

**Annual Report on the
Maine-New Hampshire Inshore Trawl Survey
January 1, 2014-December 31, 2014**

Contract # NA13NMF4720104 (DMR #3025)

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

By

Sally A. Sherman, Keri L. Stepanek, and Fran Pierce
Maine Department of Marine Resources
21 State House Station
Augusta, ME 04333

Robert Tetrault, Robert Michael Inc.
18 Machigonne St.
Portland, ME 04102

And
Conor O'Donnell
New Hampshire Fish and Game Department
225 Main Street
Durham, NH 03824-4732

July 2015

TABLE OF CONTENTS

Acknowledgements	iv
Executive Summary	v
Introduction	1
Objective	1
Materials and Methods	2
Results	
Spring 2014 Summary	4
Fall 2014 Summary	9
Partnerships	13
References	13
Appendix A: Spring Individual Station Descriptions	1-A
Appendix B: Fall Individual Station Descriptions	1-B
Appendix C: Selected Species	1-C
Acadian redbfish	2-C
Alewife	6-C
American plaice	10-C
American shad	14-C
Atlantic cod	18-C
Atlantic halibut	22-C
Atlantic herring	26-C
Blueback Herring	30-C
Butterfish	34-C
Goosefish	38-C
Haddock	42-C
Longhorn sculpin	46-C

Pollock	50-C
Rainbow smelt	54-C
Red hake	58-C
Sea raven	62-C
Silver hake	66-C
Spiny dogfish	70-C
White hake	73-C
Windowpane flounder	78-C
Winter flounder	81-C
Witch flounder	85-C
Yellowtail flounder	89-C
American lobster	93-C
Northern shrimp	97-C
Sea scallop	99-C

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, 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, Shane Conlin, Ed Motyka, Calvin Diessner, and Robert Eckert. Thanks to Margaret Hunter for updating our website. We are especially grateful for the support provided by Colonel Jon Cornish, Lieutenants Rene Cloutier 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 2014 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 fourteen years of biannual survey work, and the fifteenth 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

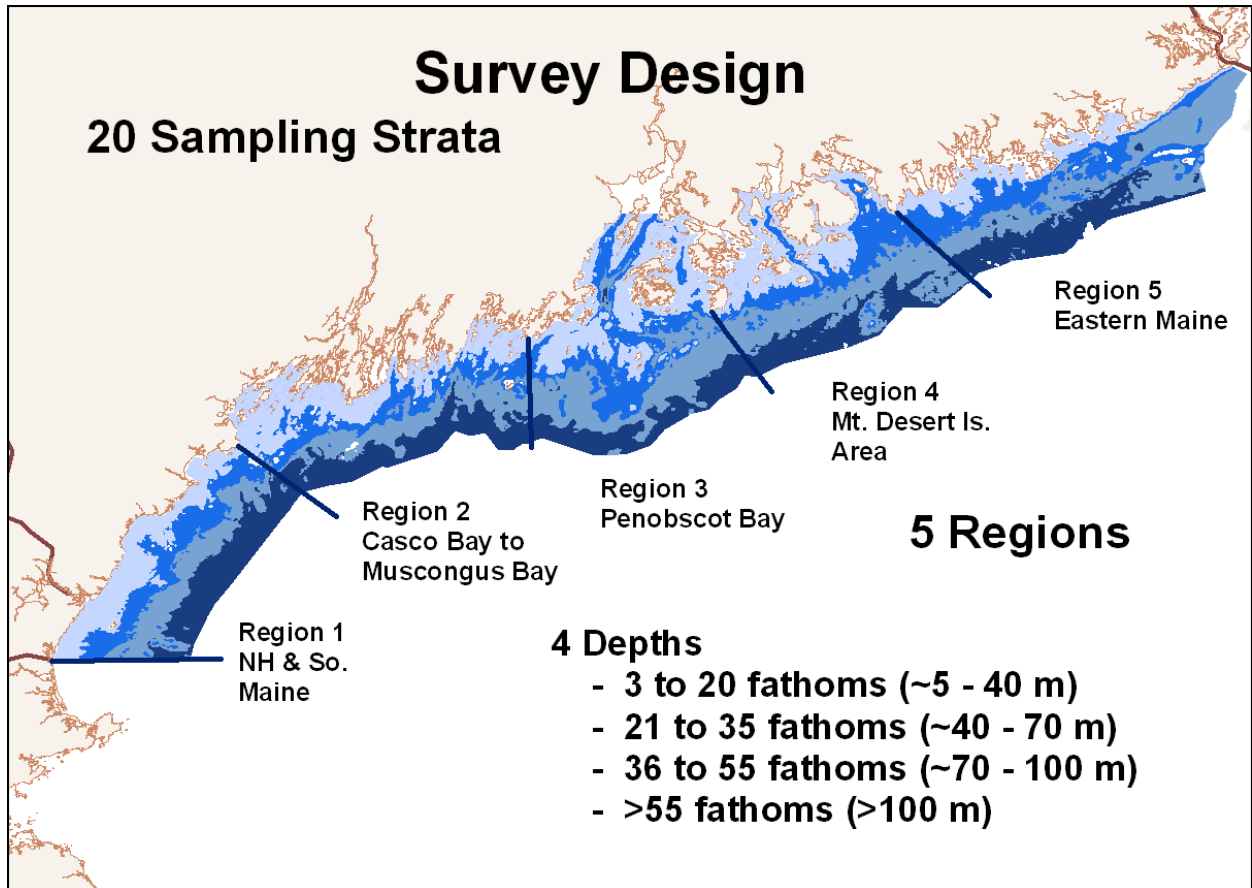


Figure 1. Sampling strata for the Maine-New Hampshire Inshore Trawl Survey

RESULTS

SPRING 2014 SUMMARY

The survey began May 5, 2014 in Portsmouth, New Hampshire and finished on June 6, 2014 off of Lubec, Maine. We completed 114 tows out of the scheduled 120. This translates to a 95% completion rate, with an average of 4.5 tows per day. Personnel from Maine DMR as well as New Hampshire F&G participated in the survey. Christine Lipsky and Julie Nieland 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. Figure 2 displays the start coordinates for the spring and fall 2014 survey tows.

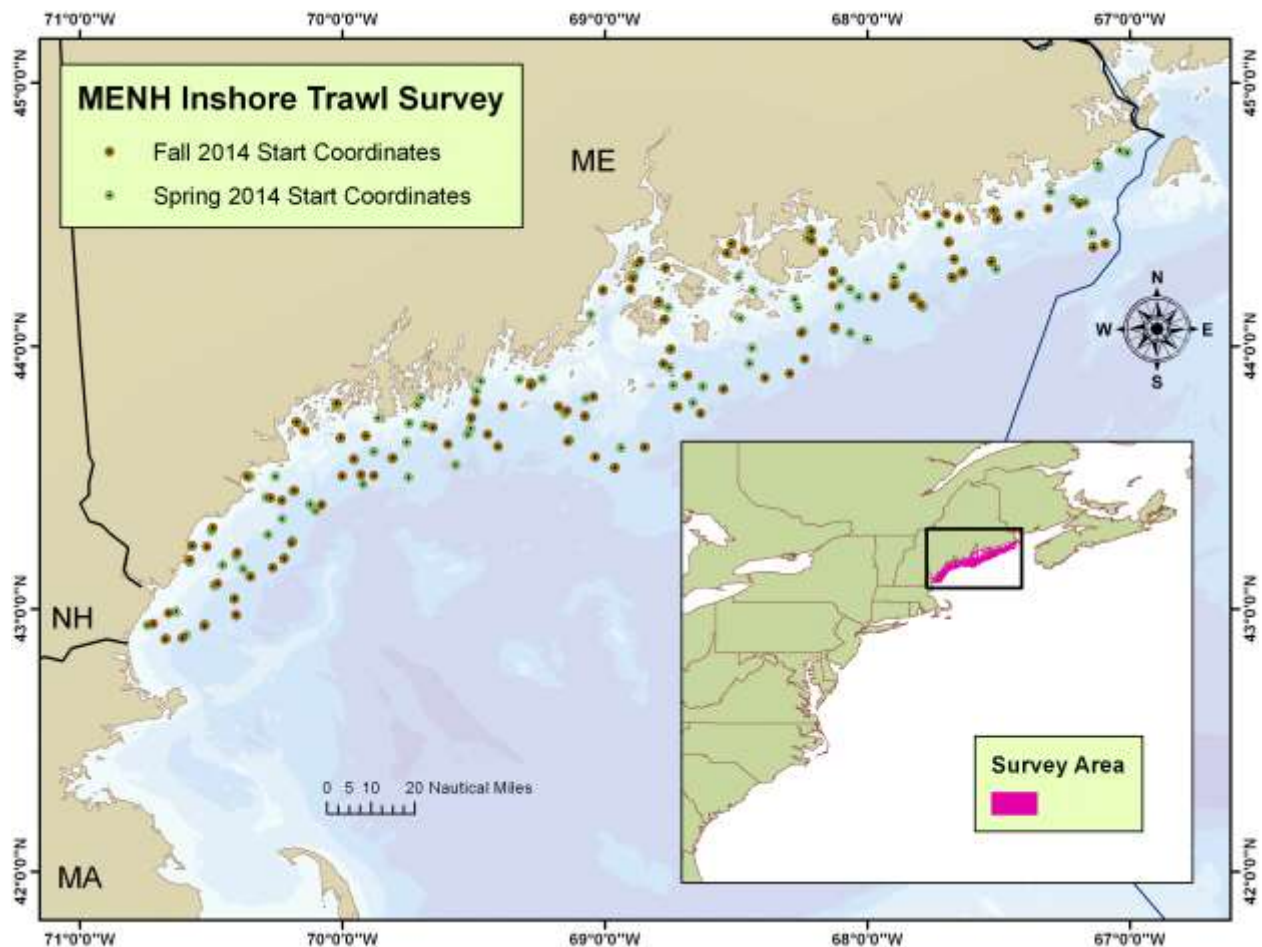


Figure 2. Survey start coordinates for the 2014 season.

For the spring 2014 survey, bottom sea water temperatures ranged from 3.5°C to 8.9°C at any one particular site. The overall average sea bottom temperature was 5.5°C which is 0.7°C lower than spring 2013 and the lowest since 2009 (Sherman et al, 2013; Sherman et al, 2010). Average sea surface temperature for spring 2014 was lower at 7.7°C compared to 8.9°C the previous spring. The average near bottom water temperature by region and stratum with regional totals is shown in Table 1.

Table 1. Average near bottom water temperature (°C) for the spring 2014 survey.

REGION					
STRATUM	1	2	3	4	5
1	4.7	5.6	6.0	7.2	6.9
2	4.1	4.7	5.8	6.2	7.0
3	4.0	4.7	5.1	6.0	6.8
4	4.1	4.7	5.4	6.4	6.7
Total	4.2	4.9	5.5	6.4	6.8

Overall average sea surface temperature for spring 2014 was lower at 7.7°C compared to 8.9°C for the previous spring (Figure 4). The lower sea surface temperatures were consistent over the extent of the survey.

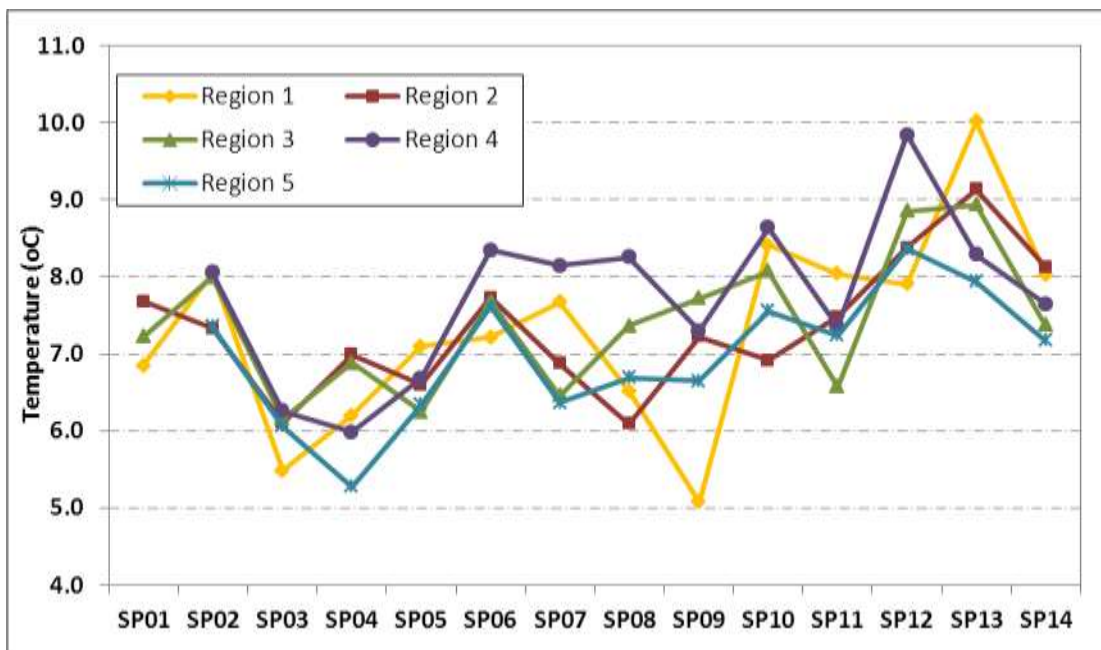


Figure 4. Spring survey average surface water temperatures (°C) by region and year.

The volume of total mixed catch varied from 5.0 kg to 2276.6 kg per tow, with an average of 147.6 kg and a median of 112.6 kg per tow. Figure 5 shows the average catch per tow for spring surveys since 2001; the spring 2014 catch average was the highest for the series, this remains true even if the largest catch of 2276.6 kg is excluded (128.8 kg)

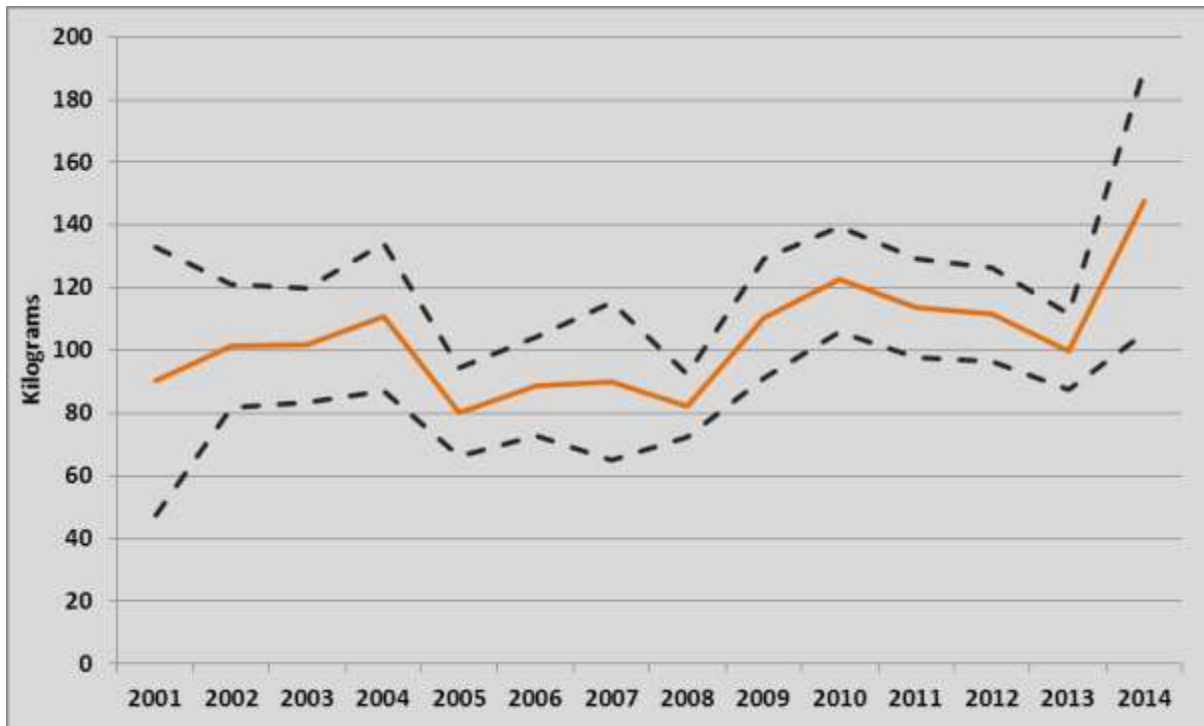


Figure 5. Average combined catch weights (kg) per tow for spring surveys for 2001-2014. The dashed lines represent 2 standard errors.

Figure 6 illustrates species groups by portion of the total catch for all spring surveys since 2001. The first year was fairly variable and after that the herrings (herring, river herring, shad) compromised the largest portion of the total catch until the most recent years where American lobster, the major component of that group, has become the principal portion of the catch. The recent increased proportion of gadoid fish is accounted for by larger catches of silver hake (whiting) and haddock. Mixed shrimp catches have declined. Flatfish are a smaller, more consistent portion of the catch.

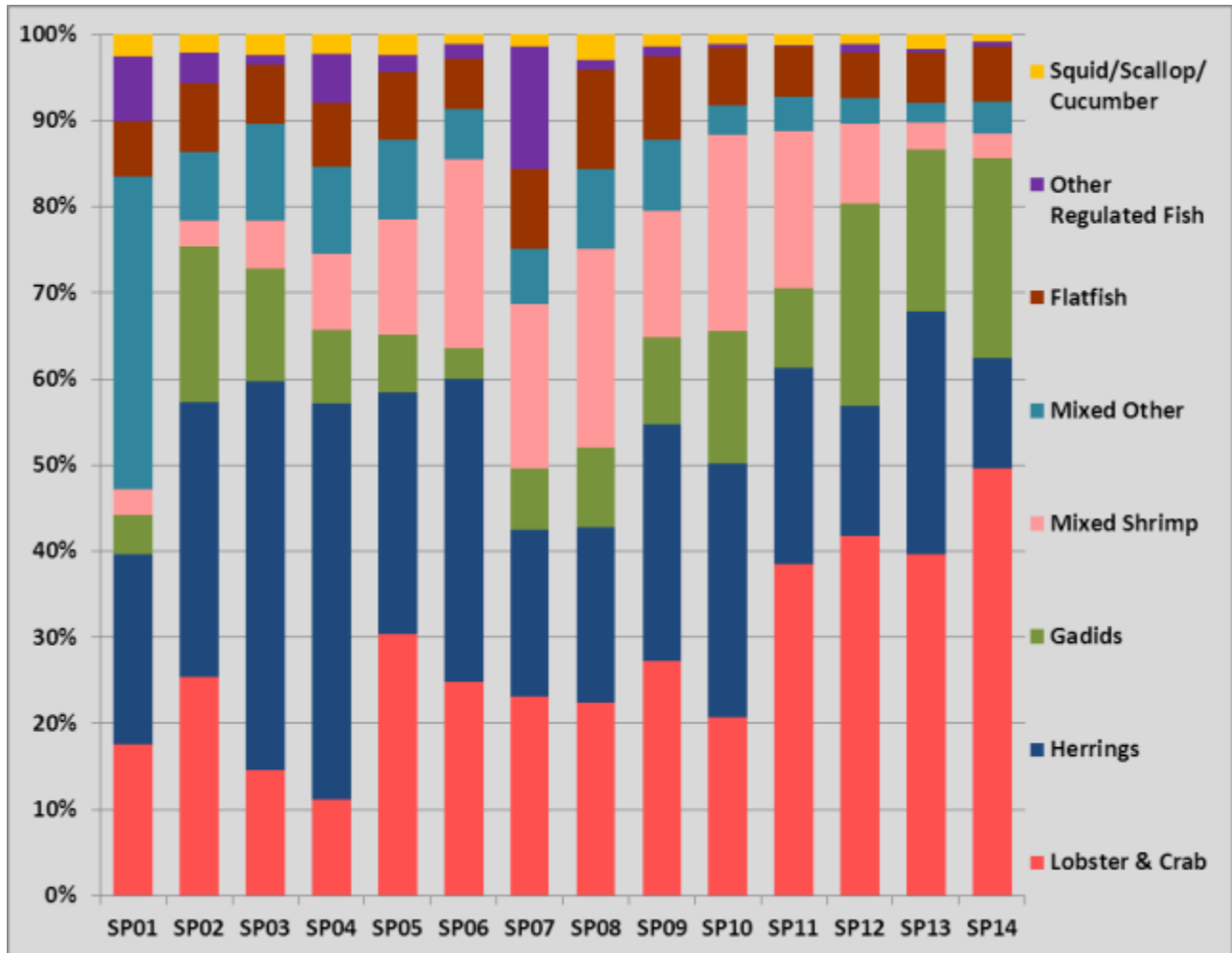


Figure 6. Percent of total catch weight apportioned by species groups for spring surveys 2001-2014.

For 2014, the total number of species caught was 95, with a low of 9 and high of 36 in any particular tow, and a per tow average of 24 species.

Biological samples are collected on selected finfish species, based on seasonal abundance and available time between tows. Table 2 shows the numbers of biological samples taken for the spring 2014 survey. It doesn't include the samples taken for NOAA Fisheries. Over 400 winter flounder were tagged along the survey area. Cod, haddock, winter flounder, and plaice were

collected for studies being conducted by the Gulf of Maine Research Institute and the University of New England. Alewife and blueback herring were similarly collected for researchers at the University of Southern Maine.

Table 2. Spring 2014 species sampled for weights, sex, maturity, food habits, and aging.

Number of Biological Samples Spring 2014				
Species	Lengths	Weights/Sex/ Maturity Stage	Otoliths	Food Habits
Atlantic cod	364	155	116	NA
Haddock	2294	436	244	NA
American plaice	3229	667	487	NA
Yellowtail flounder	341	134	NA	NA
Winter flounder	4438	847	519	NA
Goosefish	97	46	NA	27

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

Other Spring 2014 Survey Highlights

For the second spring in a row, we saw 100% occurrence of American lobsters, they were caught in every tow conducted. We had 2 large catches of lobsters in region 4 which is near Mt. Desert Is. The largest was estimated at ~11203 individuals at ~2230 kg for a 20 minute tow. Juvenile Atlantic cod were seen in 50% of the tows, which is an increase from the previous 8 spring surveys. Noteworthy increases in numbers and percent occurrence were seen for haddock, witch flounder, and the hakes (red, white, and silver) as well. Atlantic herring numbers were down about 25% from spring 2013. Northern shrimp numbers were up slightly from the previous spring which was due to a greater volume of smaller shrimp as the catch weight was down from 2013. No spiny dogfish were seen in 2014 and butterfish and the squid species catches were down.

FALL 2014 SUMMARY

The survey began September 29, 2014 in Portsmouth, New Hampshire and finished on October 31, 2014 off of Cutler, Maine. We completed 94 tows out of the scheduled 120. This translates to a 78% completion rate, with an average of 3.75 tows per day. Personnel from Maine DMR as well as New Hampshire F&G participated in the survey. Christine Lipsky and Julie Nieland 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.

Table 4 shows the average near bottom water temperature by stratum for the fall 2014 survey with totals for each region along the coast. Temperatures ranged from 6.5°C to 14.9°C in any one particular site. The overall average sea bottom temperature was 11.0°C which is 0.8°C higher than fall 2013 (Sherman et al, 2014).

Table 4. Average near bottom water temperatures (°C) for fall 2014

REGION					
STRATUM	1	2	3	4	5
1	12.2	13.6	13.1	12.8	11.8
2	9.3	11.9	12.7	12.1	12.0
3	7.8	10.2	11.5	12.0	12.1
4	7.3	9.3	11.0	10.9	11.1
Total	9.1	10.8	11.9	11.9	11.7

Sea surface temperatures were higher than the previous fall in 4 out of 5 of the regions and the overall average sea surface temperature was 13.3°C (Figure 7). The sea surface temperatures declined as the survey proceeded east through the end of October which is typical. The overall trend in the temperatures is an increase in recent years for most regions.

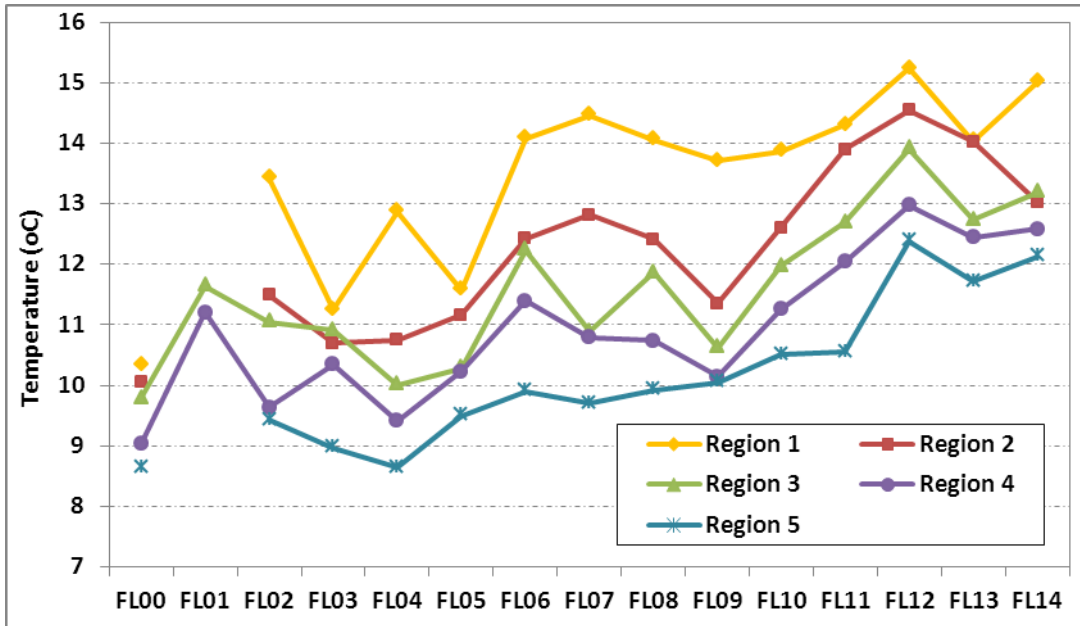


Figure 7. Average sea surface temperatures by region for fall surveys 2000-2014.

The volume of mixed catch varied from 16.6 kg to 390.5 kg per tow, with an average of 153.8 kg and a median of 139.5 kg. Figure 8 shows the average per tow catch rates for the fall surveys since 2000. The 2014 average catch weight increased from the previous fall.

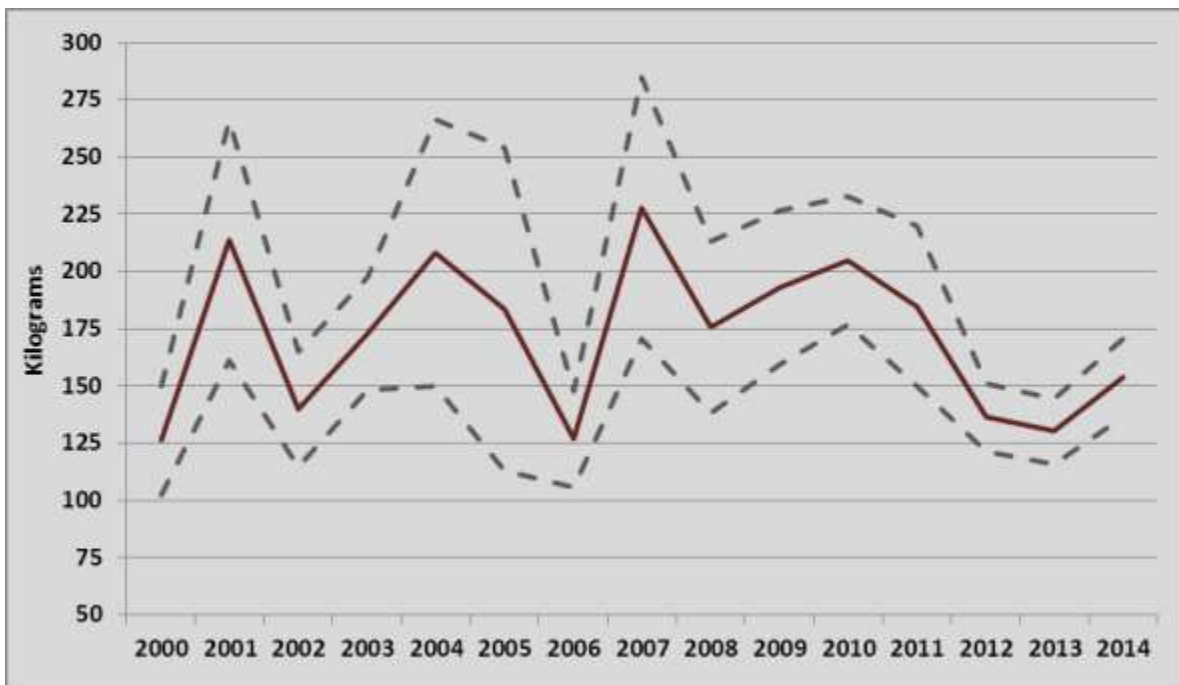


Figure 8. Average mixed catch weights per tow for fall surveys 2000-2014.

The dashed lines represent 2 standard errors.

Figure 9 illustrates species groups by portion of the total catch for all for all fall surveys since 2000. Gadids (hakes), American lobster, and other regulated finfish (spiny dogfish, monkfish) are the predominant species by weight for the early years and these three account for over 70% of the catch volume for 5 out of the 15 fall surveys. The percentage of Pandalid shrimp has decreased to levels first seen in 2001.

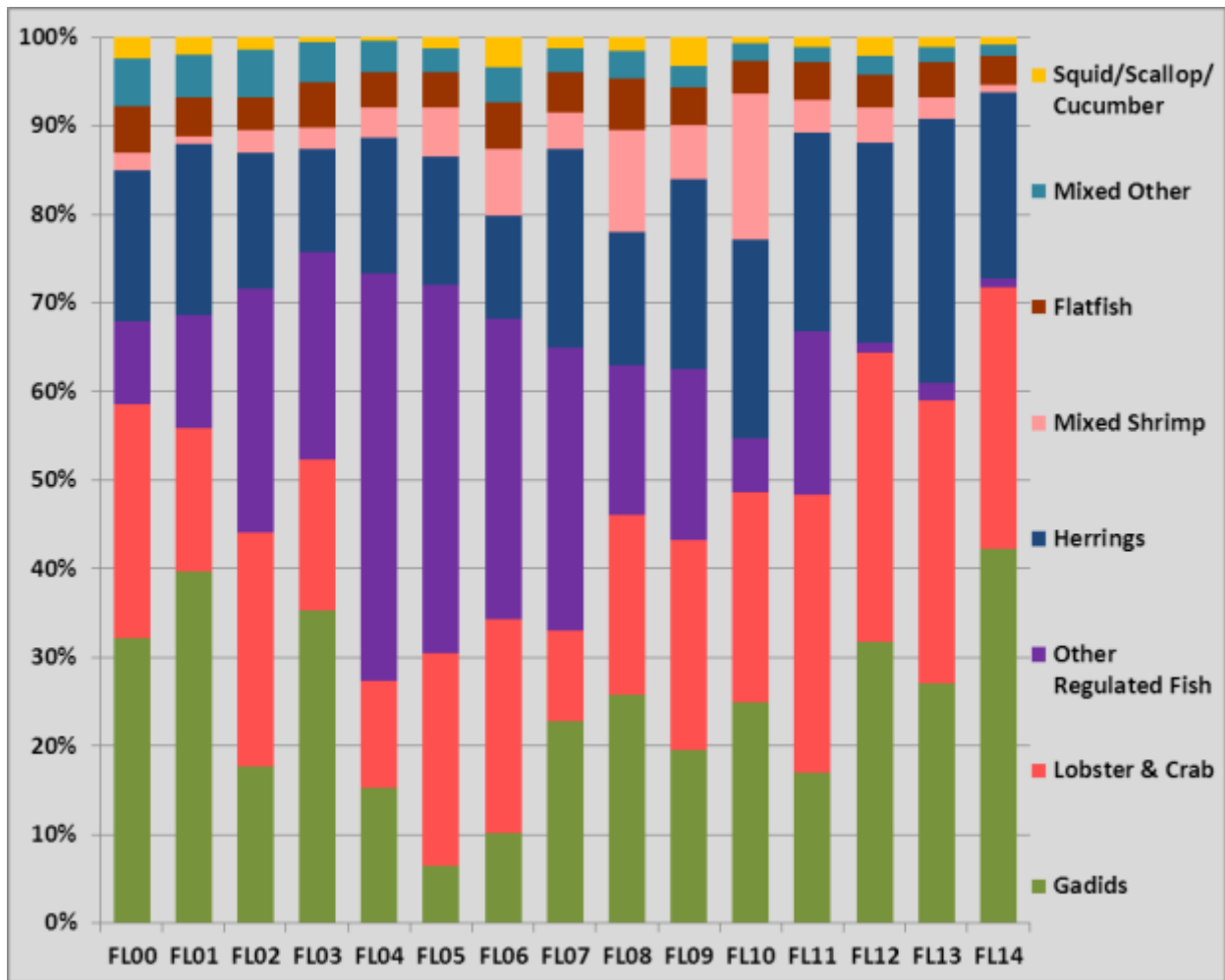


Figure 9. Percent of total catch weight apportioned by species groups for fall surveys 2000-2014.

Table 5 shows the numbers of biological samples taken for the fall 2014 survey. It doesn't include the samples taken for NOAA Fisheries. Many winter flounder were tagged along the survey area this fall. Cod were collected for studies being conducted by the University of New England. Alewife and blueback herring were similarly collected for researchers at the University of Southern Maine.

Table 5. Fall 2014 species sampled for weights, sex, maturity, food habits, and aging.

Number of Biological Samples Fall 2014				
Species	Lengths	Weights/Sex/ Maturity Stage	Otoliths	Food Habits
Atlantic cod	32	29	28	NA
Haddock	916	258	168	NA
Witch Flounder	1547	411	136	NA
White Hake	2774	537	312	NA
Monkfish	109	47	NA	47

The total number of species caught was 87, with a low of 9 and high of 30 in any particular tow, and an average and median of 20 species.

Other Fall 2014 Highlights

Three rare species were seen in fall 2014 silver rag, fawn cusk-eel, and a blackfin goosefish. Catches of Atlantic herring, alewife, silver hake, and butterfish were noticeably larger than fall 2013, and the percent occurrence was up for all except butterfish. Haddock, red and white hake and witch flounder catches were also up some. Fall 2014 was the lowest catch for northern shrimp in the survey time series. Catch amounts for Acadian redfish, long-finned squid, and sea scallop were down from the previous spring.

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.

REFERENCES

Sherman, S., K. Stepanek, and J. Sowles. 2005. Maine-New Hampshire Inshore Groundfish Trawl Survey Procedures and Protocols. Maine Department of Marine Resources, Research Reference Document 05/01.

Sherman, S., K. Stepanek, A. Gowen, J. Sowles, D. Grout, and R.M. Tetrault. 2009 Annual Report on the Maine-New Hampshire Inshore Trawl Survey (January 1, 2008-December 31, 2008) Contract # NA07NMF4720357 Submitted to the NOAA Fisheries Northeast Region Cooperative Research Partners Program August 2009.

Sherman, S., K. Stepanek, A. Gowen, J. Sowles, R. Zobel, and R.M. Tetrault. 2010 Annual Report on the Maine-New Hampshire Inshore Trawl Survey January 1, 2009-December 31, 2009 Contract # NA07NMF4720357 Submitted to the NOAA Fisheries Northeast Region Cooperative Research Partners Program July 2010.

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

Sherman, S., K. Stepanek, C. King, R. Eckert, and R.M. Tetrault. 2012 Annual Report on the Maine-New Hampshire Inshore Trawl Survey January 1, 2011-December 31, 2011 Contract # NA07NMF4720357 Submitted to the NOAA Fisheries Northeast Region Cooperative Research Partners Program July 2012.

Sherman, S., K. Stepanek, C. King, R. Eckert, and R.M. Tetrault. 2013 Annual Report on the Maine-New Hampshire Inshore Trawl Survey January 1, 2012-December 31, 2012 Contract # NA10NMF4720284 (2025) Submitted to the NOAA Fisheries Northeast Region Cooperative Research Partners Program July 2013.

Sherman, S., K. Stepanek, F. Pierce, R. Eckert, and R.M. Tetrault. 2014 Annual Report on the Maine-New Hampshire Inshore Trawl Survey January 1, 2013-December 31, 2013 Contract # NA10NMF4720284 (2025) Submitted to the NOAA Fisheries Northeast Region Cooperative Research Partners Program July 2014.

Appendix A
Individual Station Descriptors for Start of Tow

DATE	REGION	TOWID	LAT decimal degrees	LON decimal degrees	Stratum	Time	Tow Duration	Depth (FA)	Temp C °	Salinity ppt
Spring 2013										
5/5/2014	1	1	42.93682	-70.74380	1	07:28	00:20	15.8	4.5	31.85
5/5/2014	1	2	42.88628	-70.67158	2	08:49	00:20	33.1	4.0	32.42
5/5/2014	1	3	42.90045	-70.59510	3	10:50	00:20	41.8	3.5	32.49
5/5/2014	1	4	42.94017	-70.52378	3	13:27	00:15	46.2	3.7	32.46
5/5/2014	1	5	42.98975	-70.63520	1	15:16	00:15	11.3	4.5	31.85
5/6/2014	1	6	42.97435	-70.40483	4	07:51	00:20	62.6	4.1	32.60
5/6/2014	1	7	43.03643	-70.41353	3	09:19	00:20	52.3	4.0	32.53
5/6/2014	1	8	43.12332	-70.35123	4	11:12	00:20	59.4	4.0	32.66
5/6/2014	1	9	43.15183	-70.37942	3	12:50	00:20	48.7	3.9	32.57
5/6/2014	1	10	43.08758	-70.48902	2	14:22	00:15	36.2	4.0	32.43
5/7/2014	1	11	43.17657	-70.58297	1	07:19	00:18	15.3	4.7	31.42
5/7/2014	1	12	43.24110	-70.57358	1	08:25	00:20	10.5	4.6	31.46
5/7/2014	1	13	43.29590	-70.49872	1	09:50	00:20	18.5	4.6	31.62
5/7/2014	1	14	43.20213	-70.40662	3	11:35	00:20	40.0	4.0	32.43
5/7/2014	1	15	43.16650	-70.45753	2	13:19	00:15	31.7	4.0	32.31
5/8/2014	1	16	43.19057	-70.22410	4	08:12	00:20	63.9	4.1	32.68
5/8/2014	1	17	43.25805	-70.19025	4	09:36	00:20	67.7	4.2	32.78
5/8/2014	1	18	43.28238	-70.28435	3	11:08	00:17	48.8	4.3	32.19
5/8/2014	1	19	43.34120	-70.23002	3	13:06	00:15	42.2	4.3	32.38
5/8/2014	1	20	43.37282	-70.10350	4	15:16	00:20	73.2	4.1	32.71
5/8/2014	1	21	43.39748	-70.12438	4	16:47	00:19	60.3	4.1	32.46
5/9/2014	1	22	43.44822	-70.18975	3	07:53	00:20	49.4	4.6	32.24
5/9/2014	1	23	43.42332	-70.29108	2	09:42	00:18	32.4	4.3	32.25
5/9/2014	1	24	43.50425	-70.35162	1	11:21	00:20	7.0	5.2	31.60
5/9/2014	1	25	43.50365	-70.25657	2	12:38	00:20	22.5	4.4	32.08
5/12/2014	2	26	43.71125	-70.17613	1	07:50	00:20	8.7	6.3	30.65
5/12/2014	2	27	43.77613	-70.02635	1	09:23	00:20	8.8	6.2	31.01
5/12/2014	2	28	43.64933	-70.00807	2	11:34	00:18	29.2	4.7	31.98
5/12/2014	2	29	43.65715	-69.91098	2	12:48	00:20	28.6	4.7	32.09
5/12/2014	2	30	43.72557	-69.86540	1	14:04	00:20	5.3	5.7	31.74
5/13/2014	2	31	43.56932	-69.95583	3	08:07	00:20	53.1	4.8	32.40
5/13/2014	2	32	43.47415	-69.92160	4	09:47	00:20	72.1	4.3	32.75
5/13/2014	2	33	43.50007	-69.74880	4	12:07	00:20	68.9	4.8	32.65
5/13/2014	2	34	43.57158	-69.81267	3	13:52	00:20	65.2	4.7	32.50
5/13/2014	2	35	43.59757	-69.88130	3	15:26	00:20	46.5	4.7	32.11

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
5/14/2014	2	36	43.63407	-69.75555	3	08:47	00:15	45.4	4.8	32.01
5/14/2014	2	37	43.70512	-69.74600	1	10:57	00:17	17.4	5.5	31.61
5/14/2014	2	38	43.77593	-69.71697	1	12:26	00:21	11.6	4.7	31.56
5/14/2014	2	39	43.80383	-69.69972	2	13:37	00:10	26.1	4.6	31.74
5/15/2014	2	40	43.69737	-69.68538	3	07:23	00:20	38.1	4.6	31.93
5/15/2014	2	41	43.54773	-69.56877	4	11:00	00:20	84.3	4.8	32.95
5/15/2014	2	42	43.66362	-69.52432	4	12:43	00:20	71.4	4.9	32.60
5/15/2014	2	43	43.68608	-69.51313	4	13:57	00:20	70.2	4.8	32.57
5/15/2014	2	44	43.72835	-69.50903	4	15:06	00:20	59.2	4.7	32.53
5/16/2014	2	45	43.79198	-69.49463	3	07:56	00:20	50.5	4.4	31.13
5/16/2014	2	46	43.86743	-69.47307	2	09:43	00:18	25.4	4.5	31.54
5/16/2014	2	47	43.82847	-69.48910	2	10:50	00:20	38.6	4.4	31.82
5/16/2014	2	48	43.87263	-69.32700	1	12:43	00:20	16.9	5.3	31.29
5/16/2014	2	49	43.85568	-69.27793	2	13:47	00:20	37.2	5.0	31.76
5/19/2014	3	50	43.74388	-69.15335	3	10:04	00:20	54.4	4.9	32.30
5/19/2014	3	51	43.73197	-69.07662	3	11:43	00:17	52.2	4.9	32.35
5/19/2014	3	52	43.79933	-69.07427	3	13:10	00:20	45.0	4.8	32.12
5/19/2014	3	53	43.87540	-69.23968	2	15:01	00:15	35.0	6.0	31.44
5/20/2014	3	54	44.11958	-69.05490	1	06:29	00:20	19.2	5.2	31.13
5/20/2014	3	55	44.21130	-69.00790	2	08:21	00:20	27.0	4.9	31.31
5/20/2014	3	56	44.26877	-68.89005	2	10:15	00:20	23.3	5.3	31.12
5/20/2014	3	57	44.29565	-68.76958	1	11:52	00:20	16.9	5.5	30.99
5/20/2014	3	58	44.30852	-68.87933	1	13:22	00:20	17.8	5.3	30.91
5/21/2014	3	59	43.64133	-69.13607	3	08:58	00:16	79.5	5.1	32.65
5/21/2014	3	60	43.53657	-68.96463	4	11:04	00:20	56.7	5.2	32.65
5/21/2014	3	61	43.61223	-68.94020	4	12:45	00:19	70.0	5.2	32.51
5/21/2014	3	62	43.61547	-68.84828	4	14:18	00:15	68.5	5.2	32.60
5/22/2014	3	63	43.91718	-68.75403	3	06:46	00:20	54.1	5.4	31.90
5/22/2014	3	64	43.84532	-68.62750	3	08:46	00:18	57.6	5.5	32.12
5/22/2014	3	65	43.83588	-68.54952	4	11:45	00:20	63.9	5.8	31.98
5/22/2014	3	66	43.78403	-68.66562	4	14:26	00:20	58.8	5.5	31.96
5/22/2014	3	67	43.85152	-68.74148	3	15:46	00:15	54.1	5.3	32.04
5/23/2014	3	68	43.98713	-68.75332	2	07:08	00:19	37.9	5.6	31.75
5/23/2014	3	69	44.10082	-68.77268	1	08:49	00:20	15.6	7.0	30.75
5/23/2014	3	70	44.14623	-68.76037	2	10:04	00:20	28.7	7.0	31.19
5/23/2014	3	71	44.15698	-68.79382	1	11:15	00:19	8.6	6.9	30.70
5/26/2014	4	72	43.93367	-68.44980	3	11:48	00:20	57.4	5.9	32.16

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
5/26/2014	4	73	43.99258	-68.44000	3	13:01	00:20	46.8	5.8	32.44
5/26/2014	4	74	44.10563	-68.48542	1	15:03	00:17	10.5	7.1	31.40
5/27/2014	4	75	44.26273	-68.49355	1	07:34	00:17	20.4	7.3	31.03
5/27/2014	4	76	44.39133	-68.51572	1	09:39	00:20	13.0	6.6	30.26
5/27/2014	4	77	44.21313	-68.43935	1	12:30	00:20	15.1	7.7	31.21
5/27/2014	4	78	44.14603	-68.26493	2	14:41	00:14	27.2	5.8	31.81
5/27/2014	4	79	44.17963	-68.27713	2	17:06	00:20	21.0	6.8	31.42
5/28/2014	4	80	44.05728	-68.24568	3	09:35	00:16	49.6	6.1	31.94
5/29/2014	4	81	44.06262	-68.12593	4	08:37	00:20	54.5	6.1	32.39
5/29/2014	4	82	44.05030	-68.06457	4	10:29	00:20	59.0	6.6	33.06
5/29/2014	4	83	44.02625	-68.00162	4	11:56	00:18	83.3	6.6	32.49
5/29/2014	4	84	44.14877	-68.10730	3	13:56	00:20	49.8	6.1	32.04
5/29/2014	4	85	44.18632	-68.03518	3	15:25	00:20	46.4	6.0	32.27
5/29/2014	4	86	44.21623	-68.06653	3	16:33	00:17	41.3	6.0	31.88
5/30/2014	4	87	44.28565	-68.13107	2	06:48	00:17	35.0	5.9	31.69
5/30/2014	4	88	44.24857	-68.10260	2	08:20	00:15	35.9	6.0	31.95
5/30/2014	4	89	44.35755	-68.16837	2	09:57	00:20	25.5	6.4	31.44
5/30/2014	4	90	44.44243	-68.22205	2	12:36	00:16	26.0	6.2	31.44
5/30/2014	4	91	44.41152	-68.23077	1	14:06	00:20	9.3	7.2	31.52
6/2/2014	5	92	44.14805	-67.79030	4	09:03	00:20	81.9	6.9	33.22
6/2/2014	5	93	44.18652	-67.82097	4	10:23	00:16	75.2	6.5	32.62
6/2/2014	5	94	44.23640	-67.89262	3	11:48	00:20	41.6	8.9	28.44
6/2/2014	5	95	44.26080	-67.89852	2	13:18	00:20	39.0	8.6	26.76
6/2/2014	5	96	44.30170	-67.86935	2	14:35	00:20	34.2	8.4	26.19
6/3/2014	5	97	44.39892	-67.68805	2	06:51	00:17	27.0	6.4	31.65
6/3/2014	5	98	44.25903	-67.67365	4	09:00	00:18	56.5	6.5	32.65
6/3/2014	5	99	44.27883	-67.64088	3	10:25	00:20	53.1	6.5	31.26
6/3/2014	5	100	44.29220	-67.51112	4	11:47	00:20	60.1	6.3	32.58
6/3/2014	5	101	44.32397	-67.52637	3	13:12	00:20	54.5	6.4	32.35
6/4/2014	5	102	44.48405	-67.65258	1	08:18	00:19	11.4	6.9	31.60
6/4/2014	5	103	44.46222	-67.72453	1	09:44	00:19	19.0	7.0	31.59
6/4/2014	5	104	44.47995	-67.50902	3	11:47	00:17	40.1	6.4	31.75
6/4/2014	5	105	44.51385	-67.51472	1	13:11	00:20	17.8	7.4	31.62
6/5/2014	5	106	44.37722	-67.14093	4	09:30	00:20	83.3	7.3	33.61
6/5/2014	5	107	44.43092	-67.14505	3	10:56	00:15	57.7	6.5	32.37
6/5/2014	5	108	44.54723	-67.17100	2	13:01	00:15	37.4	6.5	31.88
6/5/2014	5	109	44.55888	-67.21712	3	14:10	00:16	49.7	6.6	31.88

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
6/5/2014	5	110	44.58625	-67.30307	2	15:40	00:17	29.3	6.5	31.67
6/6/2014	5	111	44.74422	-67.04003	2	08:23	00:20	36.1	6.2	31.61
6/6/2014	5	112	44.73623	-67.01073	3	09:45	00:15	46.3	6.3	31.64
6/6/2014	5	113	44.67977	-67.11920	2	12:18	00:20	38.9	6.2	31.60
6/6/2014	5	114	44.69360	-67.12262	1	13:32	00:12	20.4	6.3	31.58

Appendix B
Individual Station Descriptors for Start of Tow

DATE	REGION	TOWID	LAT decimal degrees	LON decimal degrees	Stratum	Time	Tow Duration	Depth (FA)	Temp C °	Salinity ppt
Fall 2013										
9/29/2014	1	1	42.93445	-70.52753	3	10:26	00:20	45.2	6.6	32.72
9/29/2014	1	2	42.88882	-70.61062	3	11:54	00:20	42.0	6.8	32.46
9/29/2014	1	3	42.88430	-70.67540	2	13:08	00:20	33.0	7.9	32.55
9/29/2014	1	4	42.94207	-70.72045	1	14:46	00:16	20.0	9.3	32.43
9/29/2014	1	5	42.98270	-70.66328	1	16:01	00:11	17.5	9.6	32.43
9/30/2014	1	6	42.97575	-70.40602	4	08:47	00:20	61.3	6.5	32.70
9/30/2014	1	7	43.03773	-70.41093	3	10:14	00:20	52.2	6.6	32.73
9/30/2014	1	8	43.12172	-70.35080	4	13:13	00:20	59.3	6.8	32.62
9/30/2014	1	9	43.09528	-70.47635	2	14:53	00:17	37.8	8.9	32.52
10/1/2014	1	10	43.18572	-70.58178	1	09:37	00:19	14.1	14.9	31.87
10/1/2014	1	11	43.23973	-70.57490	1	10:53	00:20	9.0	14.9	31.83
10/1/2014	1	12	43.30755	-70.49438	1	12:49	00:20	16.5	10.8	32.31
10/1/2014	1	13	43.23635	-70.51707	2	14:17	00:20	24.3	10.1	32.45
10/1/2014	1	14	43.21373	-70.40165	3	15:54	00:19	40.5	8.7	32.70
10/2/2014	1	15	43.15673	-70.26588	4	09:32	00:20	65.0	7.4	32.96
10/2/2014	1	16	43.19123	-70.22215	4	11:42	00:20	62.5	6.8	32.98
10/2/2014	1	17	43.25090	-70.19502	4	13:05	00:20	68.0	8.2	32.96
10/2/2014	1	18	43.39658	-70.08043	4	15:18	00:20	71.1	7.9	33.04
10/3/2014	1	19	43.44932	-70.18278	3	08:02	00:20	48.5	9.1	32.80
10/3/2014	1	20	43.41193	-70.23197	3	09:23	00:20	49.3	9.2	32.62
10/3/2014	1	21	43.42172	-70.27438	2	10:43	00:14	38.7	10.3	32.57
10/3/2014	1	22	43.50330	-70.36460	1	12:36	00:20	3.3	13.7	31.88
10/6/2014	2	23	43.71043	-70.17545	1	07:25	00:18	9.1	13.7	31.54
10/6/2014	2	24	43.67605	-70.14388	1	09:08	00:20	14.0	13.1	32.26
10/6/2014	2	25	43.65115	-70.00655	2	10:48	00:16	28.8	11.9	32.51
10/6/2014	2	26	43.65785	-69.91130	2	12:08	00:20	27.9	12.7	32.49
10/6/2014	2	27	43.78250	-70.02205	1	15:22	00:16	7.0	14.0	31.99
10/7/2014	2	28	43.56968	-69.95832	3	08:00	00:20	52.0	9.9	32.97
10/7/2014	2	29	43.50555	-70.00193	4	09:52	00:20	60.6	9.2	32.96
10/7/2014	2	30	43.51065	-69.92933	4	11:08	00:20	64.2	9.7	33.08
10/7/2014	2	31	43.50665	-69.88067	4	12:25	00:20	65.0	9.6	33.19
10/7/2014	2	32	43.57308	-69.80845	3	13:46	00:15	64.6	10.0	33.00
10/8/2014	2	33	43.68965	-69.65628	3	08:37	00:20	45.4	10.2	32.89
10/9/2014	2	34	43.62523	-69.59840	3	08:31	00:15	57.7	10.3	33.21
10/9/2014	2	35	43.61745	-69.40783	4	10:16	00:20	80.4	8.6	33.08

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
10/9/2014	2	36	43.66357	-69.44737	4	11:50	00:16	67.7	10.0	31.94
10/9/2014	2	37	43.72545	-69.51032	4	13:33	00:20	58.6	8.9	27.12
10/9/2014	2	38	43.78653	-69.49222	3	14:53	00:20	49.1	9.8	33.06
10/10/2014	2	39	43.76857	-69.38855	3	08:22	00:16	46.0	10.9	32.92
10/10/2014	2	40	43.85370	-69.28163	2	10:15	00:20	36.2	11.4	27.63
10/13/2014	3	41	43.75317	-69.14545	3	09:50	00:19	52.5	11.2	33.26
10/13/2014	3	42	43.73325	-69.07660	3	11:27	00:18	50.8	11.6	28.36
10/13/2014	3	43	43.76972	-69.17785	3	13:10	00:19	48.4	11.4	33.22
10/13/2014	2	44	43.84935	-69.28467	2	14:54	00:20	36.5	11.4	32.70
10/14/2014	3	45	44.21328	-69.00800	2	07:48	00:19	22.1	12.8	26.25
10/14/2014	3	46	44.29720	-68.76967	1	10:26	00:20	19.7	12.9	32.44
10/14/2014	3	47	44.32330	-68.86567	1	12:25	00:18	13.3	12.9	32.18
10/14/2014	3	48	44.25737	-68.89453	2	13:48	00:20	22.0	12.9	32.46
10/14/2014	3	49	44.21685	-68.90352	2	15:33	00:20	30.2	12.8	32.13
10/15/2014	3	50	43.80672	-69.04357	3	08:34	00:19	41.6	11.9	33.25
10/15/2014	3	51	43.63797	-69.14127	3	10:53	00:20	77.8	10.0	23.43
10/15/2014	3	52	43.57697	-69.03762	4	12:33	00:20	72.0	10.2	33.32
10/15/2014	3	53	43.53742	-68.96237	4	13:54	00:20	58.0	11.1	33.75
10/15/2014	3	54	43.61465	-68.85008	4	15:22	00:18	64.1	11.4	33.69
10/16/2014	3	55	43.93313	-68.77757	3	07:43	00:17	46.6	12.3	29.64
10/16/2014	3	56	43.88612	-68.68482	3	09:26	00:20	51.3	12.0	33.38
10/16/2014	3	57	43.83702	-68.54832	4	11:04	00:20	65.8	11.1	33.84
10/16/2014	3	58	43.74257	-68.63588	4	12:48	00:20	68.5	11.3	31.86
10/16/2014	3	59	43.76603	-68.72355	3	14:17	00:20	57.1	11.9	33.49
10/17/2014	3	60	43.98737	-68.74915	2	08:15	00:20	37.2	12.4	33.28
10/17/2014	3	61	44.10270	-68.77302	1	10:11	00:20	14.0	13.2	32.23
10/17/2014	3	62	44.16995	-68.79645	1	11:25	00:18	7.4	13.2	32.23
10/20/2014	4	63	43.87818	-68.39110	4	10:50	00:20	67.7	11.1	33.87
10/20/2014	4	64	43.89500	-68.29753	4	12:19	00:15	69.2	10.3	33.96
10/20/2014	4	65	43.95030	-68.23943	4	13:44	00:20	61.9	10.7	24.97
10/21/2014	4	66	44.07055	-68.12573	4	11:18	00:20	56.1	11.6	33.87
10/21/2014	4	67	44.05030	-68.25238	3	13:20	00:15	50.9	12.0	33.36
10/22/2014	4	68	44.35365	-68.53742	1	10:31	00:20	20.6	12.9	16.08
10/21/2014	4	69	44.38875	-68.51905	1	11:48	00:20	15.3	13.1	32.62
10/22/2014	4	70	44.36490	-68.46827	1	13:05	00:20	22.3	13.1	32.40
10/24/2014	4	71	44.28197	-68.13098	2	08:42	00:21	36.1	12.1	32.96
10/24/2014	4	72	44.22703	-68.13382	2	10:06	00:20	36.5	12.1	30.03

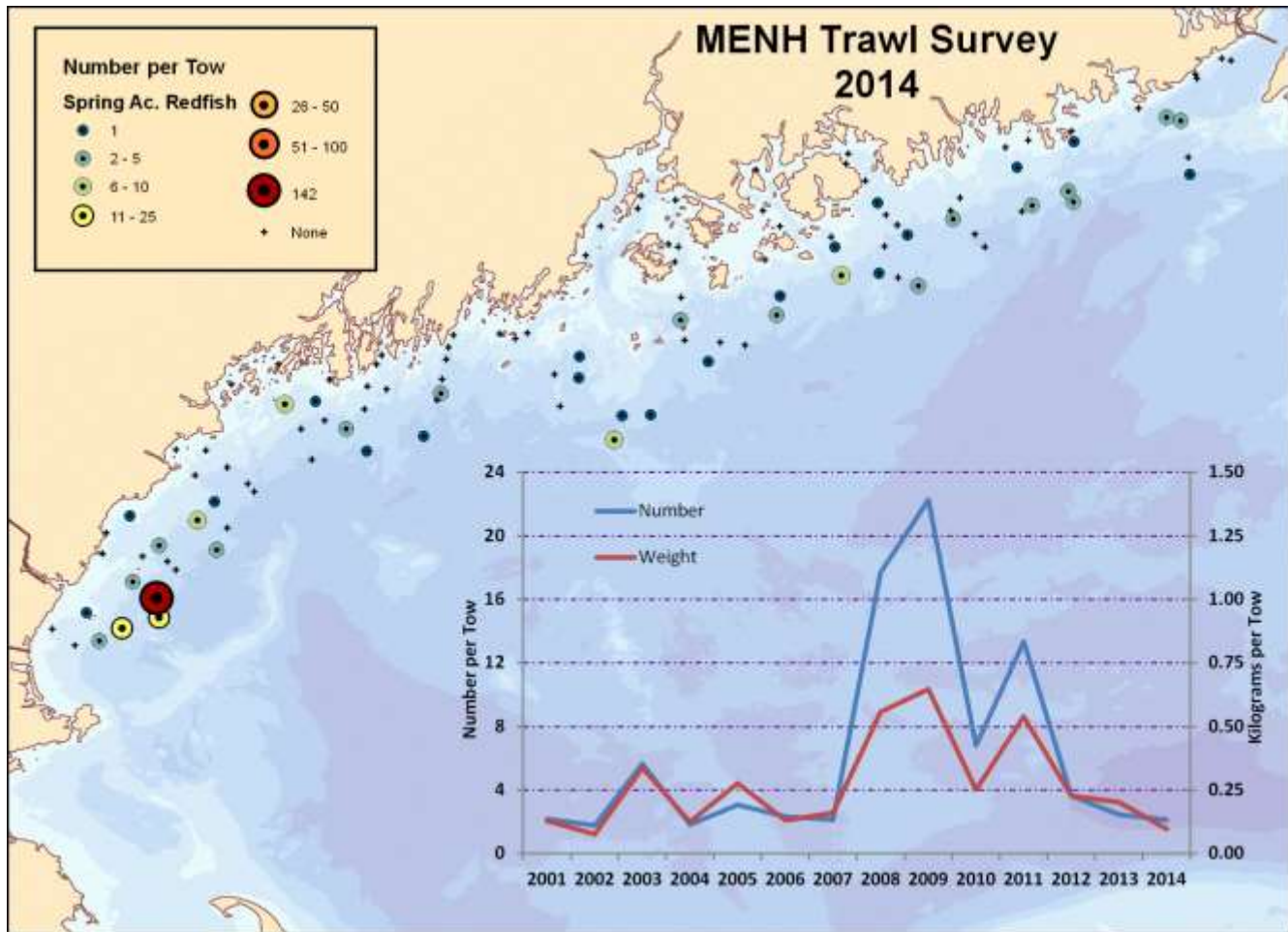
Appendix B
Individual Station Descriptors for Start of Tow

DATE	REGION	TOWID	LAT decimal degrees	LON decimal degrees	Stratum	Time	Tow Duration	Depth (FA)	Temp C °	Salinity ppt
10/24/2014	4	73	44.18622	-67.97252	3	12:58	00:15	45.2		
10/25/2014	4	74	44.43638	-68.21335	2	09:33	00:14	25.8	12.1	31.09
10/25/2014	4	75	44.40303	-68.21360	1	11:40	00:20	10.9	12.0	32.60
10/25/2014	4	76	44.35895	-68.16695	2	12:59	00:20	28.5	12.1	32.87
10/27/2014	5	77	44.15735	-67.79963	4	10:47	00:20	77.0	11.1	33.95
10/27/2014	5	78	44.18410	-67.82740	4	12:20	00:20	62.5	11.9	33.56
10/27/2014	5	79	44.22897	-67.89993	3	14:03	00:20	42.2	12.5	33.33
10/28/2014	5	80	44.39397	-67.69260	2	08:08	00:15	26.6	11.9	33.03
10/28/2014	5	81	44.33060	-67.67132	3	09:36	00:20	39.3	12.3	33.30
10/28/2014	5	82	44.32005	-67.53107	3	11:18	00:20	54.4	11.7	33.44
10/28/2014	5	83	44.28080	-67.63638	3	12:56	00:20	53.3	11.9	32.76
10/28/2014	5	84	44.26243	-67.67807	4	14:12	00:20	57.9	11.6	33.68
10/29/2014	5	85	44.48723	-67.65023	1	08:41	00:20	10.8	11.7	32.88
10/29/2014	5	86	44.50185	-67.70052	1	10:18	00:18	6.2	11.7	32.68
10/29/2014	5	87	44.49920	-67.77682	1	11:52	00:19	10.1	11.9	32.77
10/30/2014	5	88	44.51723	-67.52088	1	07:51	00:13	14.2	11.8	32.89
10/30/2014	5	89	44.48342	-67.50658	3	09:03	00:17	39.6	11.9	33.01
10/30/2014	5	90	44.49890	-67.42132	2	10:20	00:20	31.5	11.9	33.02
10/30/2014	5	91	44.52385	-67.31242	2	11:59	00:20	34.5	12.1	33.15
10/30/2014	5	92	44.54160	-67.19362	2	13:18	00:13	36.3	12.1	33.19
10/31/2014	5	93	44.37637	-67.14113	4	09:44	00:20	82.4	10.5	34.24
10/31/2014	5	94	44.38915	-67.09485	4	11:03	00:20	71.4	10.4	34.26

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*

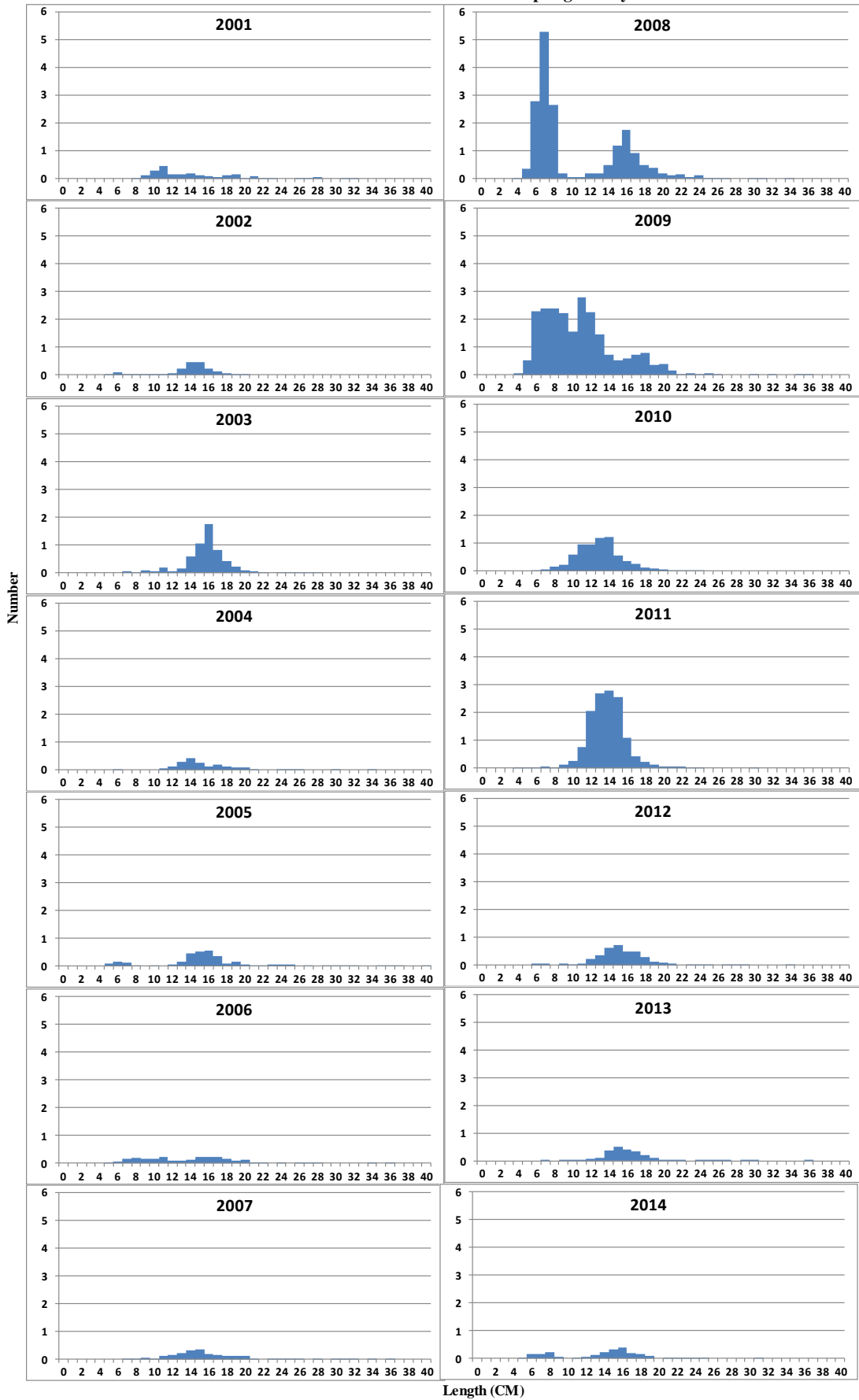
Means and coefficients of variance for the graph overlain on the above map
 fixed stations not included
 for redfish, indices calculated for regions 1 through 5, strata 1 through 4

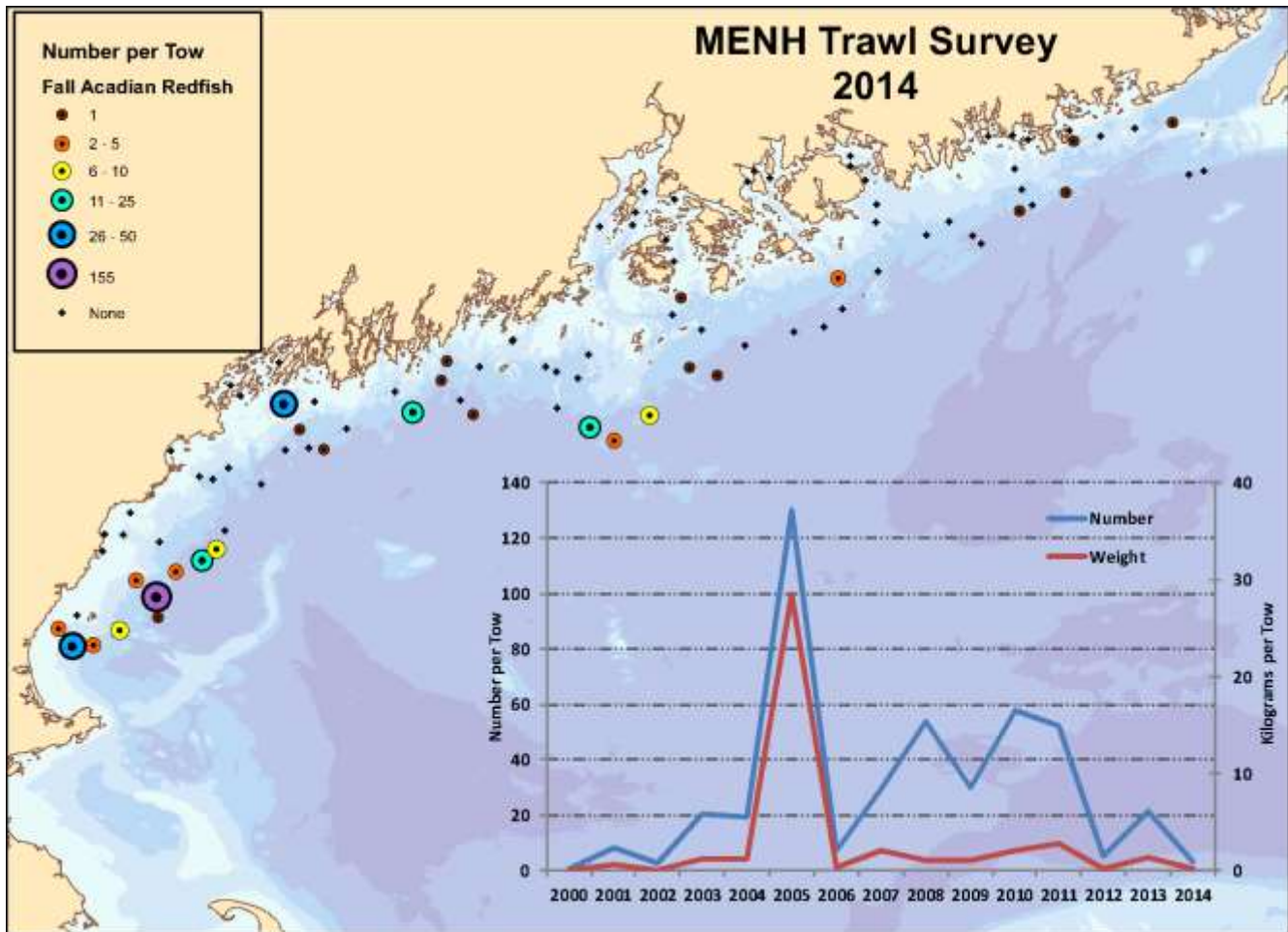
SPRING**Stratified Mean**

	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

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

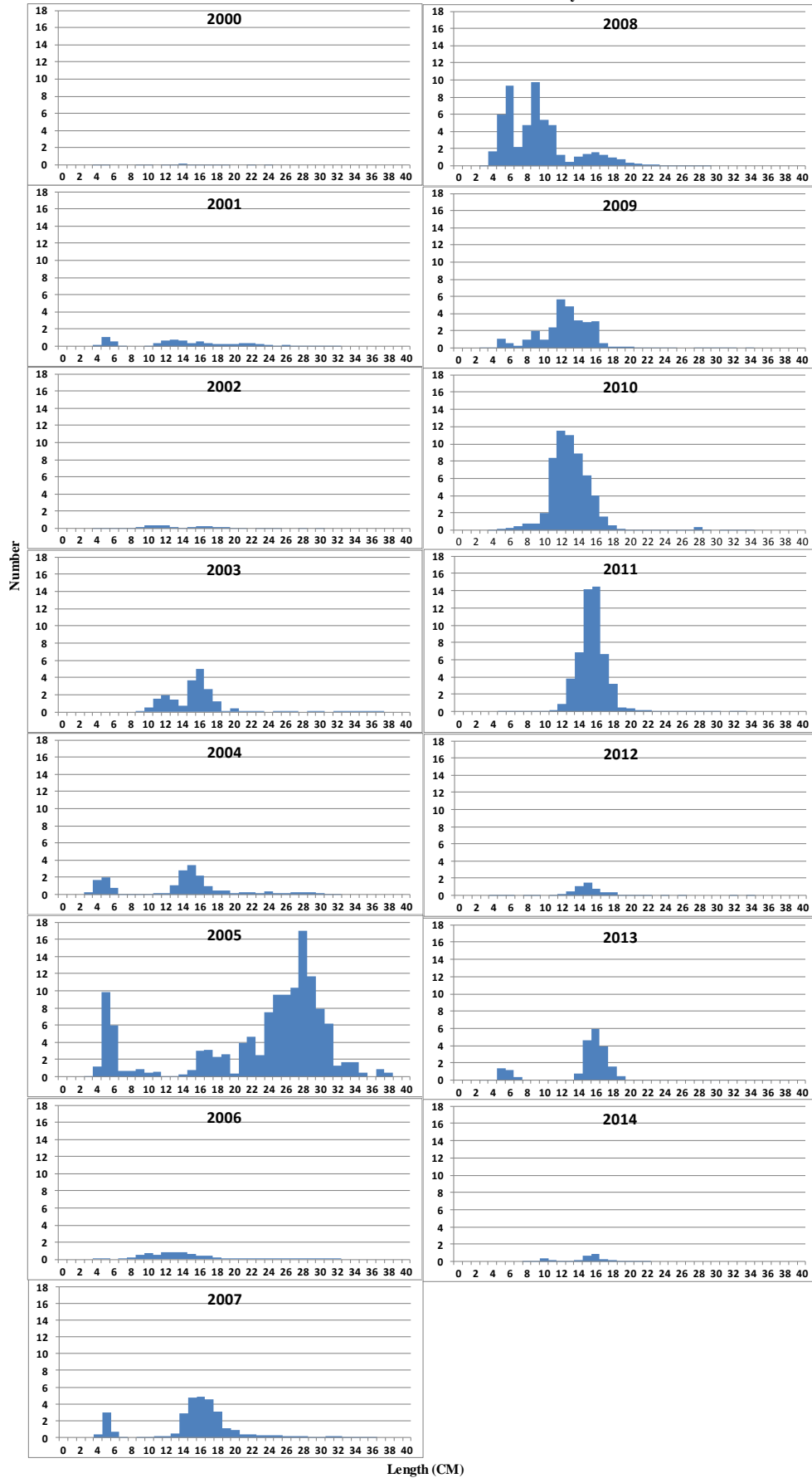
FALL

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

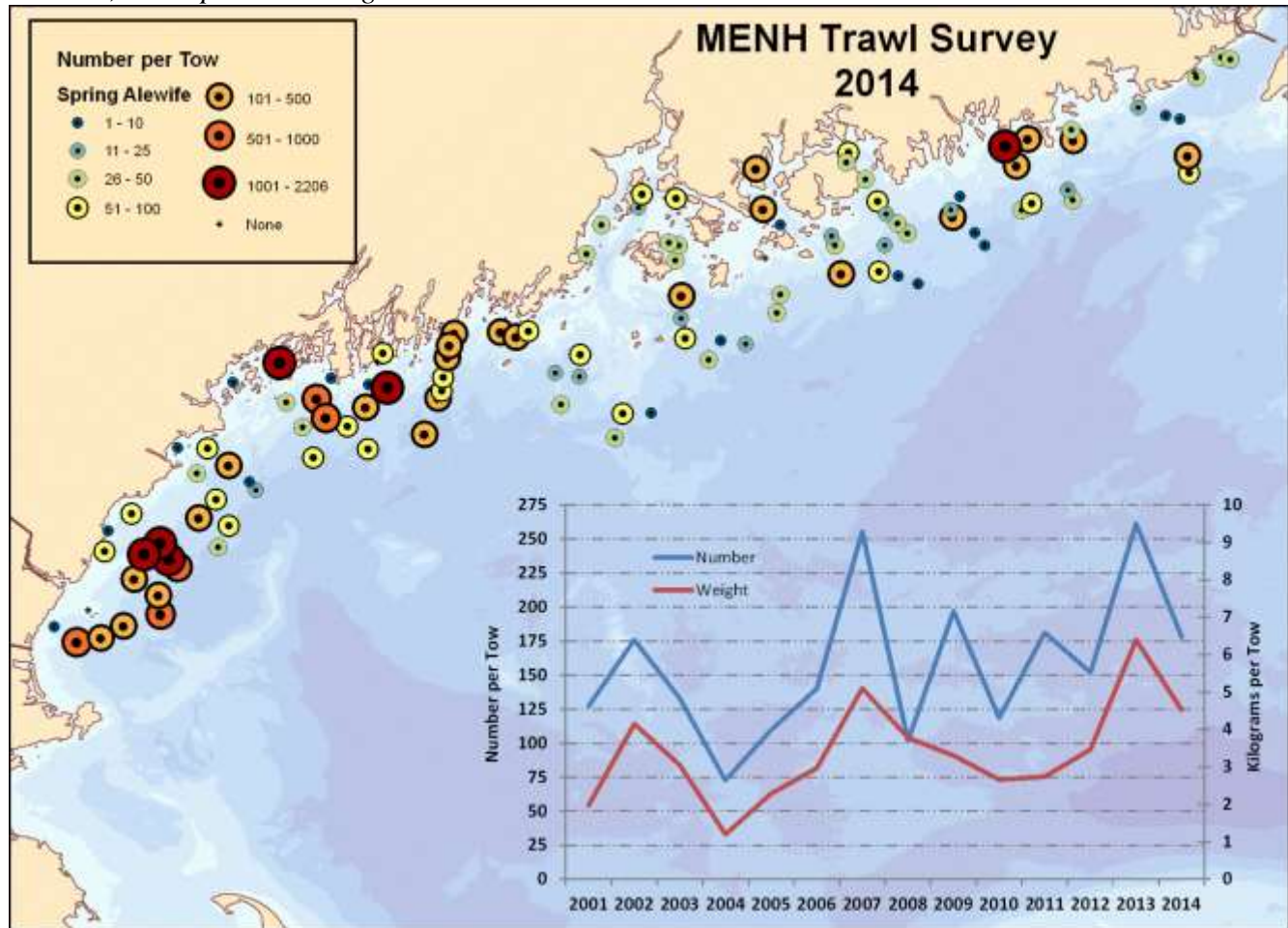
Appendix C

Acadian Redfish - MENH Fall Surveys



Length (CM)

Alewife, *Alosa pseudoharengus*



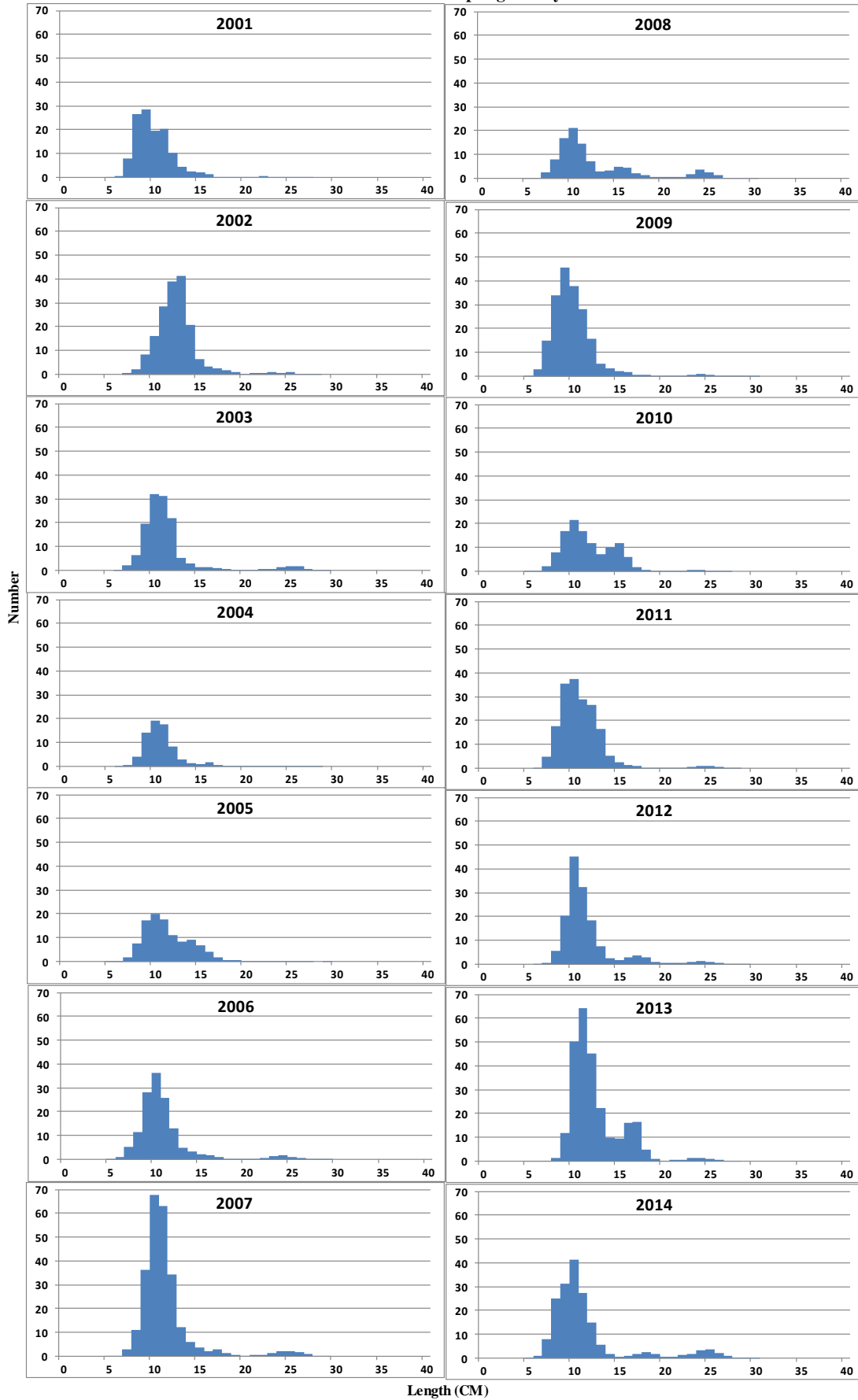
Mean and coefficients of variance for the graph overlain on the above map fixed stations not included for alewife, indices calculated for regions 1 through 5, strata 1 through 4

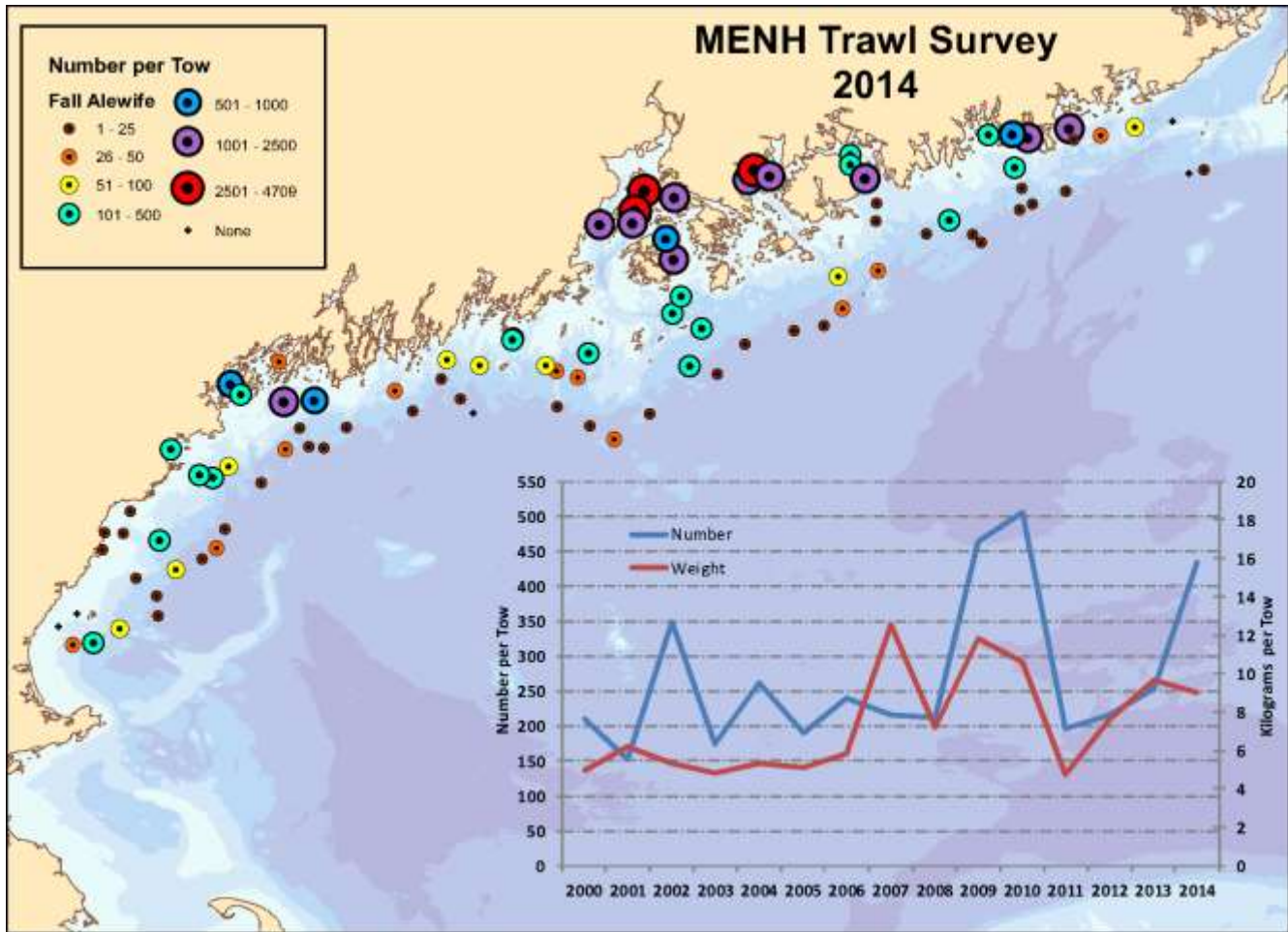
SPRING
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	127.26	0.52	1.97	0.47
2002	175.75	0.64	4.15	0.45
2003	132.75	0.41	3.05	0.43
2004	72.67	0.28	1.20	0.24
2005	109.69	0.24	2.29	0.24
2006	140.15	0.28	2.97	0.29
2007	255.32	0.64	5.10	0.47
2008	101.86	0.24	3.78	0.69
2009	196.87	0.42	3.30	0.33
2010	118.67	0.39	2.66	0.36
2011	181.09	0.38	2.74	0.28
2012	152.02	0.39	3.47	0.26
2013	261.11	0.88	6.38	0.74
2014	178.06	0.46	4.53	0.46

Appendix C

Alewife - MENH Spring Surveys





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

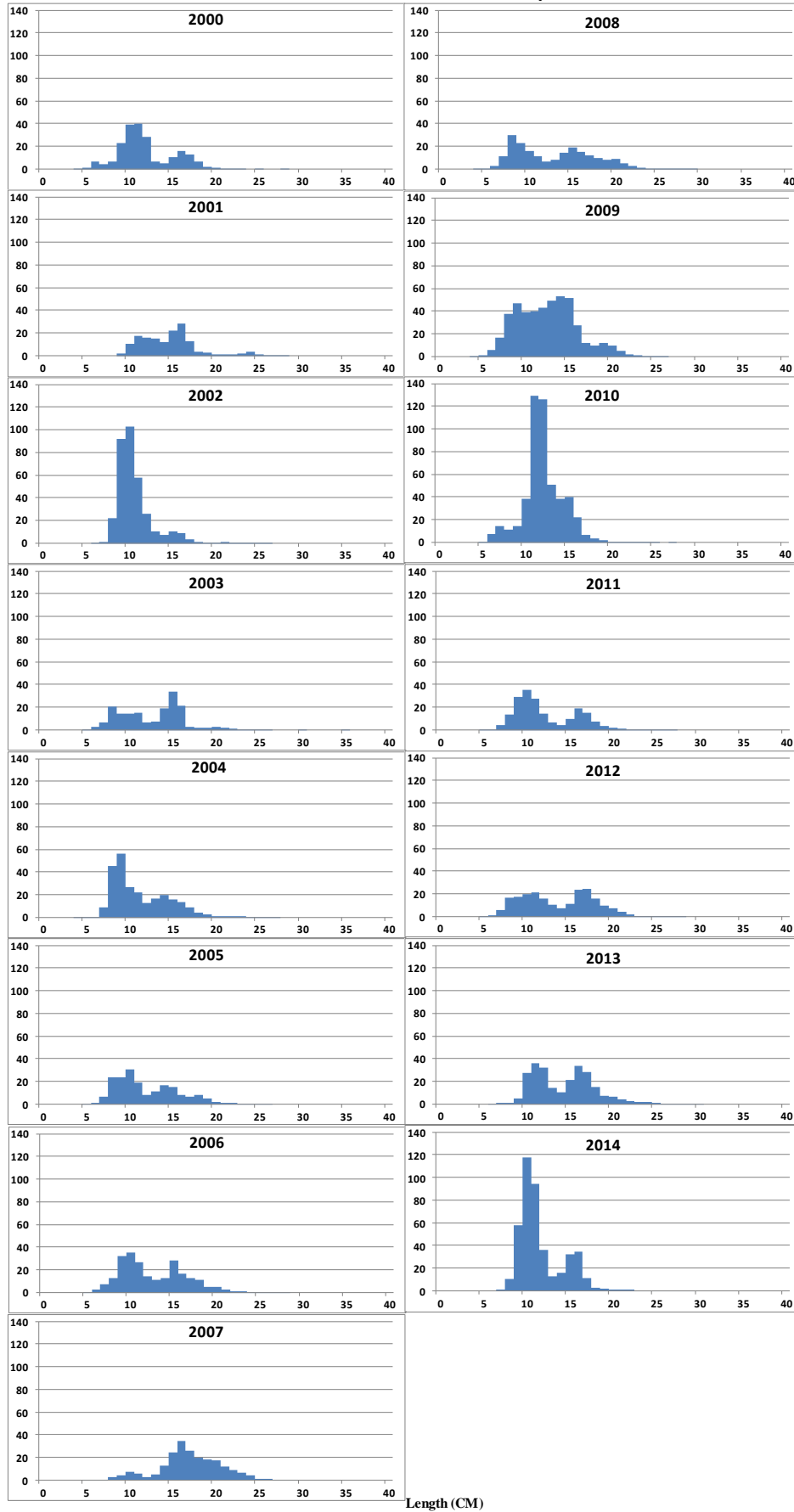
FALL

Stratified Mean

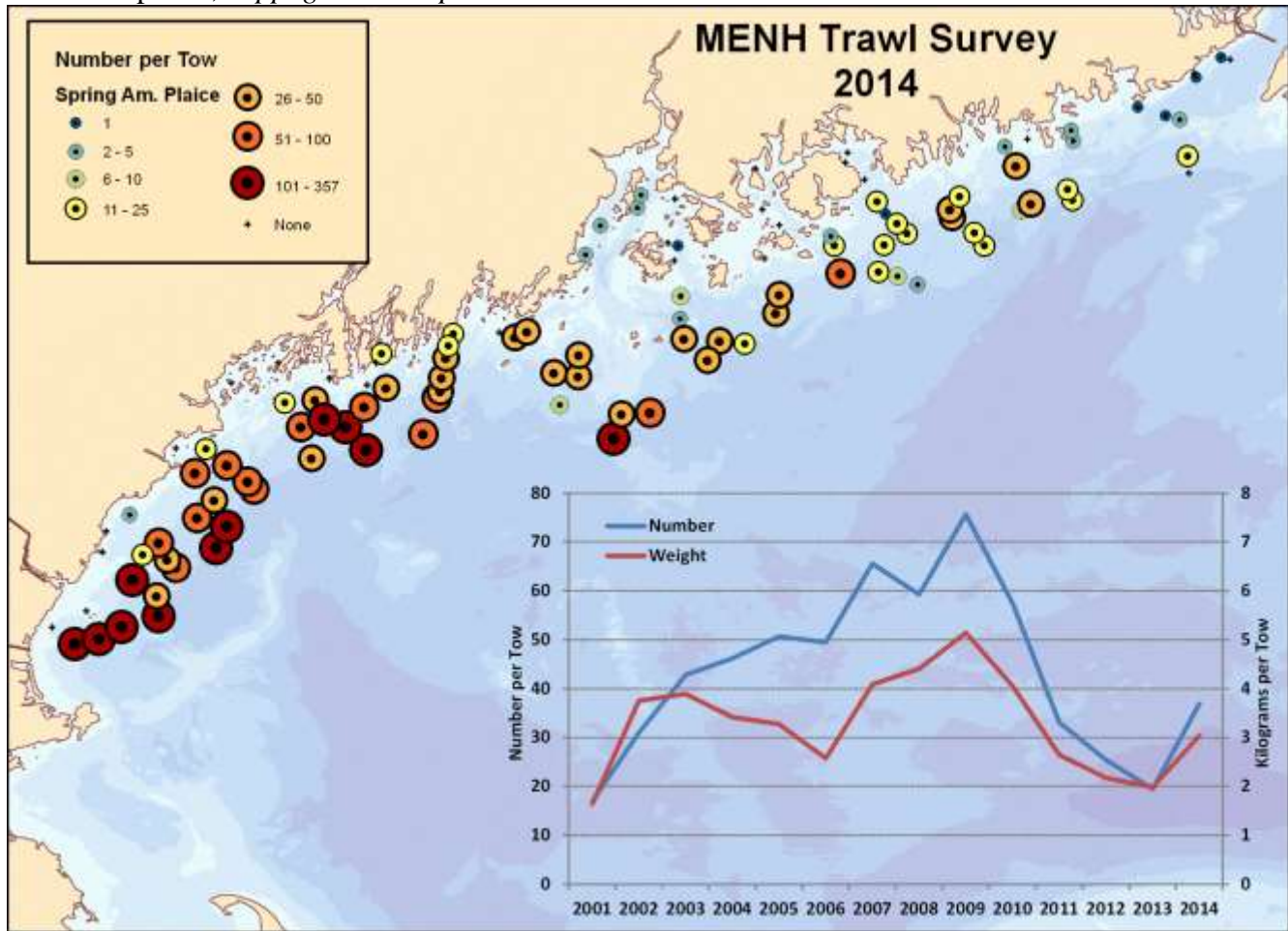
	Number		Weight	
	Mean	CV	Mean	CV
2000	210.69	0.71	4.94	0.66
2001	153.29	0.93	6.18	0.87
2002	349.73	0.79	5.36	0.56
2003	174.43	0.50	4.85	0.74
2004	261.39	0.45	5.36	0.23
2005	190.51	0.24	5.10	0.21
2006	239.46	0.48	5.85	0.50
2007	215.24	0.41	12.52	0.53
2008	211.32	0.36	7.18	0.23
2009	463.63	0.51	11.85	0.27
2010	506.39	0.45	10.58	0.41
2011	196.28	0.44	4.78	0.26
2012	216.38	0.34	7.66	0.33
2013	252.91	0.37	9.67	0.27
2014	434.19	0.35	9.05	0.34

Appendix C

Alewife - MENH Fall Survey



American plaice, *Hippoglossoides platessoides*



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

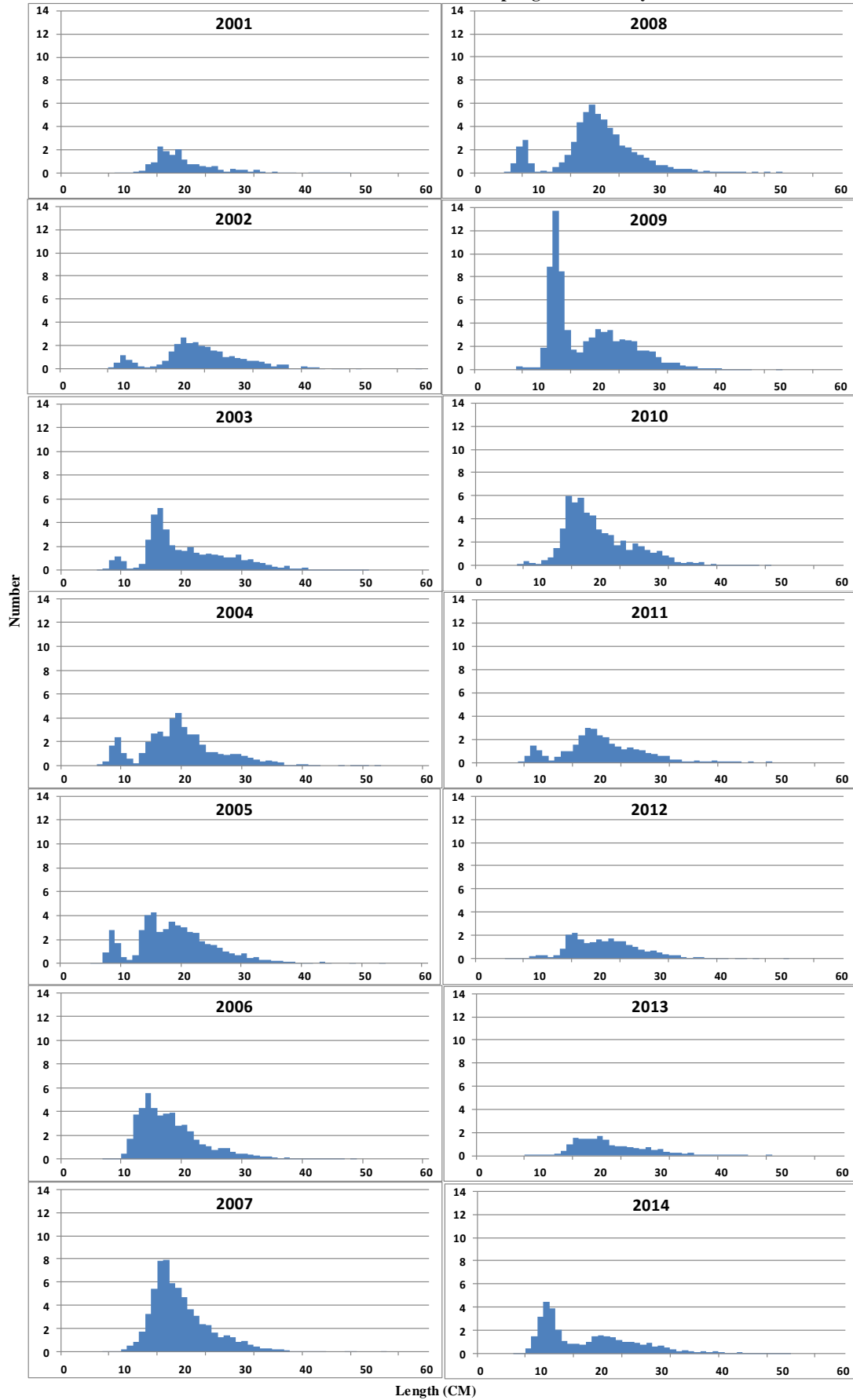
SPRING

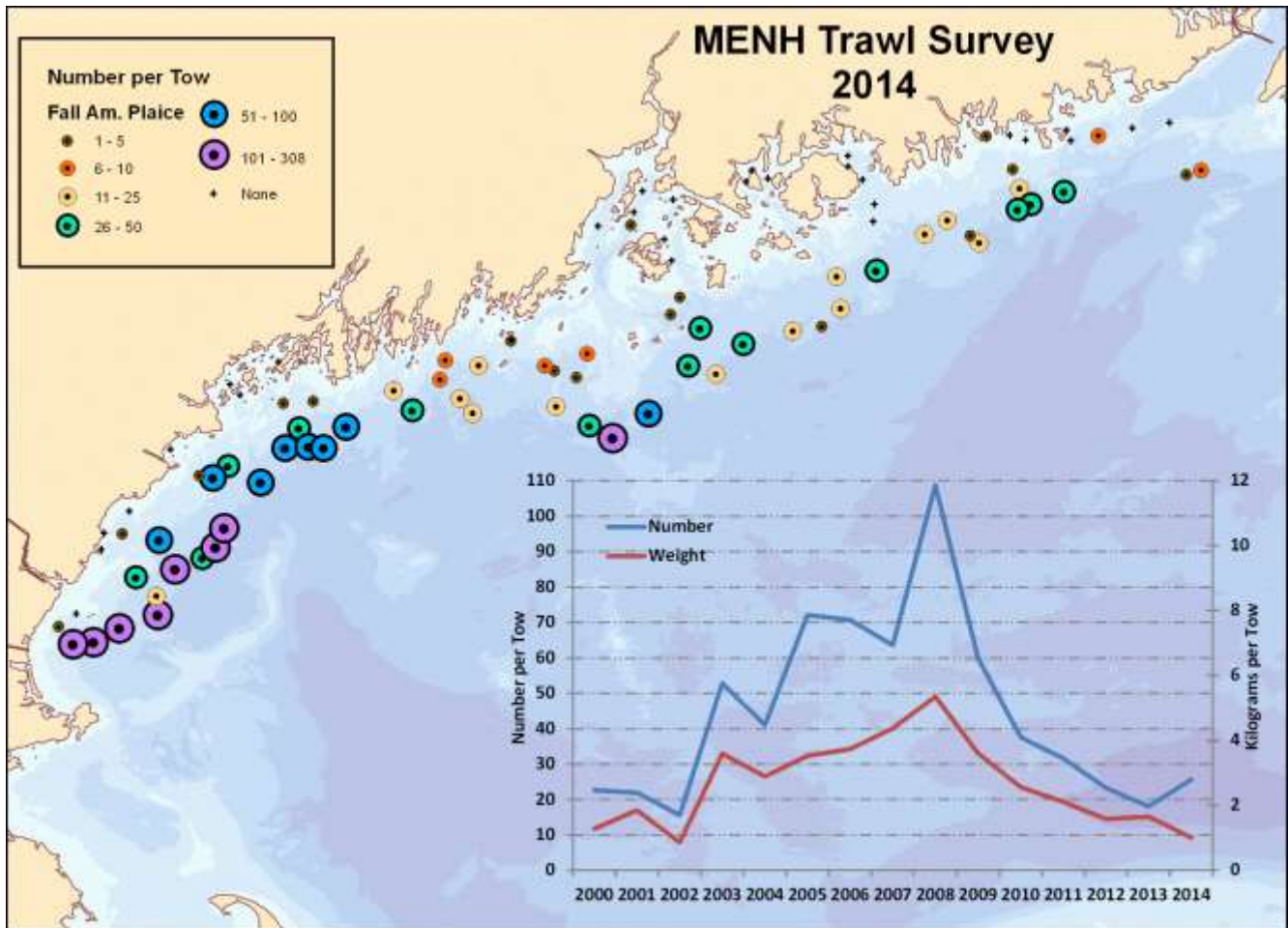
Stratified Mean

	Number Mean	CV	Weight 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

Appendix C

American Plaice - MENH Spring Trawl Survey





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

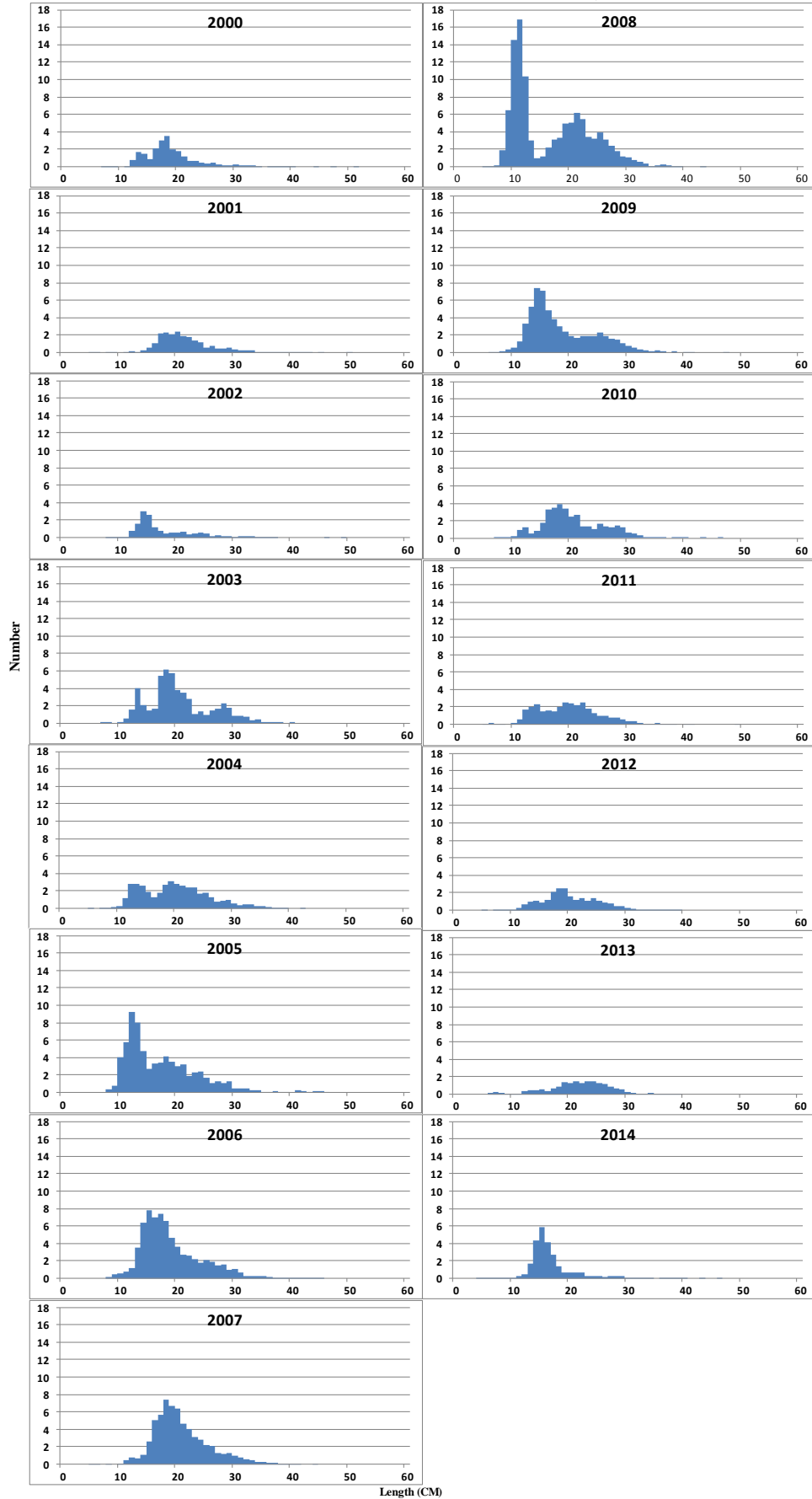
FALL

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

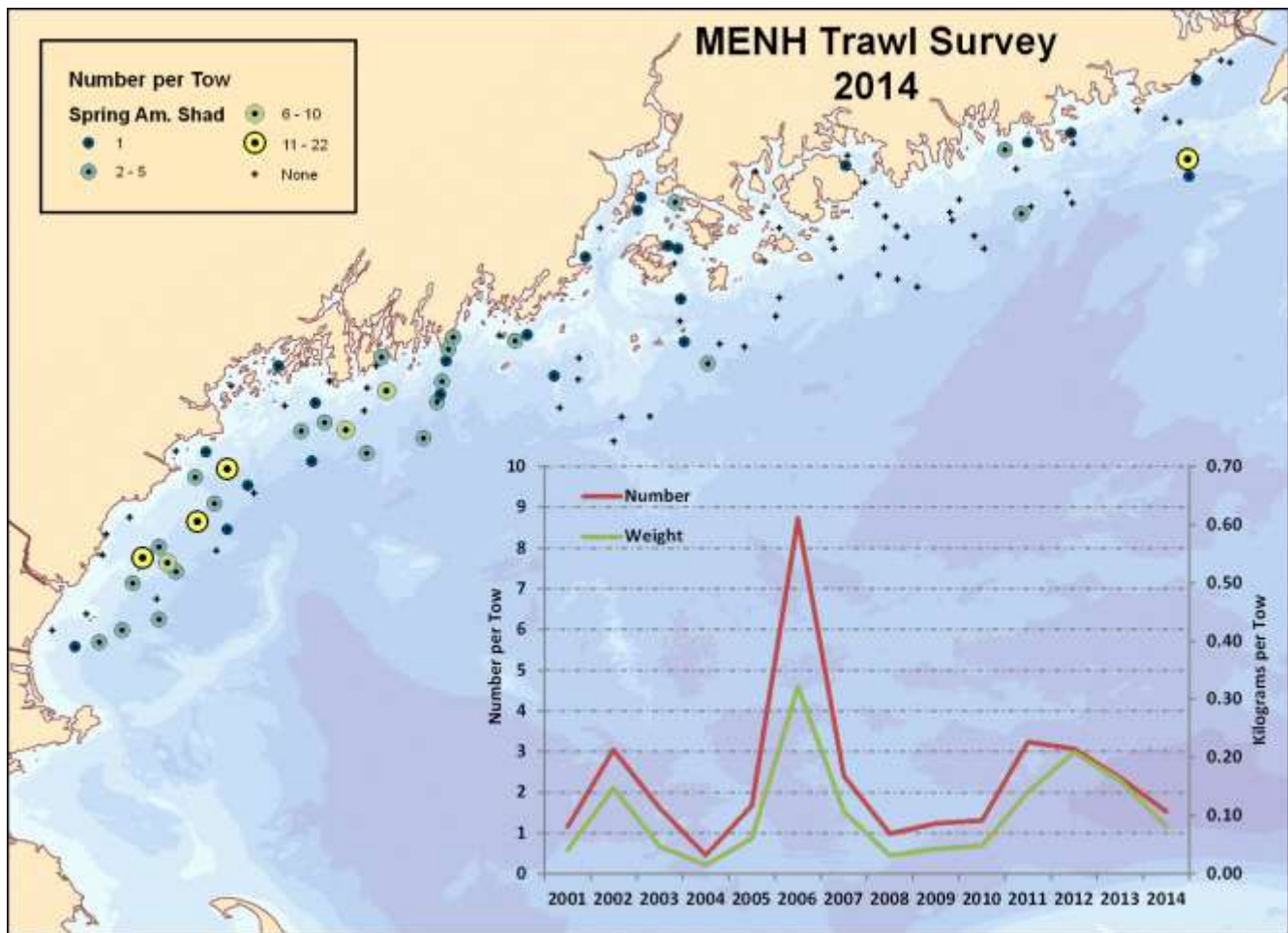
Appendix C

American Plaice - MENH Fall Trawl Survey



Length (CM)

American shad, *Alosa sapidissima*



Mean 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

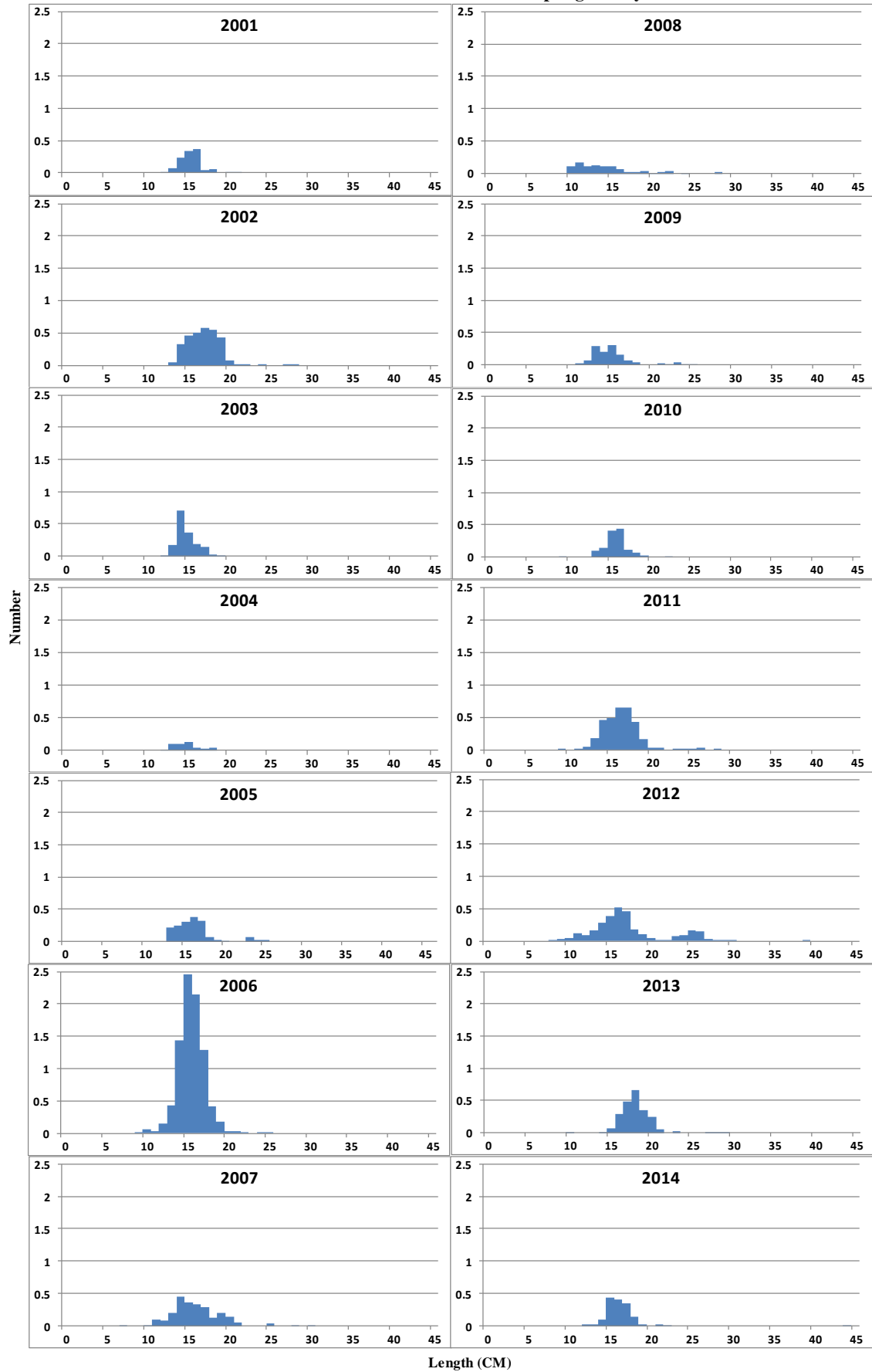
FALL

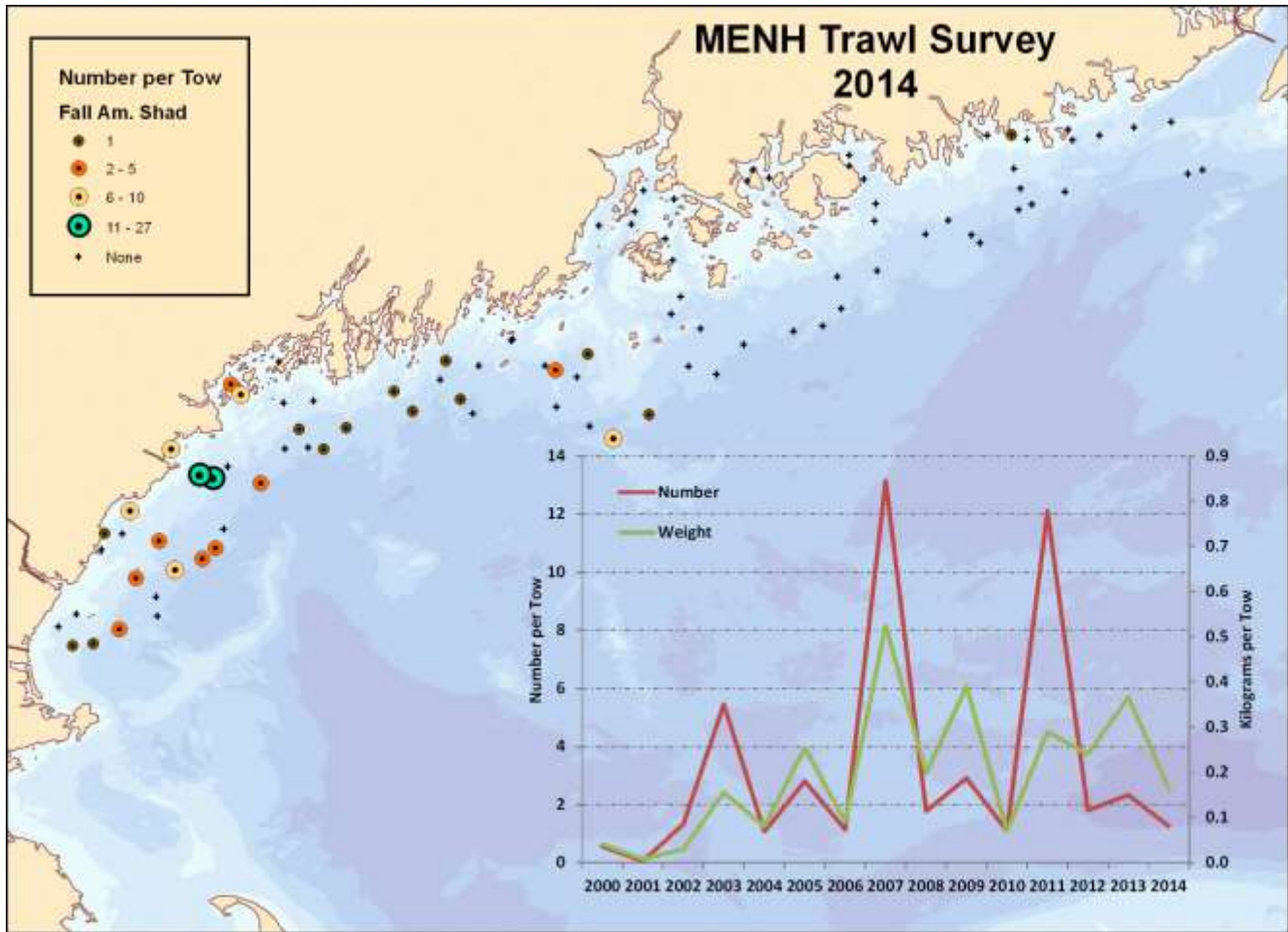
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
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

Appendix C

American Shad - MENH Spring Surveys





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

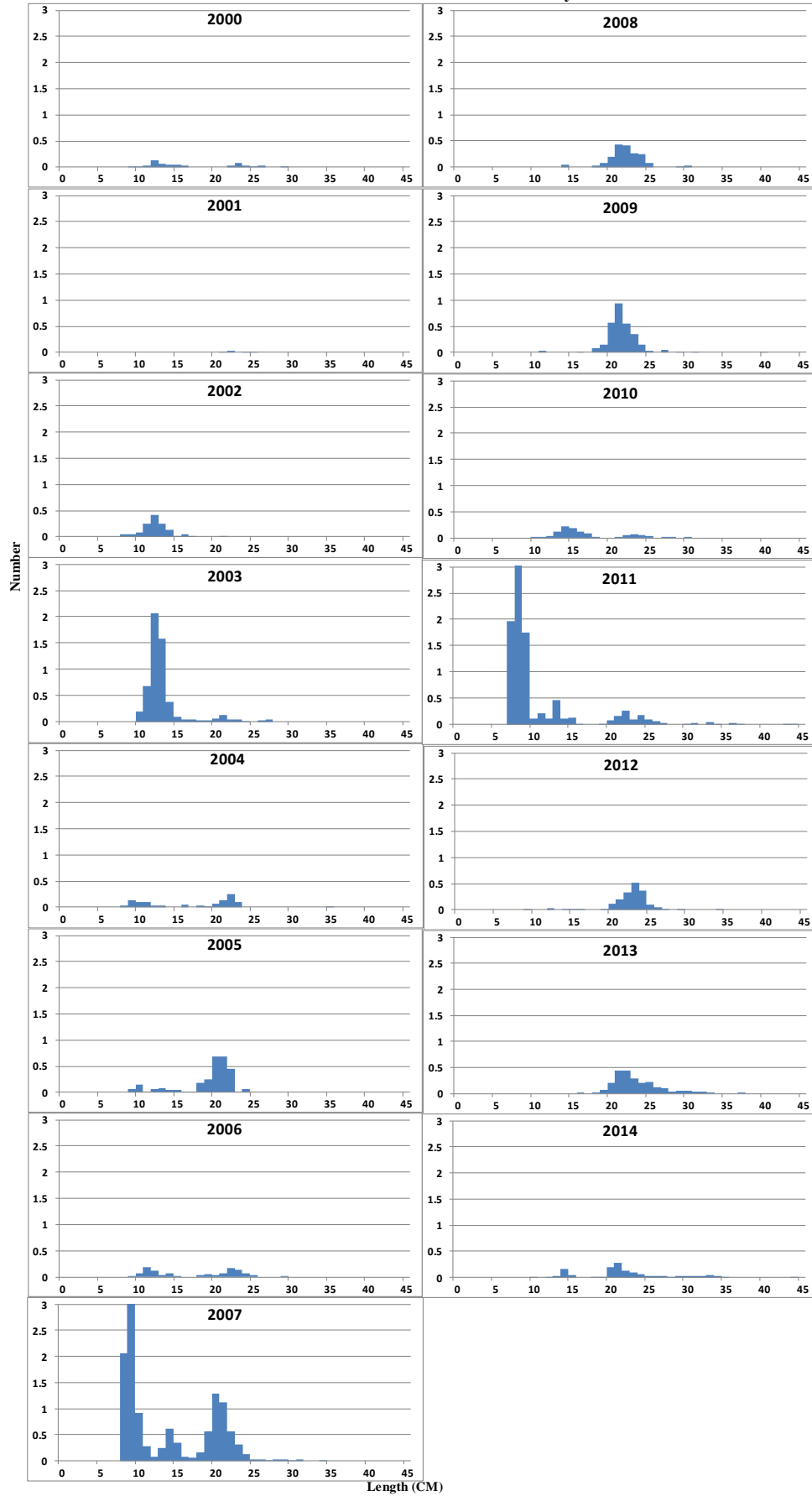
FALL

Stratified Mean

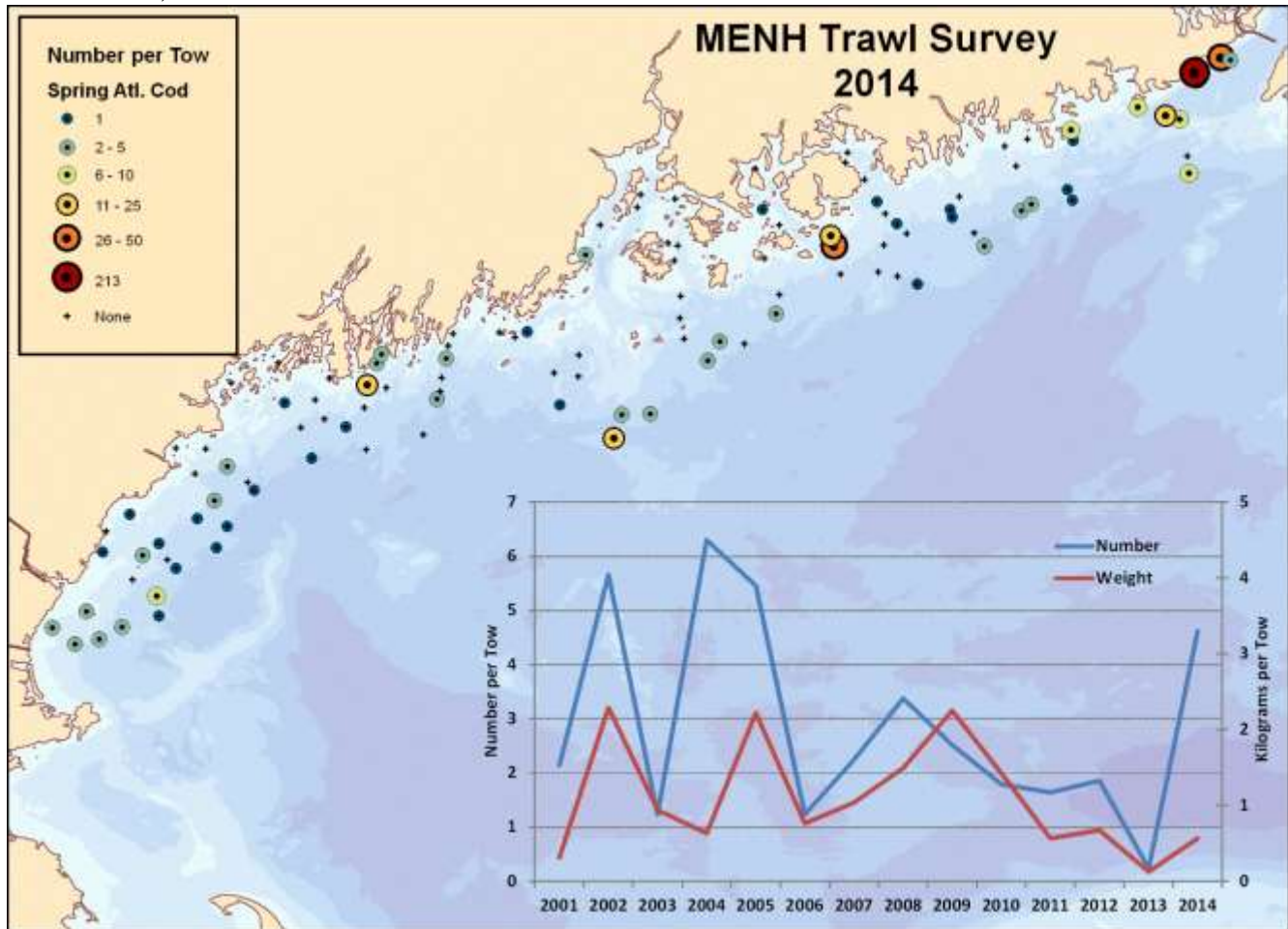
	Number		Weight	
	Mean	CV	Mean	CV
2000	0.56	0.75	0.04	0.79
2001	0.06	1.37	0.01	1.30
2002	1.33	0.81	0.03	0.68
2003	5.45	1.43	0.16	1.00
2004	1.08	0.81	0.08	0.65
2005	2.81	0.21	0.25	0.18
2006	1.14	0.94	0.09	0.51
2007	13.15	1.11	0.53	0.67
2008	1.78	0.47	0.20	0.46
2009	2.91	1.22	0.39	1.17
2010	1.10	0.93	0.07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

Appendix C

American Shad - MENH Fall Survey



Atlantic cod, *Gadus morhua*



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

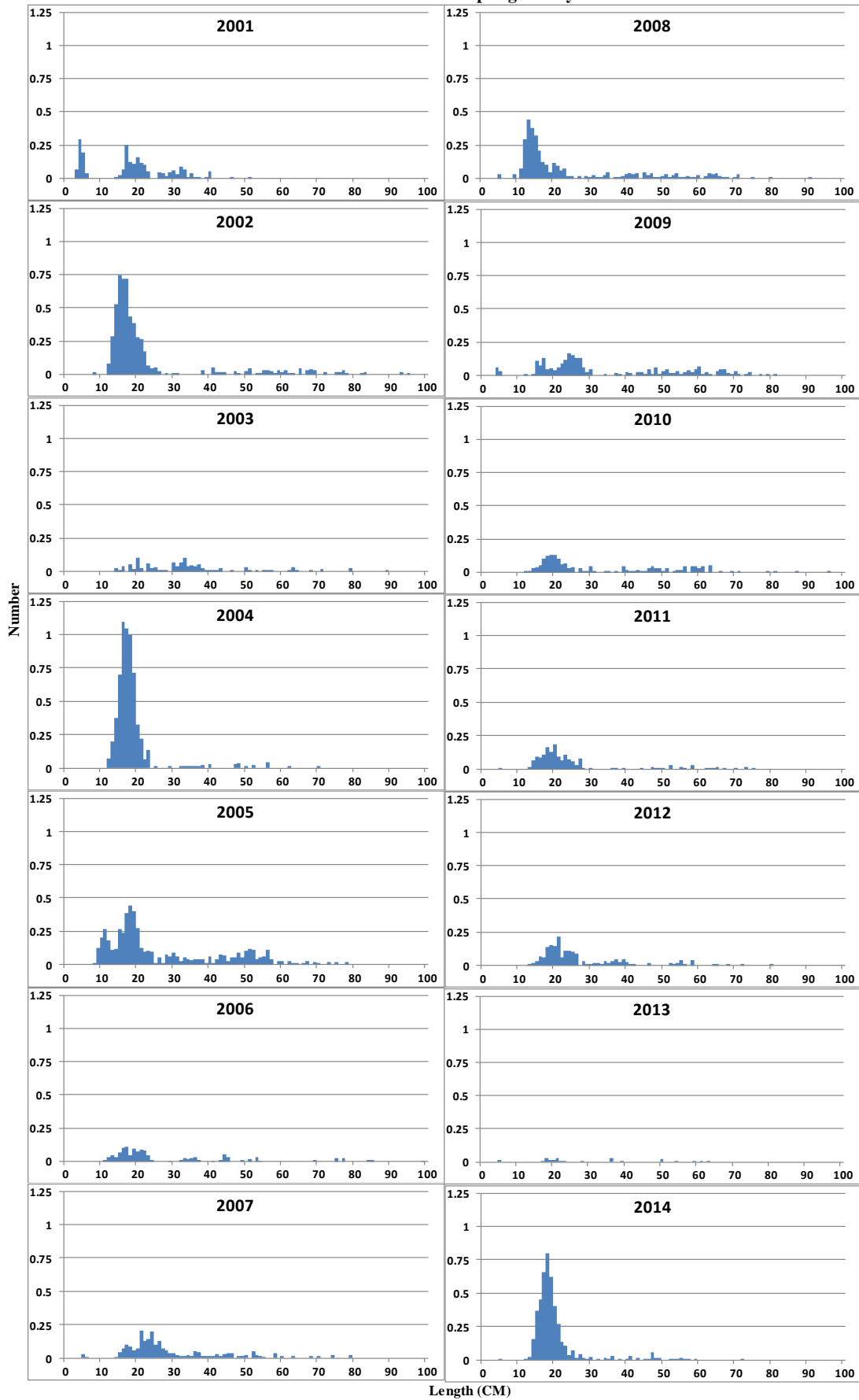
SPRING

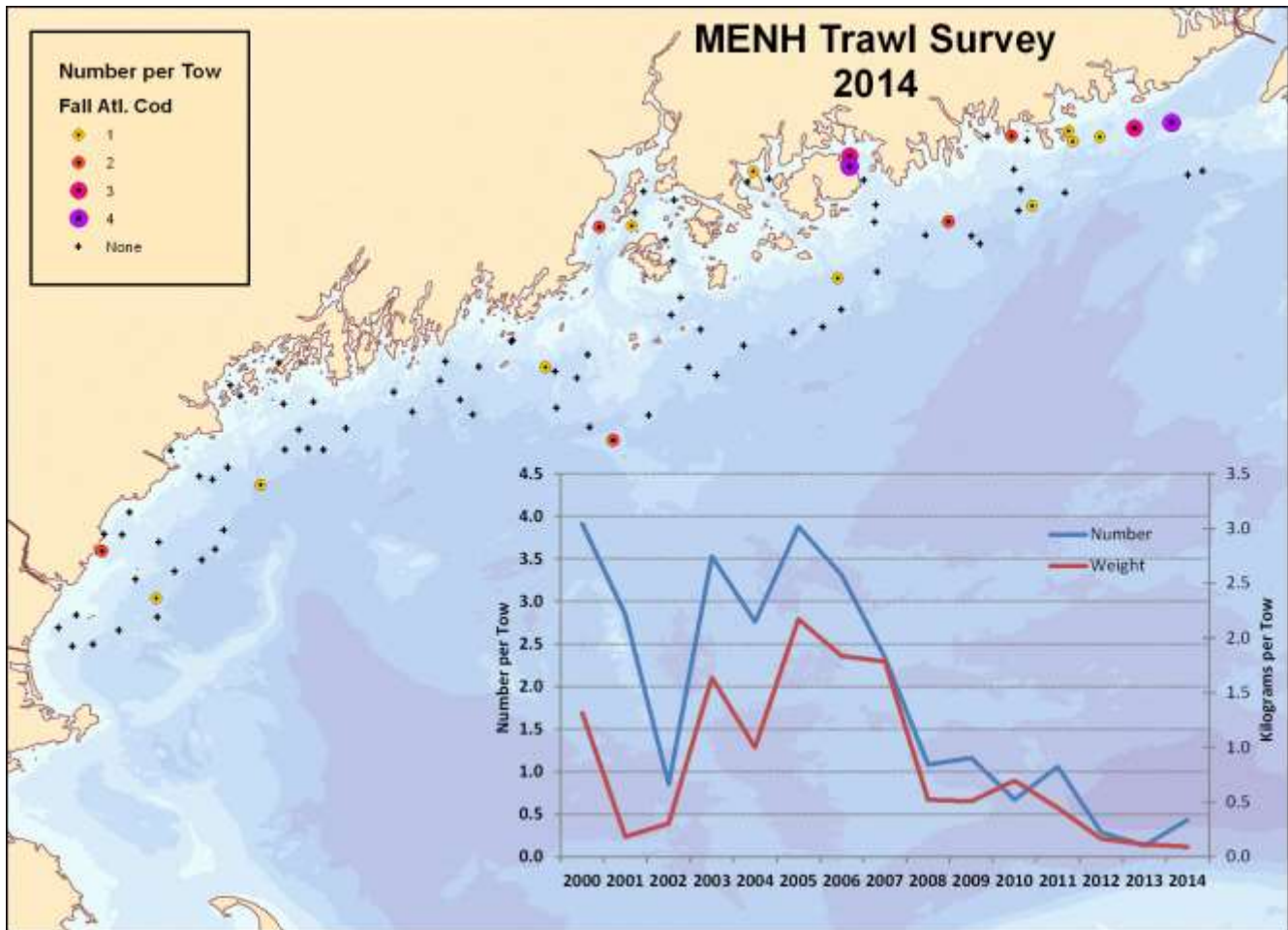
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	2.14	1.16	0.32	0.63
2002	5.66	0.59	2.29	0.74
2003	1.23	0.49	0.94	0.53
2004	6.30	0.40	0.63	0.55
2005	5.46	0.71	2.22	1.30
2006	1.24	0.81	0.76	1.20
2007	2.25	1.14	1.04	0.39
2008	3.38	1.24	1.49	0.90
2009	2.52	0.63	2.25	0.74
2010	1.79	0.48	1.43	0.78
2011	1.64	0.35	0.57	0.56
2012	1.86	0.36	0.68	0.50
2013	0.24	0.96	0.13	0.75
2014	4.62	0.93	0.57	0.50

Appendix C

Atlantic Cod - MENH Spring Surveys





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

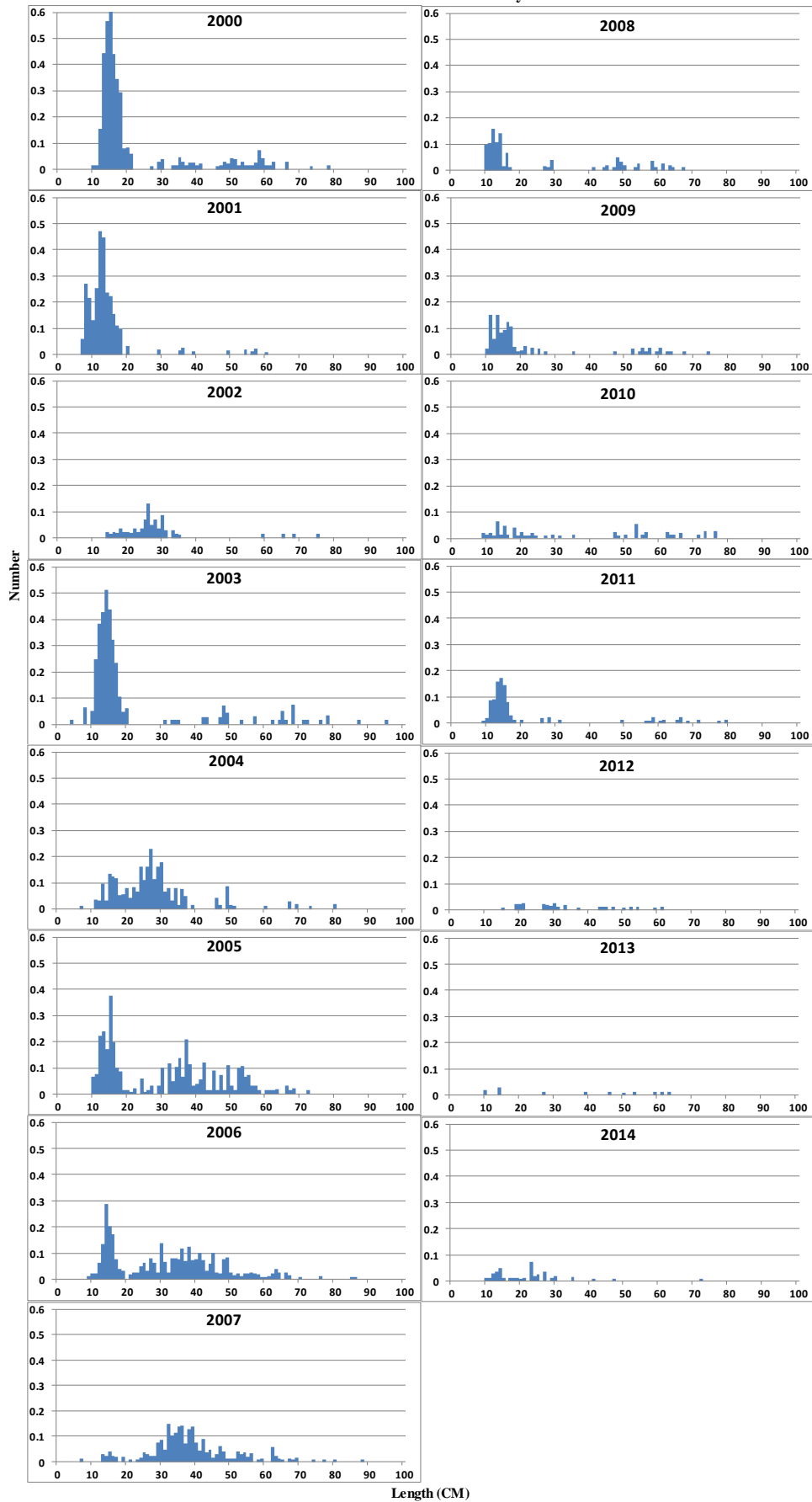
FALL

Stratified Mean

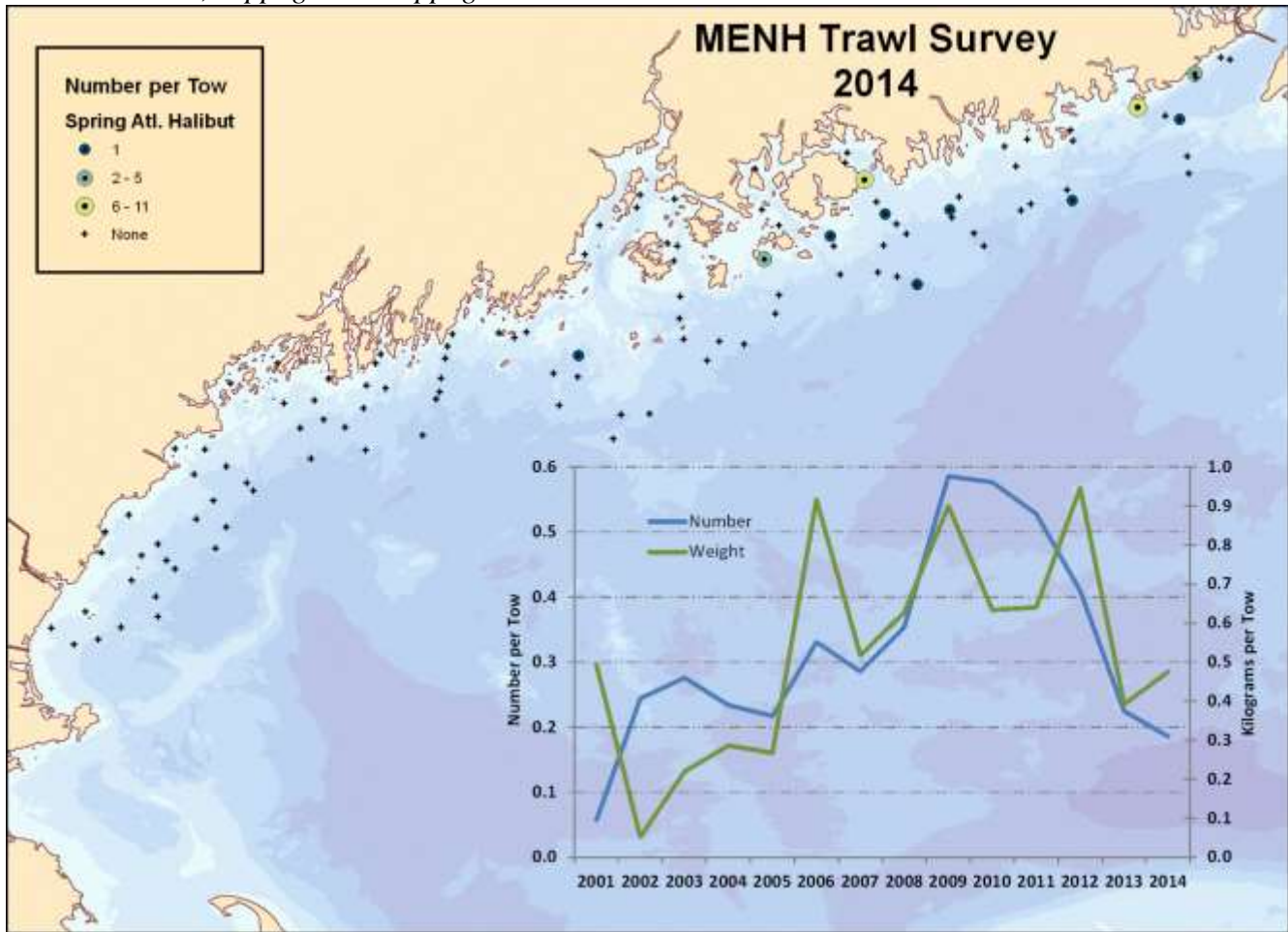
	Number		Weight	
	Mean	CV	Mean	CV
2000	3.91	0.47	1.32	1.49
2001	2.84	0.28	0.18	0.57
2002	0.85	0.23	0.30	0.65
2003	3.53	0.23	1.64	0.32
2004	2.76	0.40	1.00	0.59
2005	3.88	0.48	2.17	1.23
2006	3.31	0.48	1.84	1.28
2007	2.34	0.51	1.78	1.26
2008	1.08	0.41	0.52	0.76
2009	1.16	0.23	0.51	0.17
2010	0.67	0.17	0.70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

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

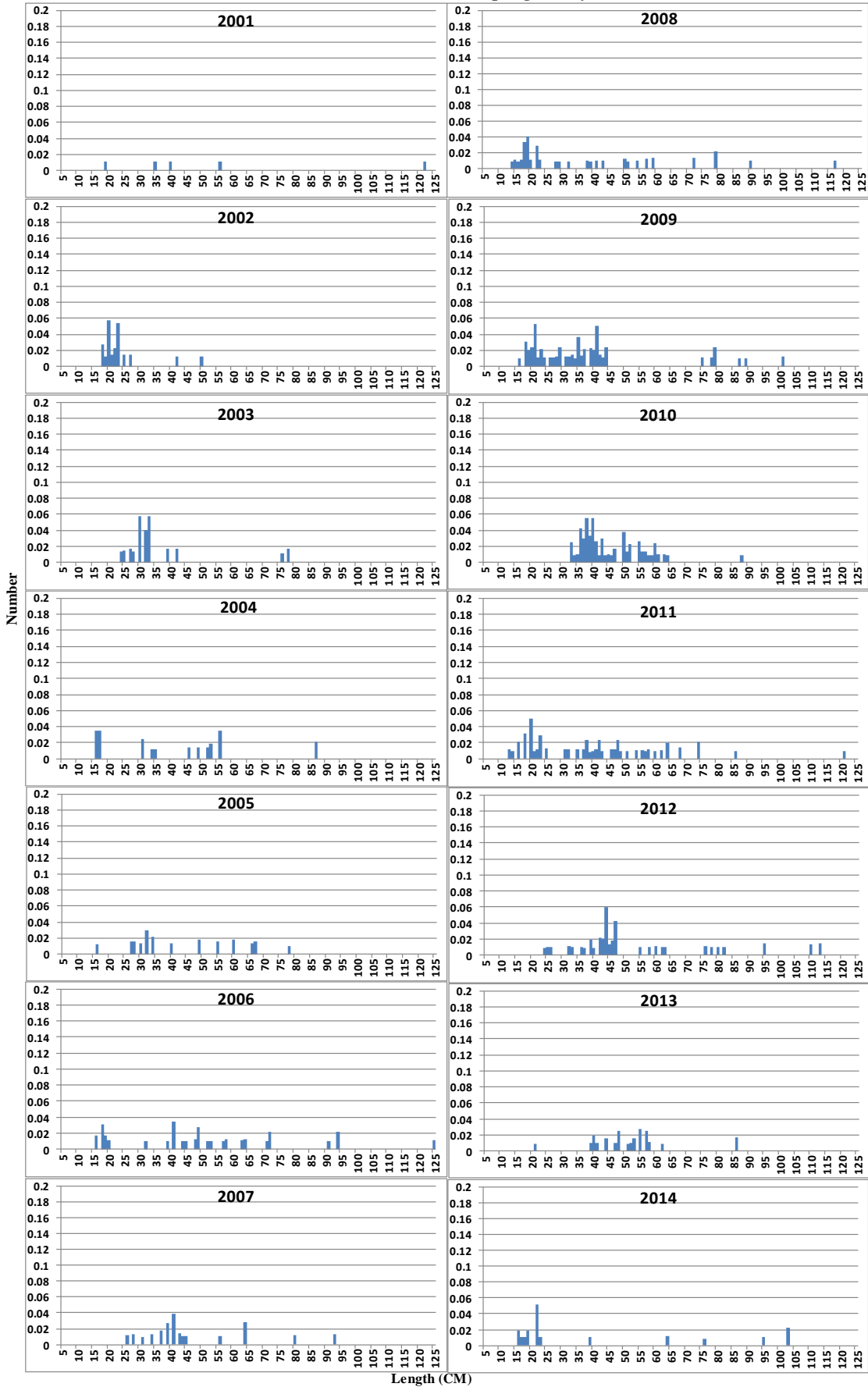
SPRING

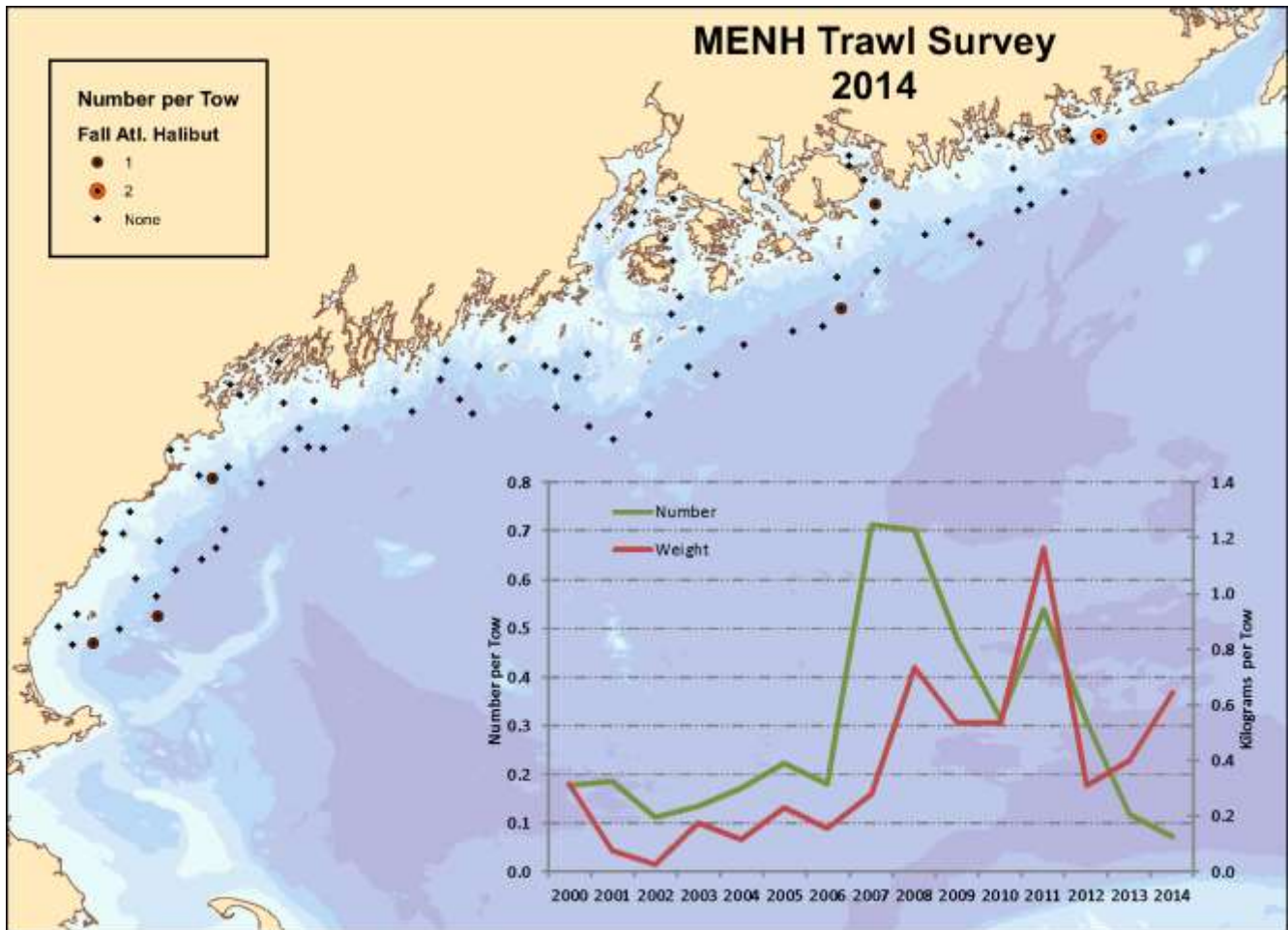
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	0.06	1.15	0.49	2.50
2002	0.24	0.73	0.05	1.38
2003	0.28	0.49	0.22	1.16
2004	0.23	0.48	0.29	0.94
2005	0.22	0.69	0.27	0.86
2006	0.33	0.44	0.92	0.90
2007	0.29	0.72	0.52	1.00
2008	0.35	0.60	0.63	1.00
2009	0.59	0.51	0.90	0.75
2010	0.58	0.47	0.63	0.56
2011	0.53	0.61	0.64	0.56
2012	0.41	0.45	0.95	0.55
2013	0.22	0.78	0.39	0.73
2014	0.19	0.84	0.48	1.04

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

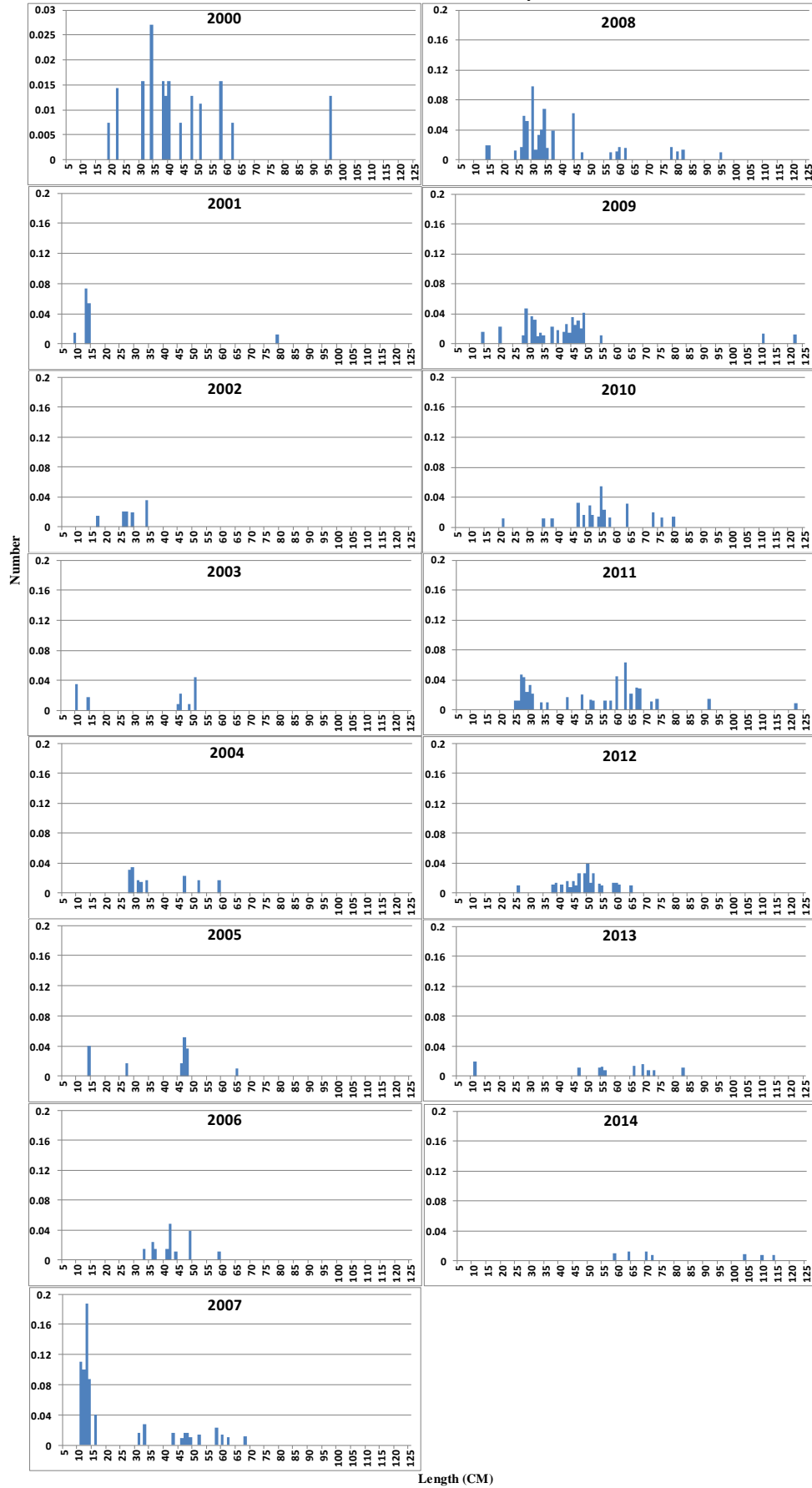
FALL

Stratified Mean

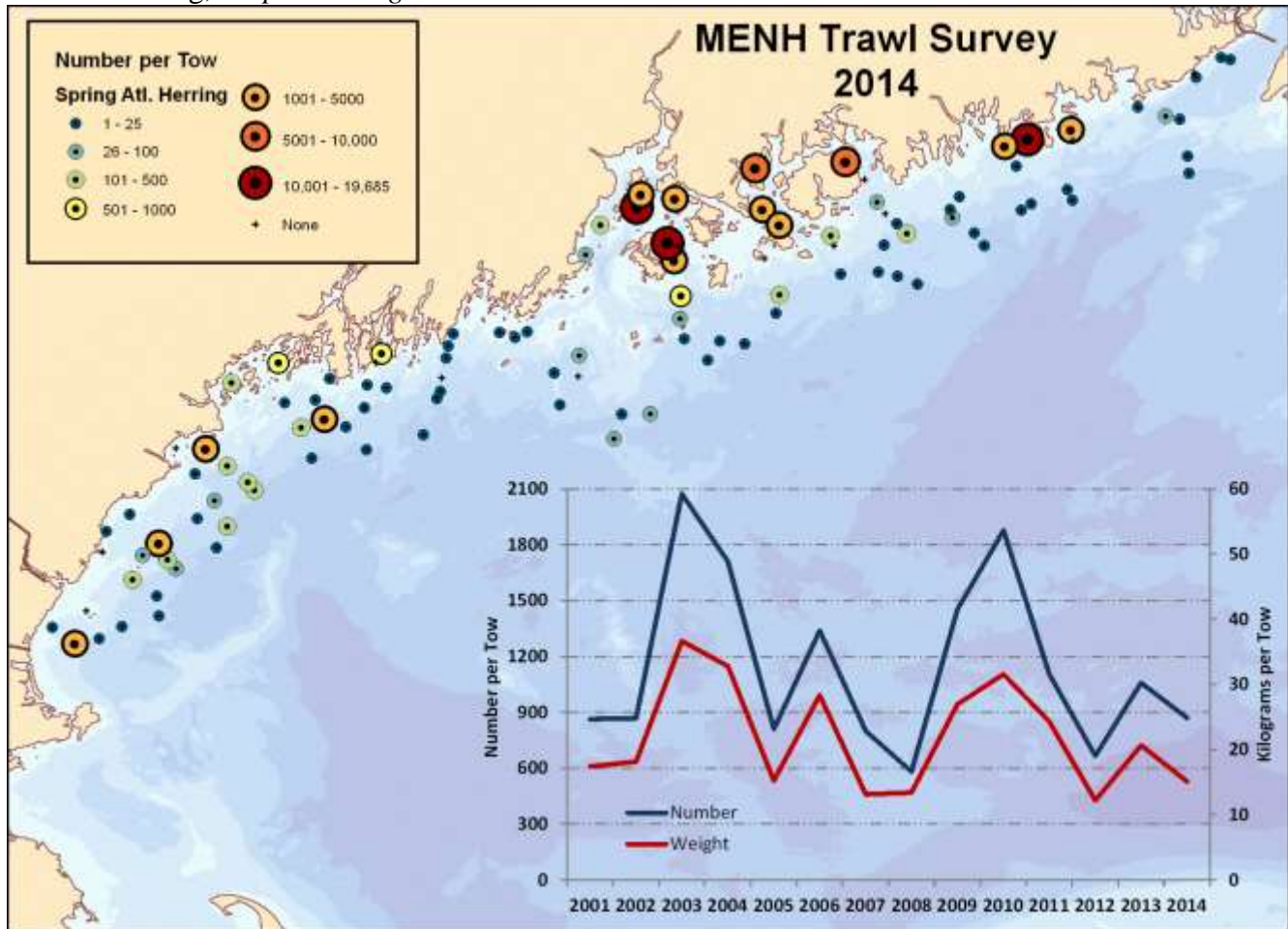
	Number		Weight	
	Mean	CV	Mean	CV
2000	0.18	0.96	0.31	1.32
2001	0.19	1.12	0.08	2.49
2002	0.11	0.79	0.02	0.84
2003	0.14	0.77	0.17	0.83
2004	0.17	0.92	0.12	0.65
2005	0.22	0.38	0.23	0.37
2006	0.18	0.84	0.15	0.88
2007	0.71	1.09	0.28	0.62
2008	0.70	0.40	0.73	0.64
2009	0.48	0.44	0.53	0.92
2010	0.31	0.43	0.53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

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

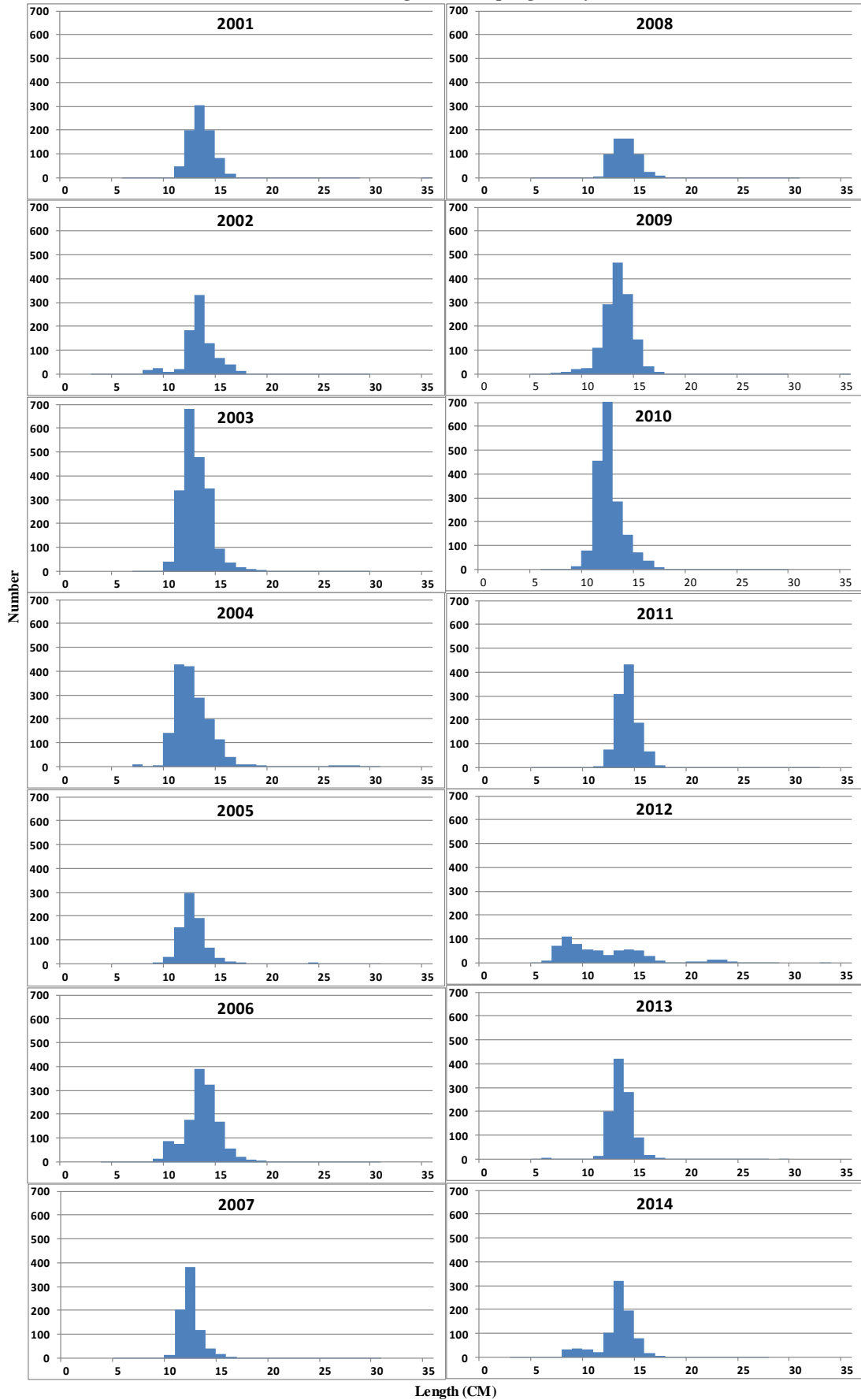
SPRING

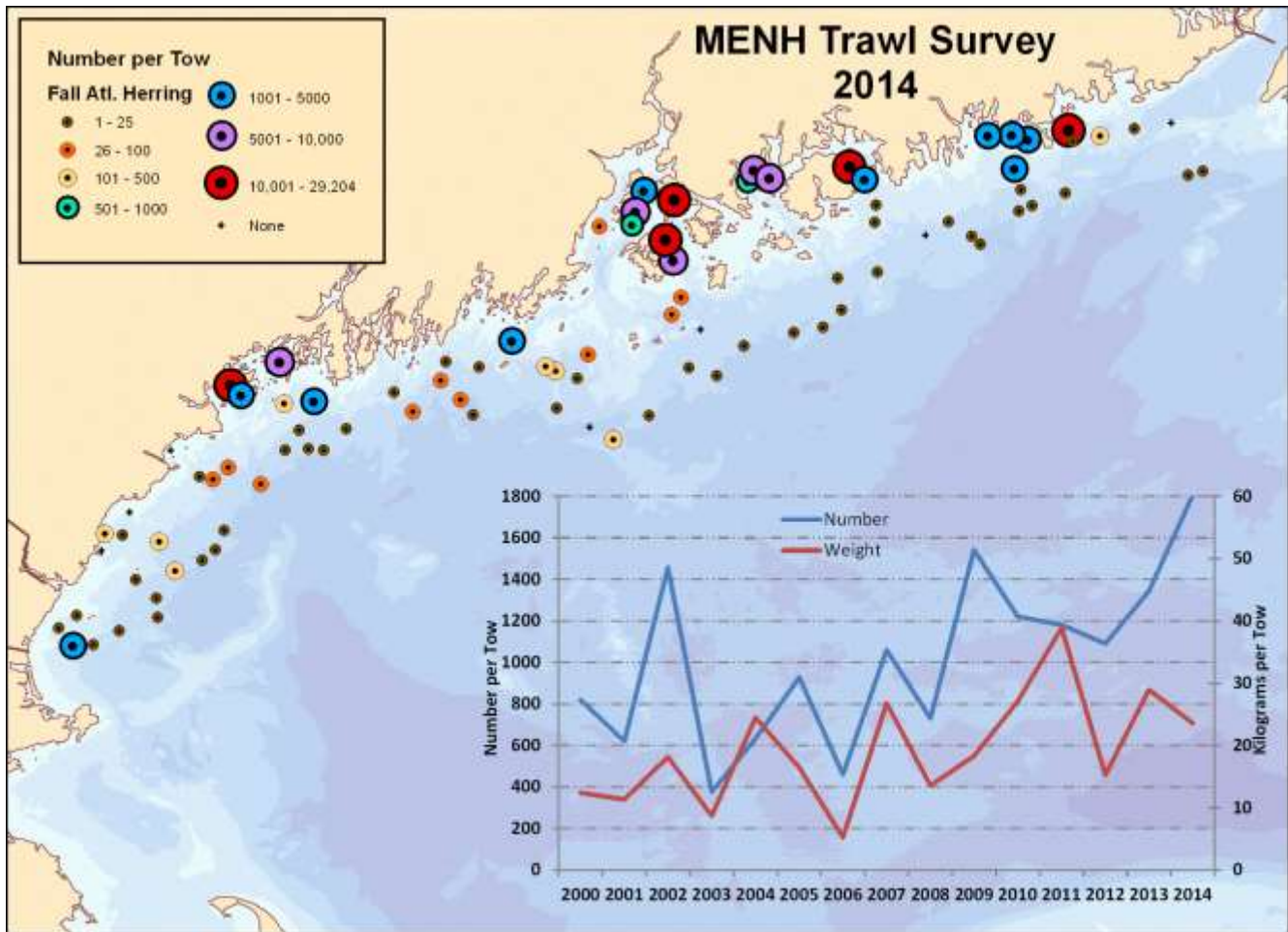
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	863.41	0.83	17.43	0.83
2002	869.60	0.65	18.16	0.56
2003	2072.84	0.46	36.64	0.43
2004	1709.26	0.49	32.81	0.44
2005	810.77	0.62	15.25	0.49
2006	1338.54	0.47	28.35	0.43
2007	800.47	0.72	13.16	0.69
2008	582.47	0.37	13.40	0.36
2009	1454.55	0.58	26.99	0.59
2010	1877.69	0.32	31.58	0.32
2011	1104.53	0.42	24.32	0.41
2012	667.17	0.54	12.23	0.50
2013	1059.00	0.42	20.66	0.42
2014	870.46	0.66	15.12	0.58

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

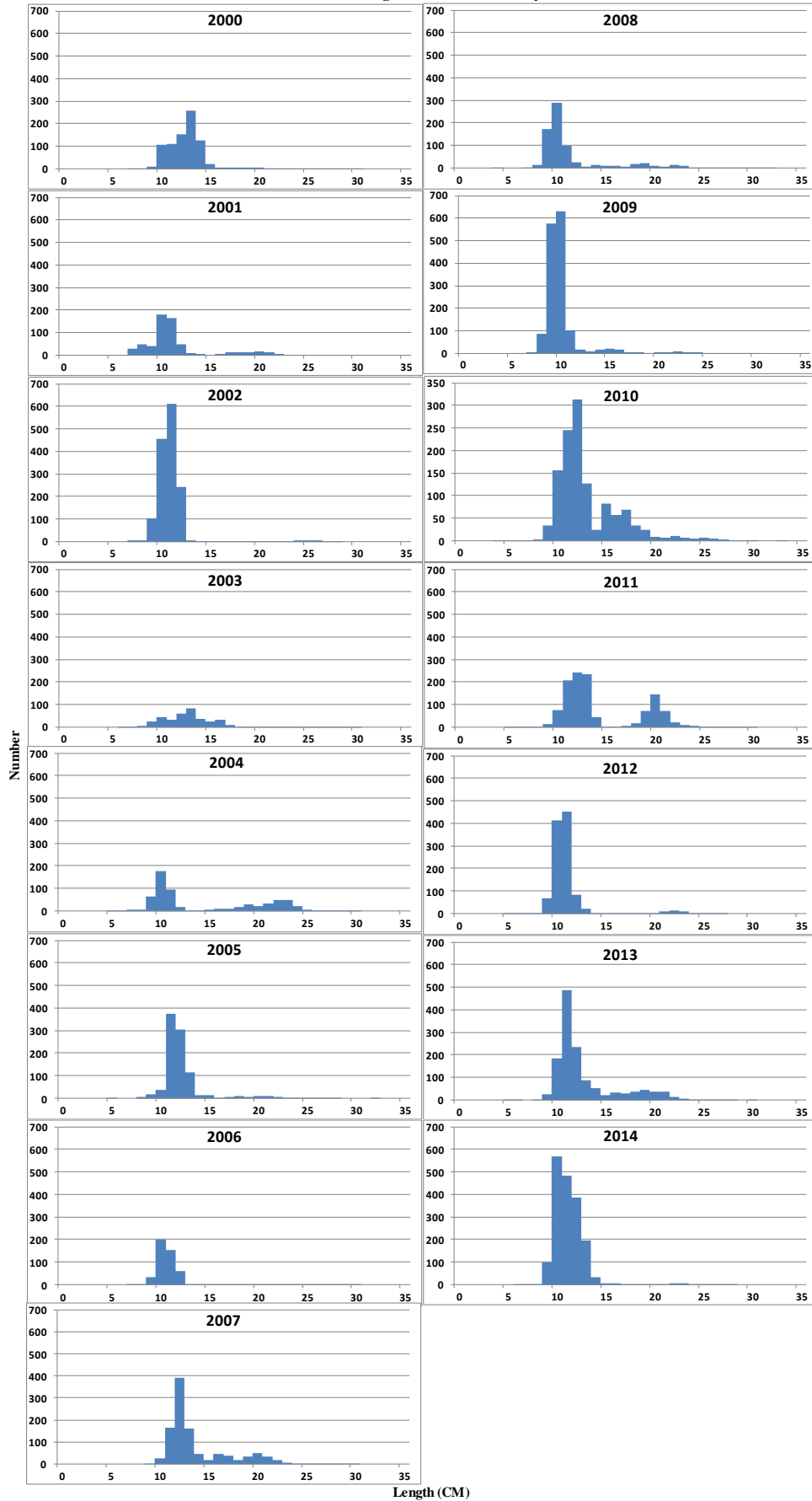
FALL

Stratified Mean

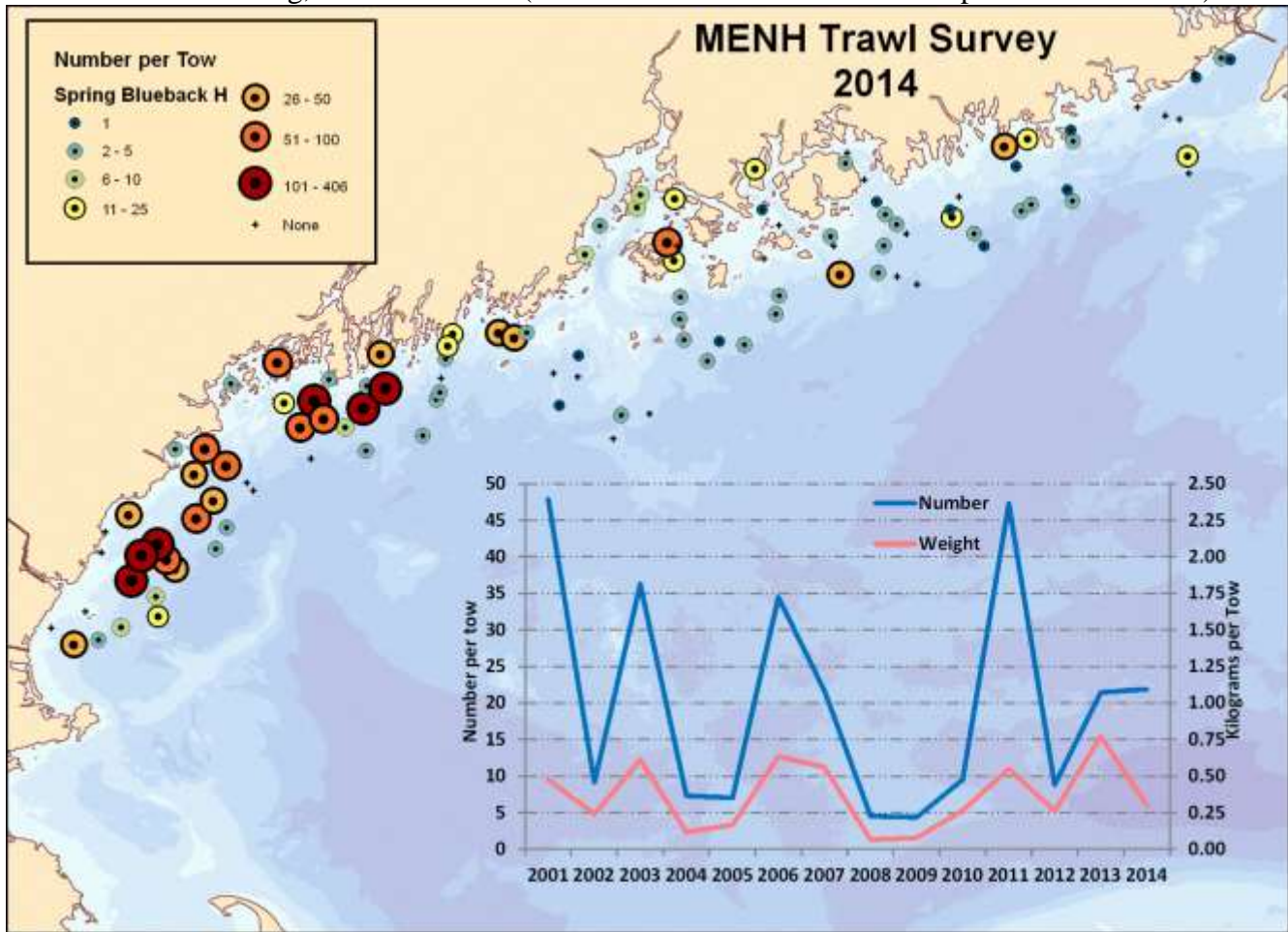
	Number		Weight	
	Mean	CV	Mean	CV
2000	820.02	0.77	12.42	0.55
2001	621.33	0.62	11.34	0.62
2002	1457.21	0.60	18.15	0.55
2003	376.73	0.97	8.71	0.90
2004	633.36	0.58	24.47	0.71
2005	928.07	0.48	16.44	0.52
2006	461.44	0.41	5.26	0.39
2007	1059.37	0.55	26.78	0.82
2008	730.86	0.48	13.58	0.59
2009	1542.49	0.37	18.32	0.34
2010	1221.33	0.51	27.12	0.39
2011	1180.79	0.52	38.89	0.29
2012	1067.01	0.58	15.04	0.47
2013	1336.44	0.58	28.44	0.46
2014	1805.00	0.49	23.59	0.38

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

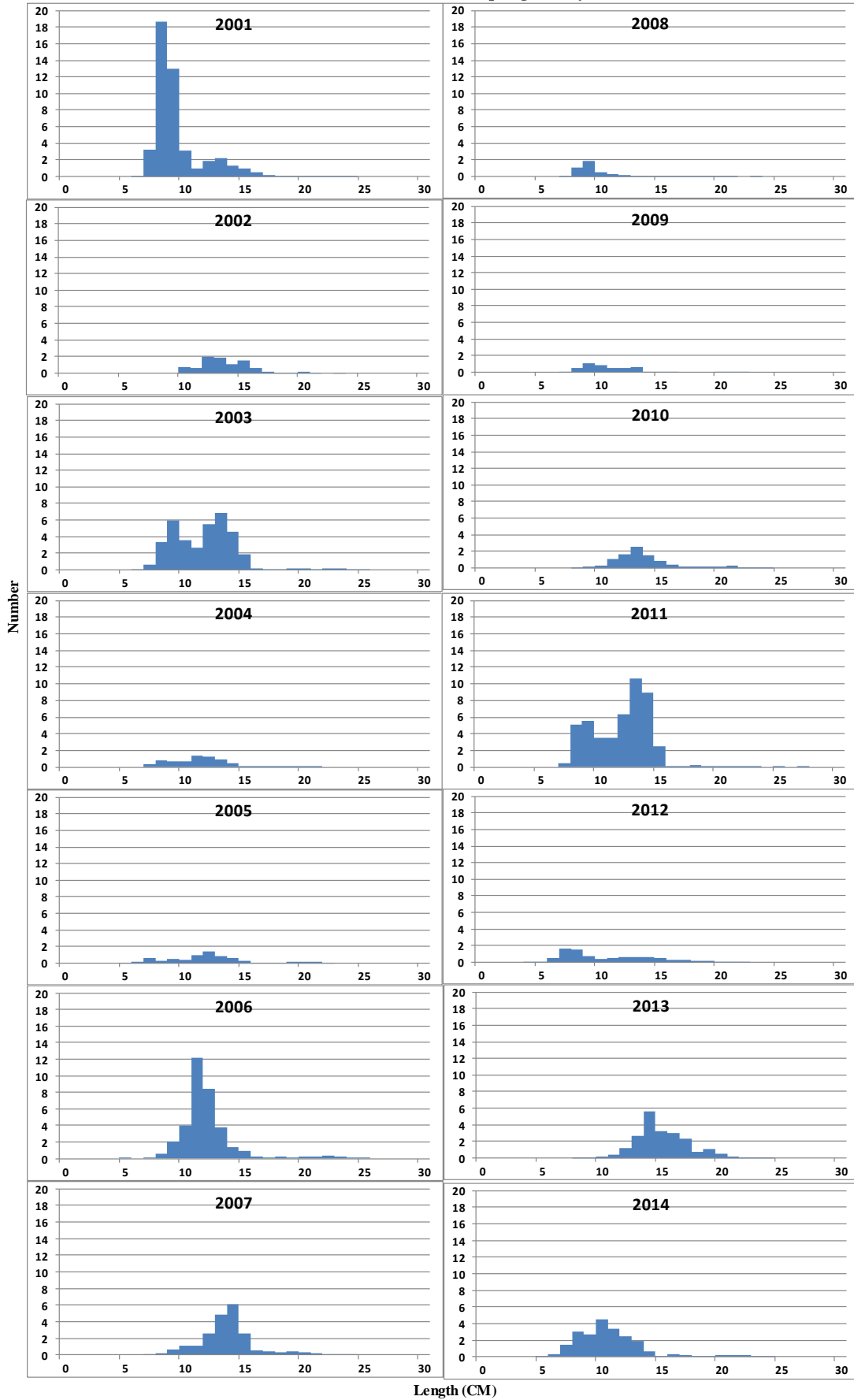
SPRING

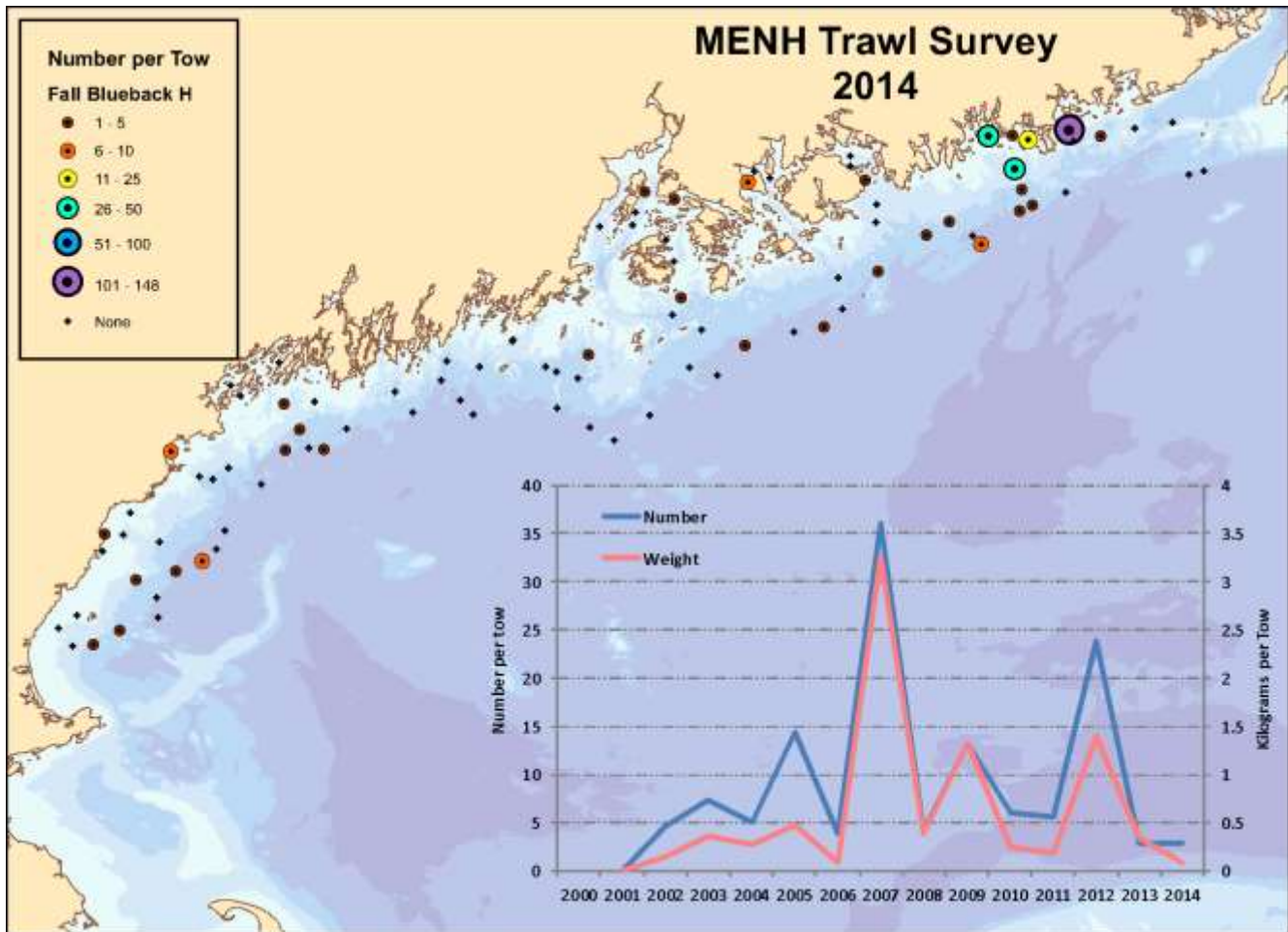
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2001	47.87	1.02	0.48	0.74
2002	9.15	1.32	0.24	1.30
2003	36.25	0.51	0.61	0.54
2004	7.31	0.50	0.12	0.39
2005	7.02	0.42	0.17	0.38
2006	34.45	0.75	0.63	0.64
2007	21.66	0.67	0.56	0.70
2008	4.52	0.52	0.07	0.42
2009	4.34	1.20	0.08	1.28
2010	9.50	0.36	0.26	0.35
2011	47.27	0.88	0.55	0.71
2012	8.80	0.43	0.26	0.48
2013	21.45	0.77	0.77	0.66
2014	21.90	0.49	0.30	0.40

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

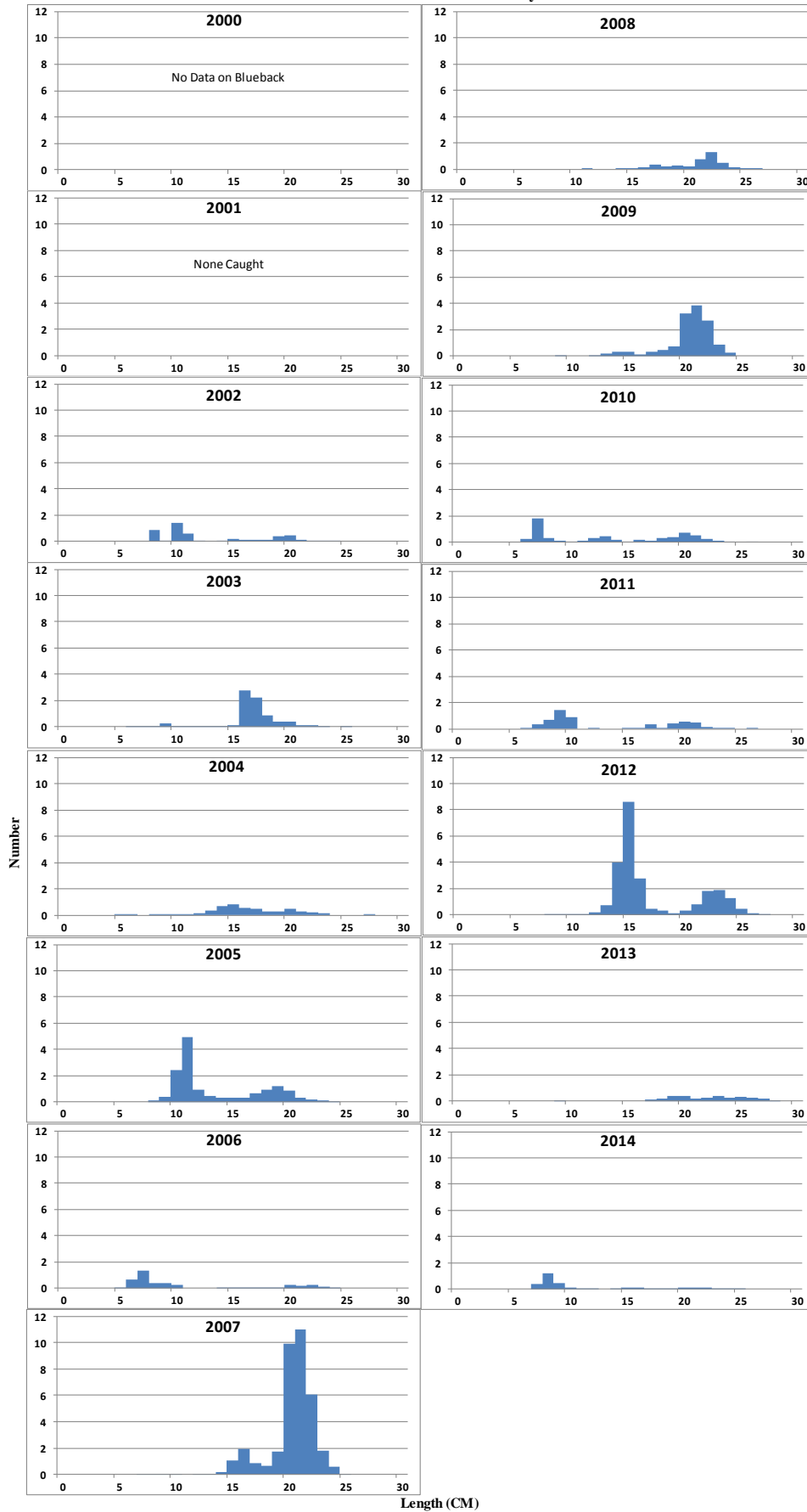
FALL

Stratified Mean

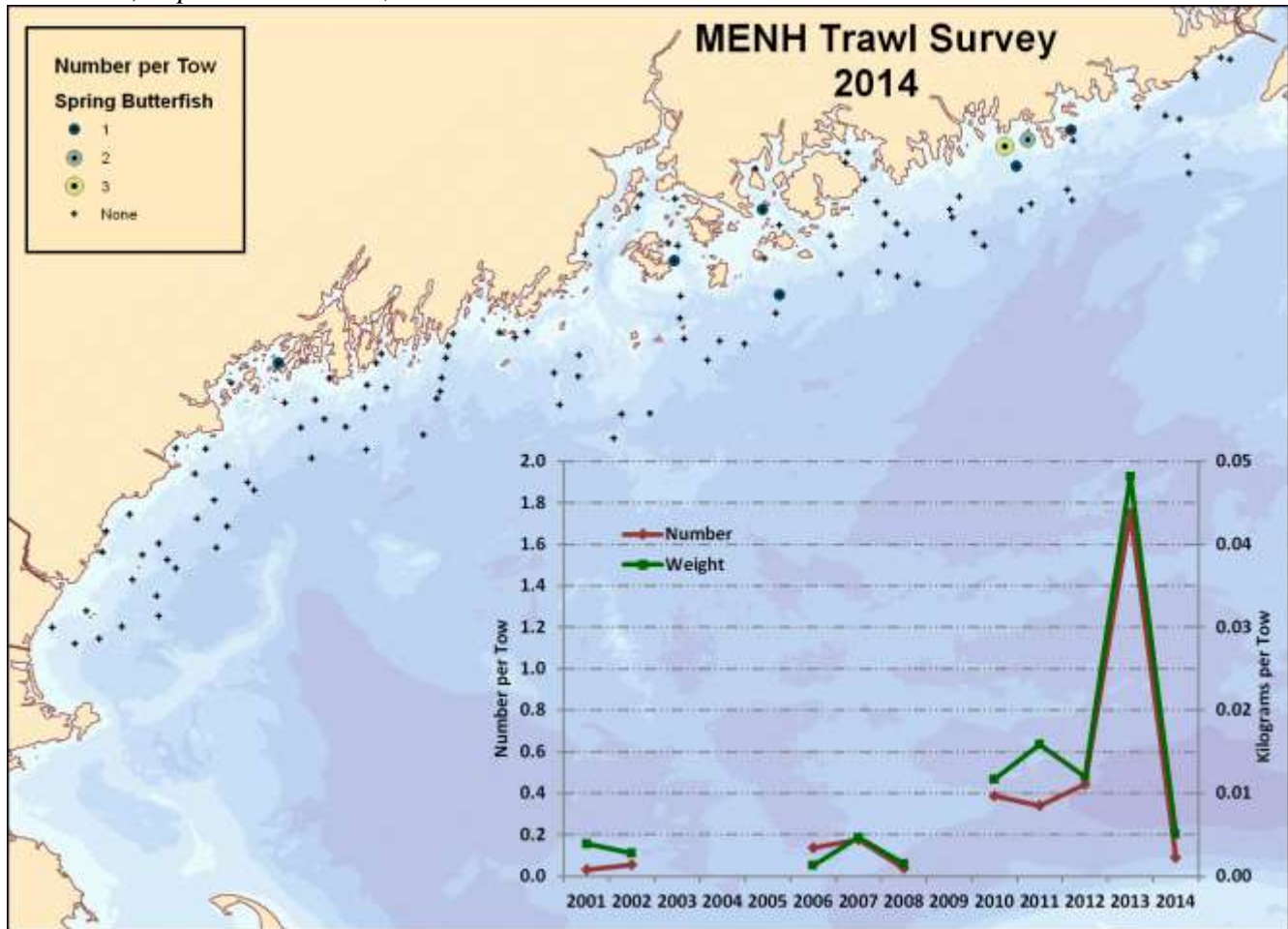
	Number Mean	CV	Weight Mean	CV
2000				
2001	0		0	
2002	4.57	0.90	0.15	0.91
2003	7.30	0.70	0.36	0.69
2004	5.02	0.65	0.28	0.43
2005	14.34	0.88	0.48	0.51
2006	3.91	1.05	0.09	1.06
2007	36.09	1.27	3.26	1.31
2008	4.12	0.97	0.39	1.19
2009	13.21	1.30	1.32	1.28
2010	6.08	0.68	0.25	0.38
2011	5.62	1.20	0.19	0.46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

Appendix C

Blueback - MENH Fall Survey



Butterfish, *Peprilus tricanthus*,



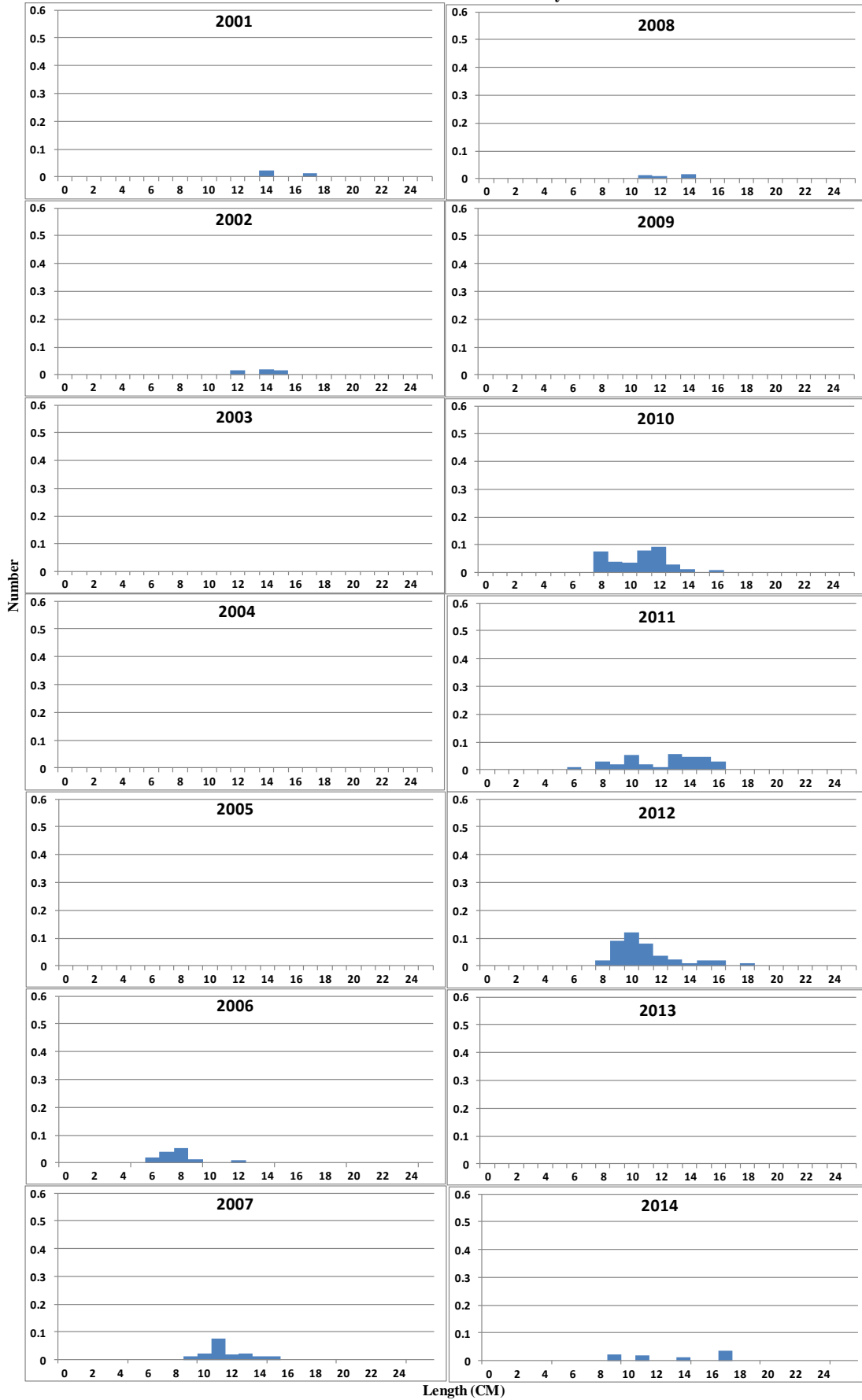
Means and coefficients of Variance for graph overlain on above map
 Fixed stations **not** included
 for butterfish, indices calculated for regions 1 through 5; strata 1 through 4

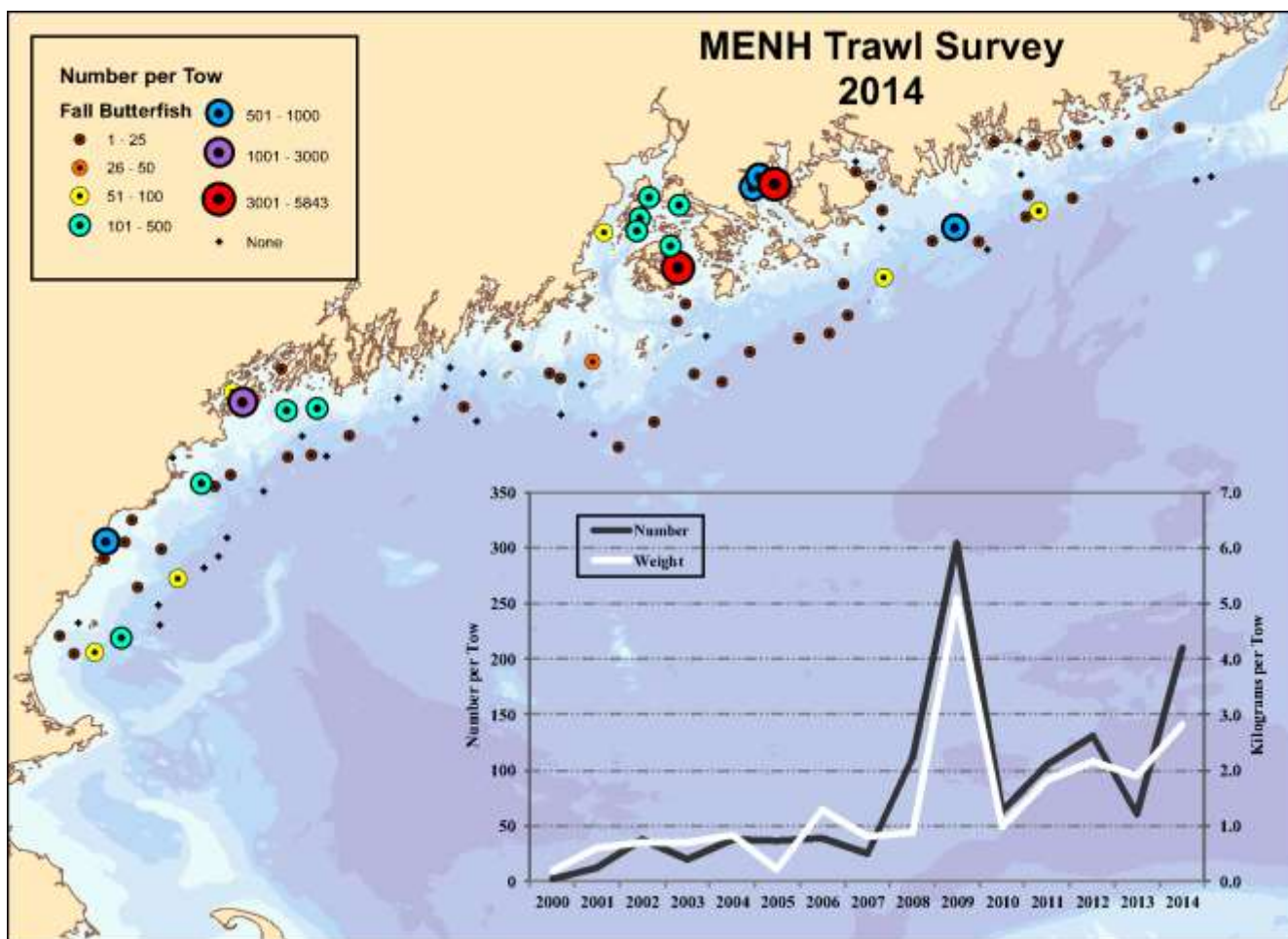
SPRING
Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2001	0.03	1.65	0.004	1.69
2002	0.06	1.46	0.003	1.46
2003				
2004				
2005				
2006	0.14	0.67	0.001	0.88
2007	0.18	0.62	0.005	0.63
2008	0.04	0.96	0.002	1.15
2009				
2010	0.39	0.53	0.012	0.69
2011	0.34	0.69	0.016	0.75
2012	0.44	0.47	0.012	0.58
2013	1.75	0.61	0.048	0.57
2014	0.09	0.74	0.01	0.95

Appendix C

Butterfish - MENH Fall Surveys





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

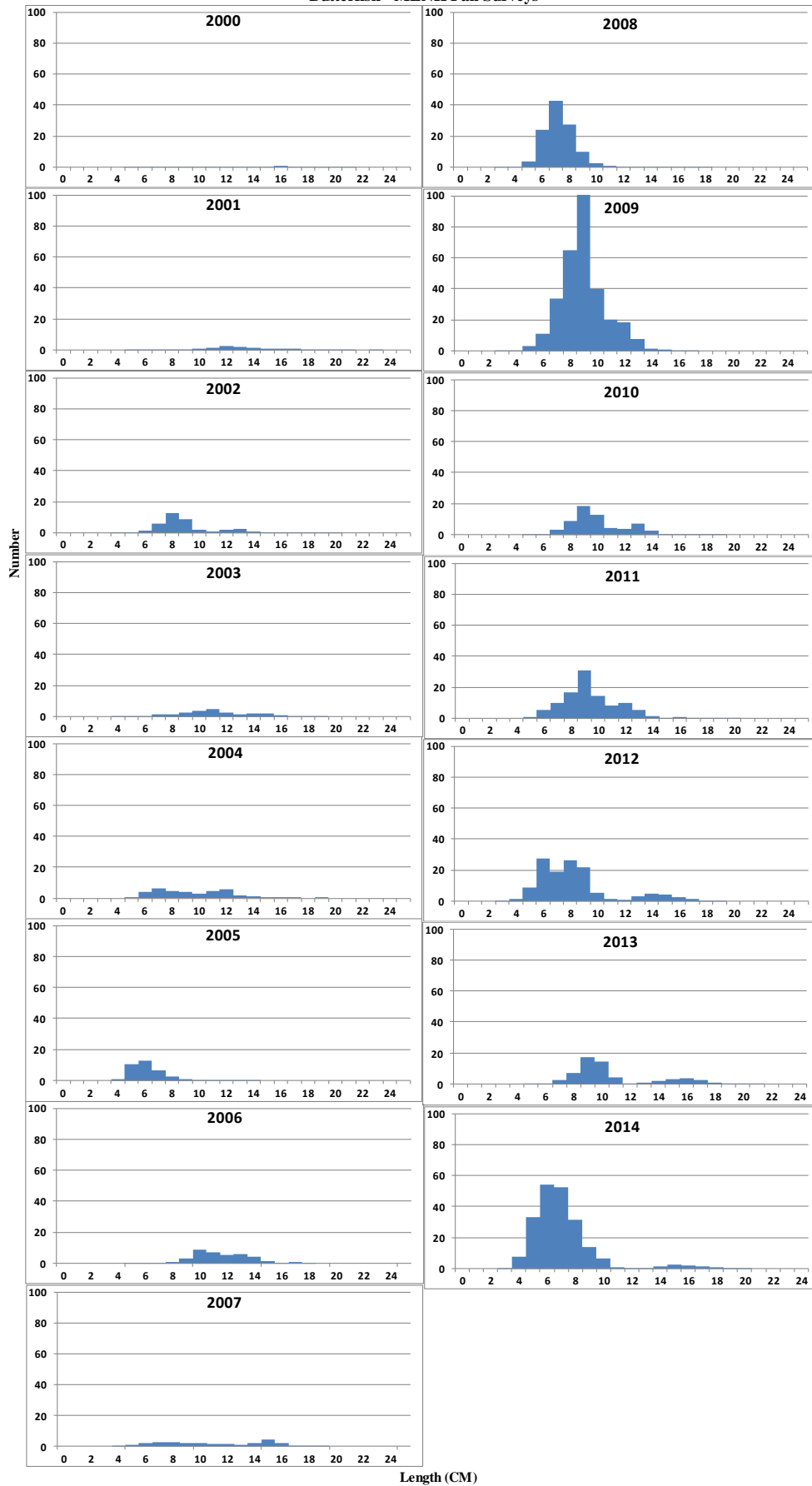
FALL

Stratified Mean

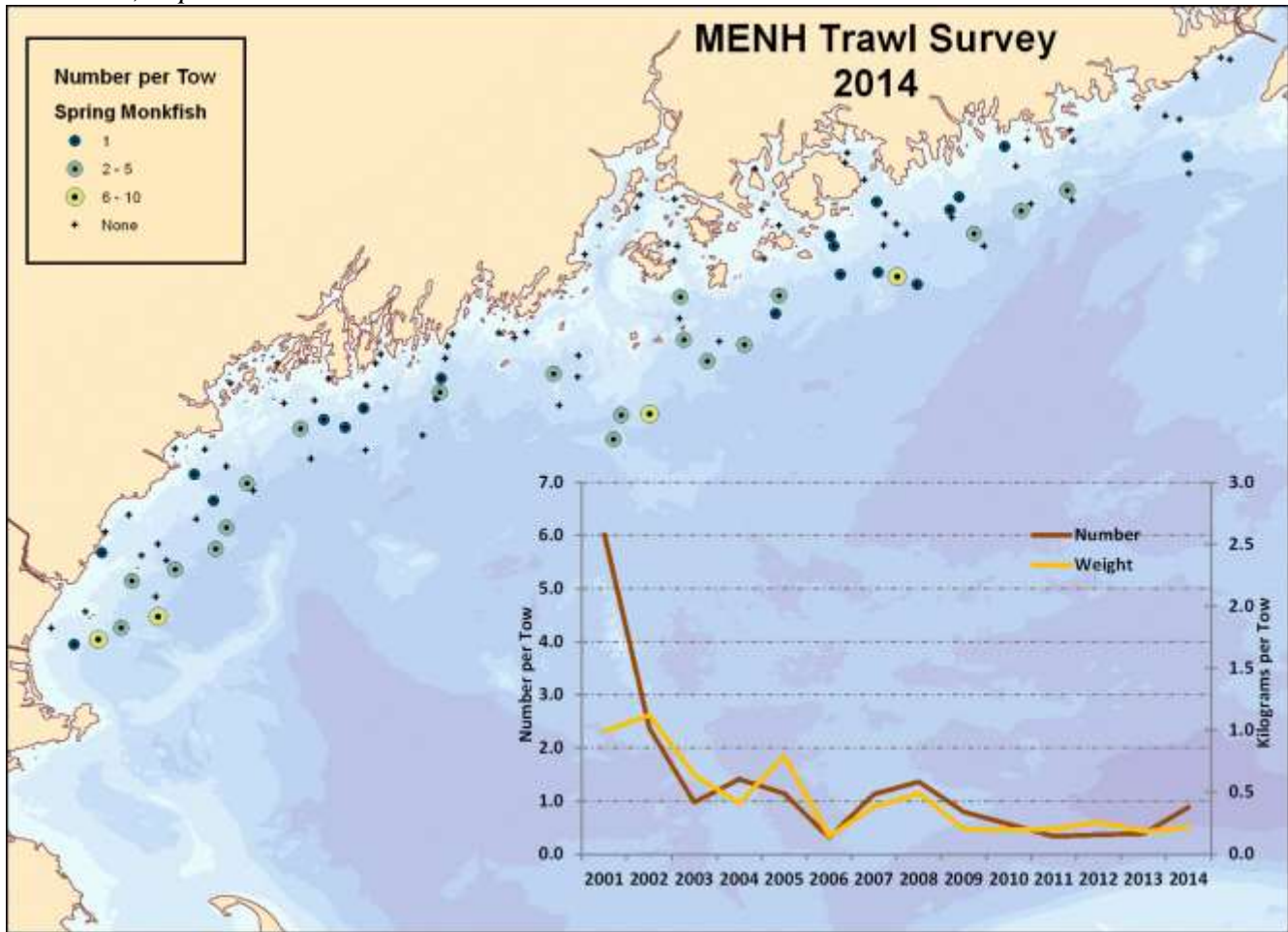
	Number		Weight	
	Mean	CV	Mean	CV
2000	2.26	0.87	0.18	0.92
2001	11.73	0.65	0.60	0.68
2002	37.90	0.63	0.71	0.53
2003	19.65	0.40	0.69	0.24
2004	37.24	0.30	0.84	0.47
2005	36.16	0.84	0.22	0.63
2006	38.91	0.66	1.28	0.80
2007	24.85	0.29	0.81	0.24
2008	112.10	0.64	0.88	0.55
2009	303.59	0.36	5.08	0.30
2010	63.24	0.38	0.98	0.30
2011	105.37	0.58	1.82	0.45
2012	130.68	0.48	2.16	0.42
2013	60.07	0.39	1.91	0.29
2014	209.94	0.75	2.81	0.52

Appendix C

Butterfish - MENH Fall Surveys



Goosefish, *Lophius americanus*



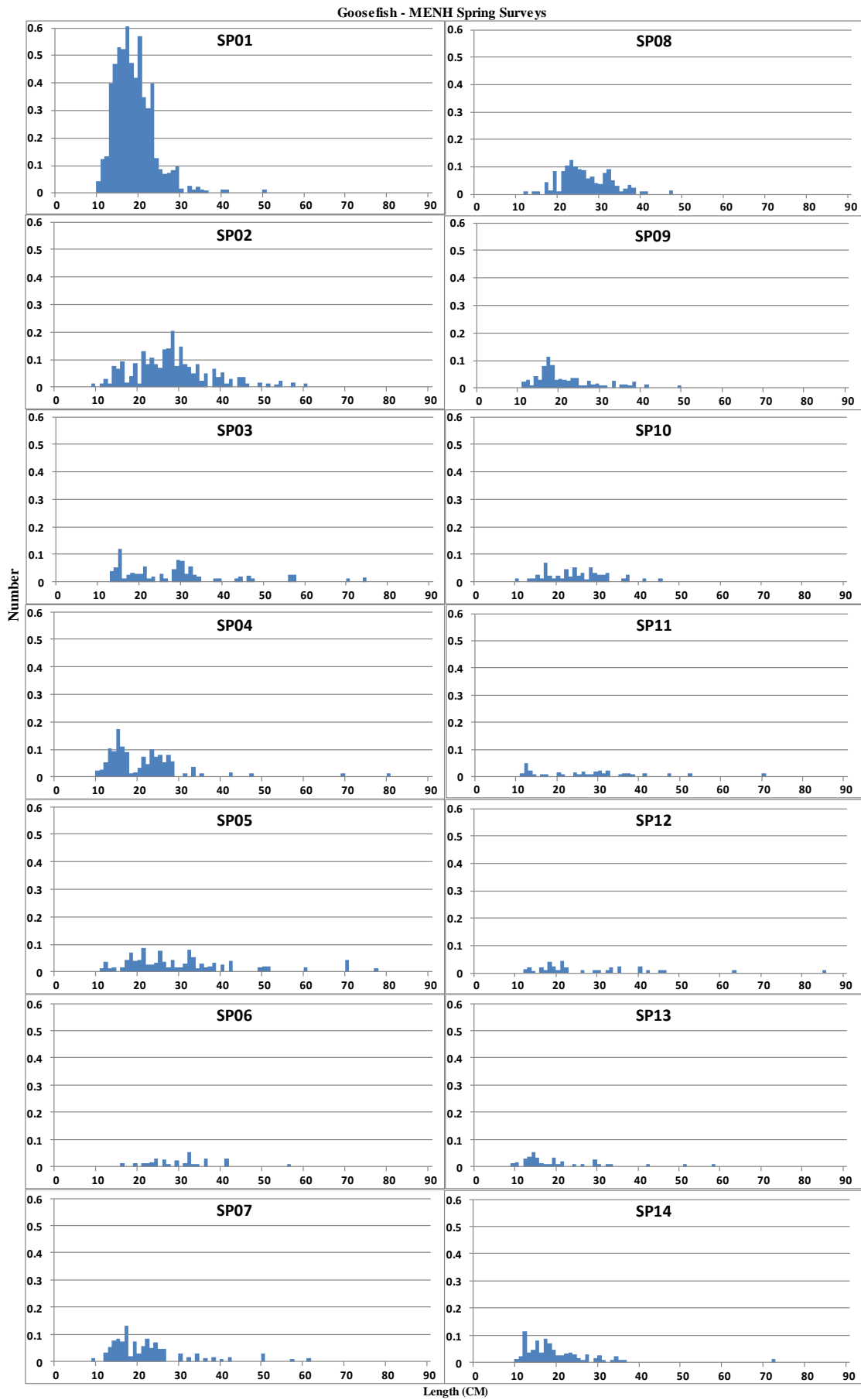
Means and coefficients of variance for graph overlain on above map fixed stations not included for goosefish, for regions 1 through 5; Strata 1 through 4

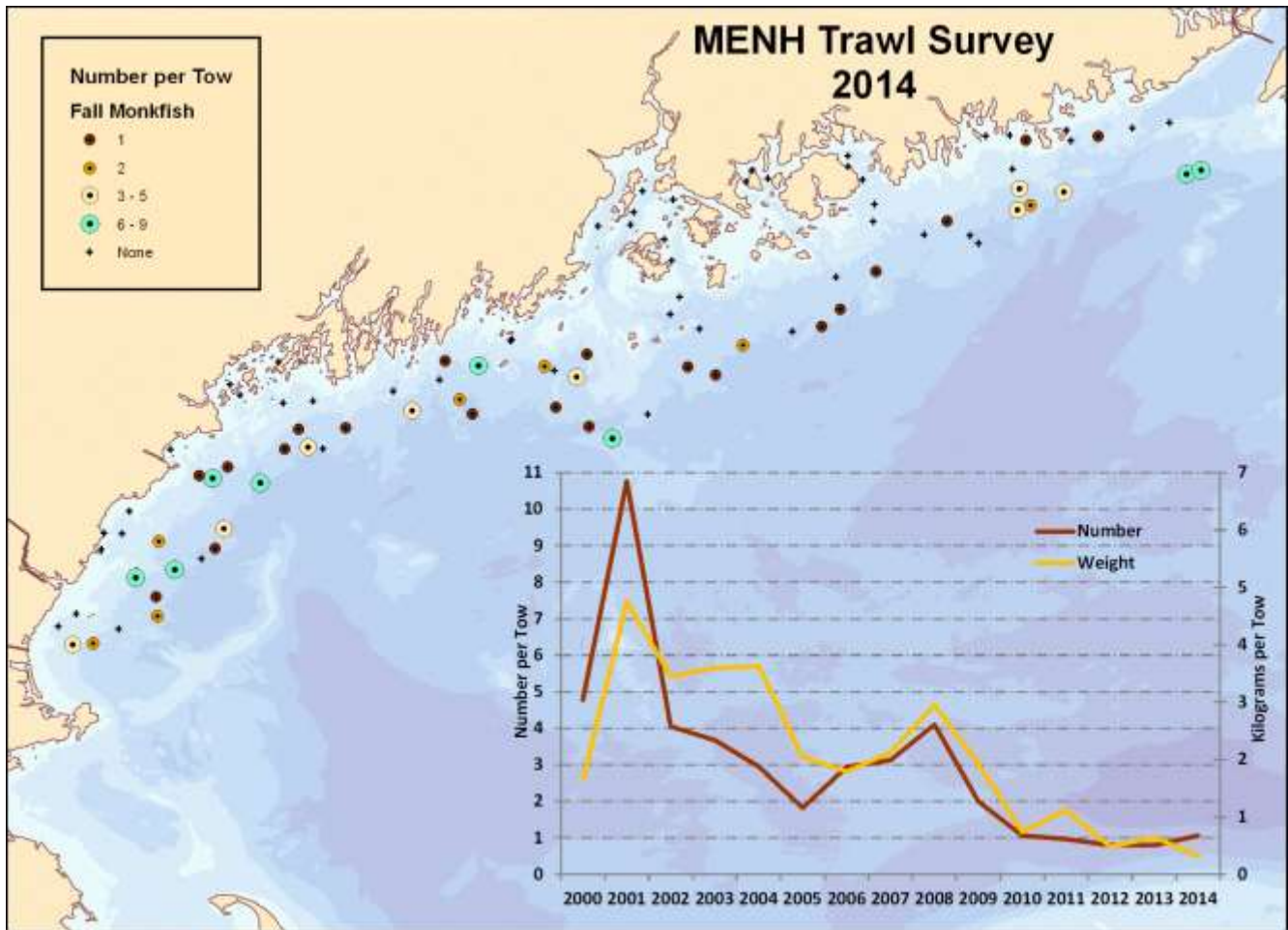
SPRING

Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	6.02	0.35	0.99	0.35
2002	2.37	0.31	1.12	0.37
2003	0.98	0.26	0.64	0.52
2004	1.41	0.23	0.41	0.60
2005	1.14	0.22	0.79	0.36
2006	0.32	0.42	0.15	0.45
2007	1.13	0.30	0.38	0.49
2008	1.37	0.26	0.49	0.30
2009	0.80	0.31	0.20	0.44
2010	0.57	0.41	0.20	0.49
2011	0.33	0.35	0.20	0.70
2012	0.37	0.36	0.26	0.95
2013	0.39	0.45	0.19	1.01
2014	0.89	0.37	0.21	0.93

Appendix C





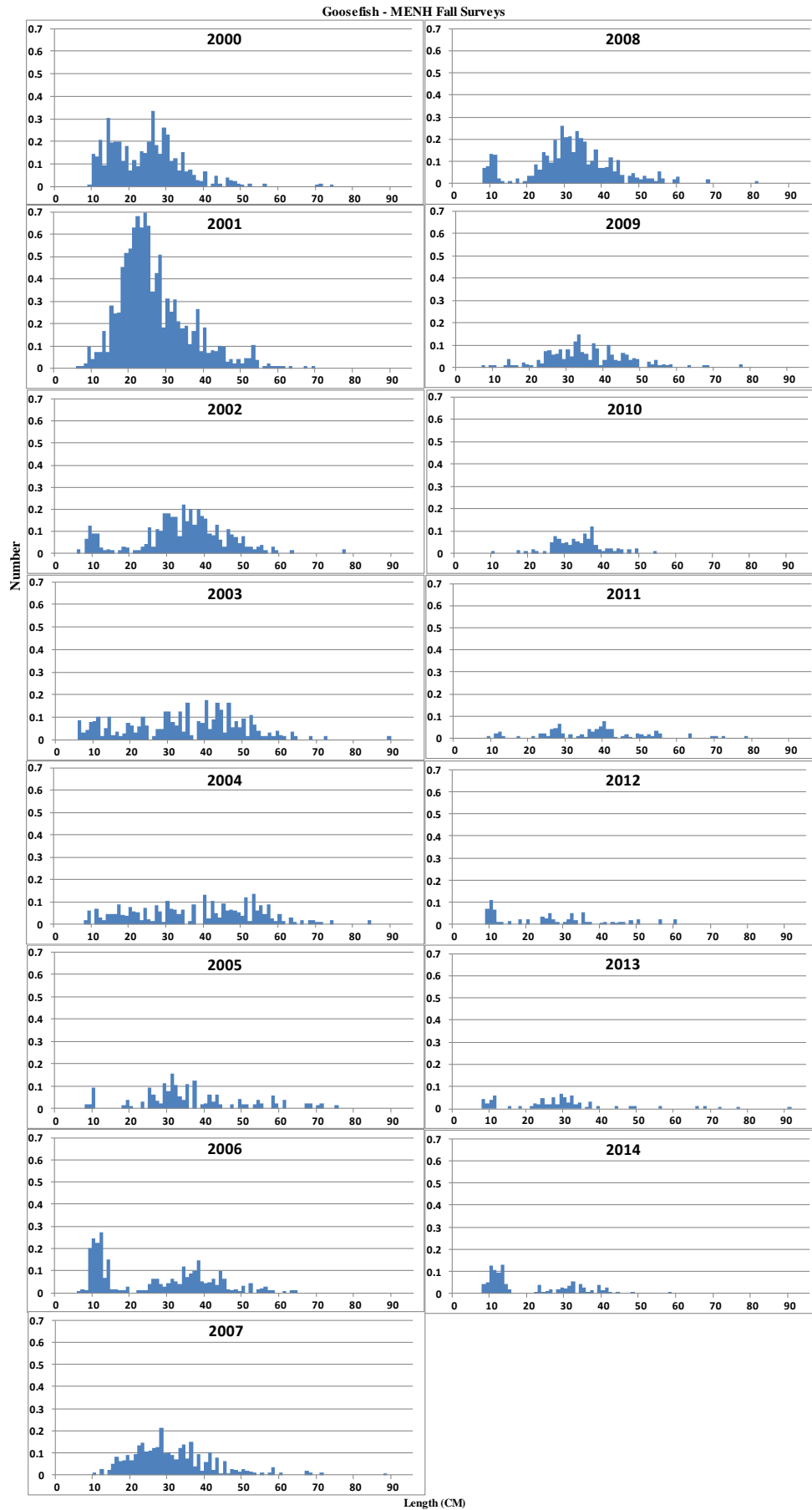
Means and coefficients of variance for graph overlain on above map fixed stations not included for goosefish, for regions 1 through 5; Strata 1 through 4

FALL

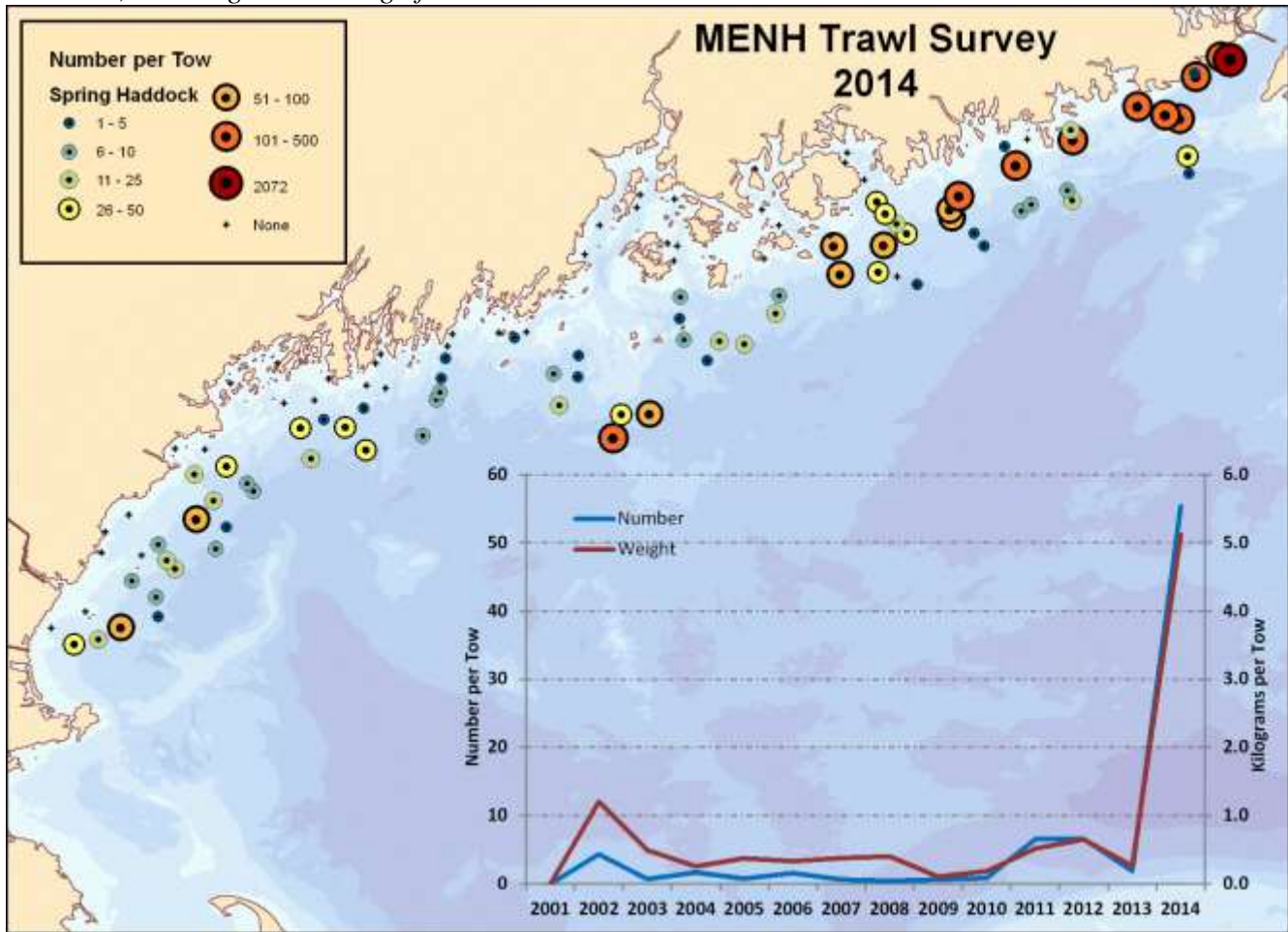
Stratified Mean

	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

Appendix C



Haddock, *Melanogrammus aeglefinus*



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

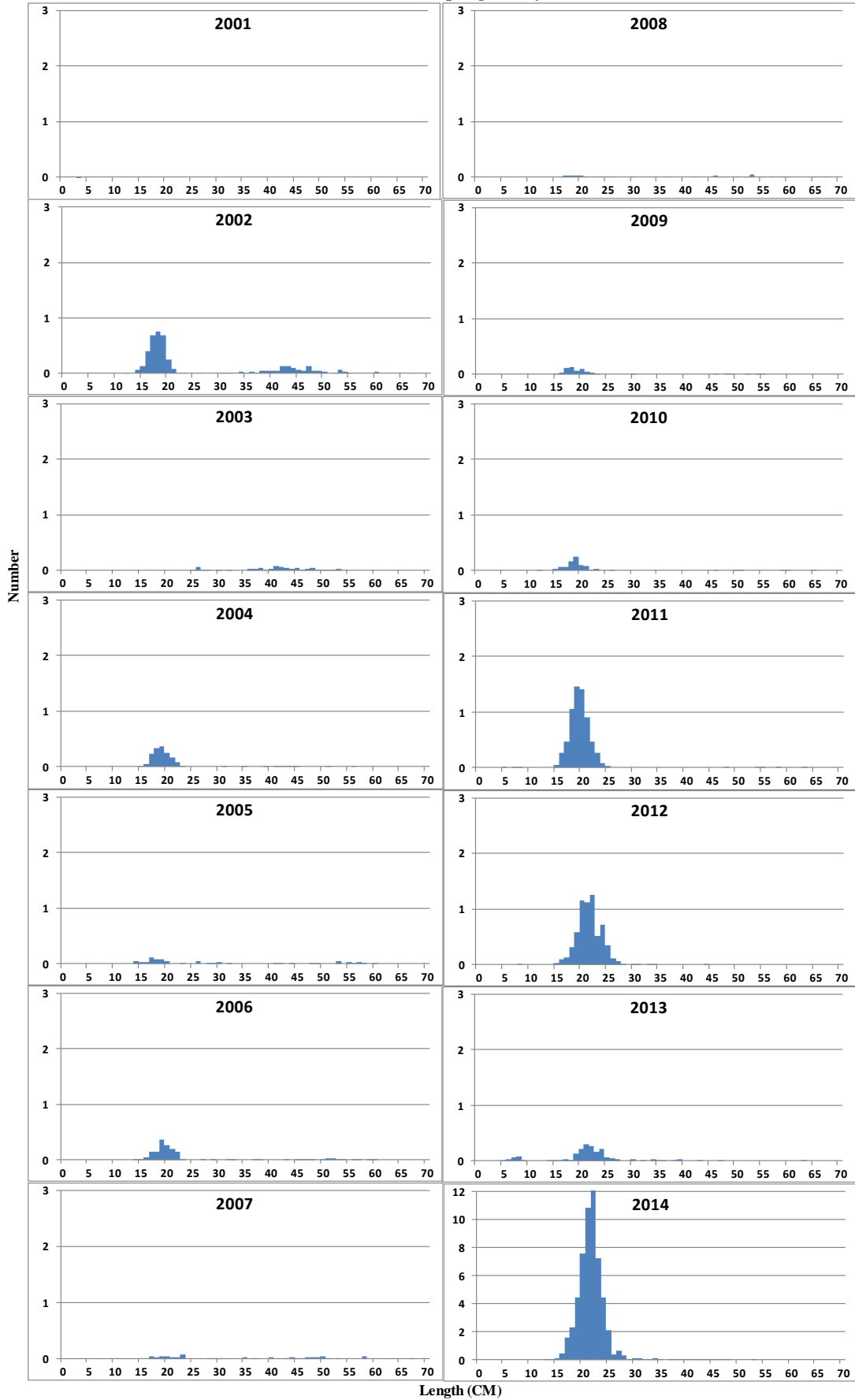
SPRING

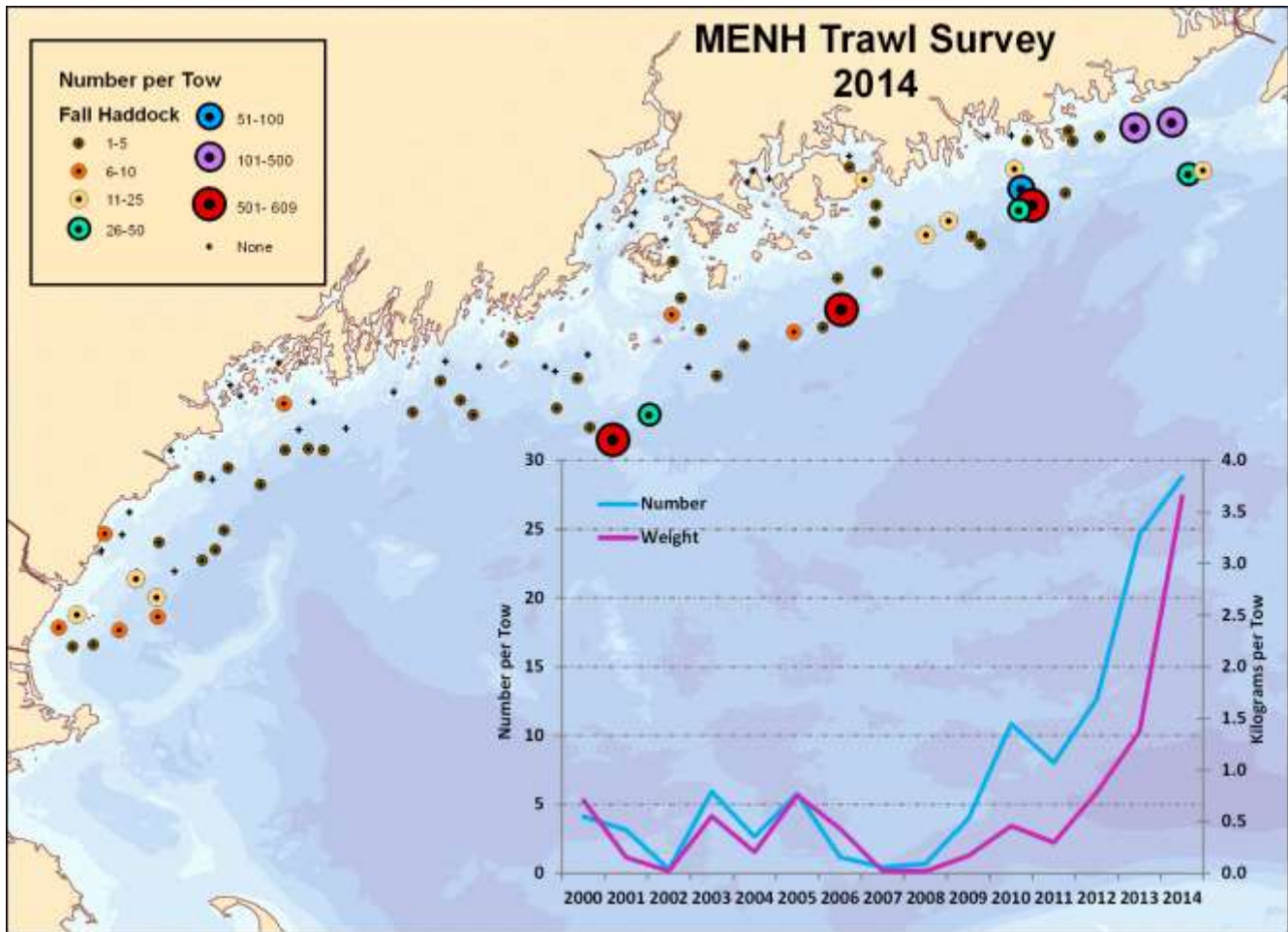
Stratified Mean

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

Appendix C

Haddock - MENH Spring Surveys





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

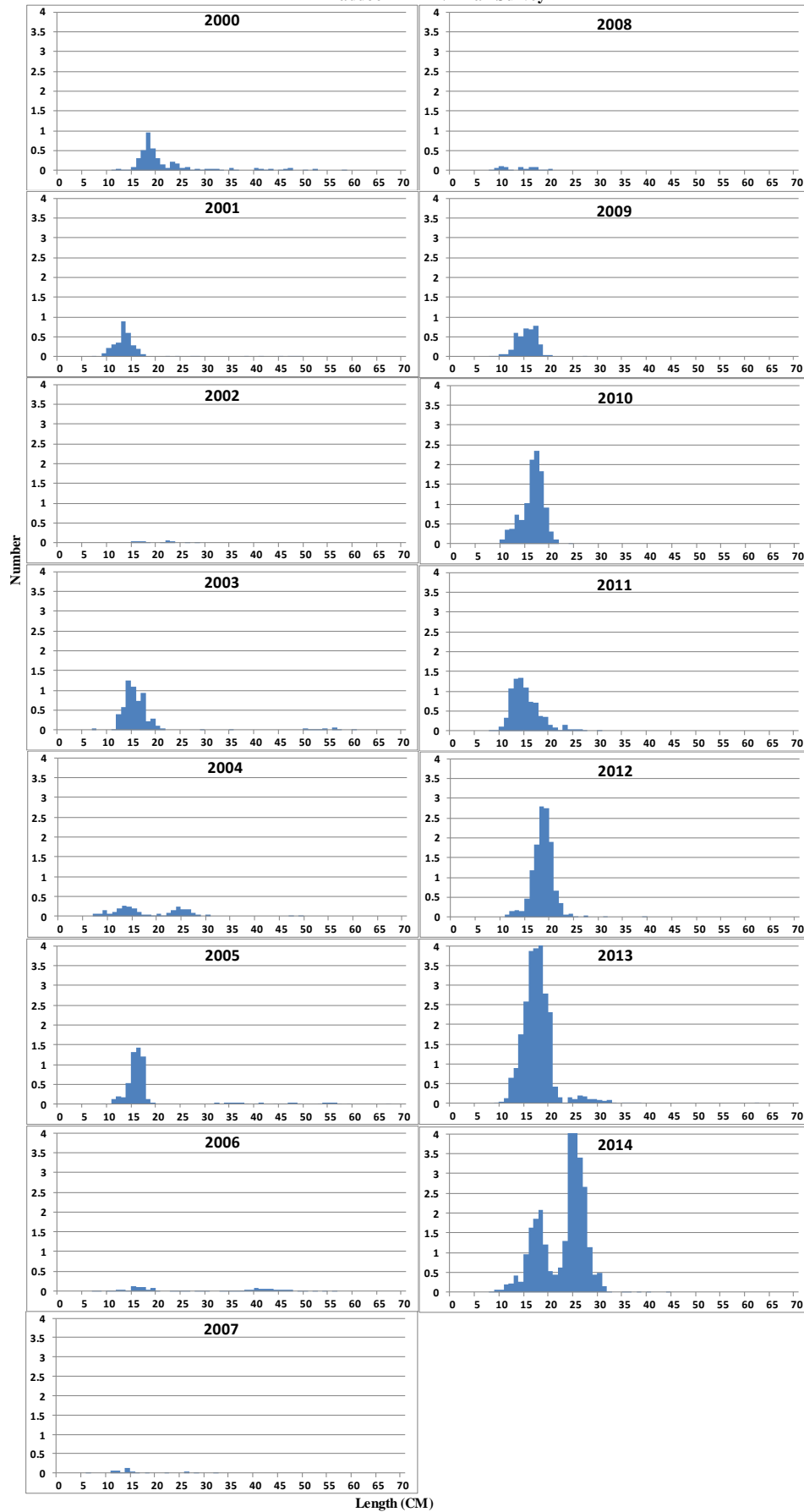
FALL

Stratified Mean

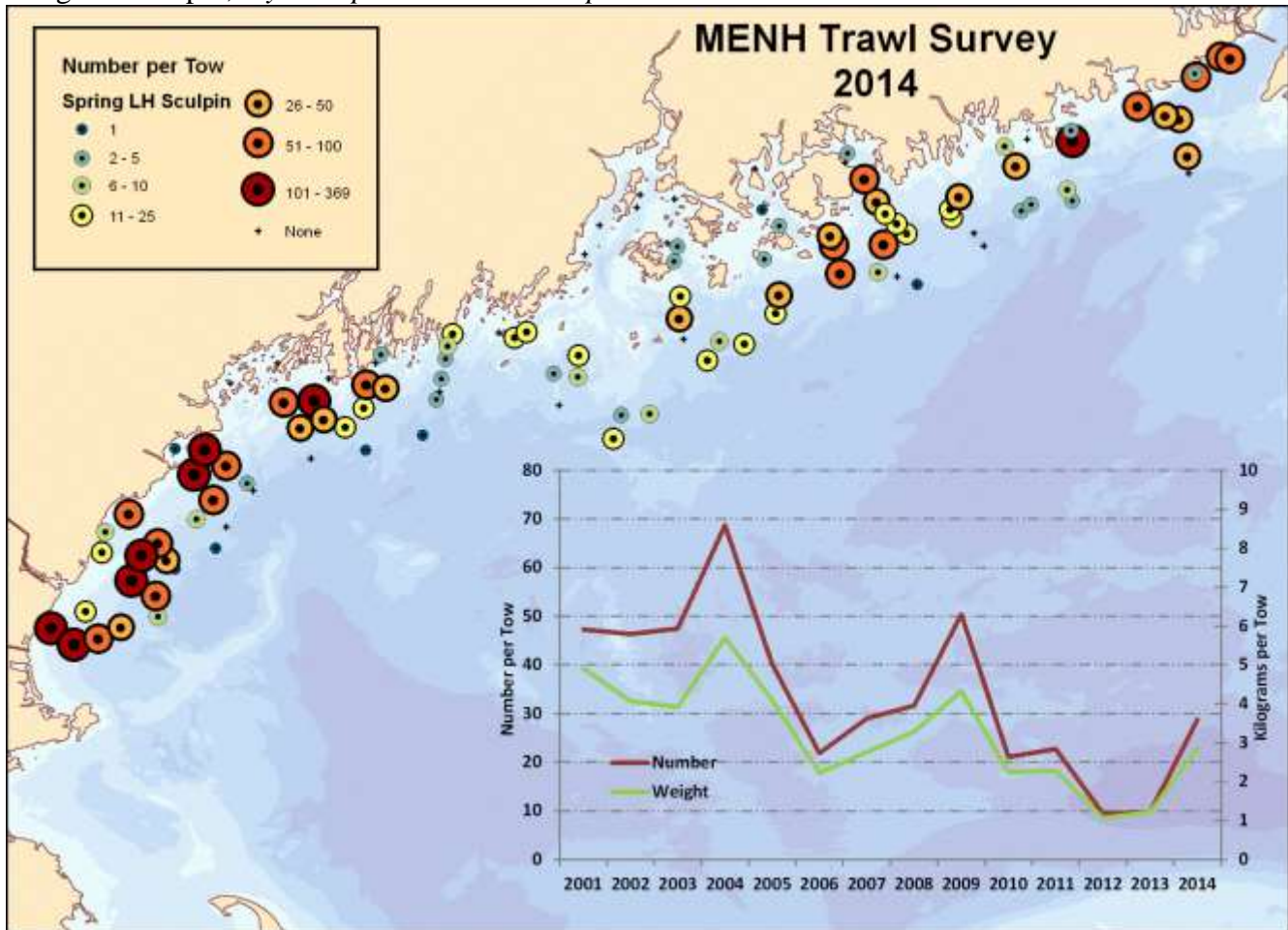
	Number		Weight	
	Mean	CV	Mean	CV
2000	4.12	0.71	0.71	1.74
2001	3.14	1.02	0.15	1.06
2002	0.29	0.92	0.02	1.23
2003	5.94	0.94	0.55	0.73
2004	2.65	0.71	0.21	0.80
2005	5.75	0.18	0.76	1.34
2006	1.18	1.27	0.43	2.22
2007	0.44	1.08	0.02	0.53
2008	0.68	0.59	0.02	0.53
2009	3.99	0.67	0.17	0.56
2010	10.86	0.64	0.46	0.68
2011	8.02	0.78	0.30	0.71
2012	12.65	0.67	0.78	0.68
2013	24.63	0.46	1.37	0.57
2014	28.76	0.88	3.65	1.08

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

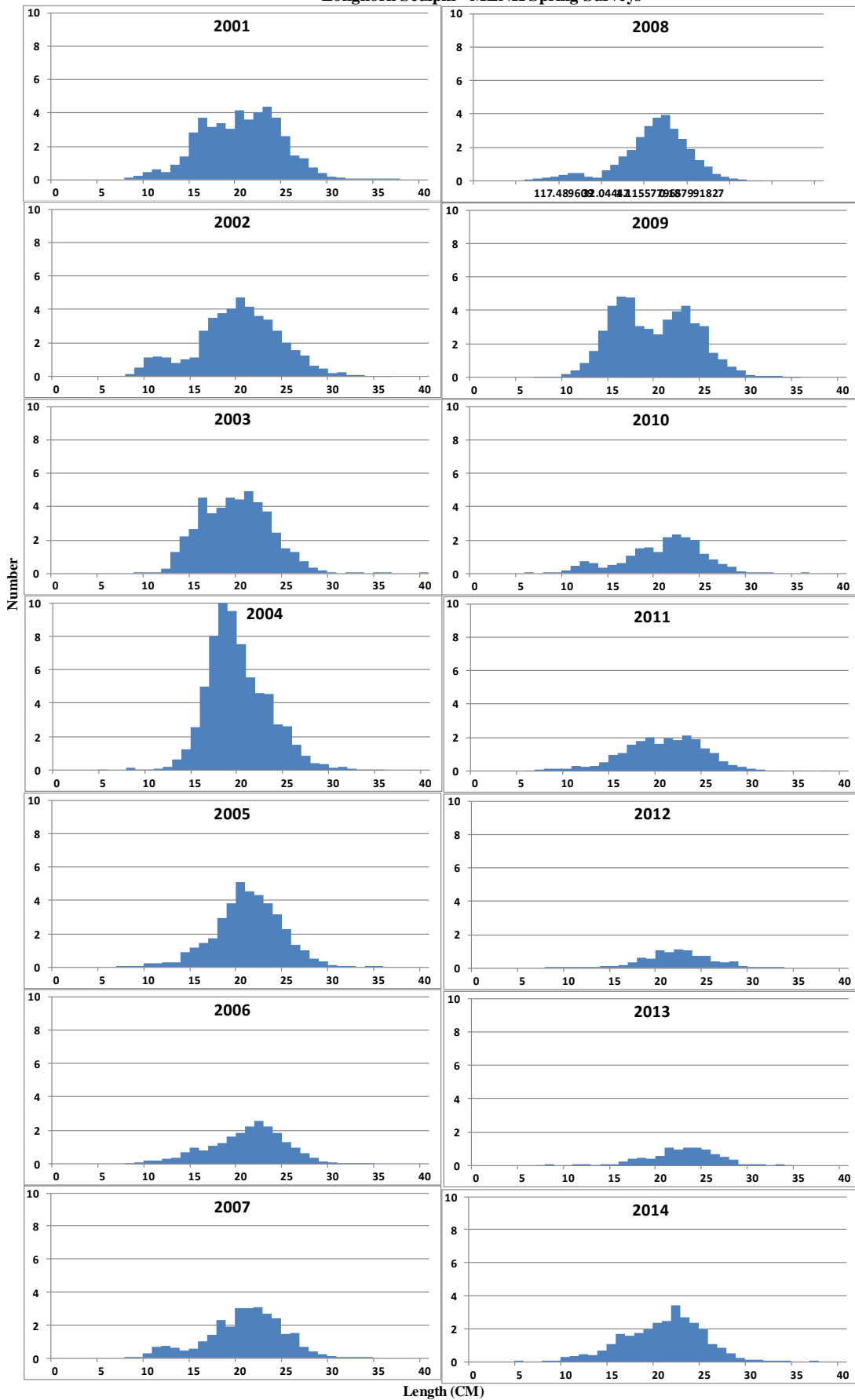
SPRING

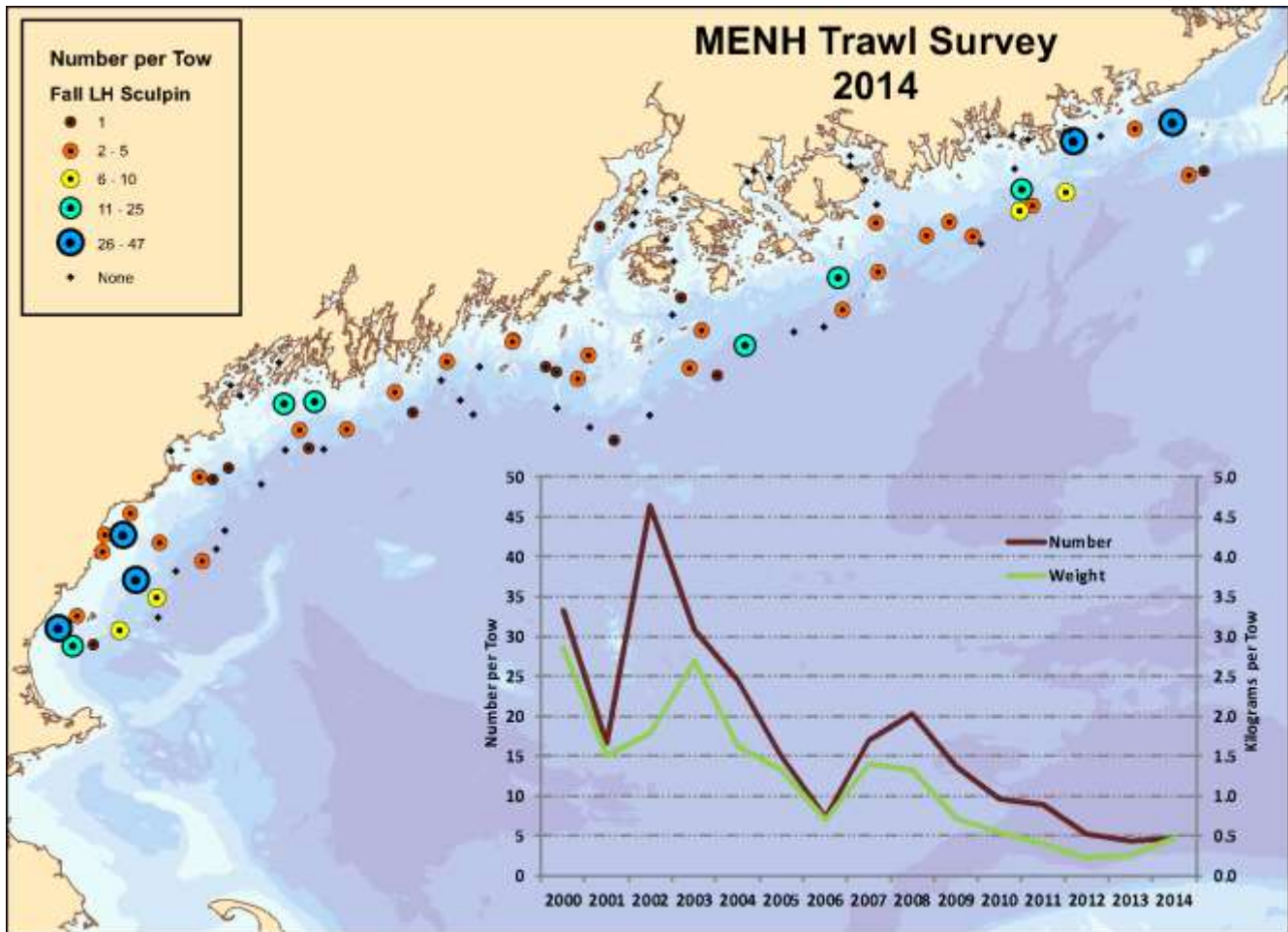
Stratified Mean

	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

Appendix C

Longhorn Sculpin - MENH Spring Surveys





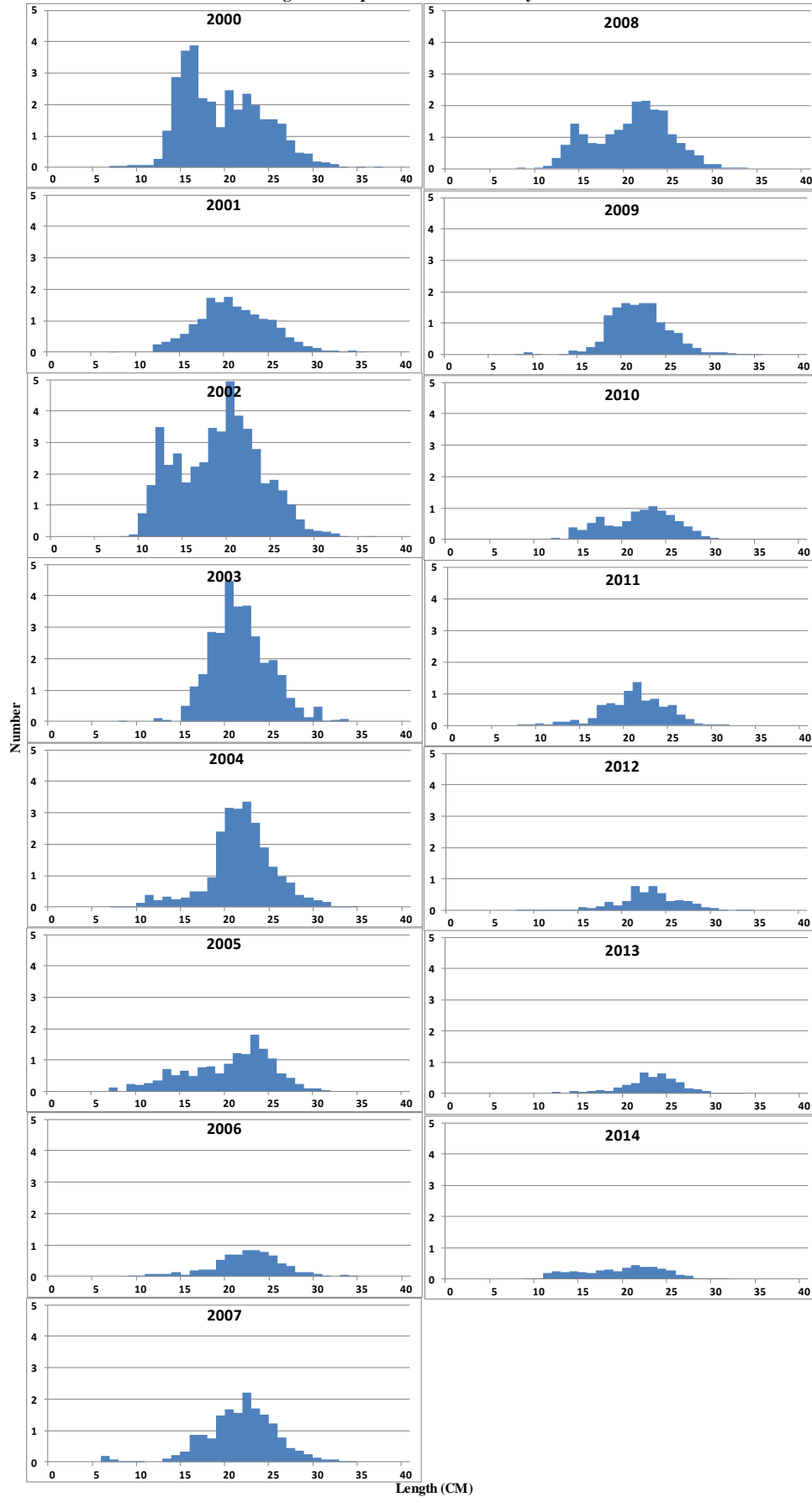
Means and coefficients of variance for graph overlain on above map fixed stations **not** included for LH sculpin, calculated for regions 1 through 5; Strata 1 through 4
FALL

Stratified Mean

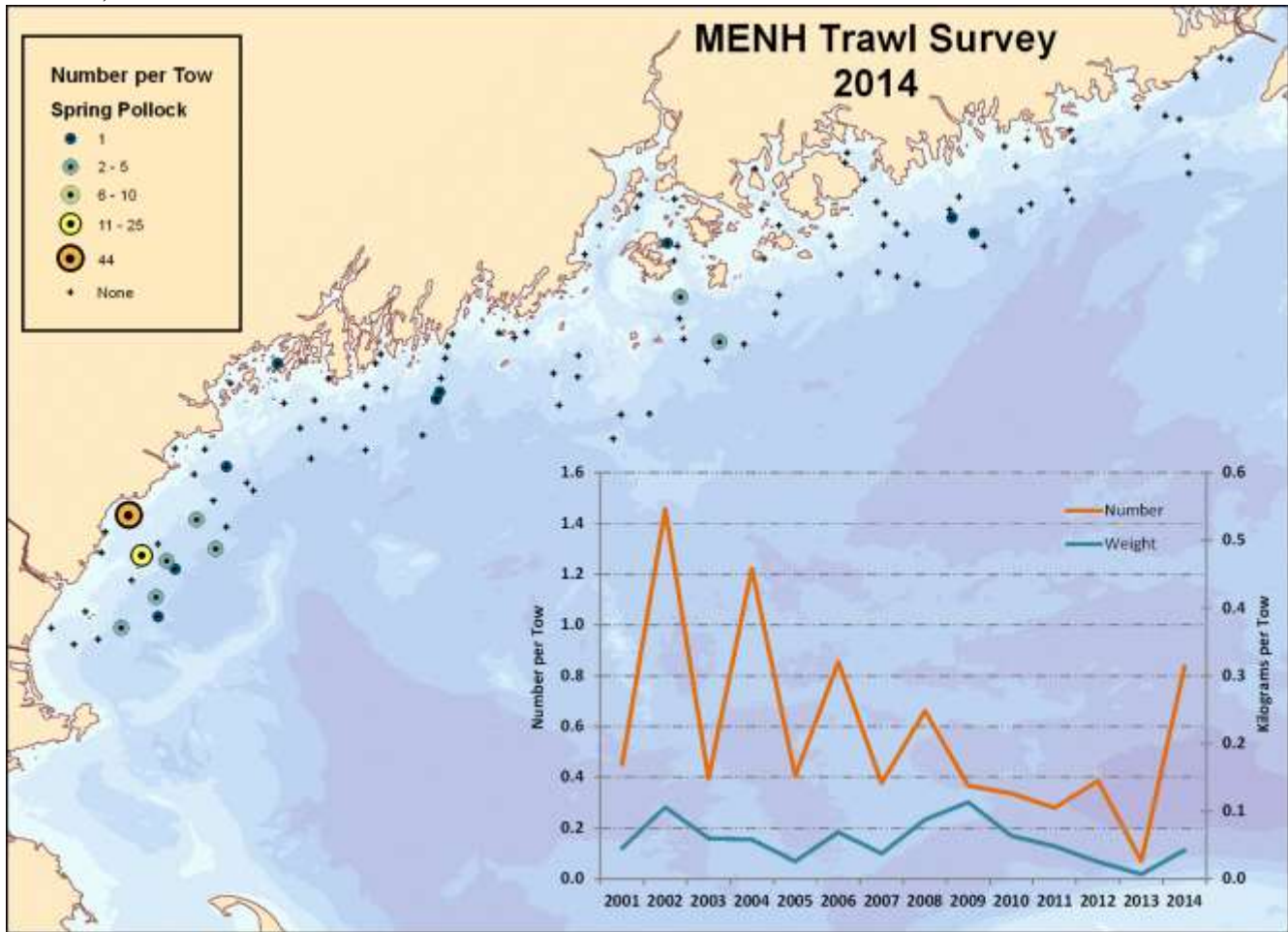
	Number		Weight	
	Mean	CV	Mean	CV
2000	33.20	0.48	2.84	0.27
2001	16.66	0.46	1.50	0.42
2002	46.40	0.36	1.79	0.63
2003	30.75	0.11	2.69	0.13
2004	24.45	0.39	1.64	0.32
2005	15.01	0.28	1.32	0.32
2006	7.27	0.29	0.70	0.31
2007	17.00	0.39	1.40	0.35
2008	20.25	0.26	1.32	0.35
2009	13.68	0.25	0.72	0.39
2010	9.62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



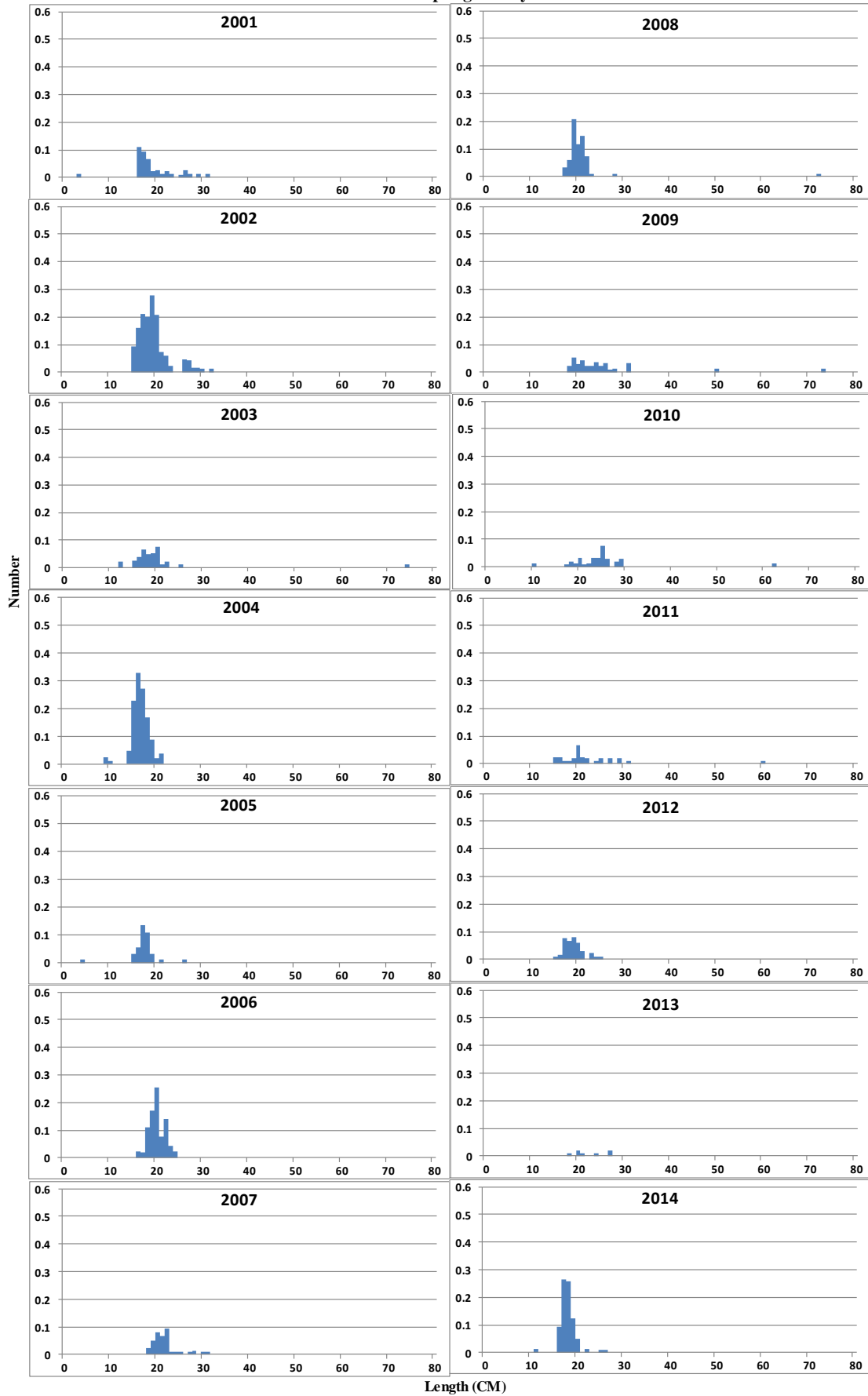
Means and coefficients of variance for graph overlain on above map fixed stations not included for pollock, calculated for regions 1 through 5; Strata 1 through 4
SPRING

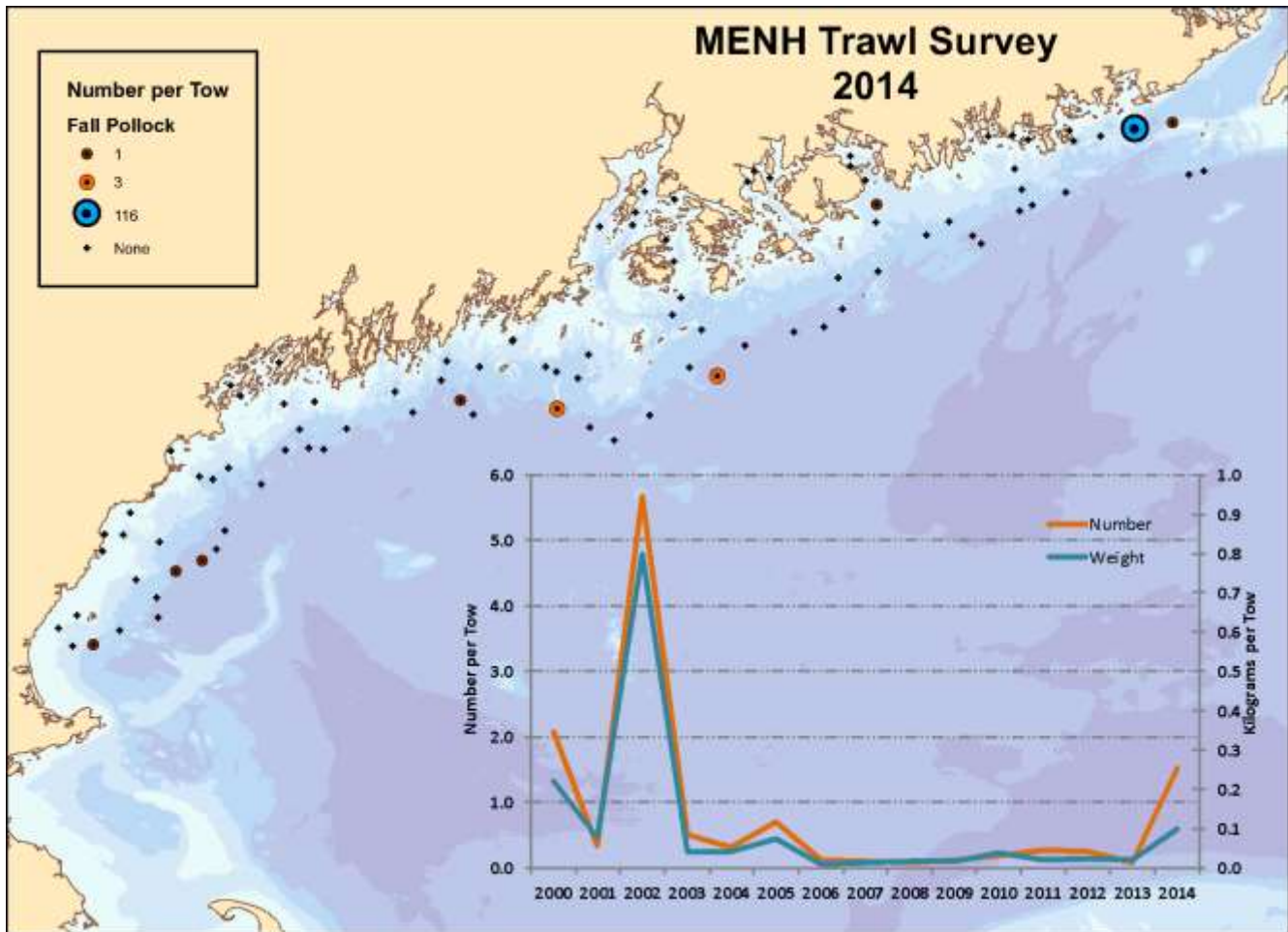
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	0.45	0.81	0.05	0.89
2002	1.46	0.56	0.11	0.59
2003	0.40	0.56	0.06	1.03
2004	1.22	0.54	0.06	0.48
2005	0.41	2.08	0.03	1.95
2006	0.85	1.28	0.07	1.30
2007	0.38	1.44	0.04	1.22
2008	0.66	1.76	0.09	1.44
2009	0.37	0.79	0.11	1.26
2010	0.34	0.88	0.06	1.15
2011	0.28	0.88	0.05	1.03
2012	0.39	1.33	0.03	1.23
2013	0.07	1.16	0.01	1.08
2014	0.84	1.24	0.04	1.24

Appendix C

Pollock - MENH Spring Survey





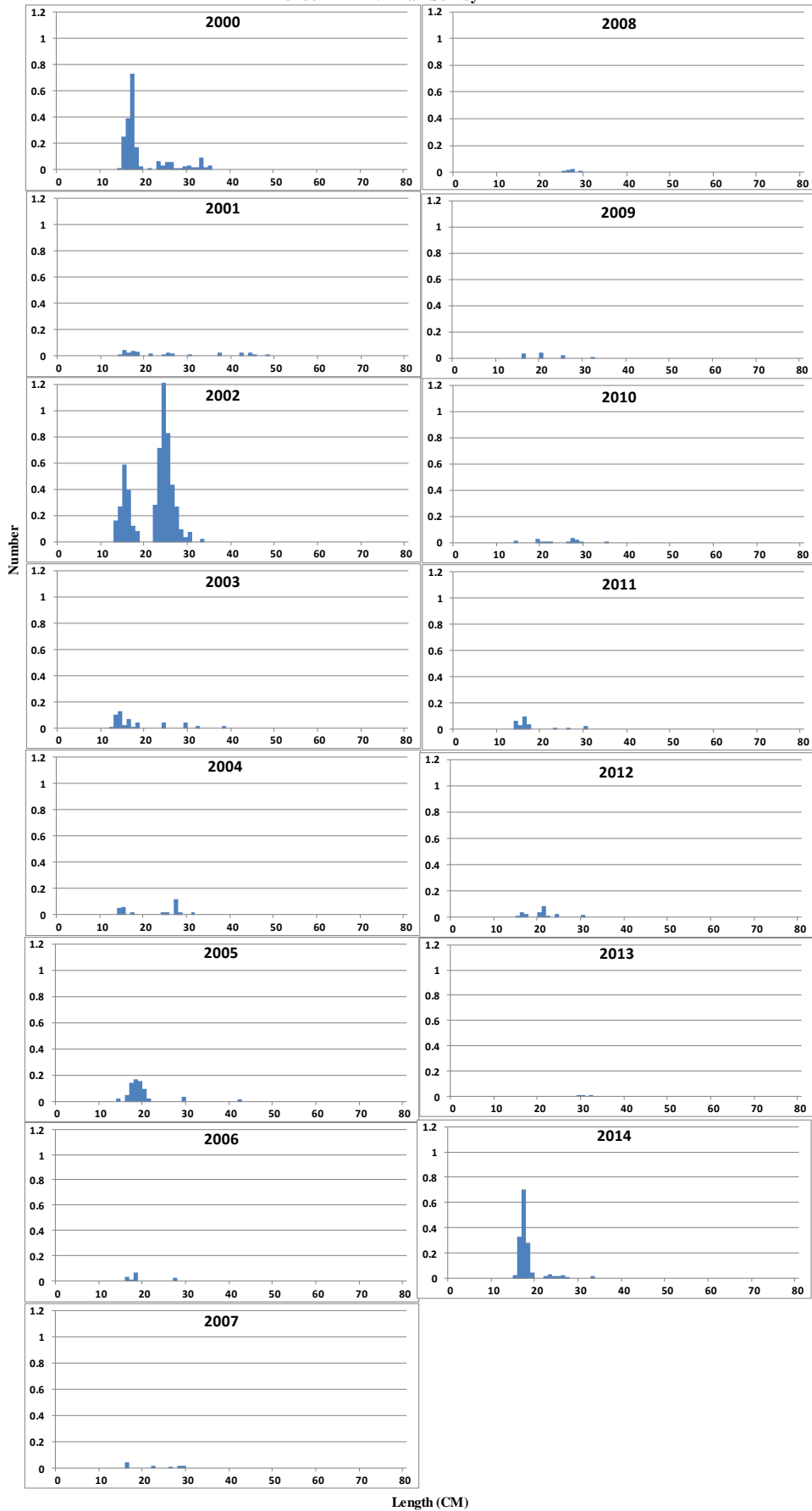
Means and coefficients of variance for graph overlain on above map
 fixed stations not included
 for pollock, calculated for regions 1 through 5; Strata 1 through 4
FALL

Stratified Mean

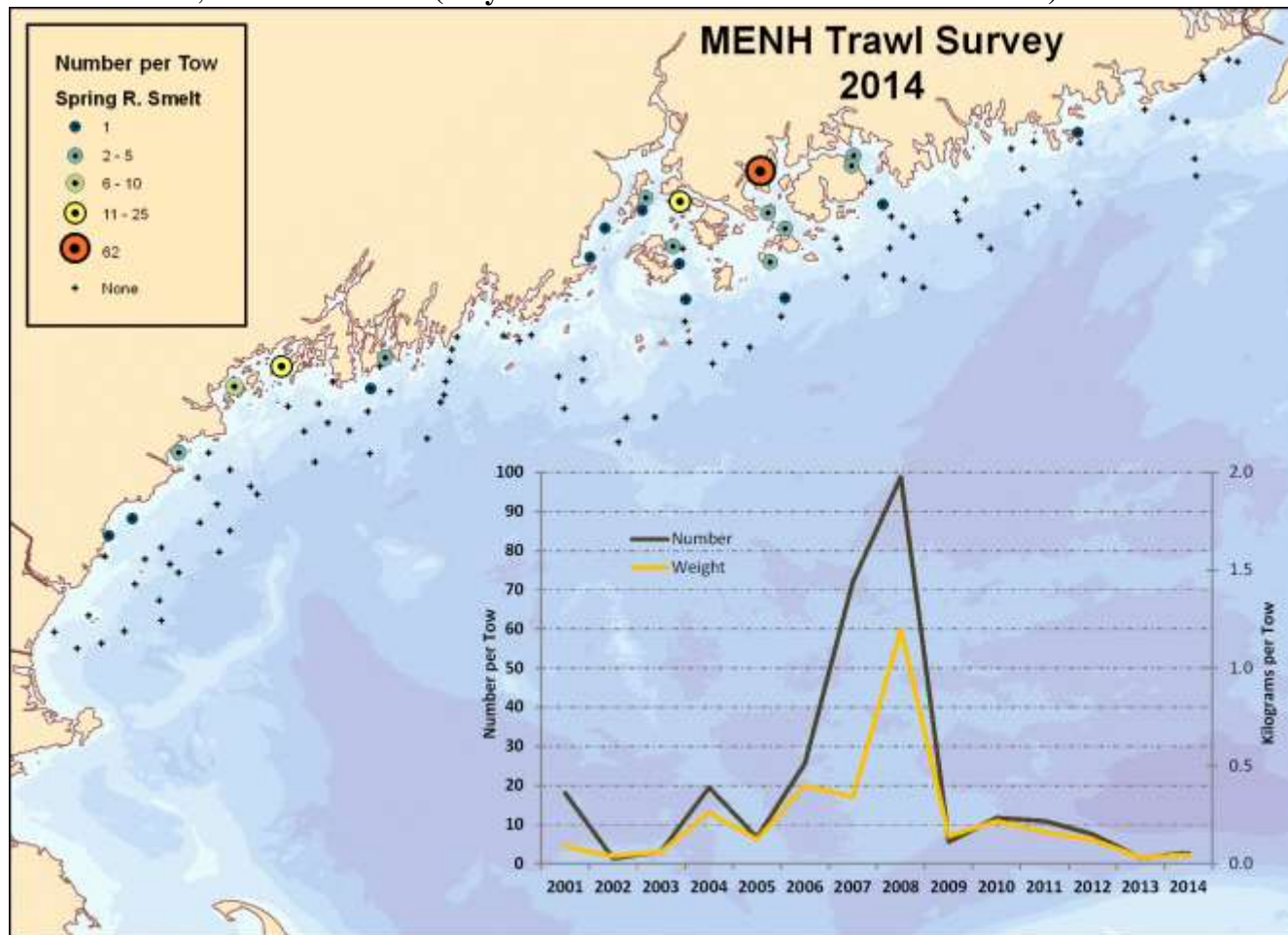
	Number		Weight	
	Mean	CV	Mean	CV
2000	2.08	1.21	0.22	0.67
2001	0.33	0.53	0.08	0.68
2002	5.68	1.65	0.80	1.80
2003	0.51	0.57	0.04	0.60
2004	0.31	0.68	0.04	0.60
2005	0.71	0.11	0.07	0.42
2006	0.13	0.88	0.01	0.91
2007	0.11	1.04	0.01	0.93
2008	0.07	0.82	0.02	0.84
2009	0.12	0.70	0.02	0.88
2010	0.19	0.63	0.04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

Appendix C

Pollock - MENH Fall Survey



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



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

for smelt, indices calculated for regions 1 through 5; Strata 1 and 2

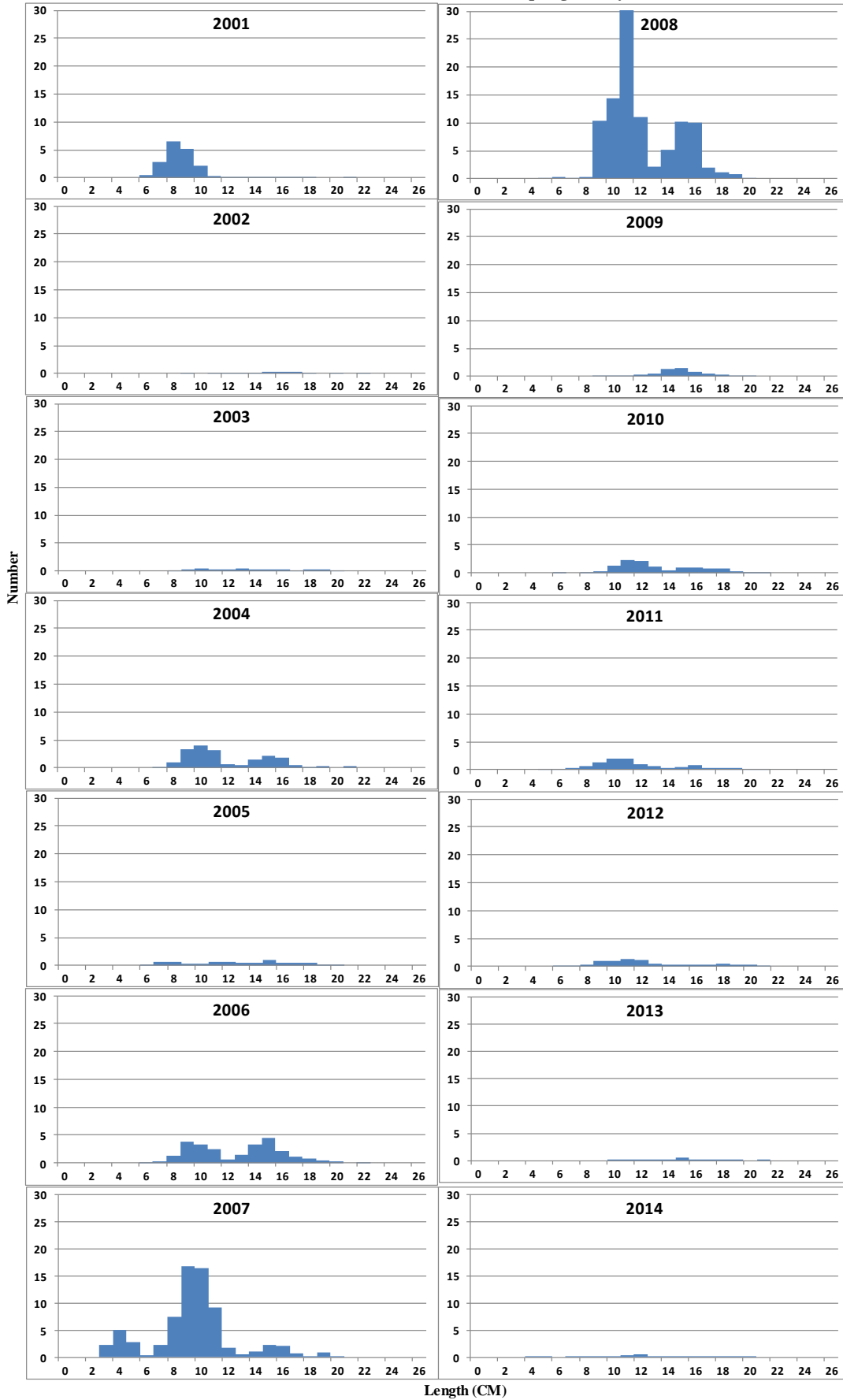
SPRING

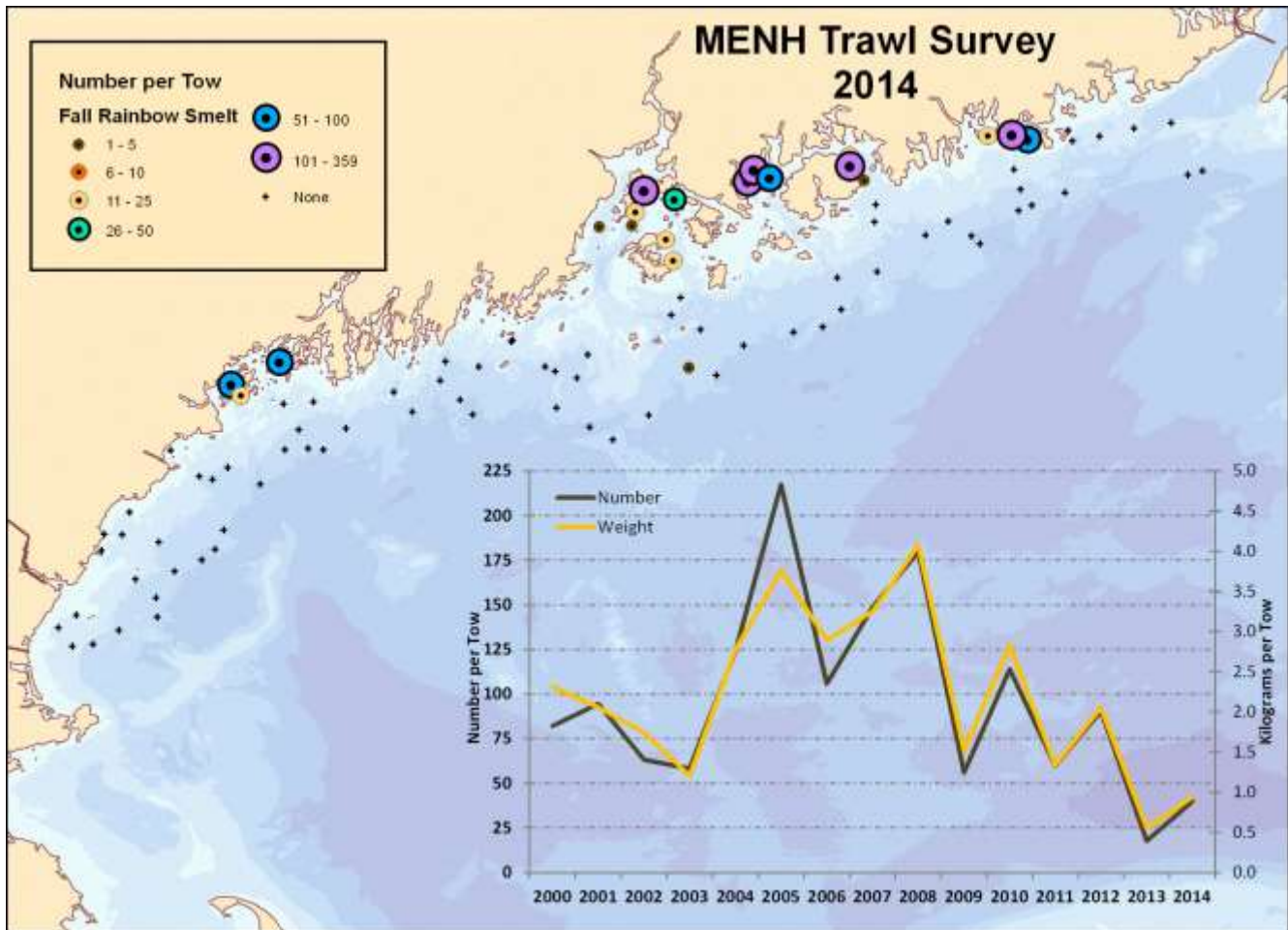
Stratified Mean

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

Appendix C

Rainbow Smelt - MENH Spring Surveys





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

for smelt, indices calculated for regions 1 through 5; Strata 1 and 2

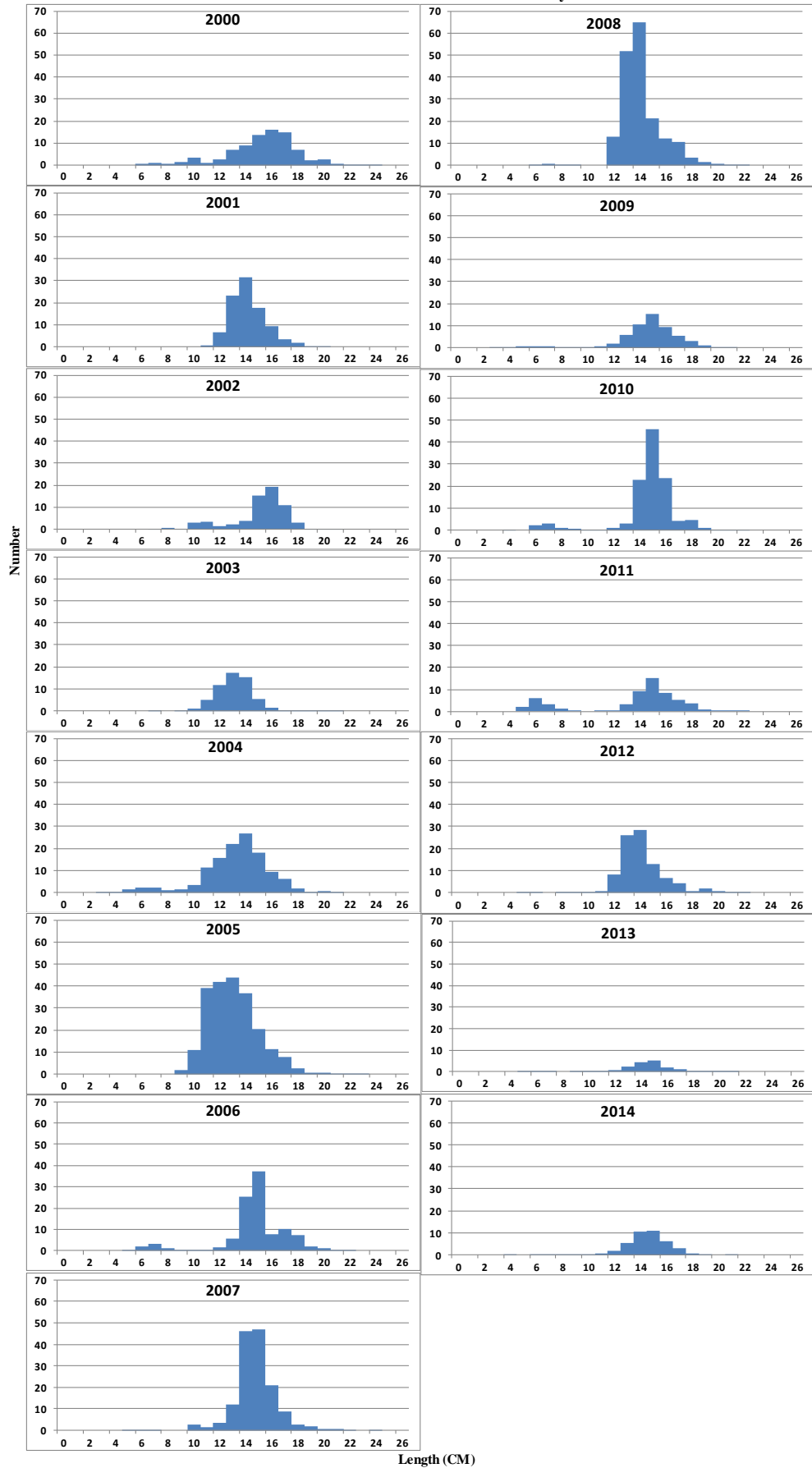
FALL

Stratified Mean

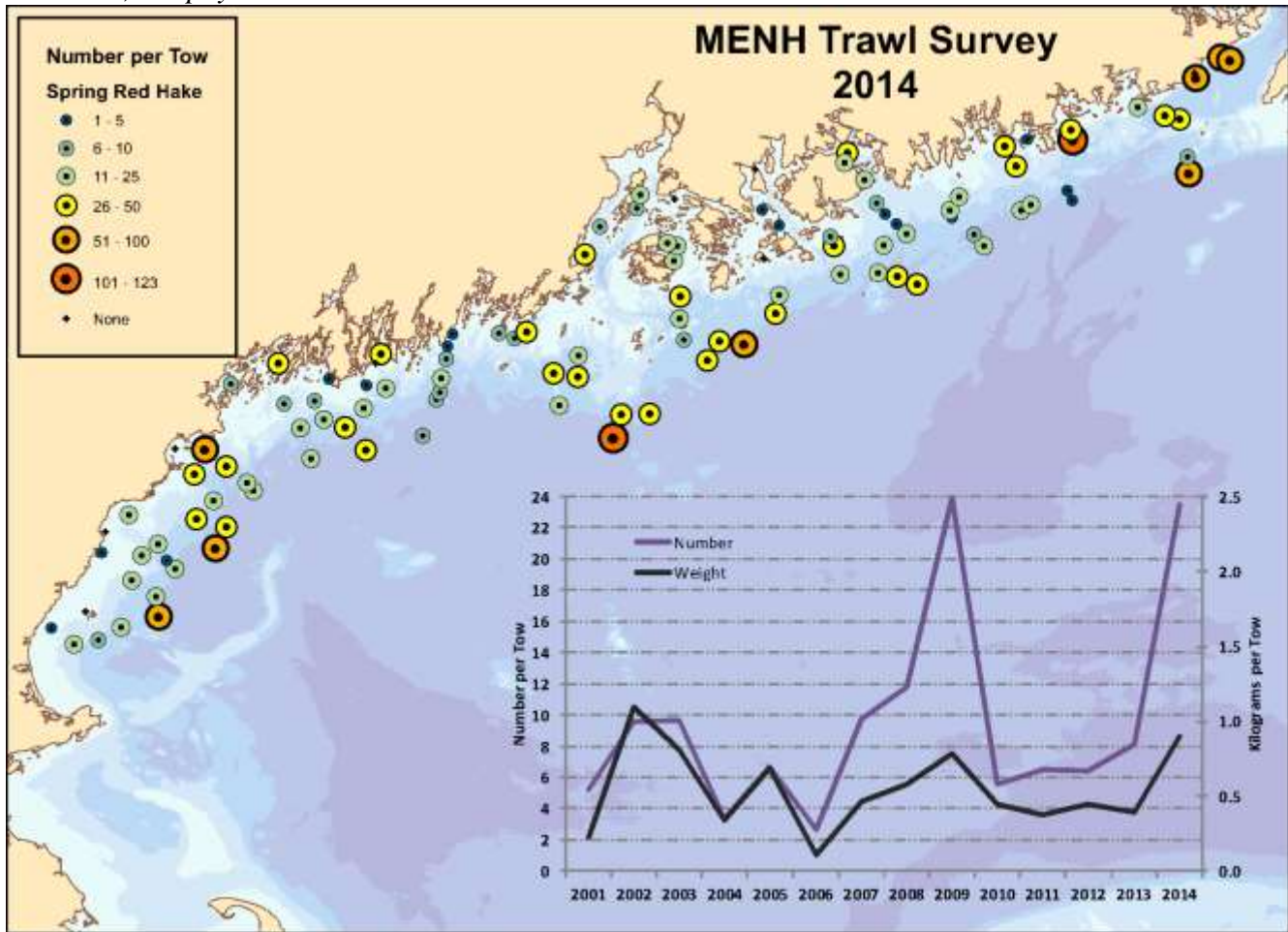
	Number		Weight	
	Mean	CV	Mean	CV
2000	82.20	1.18	2.32	1.35
2001	94.54	0.39	2.05	0.42
2002	63.24	1.56	1.74	1.52
2003	58.18	0.48	1.20	0.45
2004	123.81	0.61	2.77	0.61
2005	217.34	0.32	3.77	0.37
2006	105.85	1.10	2.89	0.96
2007	148.49	1.12	3.25	1.03
2008	179.87	1.23	4.07	1.16
2009	56.05	0.78	1.52	0.86
2010	113.81	1.42	2.83	1.50
2011	59.94	0.31	1.34	0.35
2012	84.40	0.97	1.91	0.99
2013	17.62	0.83	0.55	1.08
2014	39.94	0.40	0.94	0.39

Appendix C

Rainbow Smelt - MENH Fall Surveys



Red hake, *Urophycis chuss*



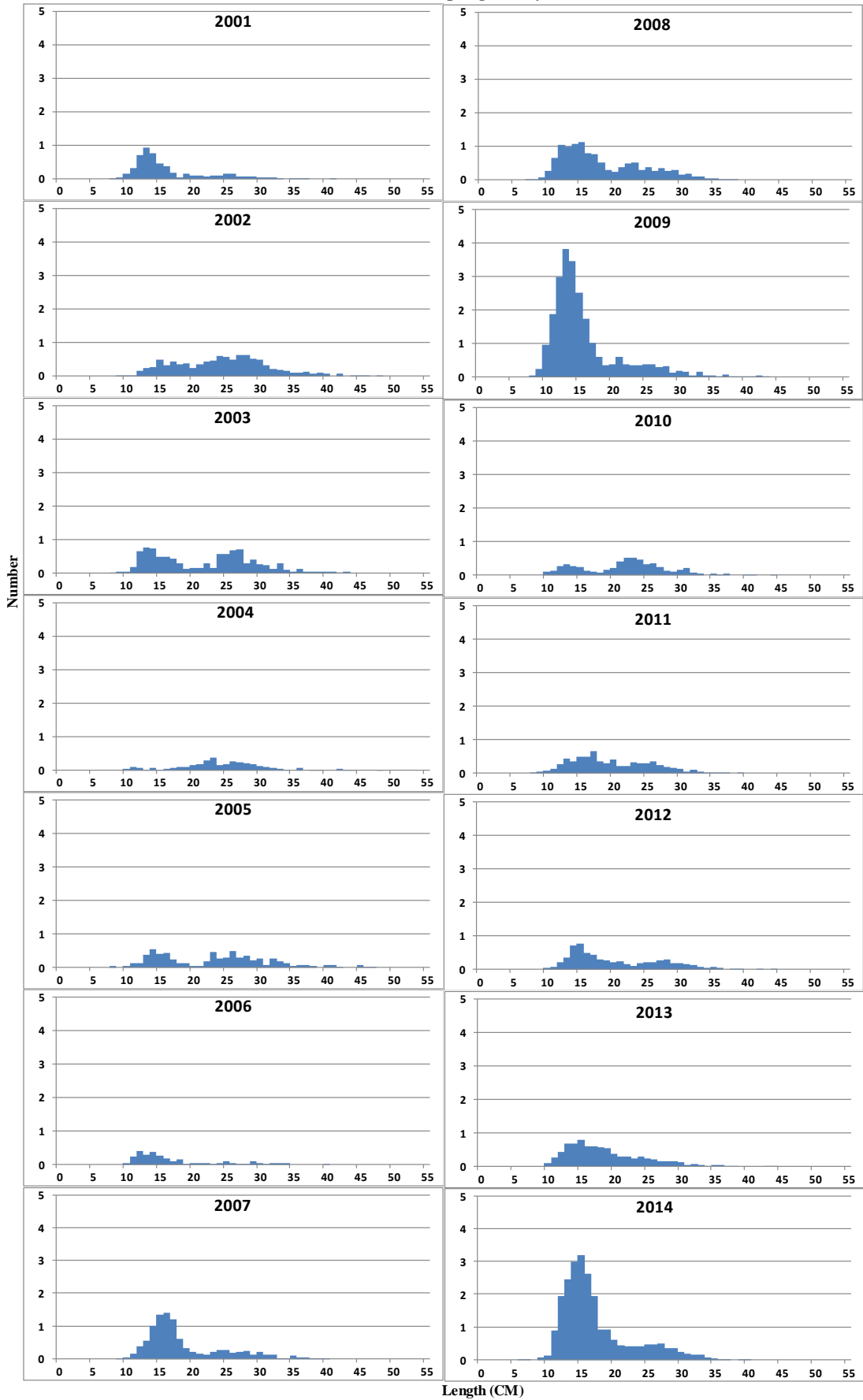
Mean and coefficients of variance for graph overlain on above map fixed stations **not** included for red hake, calculated for regions 1 through 5; Strata 1 through 4 **SPRING**

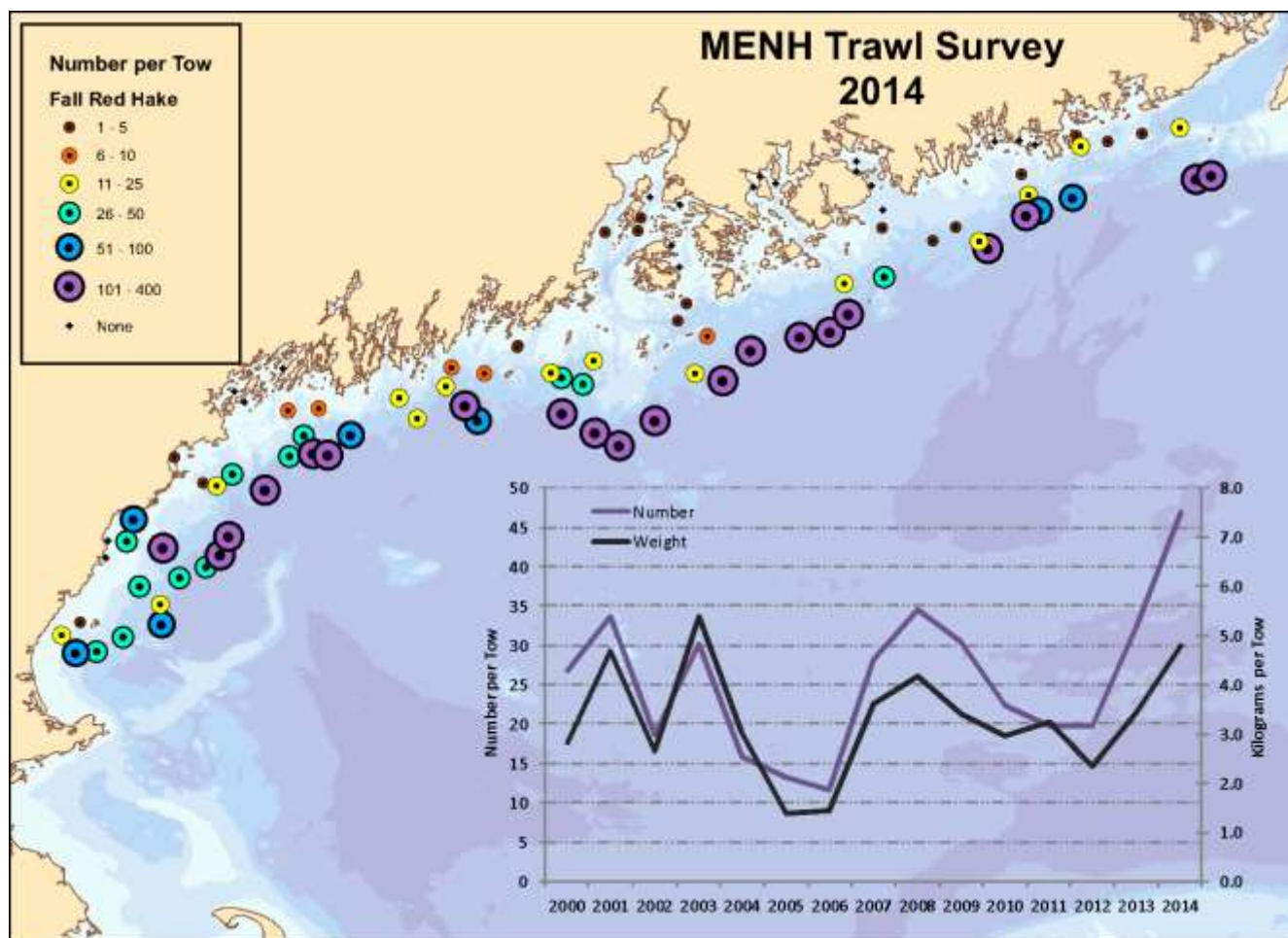
Stratified Mean

	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

Appendix C

Red Hake - MENH Spring Survey





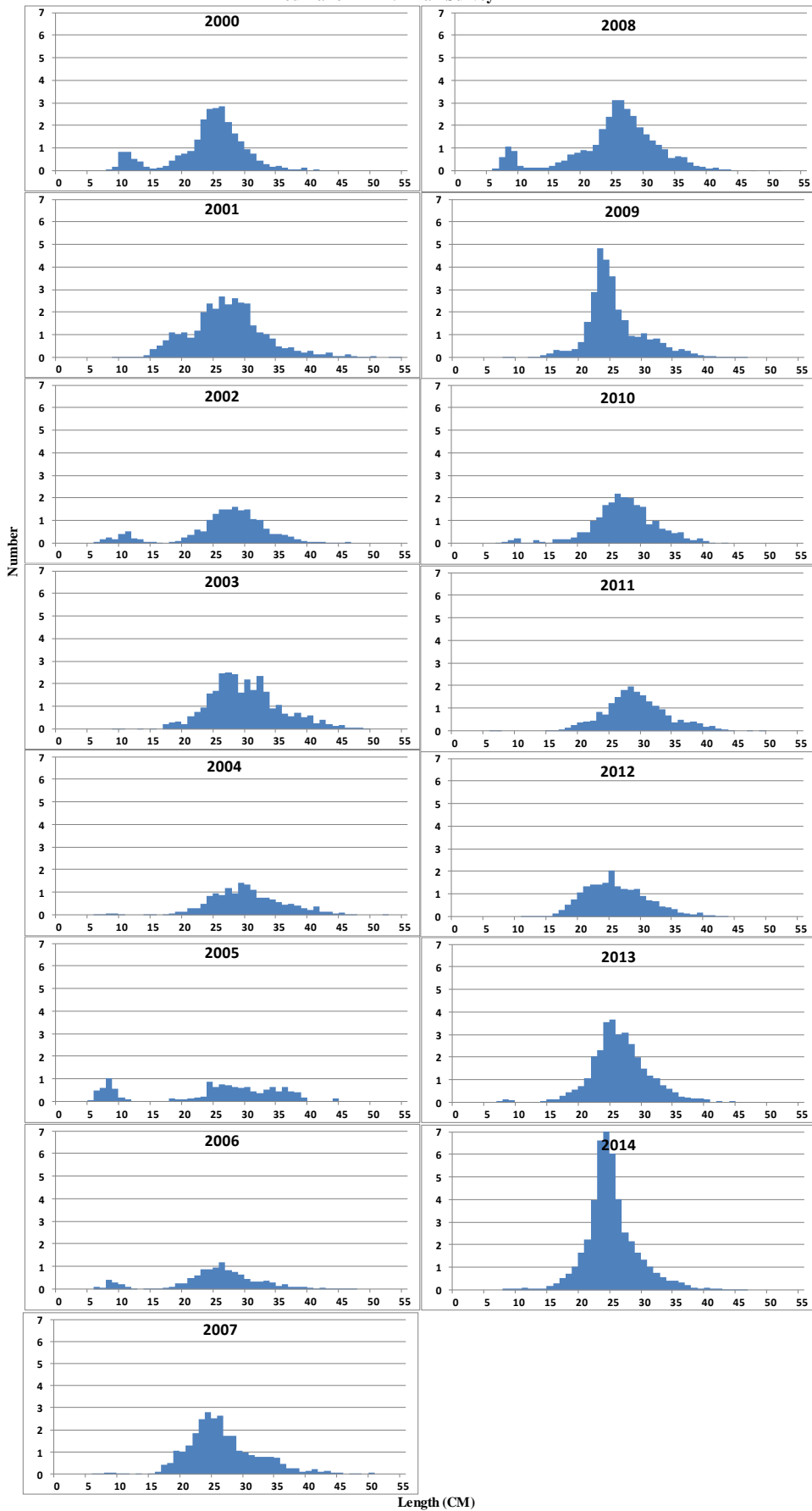
Mean and coefficients of variance for graph overlain on above map fixed stations not included for red hake, calculated for regions 1 through 5; Strata 1 through 4
FALL

Stratified Mean

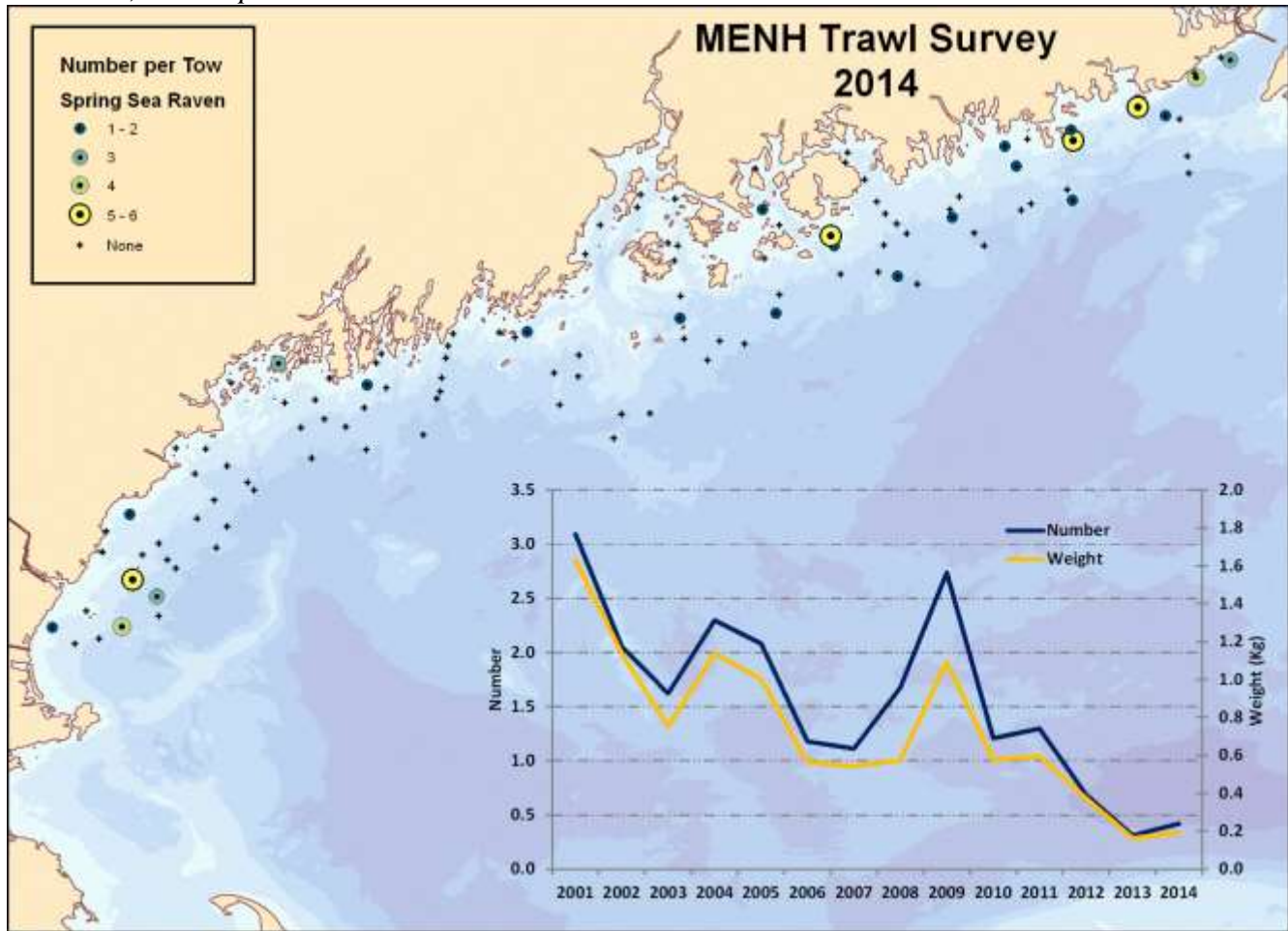
	Number		Weight	
	Mean	CV	Mean	CV
2000	26.71	0.29	2.81	0.29
2001	33.66	0.34	4.68	0.33
2002	18.67	0.38	2.64	0.42
2003	30.07	0.14	5.39	0.14
2004	15.81	0.19	3.00	0.22
2005	13.20	0.15	1.39	0.24
2006	11.58	0.25	1.45	0.23
2007	28.19	0.24	3.60	0.27
2008	34.50	0.15	4.16	0.11
2009	30.45	0.19	3.41	0.20
2010	22.33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

Appendix C

Red Hake - MENH Fall Survey



Sea raven, *Hemirhamphus americanus*



Mean 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

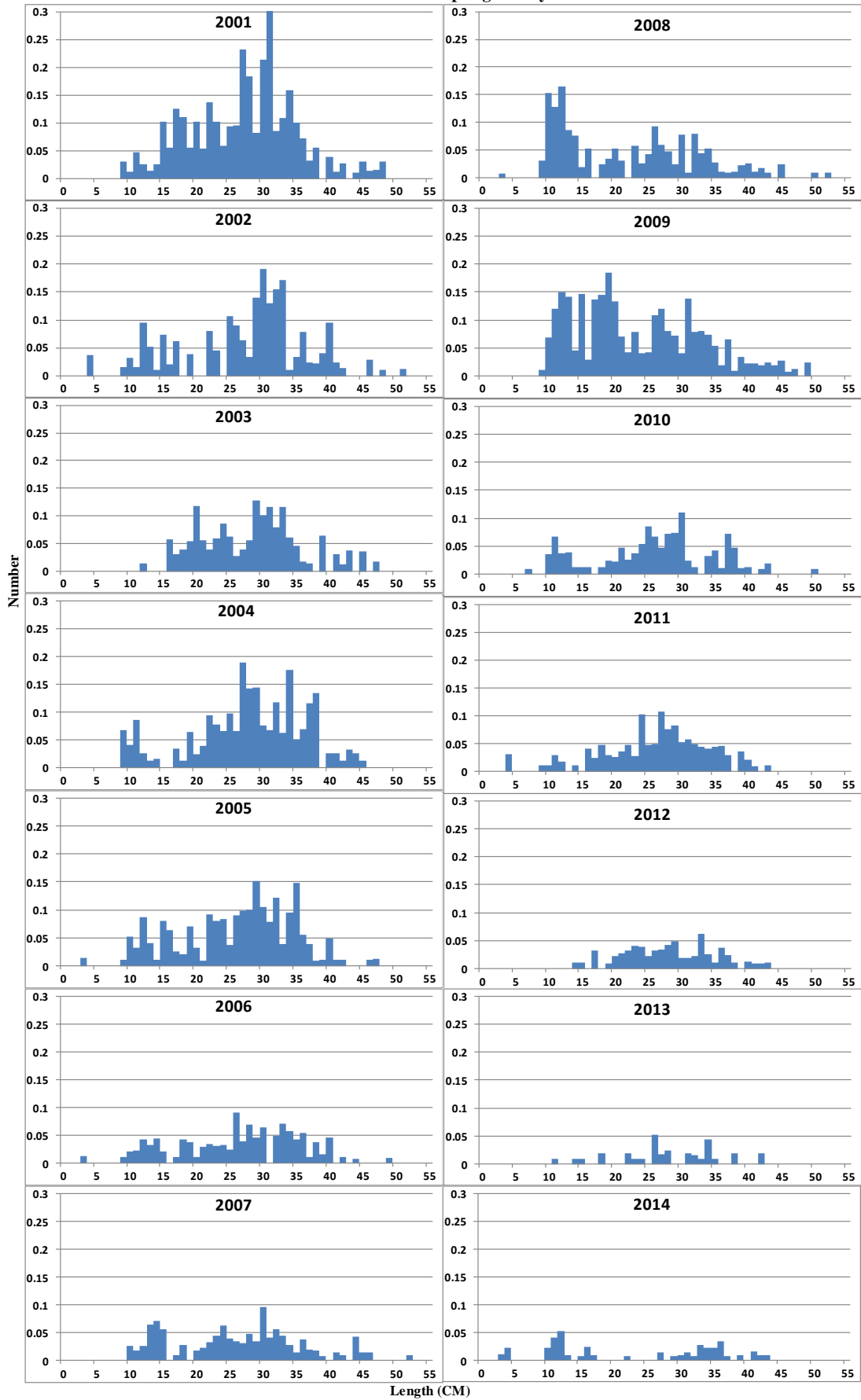
SPRING

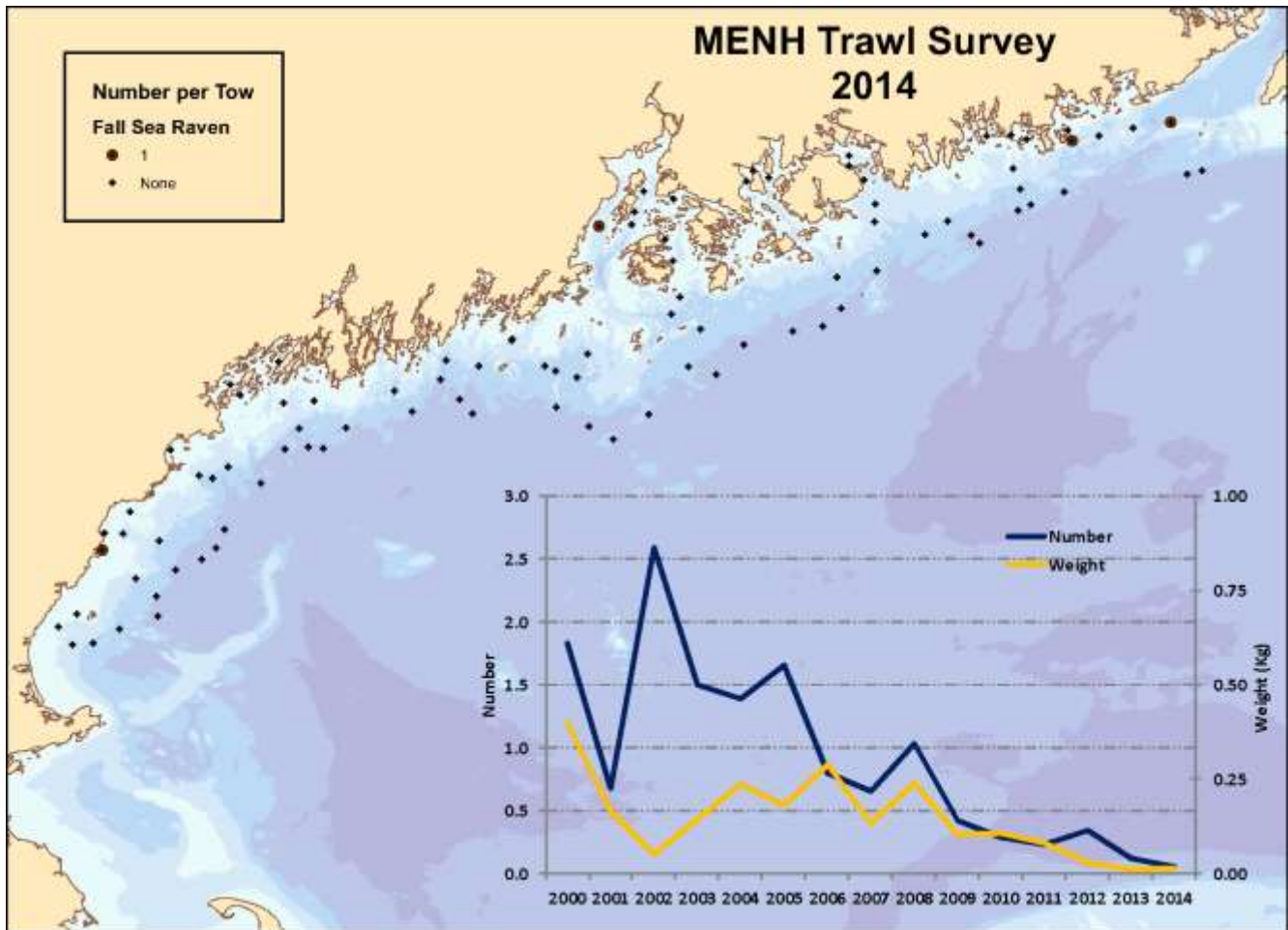
Stratified Mean

	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

Appendix C

Sea Raven - MENH Spring Survey





Mean 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

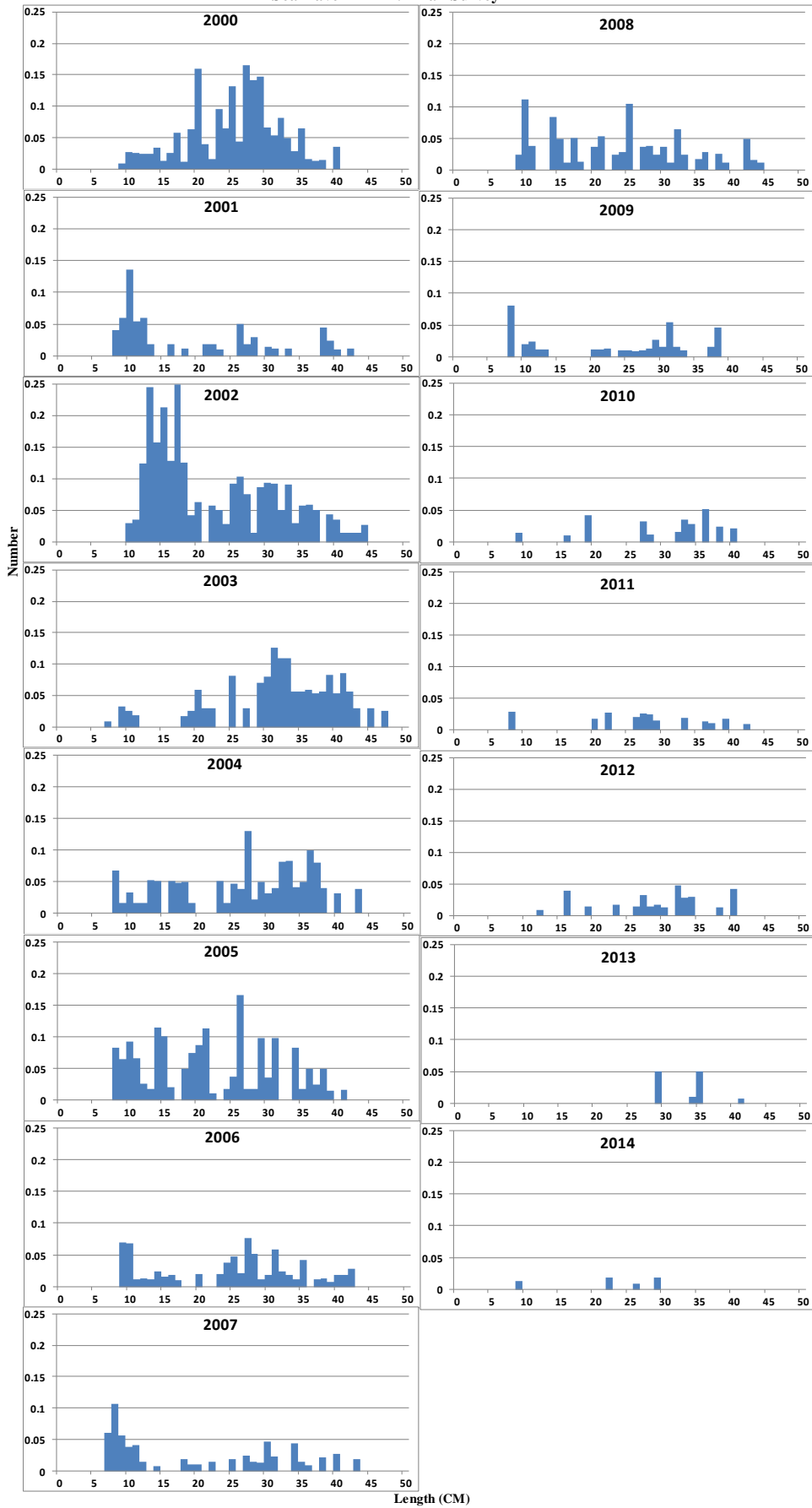
FALL

Stratified Mean

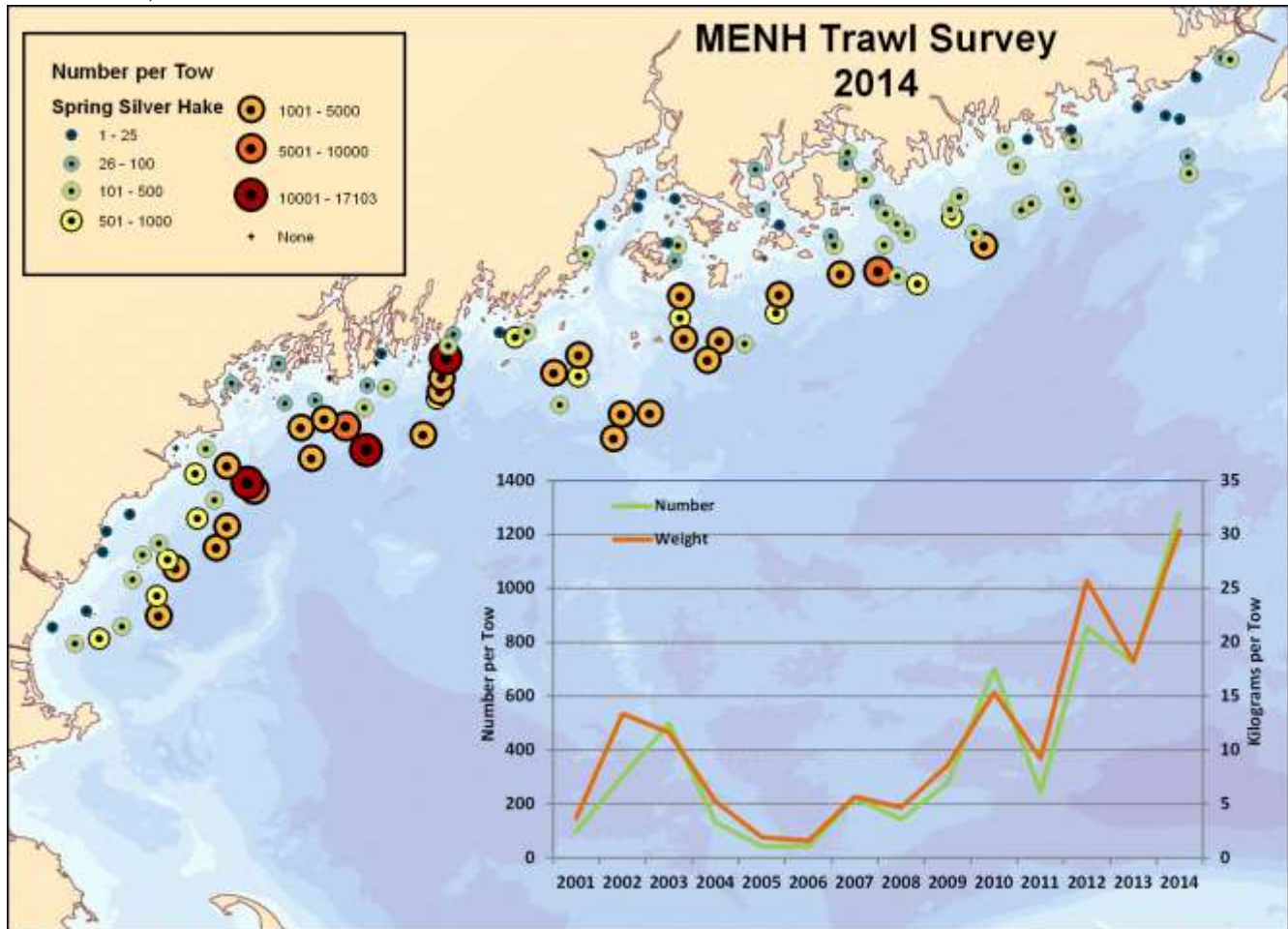
	Number		Weight	
	Mean	CV	Mean	CV
2000	1.83	0.40	0.40	0.51
2001	0.68	0.44	0.16	0.86
2002	2.59	0.64	0.05	0.92
2003	1.50	0.42	0.14	0.55
2004	1.39	0.54	0.24	0.49
2005	1.65	0.16	0.18	0.39
2006	0.80	0.42	0.29	0.53
2007	0.65	0.85	0.13	0.67
2008	1.03	0.51	0.24	0.84
2009	0.43	0.43	0.11	0.58
2010	0.29	0.51	0.11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

Appendix C

Sea Raven - MENH Fall Survey



Silver hake, *Merluccius bilinearis*



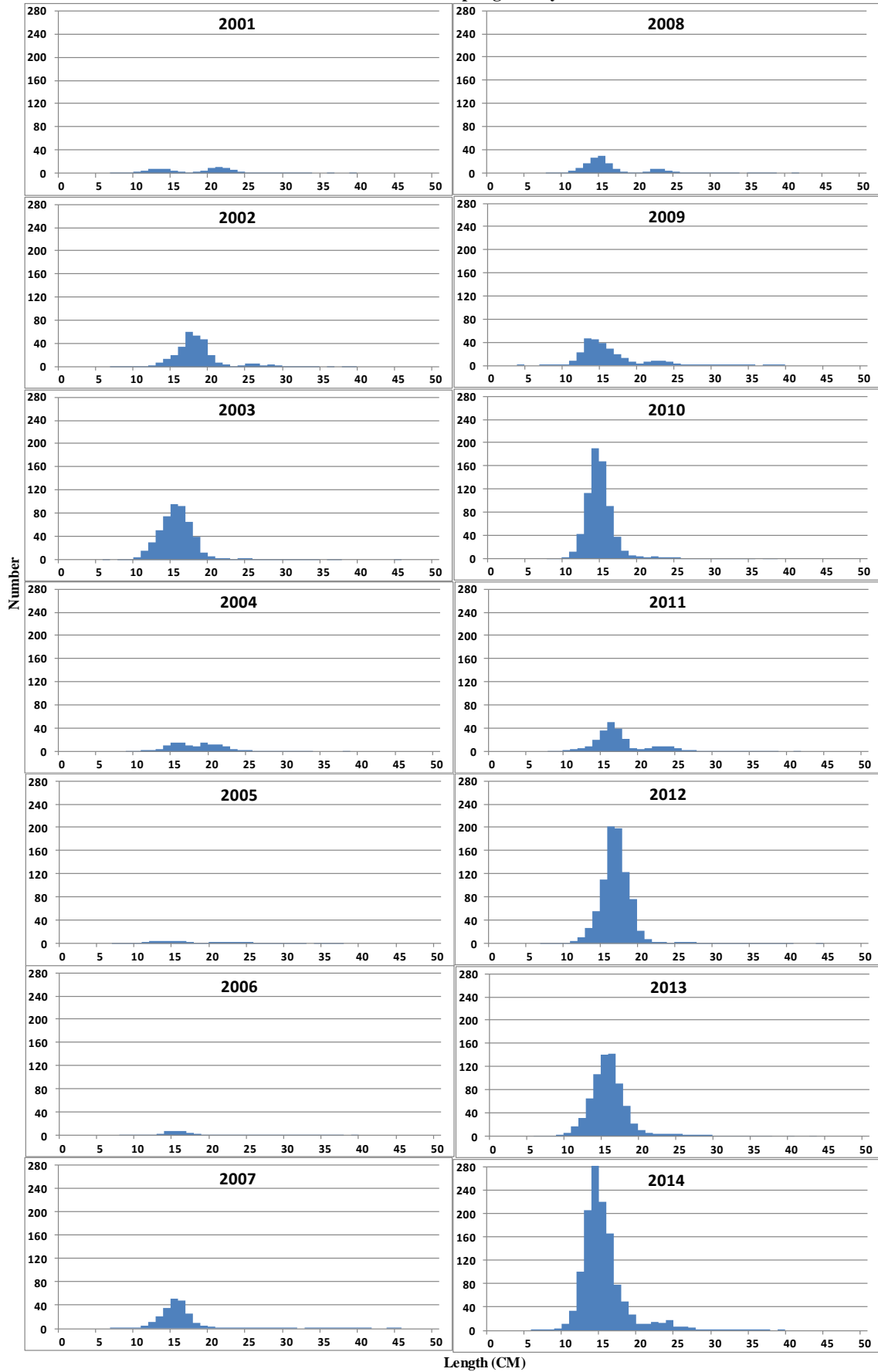
Mean and coefficients of variance for graph overlain on above map fixed stations not included for silver hake, calculated for regions 1 through 5; strata 1 through 4
SPRING

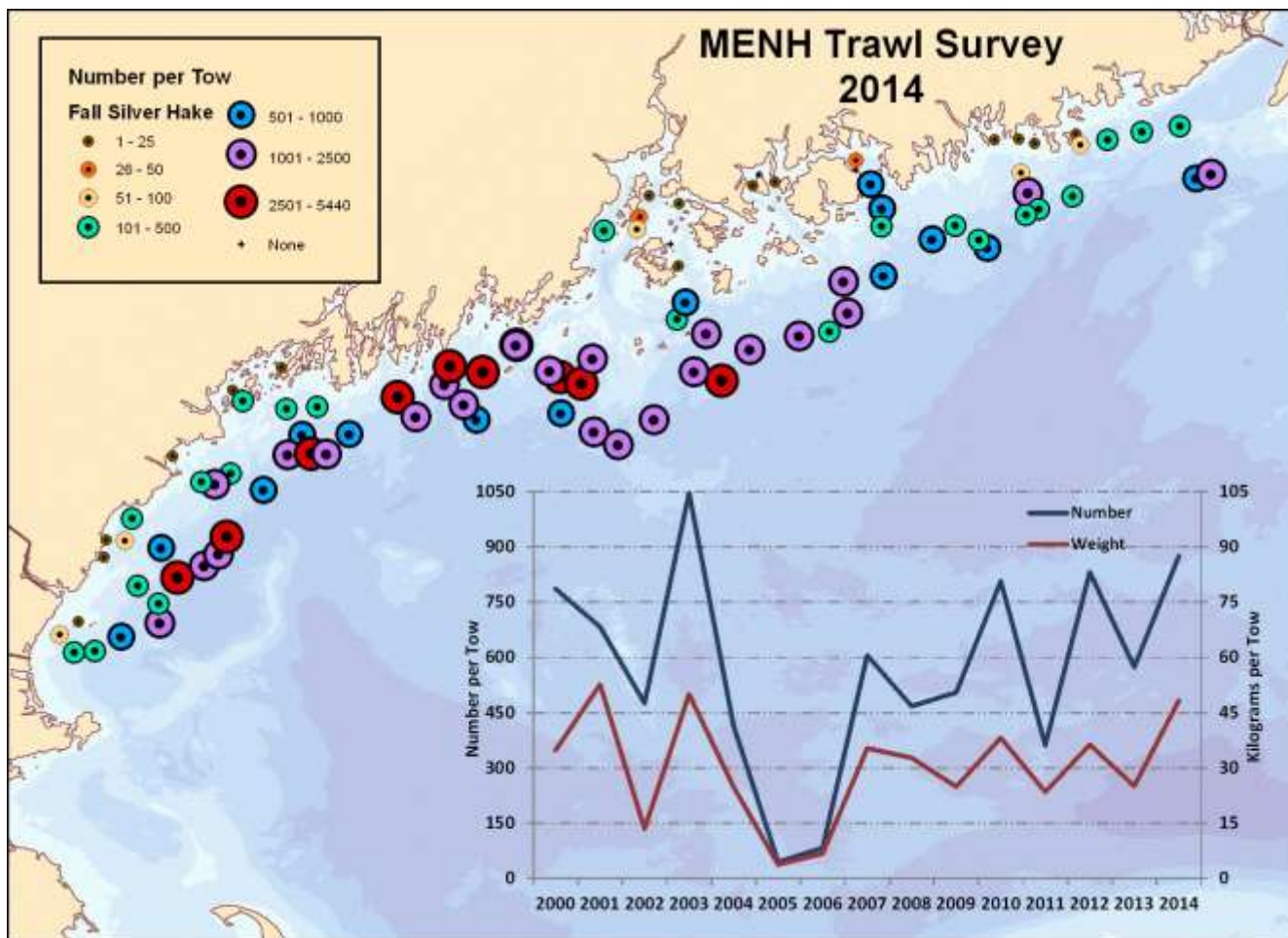
Stratified Mean

	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	723.26	0.23	18.23	0.24
2014	1282.76	0.36	30.37	0.29

Appendix C

Silver Hake - MENH Spring Surveys





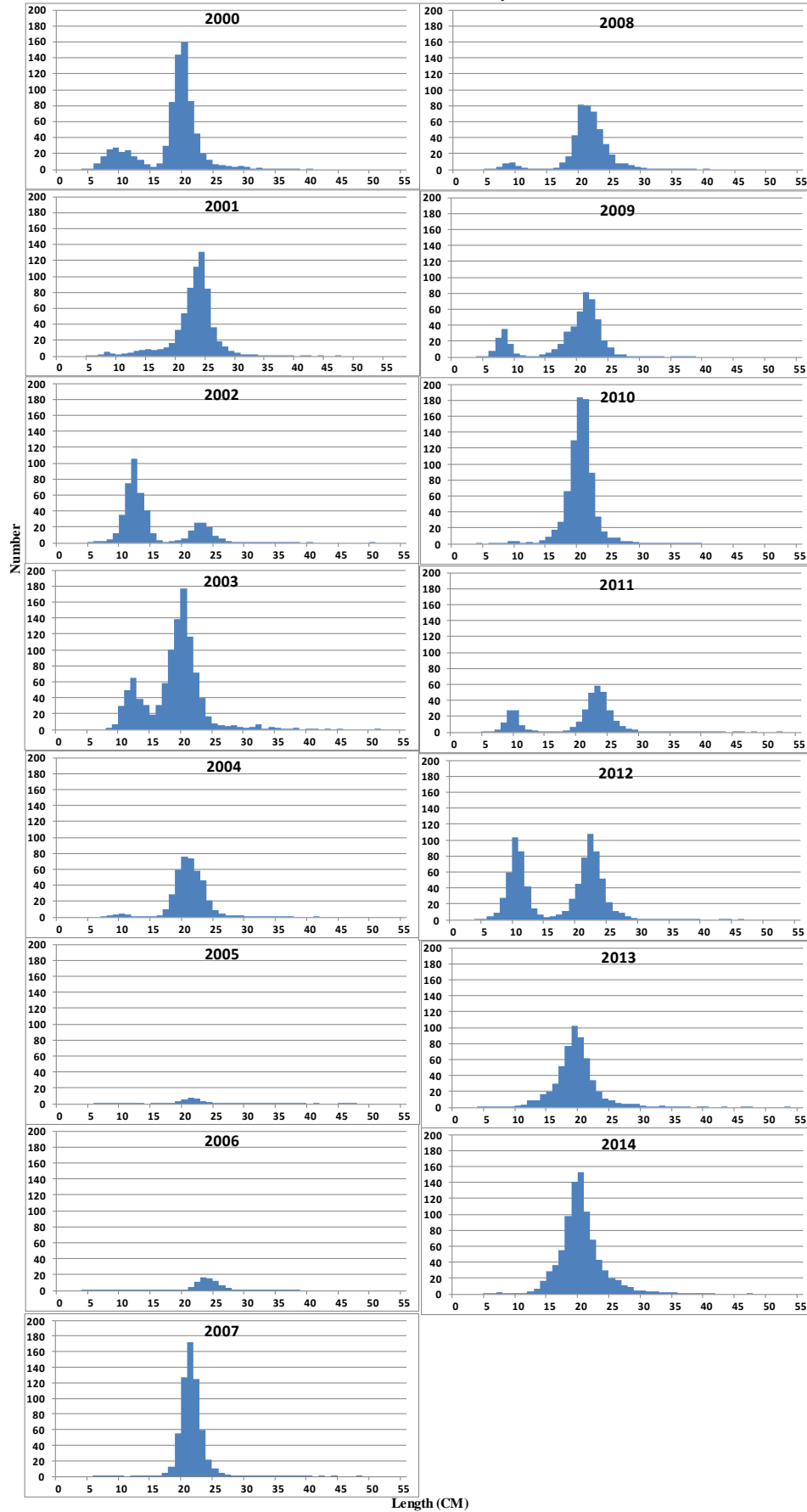
Mean and coefficients of variance for graph overlain on above map
 fixed stations not included
 for silver hake, calculated for regions 1 through 5; strata 1 through 4
FALL

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	829.66	0.20	32.76	0.25
2013	573.27	0.24	25.09	0.23
2014	874.45	0.22	48.24	0.20

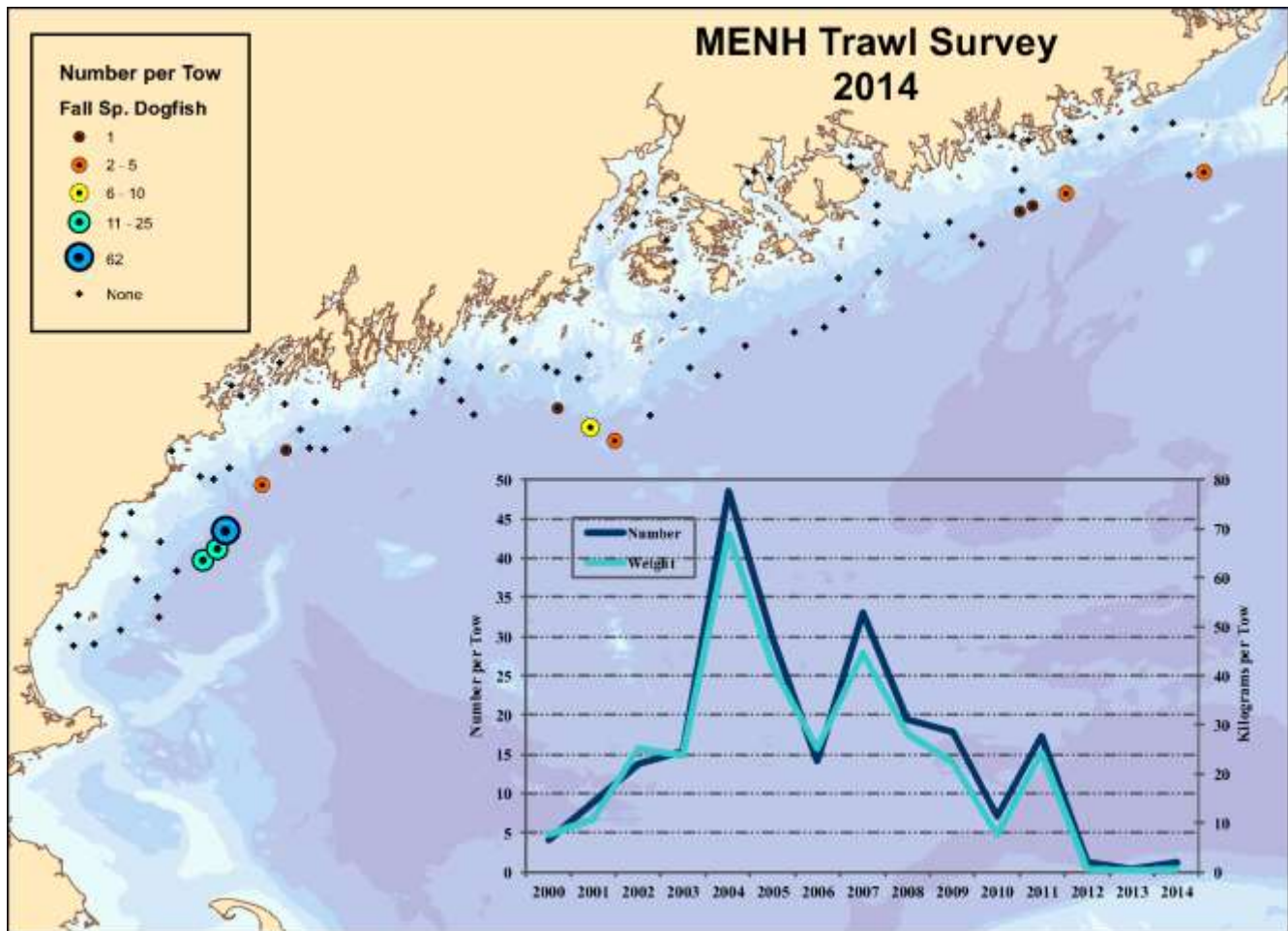
Appendix C

Silver Hake - MENH Fall Survey



Spiny dogfish, *Squalus acanthias*

No Spiny dogfish were caught in the spring 2014 survey



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

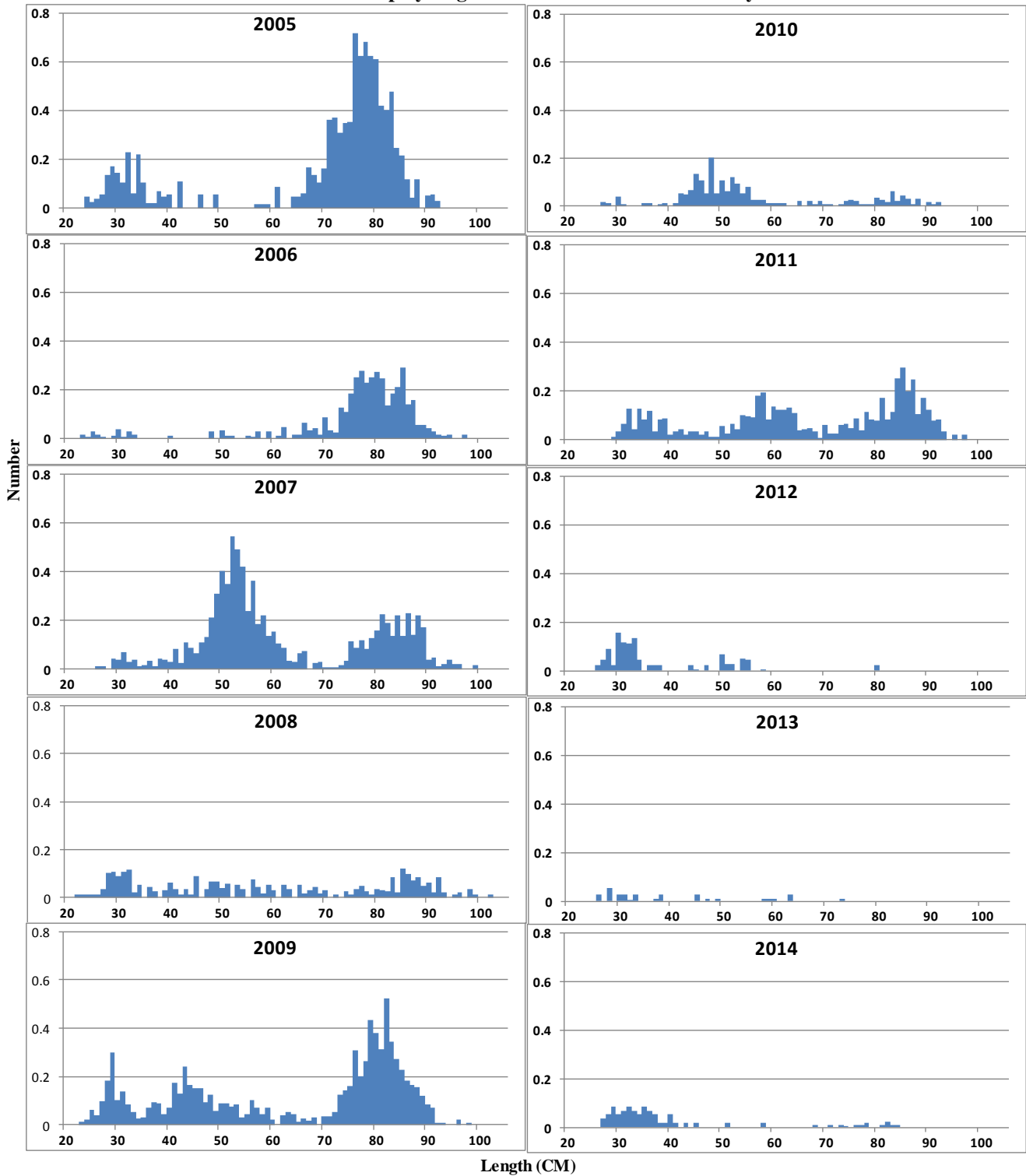
FALL

Stratified Mean

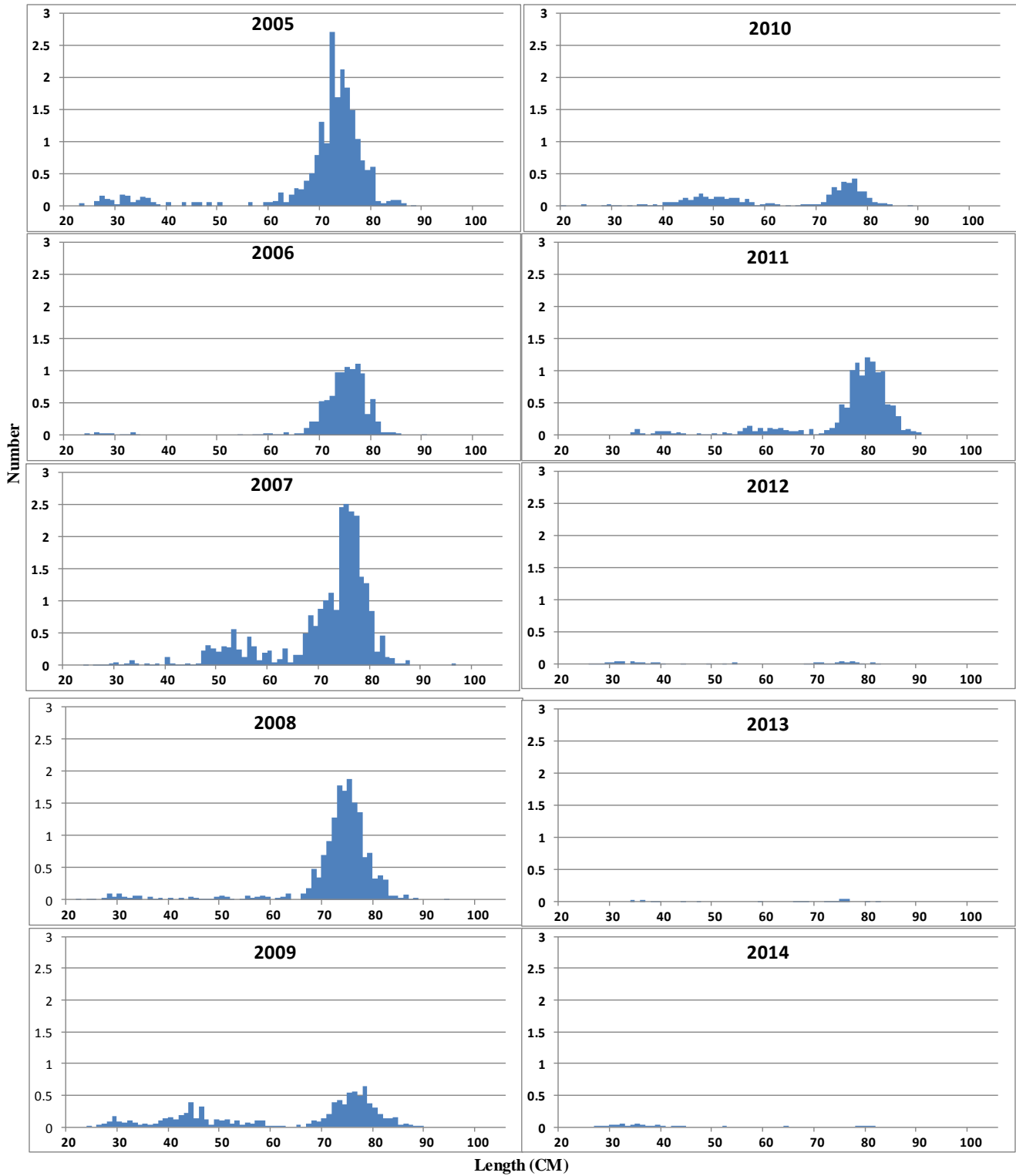
	Number		Weight	
	Mean	CV	Mean	CV
2000	4.04	0.32	7.74	0.33
2001	8.85	0.75	10.66	0.69
2002	13.78	0.40	25.29	0.43
2003	15.36	0.37	23.82	0.35
2004	48.61	0.44	69.03	0.46
2005	29.75	0.19	41.79	0.22
2006	14.16	0.32	25.23	0.31
2007	33.07	0.60	44.59	0.60
2008	19.52	0.79	28.25	0.85
2009	17.79	0.61	22.40	0.50
2010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

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

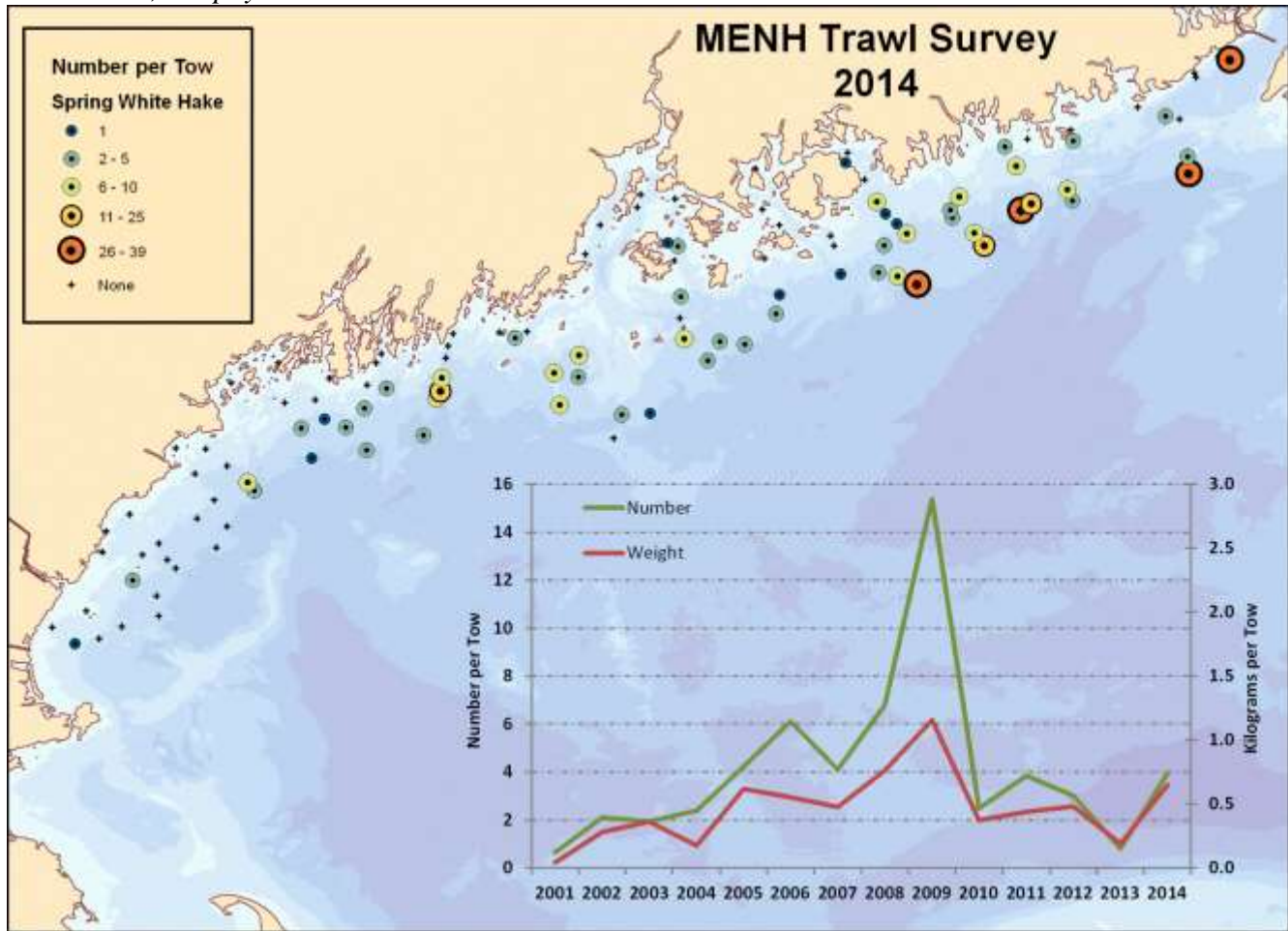
Spiny Dogfish Female - MENH Fall Survey



Spiny Dogfish Male - MENH Fall Survey



White hake, *Urophycis tenuis*



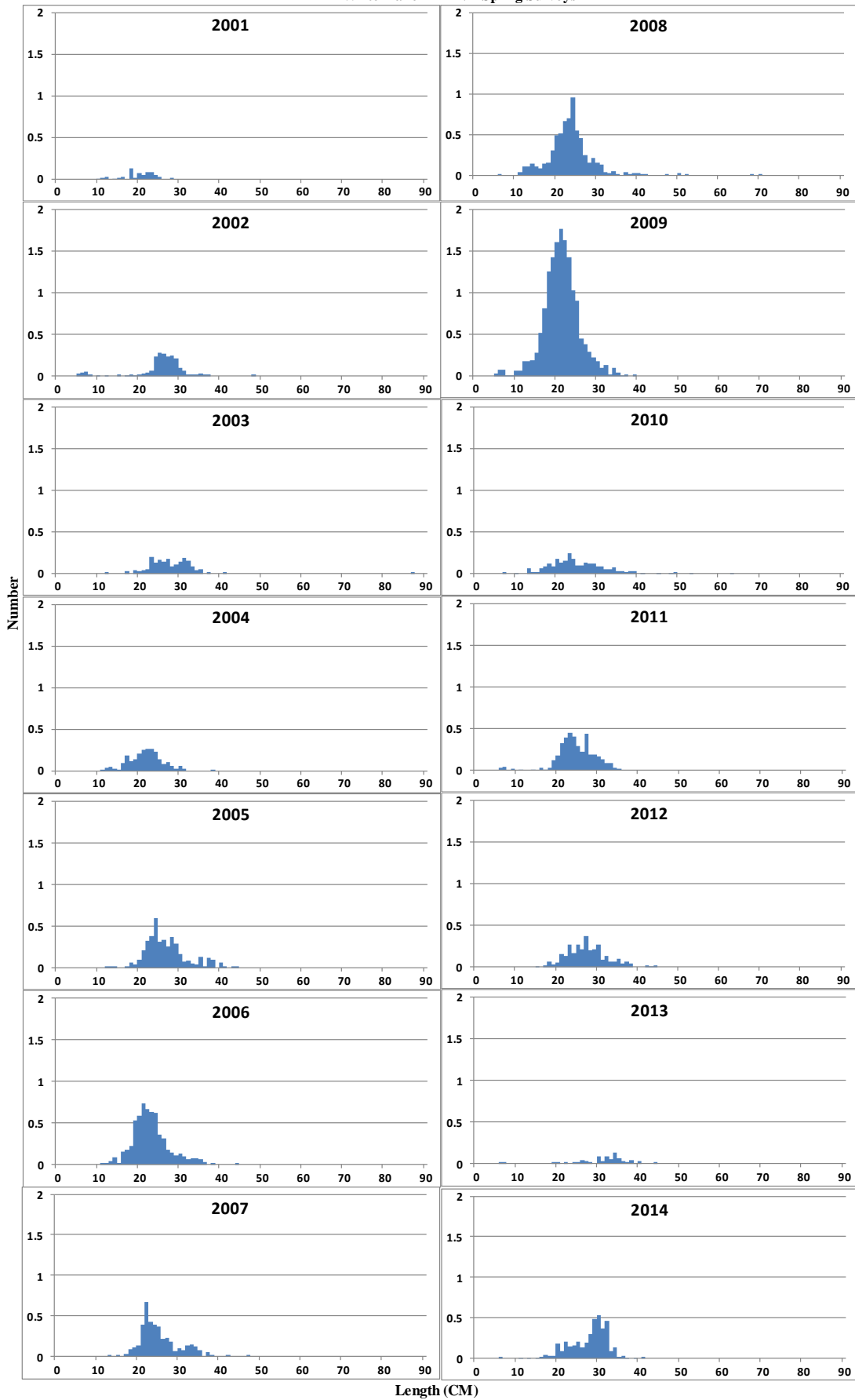
Means and coefficients of variance for the graph overlain on above map fixed stations not included for white hake, calculated for regions 1 through 5; strata 1 through 4

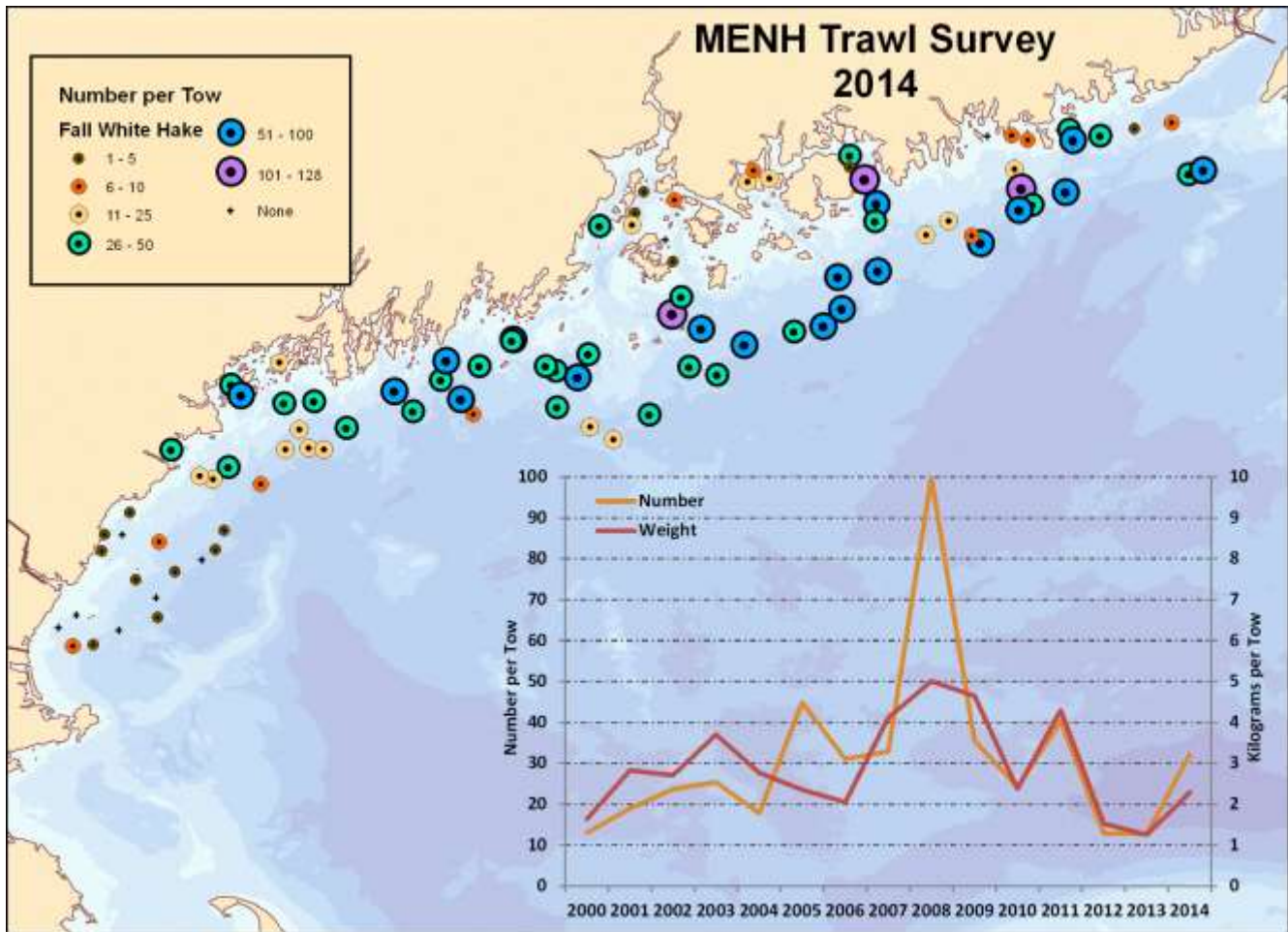
Stratified Mean
SPRING

	Number Mean	CV	Weight Mean	CV
2001	0.65	0.49	0.04	0.52
2002	2.10	0.49	0.28	0.51
2003	1.94	0.44	0.36	0.53
2004	2.39	0.32	0.17	0.30
2005	4.23	0.31	0.62	0.33
2006	6.12	0.25	0.55	0.27
2007	4.11	0.38	0.48	0.52
2008	6.79	0.26	0.76	0.31
2009	15.38	0.19	1.16	0.24
2010	2.49	0.30	0.37	0.78
2011	3.85	0.29	0.44	0.30
2012	3.02	0.25	0.48	0.31
2013	0.80	1.01	0.19	1.27
2014	3.96	0.35	0.65	0.38

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

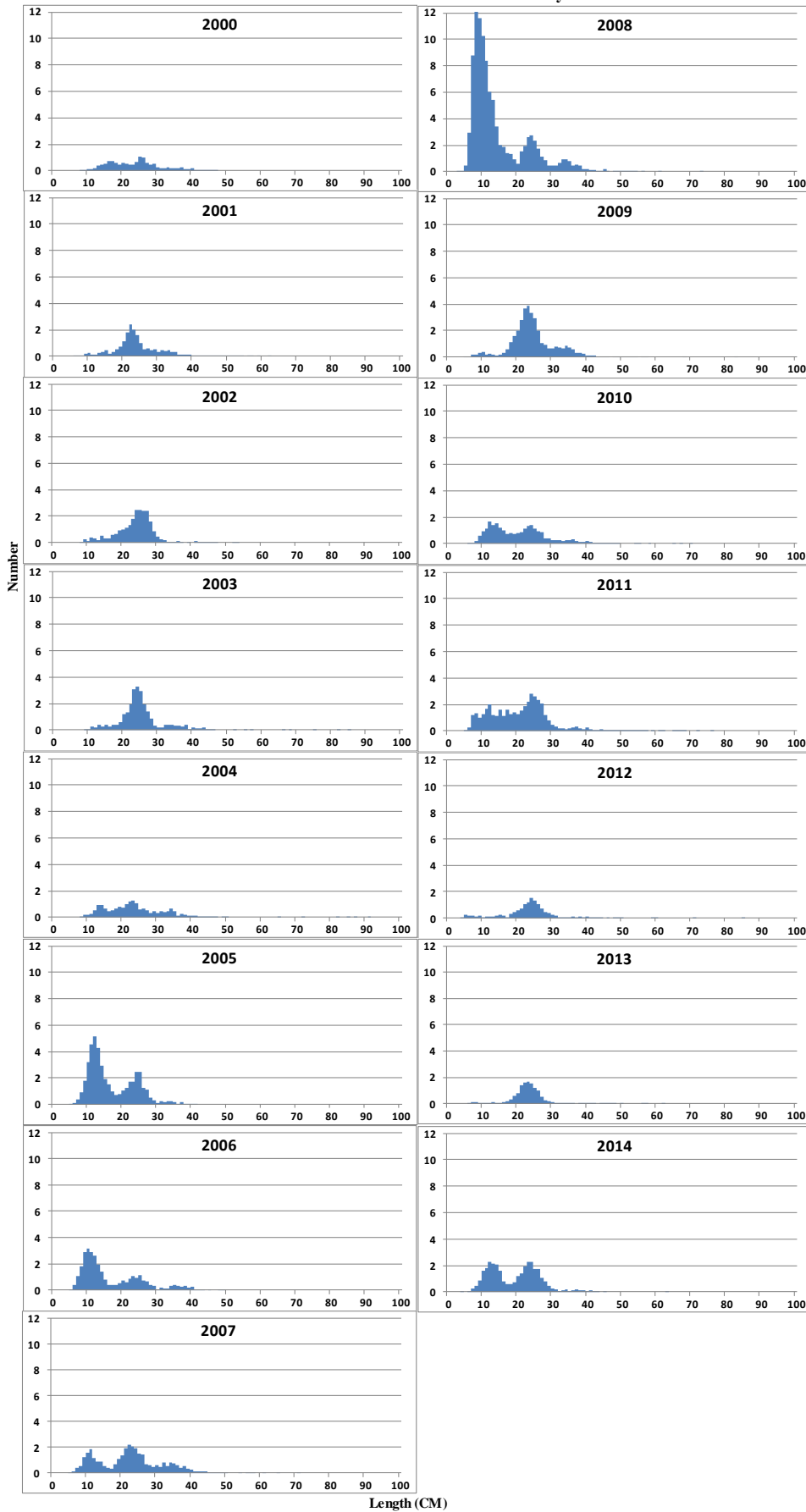
Stratified Mean

FALL

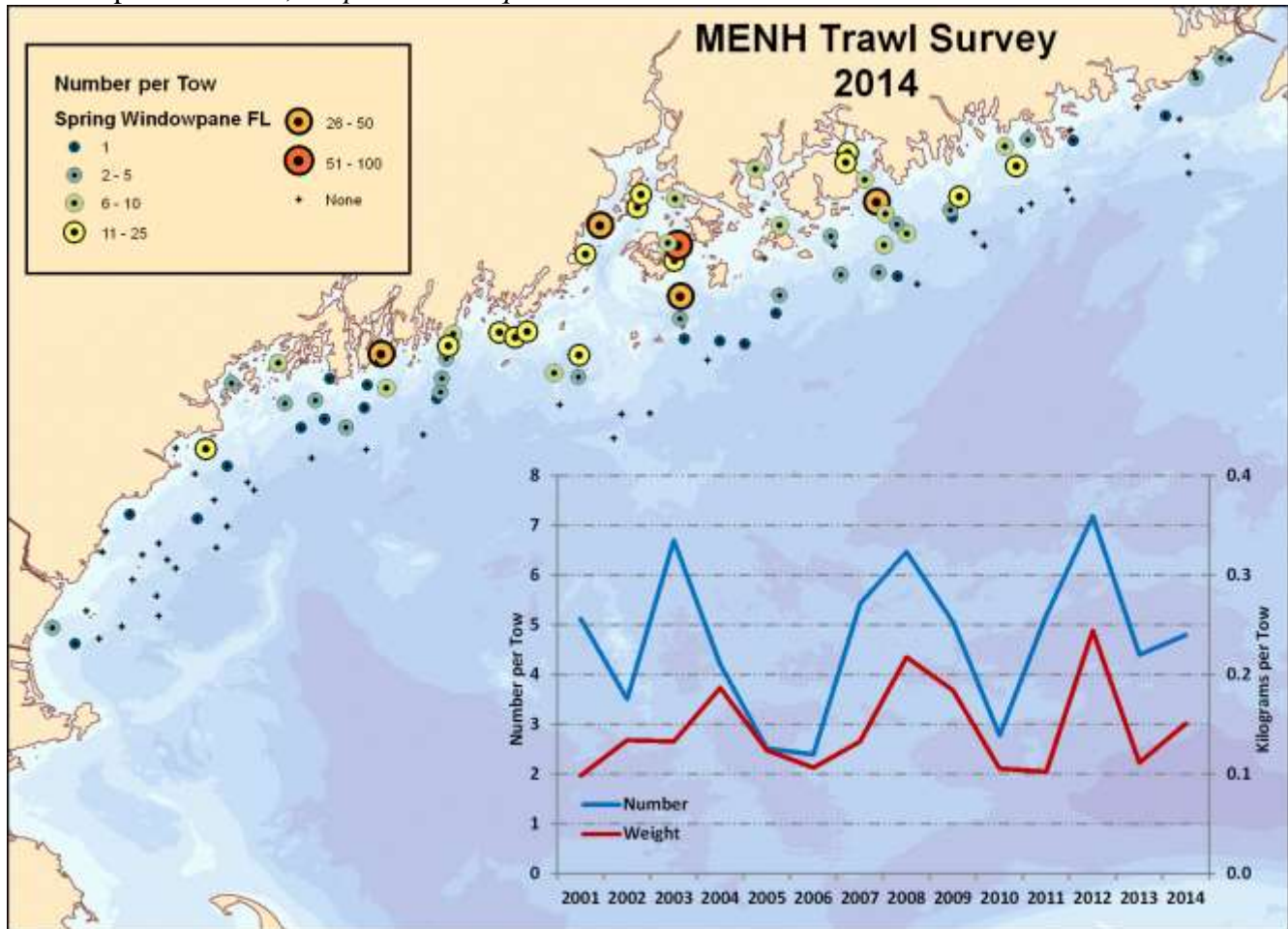
	Number		Weight	
	Mean	CV	Mean	CV
2000	13.03	0.21	1.63	0.22
2001	18.90	0.33	2.83	0.28
2002	23.65	0.18	2.71	0.22
2003	25.41	0.20	3.70	0.21
2004	17.81	0.28	2.77	0.23
2005	44.82	0.12	2.35	0.15
2006	31.06	0.23	2.05	0.19
2007	32.90	0.17	4.12	0.25
2008	99.93	0.15	5.00	0.11
2009	35.54	0.13	4.65	0.16
2010	24.20	0.20	2.37	0.23
2011	40.23	0.12	4.30	0.19
2012	12.88	0.25	1.52	0.24
2013	12.70	0.17	1.25	0.18
2014	32.19	0.18	2.29	0.17

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

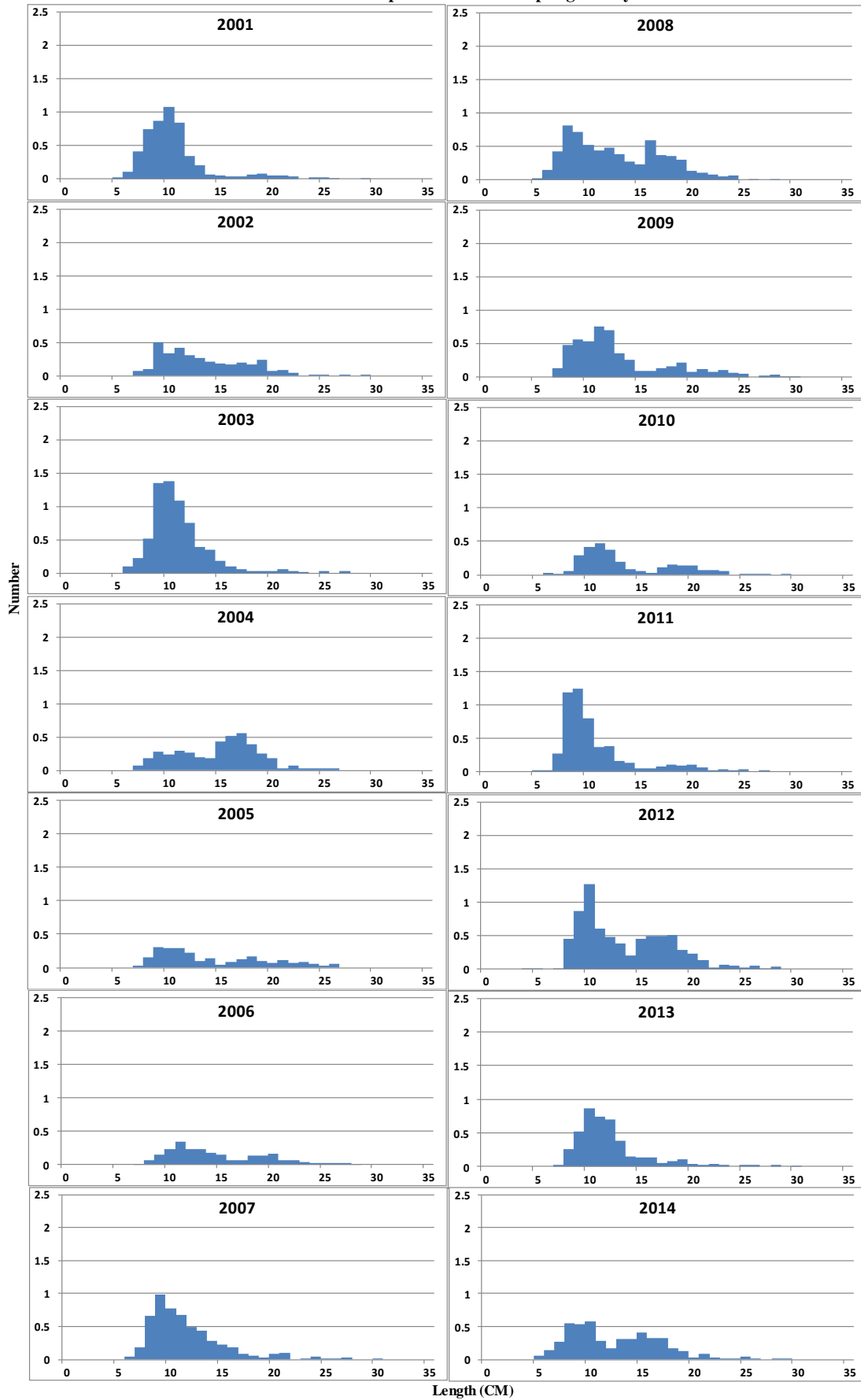
SPRING

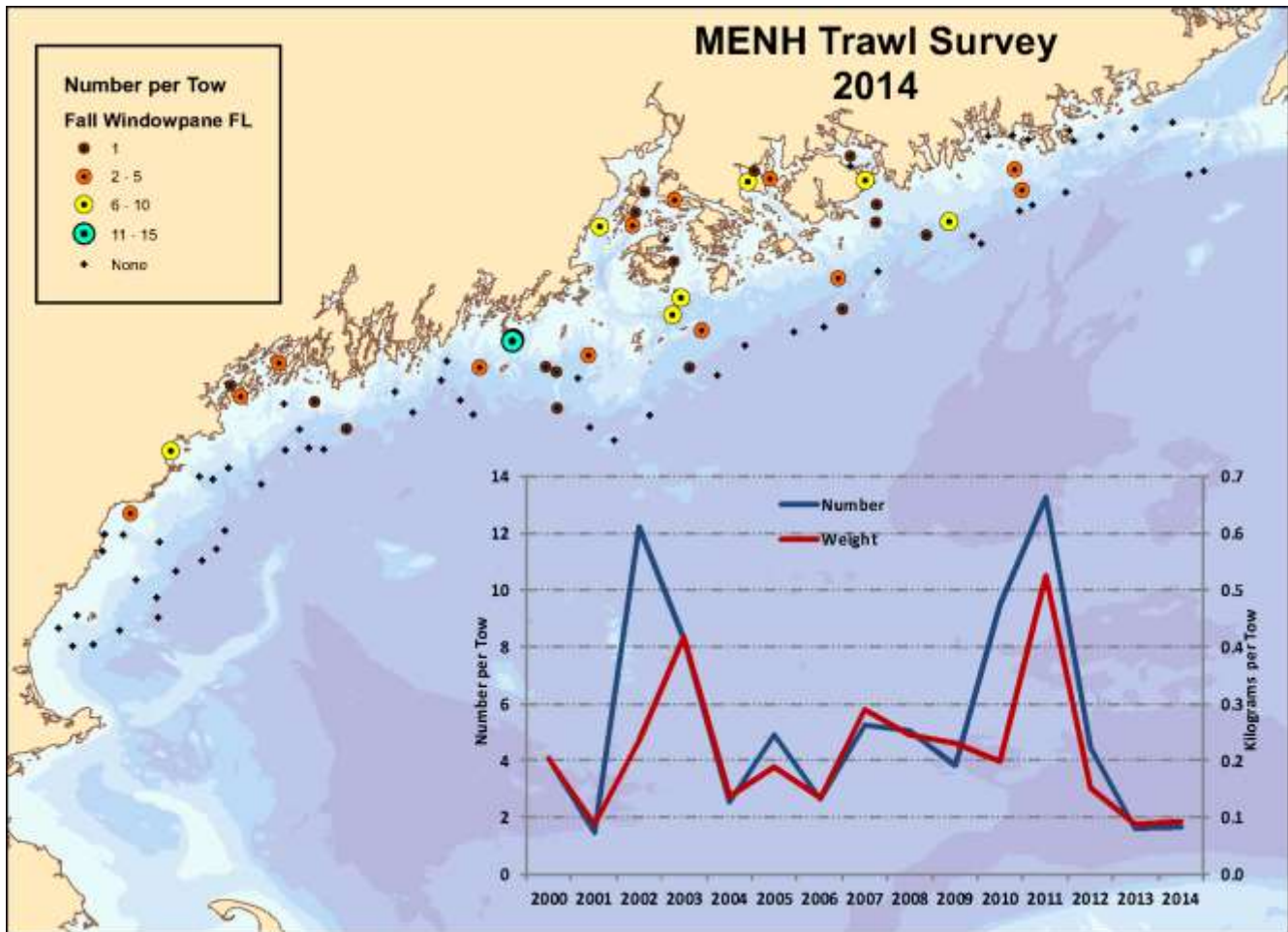
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	5.12	0.63	0.10	0.40
2002	3.51	0.33	0.13	0.37
2003	6.70	0.30	0.13	0.30
2004	4.20	0.30	0.19	0.27
2005	2.51	0.35	0.12	0.34
2006	2.39	0.44	0.11	0.33
2007	5.42	0.40	0.13	0.28
2008	6.47	0.43	0.22	0.26
2009	5.05	0.34	0.18	0.27
2010	2.78	0.36	0.11	0.32
2011	5.19	0.43	0.10	0.33
2012	7.18	0.44	0.24	0.33
2013	4.40	0.37	0.11	0.36
2014	4.79	0.27	0.15	0.27

Appendix C

Windowpane FL - MENH Spring Surveys





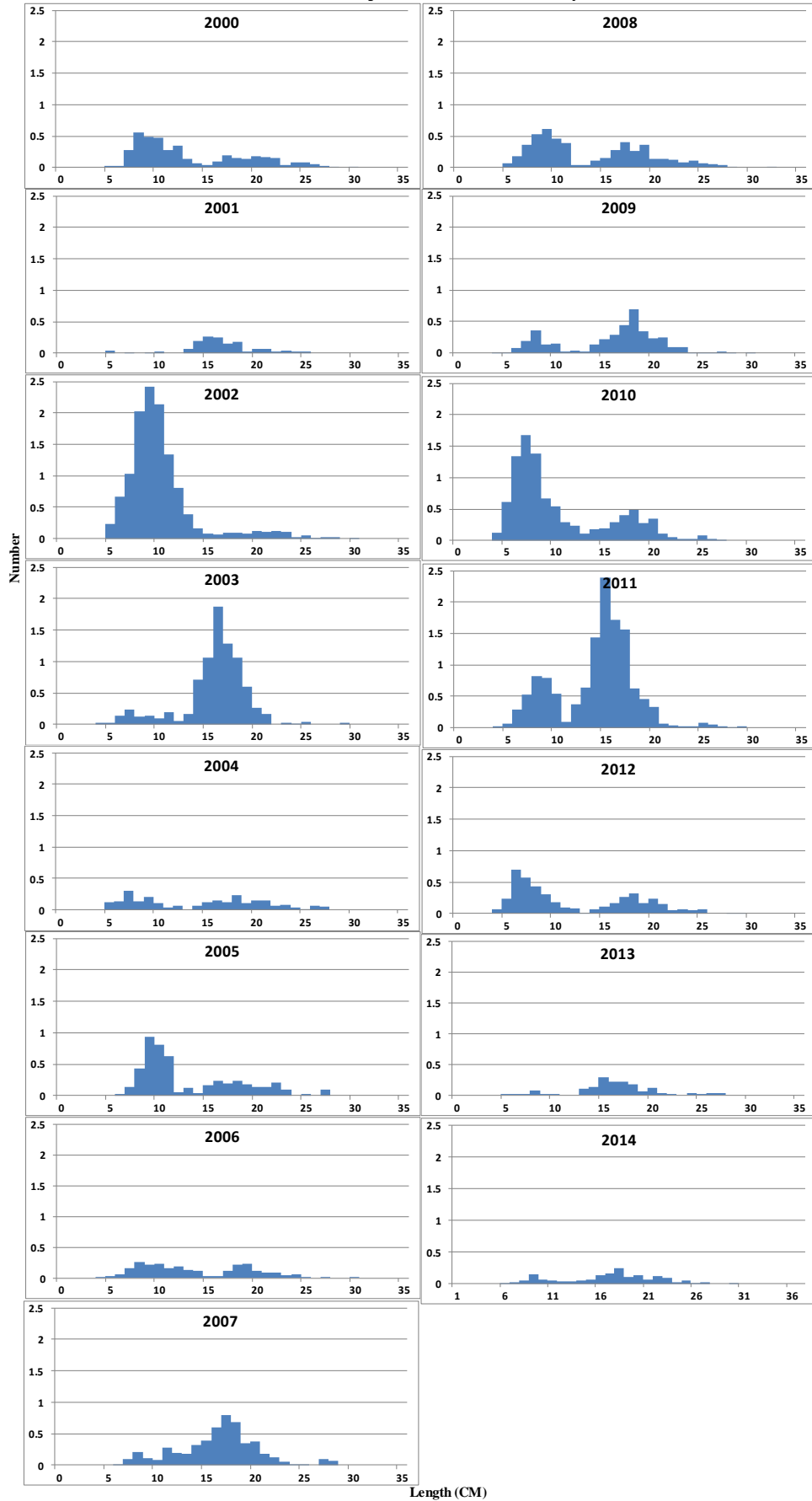
Means and coefficients of variance for the graph overlain on above map fixed stations not included for windowpane, calculated for regions 1 through 5; strata 1 through 4
FALL

Stratified Mean

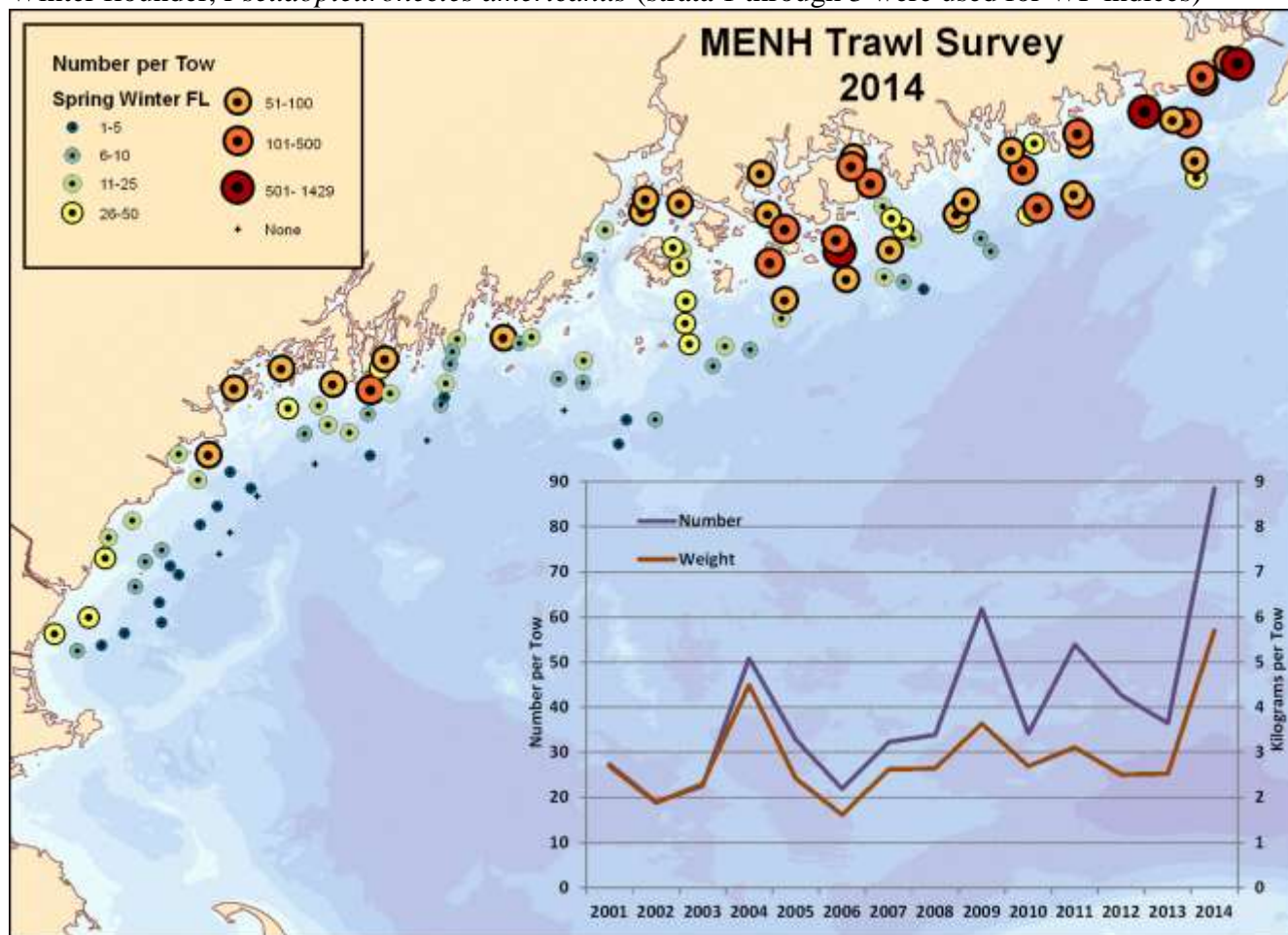
	Number		Weight	
	Mean	CV	Mean	CV
2000	4.05	0.35	0.20	0.30
2001	1.47	0.58	0.09	0.71
2002	12.24	0.47	0.24	0.38
2003	8.31	0.23	0.42	0.18
2004	2.54	0.54	0.14	0.36
2005	4.90	0.49	0.19	0.33
2006	2.66	0.27	0.14	0.43
2007	5.24	0.39	0.29	0.31
2008	5.03	0.31	0.24	0.26
2009	3.83	0.27	0.23	0.29
2010	9.47	0.74	0.20	0.23
2011	13.25	0.28	0.53	0.23
2012	4.38	0.33	0.15	0.37
2013	1.60	0.46	0.09	0.40
2014	1.65	0.35	0.09	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 for winter flounder, calculated for regions 1 through 5; strata 1 through 3

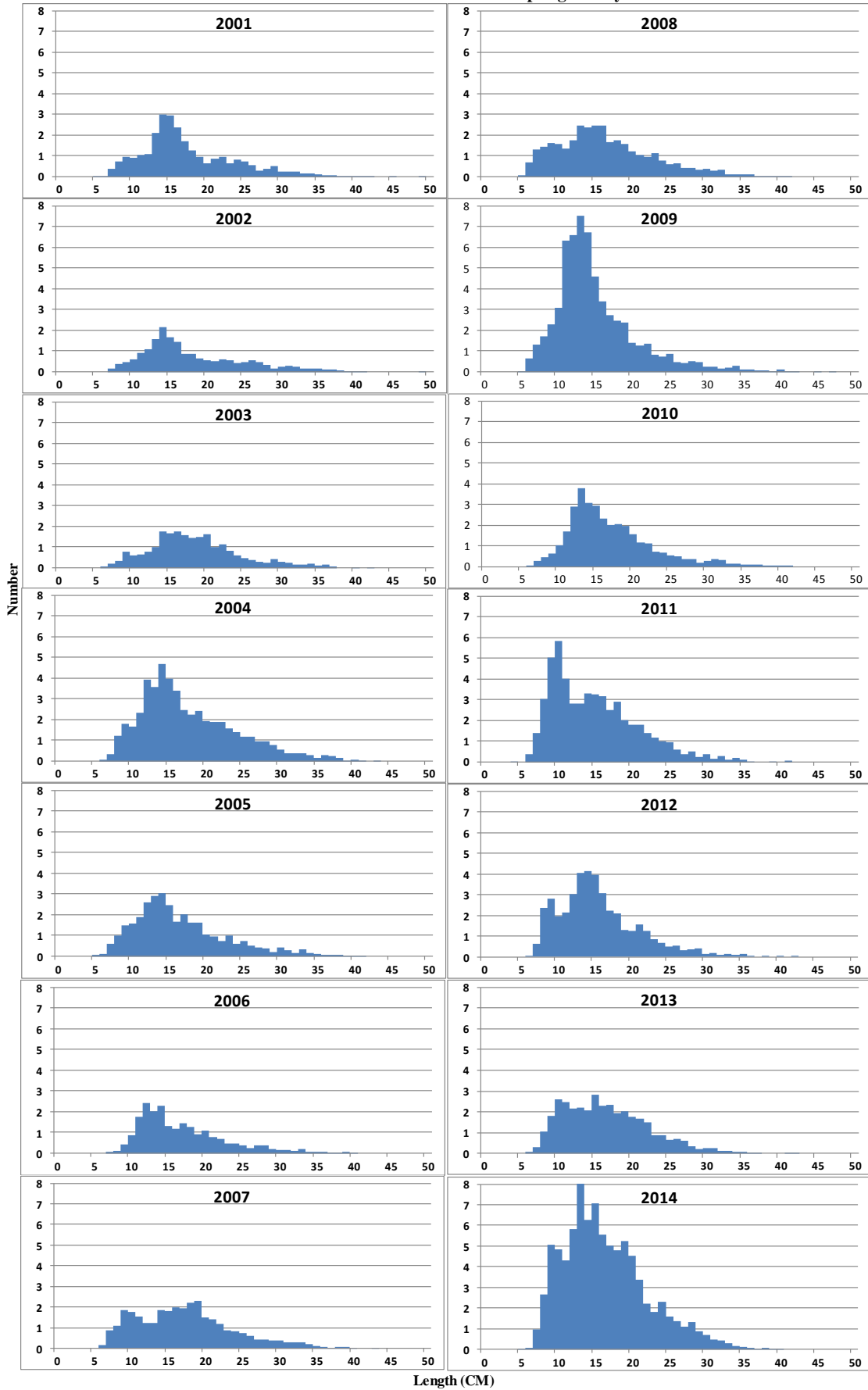
SPRING

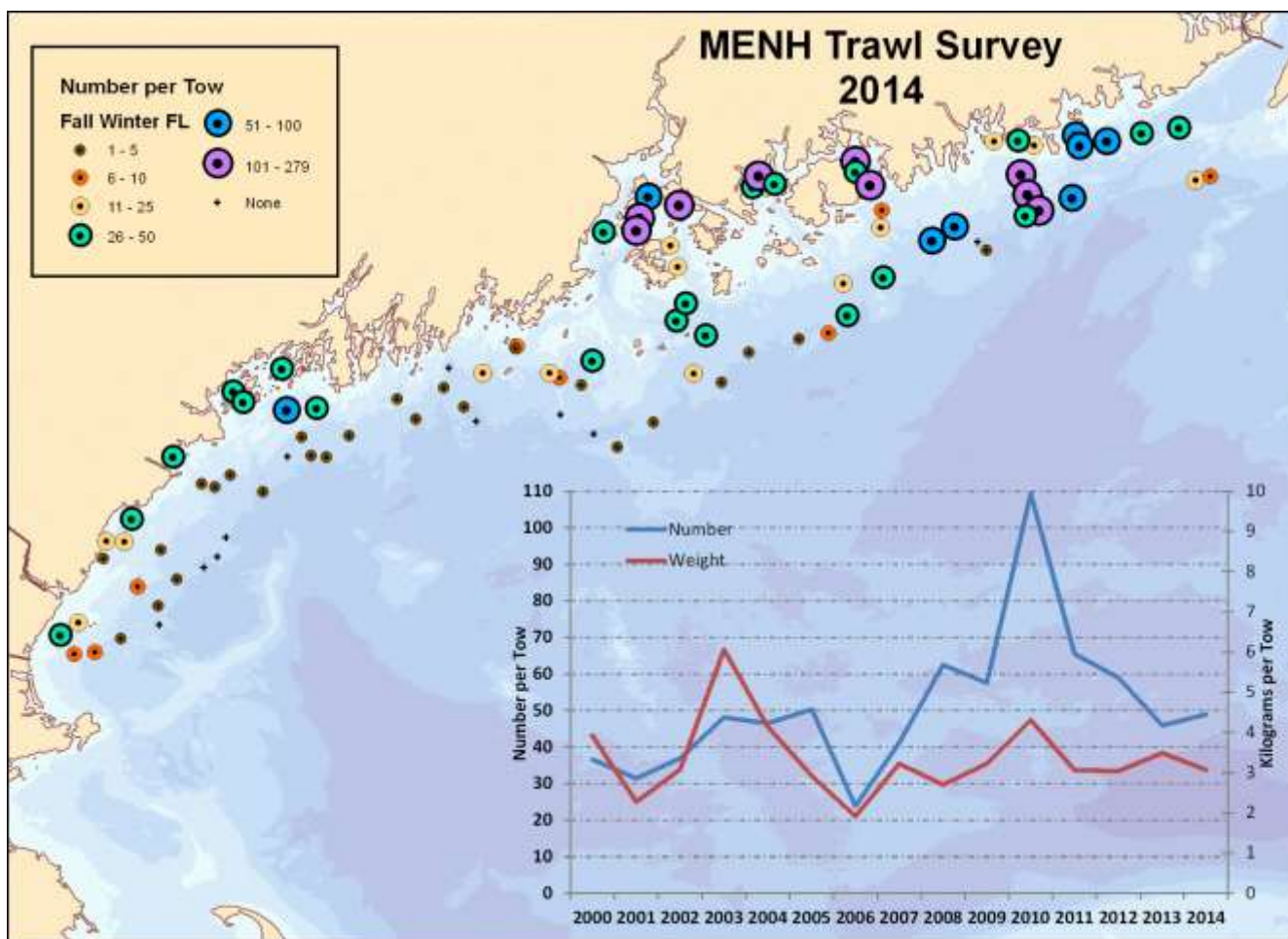
Stratified Mean

	Number Mean	CV	Mean	Weight CV
2001	27.40	0.31	2.69	0.29
2002	19.04	0.31	1.88	0.33
2003	22.57	0.29	2.30	0.42
2004	50.83	0.26	4.50	0.40
2005	32.88	0.22	2.43	0.19
2006	21.94	0.50	1.62	0.47
2007	32.29	0.28	2.63	0.24
2008	33.89	0.29	2.65	0.29
2009	61.85	0.34	3.64	0.24
2010	34.19	0.37	2.69	0.33
2011	53.90	0.23	3.11	0.43
2012	42.62	0.35	2.51	0.38
2013	36.48	0.21	2.53	0.21
2014	88.51	0.63	5.70	0.71

Appendix C

Winter Flounder - MENH Spring Surveys





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

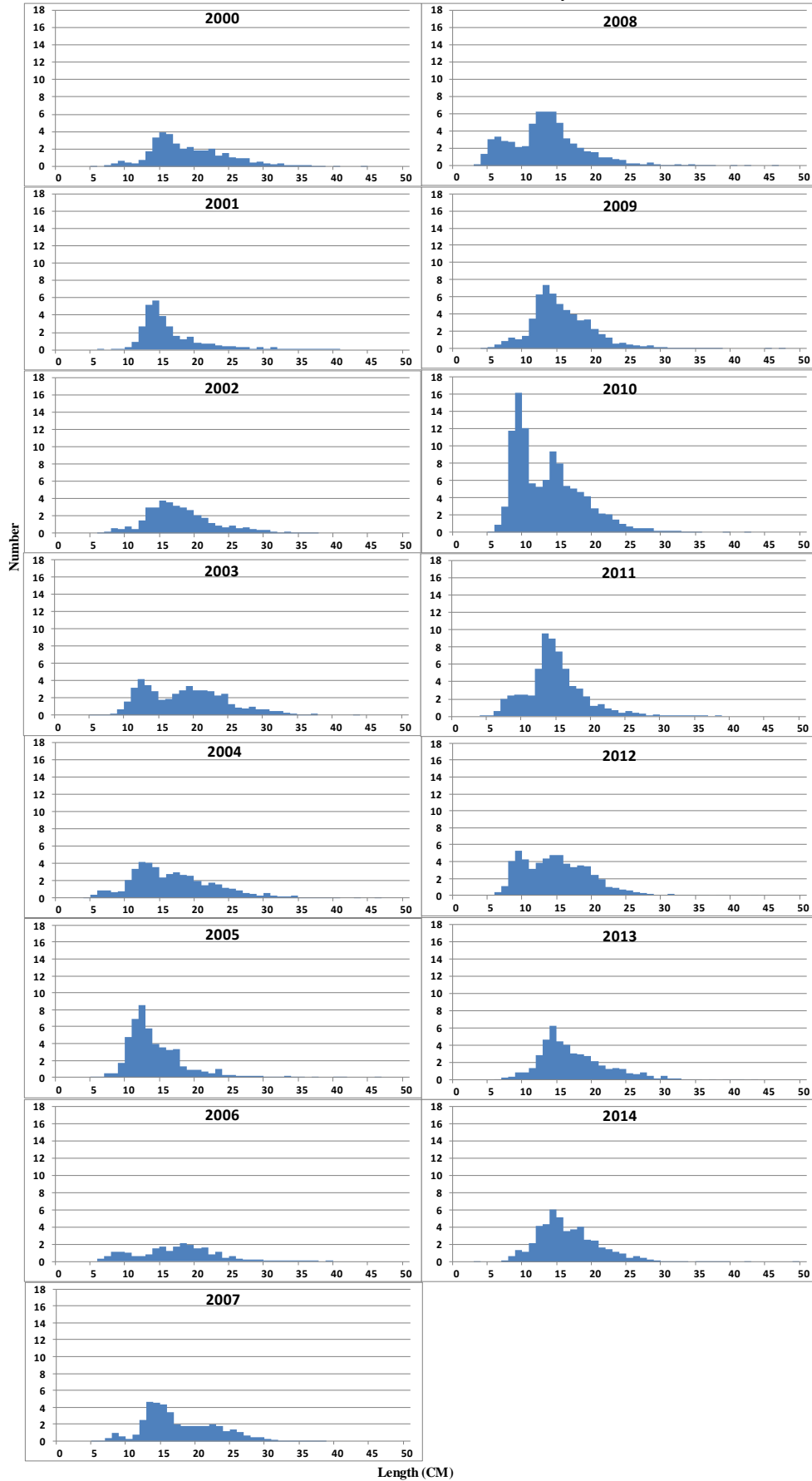
FALL

Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2000	36.59	0.20	3.92	0.26
2001	31.38	0.33	2.28	0.20
2002	36.92	0.42	3.08	0.59
2003	48.15	0.19	6.06	0.06
2004	46.45	0.34	4.14	0.35
2005	50.32	0.09	2.92	0.15
2006	23.90	0.26	1.92	0.25
2007	41.18	0.35	3.22	0.50
2008	62.46	0.16	2.70	0.16
2009	57.57	0.27	3.22	0.30
2010	109.25	0.32	4.31	0.19
2011	65.50	0.15	3.06	0.13
2012	57.60	0.20	3.01	0.18
2013	45.93	0.13	3.49	0.14
2014	48.94	0.29	3.07	0.28

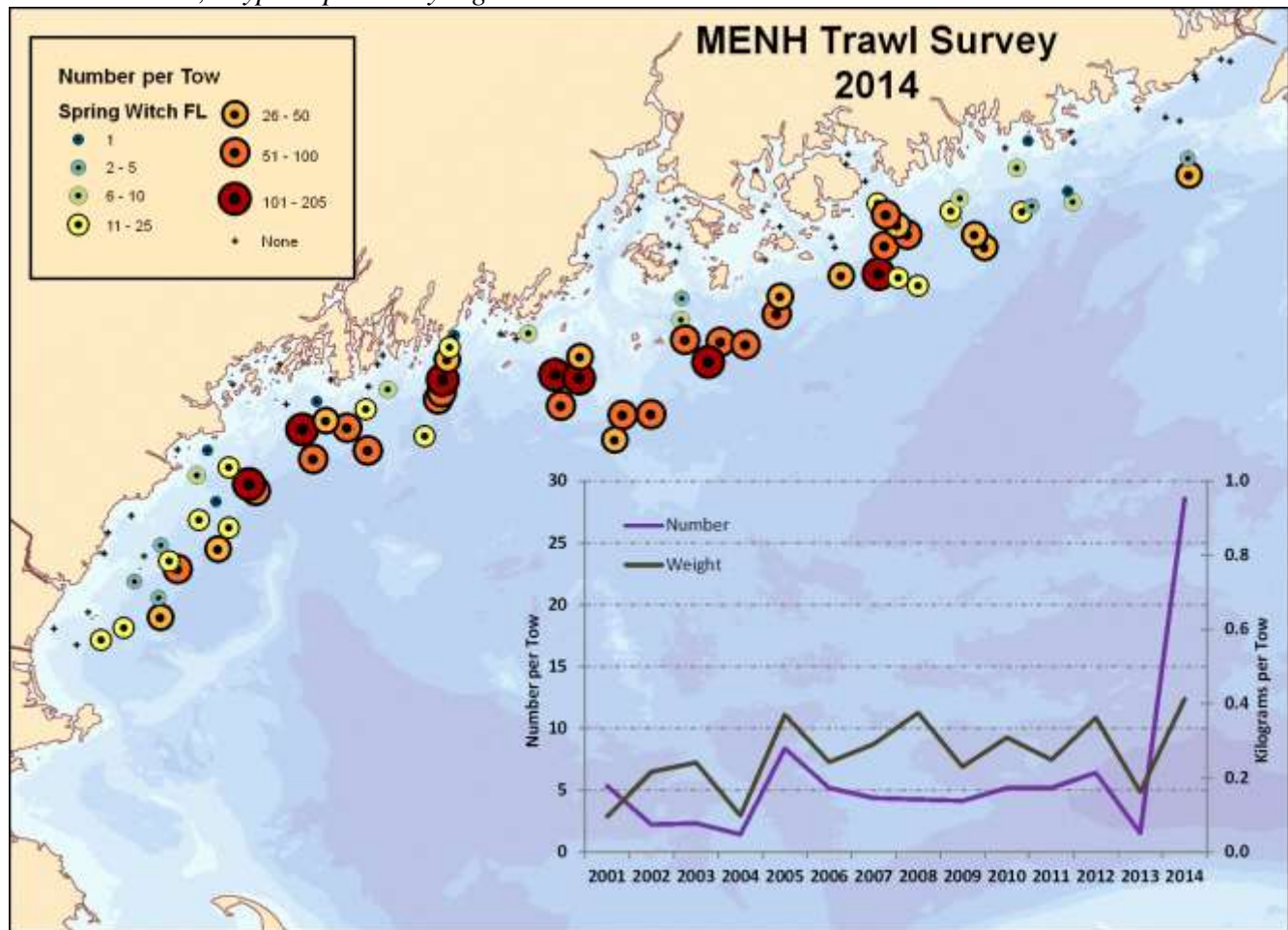
Appendix C

Winter Flounder - MENH Fall Surveys



Length (CM)

Witch flounder, *Glyptocephalus cynoglossus*



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

for witch flounder, calculated for regions 1 through 5; strata 1 through 4

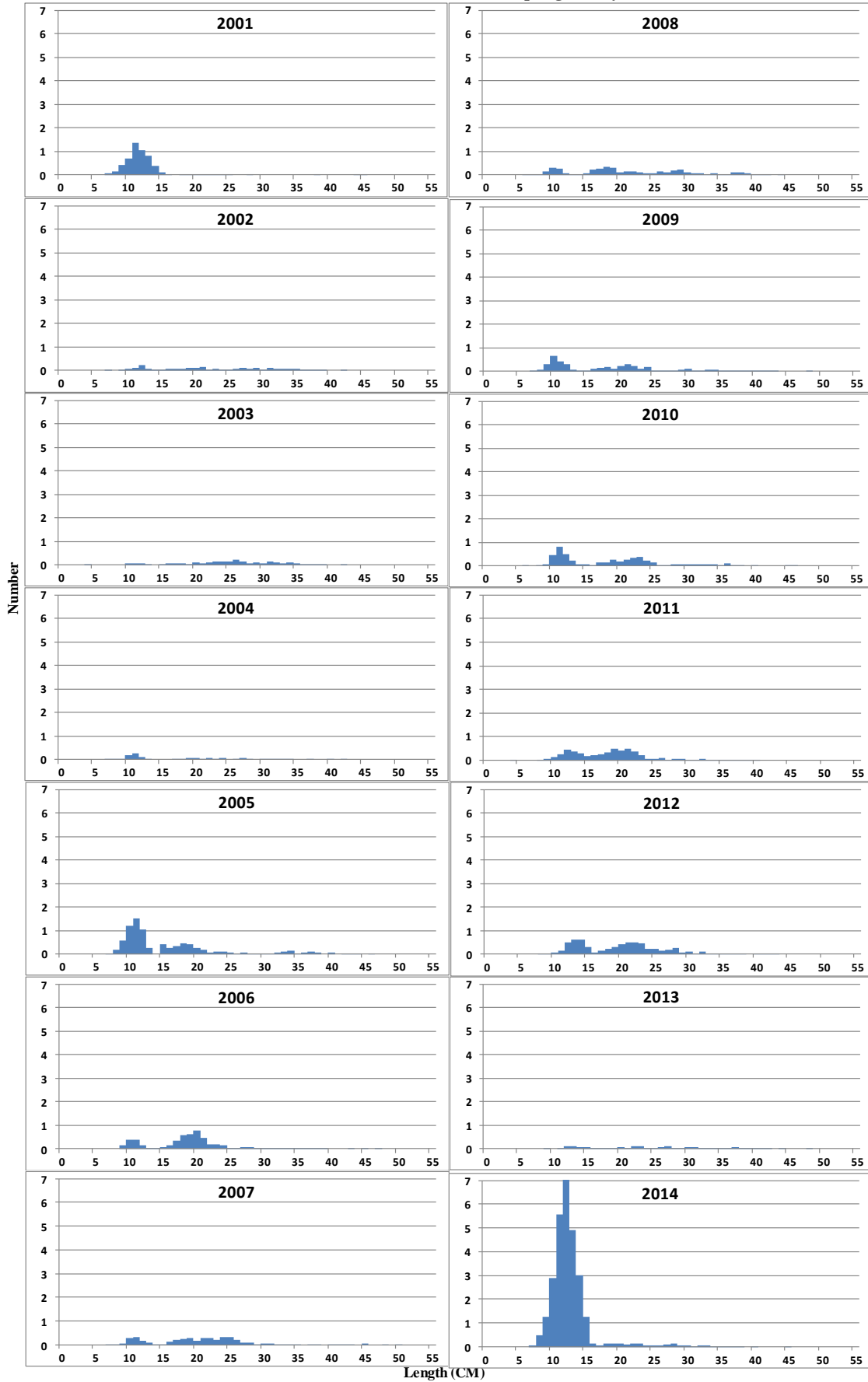
SPRING

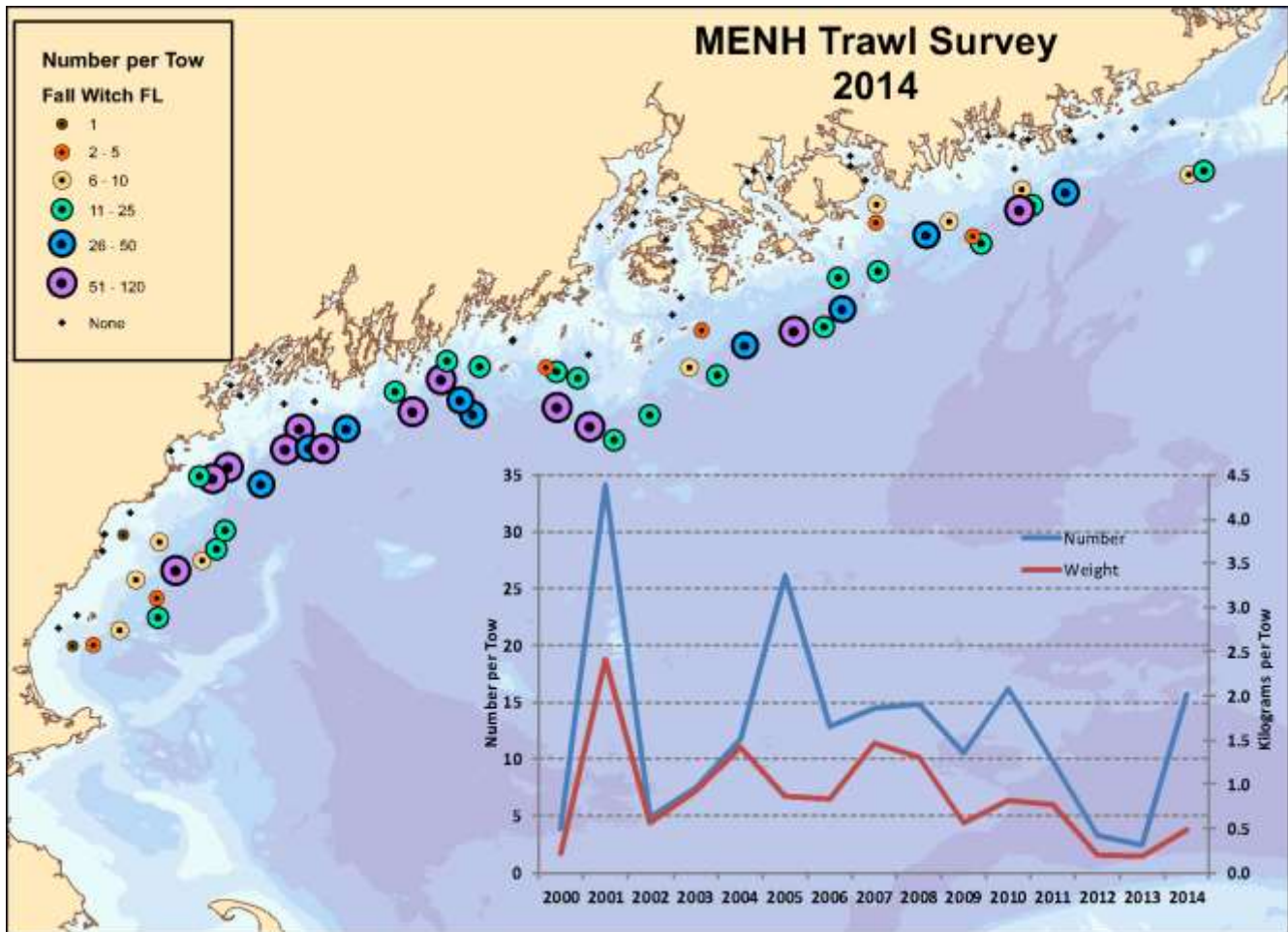
Stratified Mean

	Number Mean	CV	Weight 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

Appendix C

Witch Flounder - MENH Spring Surveys





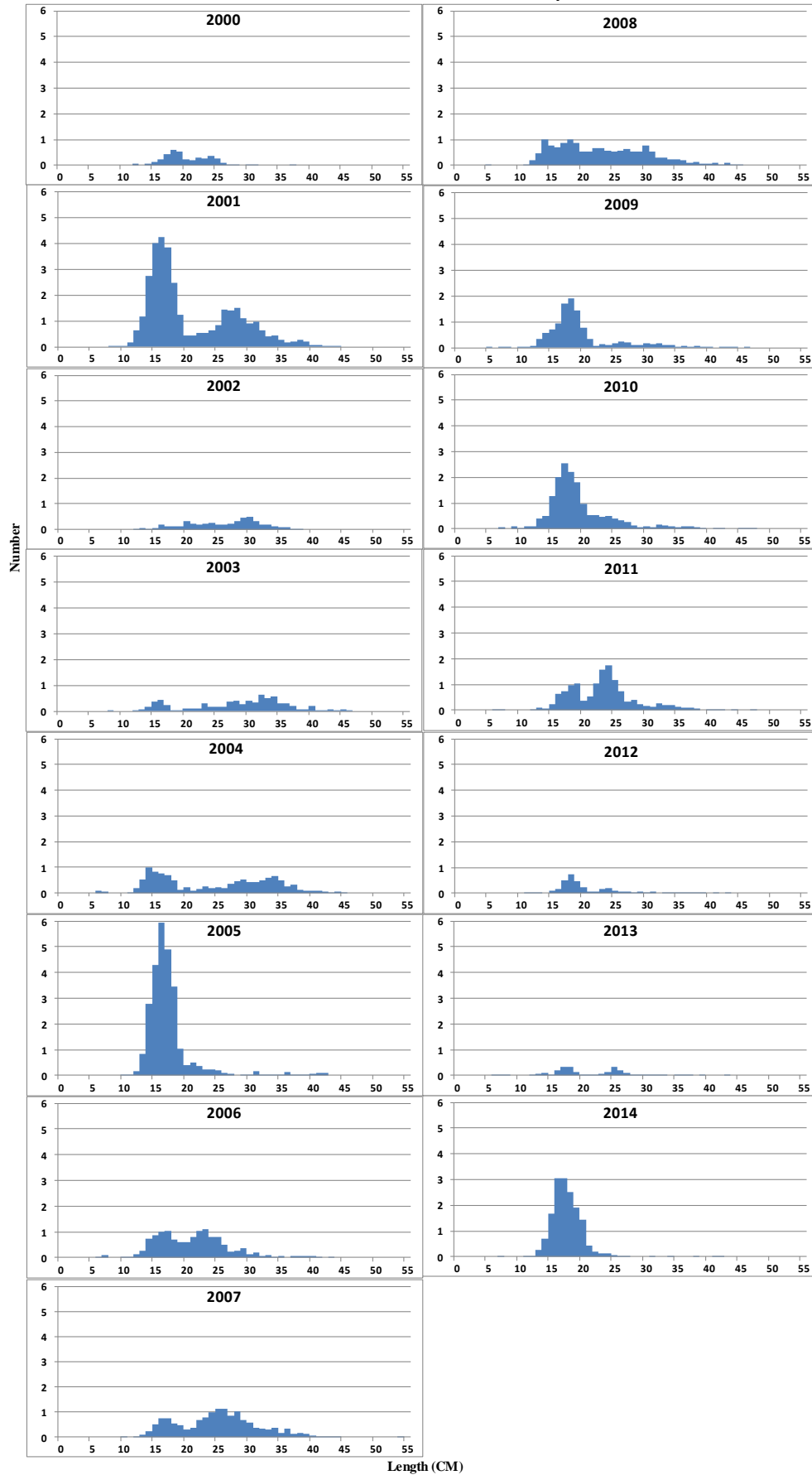
Means and coefficients of variance for the graph overlain on above map fixed stations not included for witch flounder, calculated for regions 1 through 5; strata 1 through 4
FALL

Stratified Mean

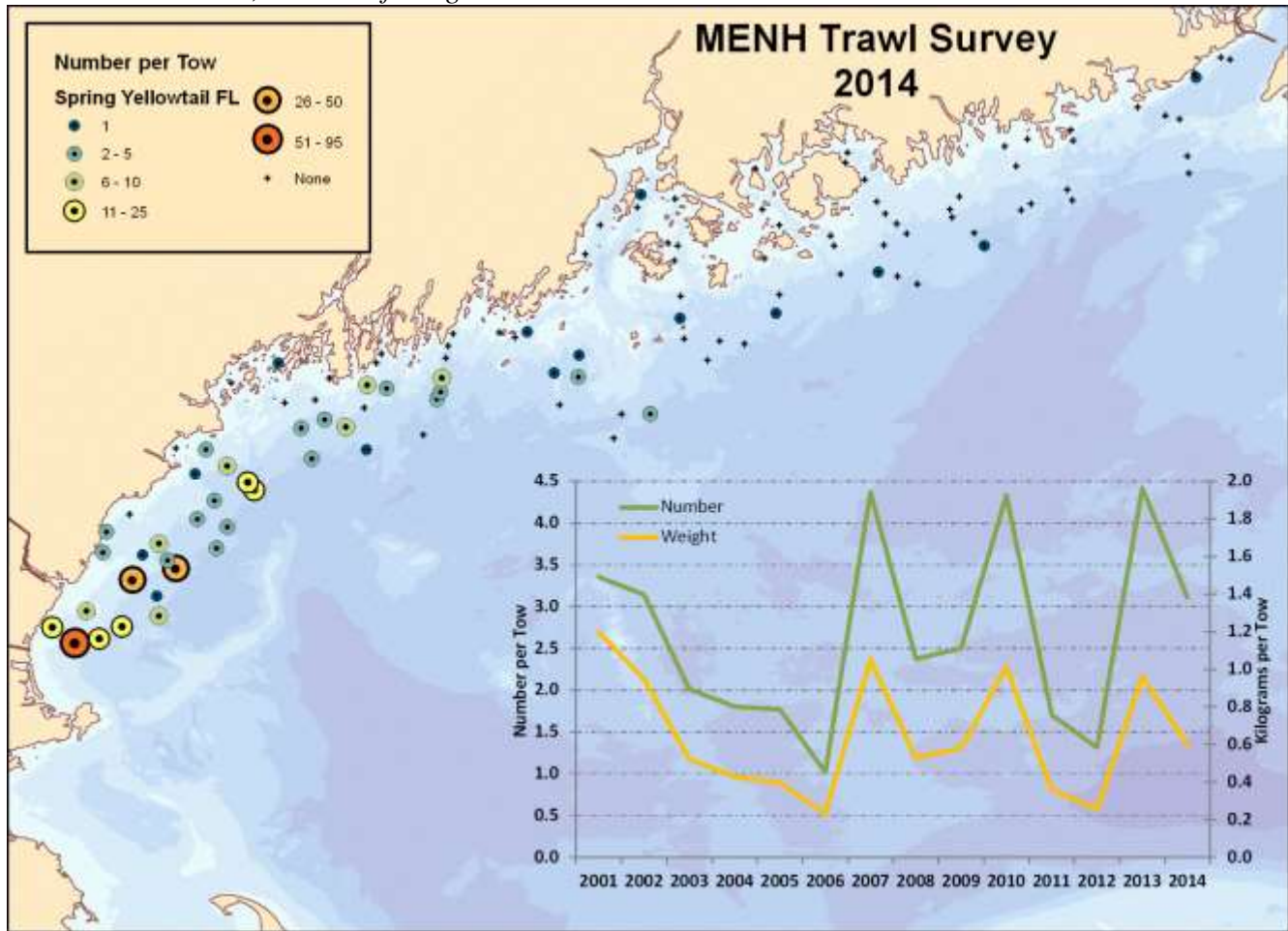
	Number		Weight	
	Mean	CV	Mean	CV
2000	3.87	0.71	0.21	0.45
2001	34.17	4.31	2.42	0.46
2002	4.84	1.23	0.56	0.62
2003	7.45	1.16	0.92	0.36
2004	11.73	1.94	1.41	0.25
2005	26.20	3.55	0.86	0.19
2006	12.83	1.37	0.83	0.16
2007	14.41	2.04	1.47	0.40
2008	14.78	1.79	1.31	0.34
2009	10.48	1.08	0.57	0.26
2010	16.22	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

Appendix C

Witch Flounder - MENH Fall Survey



Yellowtail flounder, *Limanda ferruginea*



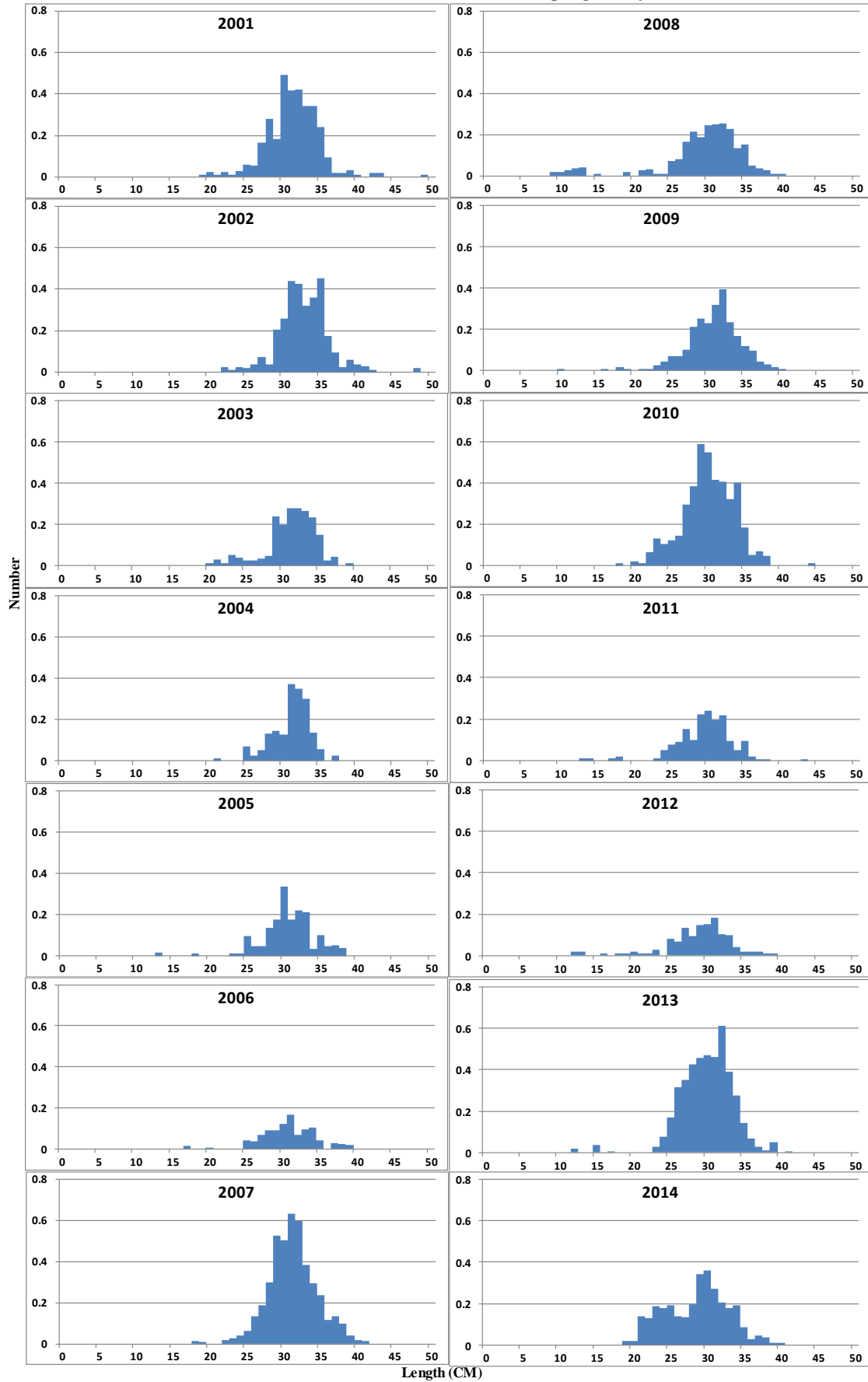
Mean and coefficients of variance for graph overlain on above map fixed stations not included for yellowtail, calculated for regions 1 through 5; Strata 1 through 4 **SPRING**

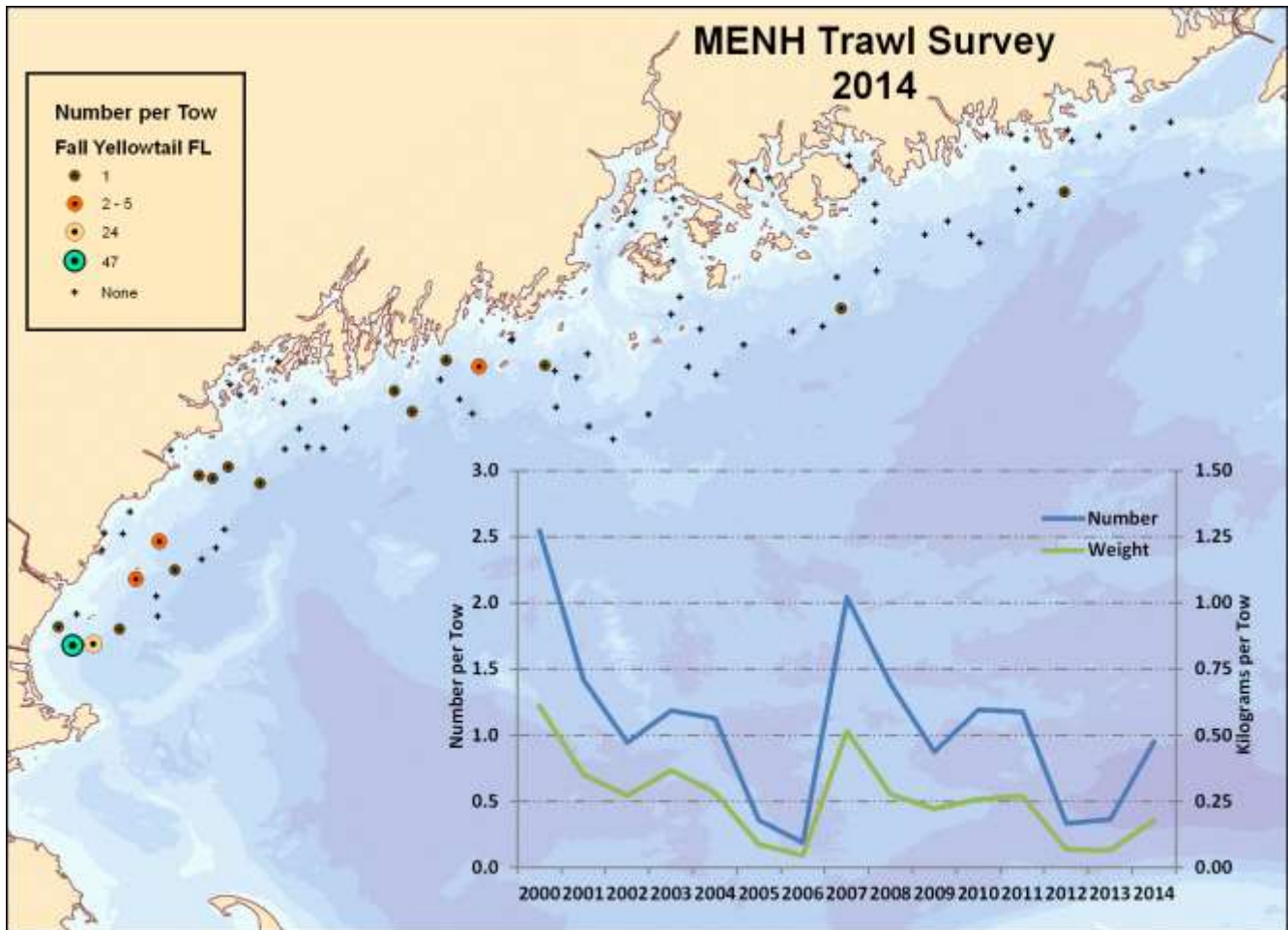
Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	3.35	1.40	1.20	1.52
2002	3.14	0.53	0.95	0.51
2003	2.01	0.42	0.52	0.40
2004	1.80	0.48	0.43	0.49
2005	1.77	0.50	0.40	0.49
2006	1.02	0.46	0.23	0.47
2007	4.36	0.61	1.05	0.60
2008	2.37	0.64	0.53	0.62
2009	2.50	0.55	0.58	0.59
2010	4.33	0.56	1.01	0.55
2011	1.70	0.56	0.36	0.60
2012	1.31	0.50	0.26	0.53
2013	4.41	0.36	0.96	0.37
2014	3.11	0.66	0.60	0.69

Appendix C

Yellowtail Flounder - MENH Spring Surveys





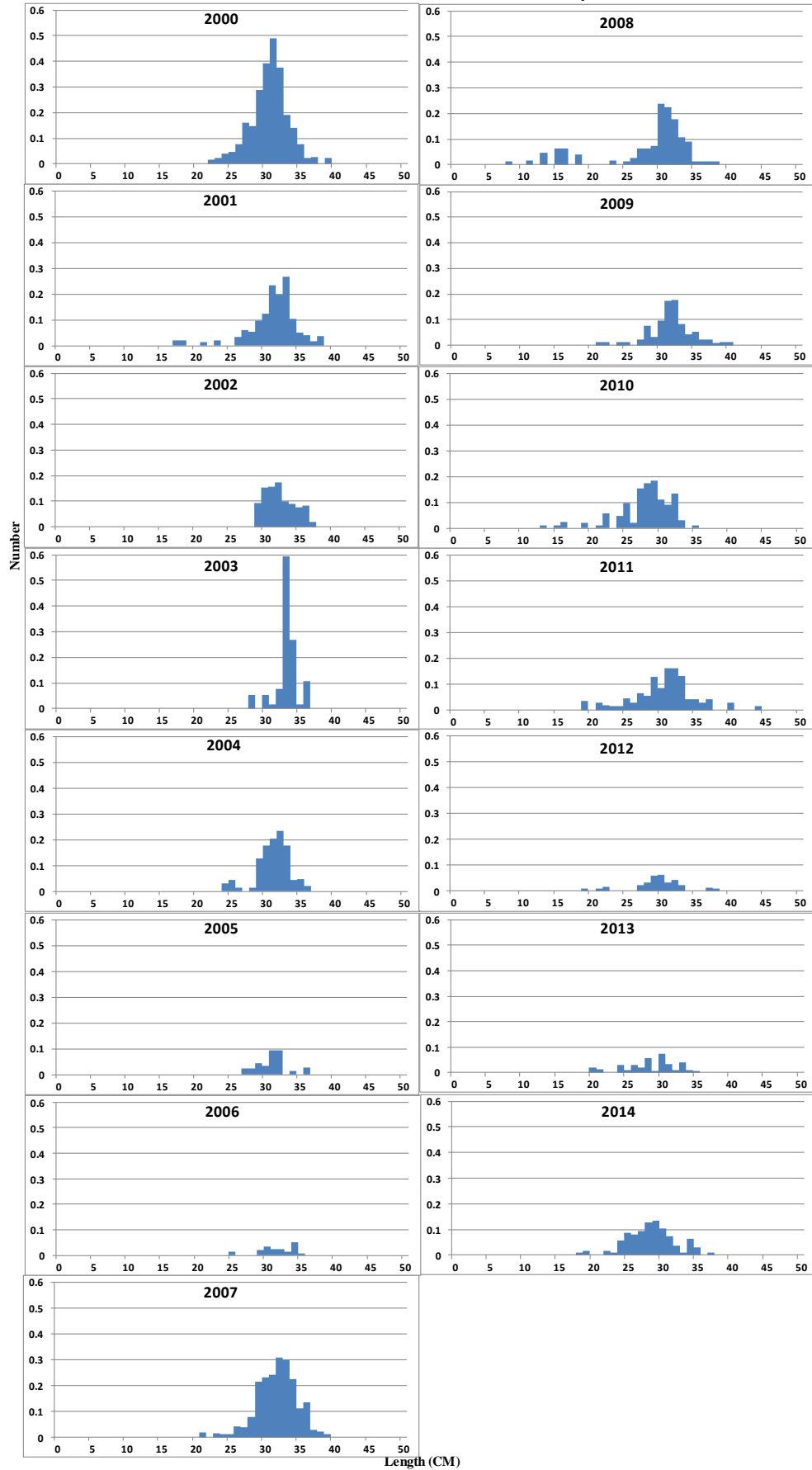
Mean and coefficients of variance for graph overlain on above map fixed stations not included for yellowtail, calculated for regions 1 through 5; Strata 1 through 4
FALL

Stratified Mean

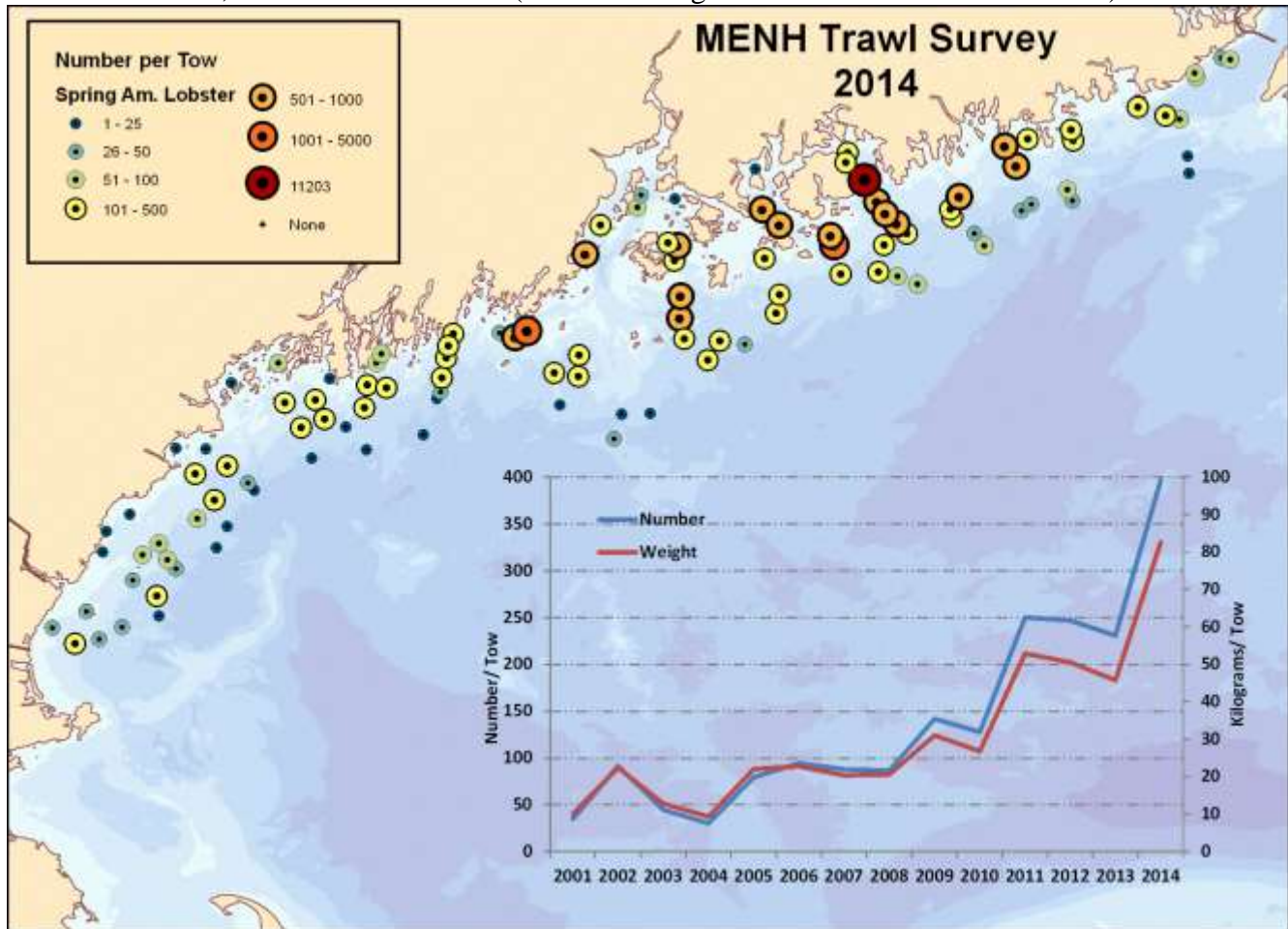
	Number		Weight	
	Mean	CV	Mean	CV
2000	2.55	1.18	0.61	1.14
2001	1.42	0.91	0.35	0.85
2002	0.94	0.53	0.27	0.47
2003	1.19	0.06	0.37	0.06
2004	1.13	0.45	0.28	0.38
2005	0.36	1.10	0.09	1.16
2006	0.19	1.54	0.05	1.52
2007	2.04	0.85	0.52	0.92
2008	1.39	0.72	0.28	0.80
2009	0.87	0.75	0.22	0.74
2010	1.19	0.87	0.26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

Appendix C

Yellowtail Flounder - MENH Fall Survey



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



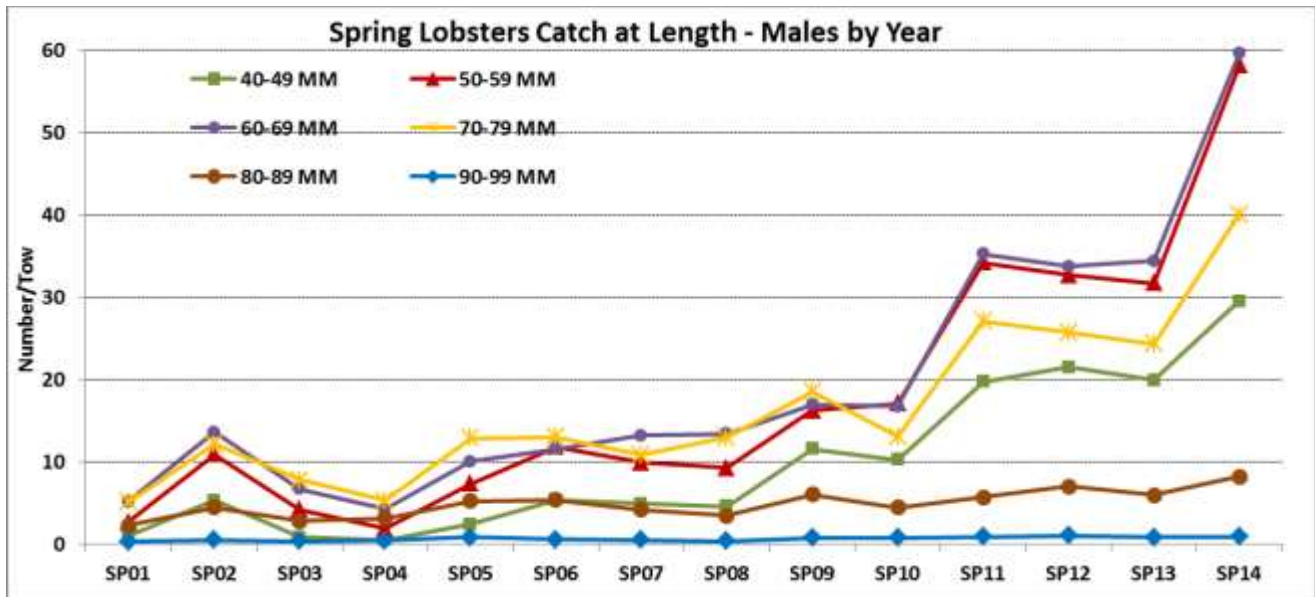
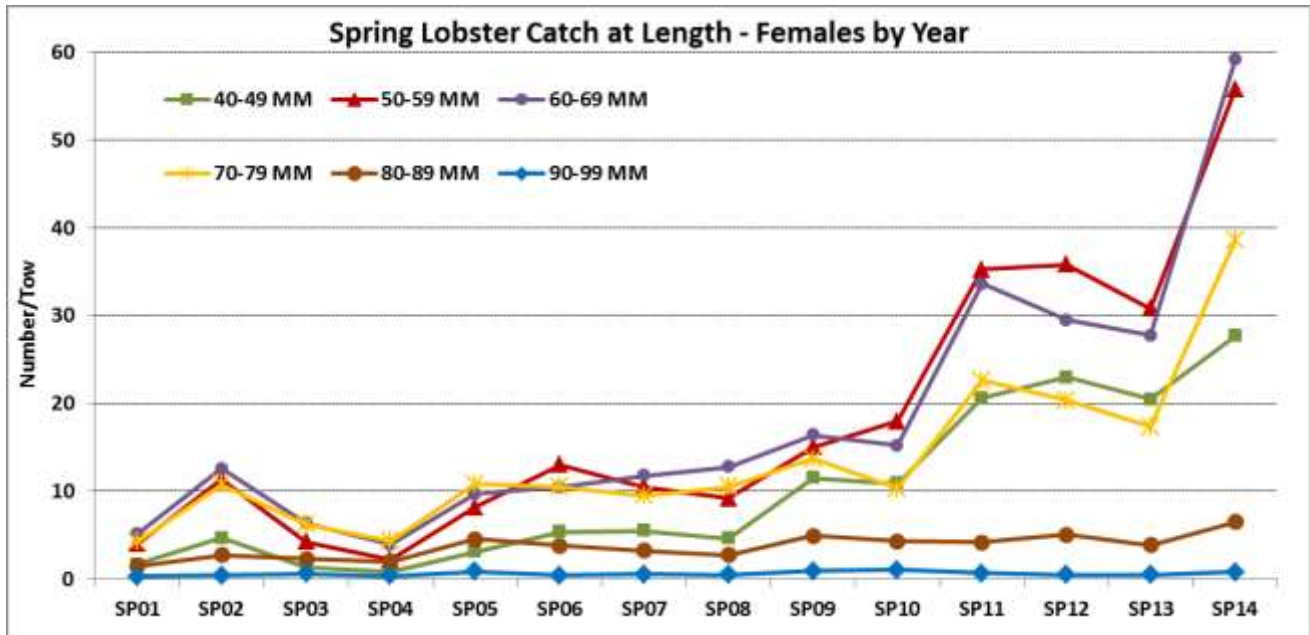
Means and coefficients of variance for graph overlain on above map fixed stations not included for lobster, calculated for regions 1 through 5; Strata 1 through 3

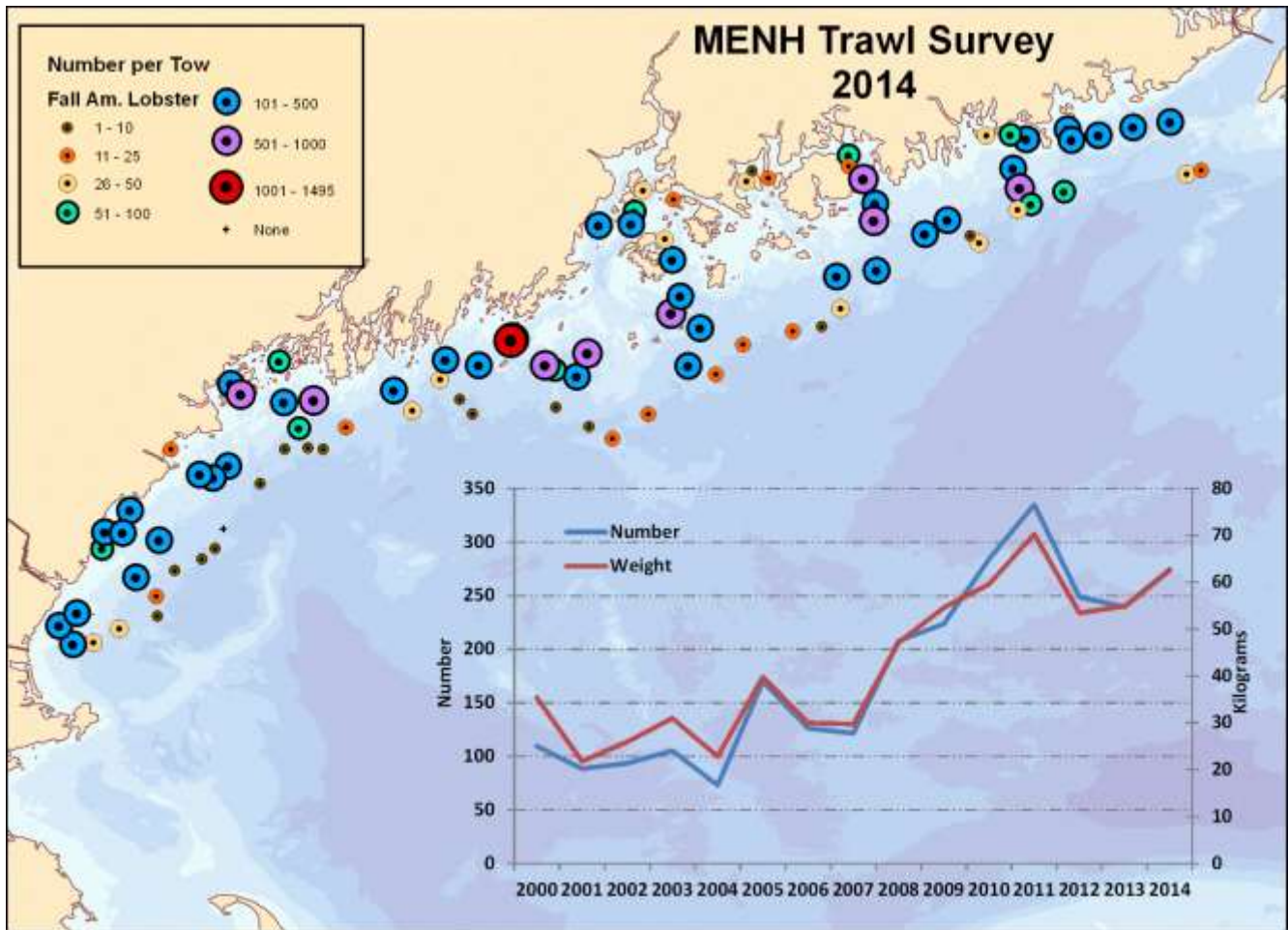
SPRING

	Stratified Mean		Stratified Mean	
	Number Mean	CV	Weight Mean	CV
2001	34.67	0.33	10.04	0.29
2002	91.47	0.32	22.42	0.29
2003	44.64	0.32	12.81	0.27
2004	30.17	0.24	9.31	0.22
2005	79.24	0.36	22.02	0.33
2006	94.52	0.46	22.75	0.38
2007	87.97	0.27	20.38	0.25
2008	86.54	0.46	20.63	0.47
2009	141.89	0.48	31.02	0.38
2010	127.54	0.24	26.80	0.21
2011	250.20	0.27	52.90	0.25
2012	247.04	0.26	50.57	0.23
2013	230.63	0.25	45.77	0.23
2014	396.67	0.67	82.67	0.64

Appendix C

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

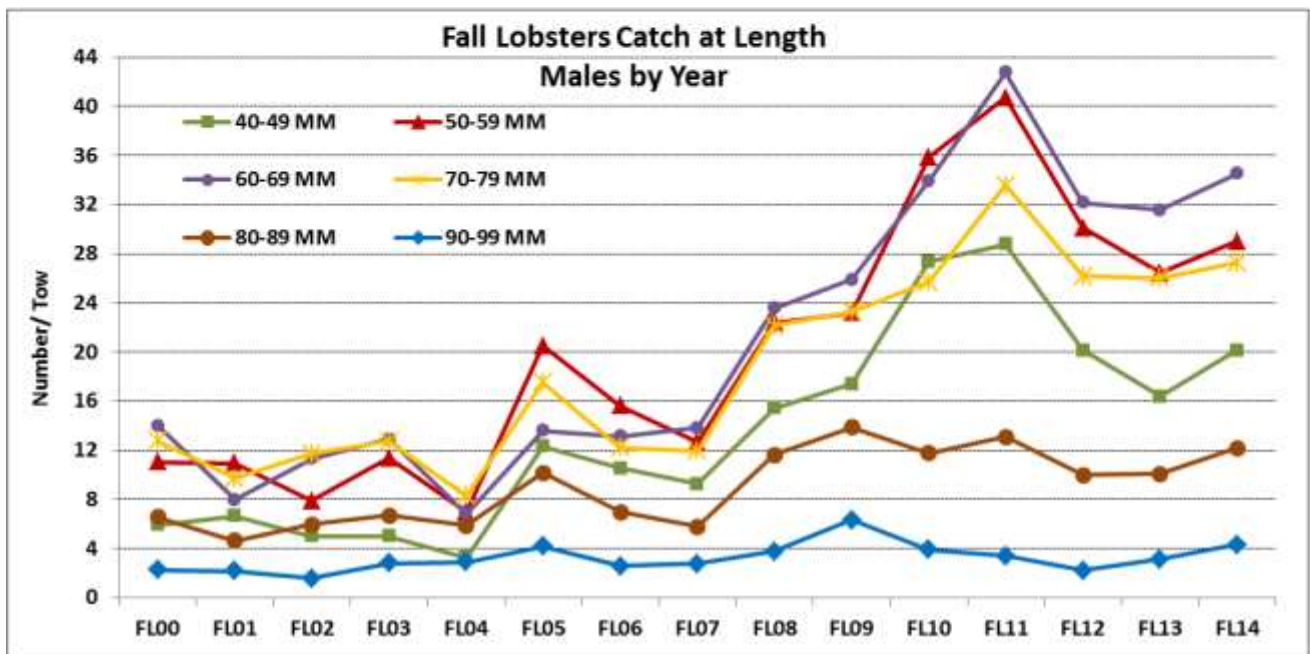
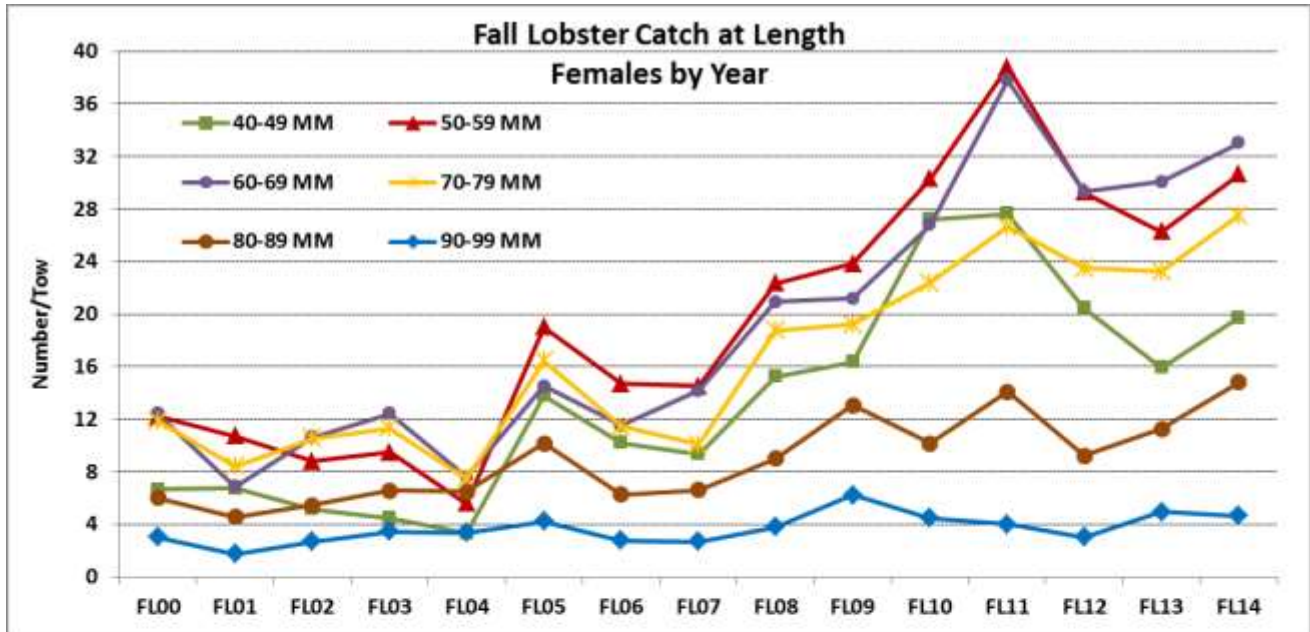
FALL

Stratified Mean

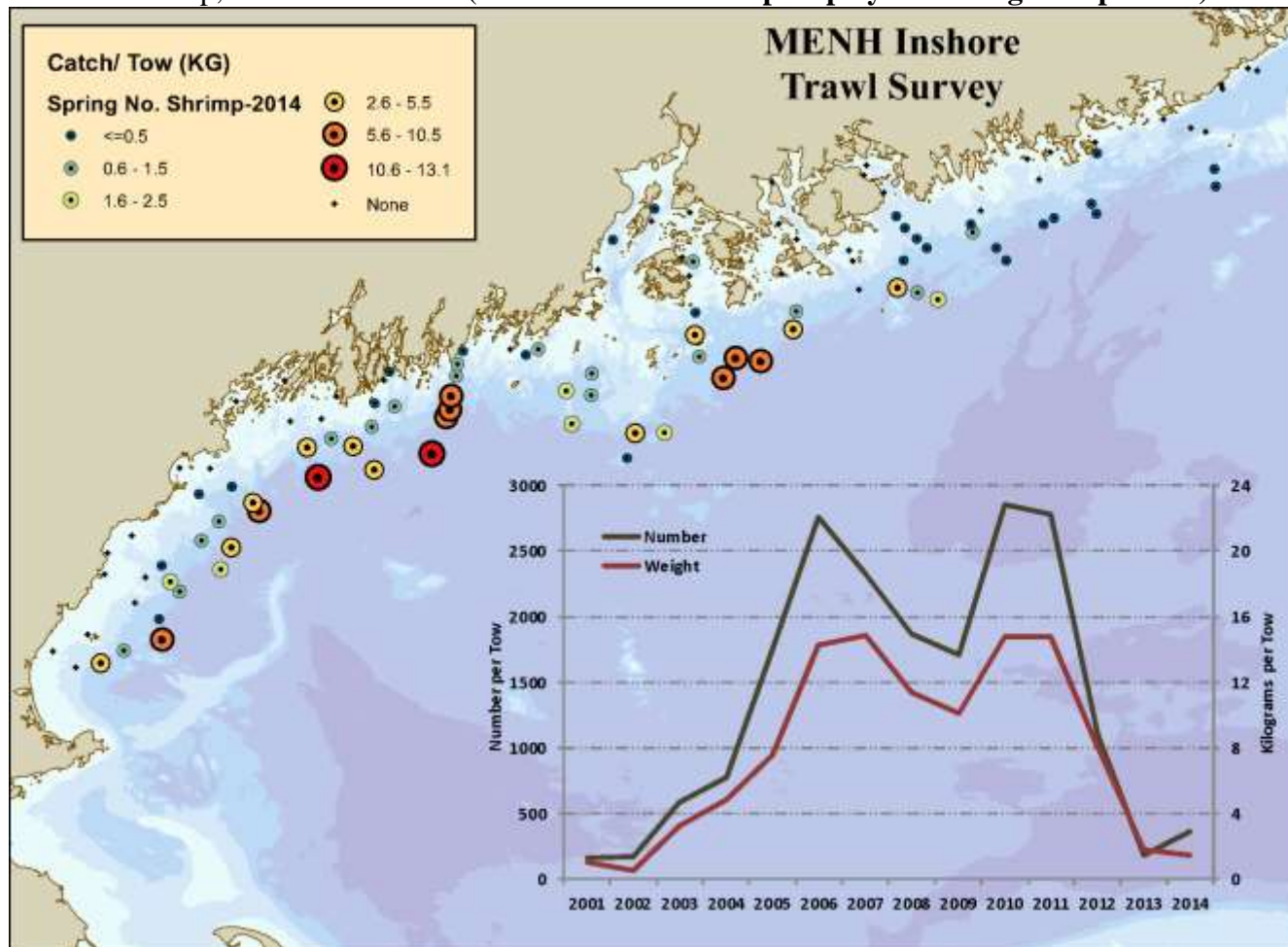
	Number		Weight	
	Mean	CV	Mean	CV
2000	109.43	0.39	35.44	0.30
2001	88.61	0.37	21.79	0.28
2002	93.61	0.23	25.97	0.19
2003	105.40	0.16	30.99	0.16
2004	73.21	0.36	22.84	0.28
2005	169.79	0.30	39.83	0.31
2006	126.31	0.33	30.02	0.31
2007	121.53	0.30	29.75	0.27
2008	207.77	0.36	47.15	0.25
2009	223.66	0.34	54.62	0.27
2010	280.43	0.21	59.57	0.21
2011	334.86	0.23	70.25	0.21
2012	247.29	0.20	53.20	0.18
2013	239.39	0.17	54.86	0.18
2014	273.46	0.21	62.80	0.18

Appendix C

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



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

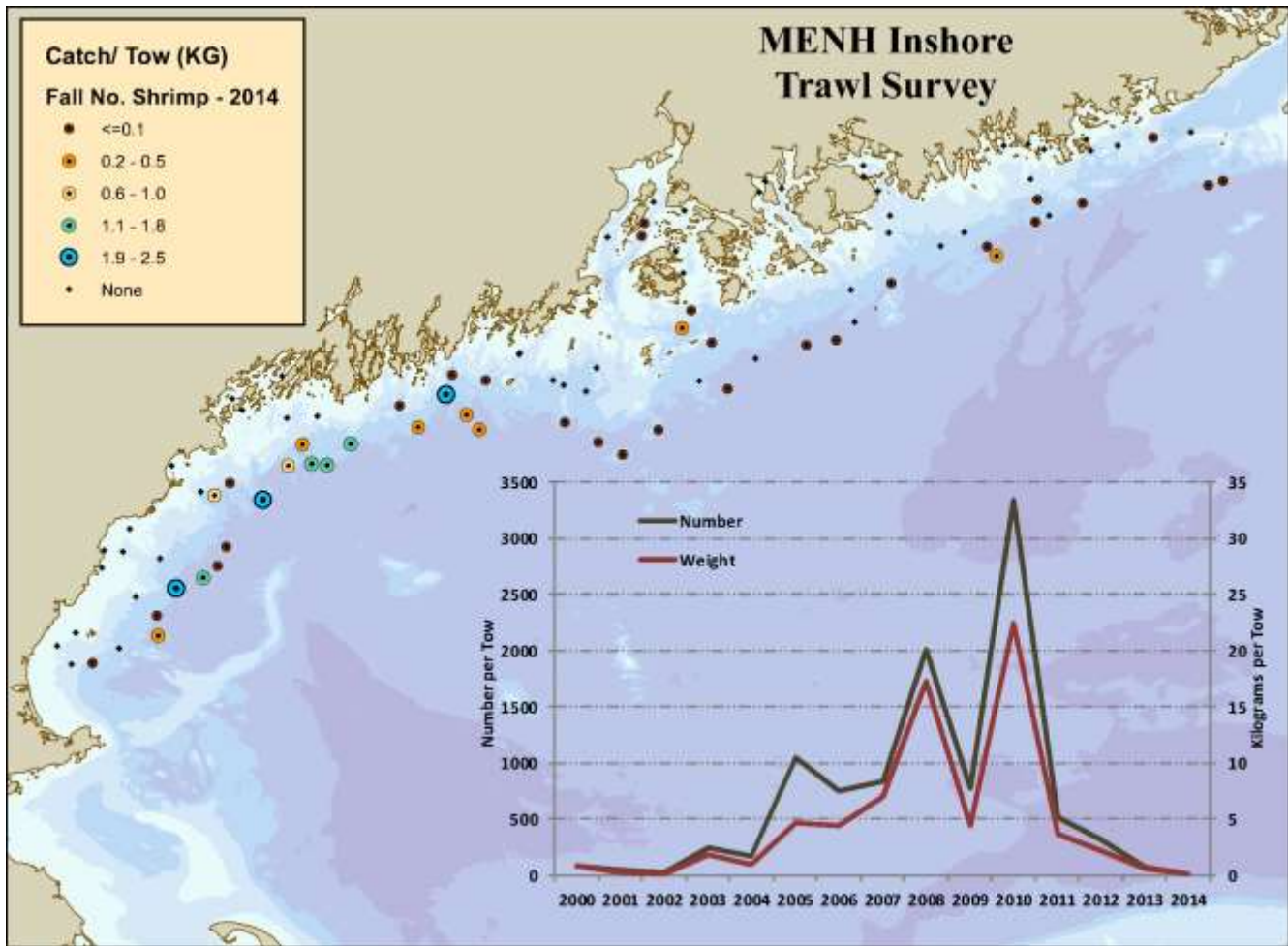


Mean and coefficients of variance for graph overlain on above map fixed stations not included for shrimp, calculated for regions 1 through 5; strata 1 through 4

SPRING

Stratified Mean

	Number Mean	CV	Weight Mean	CV
2001	159.77	0.84	1.05	0.84
2002	167.40	1.04	0.50	1.15
2003	582.09	0.23	3.25	0.21
2004	774.30	0.32	4.86	0.42
2005	1746.05	0.16	7.54	0.17
2006	2754.63	0.30	14.25	0.31
2007	2327.07	0.47	14.86	0.53
2008	1865.34	0.19	11.41	0.20
2009	1709.08	0.26	10.08	0.28
2010	2849.73	0.27	14.76	0.34
2011	2784.09	0.18	14.80	0.19
2012	1089.37	0.36	7.95	0.39
2013	180.84	0.39	1.79	0.41
2014	364.21	0.30	1.42	0.29



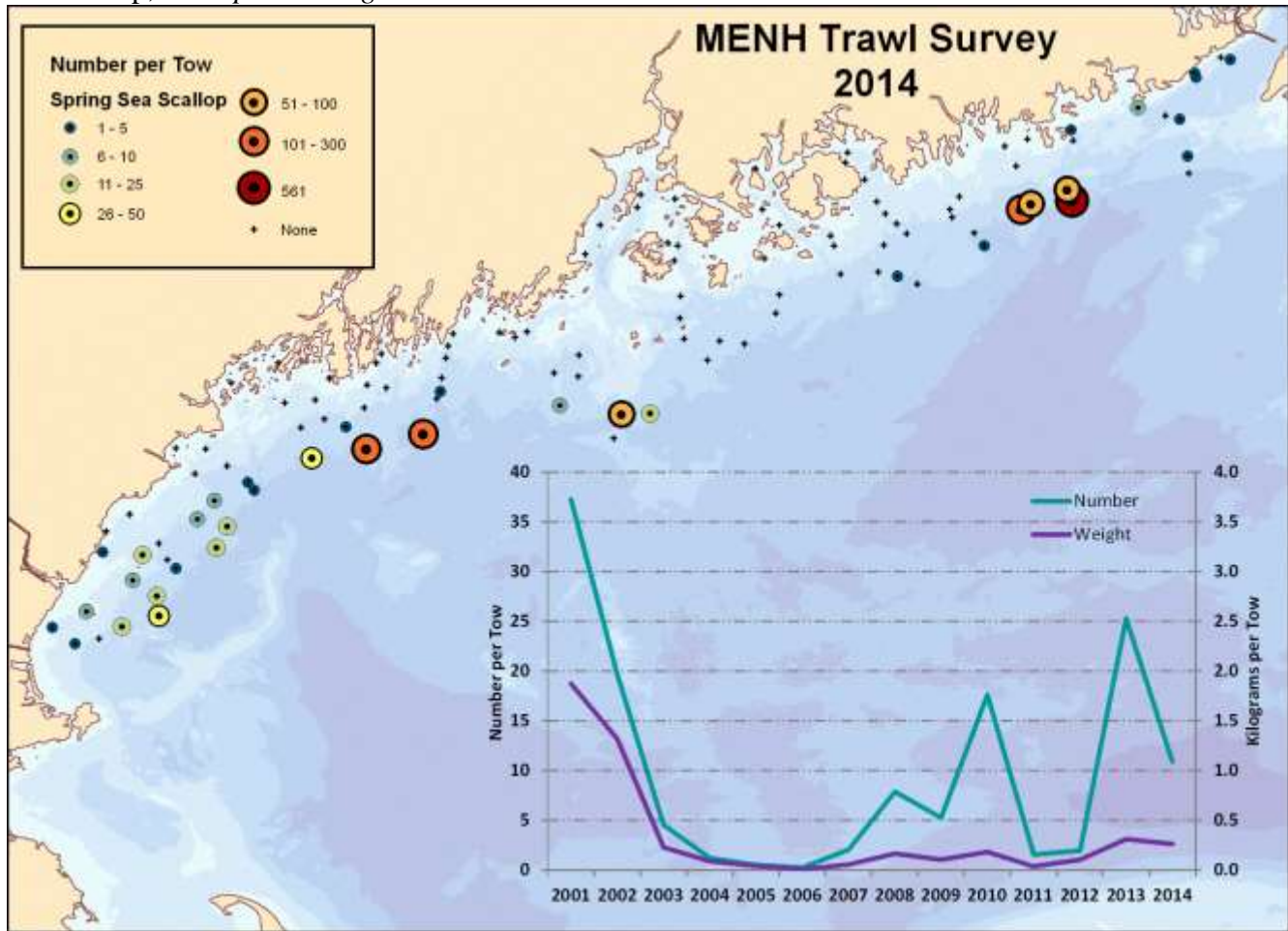
Mean and coefficients of variance for graph overlain on above map fixed stations not included for shrimp, calculated for regions 1 through 5; strata 1 through 4
FALL

Stratified Mean

	Number		Weight	
	Mean	CV	Mean	CV
2000	92.57	1.43	0.88	1.14
2001	49.89	1.11	0.27	1.11
2002	22.95	1.00	0.16	0.99
2003	242.48	0.66	1.80	0.64
2004	175.04	0.99	1.03	0.95
2005	1052.09	0.07	4.63	0.06
2006	749.43	0.54	4.44	0.60
2007	843.76	0.38	7.00	0.38
2008	2010.33	0.68	17.29	0.76
2009	775.52	0.15	4.47	0.17
2010	3340.03	0.24	22.47	0.26
2011	518.02	0.31	3.72	0.31
2012	318.03	0.37	2.20	0.33
2013	76.62	0.88	0.61	0.94
2014	16.40	0.46	0.16	0.52

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

Sea scallop, *Placopecten magelanicus*



Mean 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

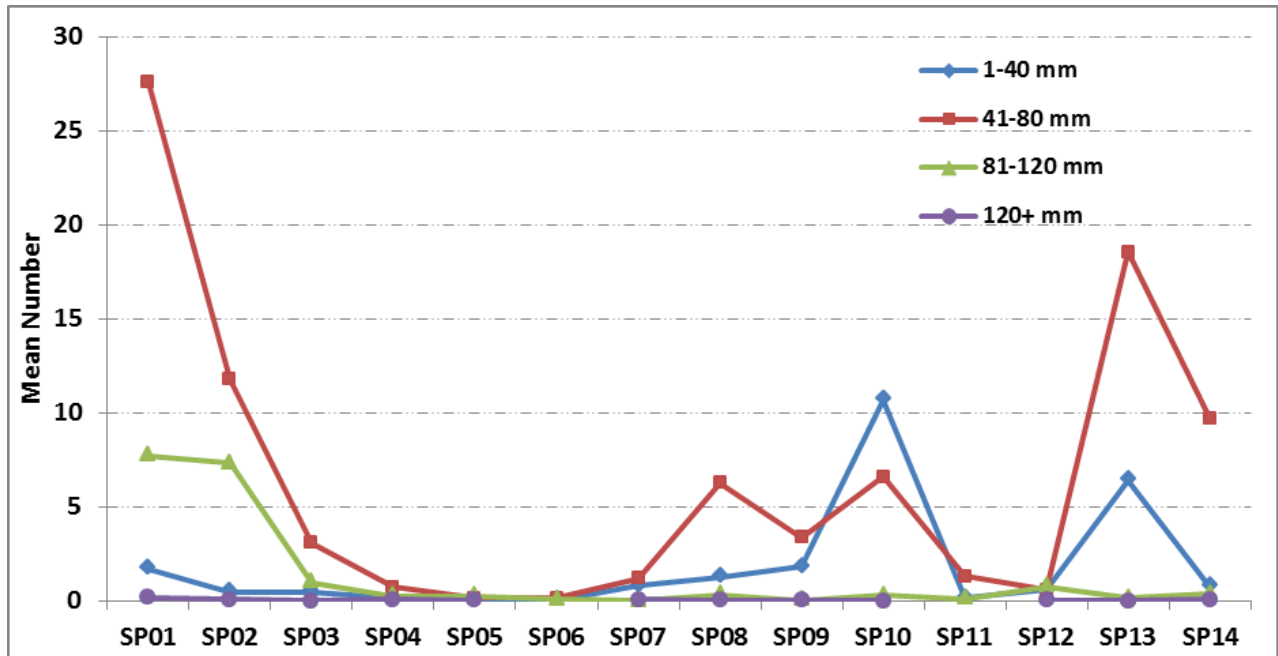
Stratified Mean

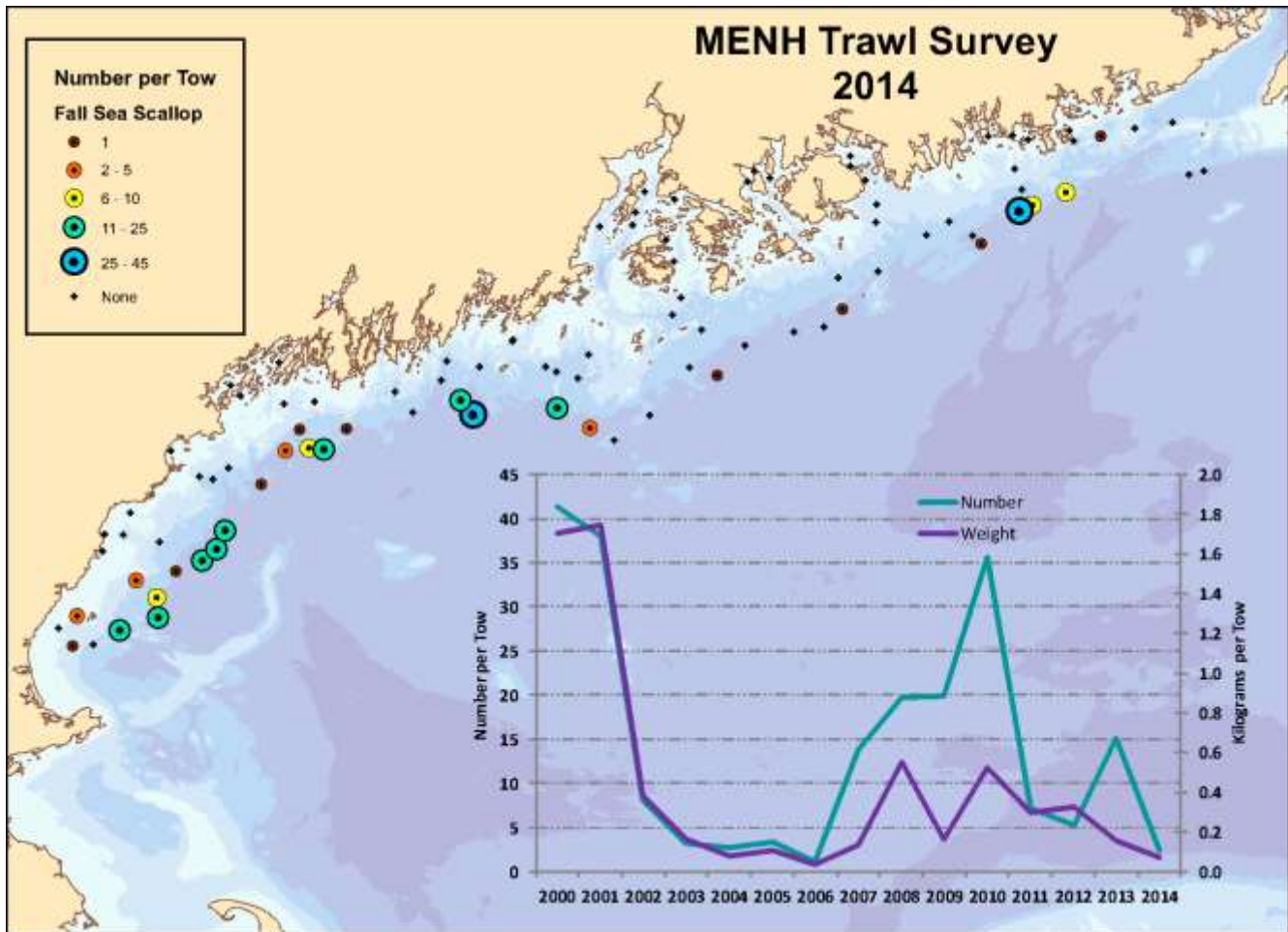
	Number Mean	CV	Weight Mean	CV
2001	37.25	0.58	1.87	0.98
2002	19.66	0.71	1.32	0.74
2003	4.55	0.49	0.23	0.57
2004	1.23	0.50	0.09	0.48
2005	0.51	0.56	0.04	0.75
2006	0.27	0.92	0.01	0.97
2007	2.08	0.65	0.06	0.88
2008	7.89	0.58	0.17	0.58
2009	5.28	0.75	0.11	0.70
2010	17.61	1.11	0.18	0.99
2011	1.59	0.53	0.04	0.56
2012	1.98	0.75	0.11	1.14
2013	25.27	0.76	0.31	0.85
2014	10.91	0.75	0.26	0.66

Appendix C

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

Spring





Mean and coefficients of 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		Weight	
	Mean	CV	Mean	CV
2000	41.30	0.63	1.70	0.85
2001	38.01	0.67	1.75	0.49
2002	8.13	0.55	0.39	0.60
2003	3.17	1.08	0.16	0.97
2004	2.72	0.96	0.08	0.65
2005	3.43	0.51	0.11	0.49
2006	1.16	0.79	0.04	0.56
2007	13.94	0.75	0.14	0.52
2008	19.80	0.54	0.55	0.71
2009	19.88	0.80	0.17	0.51
2010	35.57	0.51	0.53	0.71
2011	7.12	1.56	0.30	1.92
2012	5.21	0.79	0.33	1.57
2013	15.17	0.51	0.15	0.39
2014	2.49	0.54	0.07	0.64

Appendix C

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

Fall

