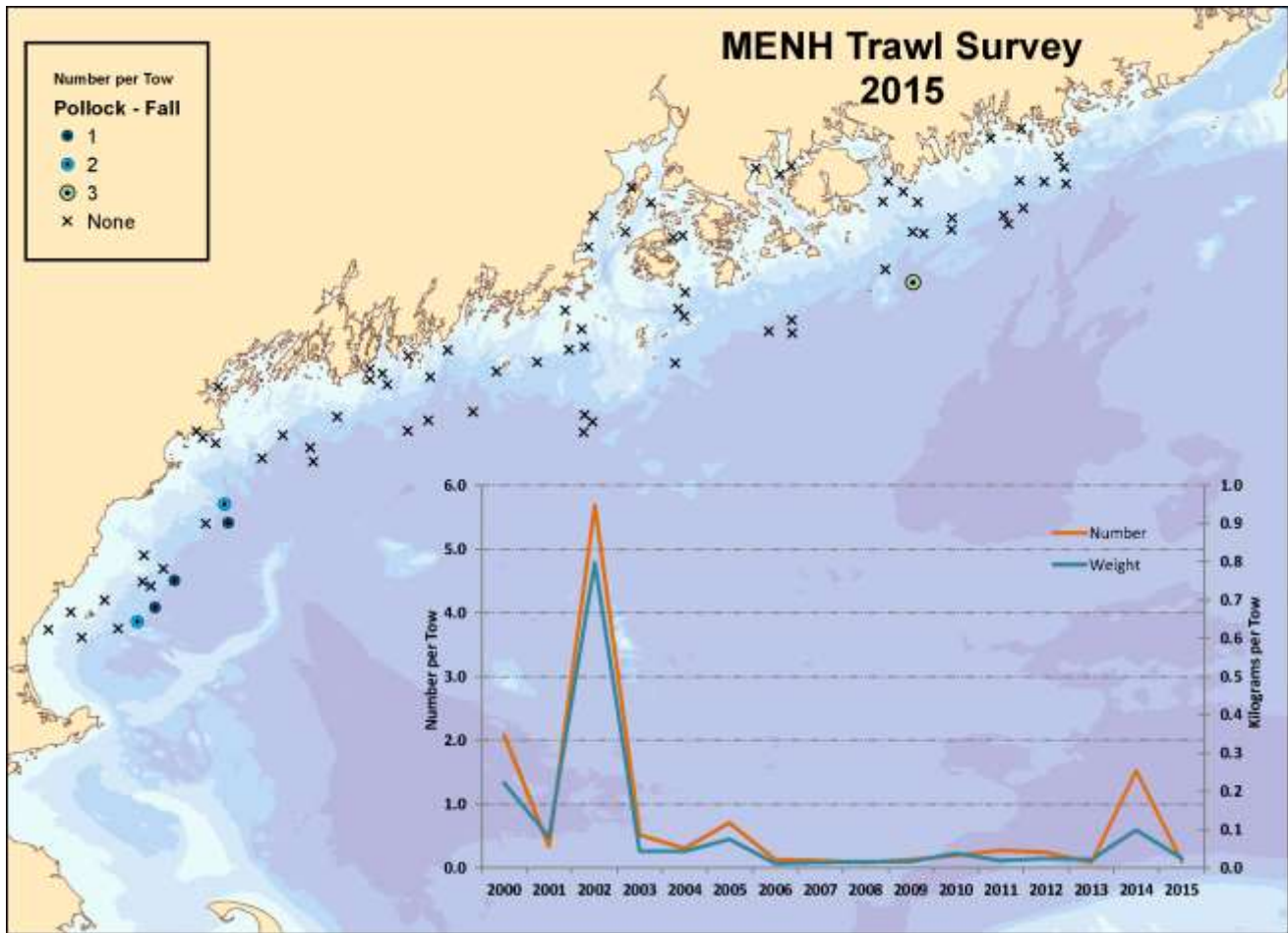
Means and coefficients of variance for graph overlain on above map
 fixed stations not included
 for pollock, calculated for regions 1 through 5; Strata 1 through 4
SPRING

	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
2014	0.84	1.24	0.04	1.24
2015	0.30	0.89	0.02	0.94

Appendix C

Pollock - MENH Spring Surveys



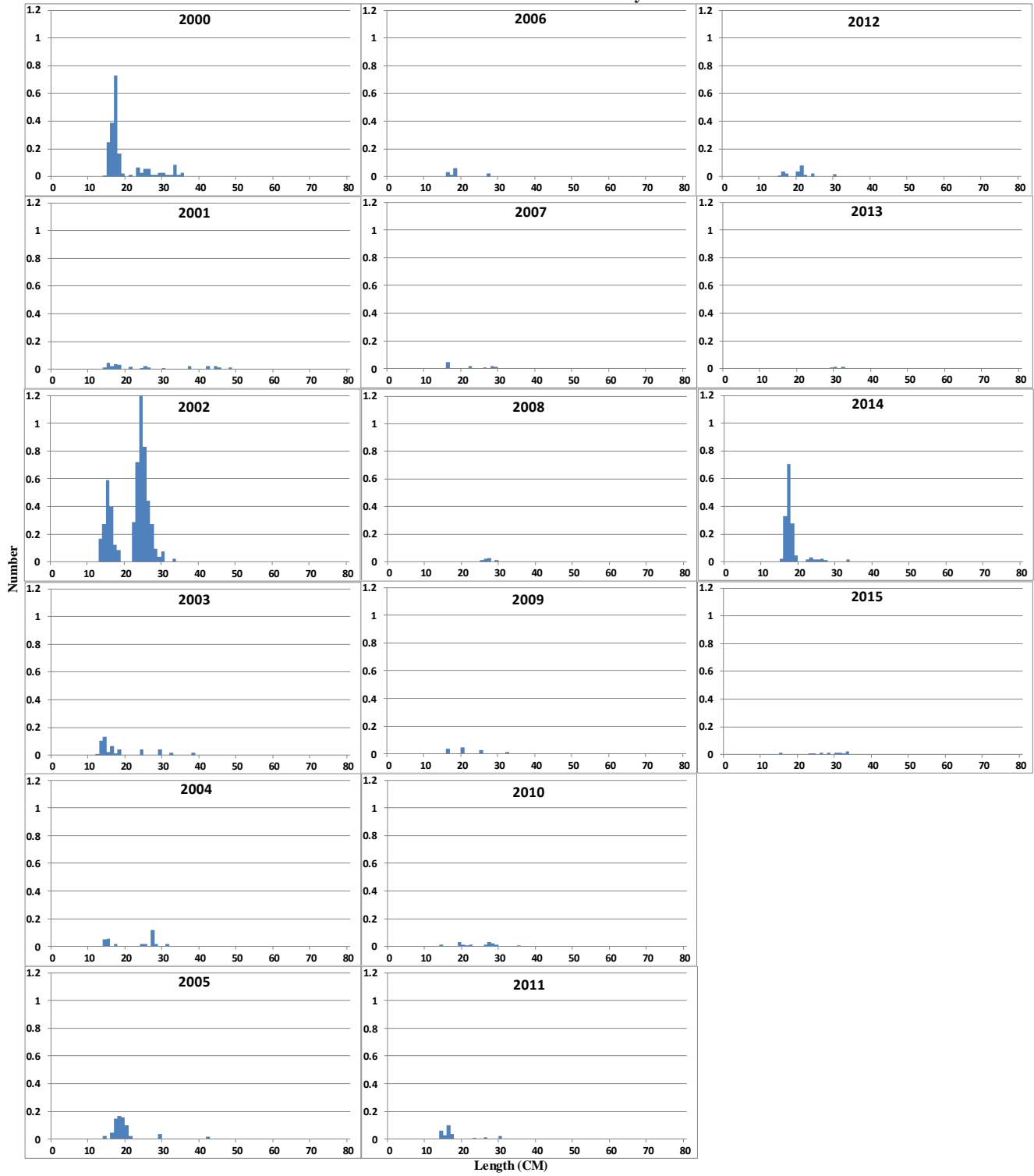


Means and coefficients of variance for graph overlain on above map
 fixed stations not included
 for pollock, calculated for regions 1 through 5; Strata 1 through 4
 FALL

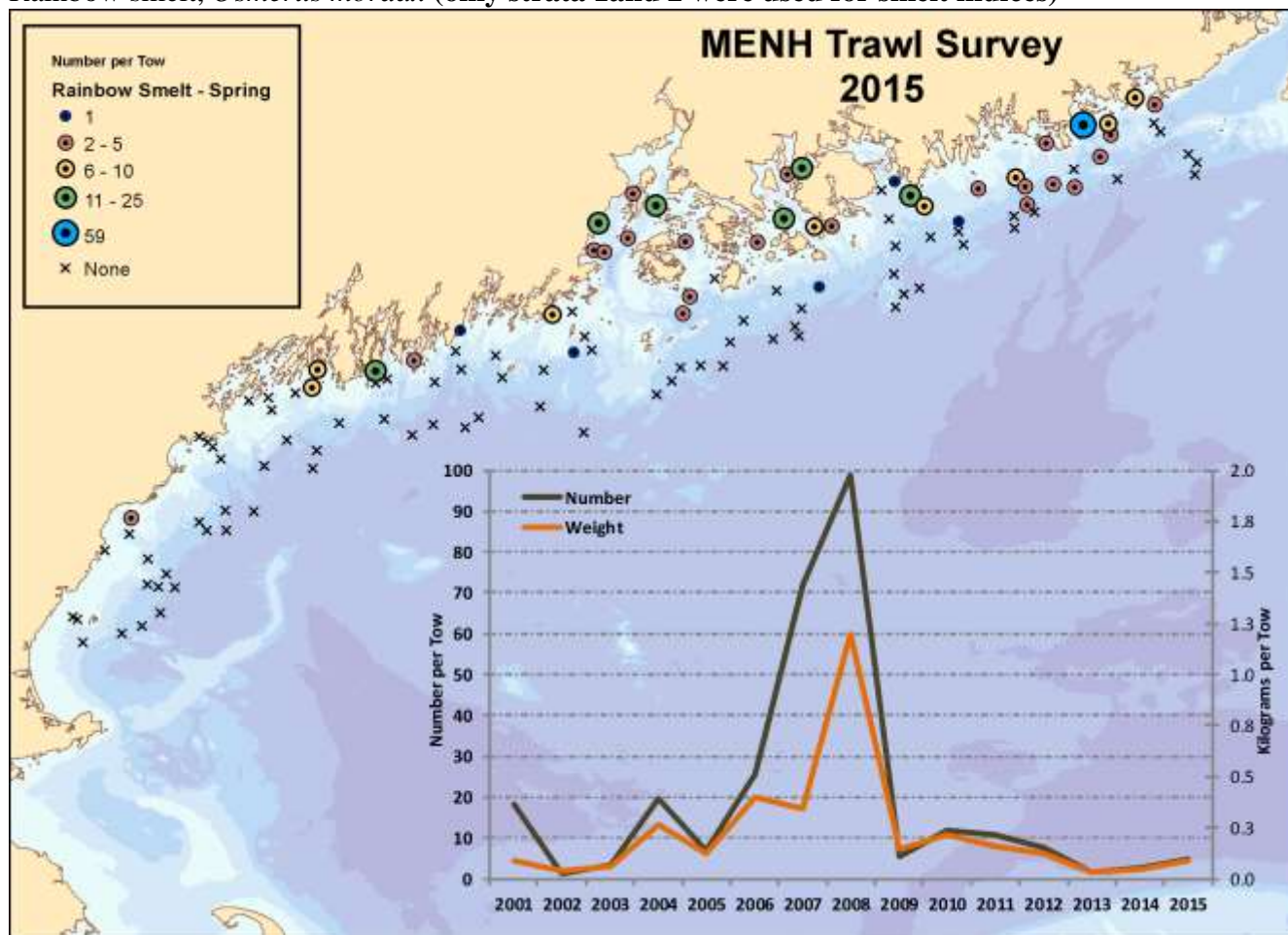
	Stratified Mean			
	Number		Weight	
	Mean	CV	Mean	CV
2000	2.08	1.21	0.22	0.67
2001	0.33	0.53	0.08	0.68
2002	5.68	1.65	0.80	1.80
2003	0.51	0.57	0.04	0.60
2004	0.31	0.68	0.04	0.60
2005	0.71	0.11	0.07	0.42
2006	0.13	0.88	0.01	0.91
2007	0.11	1.04	0.01	0.93
2008	0.07	0.82	0.02	0.84
2009	0.12	0.70	0.02	0.88
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
2014	1.53	1.84	0.10	1.52
2015	0.10	0.82	0.03	1.04

Appendix C

Pollock - MENH Fall Surveys



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

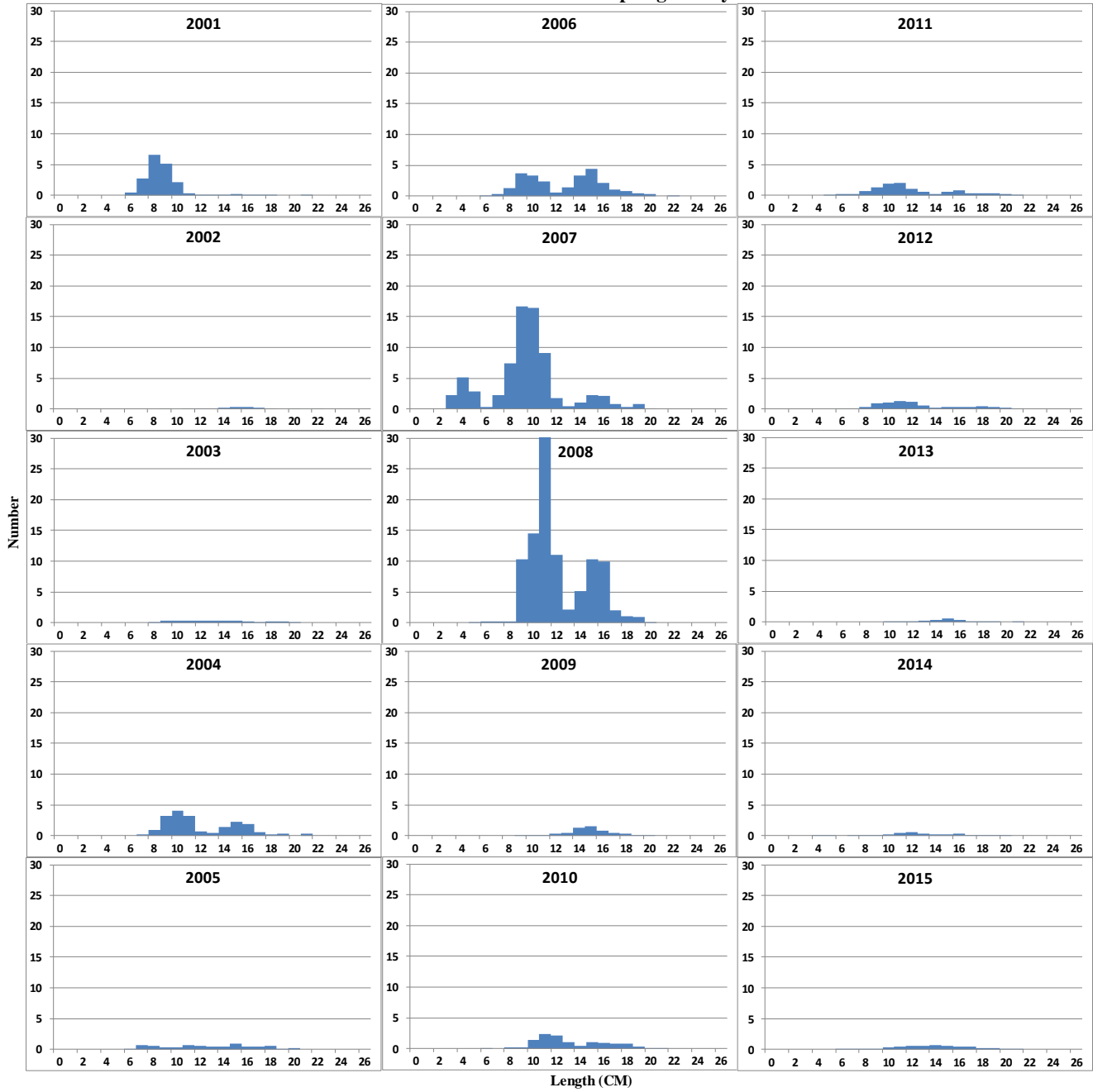


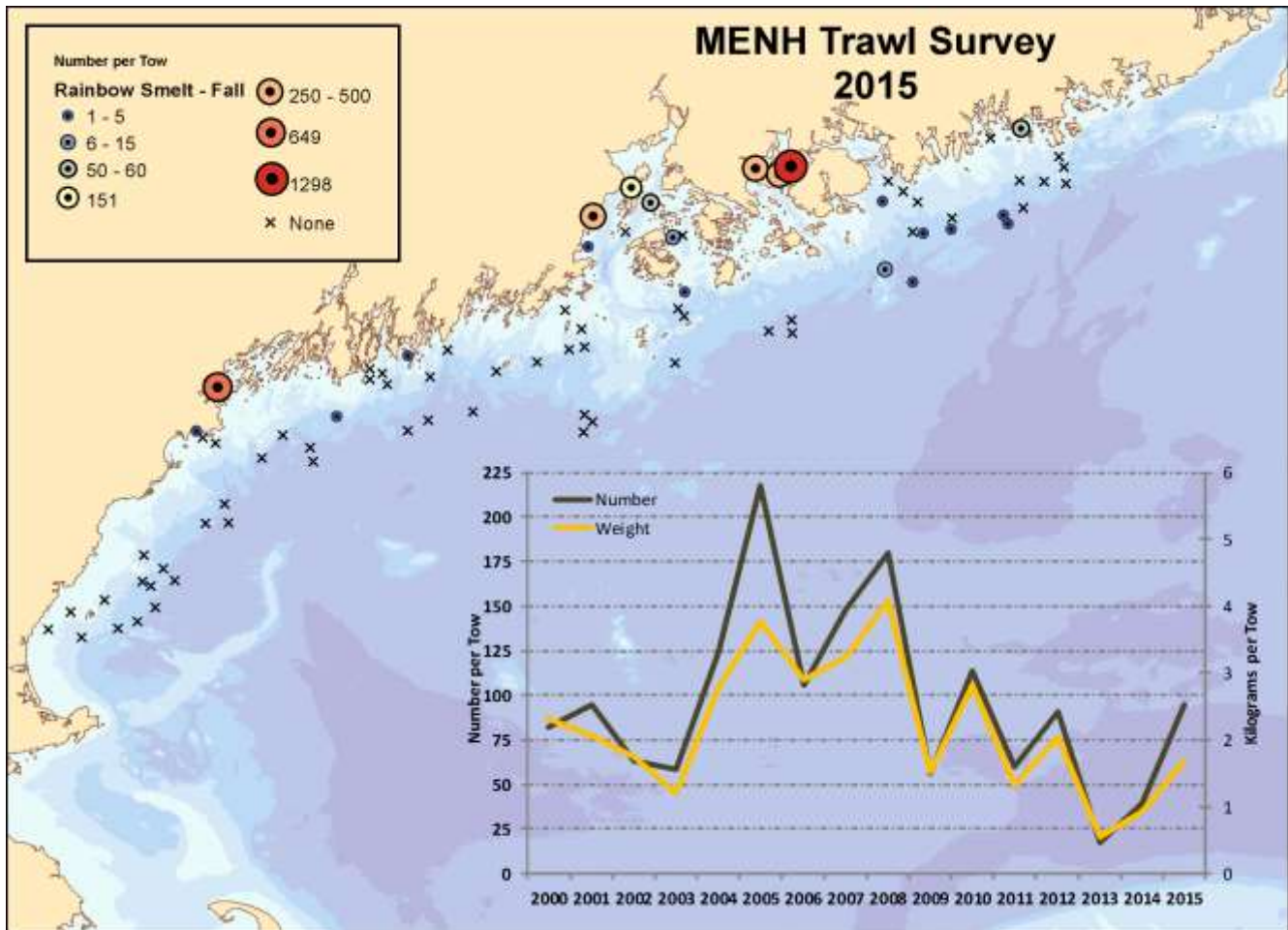
Means and coefficients of variance for graph overlain on above map
 fixed stations not included
 for smelt, indices calculated for regions 1 through 5; Strata 1 and 2
SPRING
 Stratified Mean

	Number Mean	CV	Mean	Weight CV
2001	18.07	1.48	0.09	1.19
2002	1.34	0.82	0.04	0.83
2003	3.20	0.62	0.06	0.55
2004	19.50	1.25	0.26	0.99
2005	6.72	0.63	0.13	0.98
2006	25.62	0.86	0.40	0.83
2007	72.07	1.17	0.34	0.93
2008	98.81	1.79	1.20	1.70
2009	5.59	0.89	0.14	0.86
2010	11.74	1.21	0.22	1.12
2011	10.91	1.05	0.16	0.83
2012	7.56	1.19	0.12	0.92
2013	1.53	1.57	0.03	1.36
2014	2.76	1.00	0.04	0.91
2015	4.79	0.55	0.09	0.53

Appendix C

Rainbow Smelt - MENH Spring Surveys



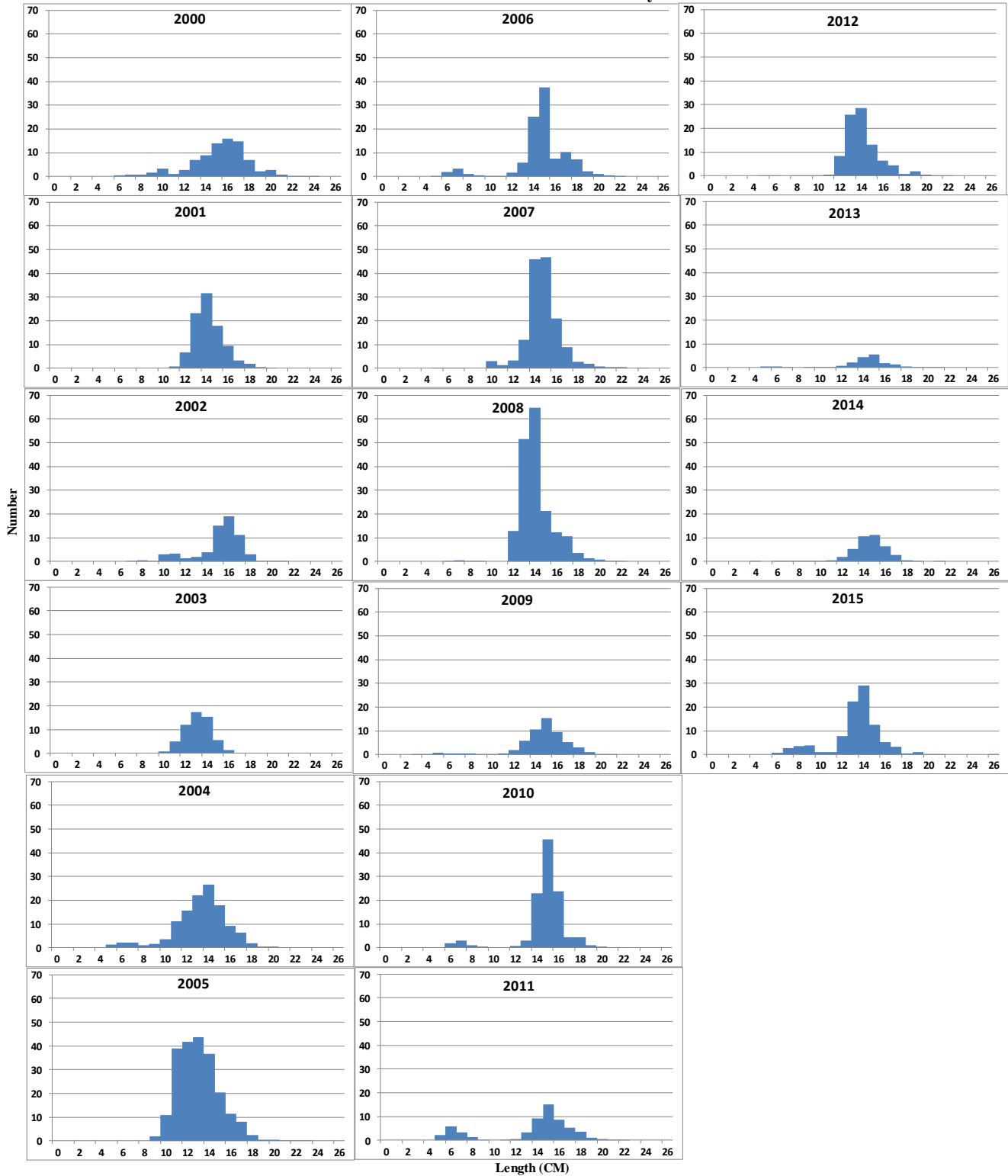


Means and coefficients of variance for graph overlain on above map fixed stations not included for smelt, indices calculated for regions 1 through 5; Strata 1 and 2
FALL
Stratified Mean

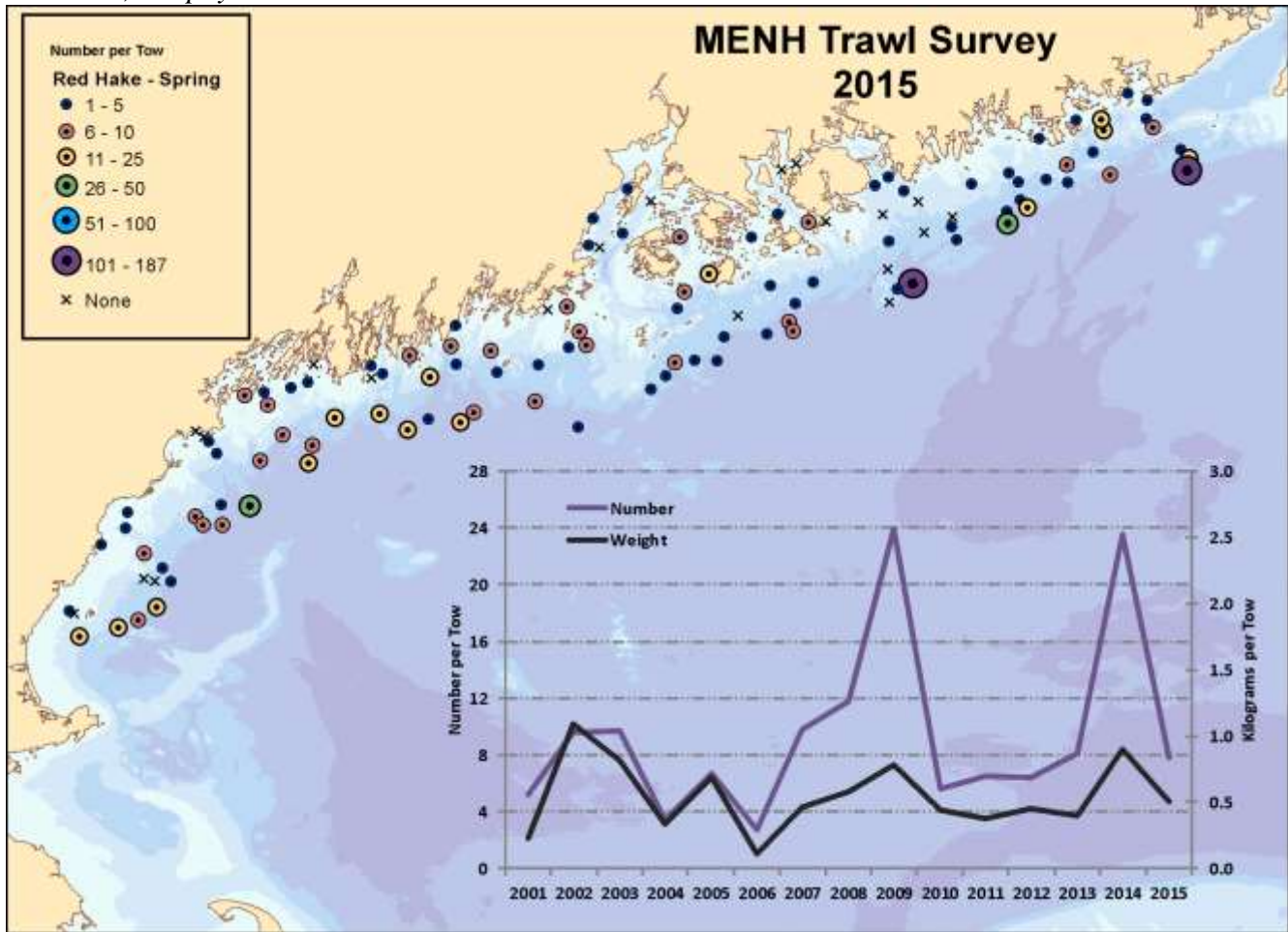
	Number Mean	CV	Weight Mean	CV
2000	82.20	1.18	2.32	1.35
2001	94.54	0.39	2.05	0.42
2002	63.24	1.56	1.74	1.52
2003	58.18	0.48	1.20	0.45
2004	123.81	0.61	2.77	0.61
2005	217.34	0.32	3.77	0.37
2006	105.85	1.10	2.89	0.96
2007	148.49	1.12	3.25	1.03
2008	179.87	1.23	4.07	1.16
2009	56.05	0.78	1.52	0.86
2010	113.81	1.42	2.83	1.50
2011	59.94	0.31	1.34	0.35
2012	90.60	0.93	2.05	0.94
2013	17.64	0.83	0.55	1.08
2014	39.94	0.40	0.94	0.39
2015	94.91	0.72	1.69	0.65

Appendix C

Rainbow Smelt - MENH Fall Surveys



Red hake, *Urophycis chuss*



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

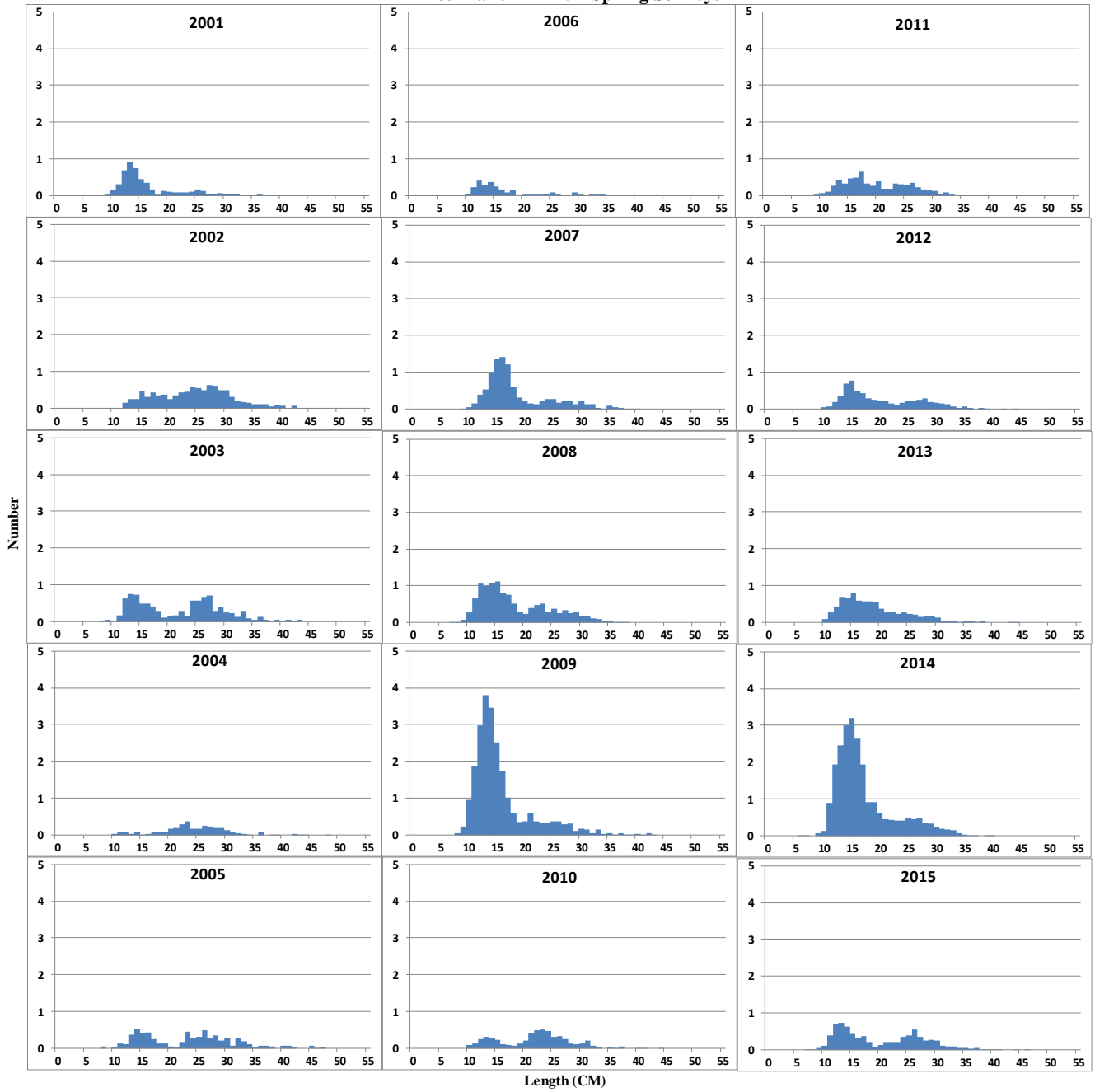
SPRING

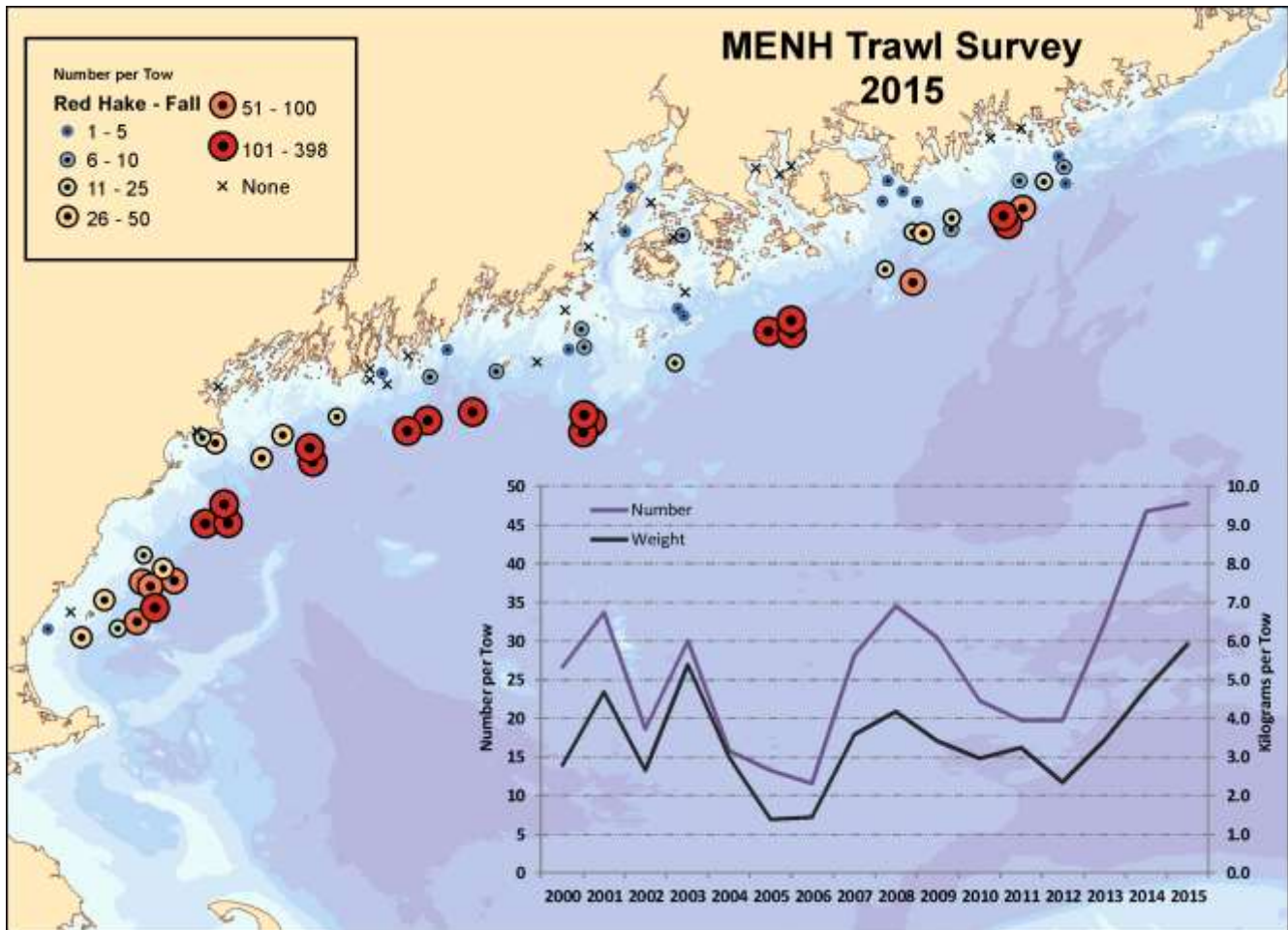
Stratified Mean

	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
2014	23.48	0.22	0.90	0.26
2015	7.83	0.50	0.50	0.94

Appendix C

Red Hake - MENH Spring Surveys





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

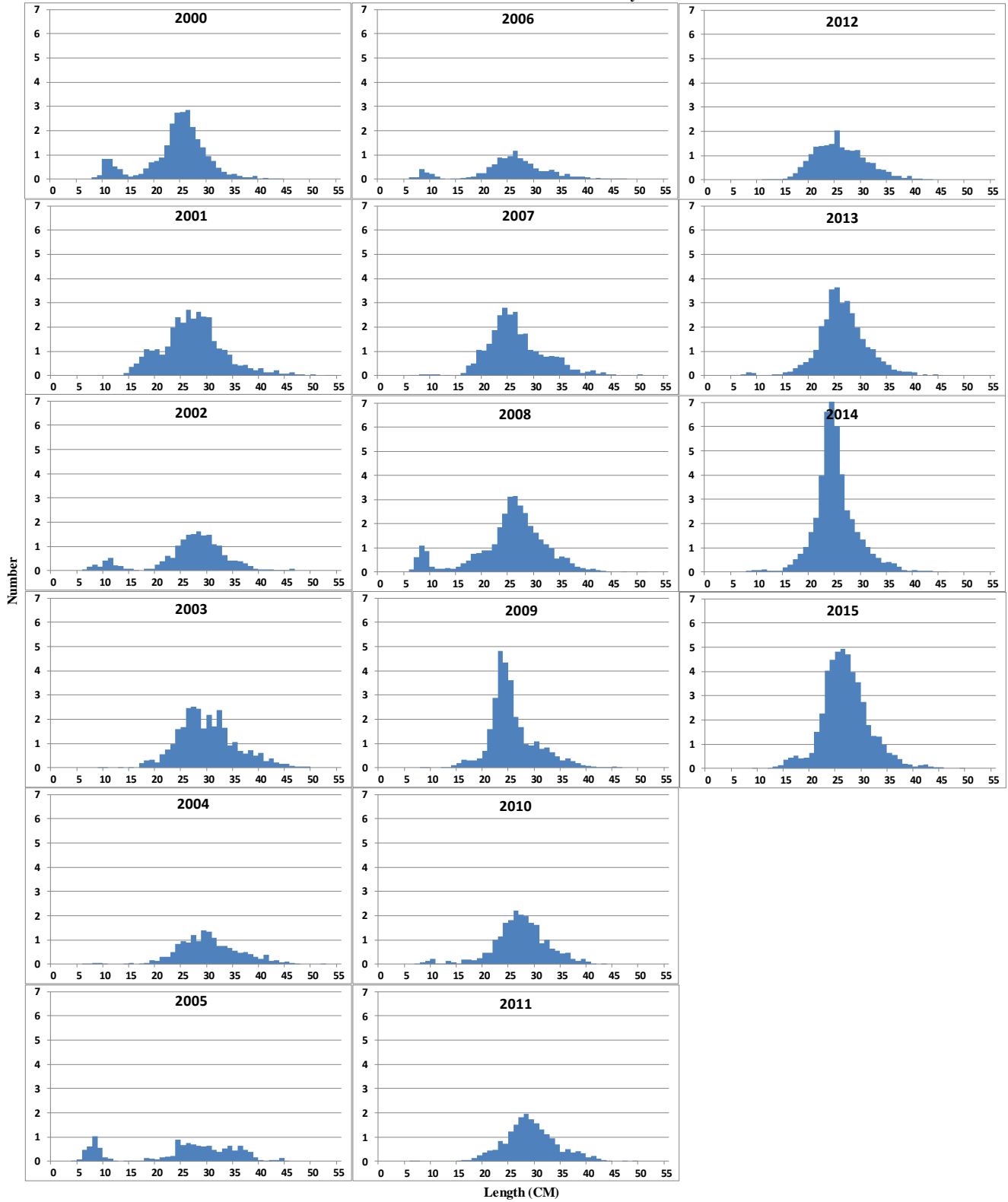
FALL

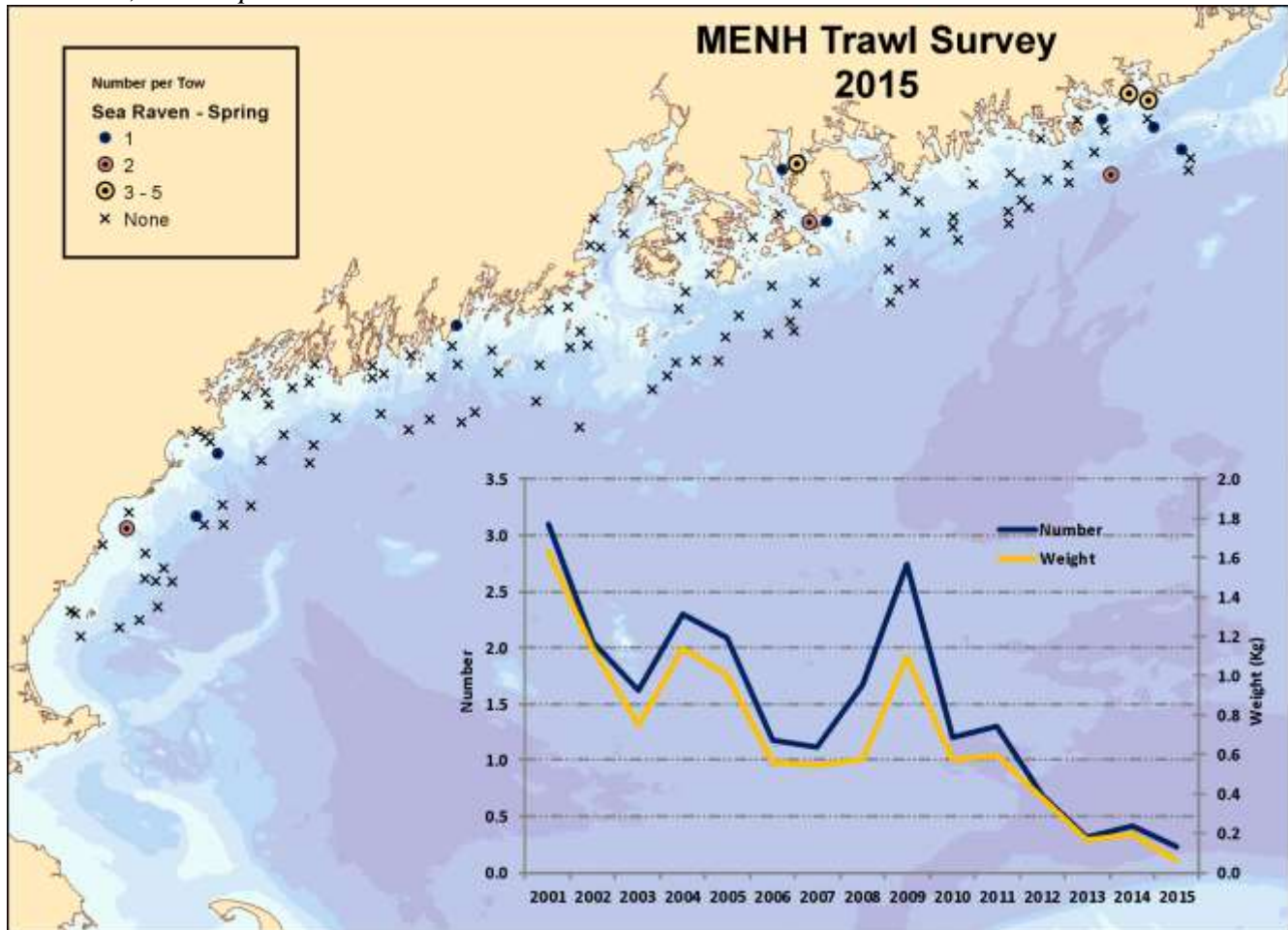
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2000	26.71	0.29	2.81	0.29
2001	33.66	0.34	4.68	0.33
2002	18.67	0.38	2.64	0.42
2003	30.07	0.14	5.39	0.14
2004	15.81	0.19	3.00	0.22
2005	13.20	0.15	1.39	0.24
2006	11.58	0.25	1.45	0.23
2007	28.19	0.24	3.60	0.27
2008	34.50	0.15	4.16	0.11
2009	30.45	0.19	3.41	0.20
2010	22.33	0.18	2.97	0.19
2011	19.76	0.19	3.24	0.17
2012	19.74	0.15	2.34	0.16
2013	32.50	0.43	3.43	0.35
2014	46.85	0.27	4.78	0.29
2015	47.82	0.23	5.93	0.26

Appendix C

Red Hake - MENH Fall Survey



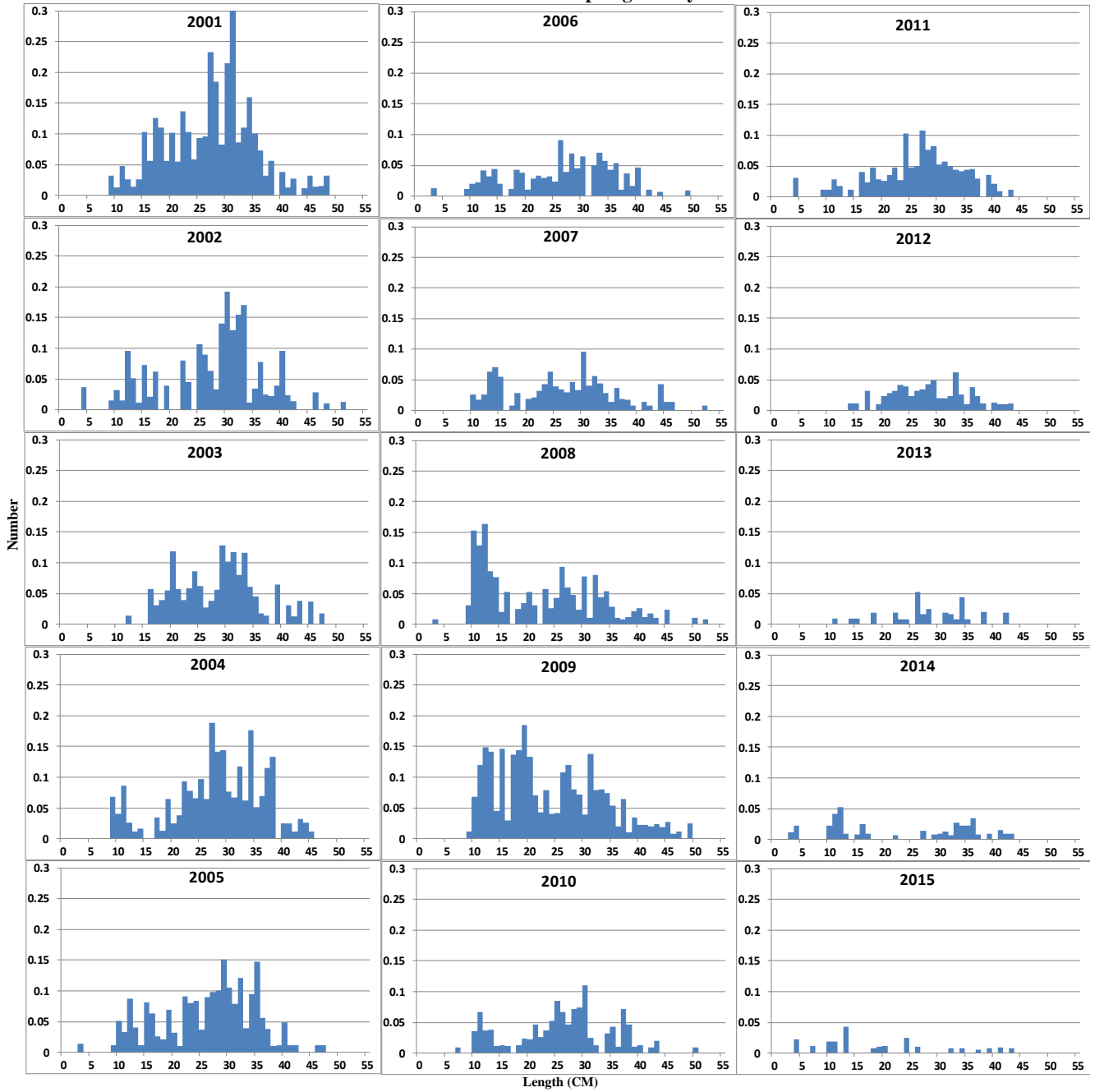
Sea raven, *Hemiripterus americanus*

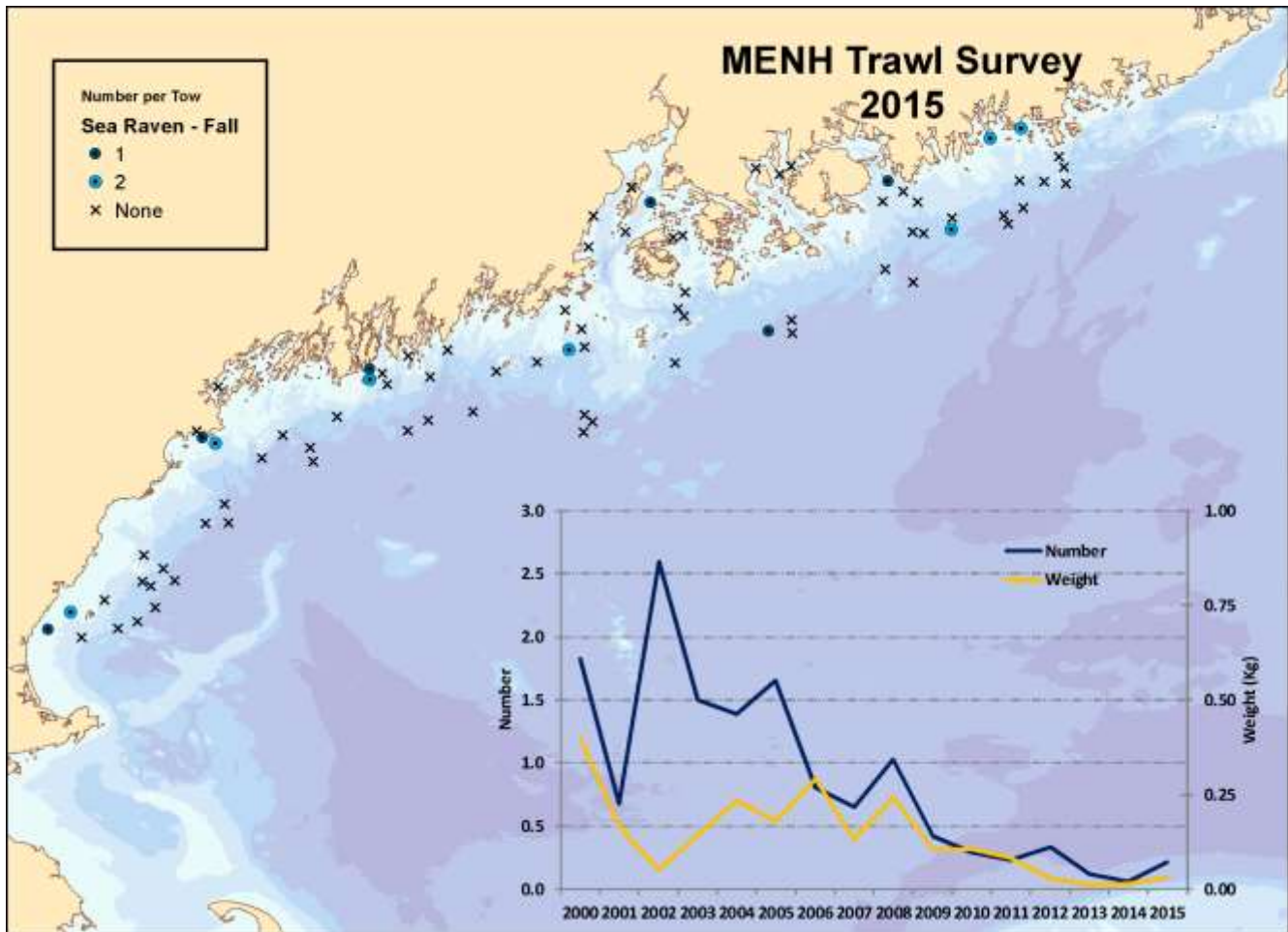
Means and coefficients of variance for graph overlain on above map
 fixed stations not included
 for sea raven, calculated for regions 1 through 5; strata 1 through 4
 SPRING

	Stratified Mean			
	Number Mean	CV	Weight 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
2014	0.42	0.61	0.19	0.77
2015	0.23	0.69	0.06	1.07

Appendix C

Sea Raven - MENH Spring Surveys





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

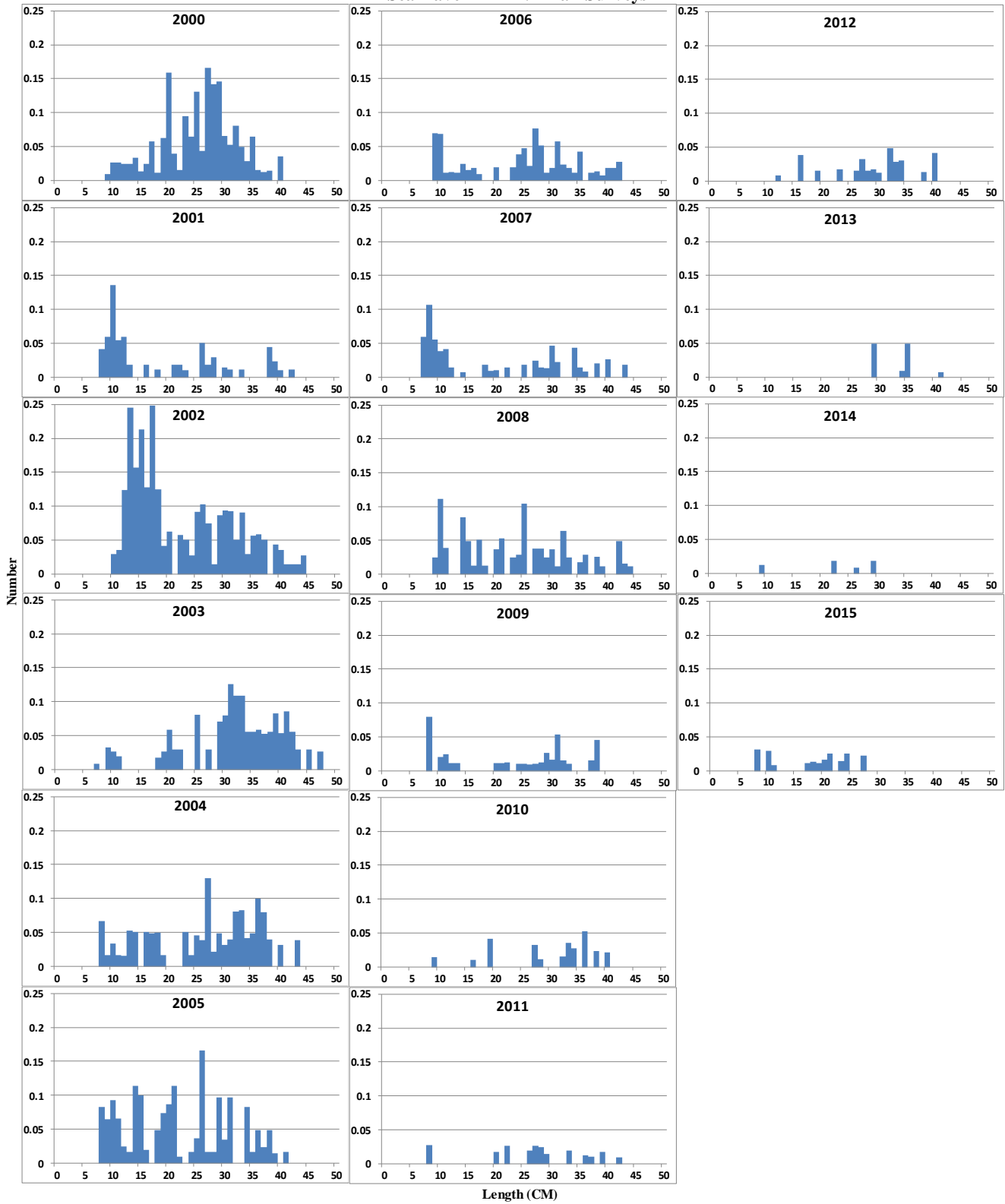
FALL

Stratified Mean

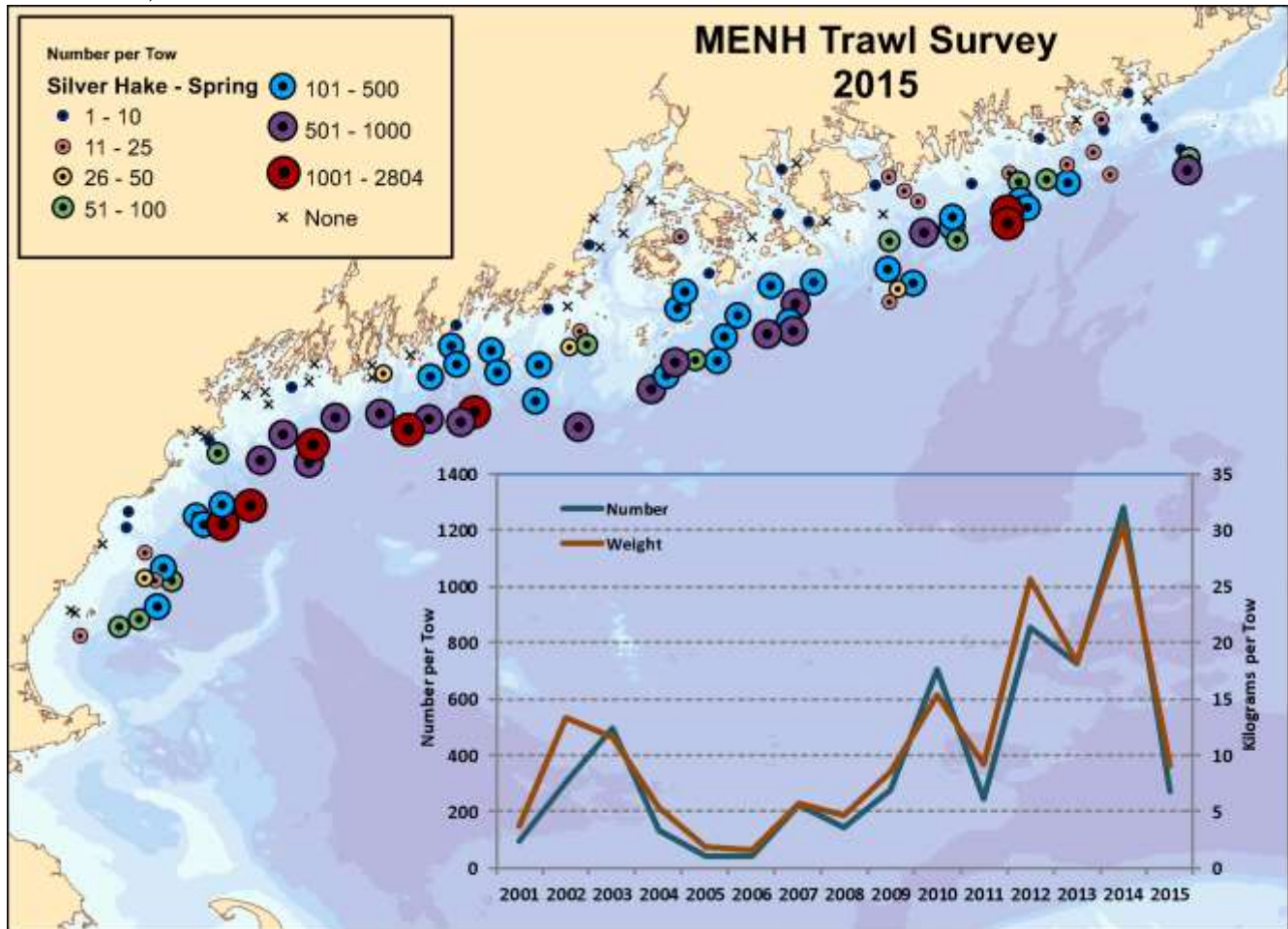
	Number		Weight	
	Mean	CV	Mean	CV
2000	1.83	0.40	0.40	0.51
2001	0.68	0.44	0.16	0.86
2002	2.59	0.64	0.05	0.92
2003	1.50	0.42	0.14	0.55
2004	1.39	0.54	0.24	0.49
2005	1.65	0.16	0.18	0.39
2006	0.80	0.42	0.29	0.53
2007	0.65	0.85	0.13	0.67
2008	1.03	0.51	0.24	0.84
2009	0.43	0.43	0.11	0.58
2010	0.29	0.51	0.11	0.86
2011	0.23	0.61	0.08	0.88
2012	0.34	0.93	0.03	1.14
2013	0.12	1.22	0.01	2.45
2014	0.06	1.11	0.01	1.30
2015	0.21	0.49	0.03	0.69

Appendix C

Sea Raven - MENH Fall Surveys



Silver hake, *Merluccius bilinearis*



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

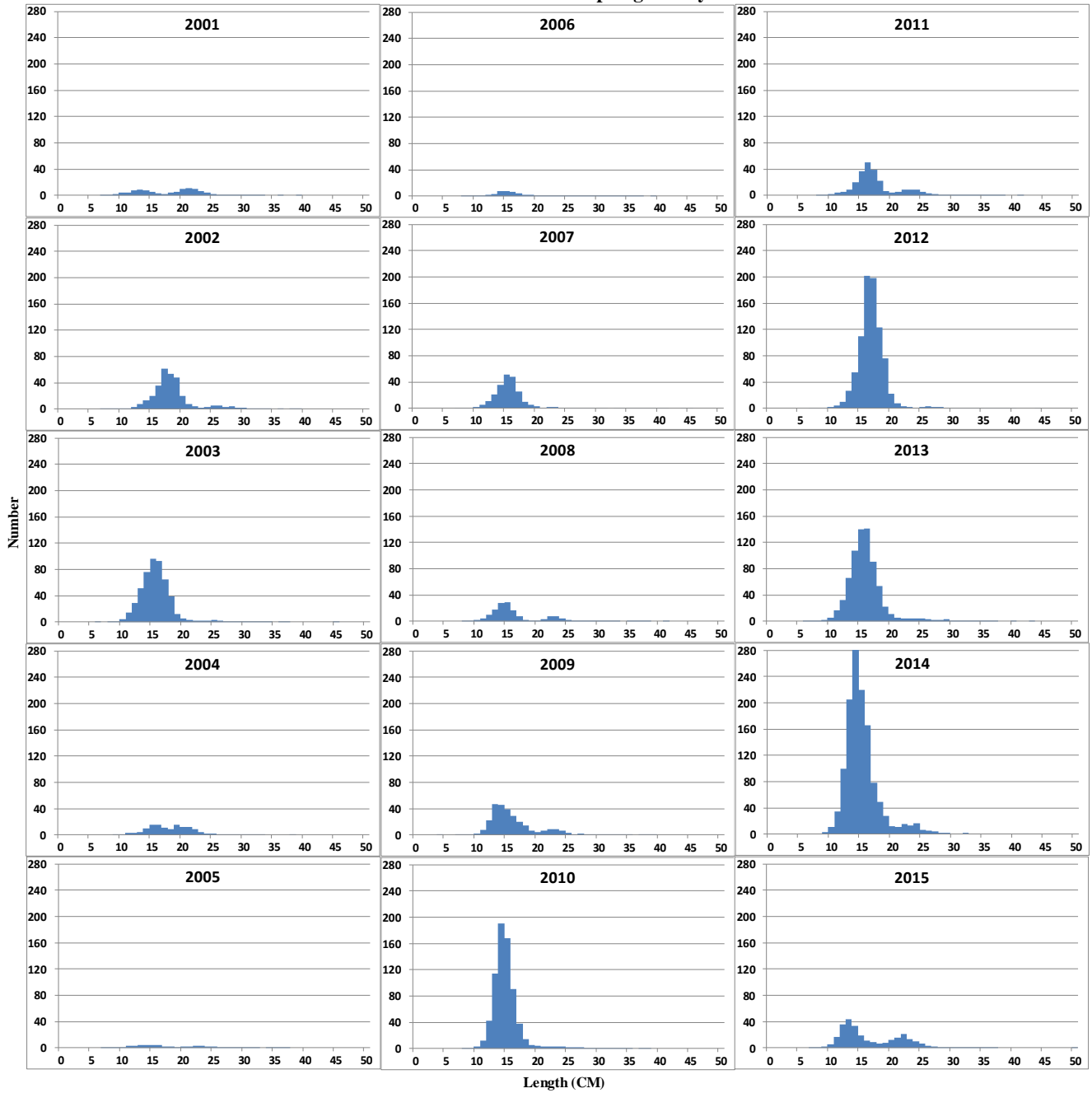
SPRING

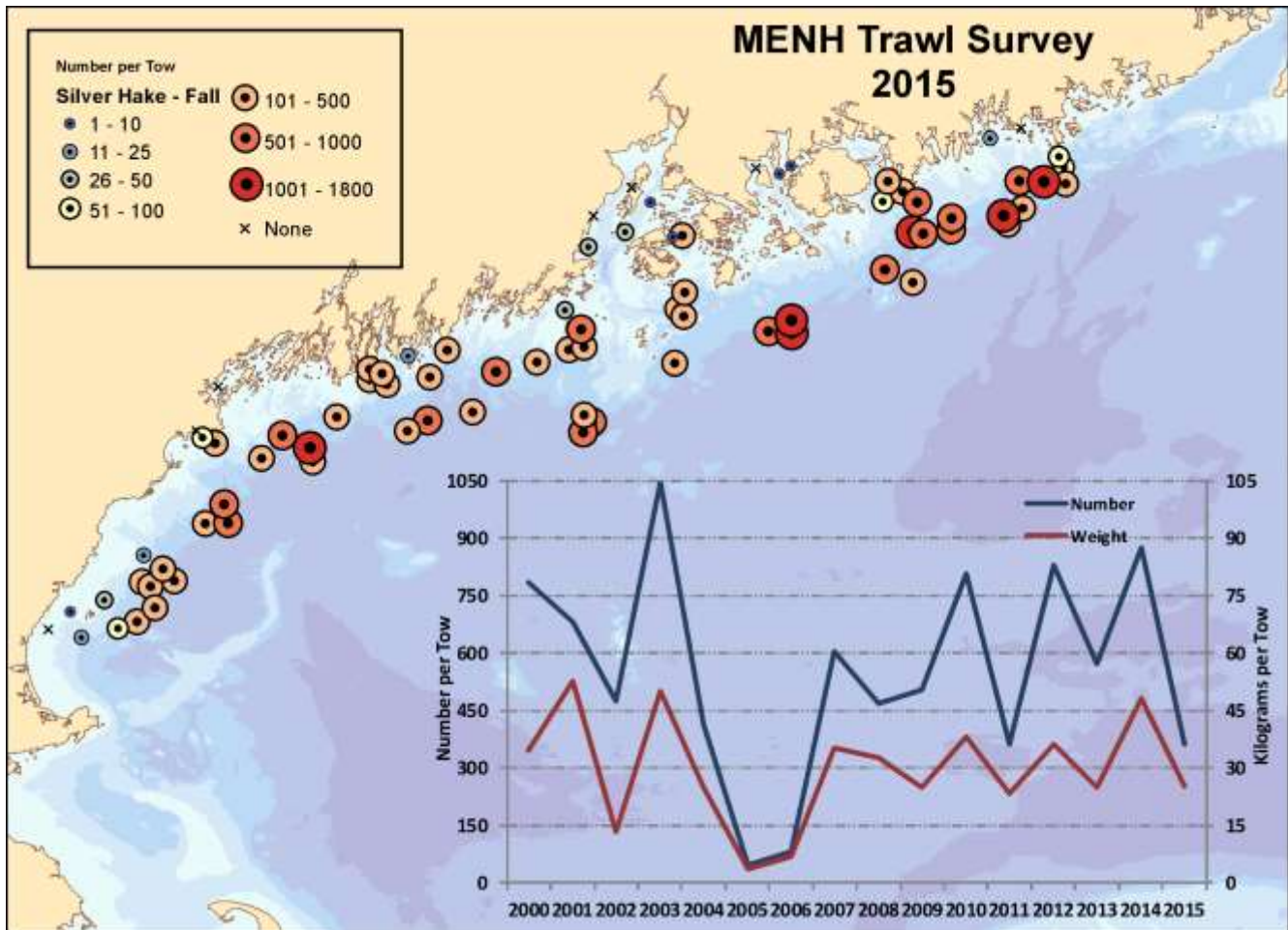
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2001	97.62	0.34	3.68	0.35
2002	302.18	1.00	13.34	0.99
2003	497.84	0.30	11.63	0.31
2004	131.82	0.17	5.26	0.22
2005	43.34	0.19	1.91	0.17
2006	40.60	0.37	1.58	0.41
2007	223.16	0.76	5.68	0.79
2008	142.90	0.27	4.67	0.32
2009	277.91	0.27	8.59	0.29
2010	702.43	0.37	15.33	0.33
2011	243.92	0.22	9.21	0.23
2012	854.53	0.84	25.68	0.69
2013	723.25	0.23	18.23	0.24
2014	1282.76	0.36	30.37	0.29
2015	272.88	0.30	9.11	0.27

Appendix C

Silver Hake - MENH Spring Surveys





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

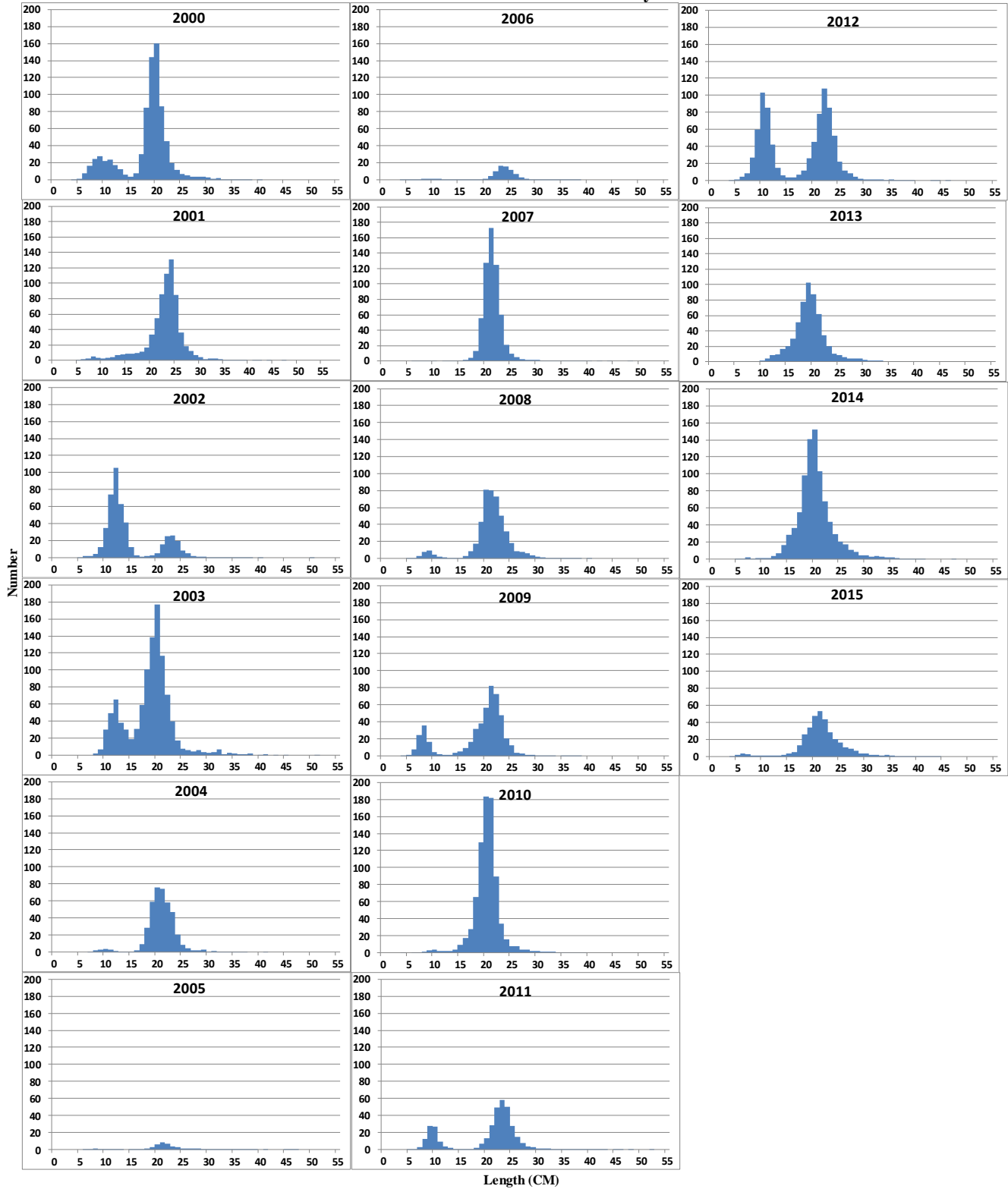
FALL

Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2000	786.14	0.19	34.77	0.21
2001	682.55	0.37	52.62	0.34
2002	476.01	0.47	13.47	0.30
2003	1046.09	0.14	49.97	0.15
2004	413.66	0.31	24.85	0.33
2005	44.91	0.24	3.77	0.30
2006	83.14	0.33	6.76	0.41
2007	605.57	0.28	35.35	0.30
2008	467.93	0.35	32.77	0.39
2009	504.72	0.26	24.88	0.28
2010	806.34	0.20	38.16	0.20
2011	361.96	0.17	23.51	0.19
2012	831.21	0.20	36.34	0.23
2013	573.65	0.24	25.10	0.23
2014	874.45	0.22	48.24	0.20
2015	362.33	0.21	25.21	0.23

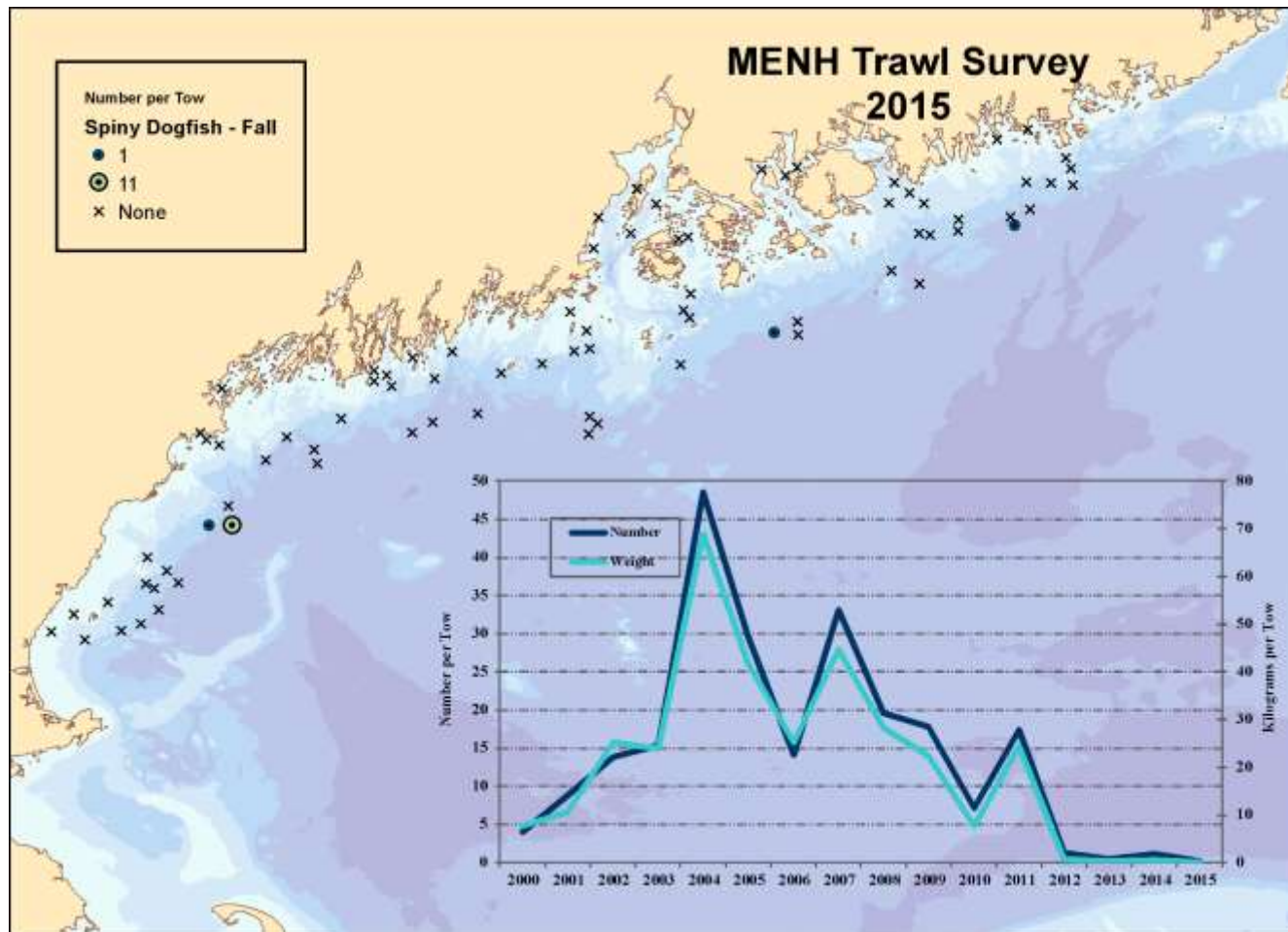
Appendix C

Silver Hake - MENH Fall Surveys



Spiny dogfish, *Squalus acanthias*

One Spiny dogfish was caught in the spring 2015 survey. It was a 55 CM female and it was caught off of Cutler in 87 fathoms.

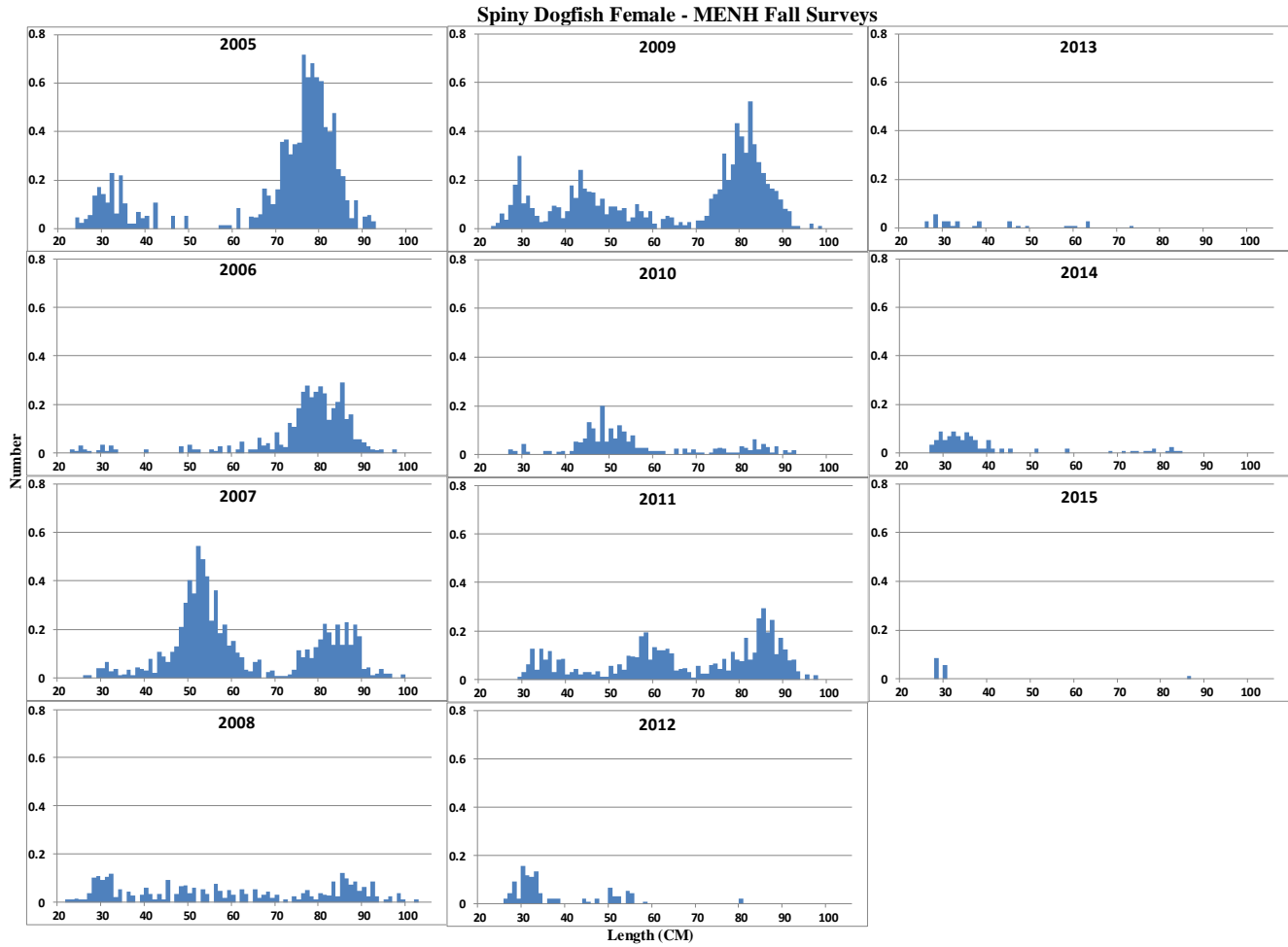


Means and coefficients of variance for graph overlain on above map fixed stations not included for spiny dogs, calculated for regions 1 through 5; strata 1 through 4
FALL Stratified Mean

	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
2014	1.17	1.09	0.58	0.88
2015	0.15	1.78	0.18	1.34

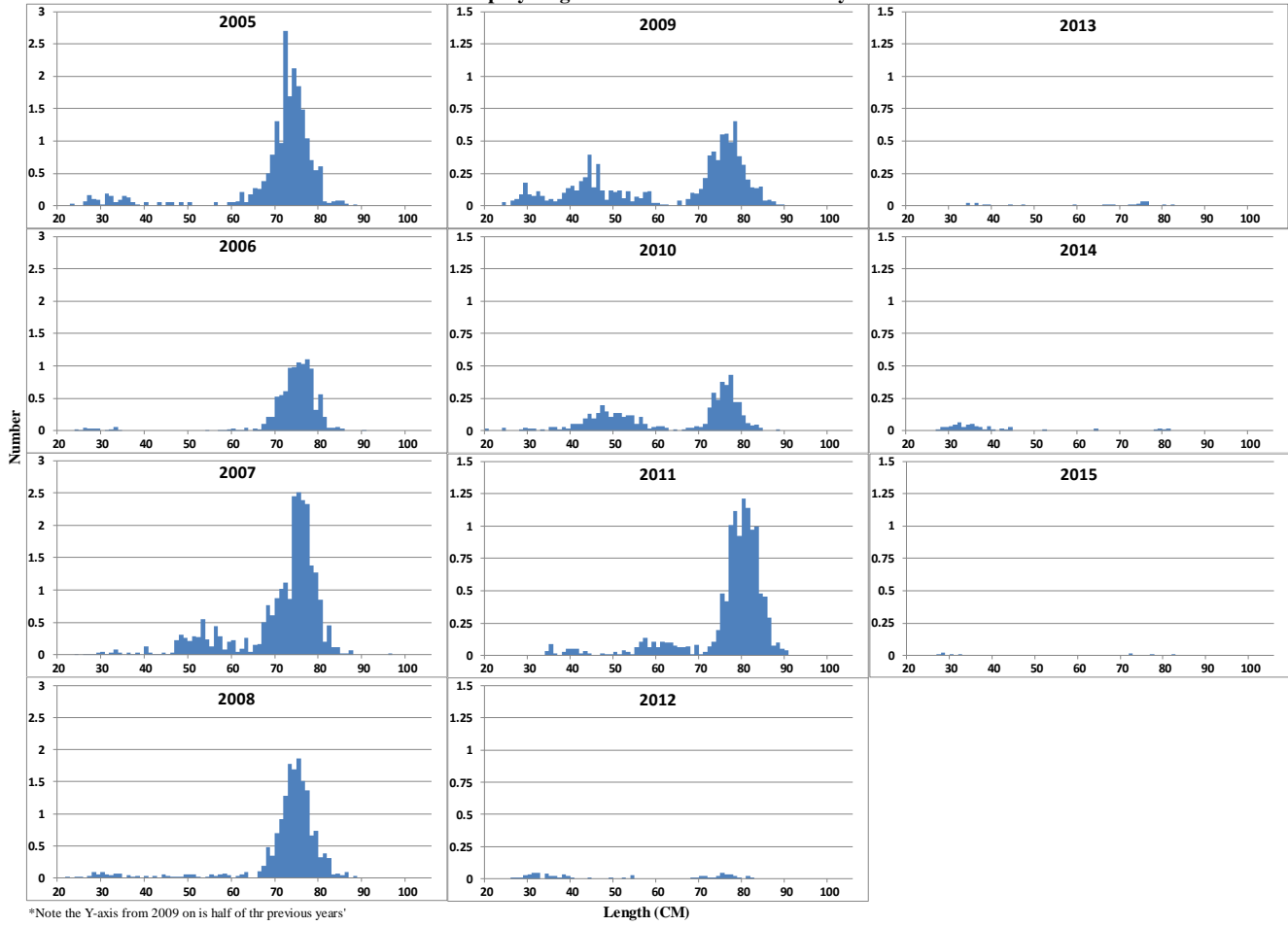
Appendix C

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.

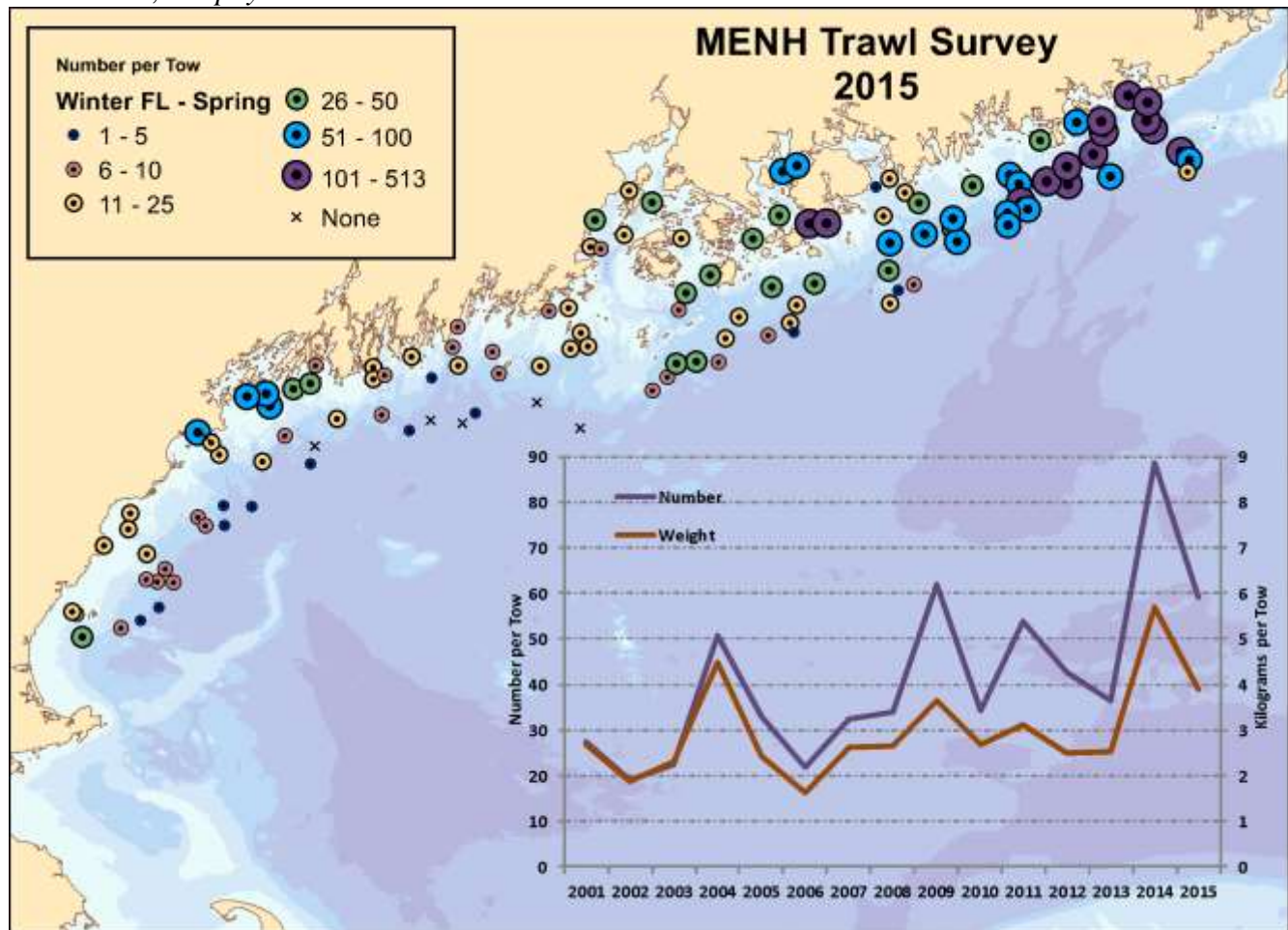


Appendix C

Spiny Dogfish Male - MENH Fall Surveys*



White hake, *Urophycis tenuis*



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

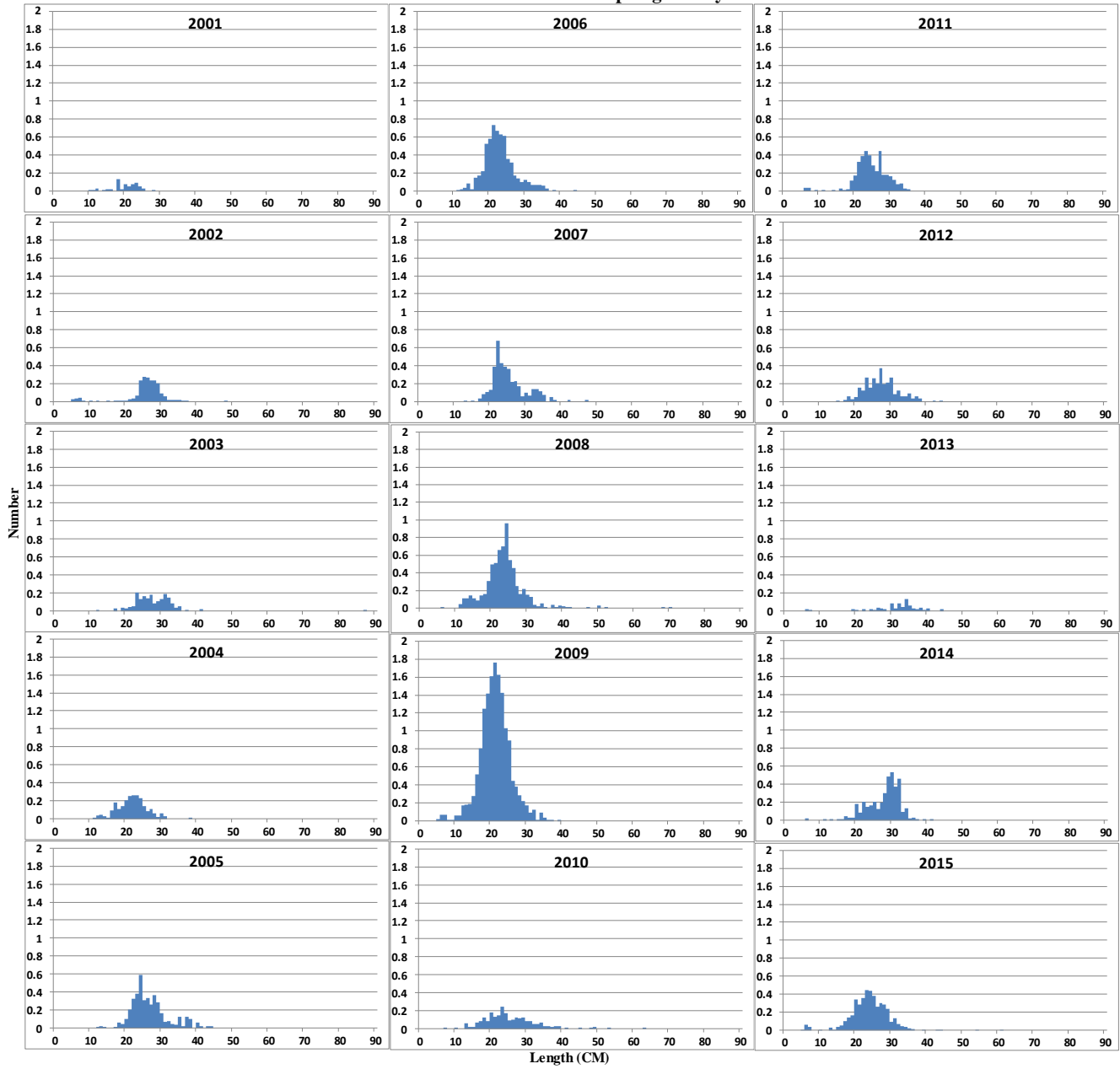
SPRING

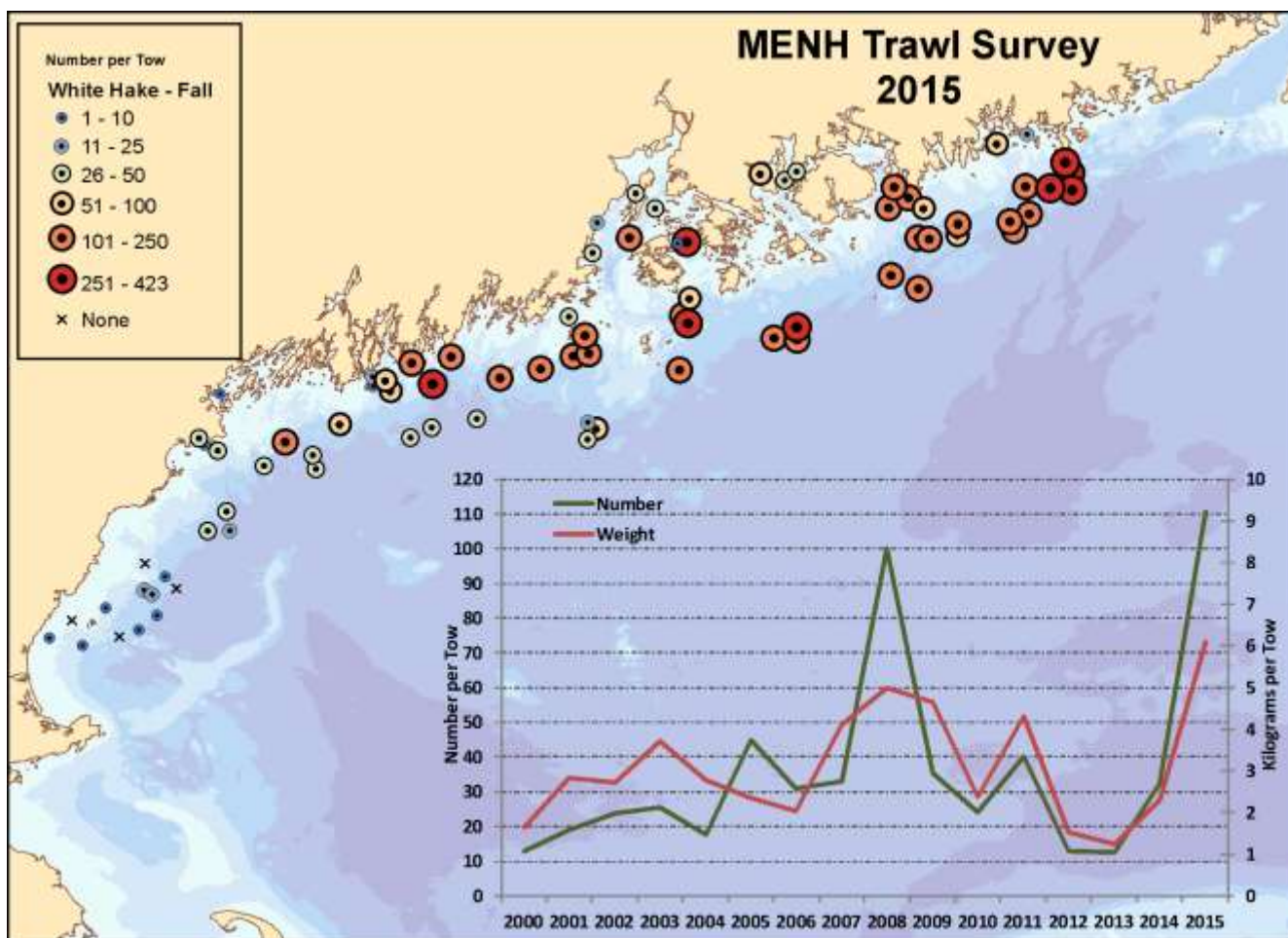
Stratified Mean

	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
2014	3.96	0.35	0.65	0.38
2015	4.45	0.34	0.46	0.60

Appendix C

White Hake - MENH Spring Surveys



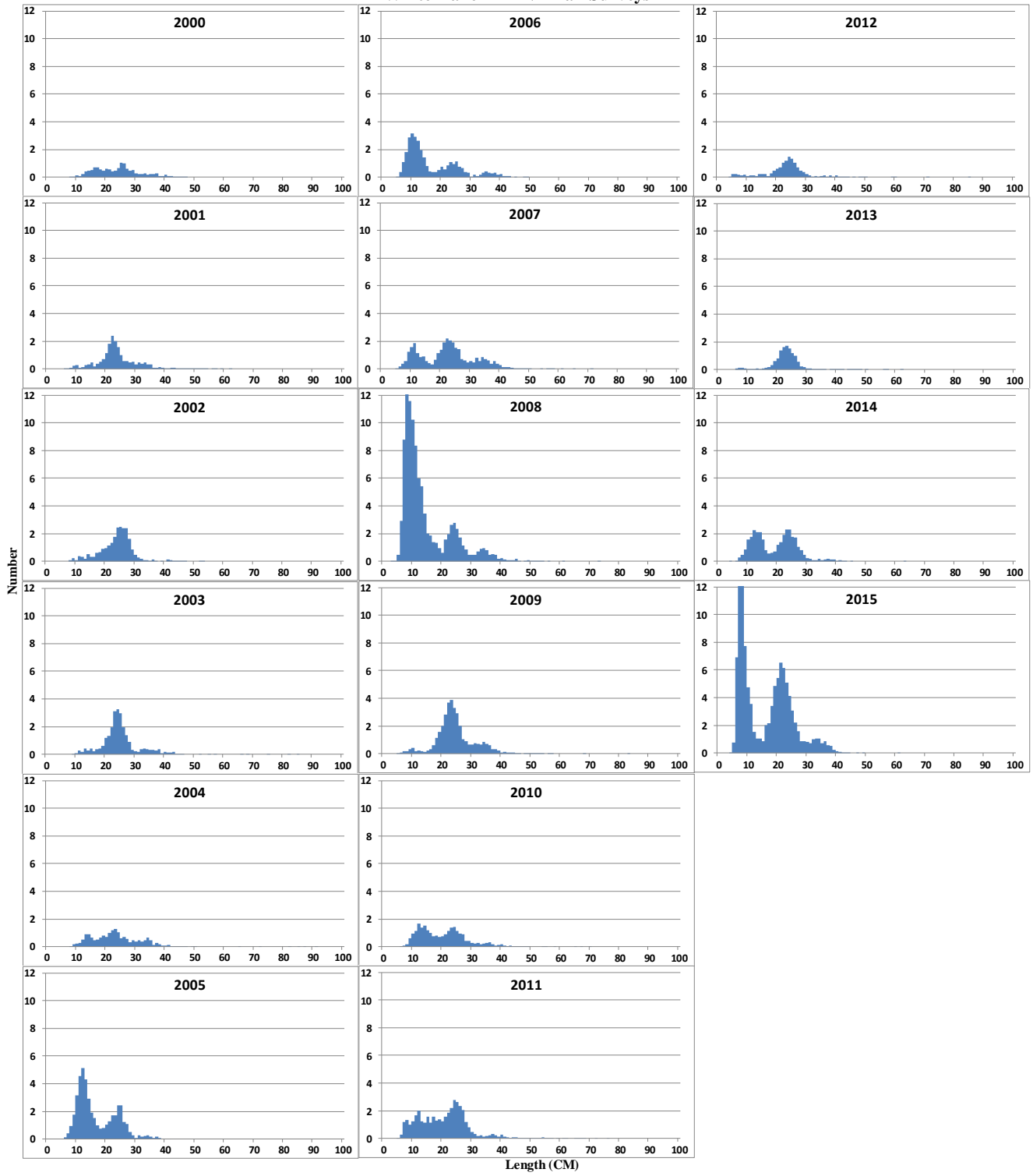


Means and coefficients of variance for the graph overlain on above map
 fixed stations not included
 for white hake, calculated for regions 1 through 5; strata 1 through 4

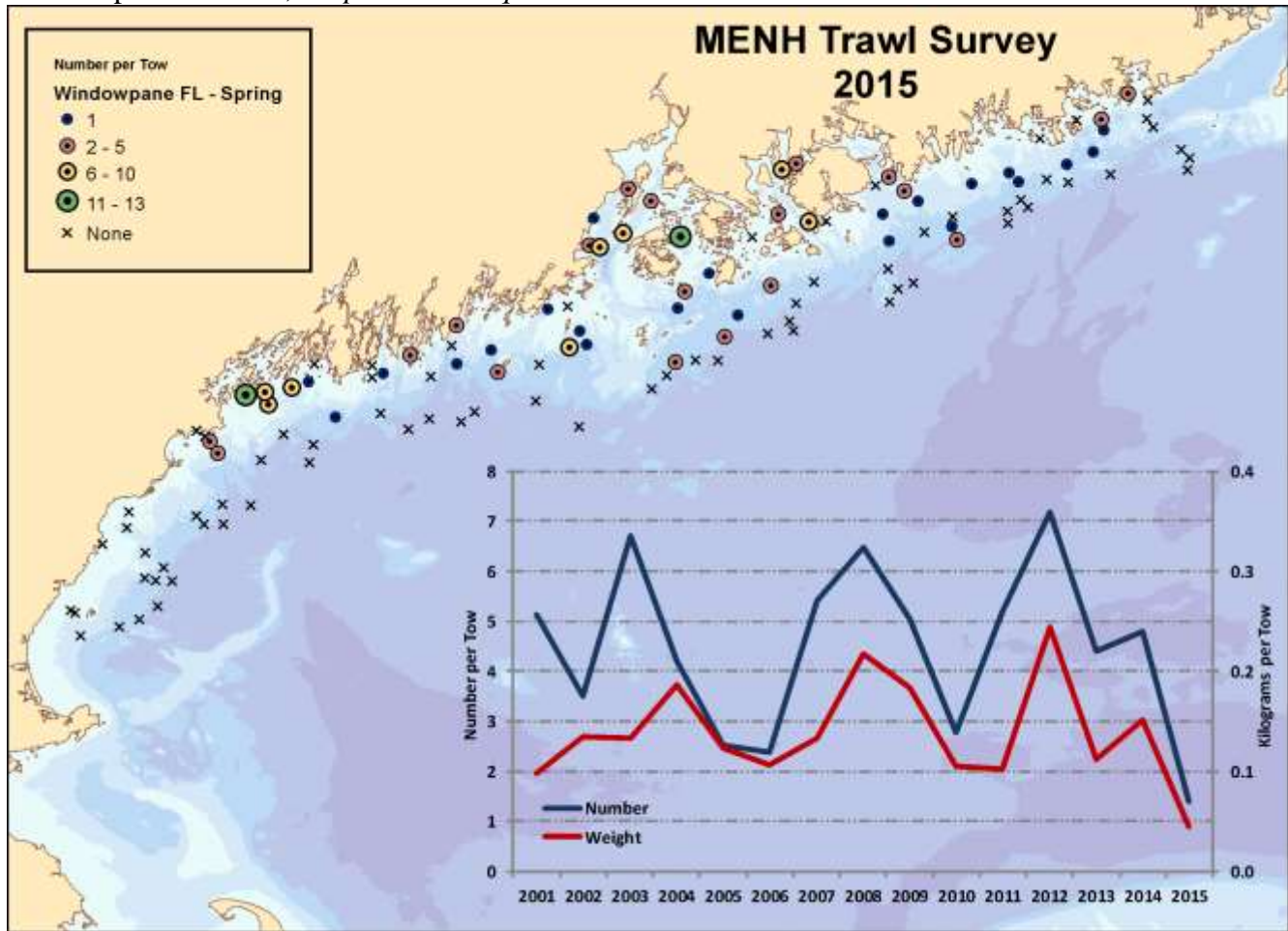
FALL	Stratified Mean			
	Number Mean	CV	Mean	Weight CV
2000	13.03	0.21	1.63	0.22
2001	18.90	0.33	2.83	0.28
2002	23.65	0.18	2.71	0.22
2003	25.41	0.20	3.70	0.21
2004	17.81	0.28	2.77	0.23
2005	44.82	0.12	2.35	0.15
2006	31.06	0.23	2.05	0.19
2007	32.90	0.17	4.12	0.25
2008	99.93	0.15	5.00	0.11
2009	35.54	0.13	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
2014	32.19	0.18	2.29	0.17
2015	110.71	0.11	6.09	0.13

Appendix C

White Hake - MENH Fall Surveys



Windowpane flounder, *Scophthalmus aquosus*



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

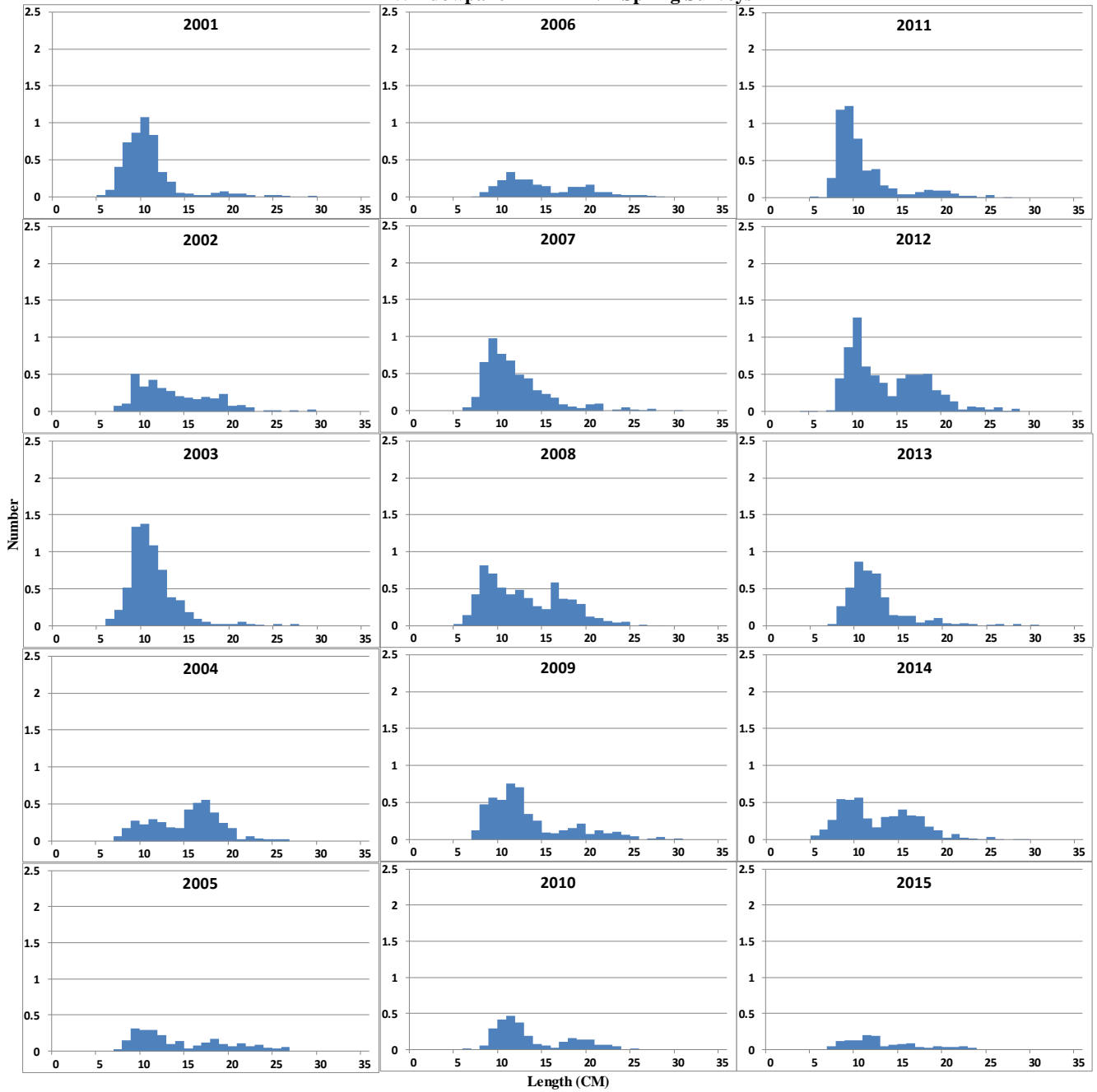
SPRING

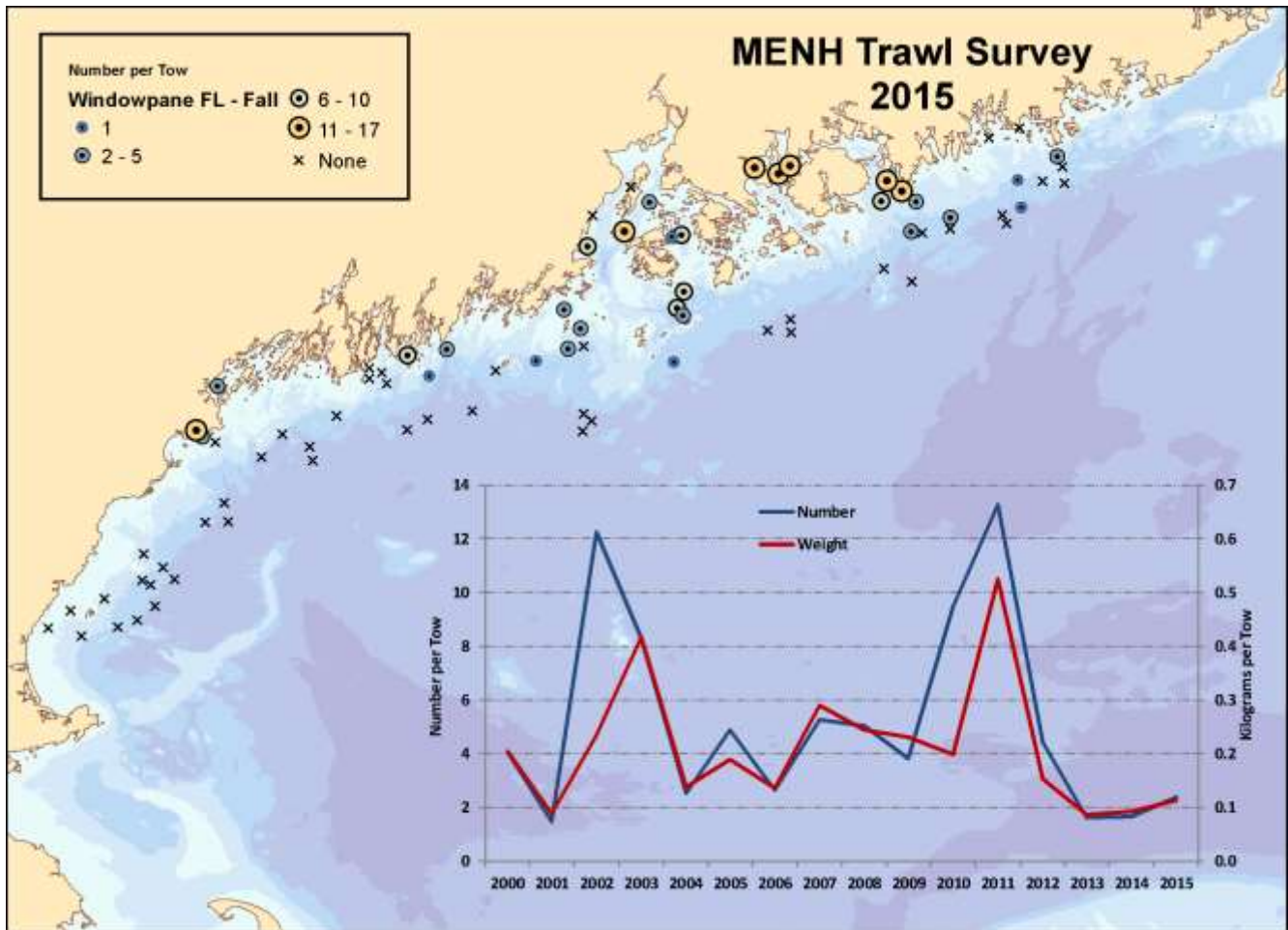
Stratified Mean

	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
2014	4.79	0.27	0.15	0.27
2015	1.39	0.37	0.04	0.39

Appendix C

Windowpane FL - MENH Spring Surveys





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

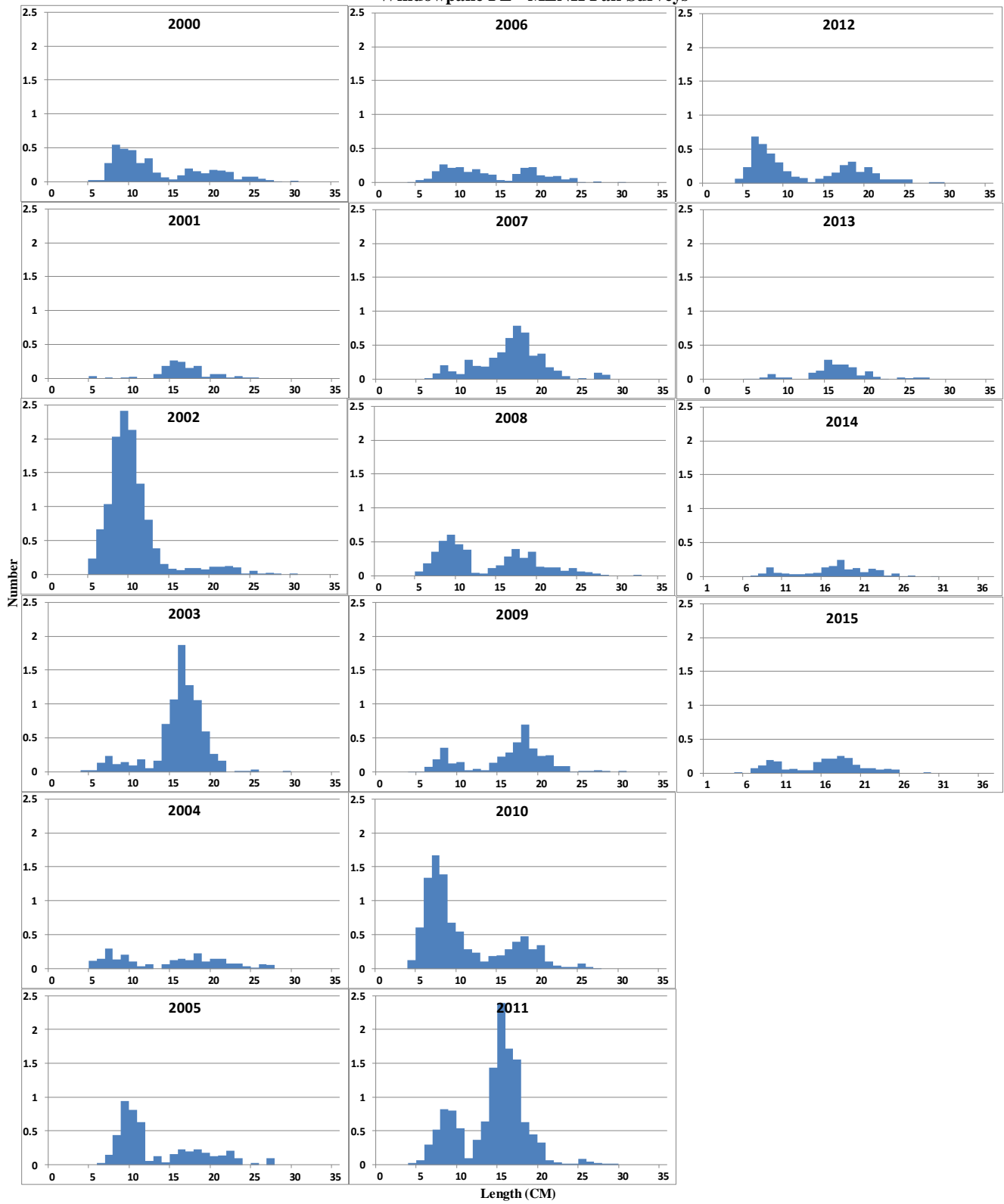
FALL

Stratified Mean

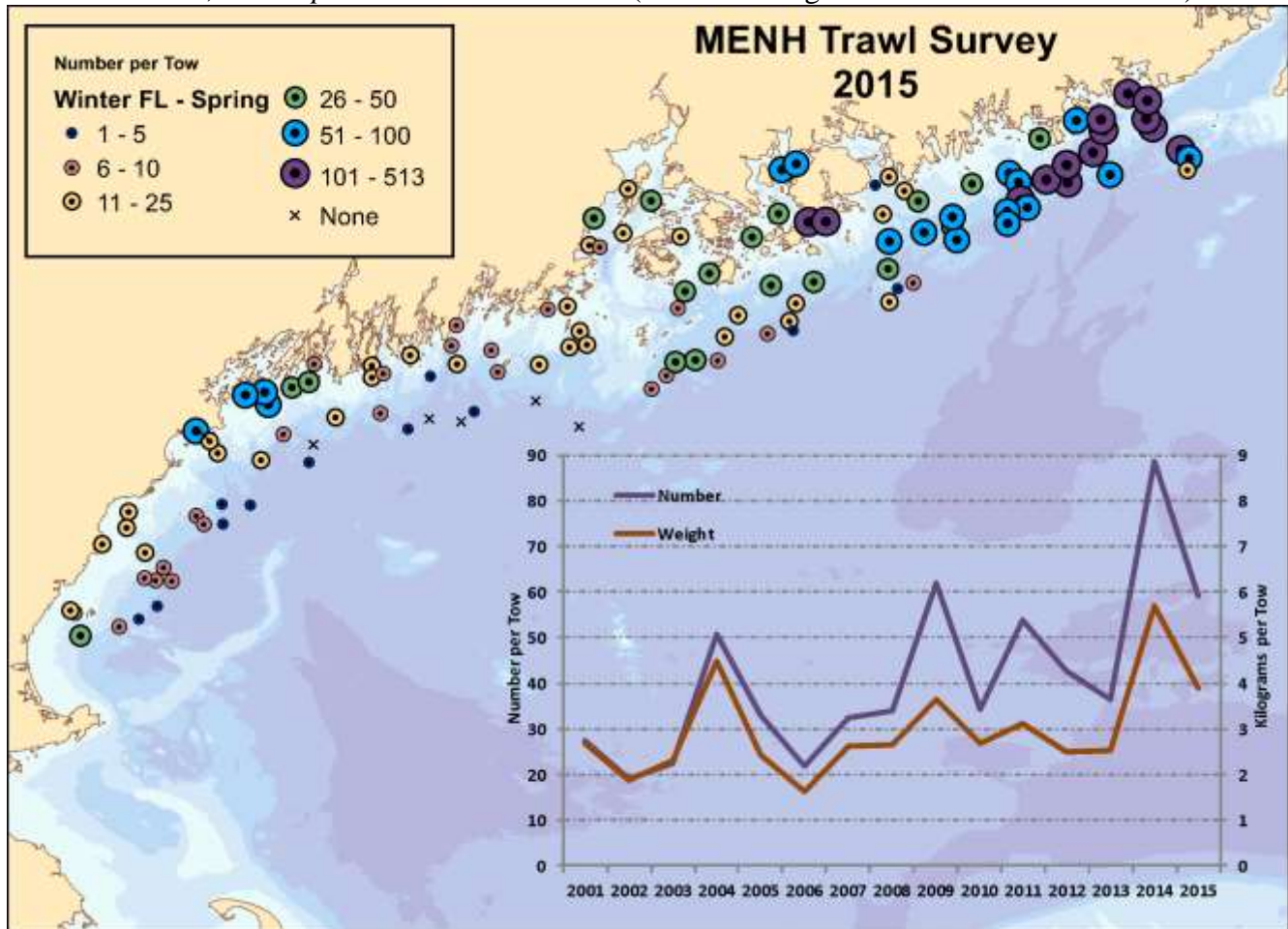
	Number		Weight	
	Mean	CV	Mean	CV
2000	4.05	0.35	0.20	0.30
2001	1.47	0.58	0.09	0.71
2002	12.24	0.47	0.24	0.38
2003	8.31	0.23	0.42	0.18
2004	2.54	0.54	0.14	0.36
2005	4.90	0.49	0.19	0.33
2006	2.66	0.27	0.14	0.43
2007	5.24	0.39	0.29	0.31
2008	5.03	0.31	0.24	0.26
2009	3.83	0.27	0.23	0.29
2010	9.47	0.74	0.20	0.23
2011	13.25	0.28	0.53	0.23
2012	4.44	0.33	0.15	0.37
2013	1.60	0.46	0.09	0.40
2014	1.65	0.35	0.09	0.40
2015	2.39	0.25	0.11	0.40

Appendix C

Windowpane FL - MENH Fall Surveys



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

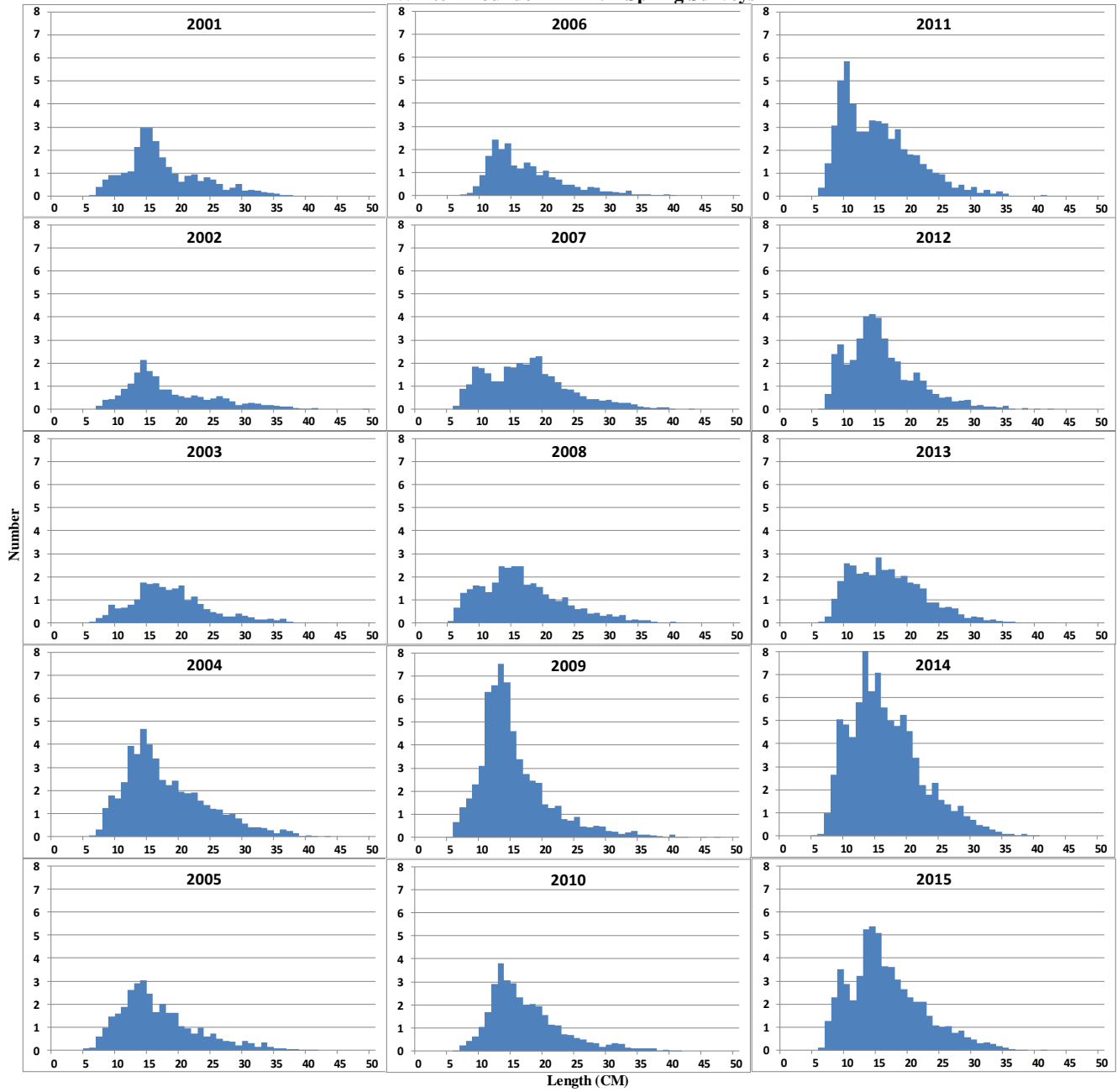


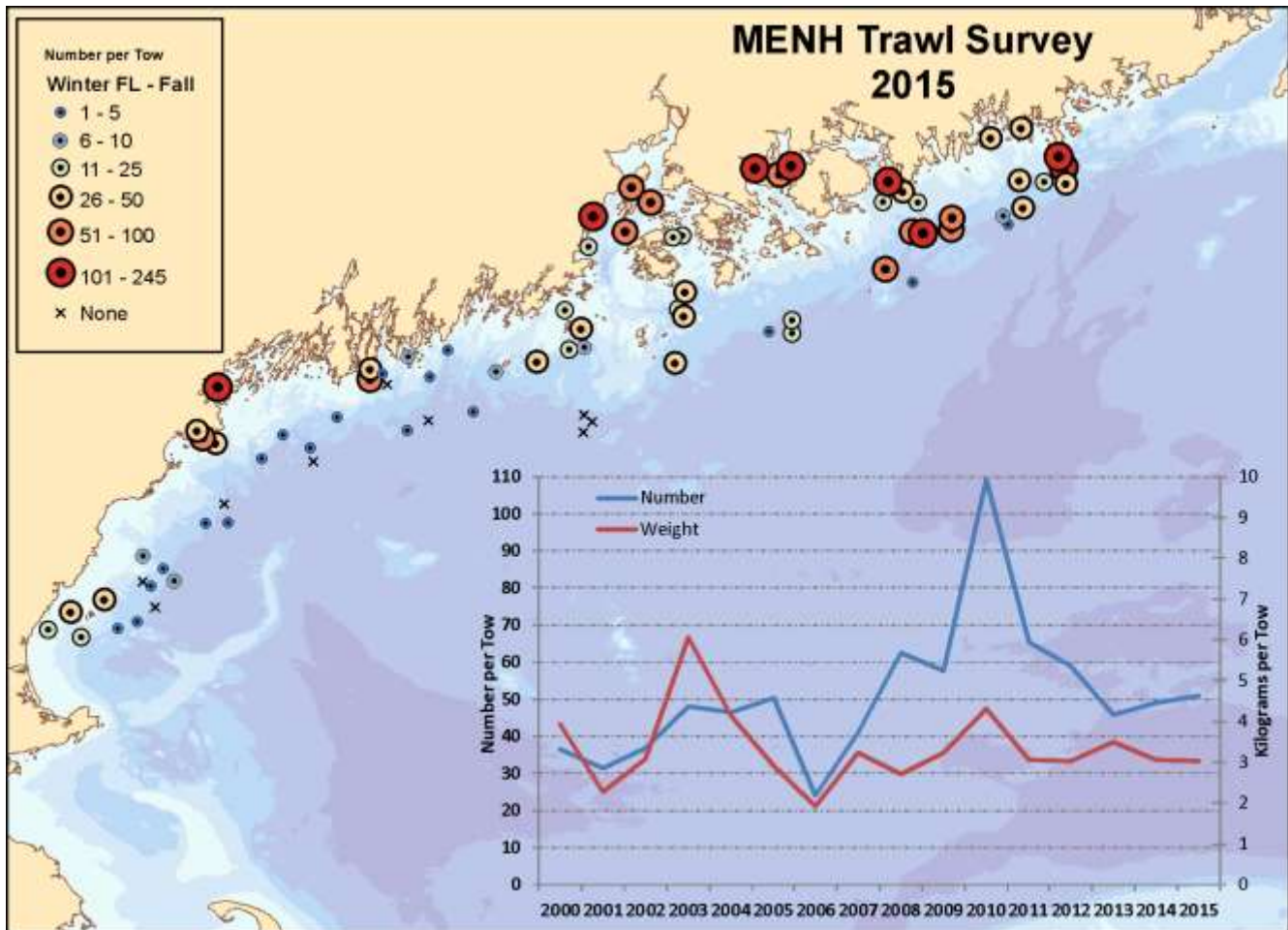
Means and coefficients of variance for the graph overlain on above map
 fixed stations not included Stratified Mean
 for winter flounder, calculated for regions 1 through 5; strata 1 through 3

SPRING	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
2014	88.51	0.63	5.70	0.71
2015	59.29	0.33	3.89	0.45

Appendix C

Winter Flounder - MENH Spring Surveys



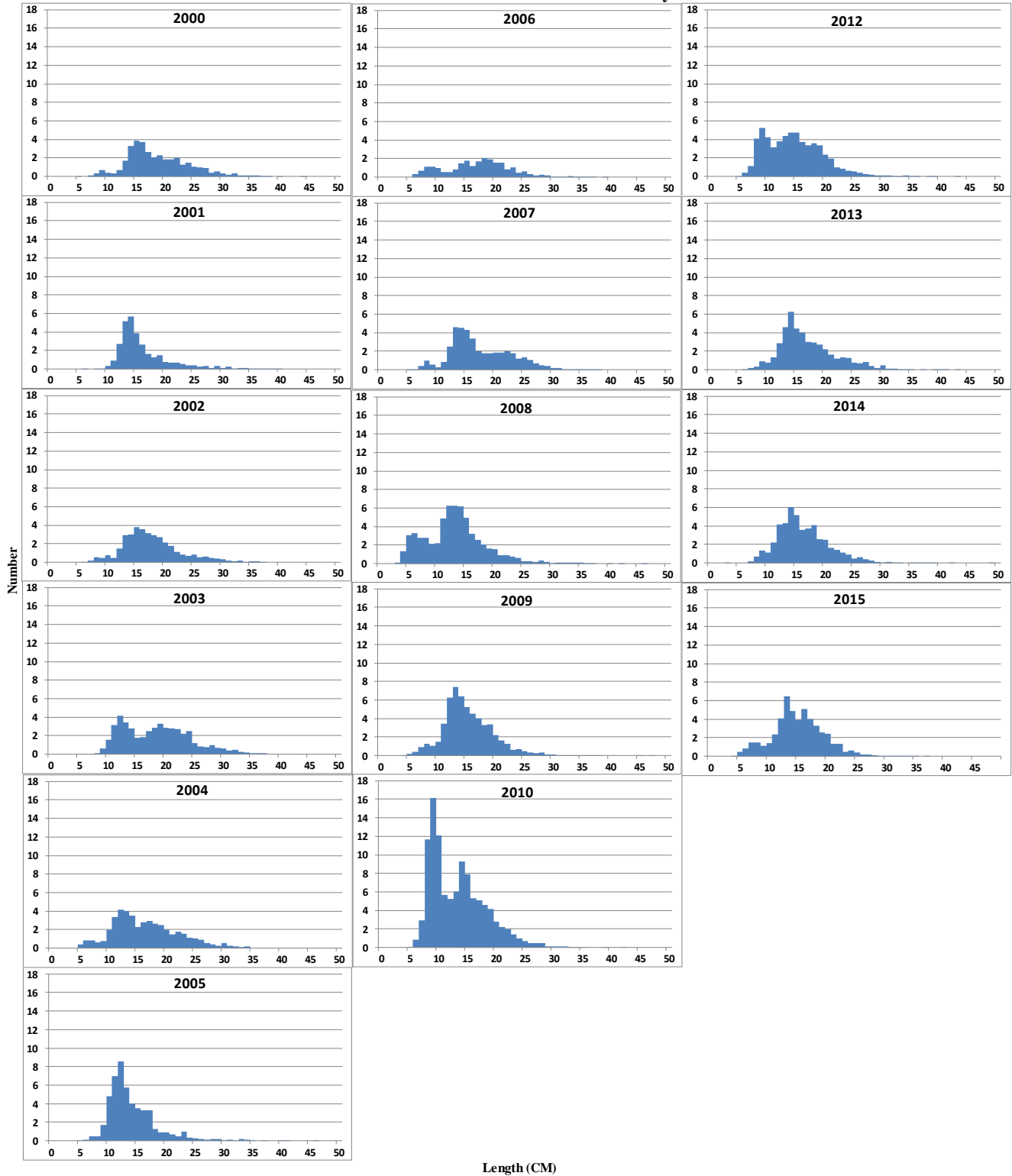


Means and coefficients of variance for the graph overlain on above map
 fixed stations not included Stratified Mean
 for winter flounder, calculated for regions 1 through 5; strata 1 through 3

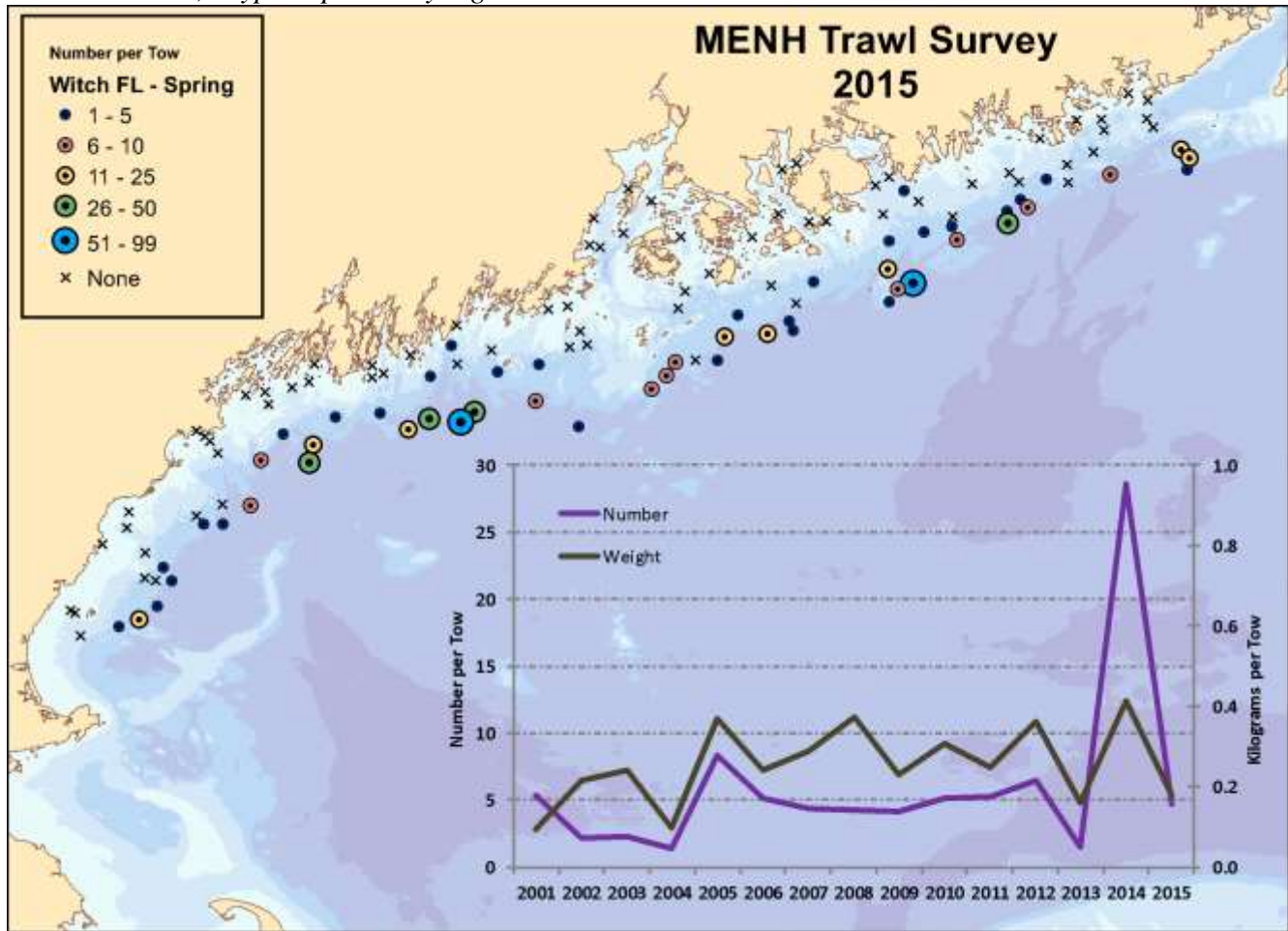
FALL	Number		Weight	
	Mean	CV	Mean	CV
2000	36.59	0.20	3.92	0.26
2001	31.38	0.33	2.28	0.20
2002	36.92	0.42	3.08	0.59
2003	48.15	0.19	6.06	0.06
2004	46.45	0.34	4.14	0.35
2005	50.32	0.09	2.92	0.15
2006	23.90	0.26	1.92	0.25
2007	41.18	0.35	3.22	0.50
2008	62.46	0.16	2.70	0.16
2009	57.57	0.27	3.22	0.30
2010	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
2014	48.94	0.29	3.07	0.28
2015	51.10	0.24	3.03	0.29

Appendix C

Winter Flounder - MENH Fall Surveys



Witch flounder, *Glyptocephalus cynoglossus*



Means and coefficients of variance for the graph overlain on above map
 fixed stations not included
 for witch flounder, indices calculated for all strata

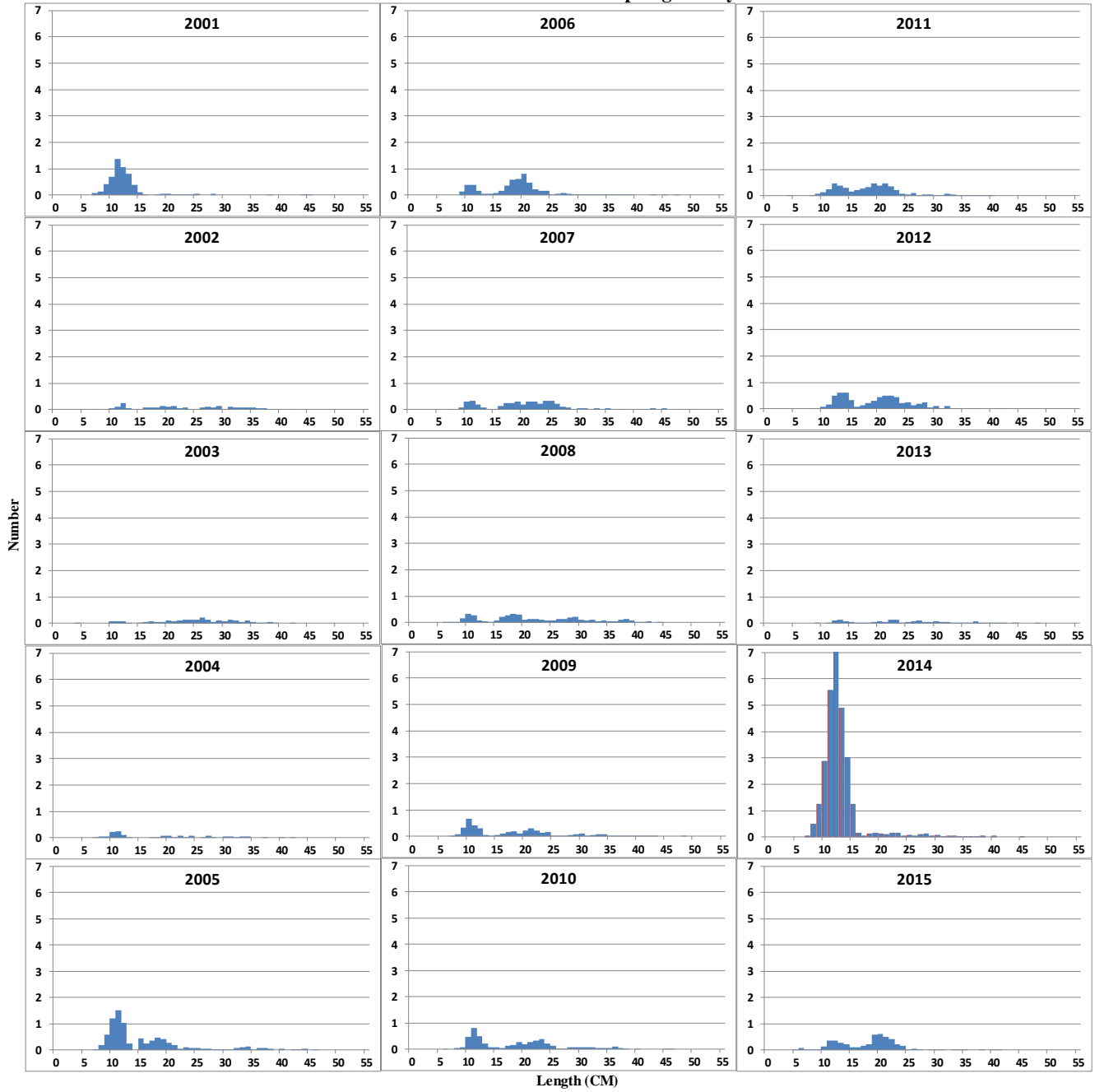
SPRING

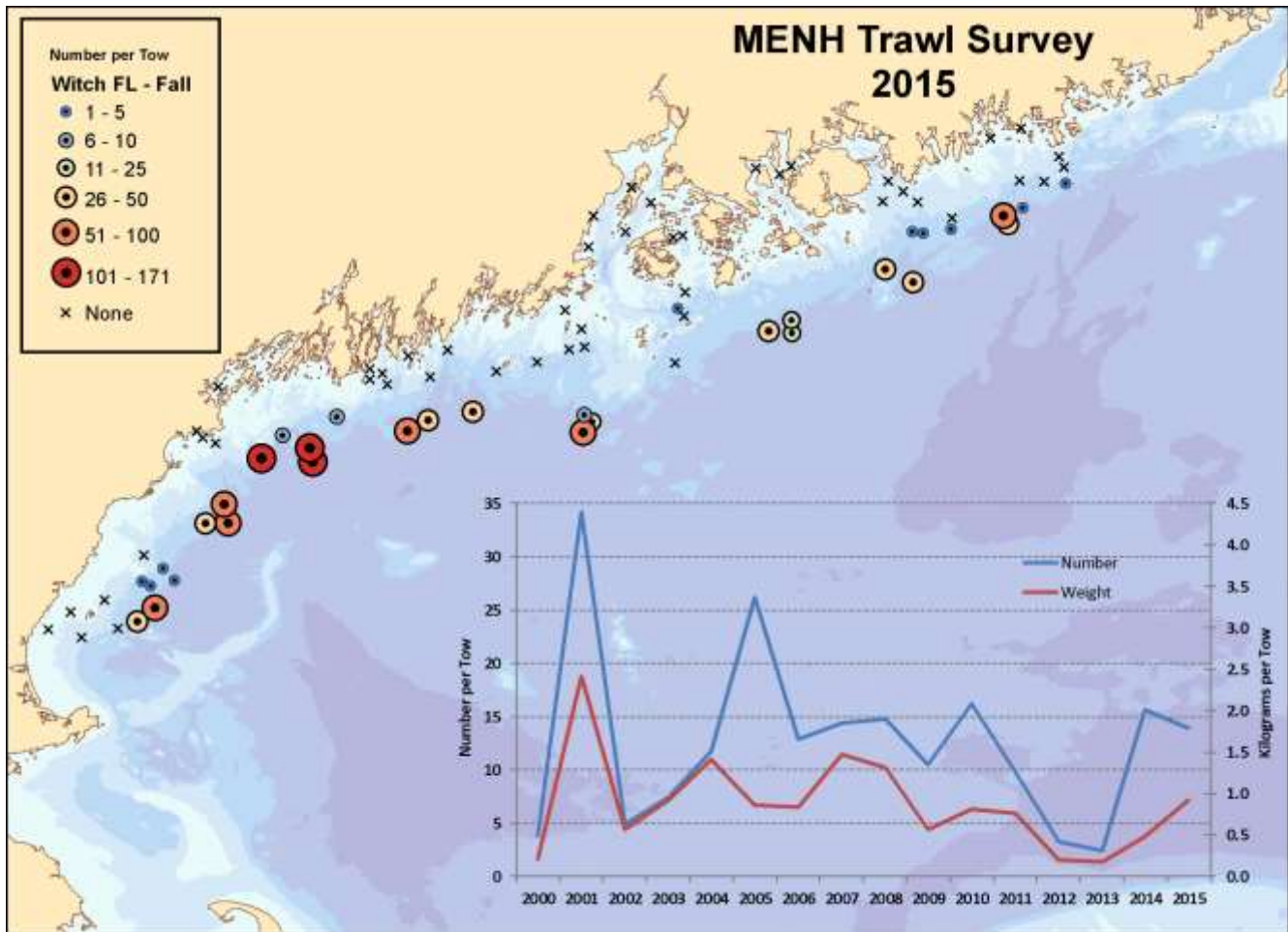
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2001	5.33	0.68	0.10	0.72
2002	2.22	1.17	0.22	1.73
2003	2.32	0.55	0.24	0.54
2004	1.42	0.30	0.10	0.37
2005	8.37	0.28	0.37	0.33
2006	5.17	0.43	0.24	0.52
2007	4.37	0.29	0.29	0.27
2008	4.25	0.30	0.38	0.40
2009	4.15	0.33	0.23	0.50
2010	5.17	0.37	0.31	0.43
2011	5.20	0.27	0.25	0.35
2012	6.41	0.36	0.36	0.47
2013	1.54	0.46	0.16	0.55
2014	28.59	0.24	0.41	0.23
2015	4.68	0.43	0.18	0.58

Appendix C

Witch Flounder - MENH Spring Surveys





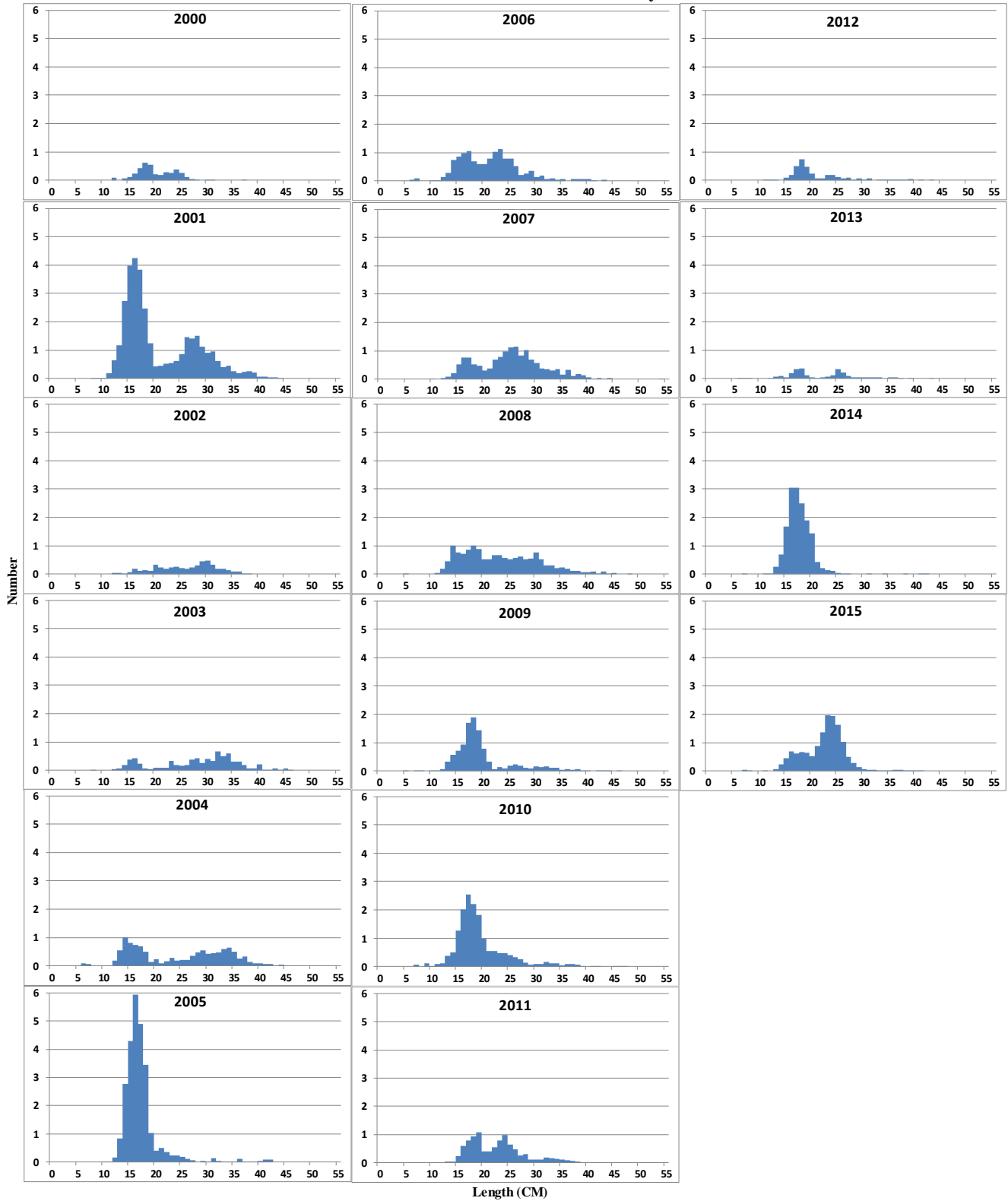
Means and coefficients of variance for the graph overlain on above map
 fixed stations not included
 for witch flounder, indices calculated for all strata

FALL

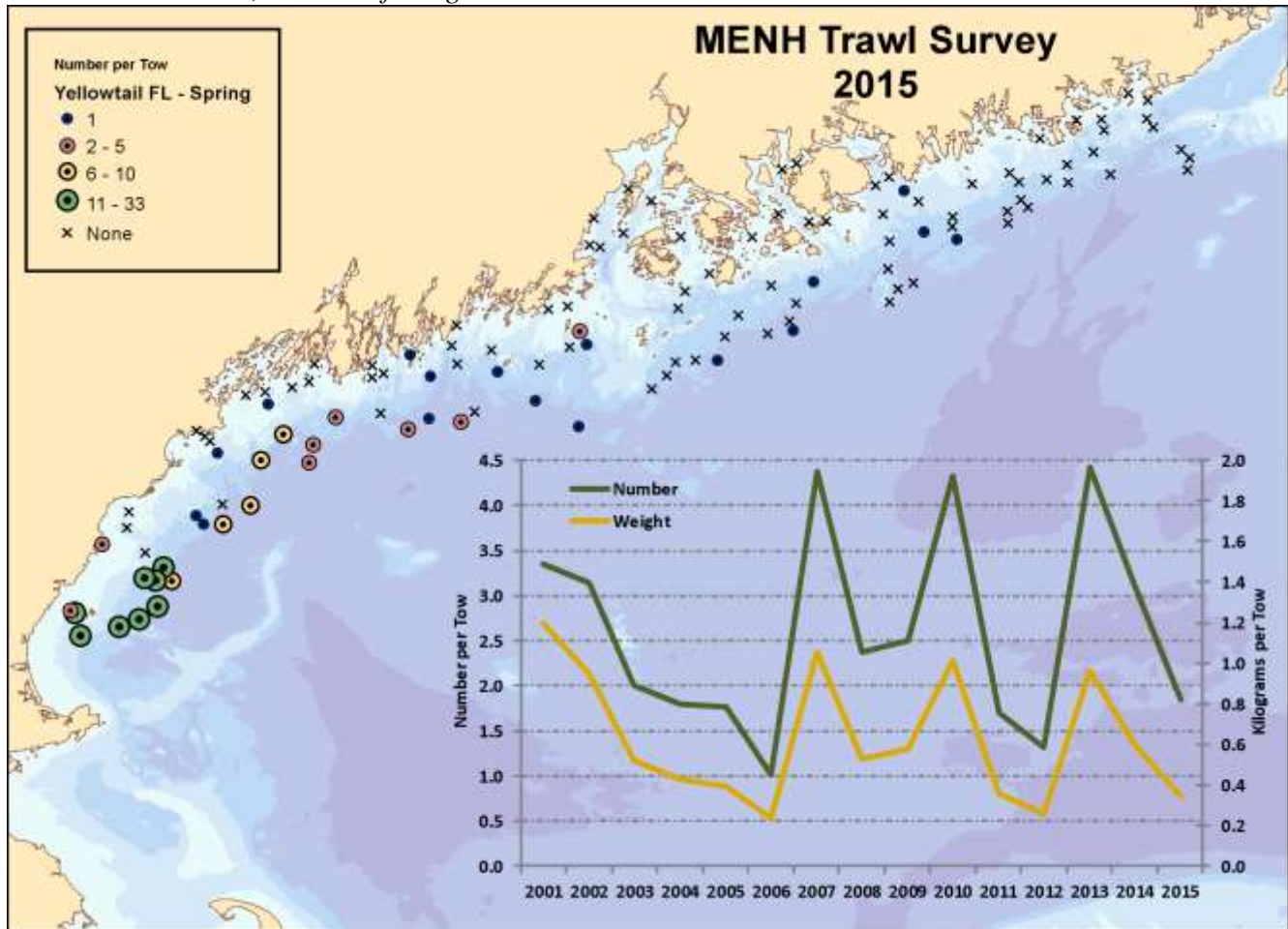
	Number		Stratified Mean		CV
	Mean	CV	Weight Mean	CV	
2000	3.87	0.71	0.21	0.45	
2001	34.17	4.31	2.42	0.46	
2002	4.84	1.23	0.56	0.62	
2003	7.45	1.16	0.92	0.36	
2004	11.73	1.94	1.41	0.25	
2005	26.20	3.55	0.86	0.19	
2006	12.83	1.37	0.83	0.16	
2007	14.41	2.04	1.47	0.40	
2008	14.78	1.79	1.31	0.34	
2009	10.48	1.08	0.57	0.26	
2010	16.22	1.74	0.81	0.24	
2011	9.79	1.23	0.77	0.34	
2012	3.26	0.40	0.20	0.45	
2013	2.43	0.34	0.18	0.46	
2014	15.62	0.25	0.48	0.25	
2015	13.95	0.35	0.92	0.36	

Appendix C

Witch Flounder - MENH Fall Surveys



Yellowtail flounder, *Limanda ferruginea*



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

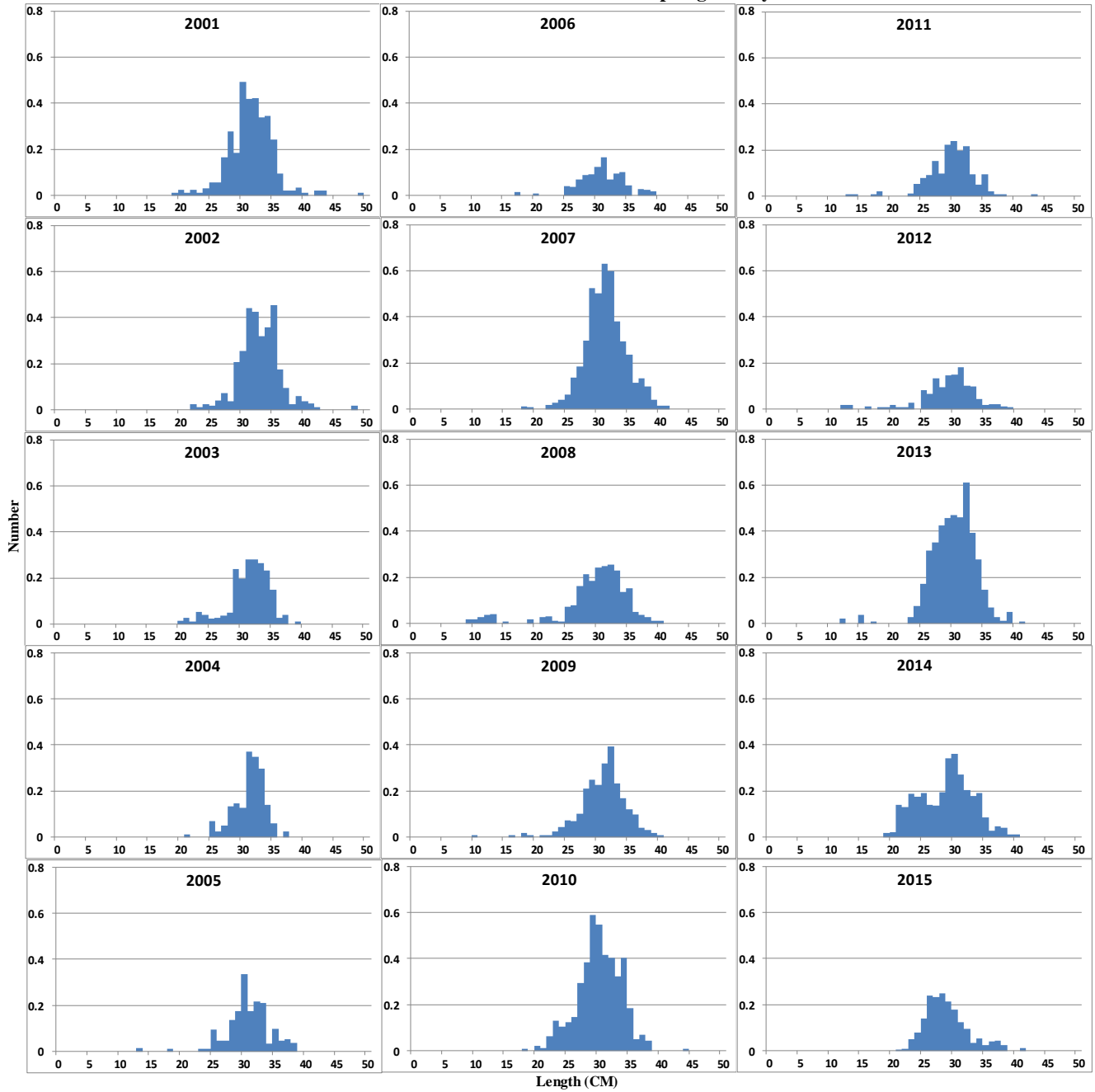
SPRING

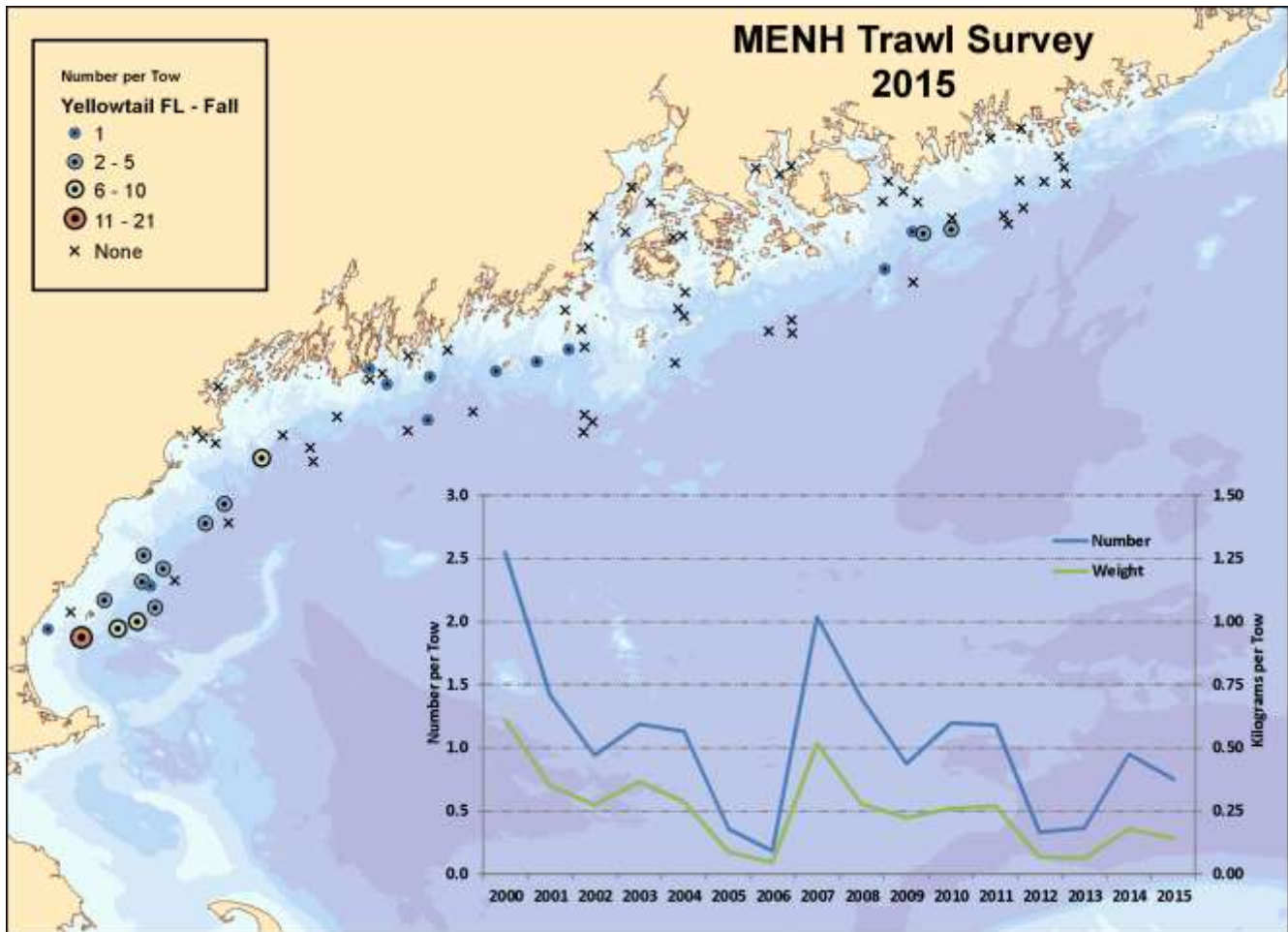
Stratified Mean

	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
2014	3.11	0.66	0.60	0.69
2015	1.84	0.47	0.34	0.51

Appendix C

Yellowtail Flounder - MENH Spring Surveys





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

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

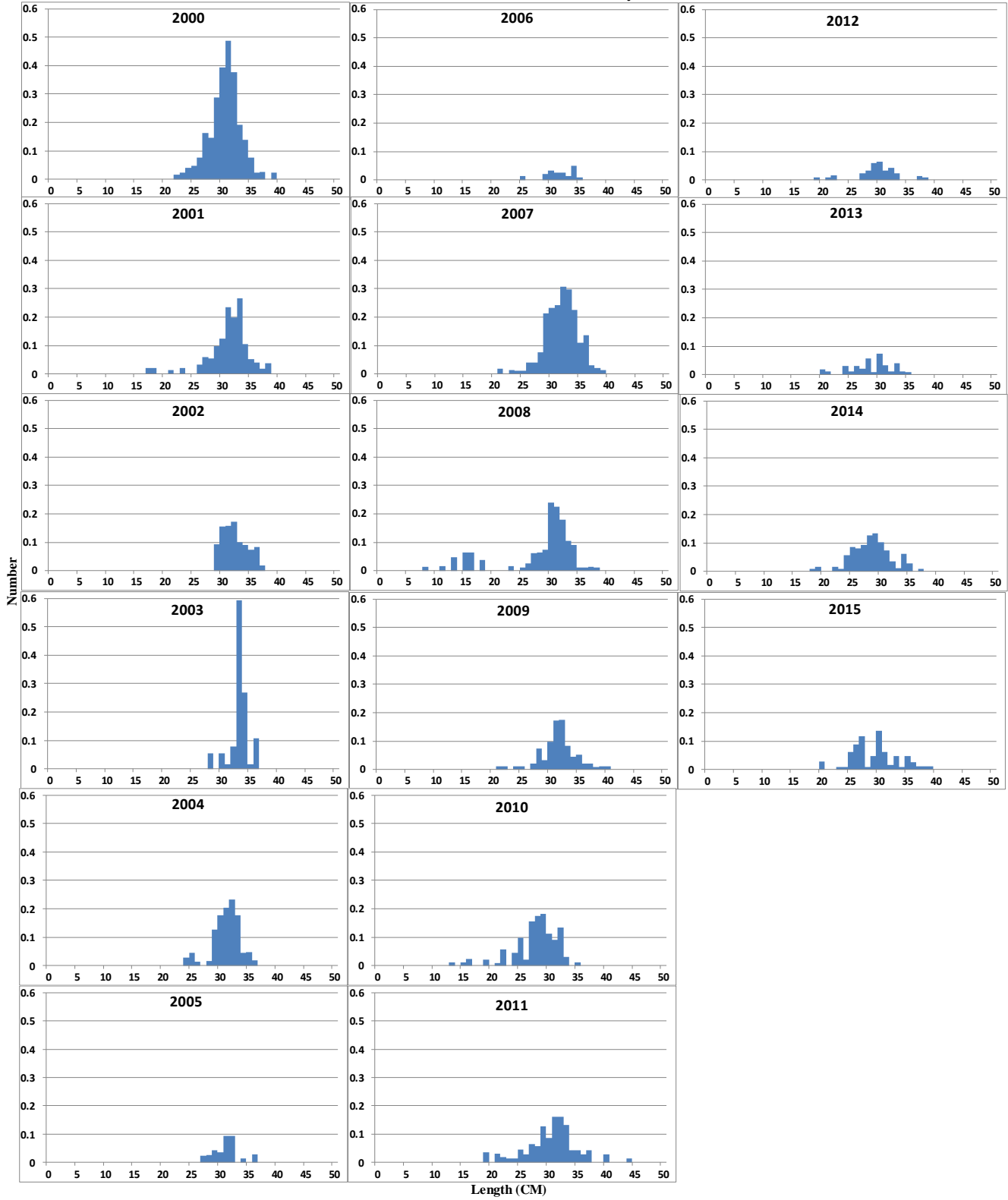
FALL

Stratified Mean

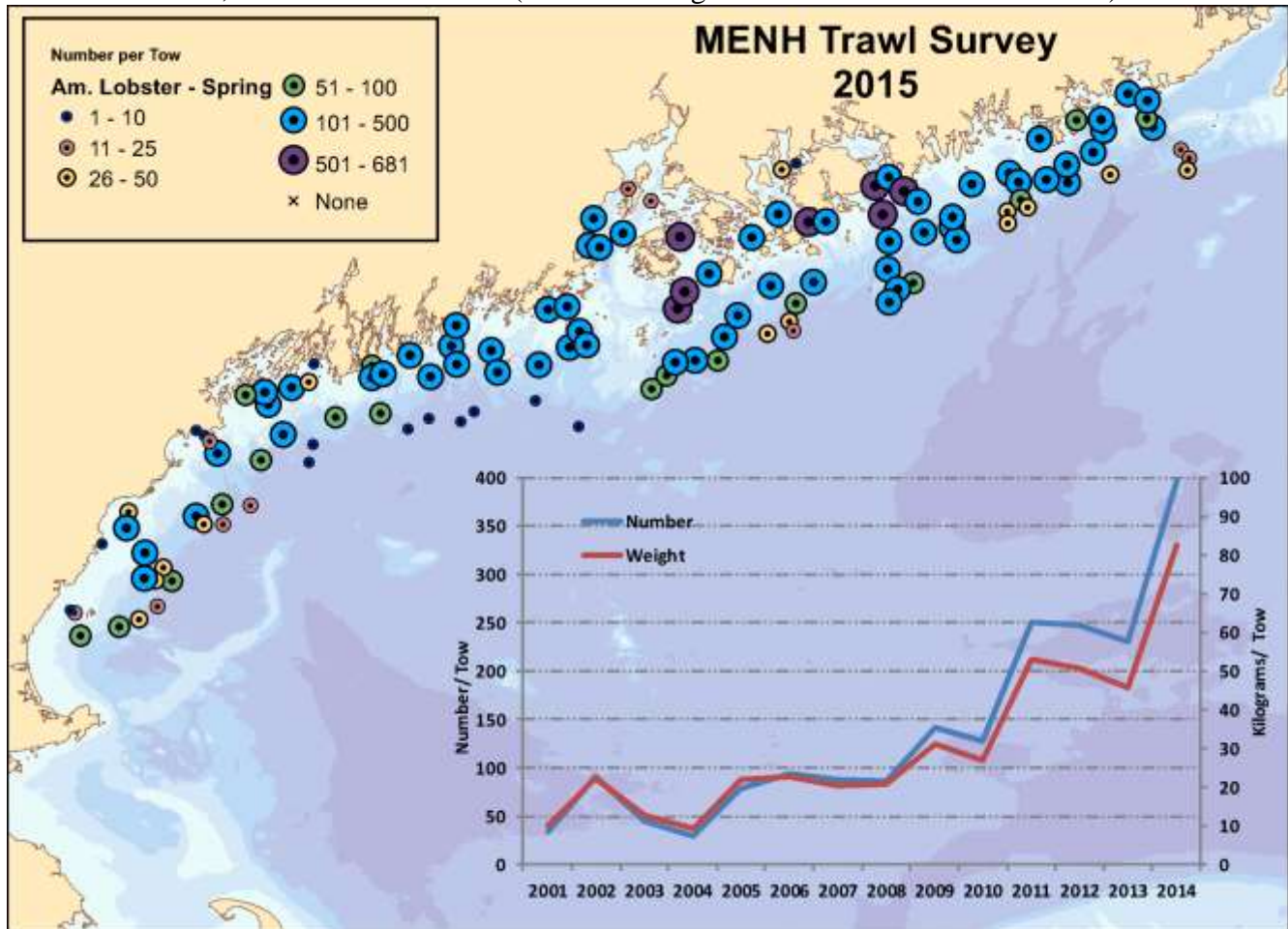
	Number		Weight	
	Mean	CV	Mean	CV
2000	2.55	1.18	0.61	1.14
2001	1.42	0.91	0.35	0.85
2002	0.94	0.53	0.27	0.47
2003	1.19	0.06	0.37	0.06
2004	1.13	0.45	0.28	0.38
2005	0.36	1.10	0.09	1.16
2006	0.19	1.54	0.05	1.52
2007	2.04	0.85	0.52	0.92
2008	1.39	0.72	0.28	0.80
2009	0.87	0.75	0.22	0.74
2010	1.19	0.87	0.26	0.92
2011	1.18	1.26	0.27	1.47
2012	0.33	1.03	0.07	1.12
2013	0.36	0.70	0.06	0.73
2014	0.95	1.14	0.18	1.14
2015	0.75	0.61	0.14	0.60

Appendix C

Yellowtail Flounder - MENH Fall Survey



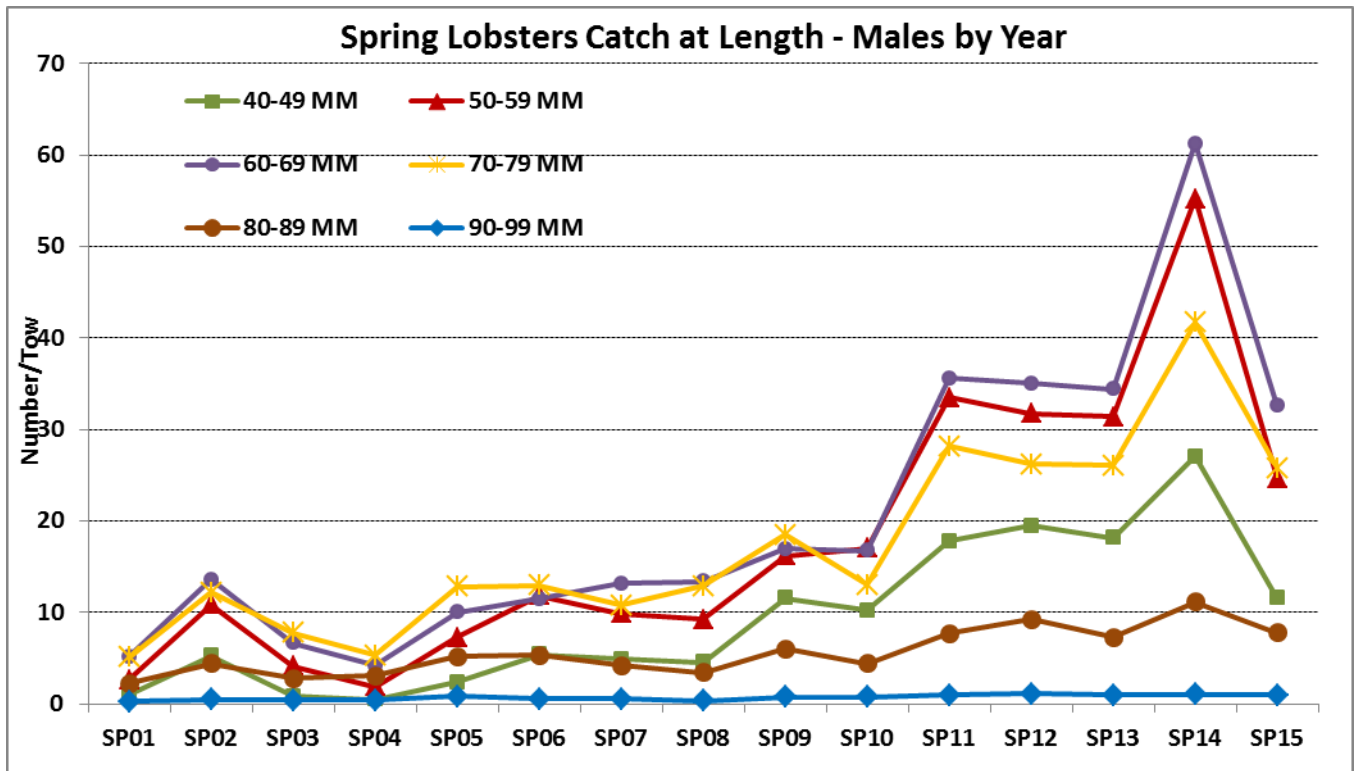
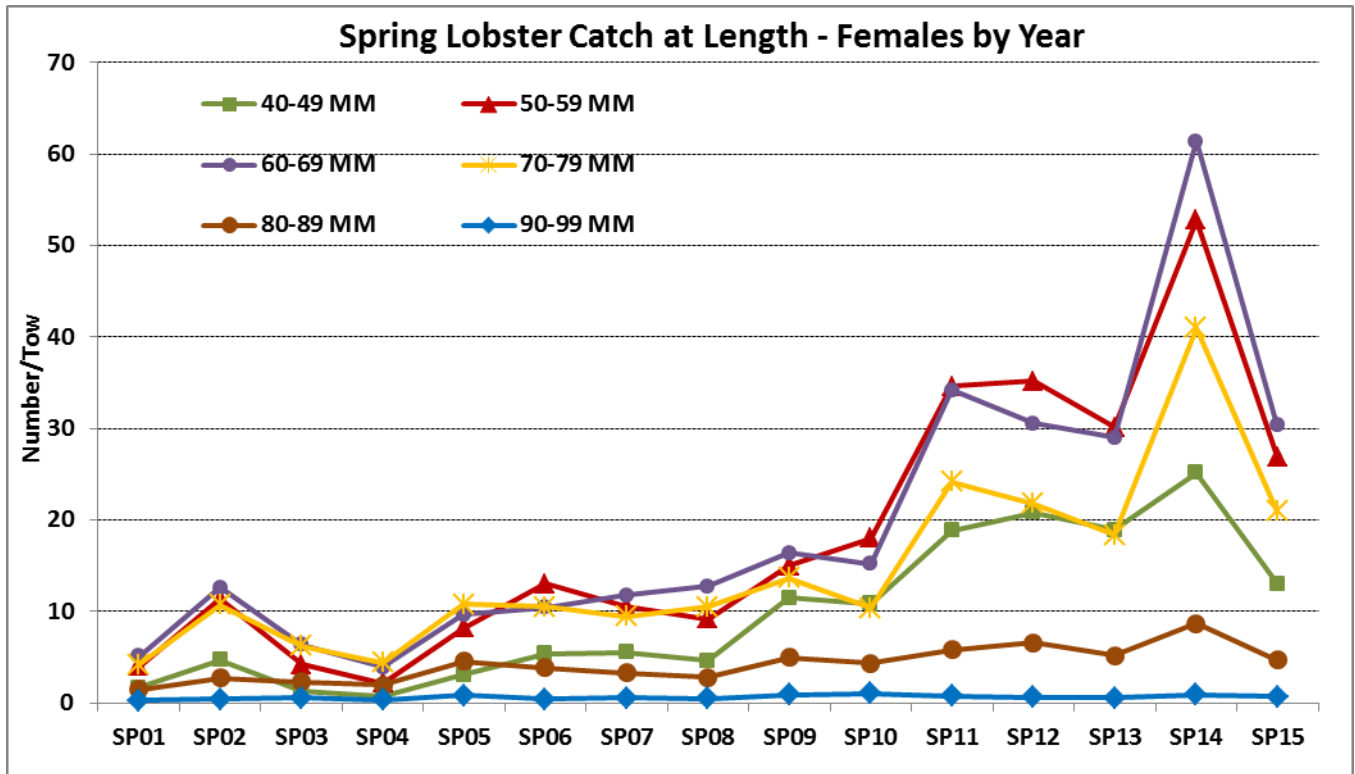
American lobster, *Homarus americanus* (Strata 1 through 3 were used for lobster indices)

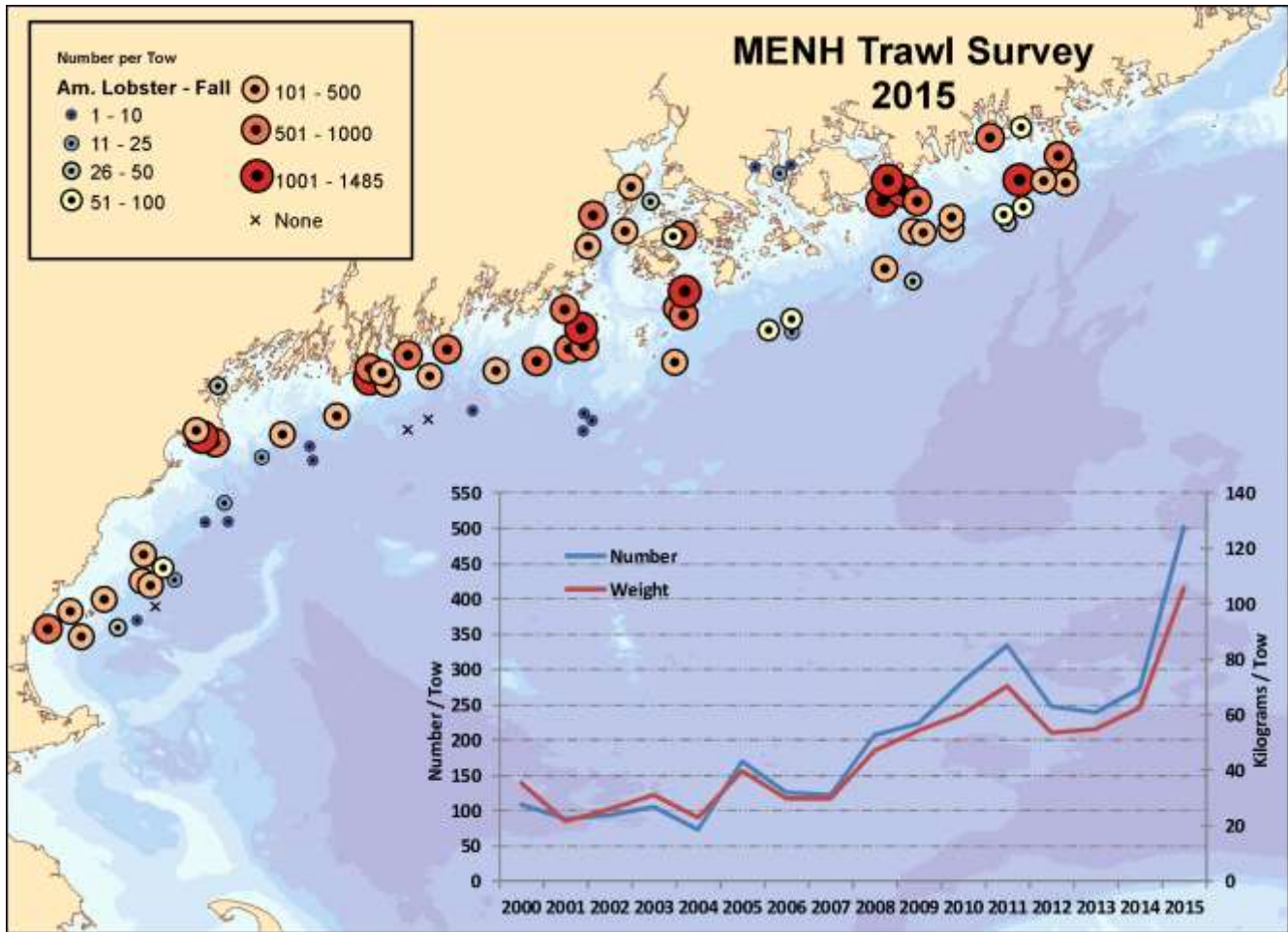


Means and coefficients of variance for graph overlain on above map
 fixed stations not included
 for lobster, calculated for regions 1 through 5; Strata 1 through 3
SPRING
Stratified Mean

	Number		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
2014	396.67	0.67	82.67	0.64
2015	204.29	0.16	45.33	0.15

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

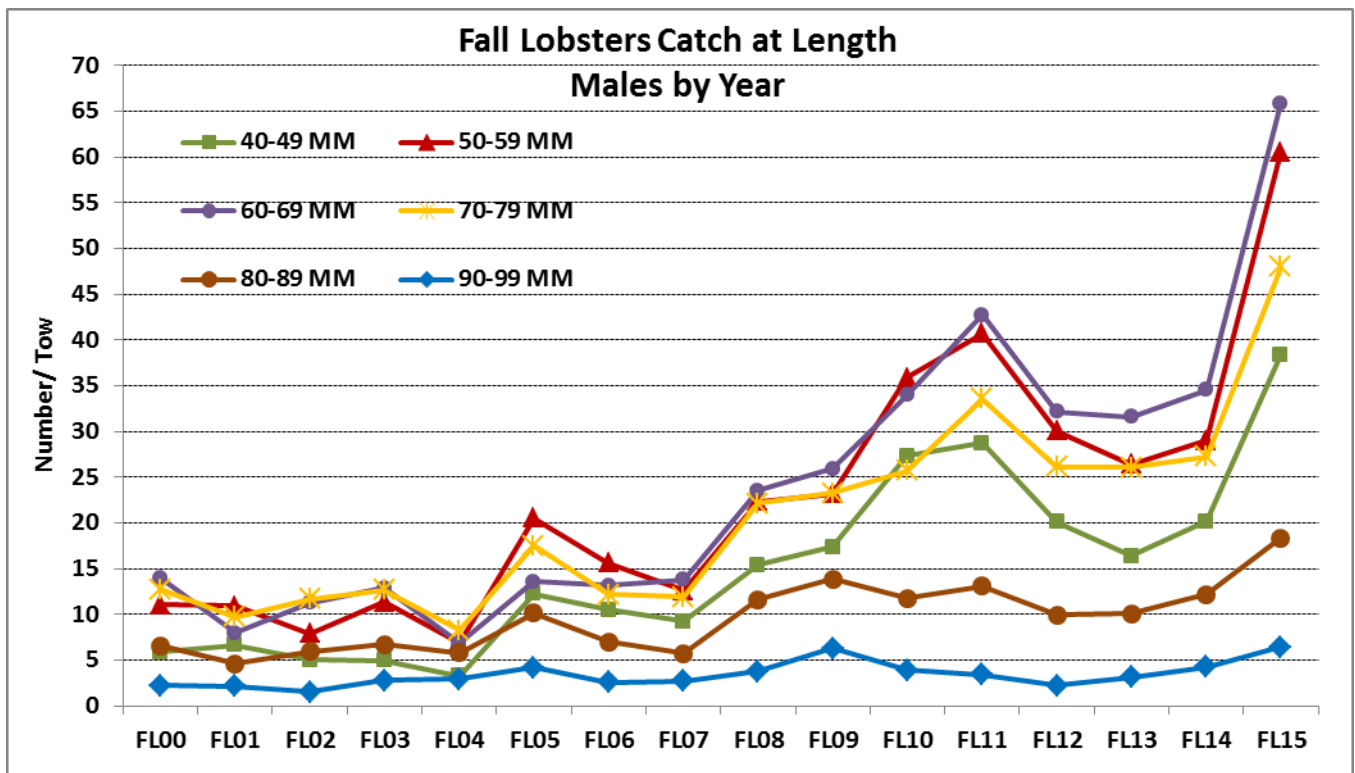
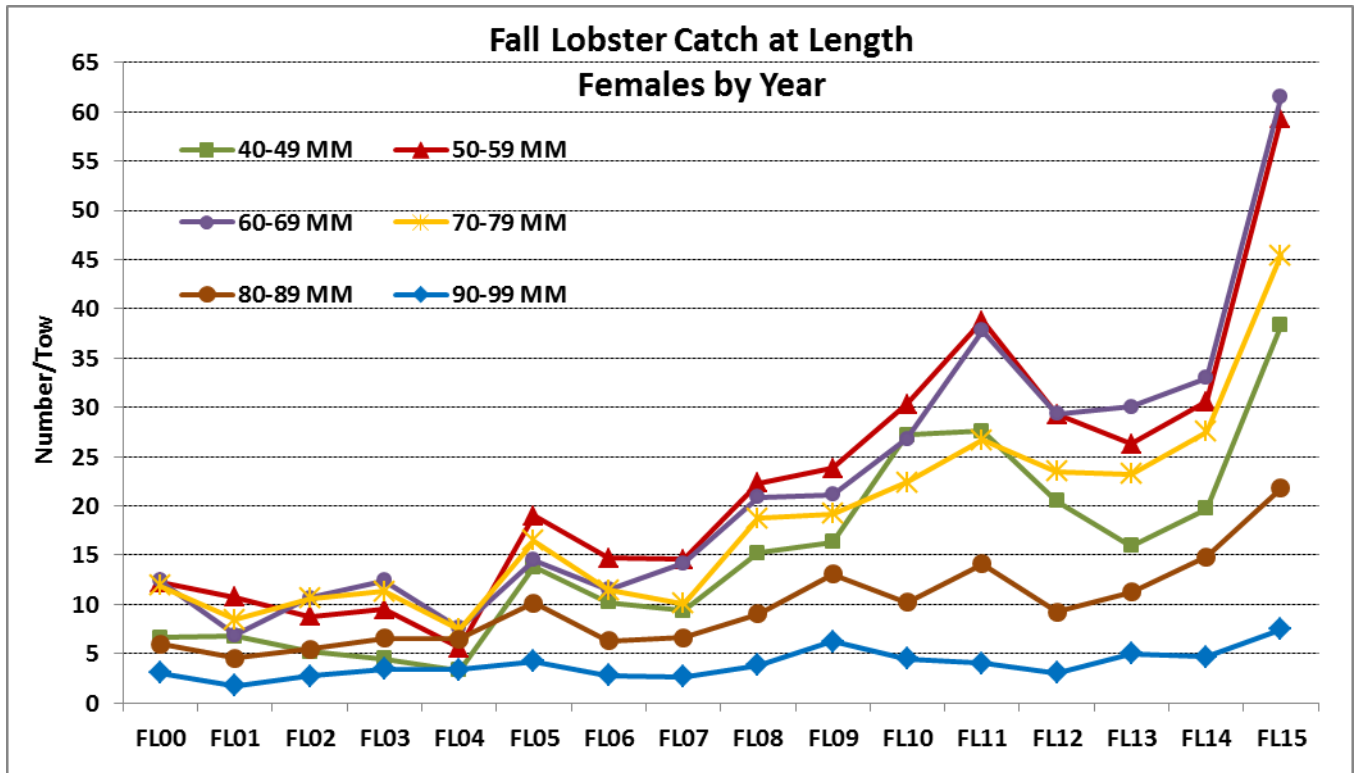
FALL

Stratified Mean

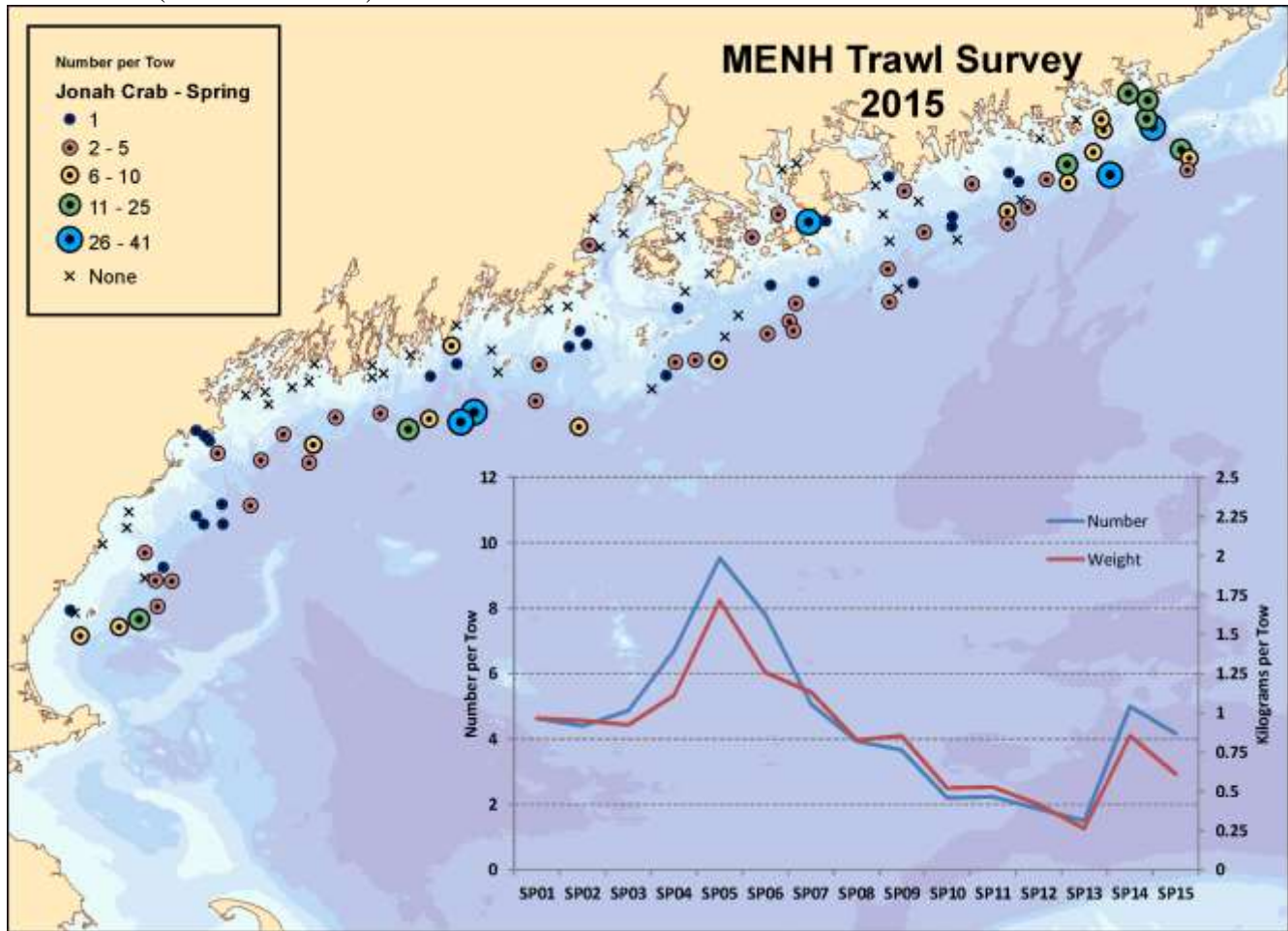
	Number		Weight	
	Mean	CV	Mean	CV
2000	109.43	0.39	35.44	0.30
2001	88.61	0.37	21.79	0.28
2002	93.61	0.23	25.97	0.19
2003	105.40	0.16	30.99	0.16
2004	73.21	0.36	22.84	0.28
2005	169.79	0.30	39.83	0.31
2006	126.31	0.33	30.02	0.31
2007	121.53	0.30	29.75	0.27
2008	207.77	0.36	47.15	0.25
2009	223.66	0.34	54.62	0.27
2010	284.06	0.21	60.64	0.21
2011	334.85	0.23	70.25	0.21
2012	248.49	0.20	53.47	0.18
2013	239.56	0.16	54.91	0.18
2014	273.46	0.21	62.80	0.18

2015 501.97 0.17 105.83 0.18

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



Jonah Crab (*Cancer borealis*)

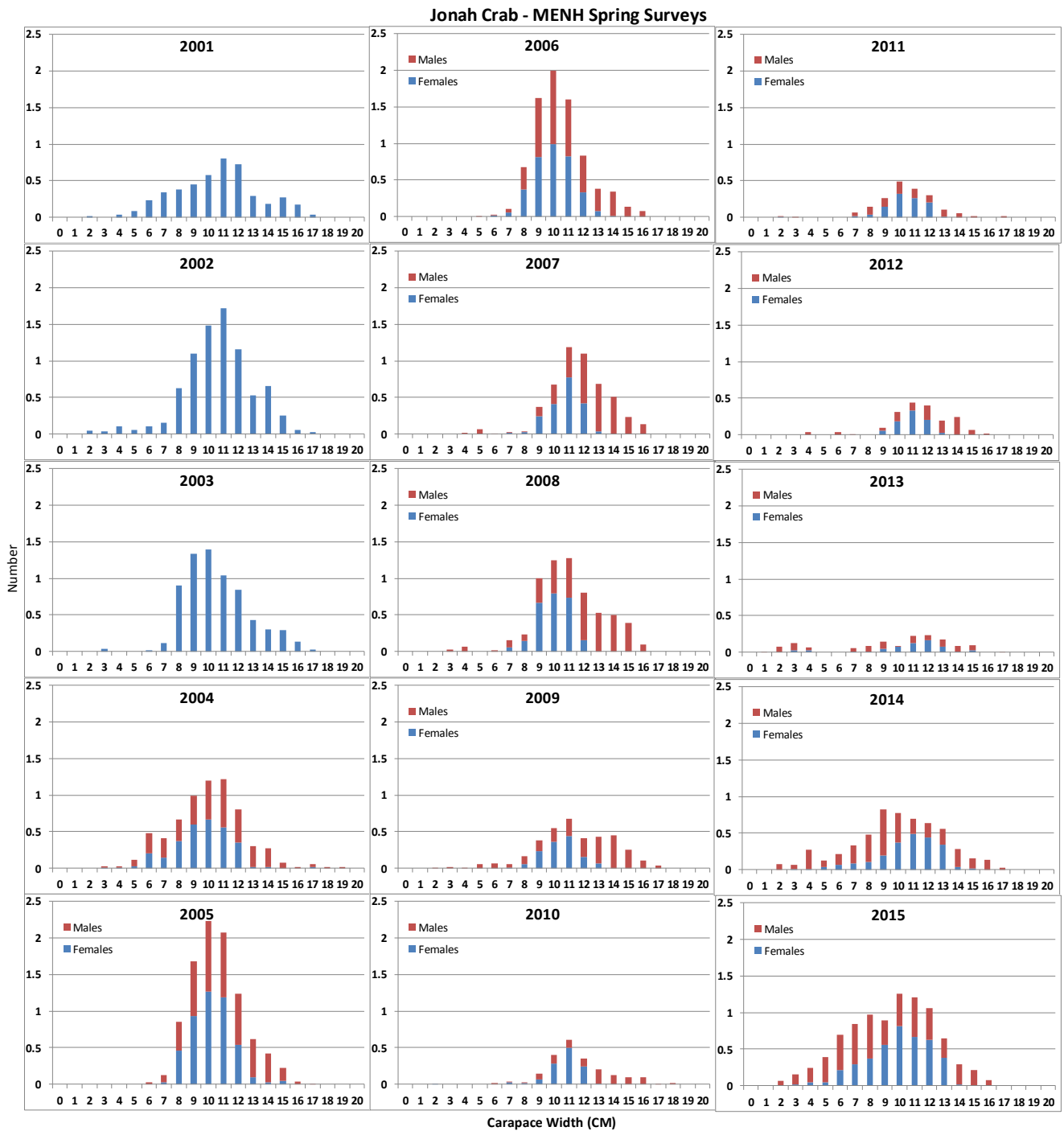


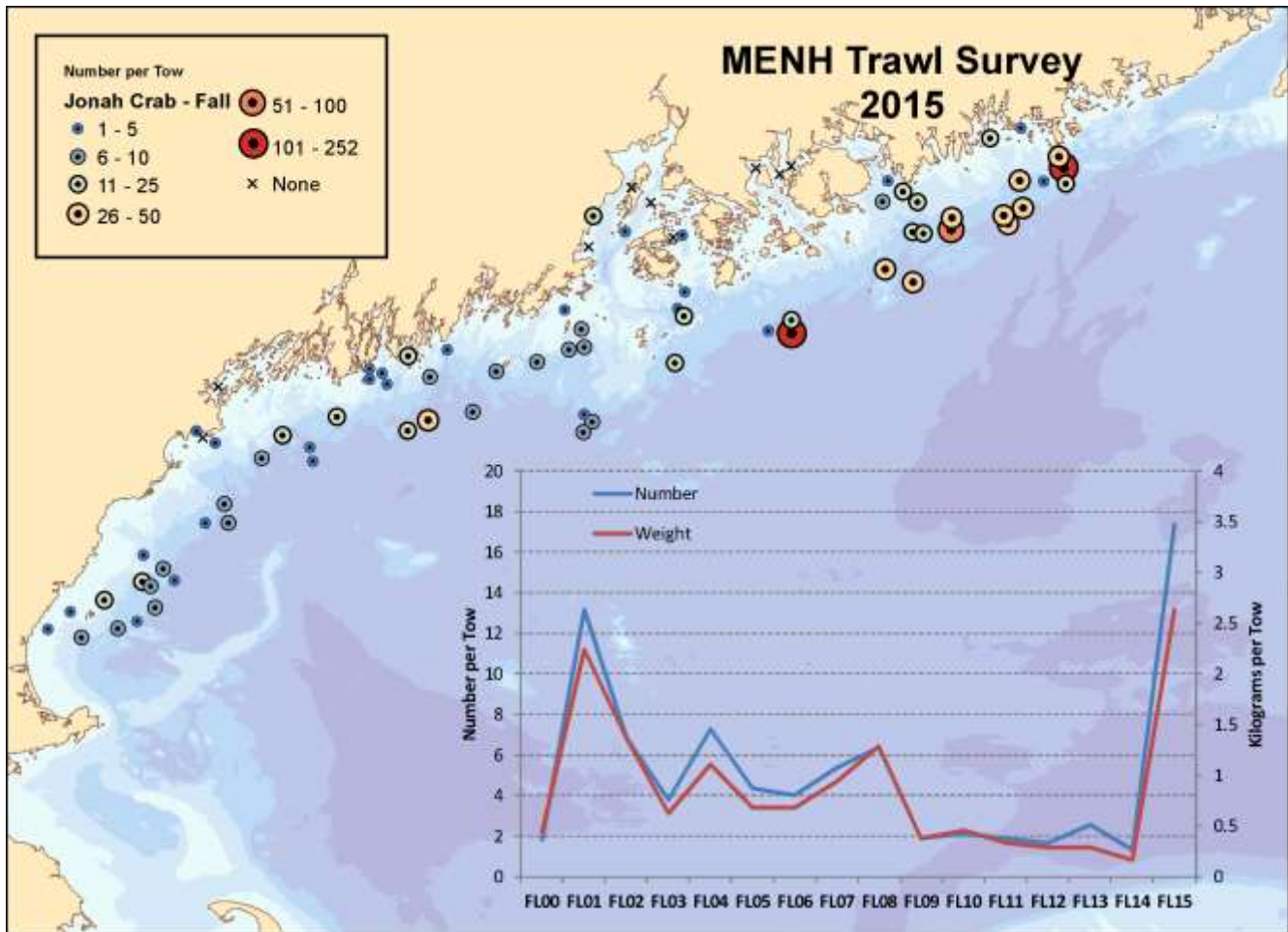
Means and coefficients of variance for graph overlain on above map
 fixed stations not included
 for jonah crab, calculated for regions 1 through 5; strata 1 through 4
SPRING

SPRING	Stratified Mean			
	Number Mean	CV	Weight Mean	CV
2001	4.63	0.88	0.97	0.68
2002	4.41	0.72	0.95	0.71
2003	4.88	0.33	0.93	0.33
2004	6.71	0.52	1.11	0.48
2005	9.53	0.32	1.71	0.33
2006	7.79	0.50	1.26	0.47
2007	5.06	0.31	1.13	0.34
2008	3.95	0.21	0.82	0.23
2009	3.67	0.21	0.85	0.25
2010	2.20	0.38	0.52	0.39
2011	2.22	0.35	0.53	0.32
2012	1.88	0.23	0.42	0.25
2013	1.49	0.40	0.26	0.37
2014	4.99	0.50	0.86	0.44
2015	4.18	0.38	0.61	0.36

Appendix C

Starting in 2004, Jonah crabs were separated by sex before measuring. Aggregate length frequencies are noted by different colors in the plots from 2004 onward.



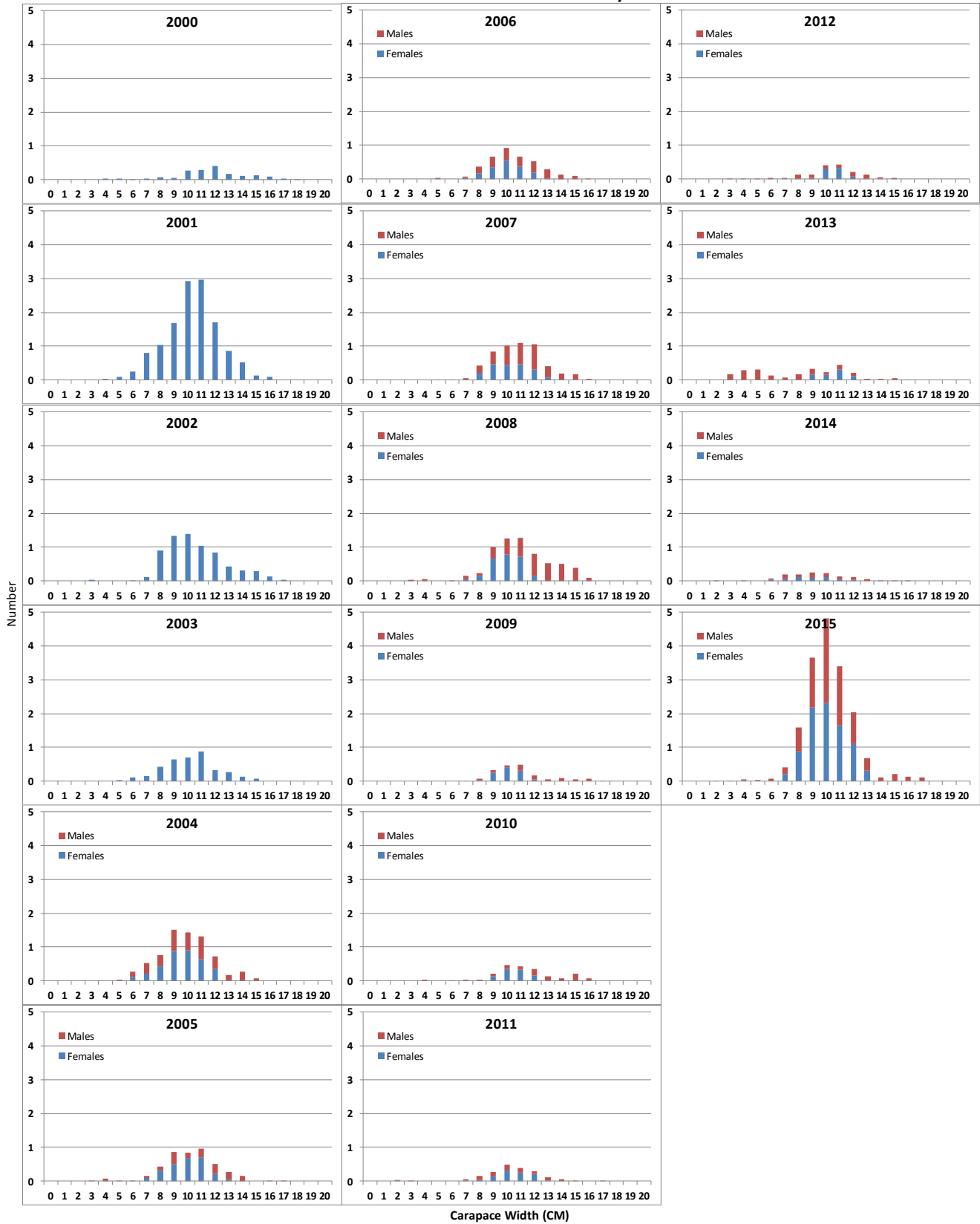


Means and coefficients of variance for graph overlain on above map
 fixed stations not included
 for jonah crab, calculated for regions 1 through 5; strata 1 through 4
 FALL Stratified Mean

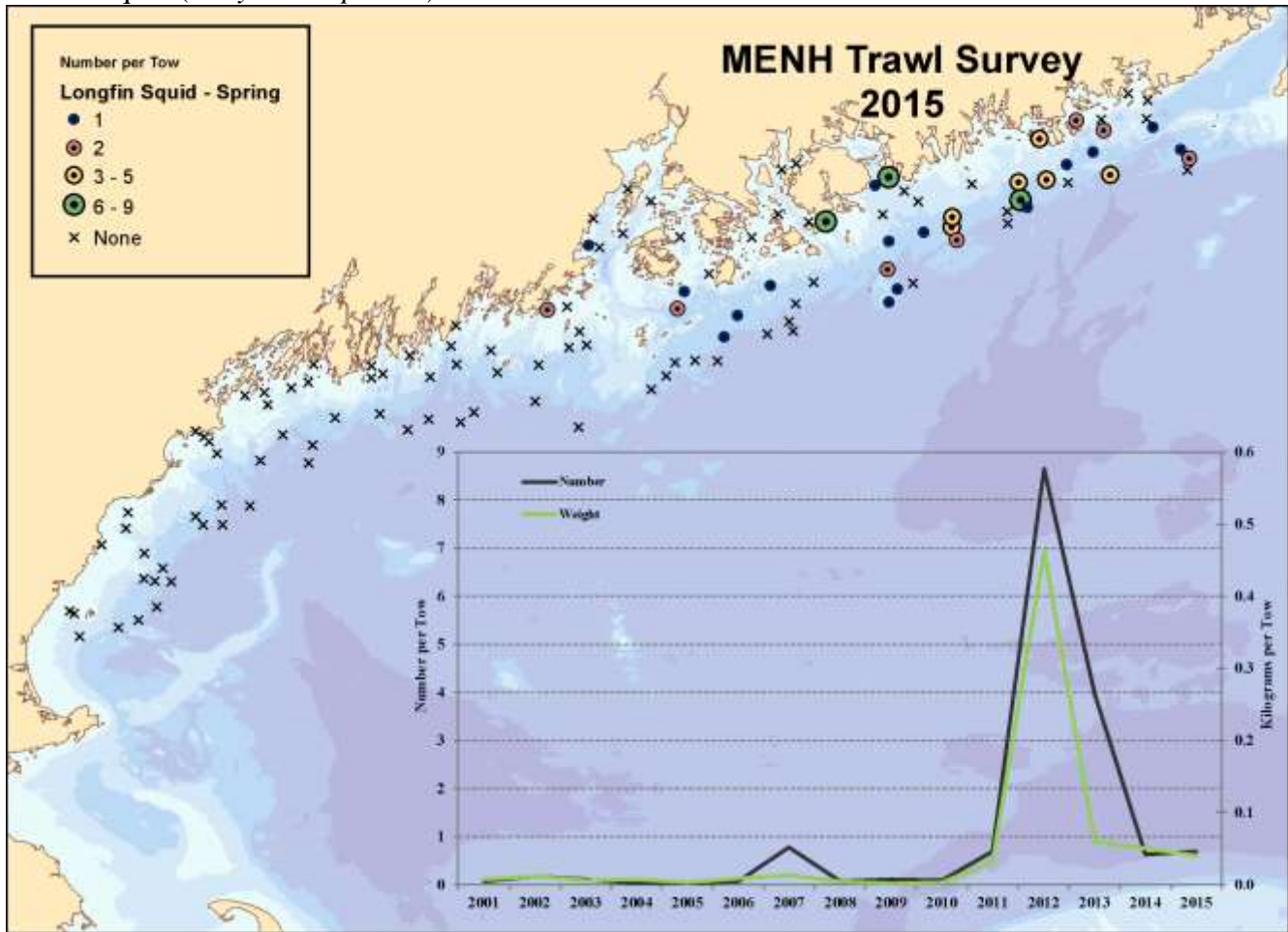
	Number		Weight	
	Mean	CV	Mean	CV
2000	1.82	0.50	0.45	0.47
2001	13.15	0.24	2.24	0.28
2002	6.90	0.68	1.36	0.66
2003	3.80	0.20	0.63	0.22
2004	7.28	0.32	1.11	0.36
2005	4.38	0.33	0.69	0.34
2006	4.04	0.41	0.69	0.38
2007	5.37	0.26	0.94	0.28
2008	6.35	0.20	1.28	0.17
2009	1.87	0.31	0.38	0.30
2010	2.10	0.34	0.46	0.43
2011	1.91	0.30	0.34	0.35
2012	1.69	0.26	0.29	0.30
2013	2.56	0.33	0.29	0.26
2014	1.30	0.33	0.16	0.36
2015	17.38	0.51	2.63	0.40

Appendix C

Jonah Crab - MENH Fall Surveys



Lonfin Squid (*Doryteuthis pealeii*)



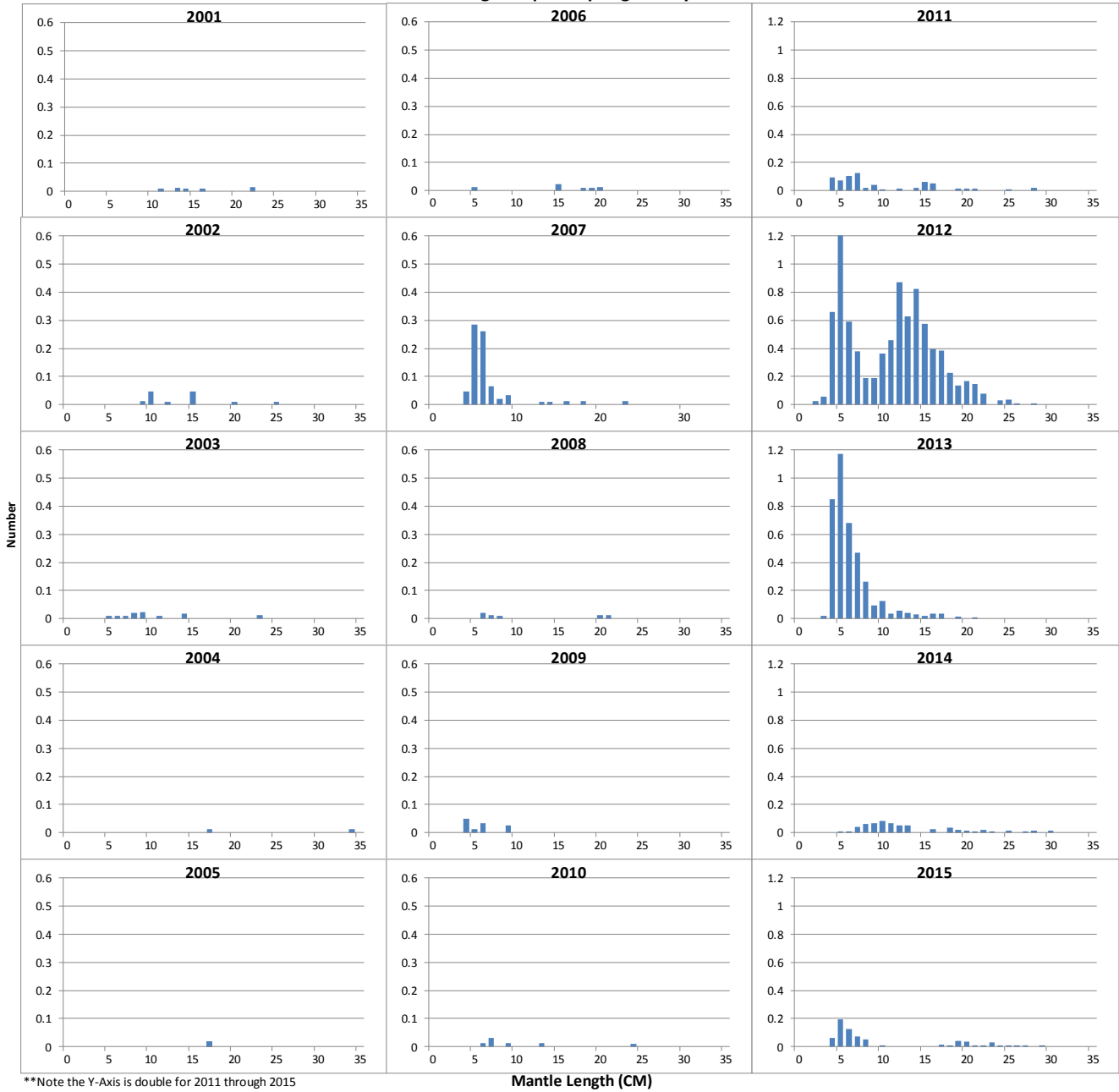
Means and coefficients of variance for graph overlain on above map
 fixed stations not included
 for *Doryteuthis pealeii*, indices calculated for all strata

SPRING

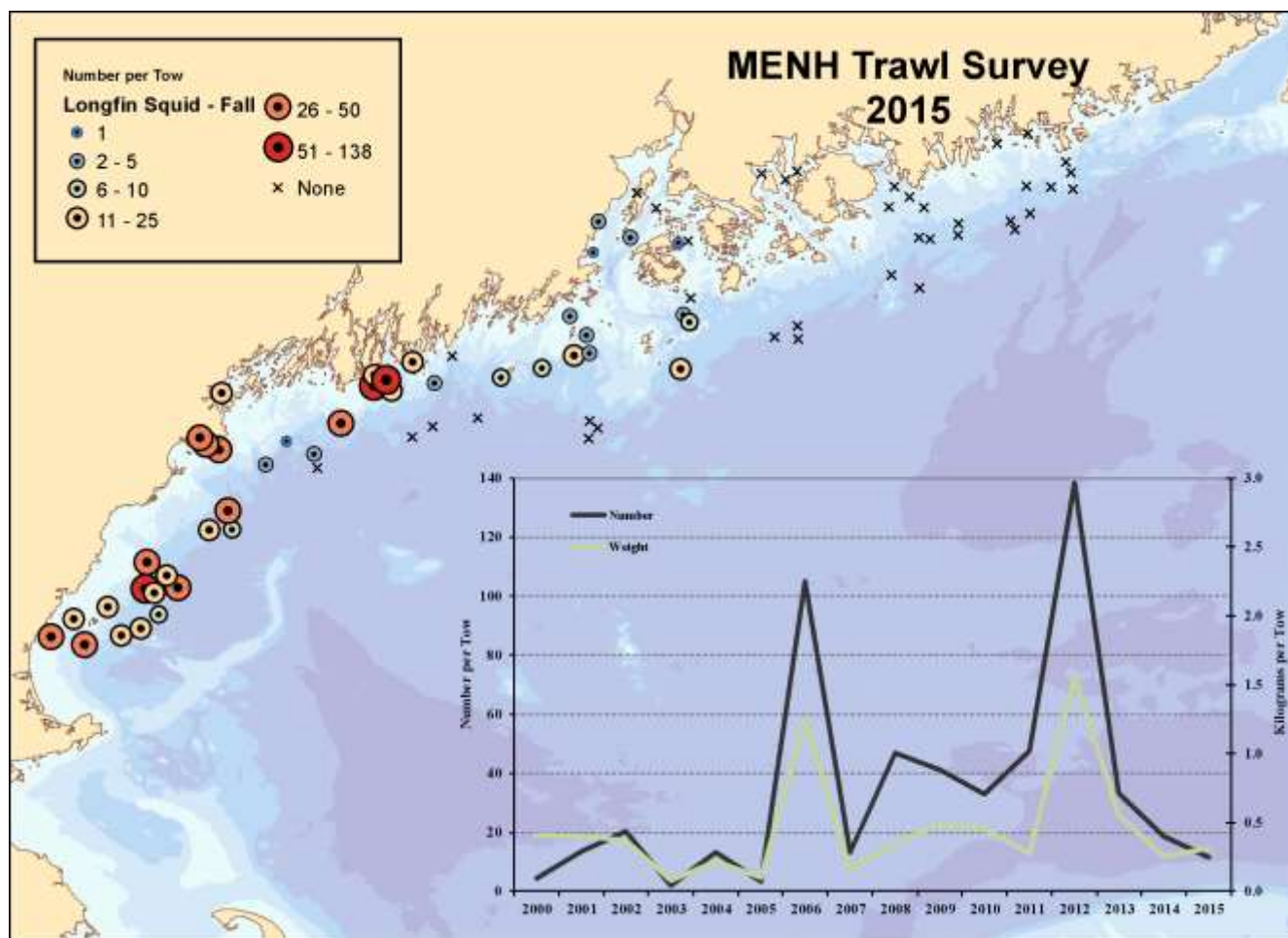
	Number		Stratified Mean Weight	
	Mean	CV	Mean	CV
2001	0.07	1.01	0.008	1.09
2002	0.17	0.37	0.012	0.86
2003	0.12	0.74	0.006	1.49
2004	0.03	1.60	0.007	2.01
2005	0.02	1.73	0.003	1.73
2006	0.07	0.86	0.009	1.03
2007	0.77	0.46	0.013	0.46
2008	0.06	1.08	0.005	2.01
2009	0.12	0.75	0.002	0.92
2010	0.08	1.00	0.003	1.24
2011	0.68	0.40	0.031	0.58
2012	8.64	0.90	0.461	1.10
2013	3.96	0.54	0.059	0.39
2014	0.63	0.81	0.051	1.03
2015	0.70	0.47	0.041	0.81

Appendix C

Longfin Squid - Spring Surveys**



**Note the Y-Axis is double for 2011 through 2015



Means and coefficients of variance for graph overlain on above map
 fixed stations not included
 for *Doryteuthis pealeii*, indices calculated for all strata

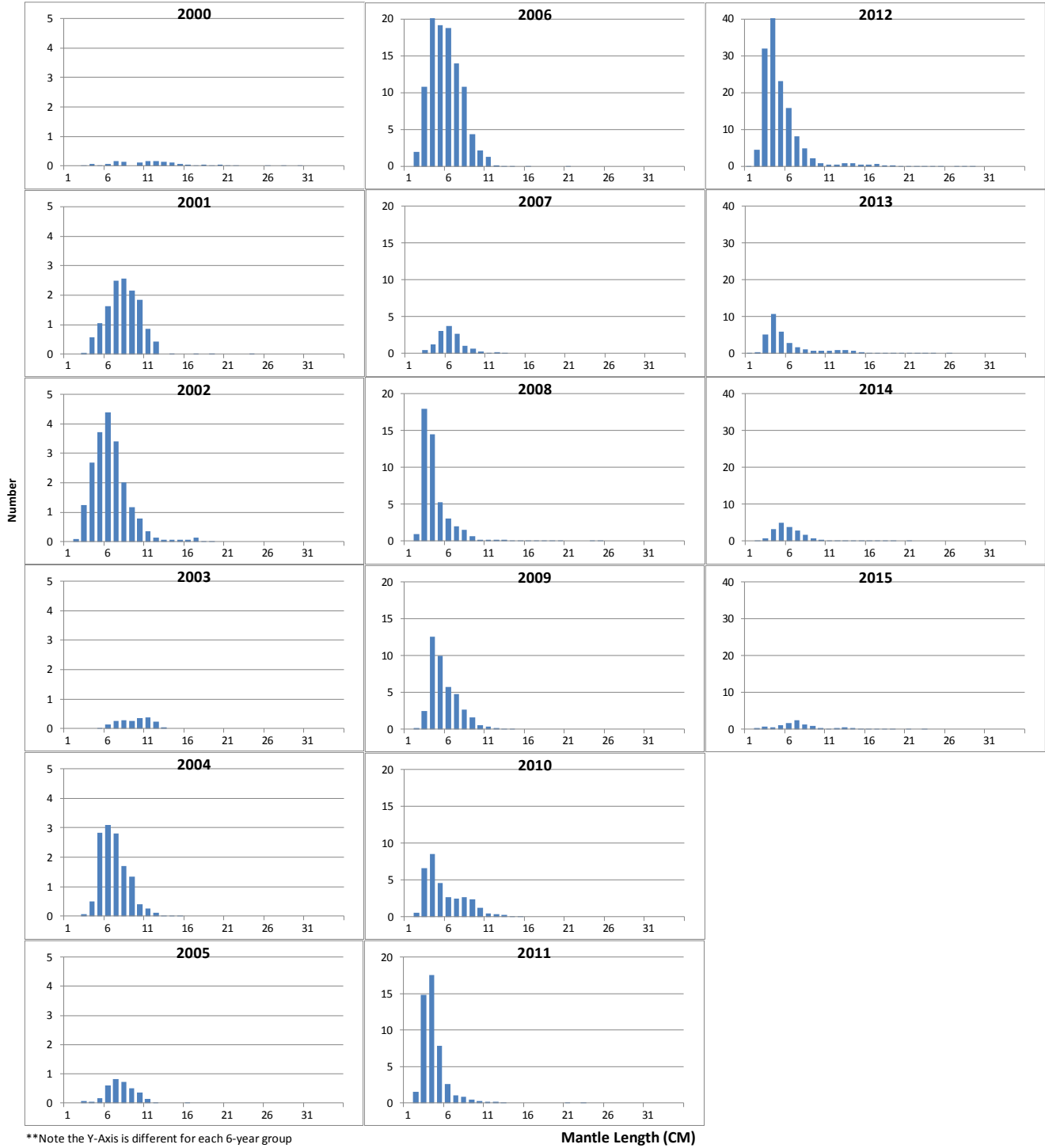
FALL

Stratified Mean

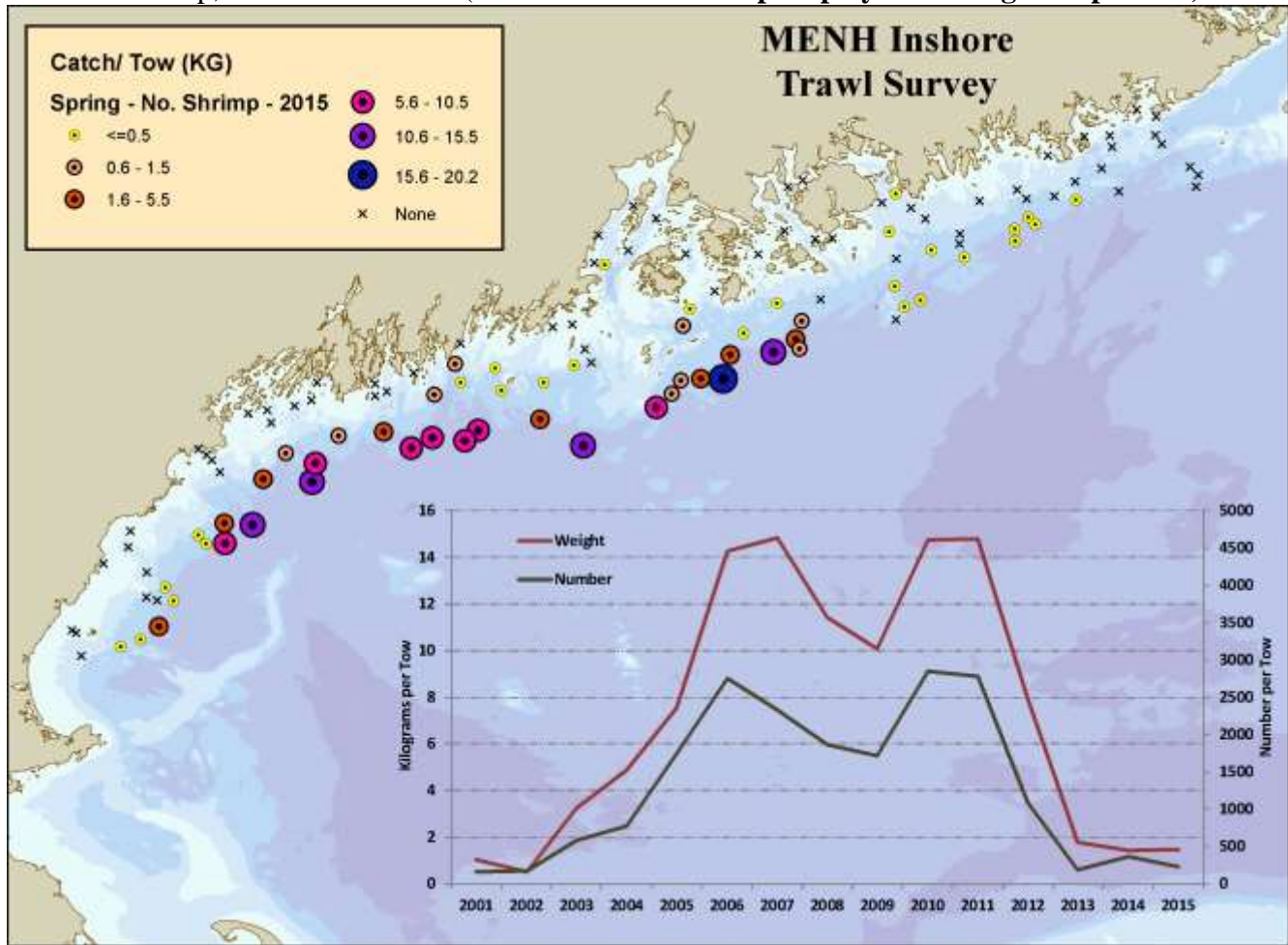
	Number		Weight	
	Mean	CV	Mean	CV
2000	4.57	0.54	0.41	0.65
2001	13.56	0.50	0.40	0.57
2002	20.36	0.35	0.37	0.41
2003	1.94	0.53	0.08	0.50
2004	13.18	0.79	0.22	0.86
2005	3.52	0.26	0.10	0.26
2006	105.10	0.30	1.26	0.33
2007	13.19	0.47	0.16	0.37
2008	46.89	0.34	0.34	0.27
2009	41.03	0.26	0.49	0.27
2010	32.87	0.17	0.45	0.20
2011	47.55	0.27	0.28	0.33
2012	138.30	0.30	1.55	0.25
2013	33.39	0.28	0.55	0.24
2014	18.54	0.34	0.25	0.36
2015	11.41	0.34	0.31	0.32

Appendix C

Longfin Squid - Fall Surveys**



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



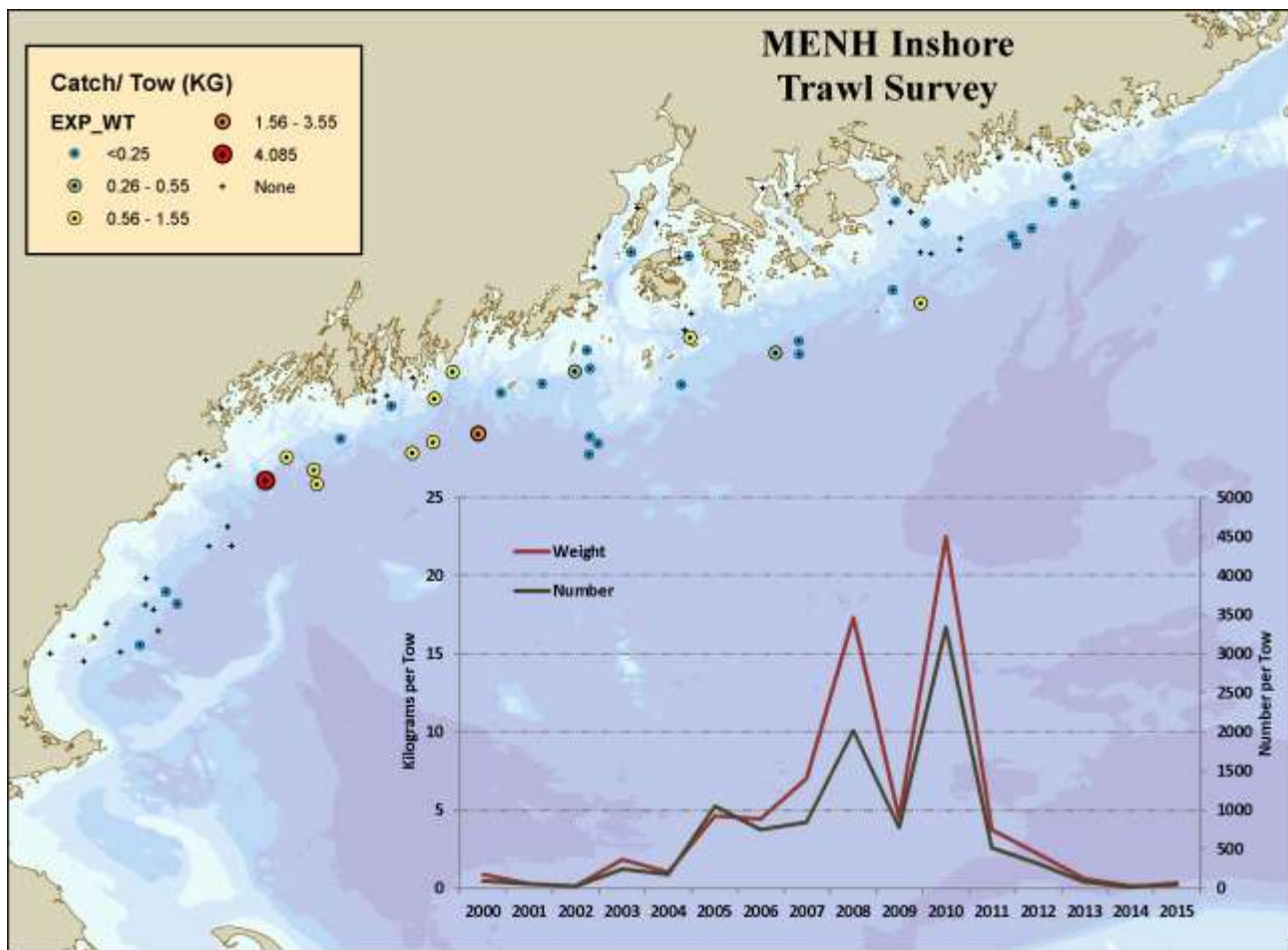
Means and coefficients of variance for graph overlain on above map fixed stations not included

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
2014	364.21	0.30	1.42	0.29
2015	231.66	0.33	1.49	0.35



Means 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

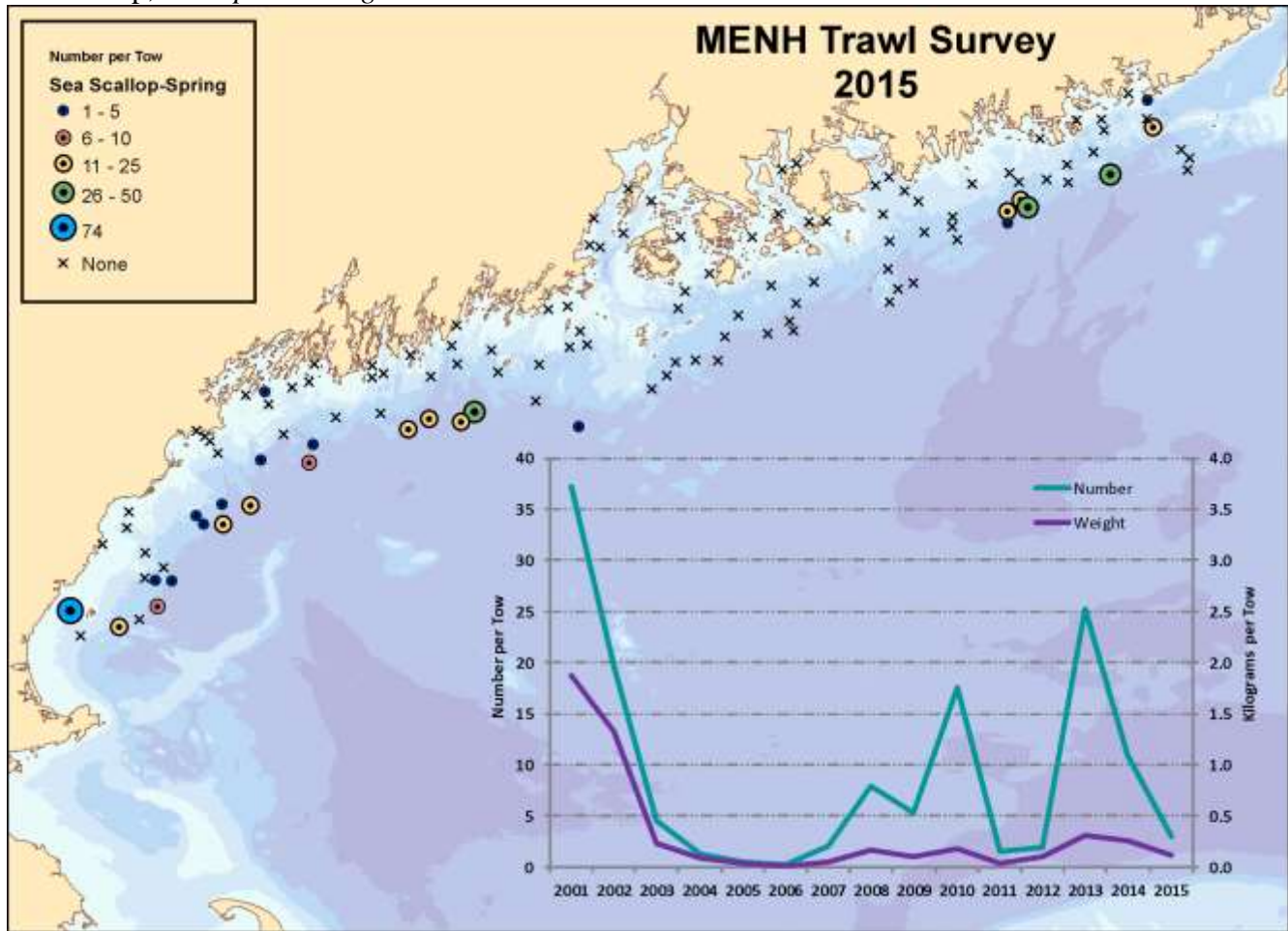
FALL

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
2014	16.40	0.46	0.16	0.52
2015	65.92	0.62	0.19	0.60

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

Sea scallop, *Placopecten magellanicus*



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

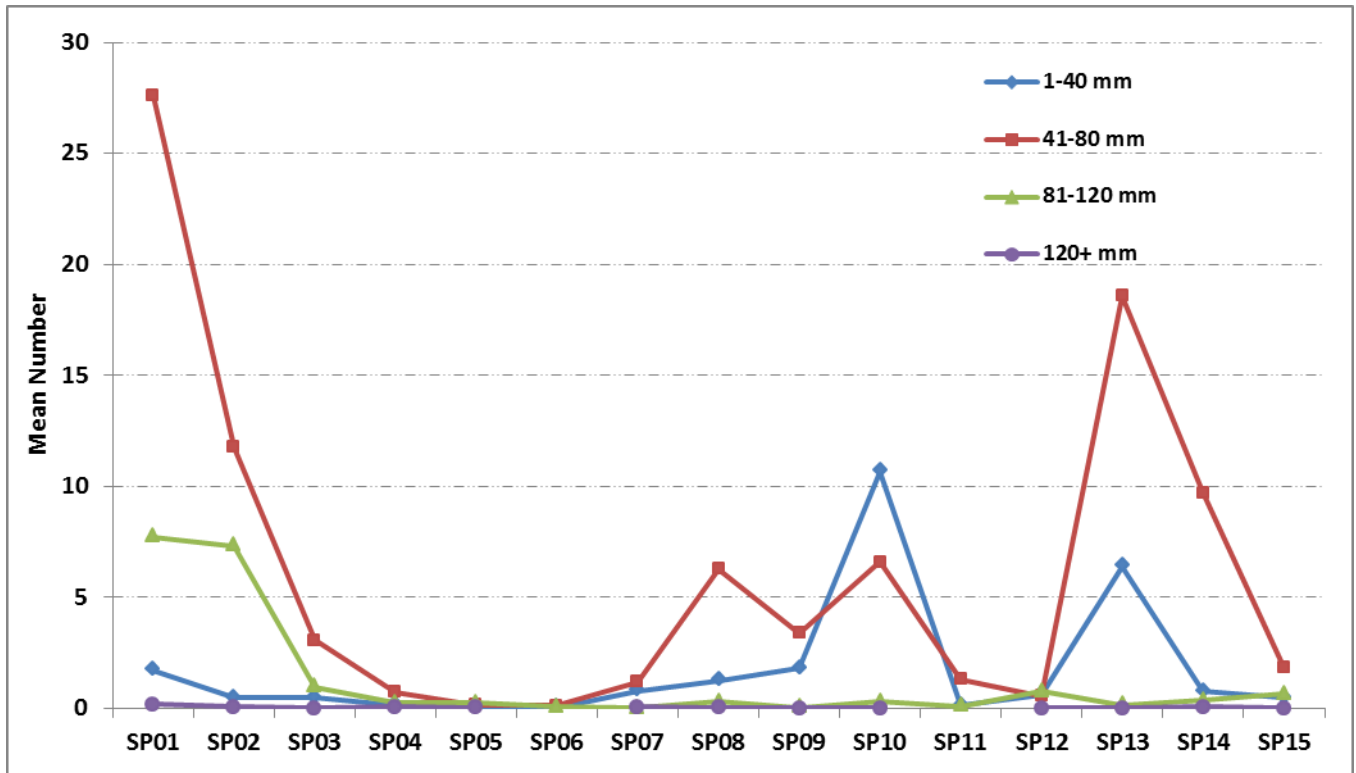
SPRING

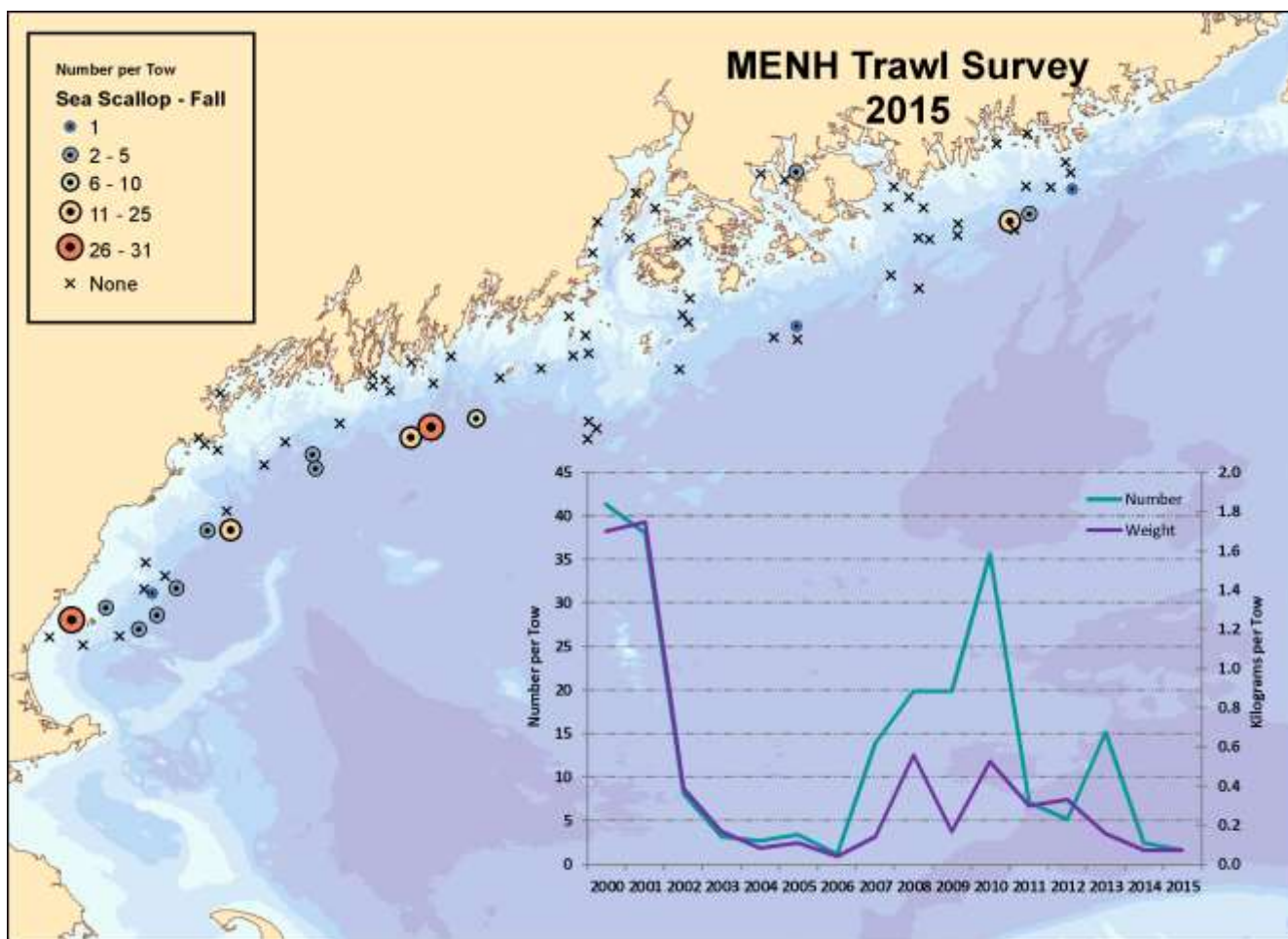
	Stratified Mean			
	Number	CV	Weight	CV
	Mean		Mean	
2001	37.25	0.58	1.87	0.98
2002	19.66	0.71	1.32	0.74
2003	4.55	0.49	0.23	0.57
2004	1.23	0.50	0.09	0.48
2005	0.51	0.56	0.04	0.75
2006	0.27	0.92	0.01	0.97
2007	2.08	0.65	0.06	0.88
2008	7.89	0.58	0.17	0.58
2009	5.28	0.75	0.11	0.70
2010	17.61	1.11	0.18	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
2014	10.91	0.75	0.26	0.66
2015	2.98	0.60	0.11	0.55

Appendix C

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

Spring





Means and coefficients of variance for 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 Mean	CV	Weight 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
2014	2.49	0.54	0.07	0.64
2015	1.59	0.64	0.07	0.57

Appendix C

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

Fall

