

# **Maine-New Hampshire**

## **Inshore Trawl Survey**

# Survey Design

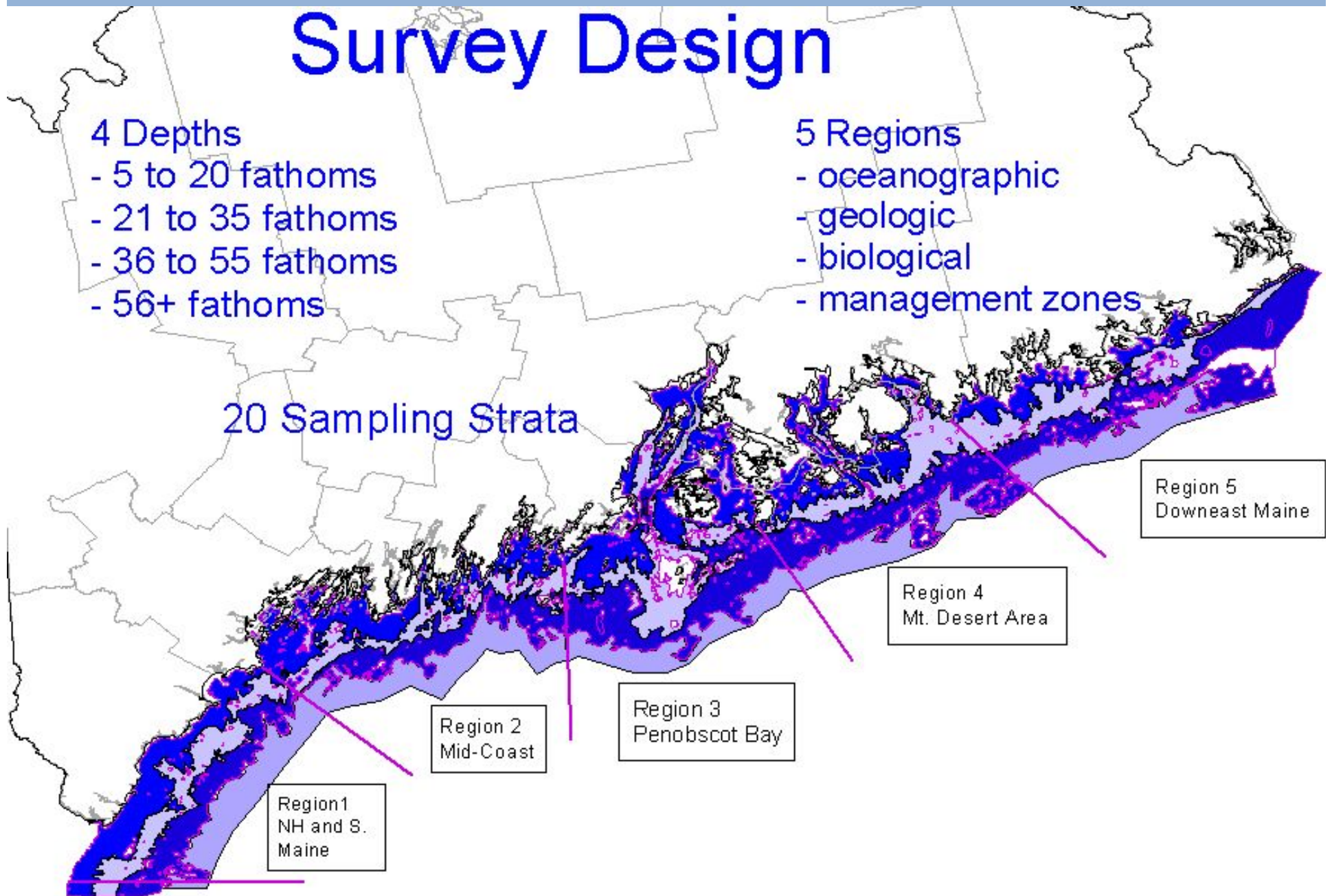
## 4 Depths

- 5 to 20 fathoms
- 21 to 35 fathoms
- 36 to 55 fathoms
- 56+ fathoms

## 5 Regions

- oceanographic
- geologic
- biological
- management zones

## 20 Sampling Strata



Region 5  
Downeast Maine

Region 4  
Mt. Desert Area

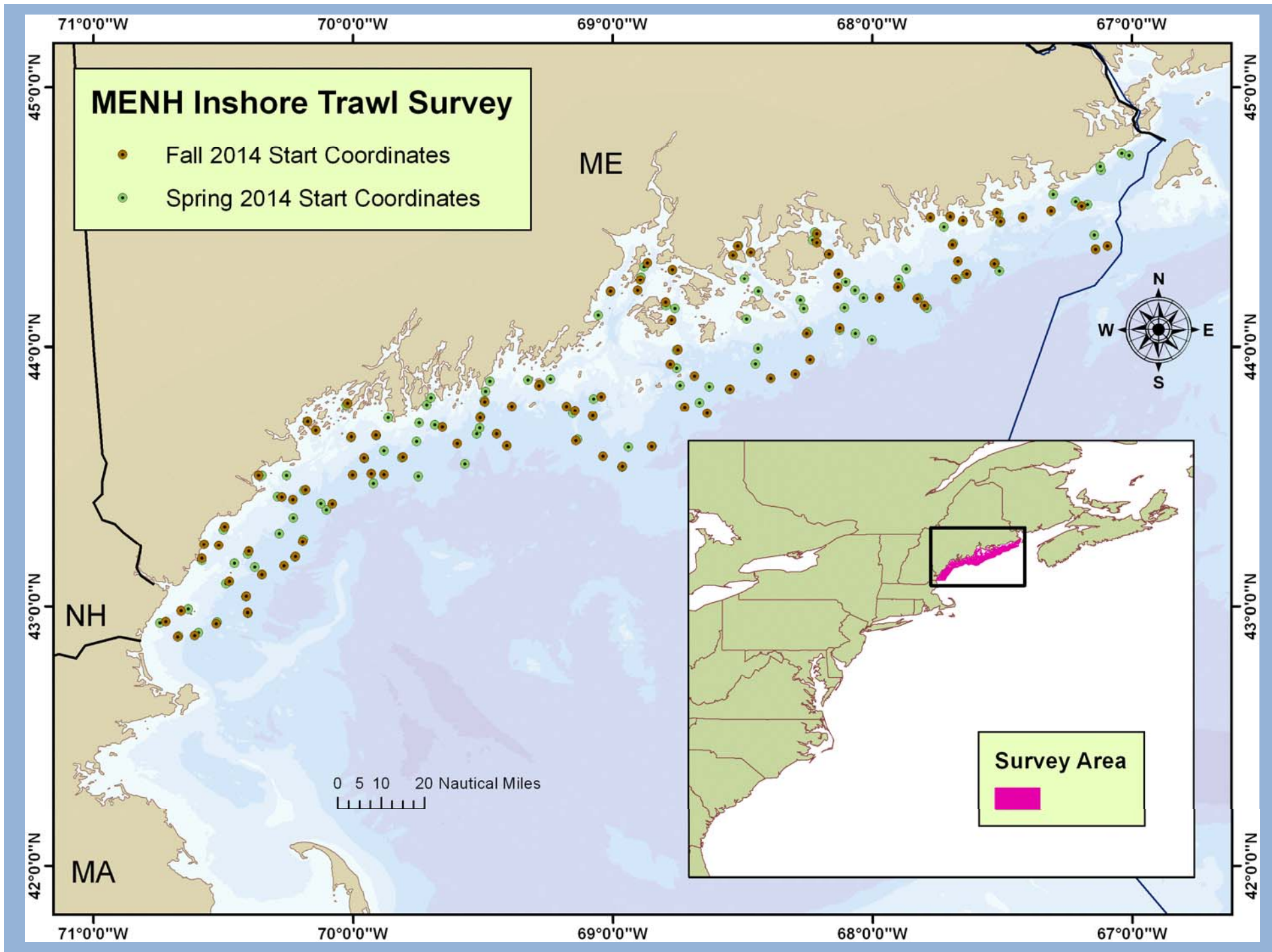
Region 3  
Penobscot Bay

Region 2  
Mid-Coast

Region 1  
NH and S.  
Maine

# Goals

- To fill in an information gap in Maine and New Hampshire inshore waters
- To create a long-term fisheries-independent database
- To contribute to the interpretation of trends and patterns seen in other fisheries studies
- To foster collaborative research between scientists and the fishing industry

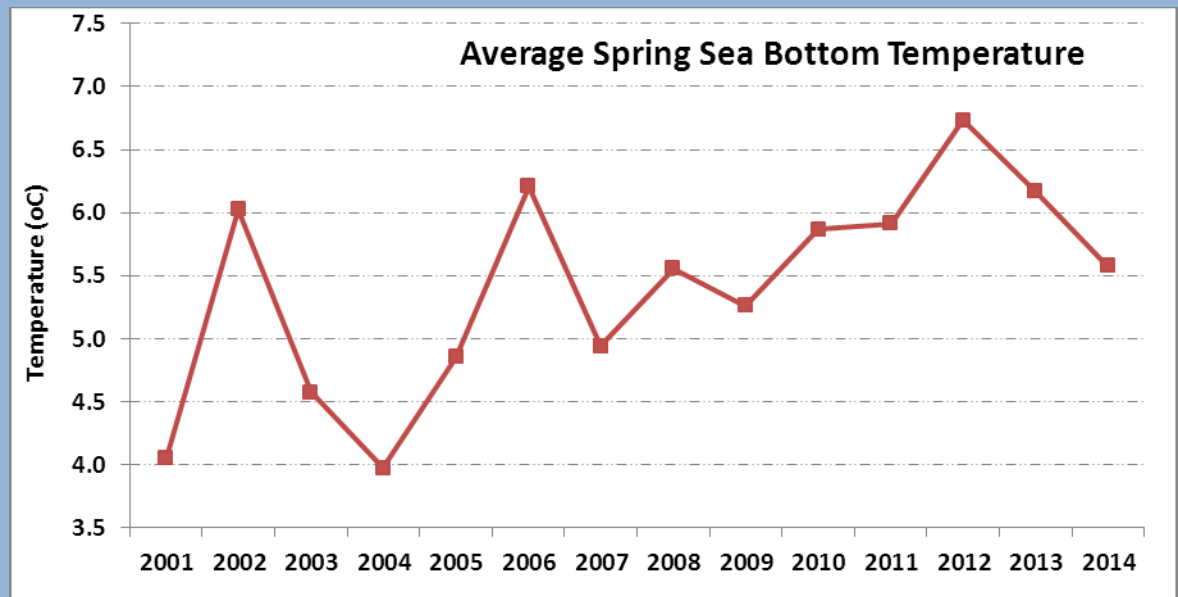
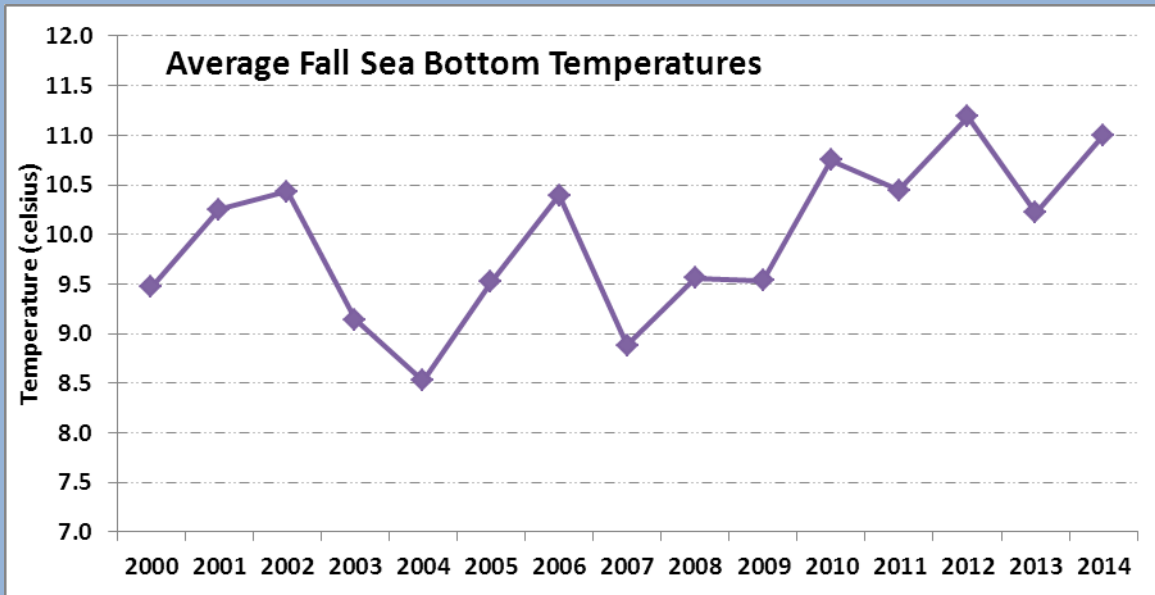




# 2014

- **Spring Survey: Portsmouth, NH on May 5, 2014 through June 6, 2014, off Cutler, ME.**
- **25 days, 114 tows completed, 97% of 100 random stations; 16 fixed.**
- **Fall Survey: Portsmouth, NH on September 29, 2014 through October 31, 2014, off Cutler, ME.**
- **25 days, 94 tows completed, 100% random.**
- **Fixed stations for the fall survey were dropped due to poor completion rates.**

# Temperatures



# Biological Samples

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

Fall 2014 data is still being entered and audited.  
Food habits data was collected on monkfish.  
Biological sampling was also done on species below.

<b>Otoliths Collected for Fall 2014</b>	
<b>Atlantic Cod</b>	28
<b>Haddock</b>	168
<b>White Hake</b>	312
<b>Witch Flounder</b>	136

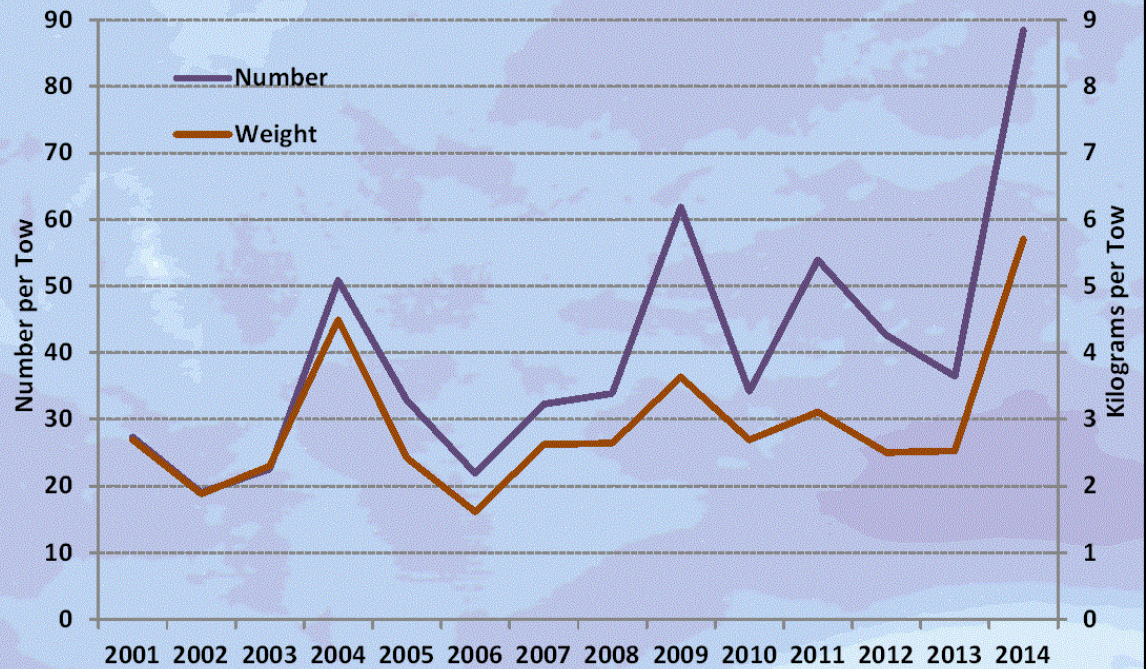
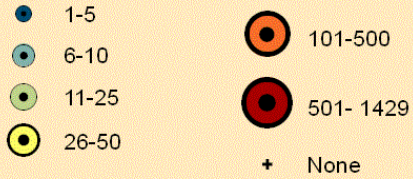


# MENH Trawl Survey 2014

## Winter Flounder

Number per Tow

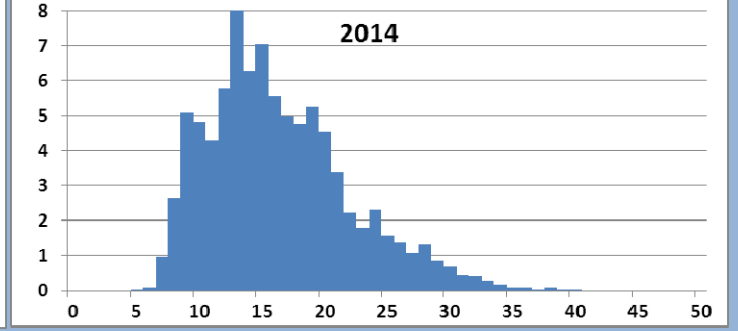
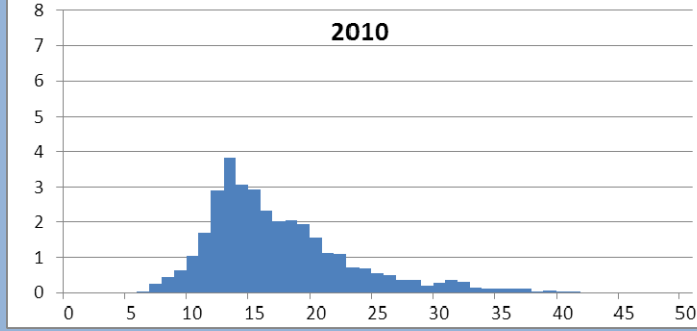
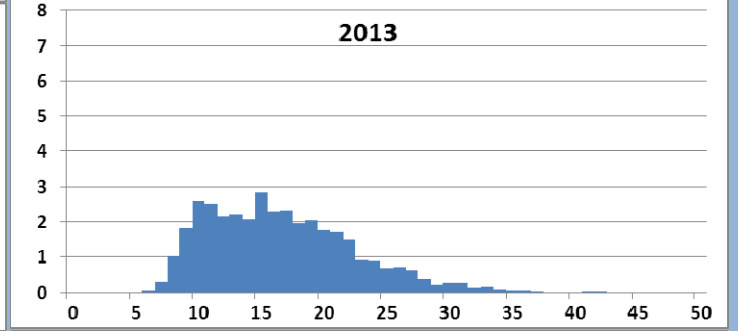
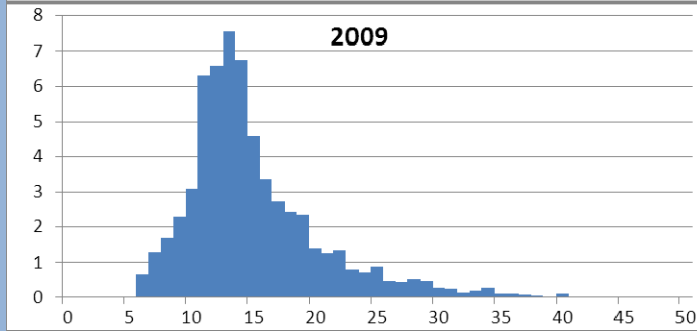
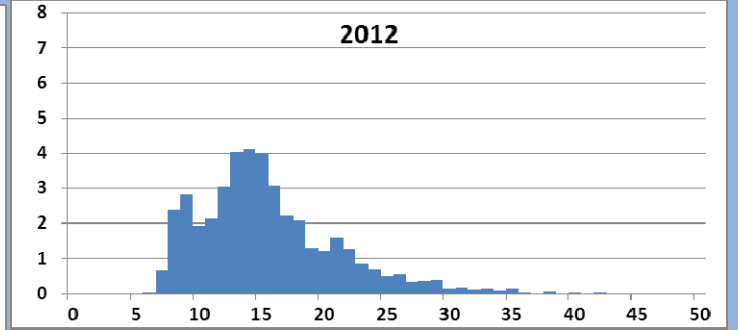
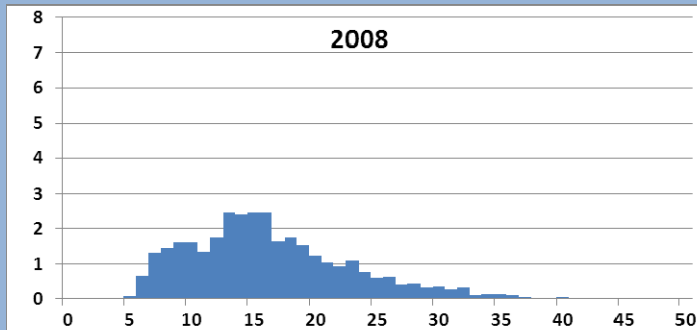
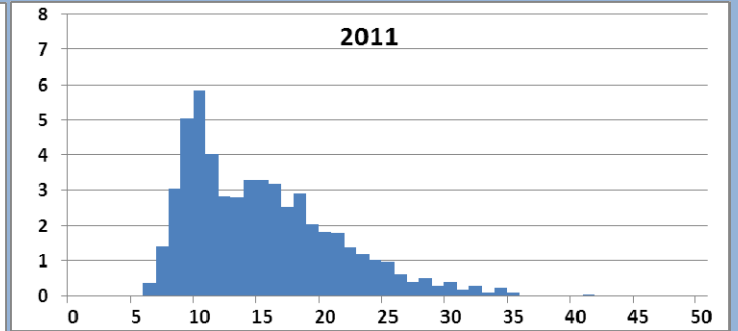
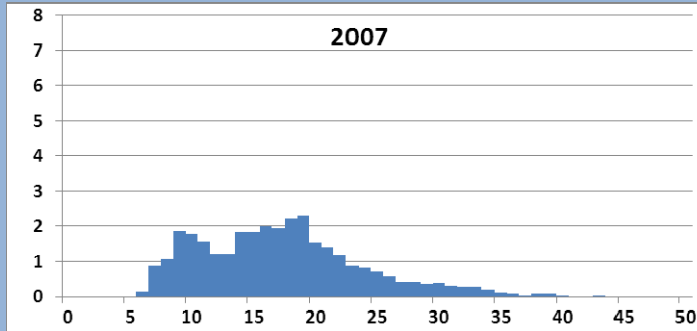
Spring Winter FL





**MENH Winter  
Flounder  
Catch at  
Length  
(Stratified  
Mean)  
Recent  
Spring  
Surveys**

Number



Length (CM)



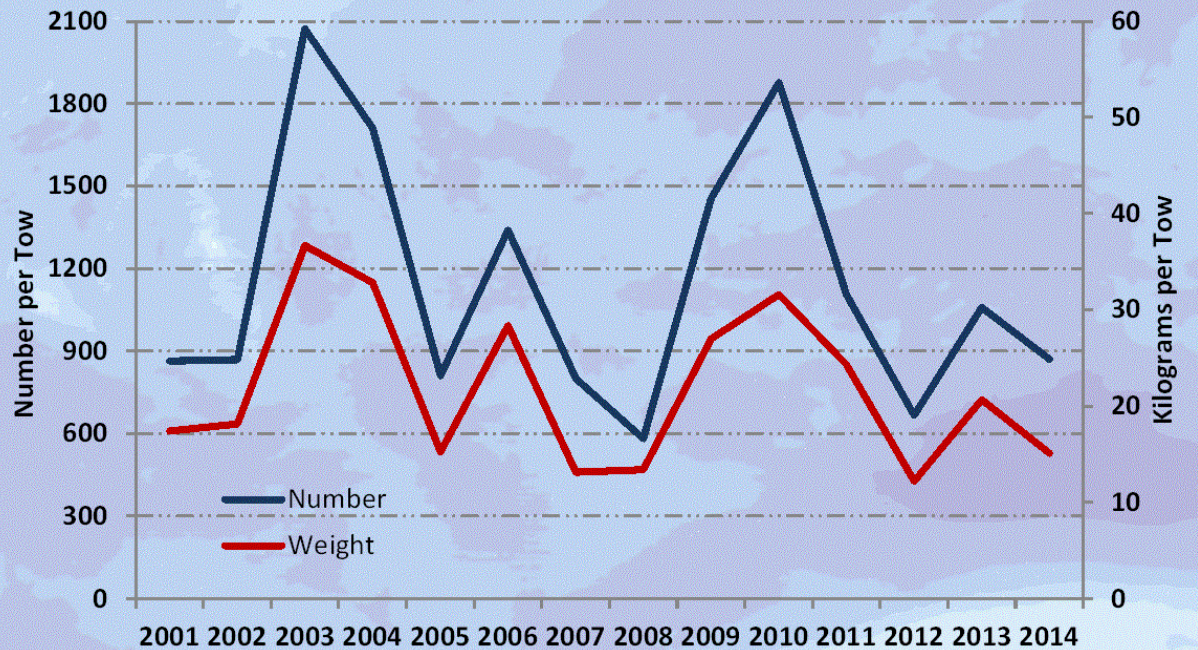
# MENH Trawl Survey 2014

## Number per Tow

### Spring Atl. Herring

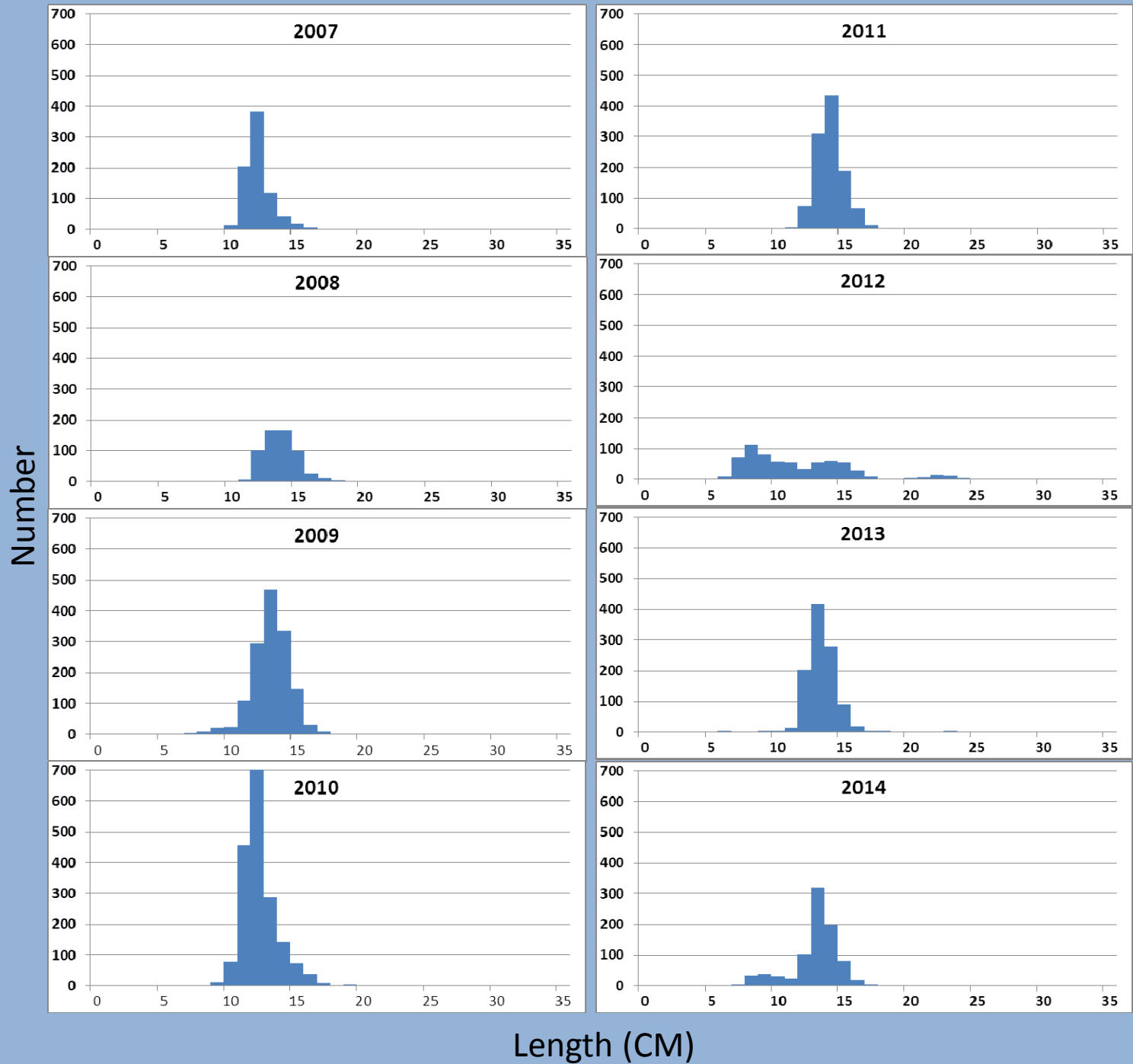


## Atlantic Herring





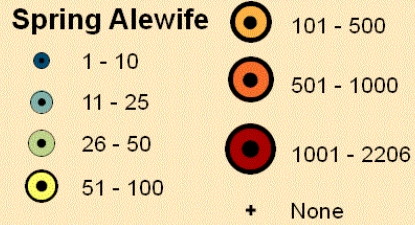
# MENH Atlantic Herring Catch at Length Recent Spring Surveys



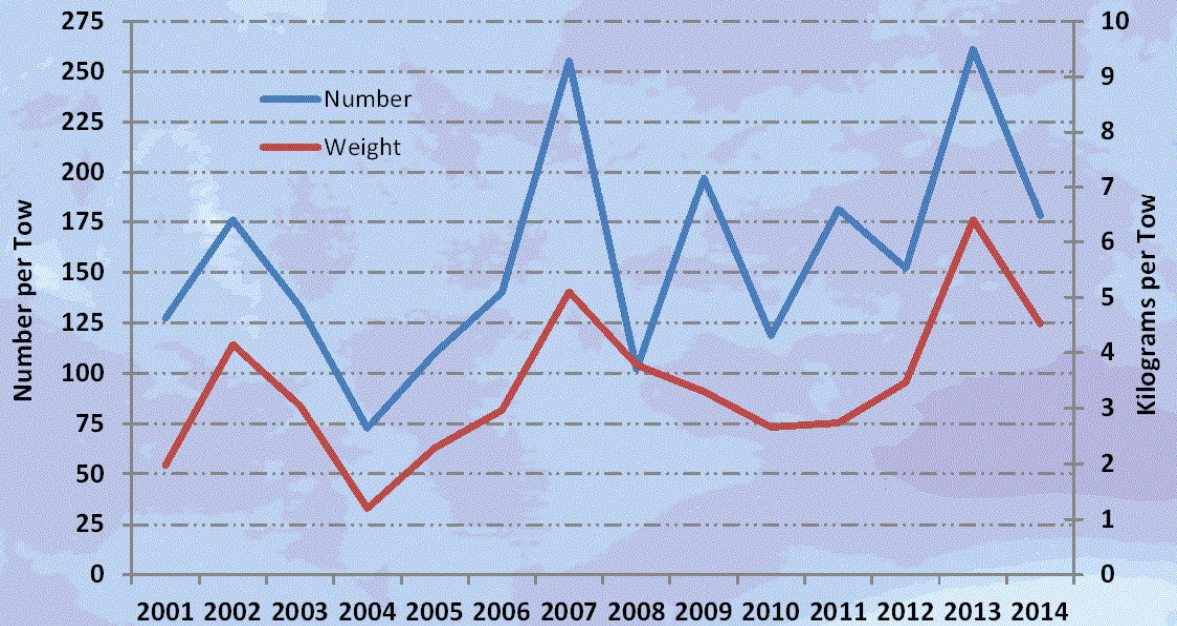


# MENH Trawl Survey 2014

## Number per Tow



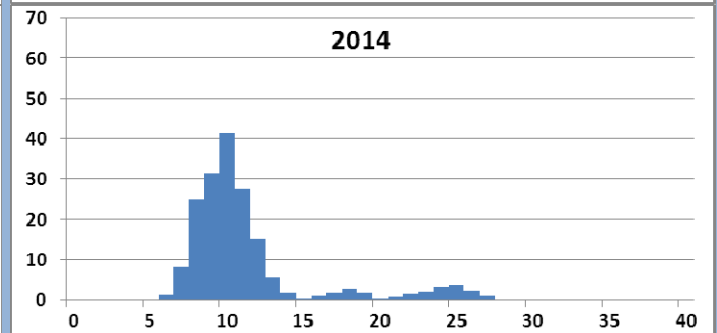
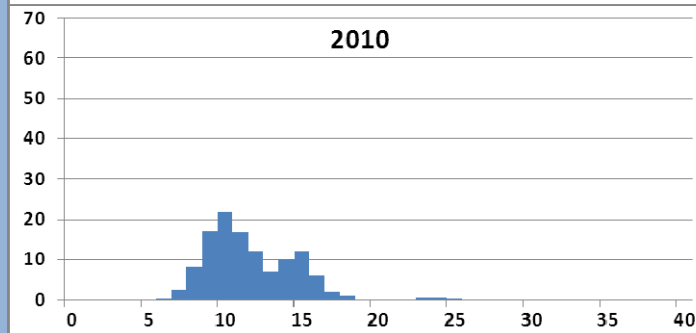
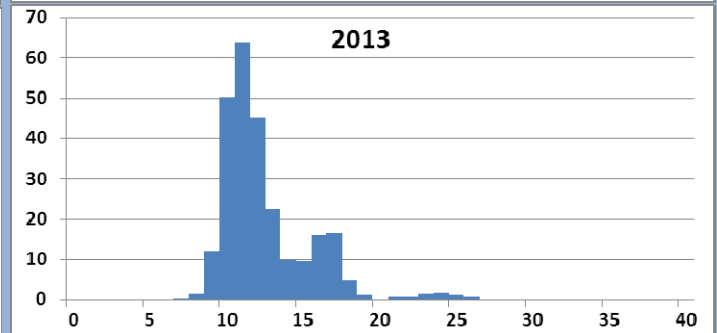
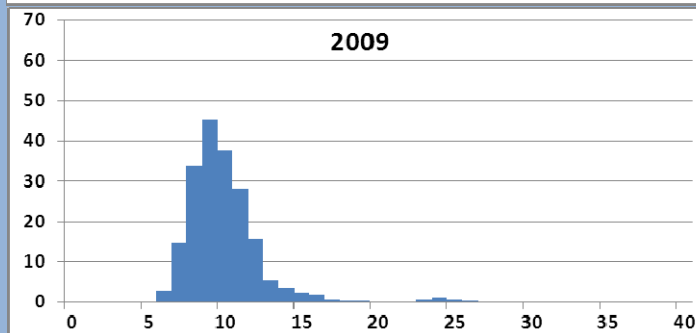
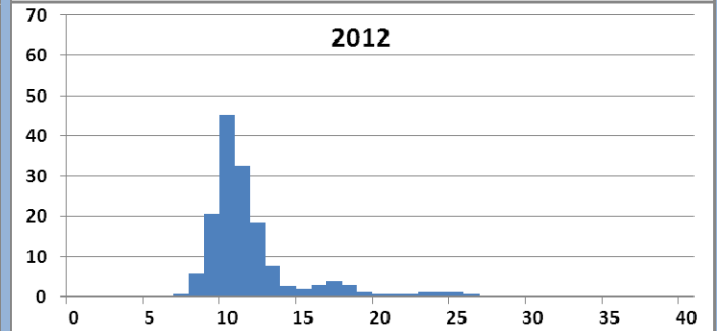
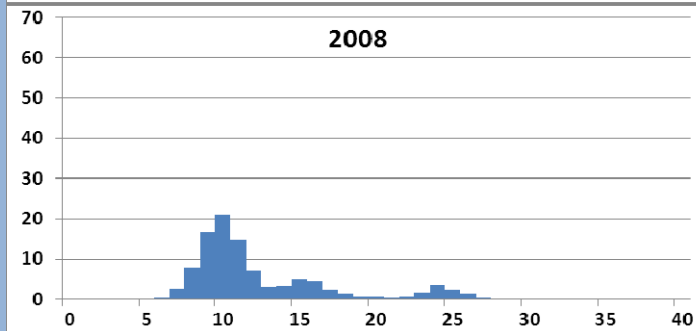
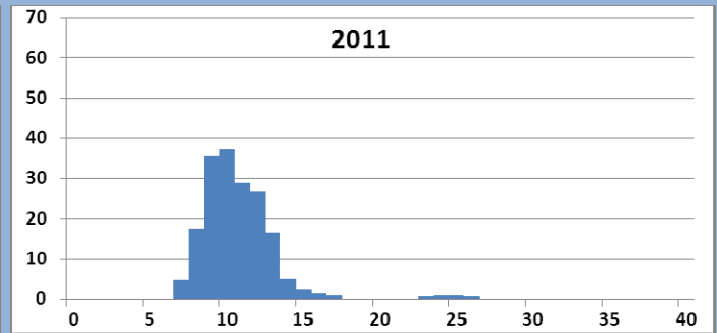
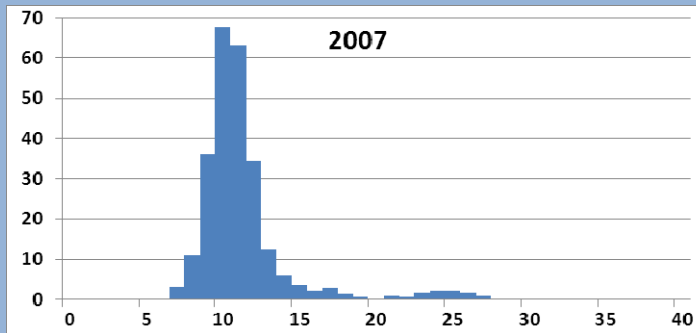
## Alewife





# MENH Alewife Catch at Length - Recent Spring Surveys

Number

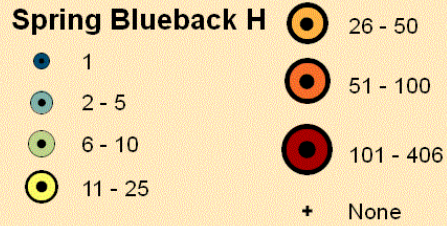


Length (CM)

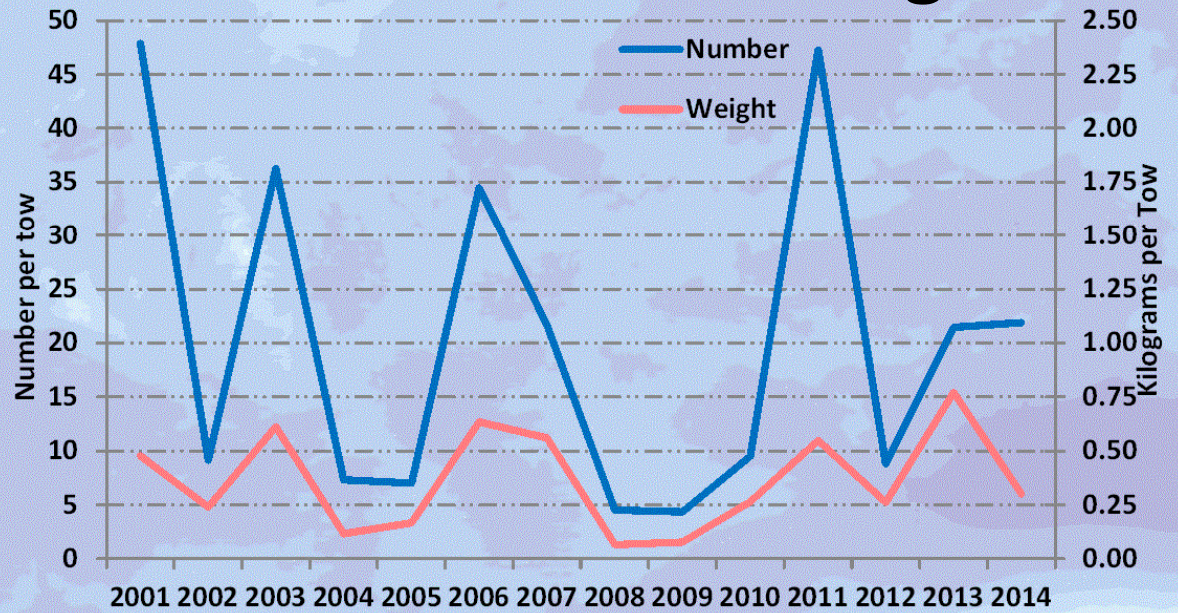


# MENH Trawl Survey 2014

Number per Tow

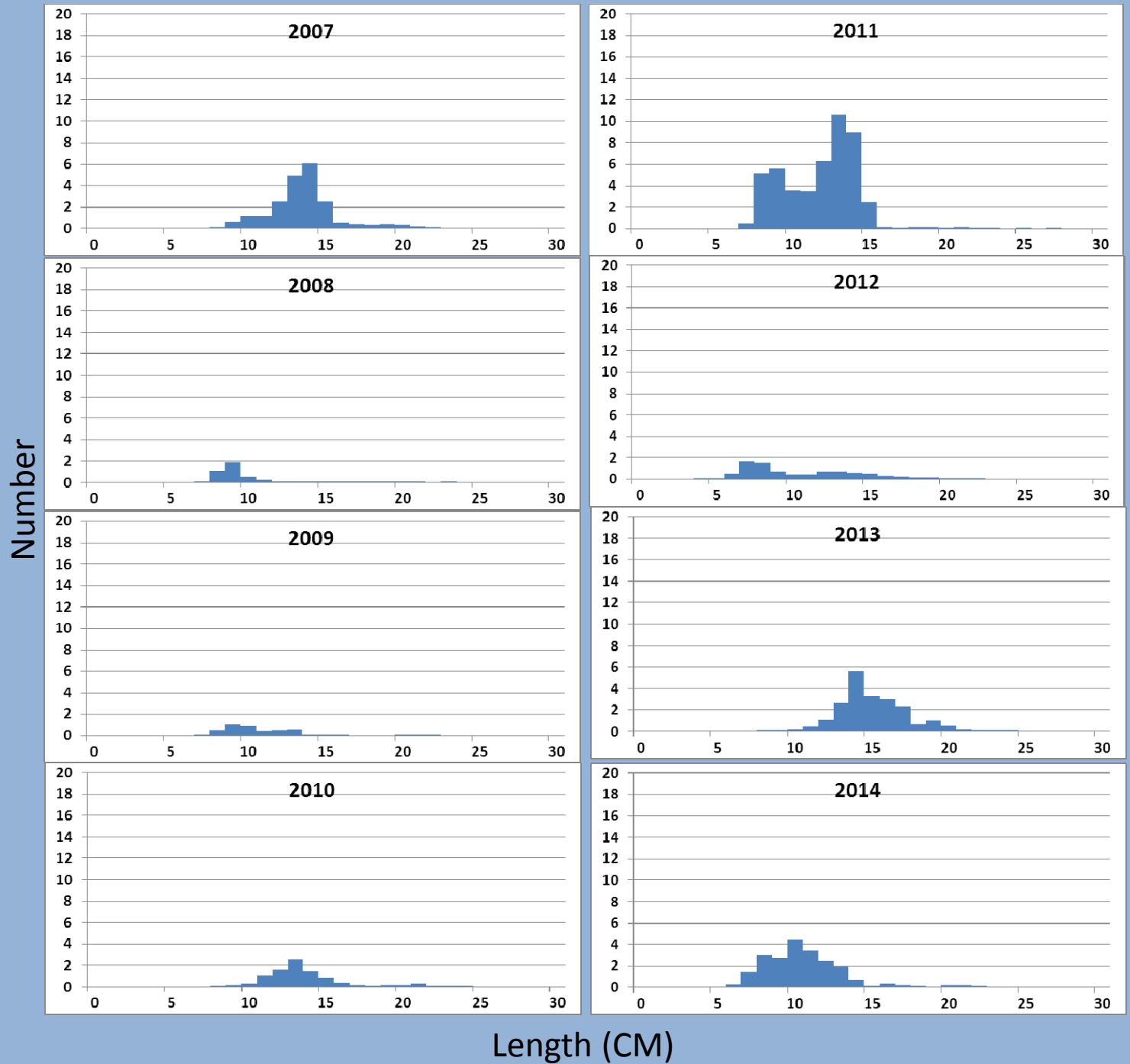


## Blueback Herring





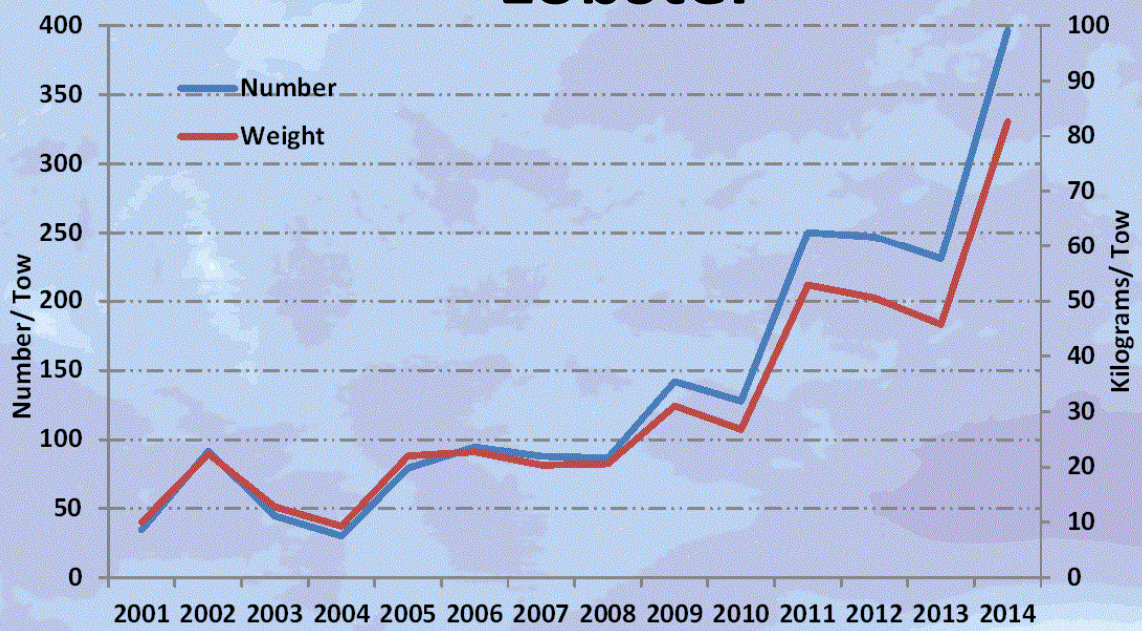
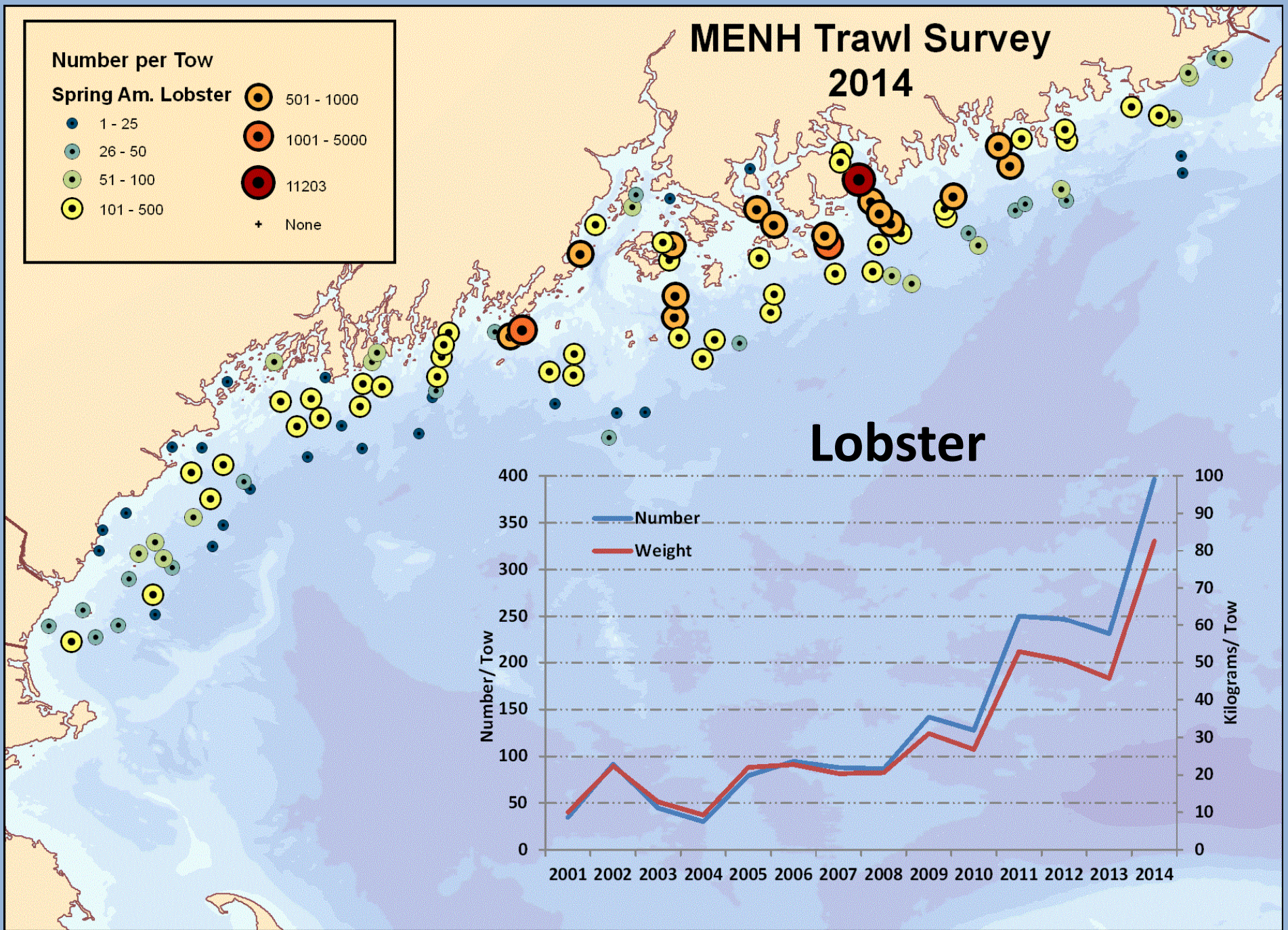
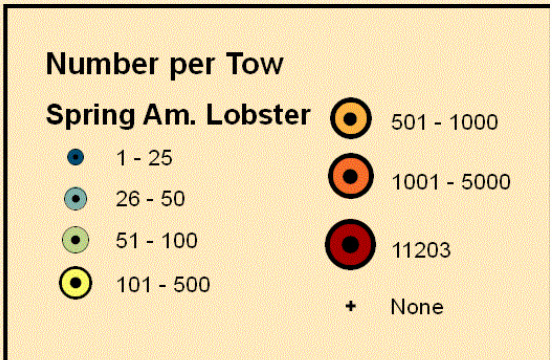
# MENH Blueback Herring Catch at Length Recent Spring Surveys





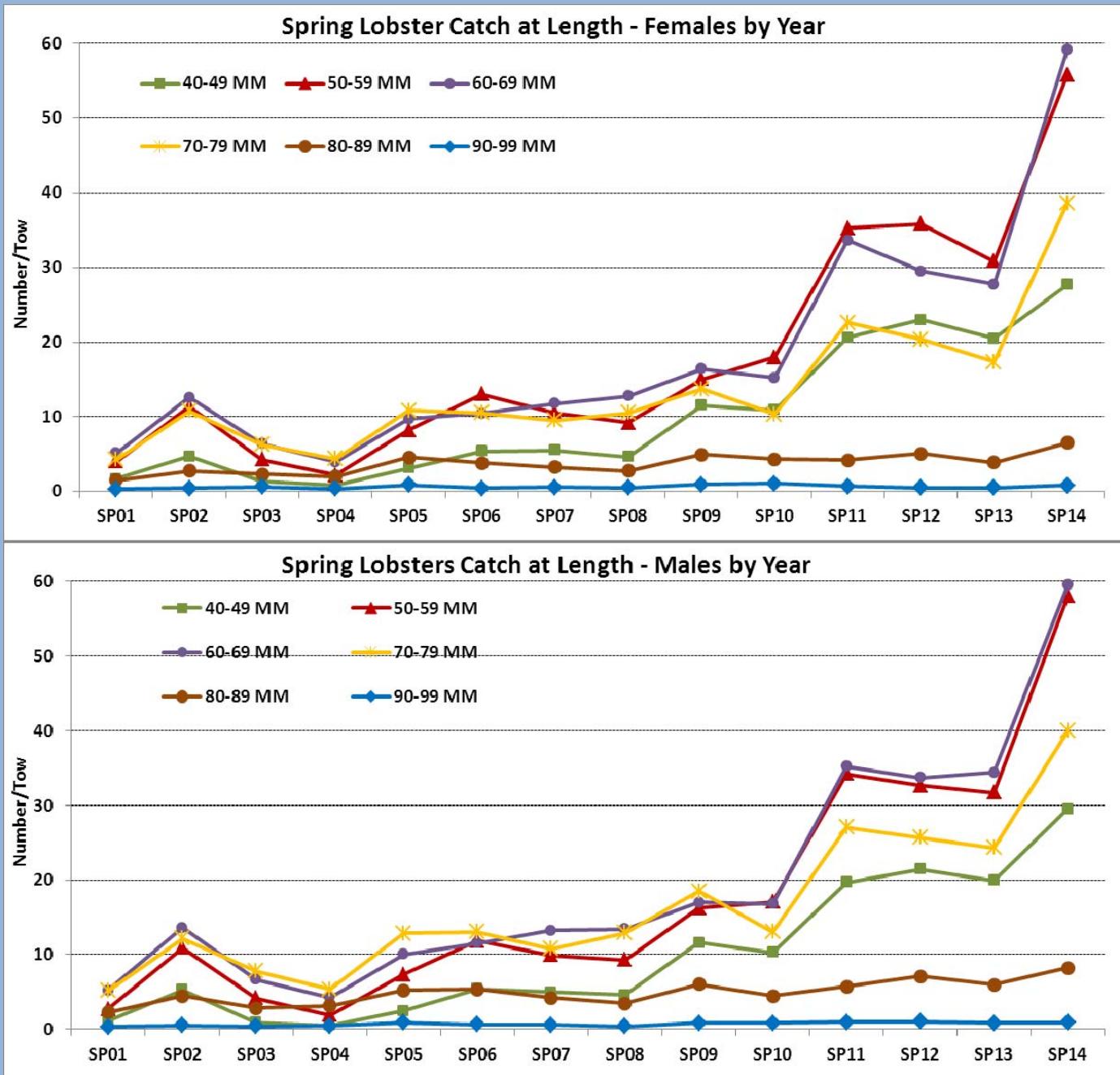
# MENH Trawl Survey 2014

## Lobster





# Catch at Length for Lobster – Selected Size Categories – Carapace Length





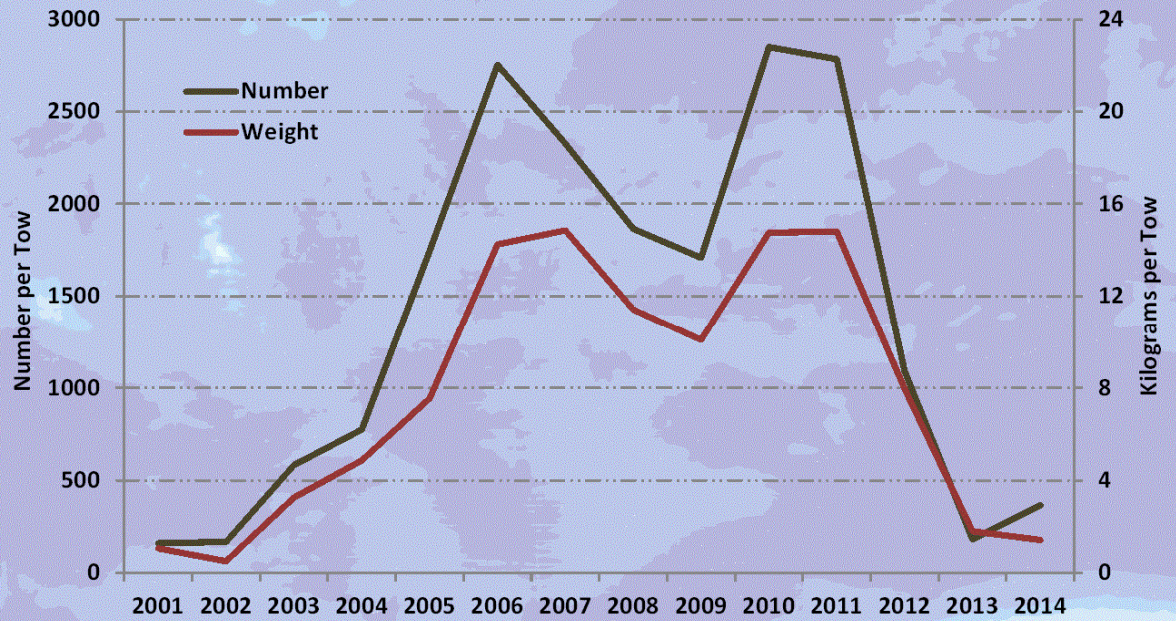
# MENH Inshore Trawl Survey

Catch/ Tow (KG)

Spring No. Shrimp - 2014

- <1.5
- 1.6 - 5.5
- 5.6 - 10.5
- 10.5 - 13.0
- + None

## N. Shrimp



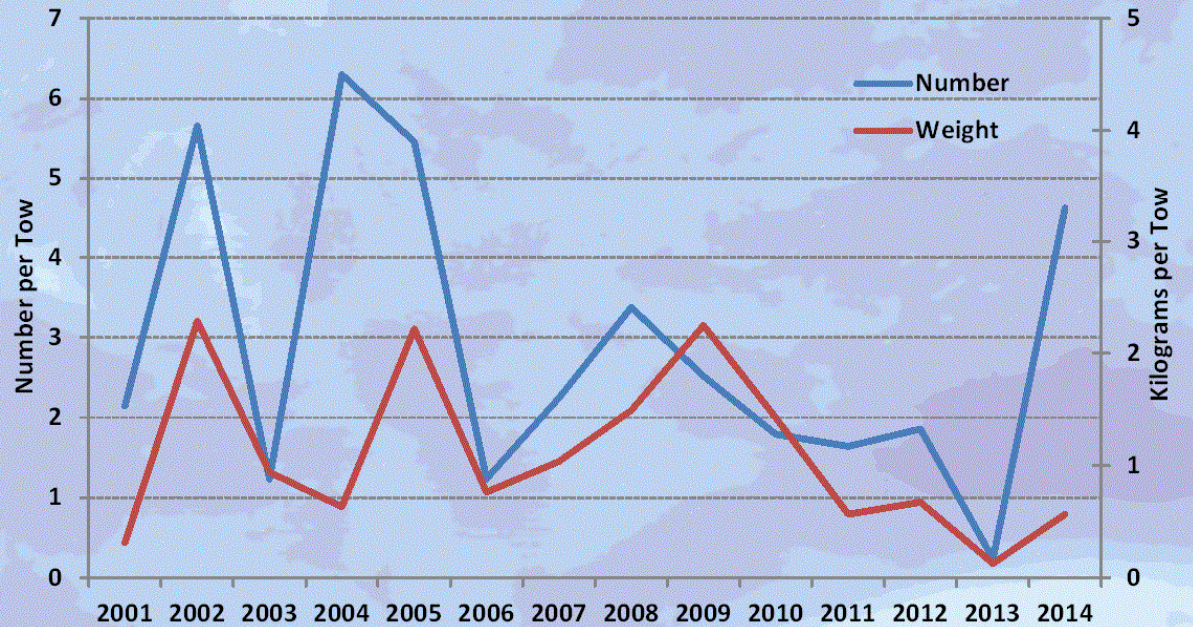


# MENH Trawl Survey 2014

## Number per Tow Spring Atl. Cod

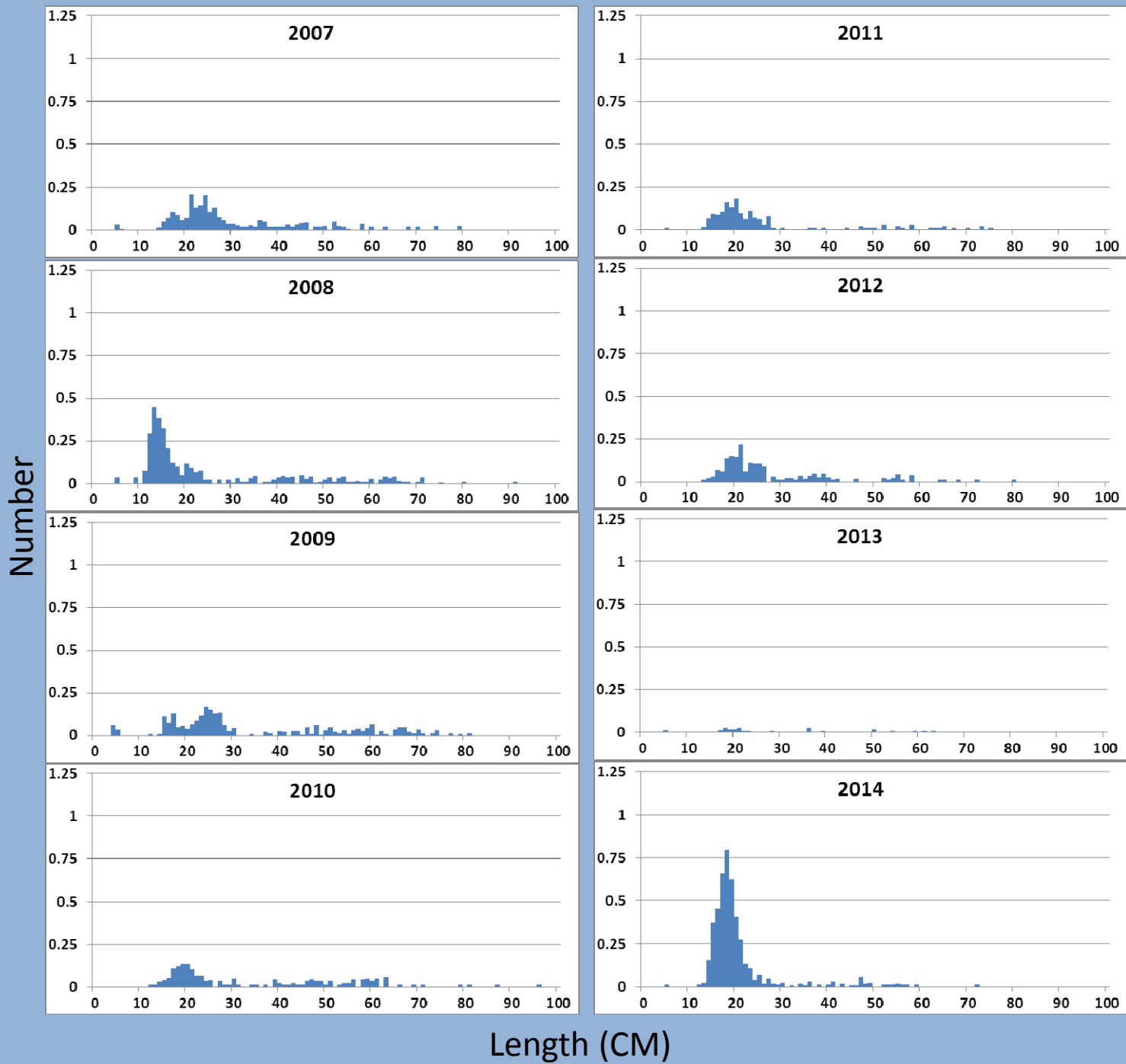
- 1
- 2 - 5
- 6 - 10
- 11 - 25
- 26 - 50
- 213
- + None

## Cod





# MENH Atlantic Cod Catch at Length Recent Spring Surveys





# ME-NH Inshore Trawl Survey Data Uses

- ❖ **WINTER FLOUNDER** – 2009 and 2012 GARM III updates, 2011 stock assessment (SARC 52), 2014 Operational Assessment.
- ❖ **AMERICAN LOBSTER** – ASMFC stock assessments, 2009 and 2014.
- ❖ **HADDOCK** – GARM III updates in 2009 and 2012 and 2014 stock assessment (SARC 59).
- ❖ **NORTHERN SHRIMP** – fishing season advice since 2005, stock assessment 2014 (SARC 58).
- ❖ **BUTTERFISH** – data to stock assessment in 2014 (SARC 58).
- ❖ **WHITE HAKE** – GARM III updates in 2009 and 2012, stock assessment in 2012 (SARC 56).
- ❖ **ATLANTIC COD** - 2011 and 2012 GOM cod stock assessment review (SARC 53 & 55), 2009 and 2012 GARM III updates. 2014 Operational Assessment.
- ❖ **SILVER HAKE, RED HAKE, AND LOLIGO SQUID** assessments (SARC 51) in 2010, updates 2014.
- ❖ **MONKFISH** – stock assessments (SARC 50) in 2010.
- ❖ **POLLOCK** – stock assessment (SARC 50) in 2010, GARM III updates 2012. 2014 Assessment update.
- ❖ **ACADIAN REDFISH, YELLOWTAIL FLOUNDER, WITCH FLOUNDER, ATLANTIC HALIBUT, WINDOWPANE FLOUNDER, AND AMERICAN PLAICE** in 2009 and 2012 for GARM III updates
- ❖ **ATLANTIC HERRING** – quota advice since 2003, stock assessment 2012 (SARC 54)
- ❖ **AMERICAN SHAD AND RIVER HERRING** - 2006 - ASMFC technical committee for management plan review.
- ❖ **SEA SCALLOP** - Maine area management measures in 2008 and 2012/13.
- ❖ **MULTIPLE SPECIES (>60)** – Catch, length, and environmental data provided to NMFS for an EFH database 2014

# Massachusetts Division of Marine Fisheries Inshore Bottom-Trawl Survey 2014

NEAMAP Board  
February 4, 2015

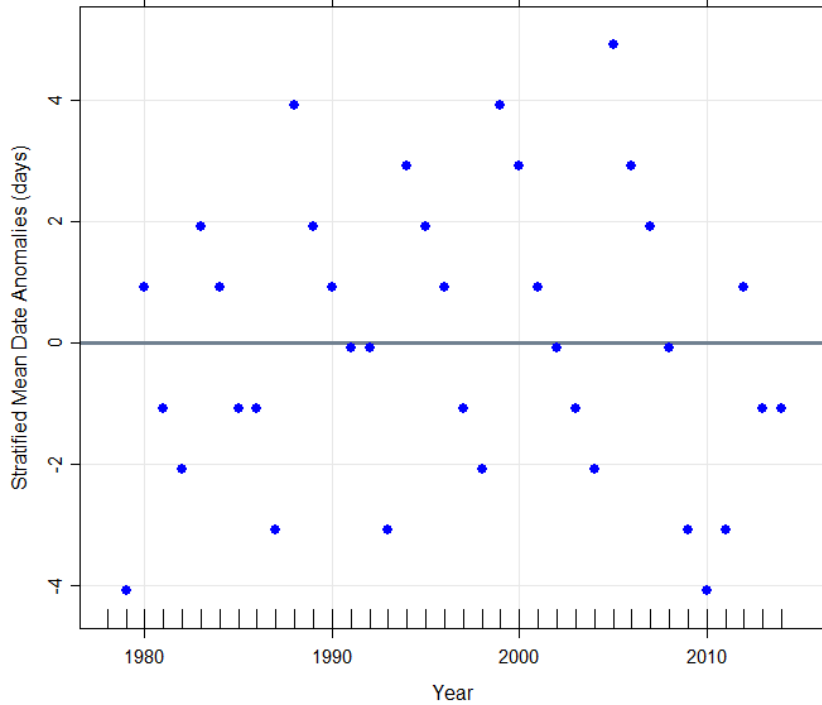


**Marine Fisheries**  
Commonwealth of Massachusetts

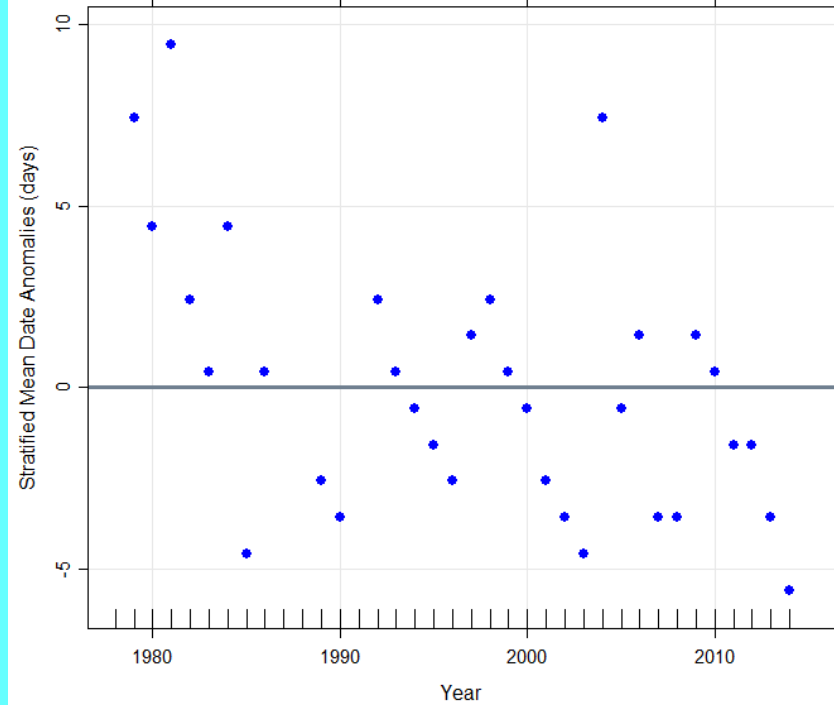


# Survey Timing

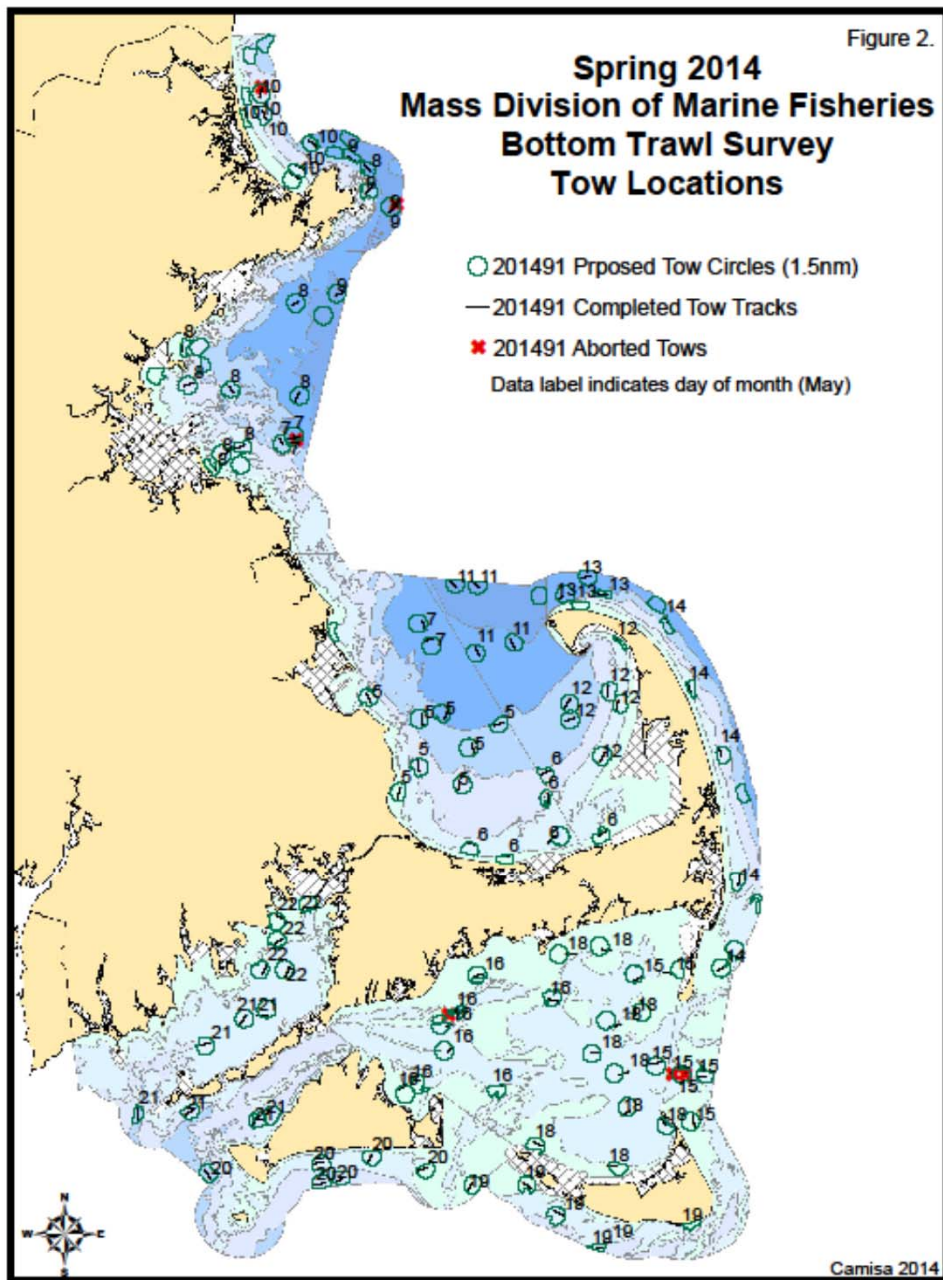
Timing of MDMF Trawl Survey Sampling  
Anomalies from Timeseries Mean  
Spring 1978-2014, Regions 1:5



Timing of MDMF Trawl Survey Sampling  
Anomalies from Timeseries Mean,  
Fall 1978-2014, Regions 1:5



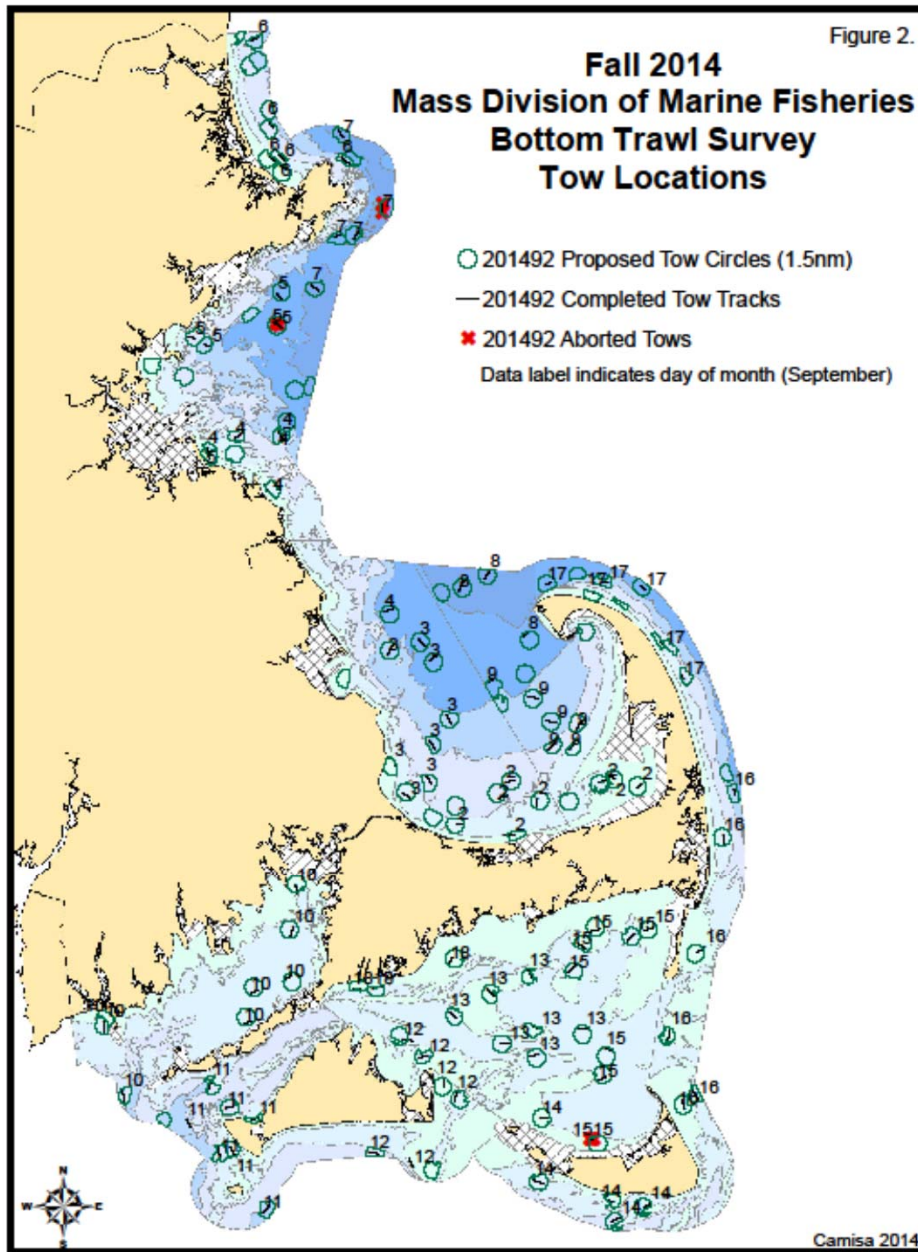




## 2014 Spring Survey

102 stations were completed. All 102 stations are considered representative and acceptable for assessment of all species.

One assigned station not completed in stratum 16.



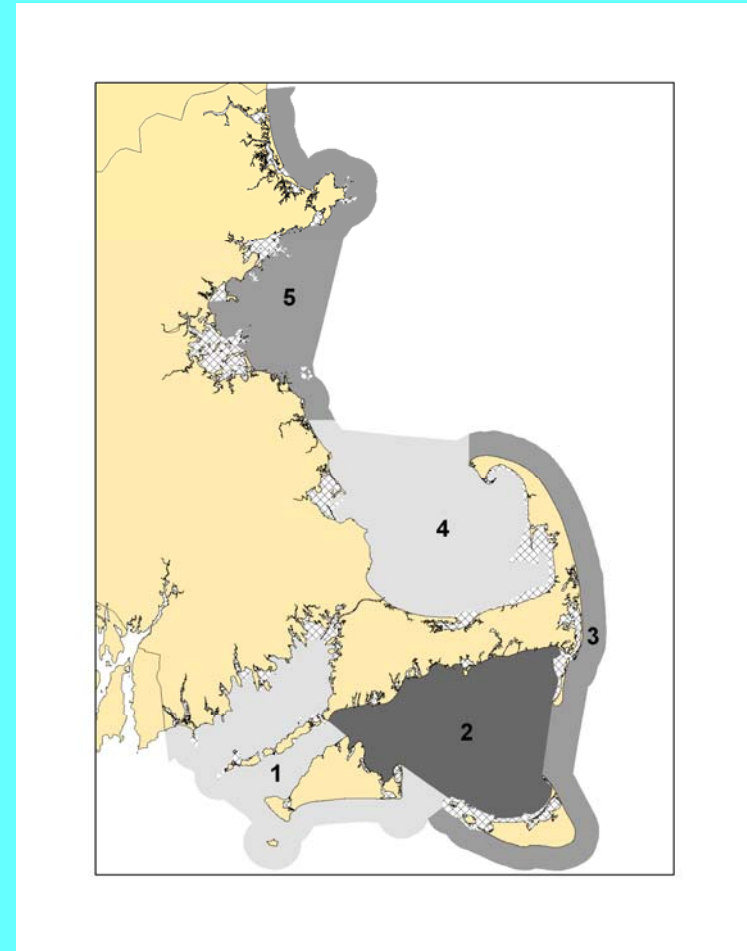
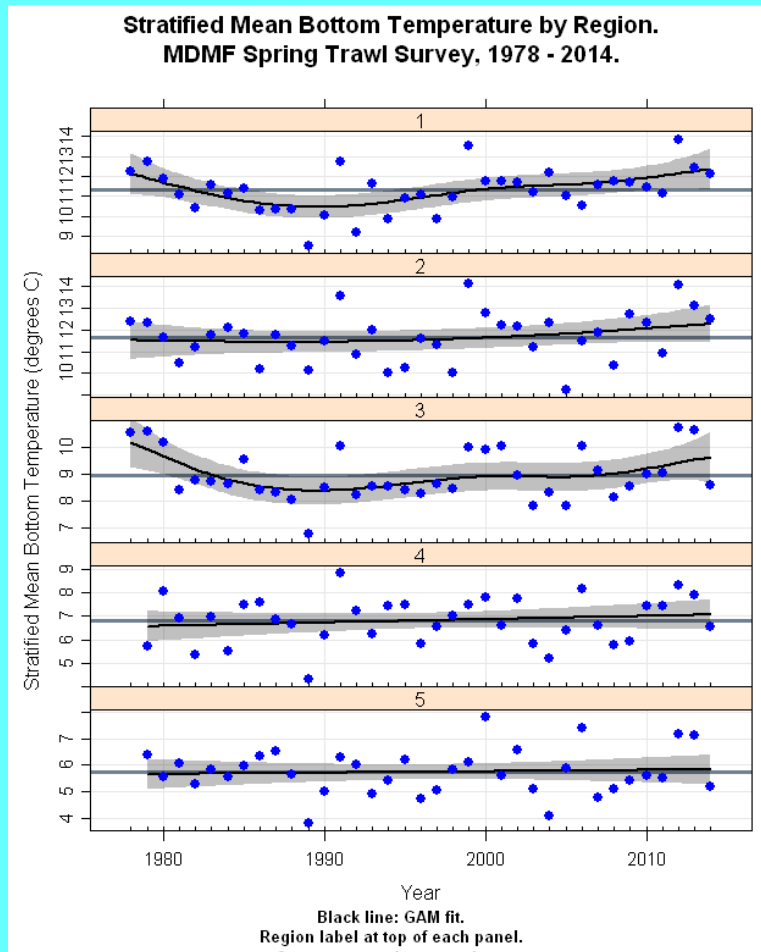
## 2014 Fall Survey

100 completed stations are considered acceptable for assessment of all species. One station was accepted for spiny dogfish only.

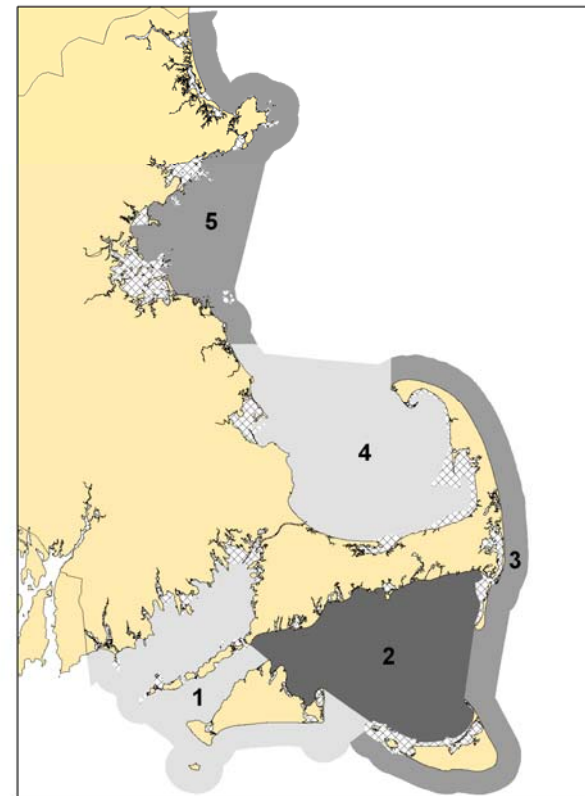
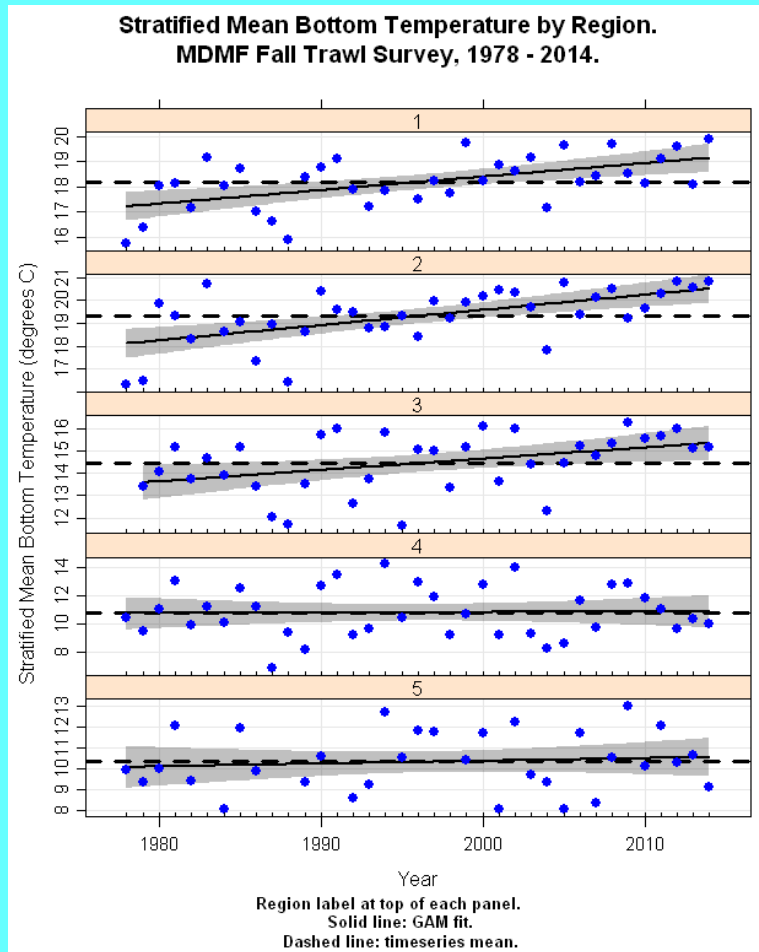
Three assigned stations were not completed successfully; one each in strata 15, 20, and 33.



# Observed Bottom Temperatures – Spring Survey

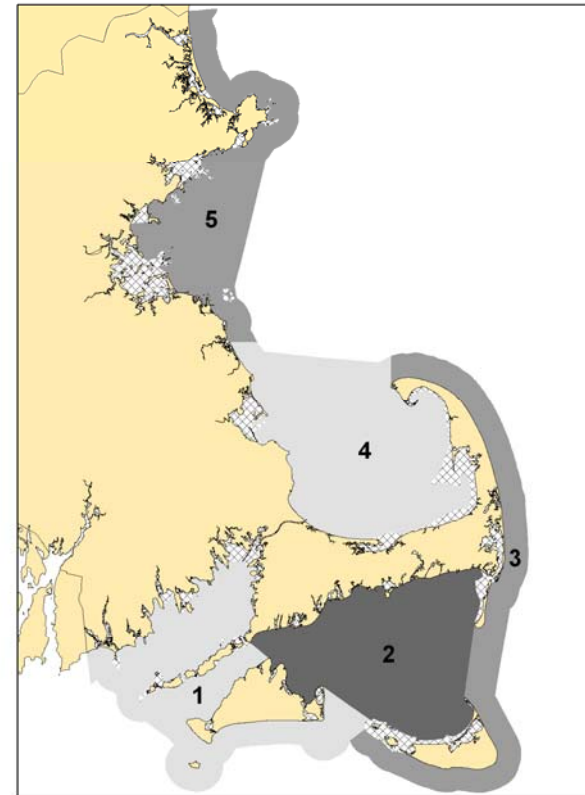
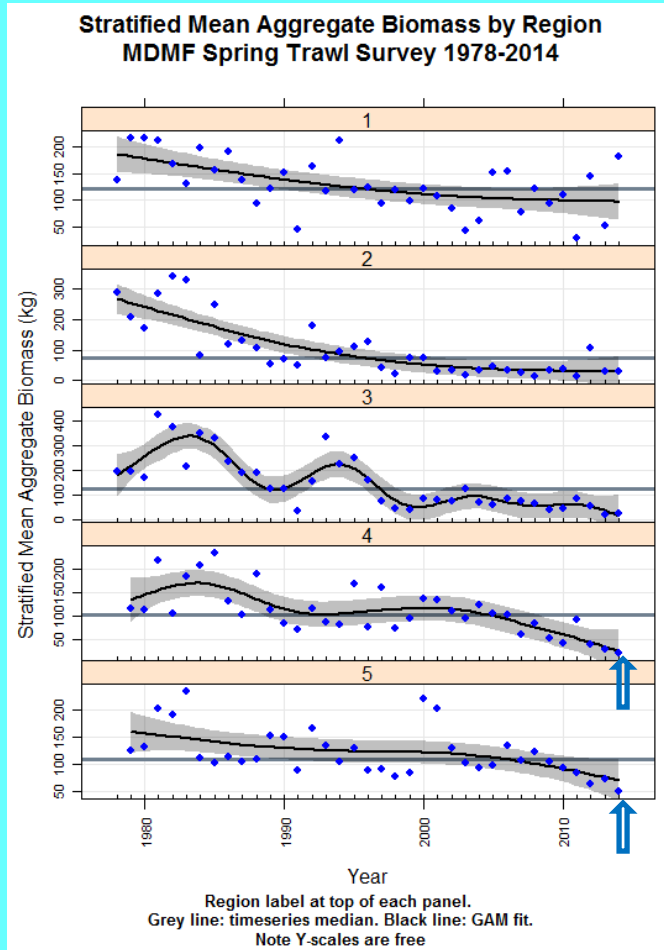


# Observed Bottom Temperatures – Fall Survey

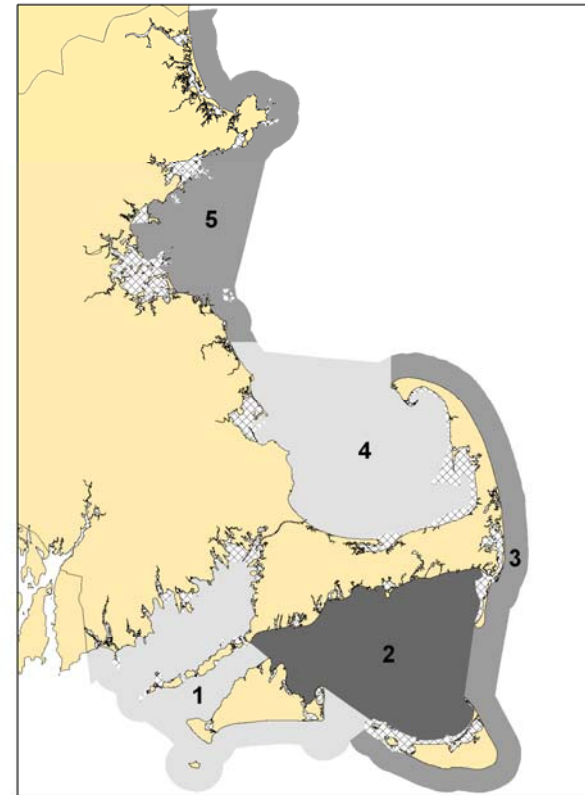
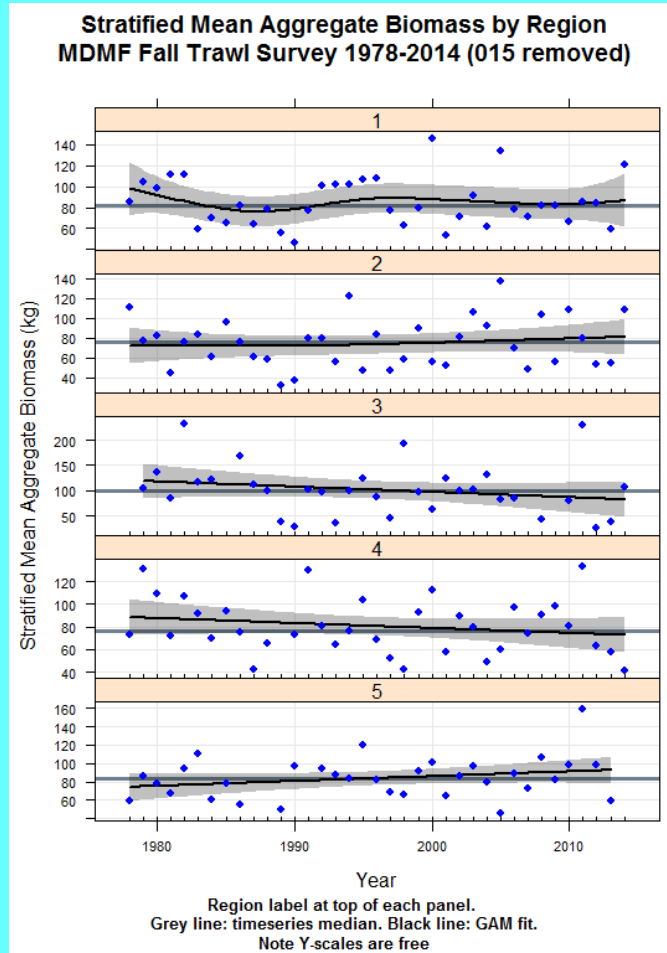




# Regional Trends in Aggregate Biomass



# Regional Trends in Aggregate Biomass

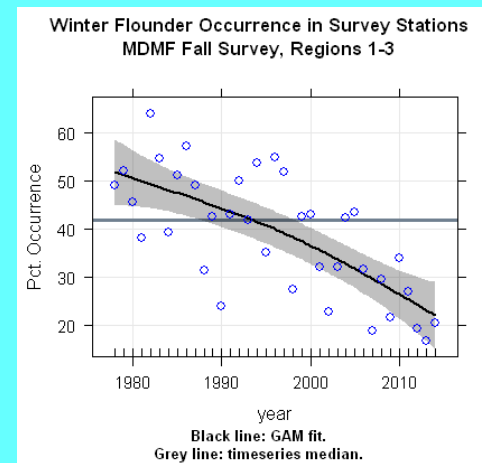
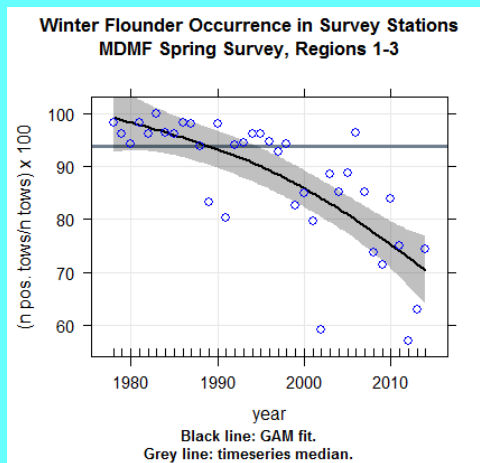
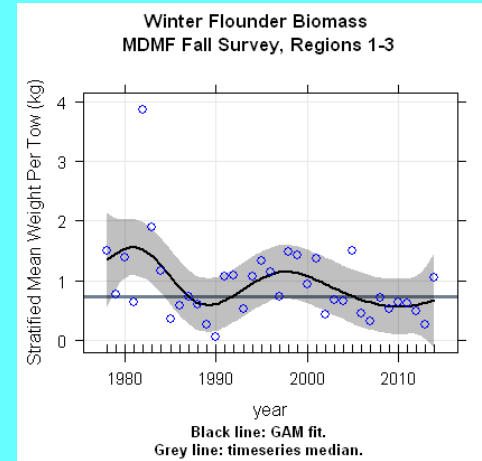
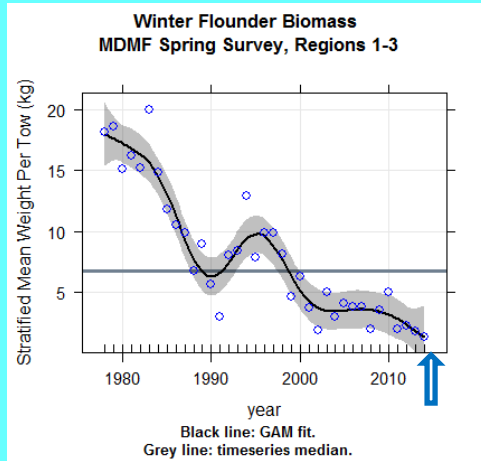




# Indices 1978 – 2014.

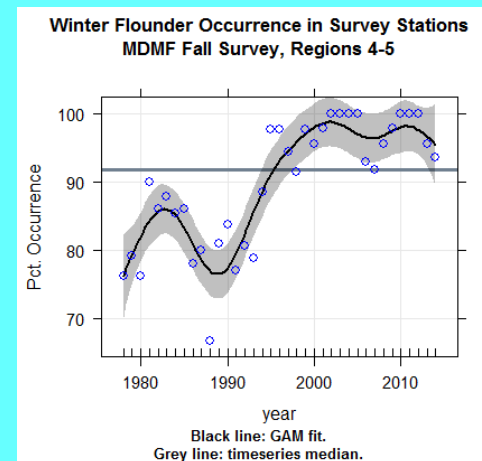
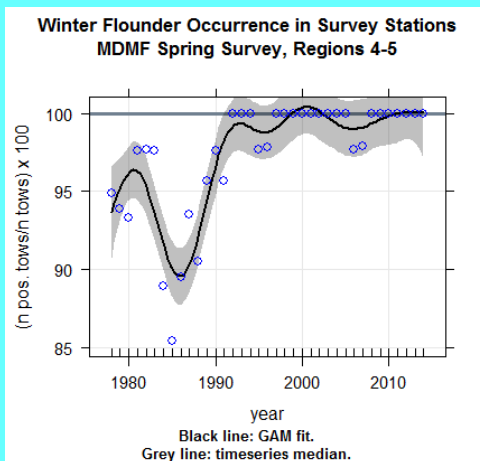
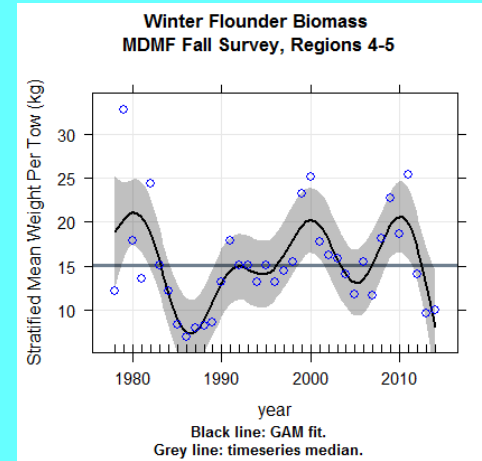
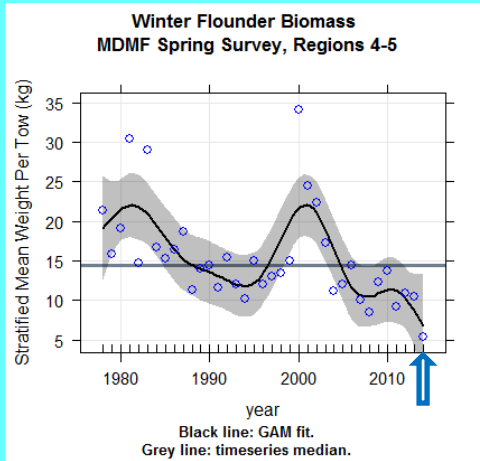


# Winter Flounder - SNE

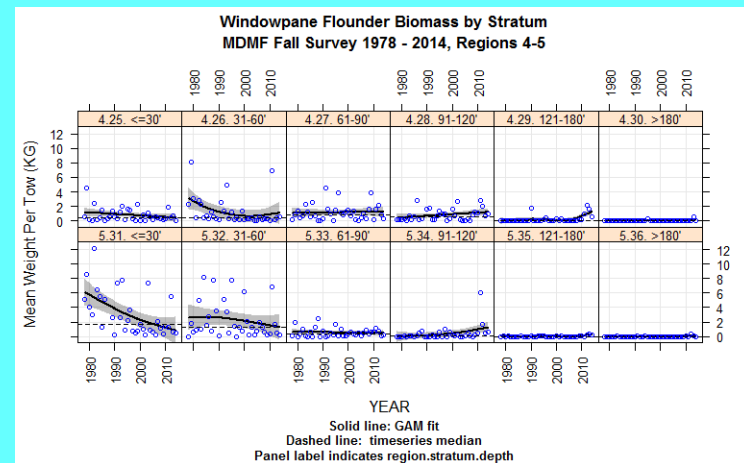
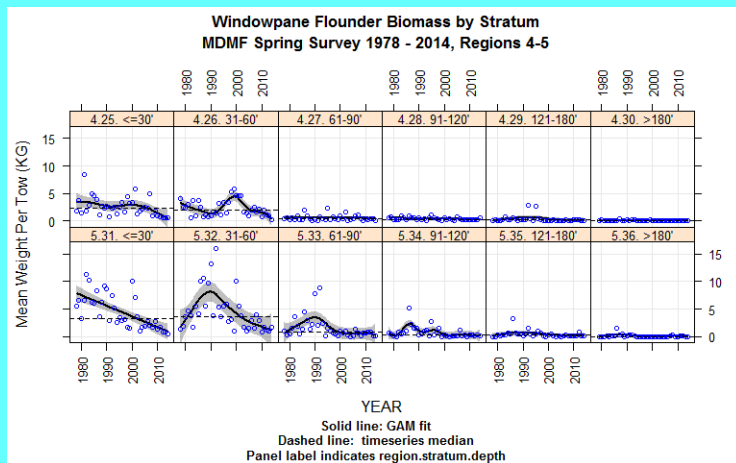
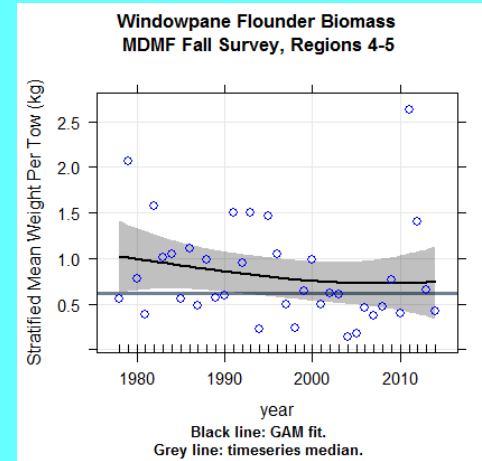
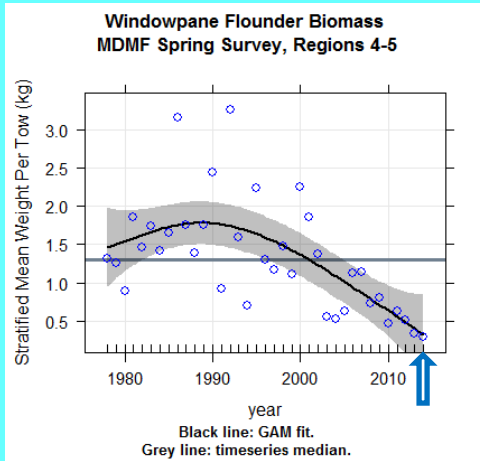




# Winter Flounder-GOM

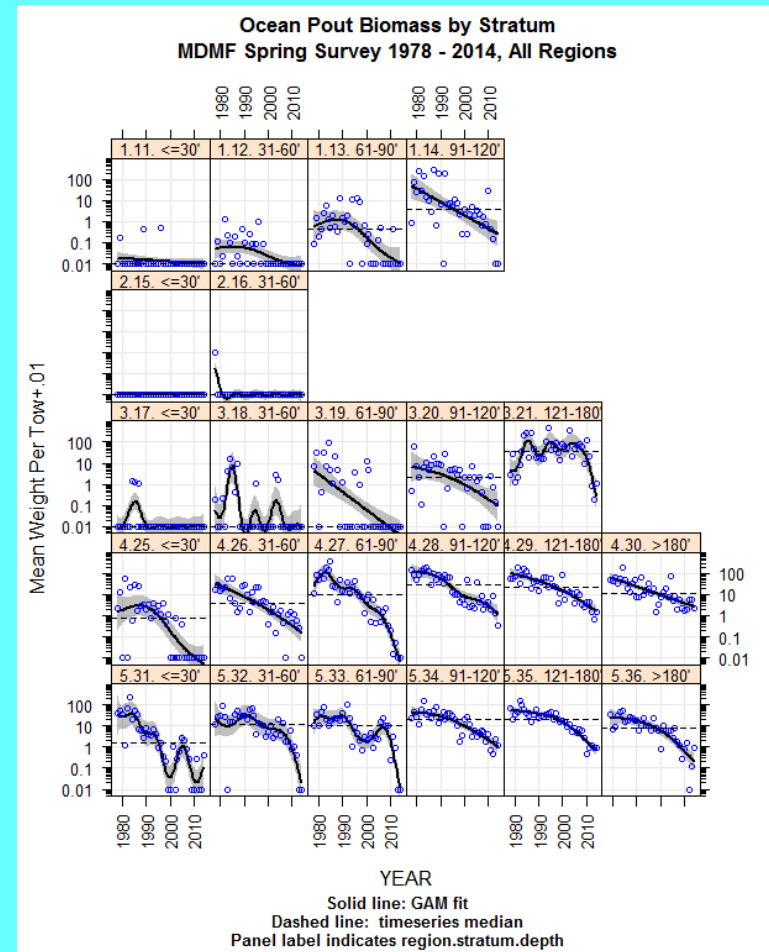
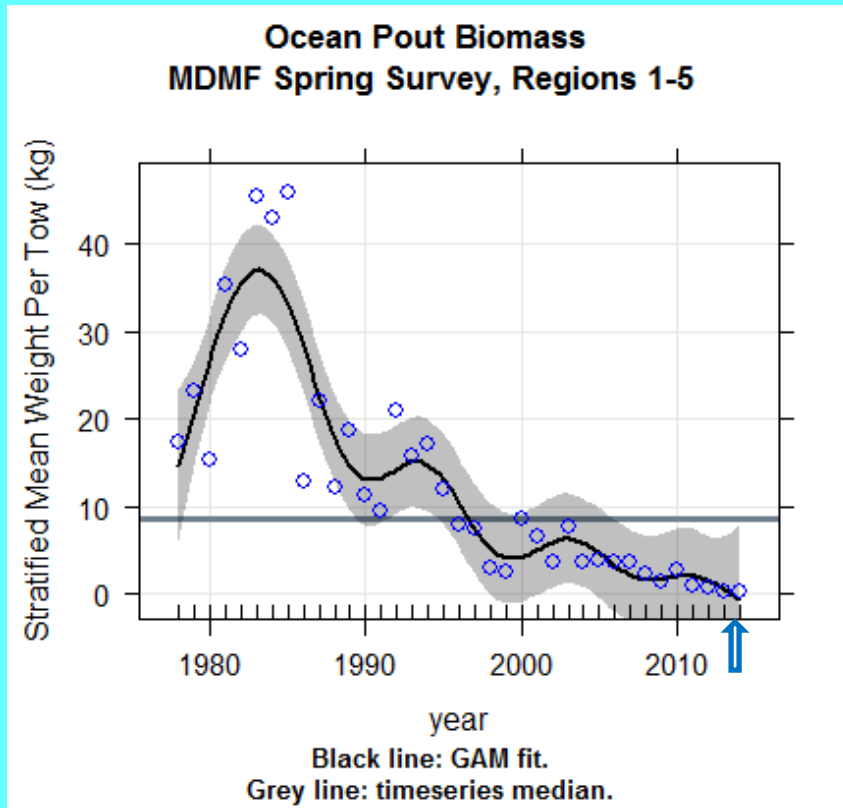


# Windowpane Flounder - GOM



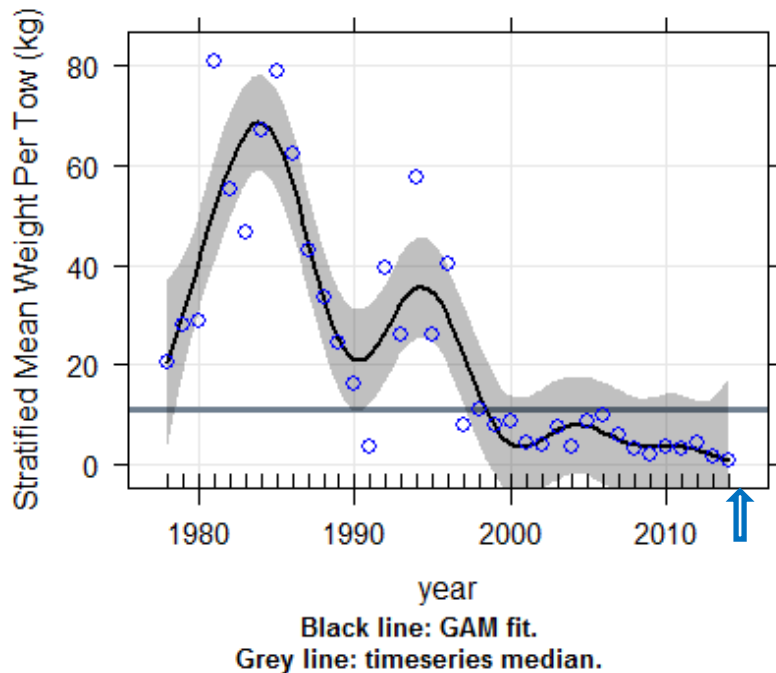


# Ocean Pout

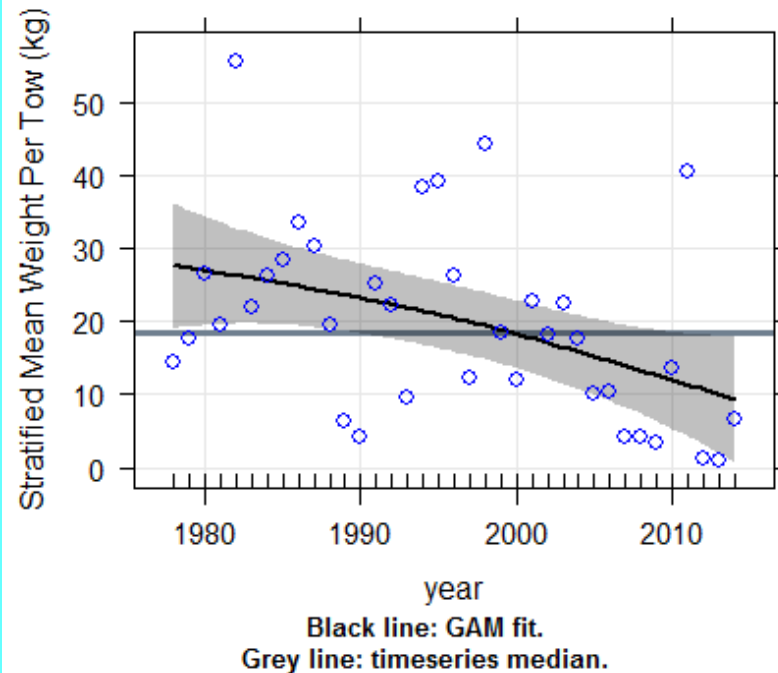


# Winter Skate – SNE

Winter Skate Biomass  
MDMF Spring Survey, Regions 1-3



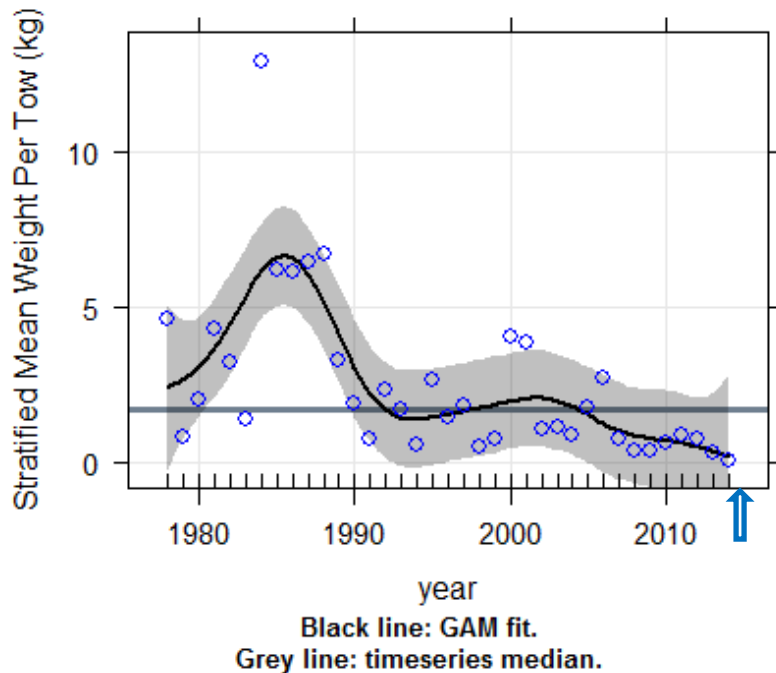
Winter Skate Biomass  
MDMF Fall Survey, Regions 1-3



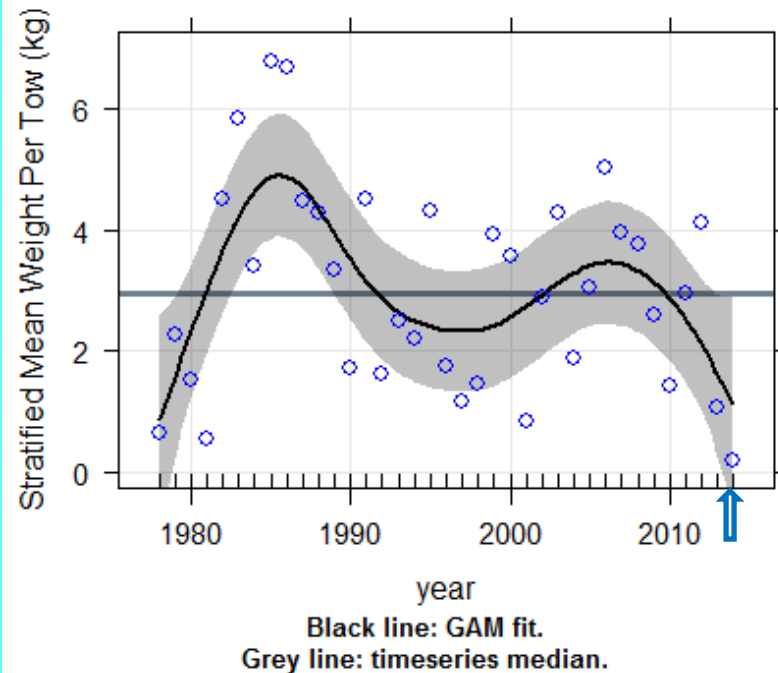


# Winter Skate – GOM

Winter Skate Biomass  
MDMF Spring Survey, Regions 4-5

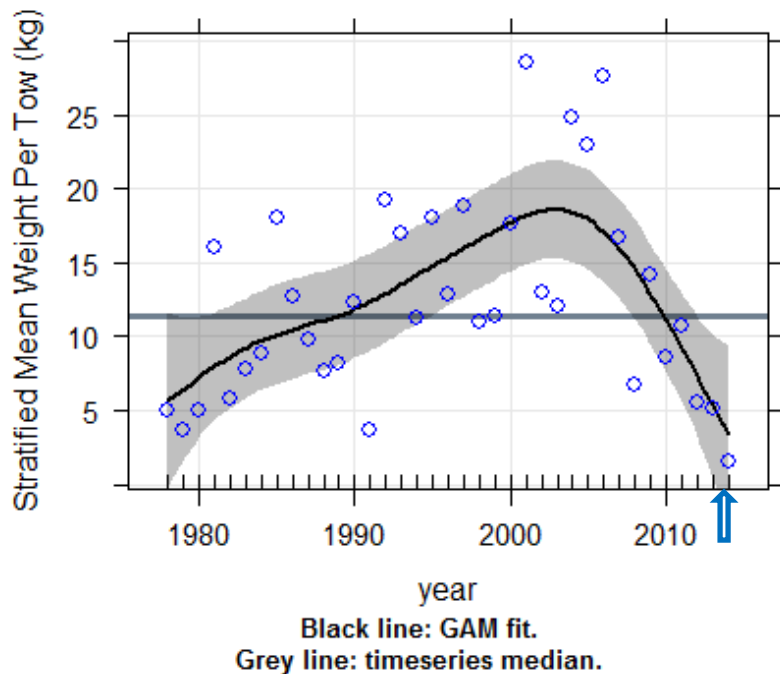


Winter Skate Biomass  
MDMF Fall Survey, Regions 4-5

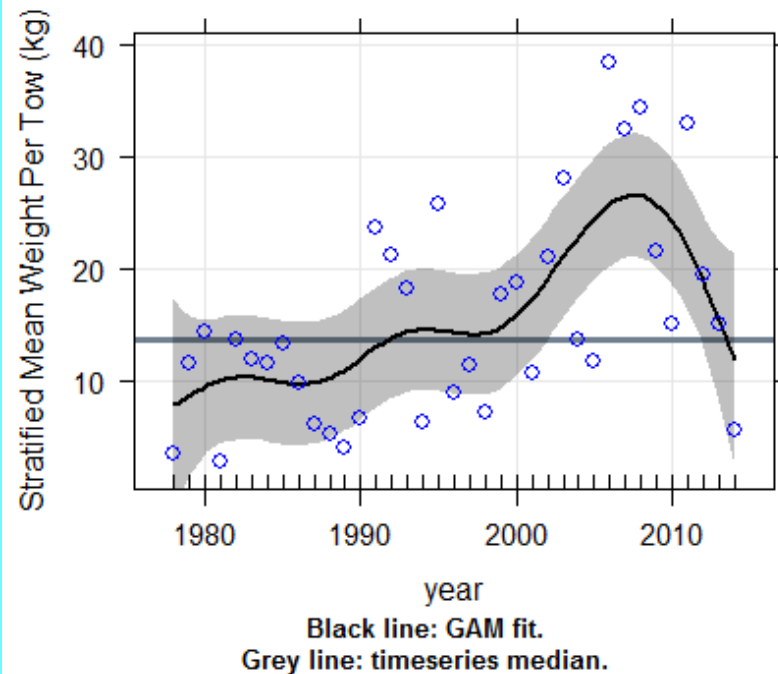


# Little Skate – GOM

**Little Skate Biomass  
MDMF Spring Survey, Regions 4-5**

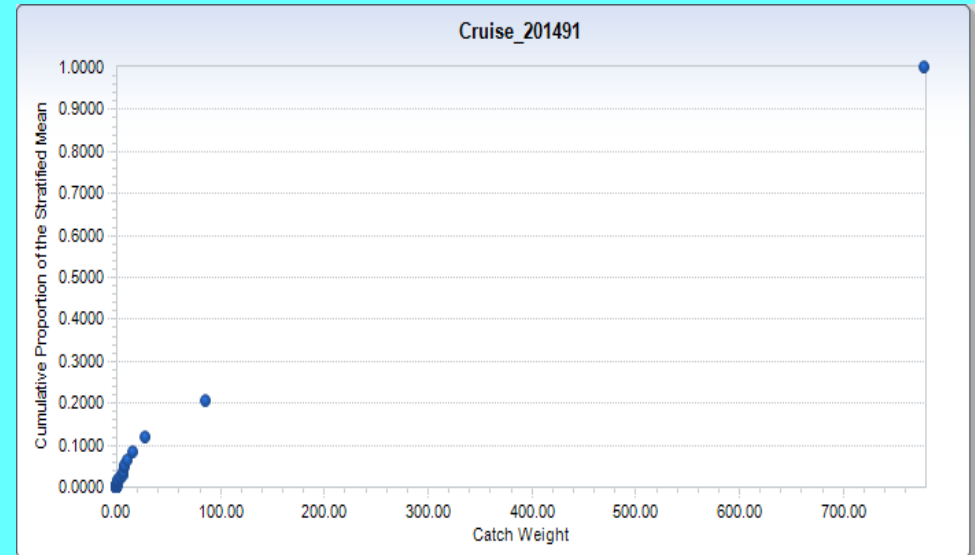
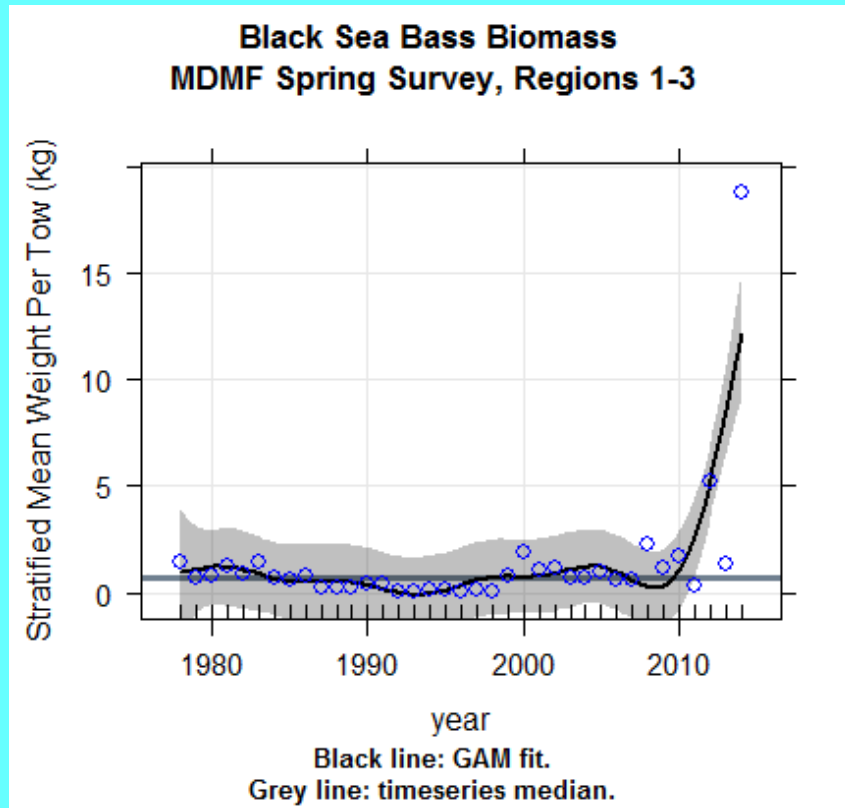


**Little Skate Biomass  
MDMF Fall Survey, Regions 4-5**



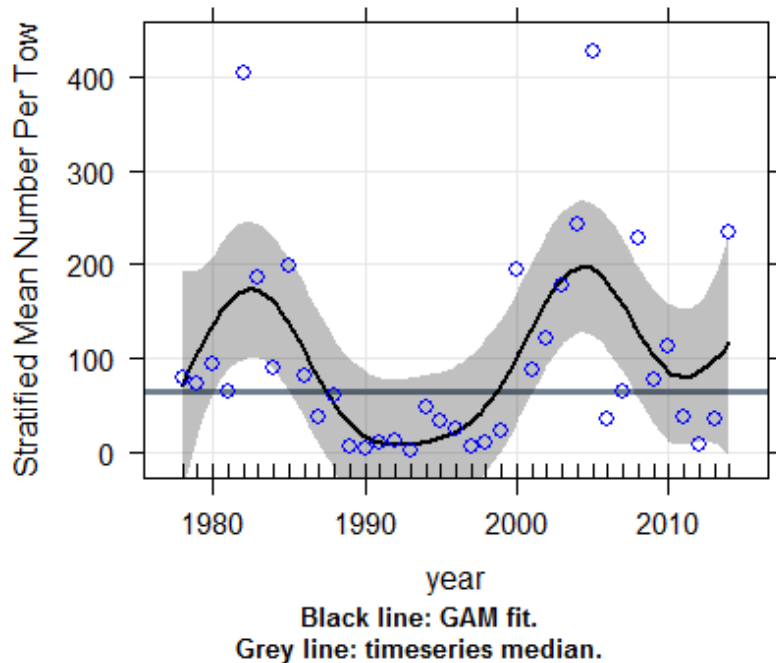


# Black Sea Bass

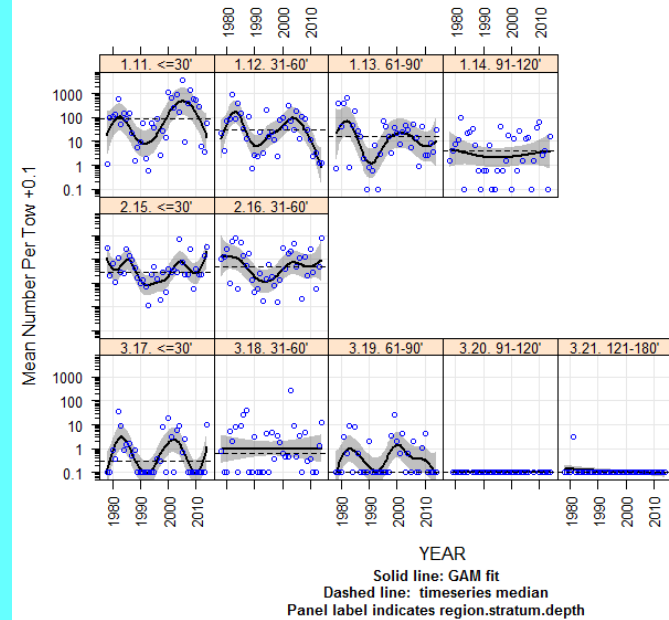


# YOY Black Sea Bass

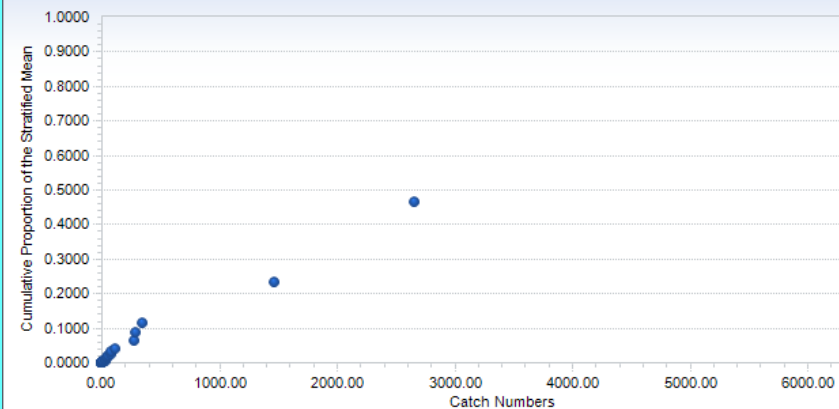
**Age-0 Black Sea Bass (<12cm) Abundance**  
MDMF Fall Survey, Regions 1-3



**Age-0 Black Sea Bass (<12cm) Abundance by Stratum**  
MDMF Fall Survey 1978 - 2014, Regions 1-3

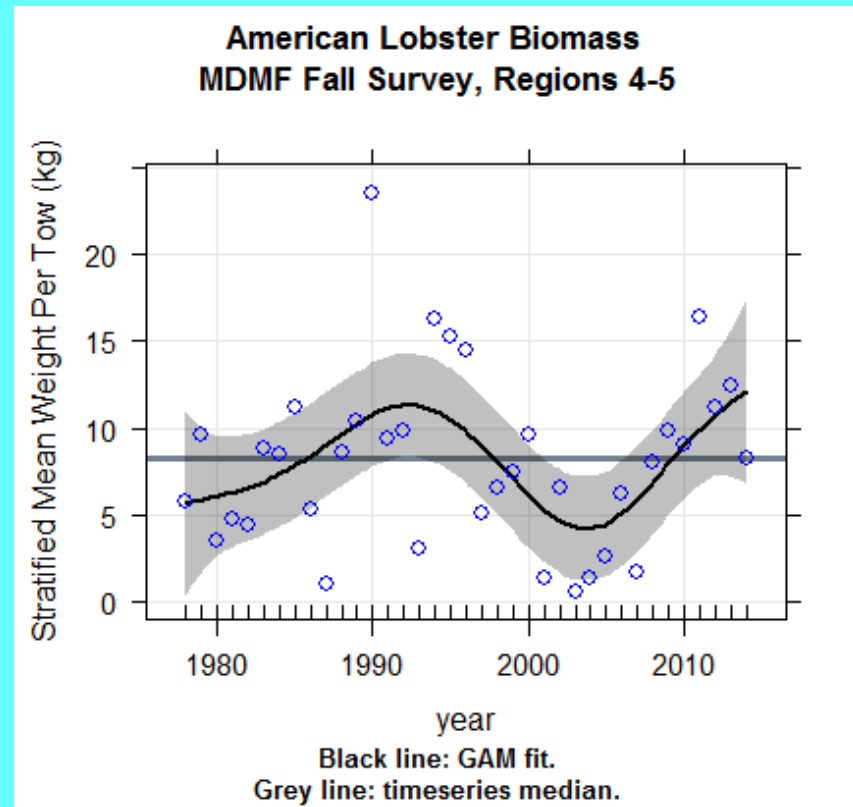
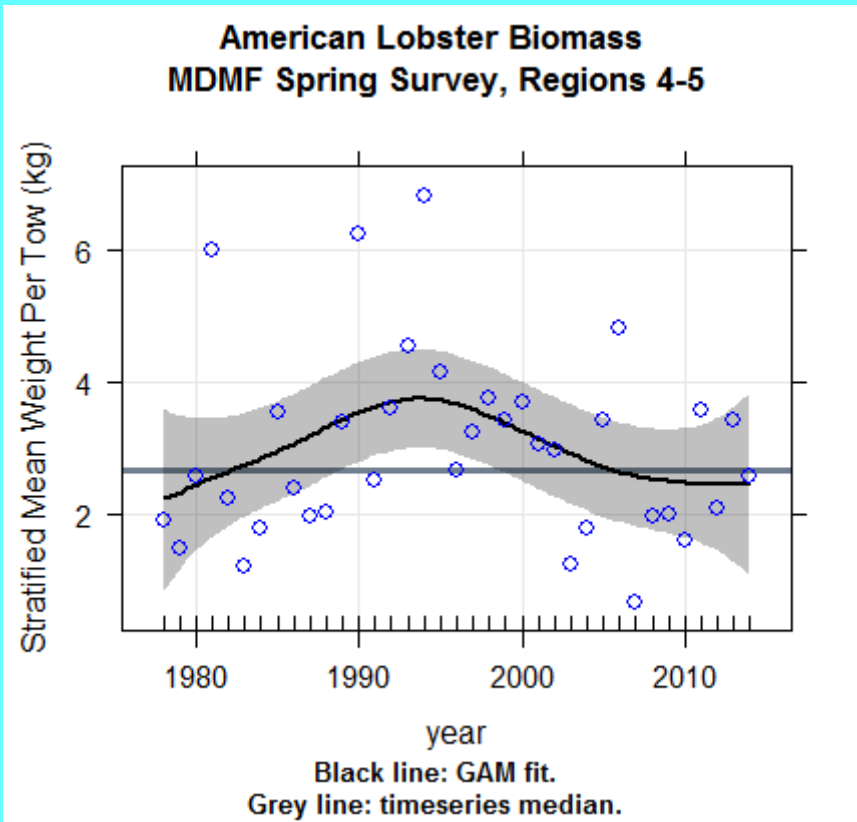


**Cruise\_201492**

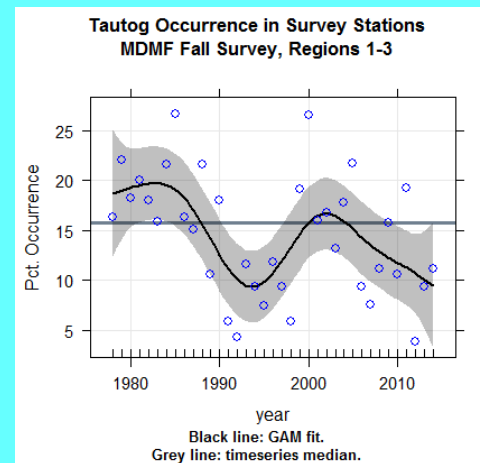
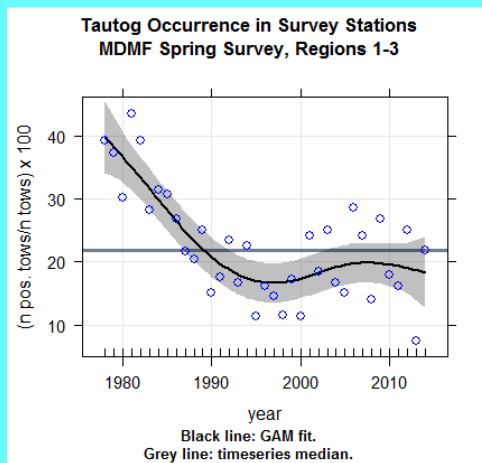
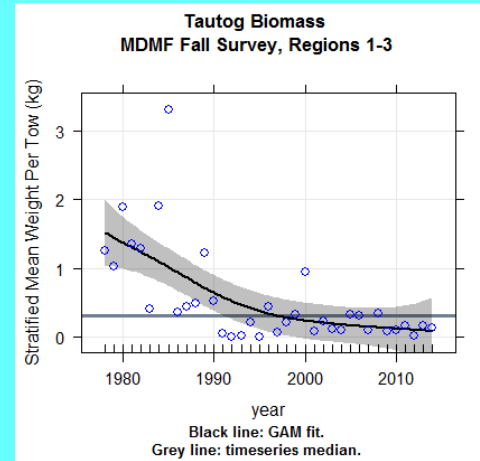
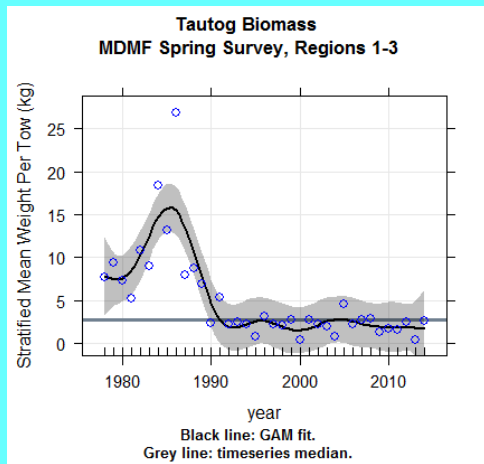




# American Lobster - GOM



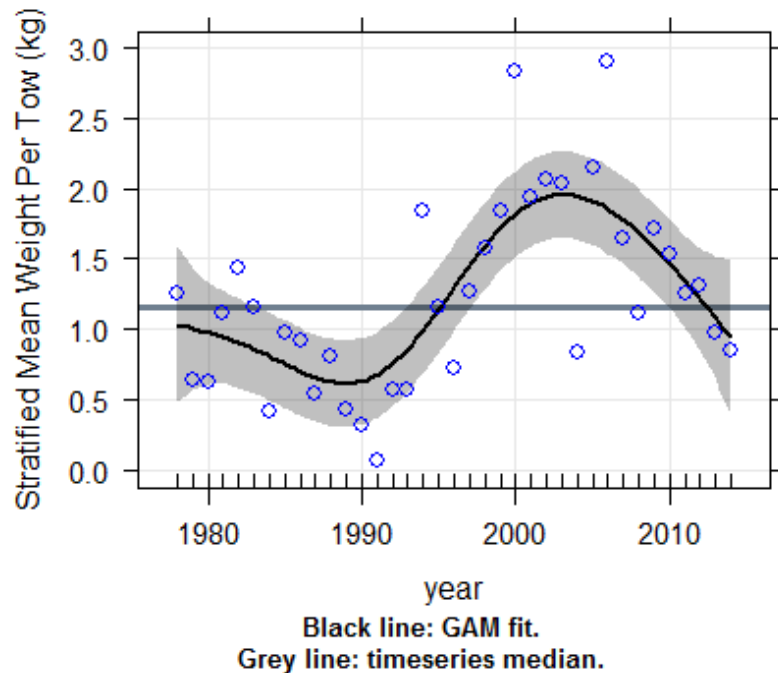
# Tautog



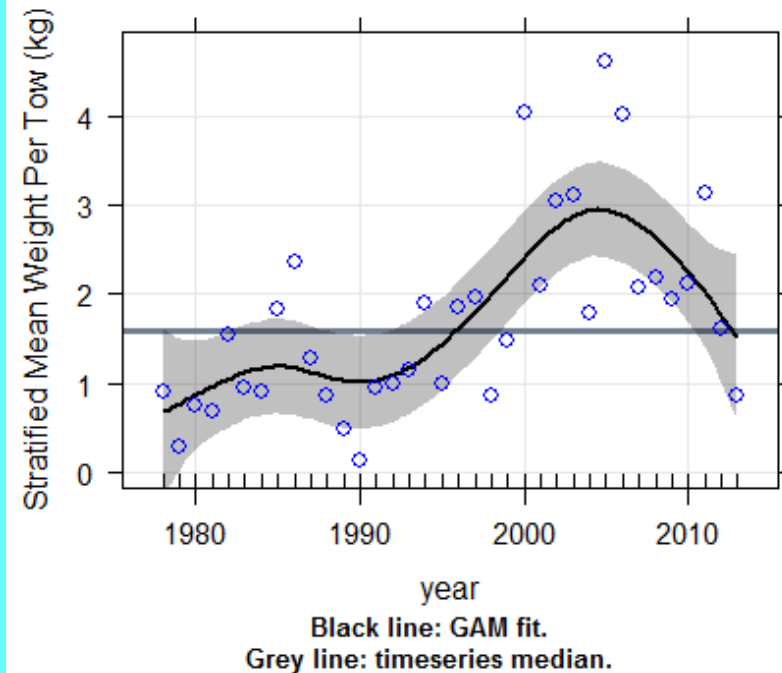


# Summer Flounder

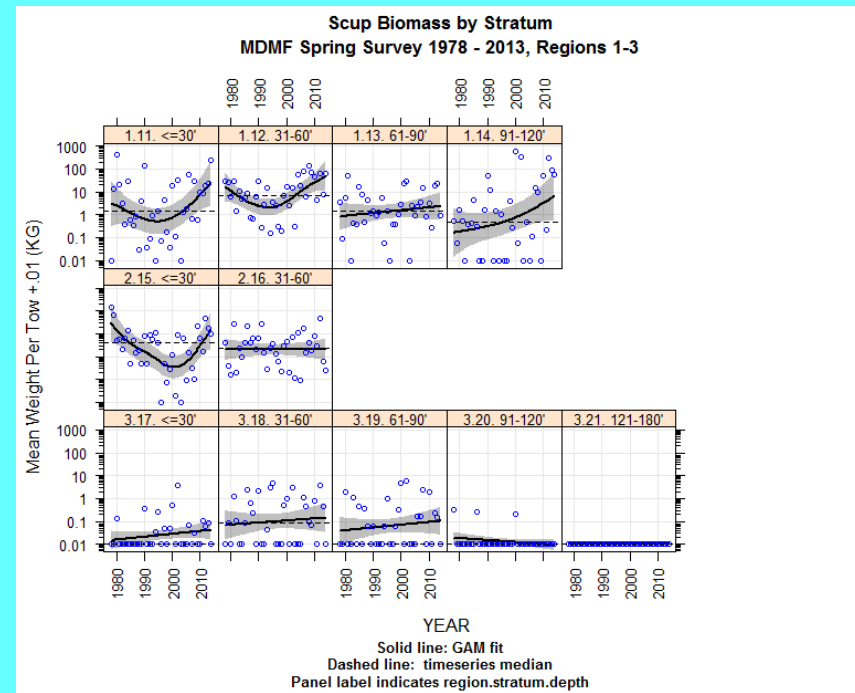
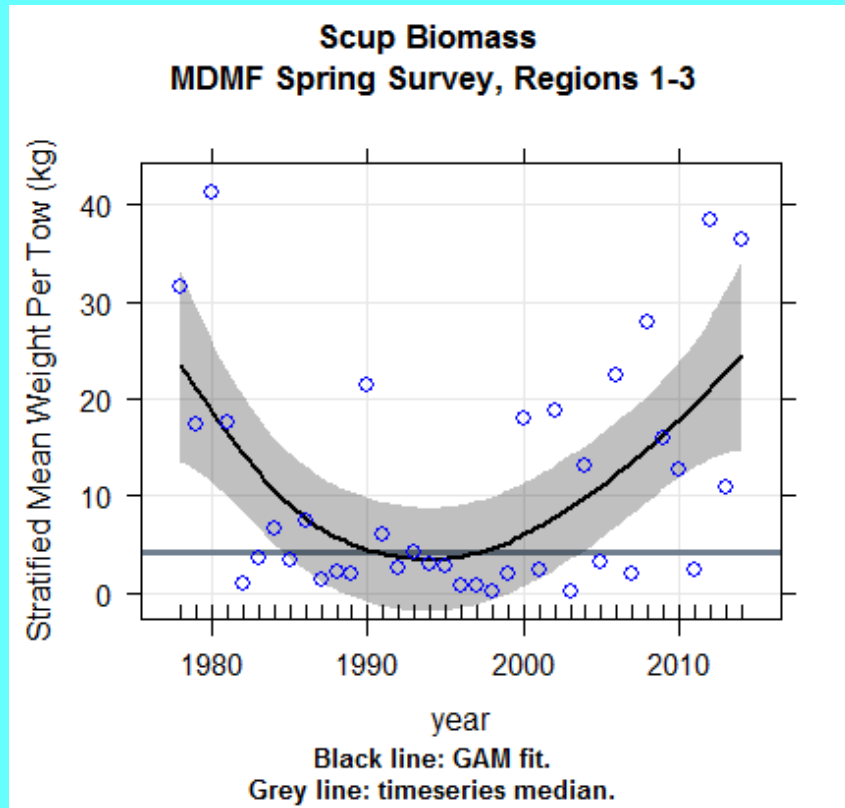
**Summer Flounder Biomass  
MDMF Spring Survey, Regions 1-5**



**Summer Flounder Biomass  
MDMF Fall Survey, Regions 1-5**

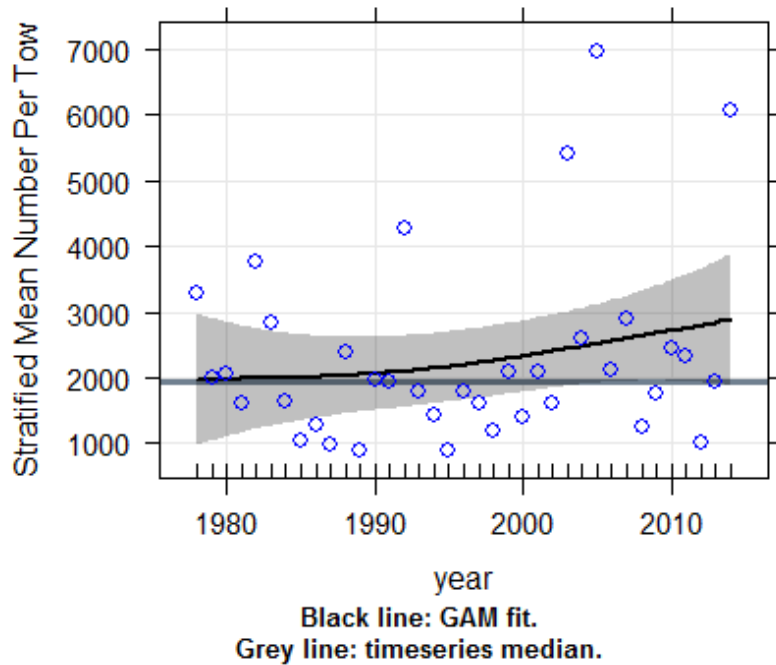


# Scup

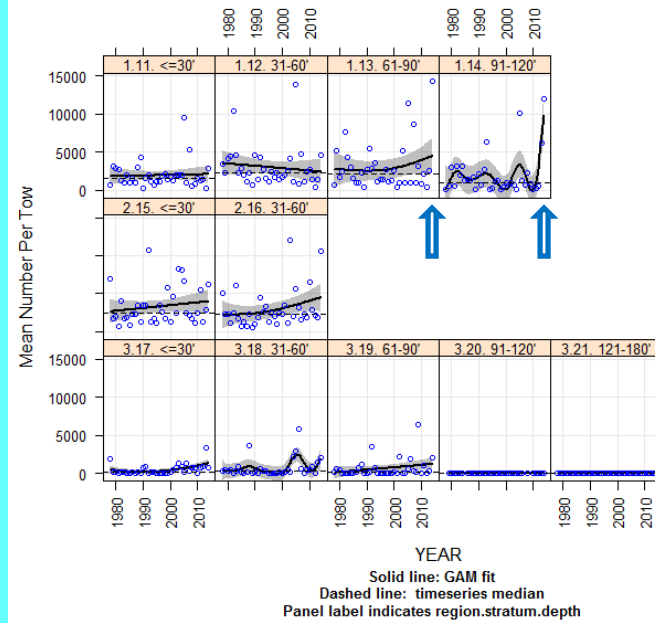


# YOY Scup

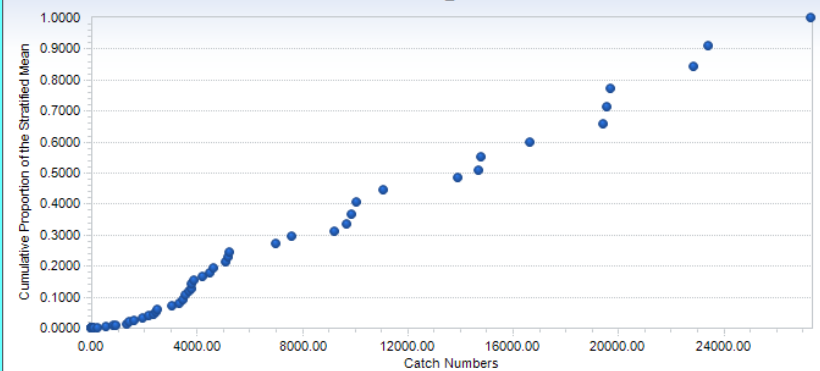
**Age-0 Scup (<13cm) Abundance  
MDMF Fall Survey 1978 - 2014, Regions 1-3**



**YOY Scup (<13 cm) Abundance by Stratum  
MDMF Fall Survey 1978 - 2014, Regions 1-3**

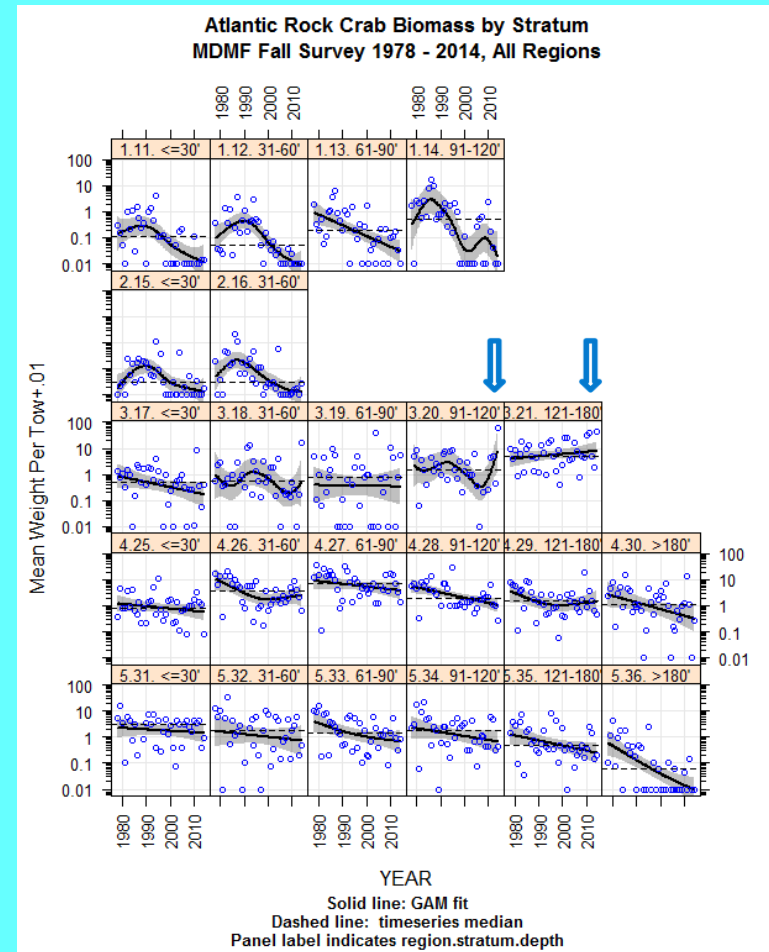
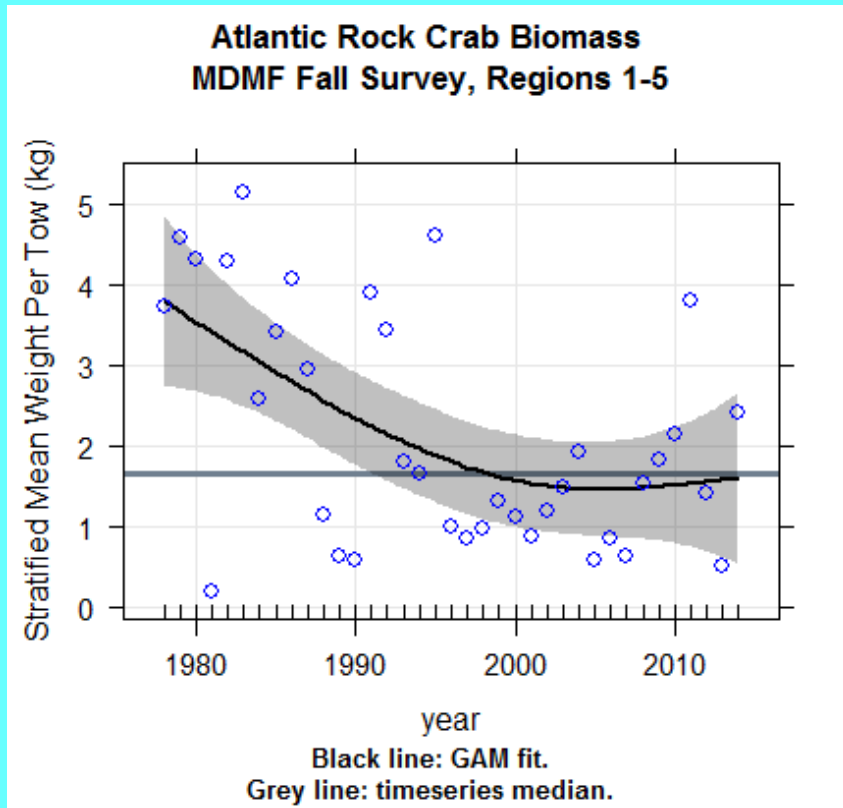


**Cruise\_201492**

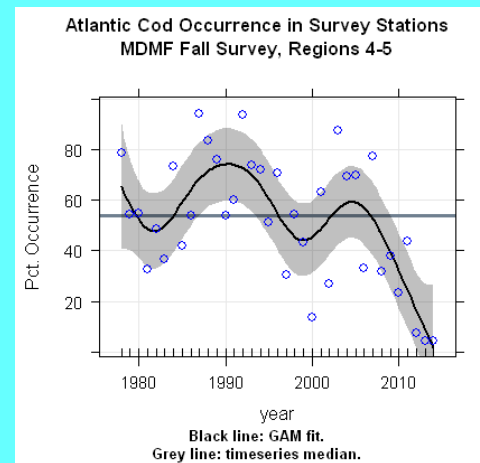
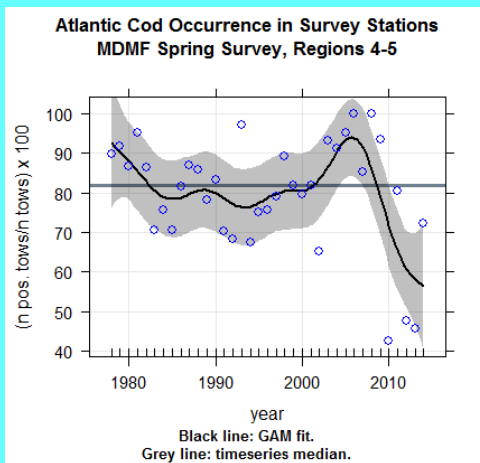
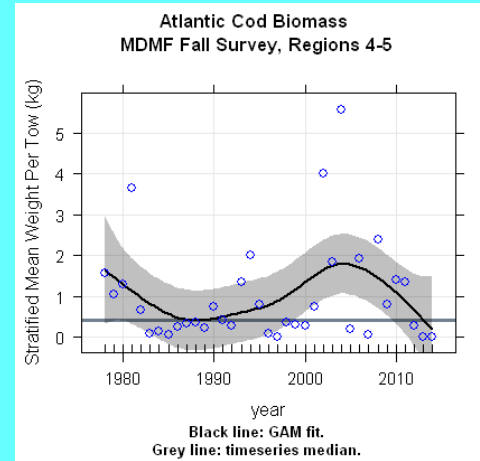
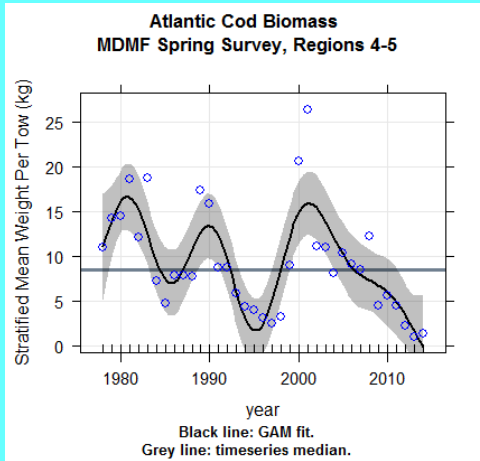




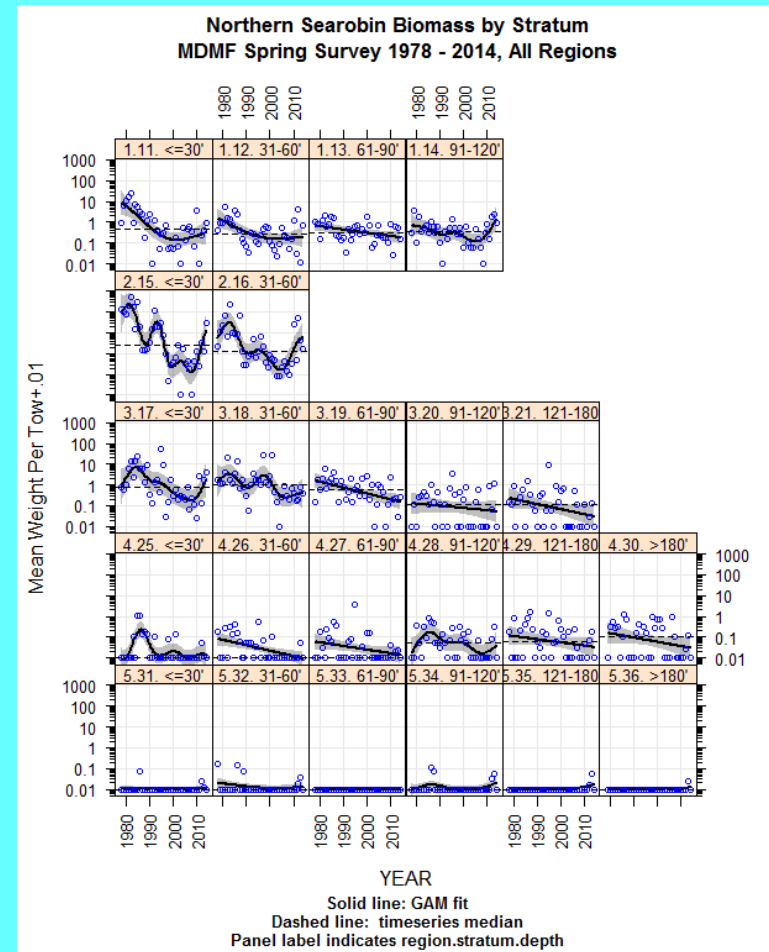
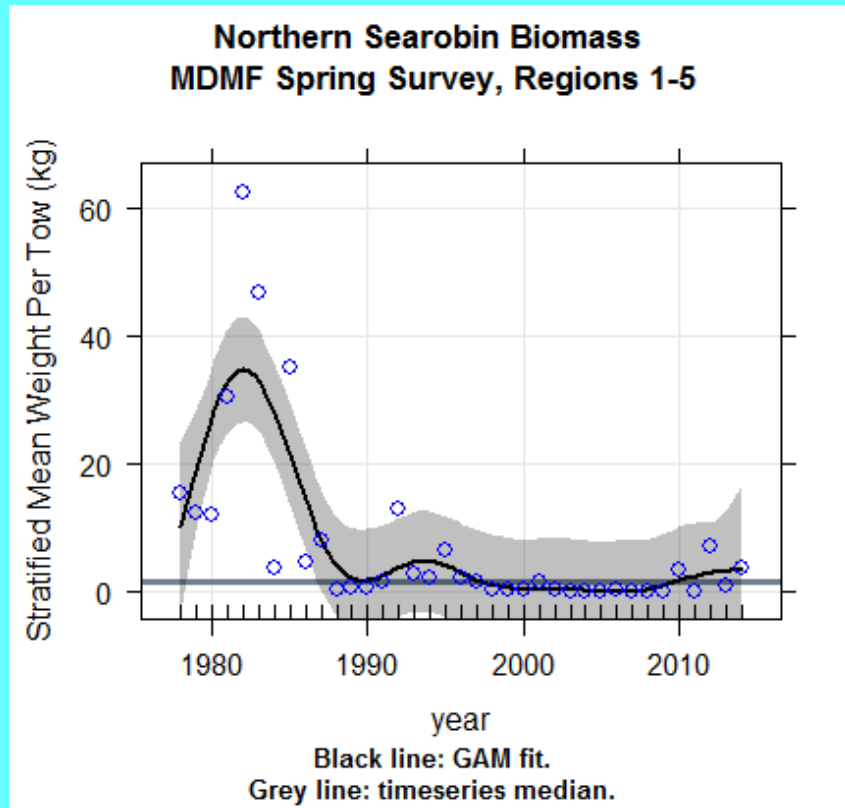
# Rock Crab



# Atlantic Cod



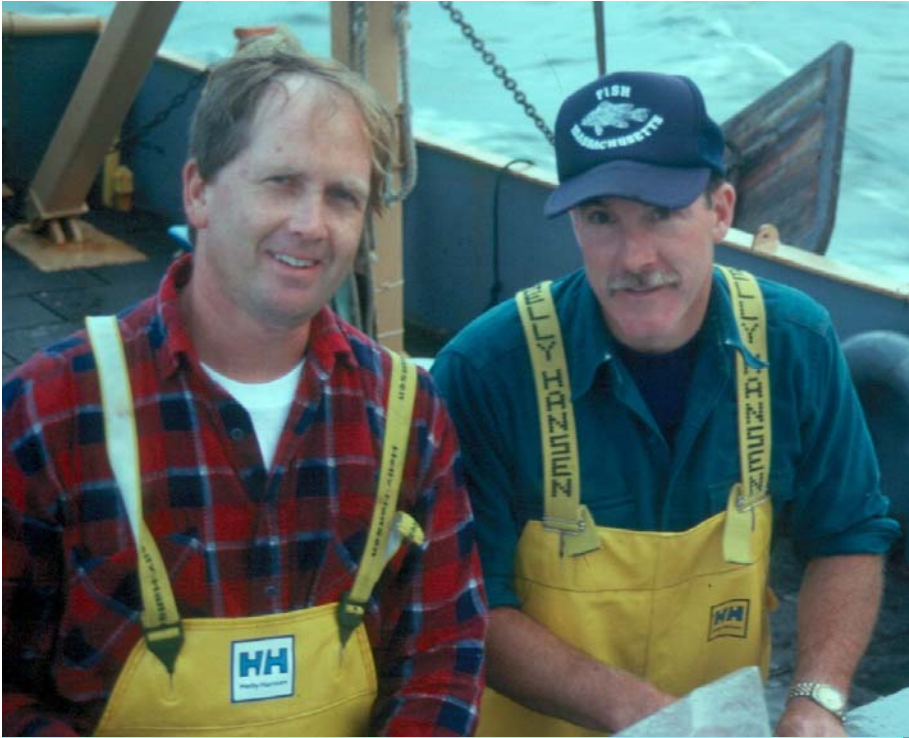
# Northern Searobin





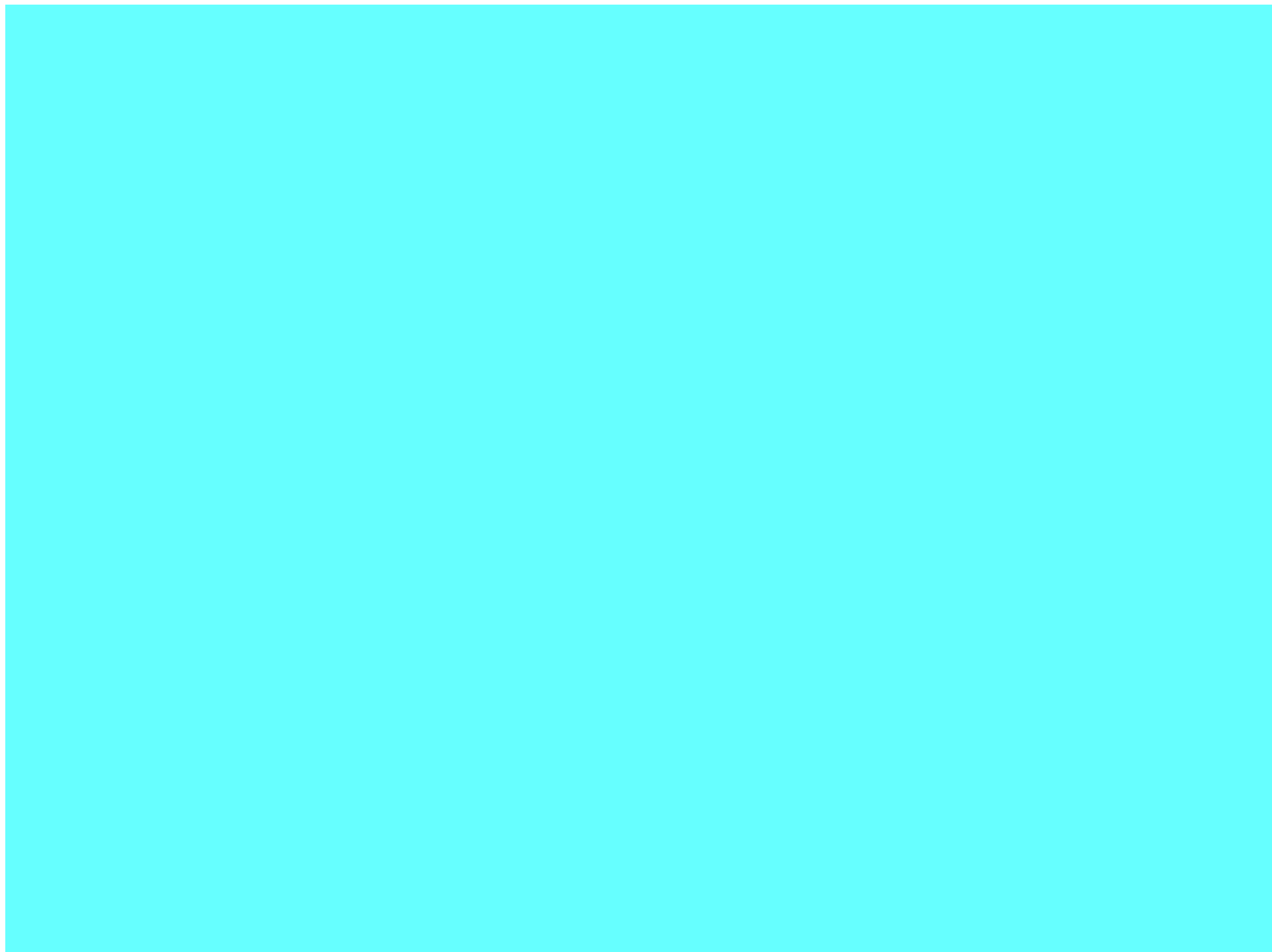
# Interesting Catches.





Any questions?

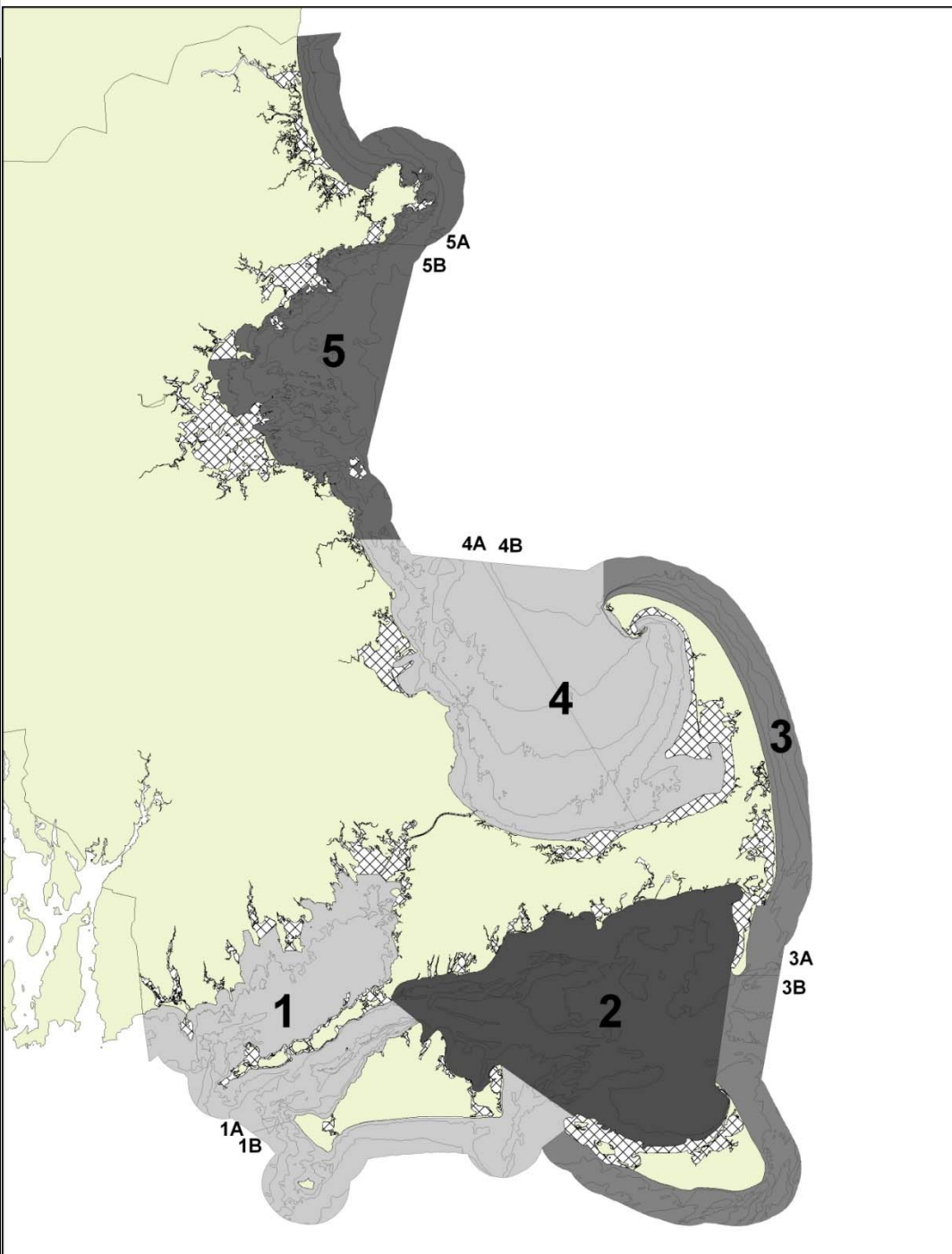




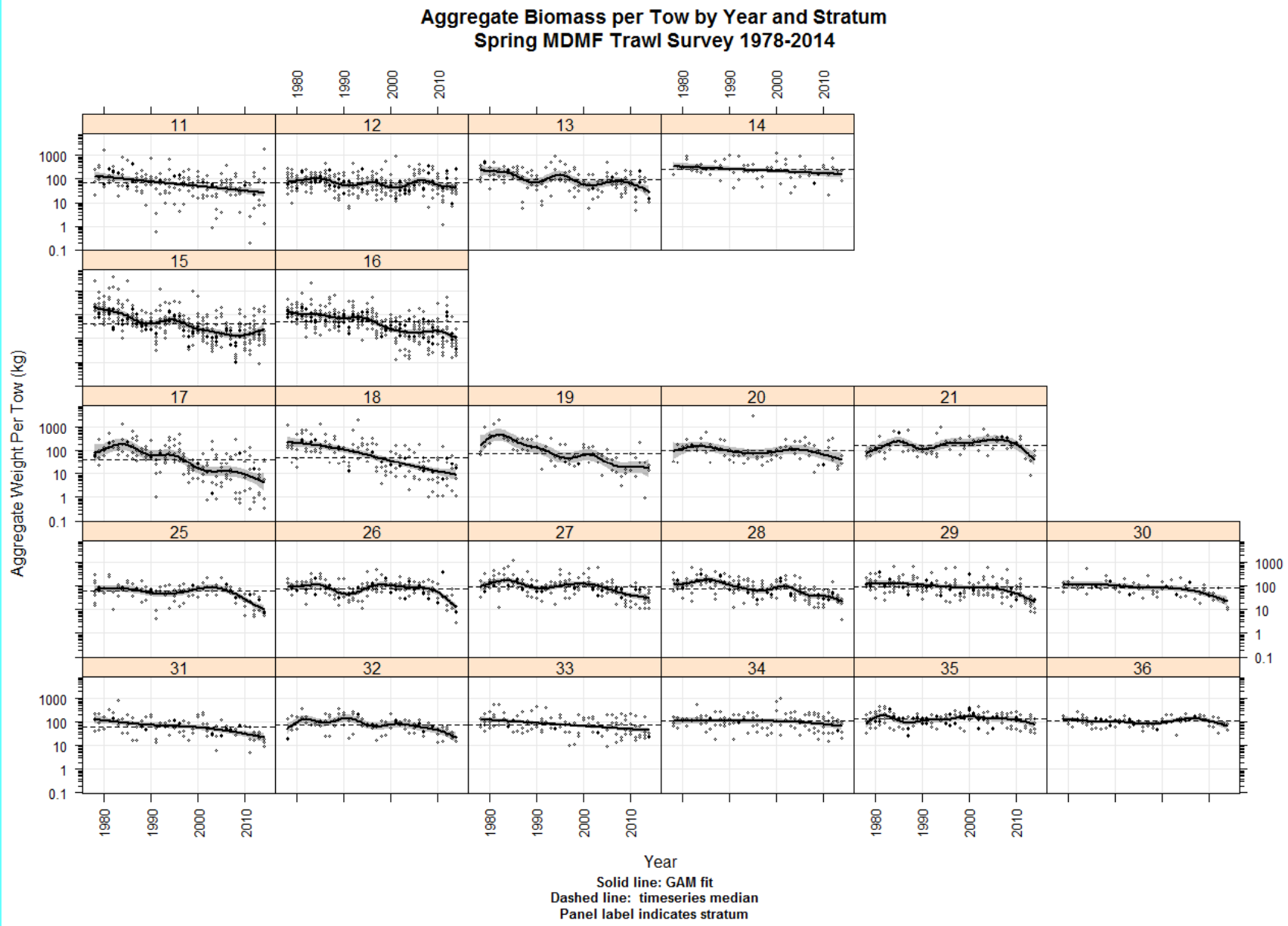


Slides for the back pocket.

MADMF TRAWL SURVEY						
STATION ASSIGNMENT BY STRATUM						
REGION	STRATUM	DEPTH (METERS)	DEPTH (FEET)	SUBSTRATUM A	SUBSTRATUM B	# STATIONS ASSIGNED
5	31	0 - 9.1	0 - 30	2	1	3
	32	9.2 - 18.3	31 - 60	1	2	3
	33	18.4 - 27.4	61 - 90	2	2	4
	34	27.5 - 36.6	91 - 120	2	2	4
	35	36.7 - 54.9	121 - 180	2	3	5
	36	>=55.0	>180	1	1	2
4	25	0 - 9.1	0 - 30	2	2	4
	26	9.2 - 18.3	31 - 60	3	2	5
	27	18.4 - 27.4	61 - 90	3	2	5
	28	27.5 - 36.6	91 - 120	3	2	5
	29	36.7 - 54.9	121 - 180	3	2	5
	30	>=55.0	>180	0	2	2
3	17	0 - 9.1	0 - 30	2	3	5
	18	9.2 - 18.3	31 - 60	2	3	5
	19	18.4 - 27.4	61 - 90	1	1	2
	20	27.5 - 36.6	91 - 120	2	0	2
	21	36.7 - 54.9	121 - 180	2	0	2
2	15	0 - 9.1	0 - 30	10		10
	16	9.2 - 18.3	31 - 60	11		11
1	11	0 - 9.1	0 - 30	3	2	5
	12	9.2 - 18.3	31 - 60	5	2	7
	13	18.4 - 27.4	61 - 90	3	2	5
	14	27.5 - 36.6	91 - 120	1	1	2
TOTAL STATION ASSIGNMENT						103

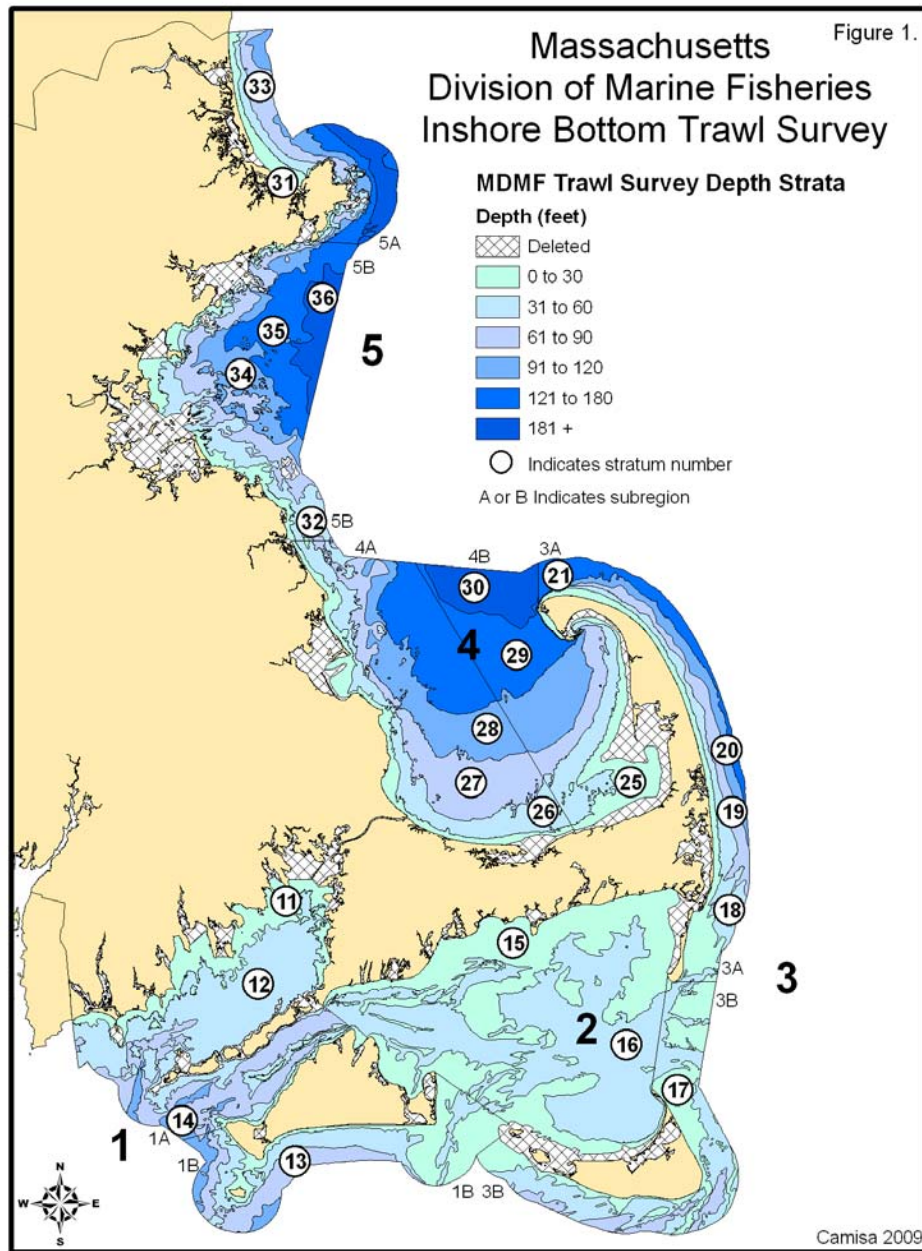


# Stratum Trends in Aggregate Biomass



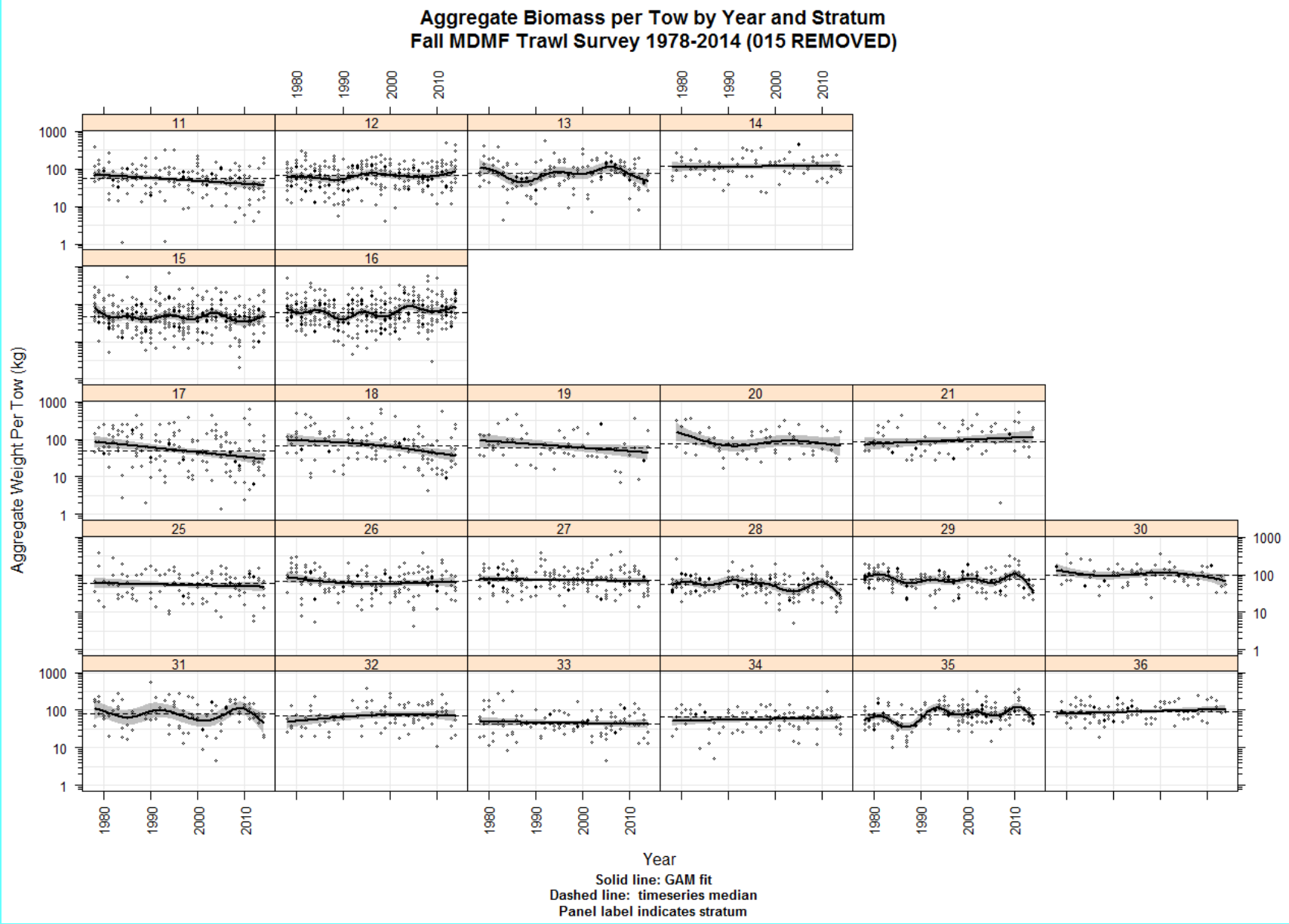


# Survey Area

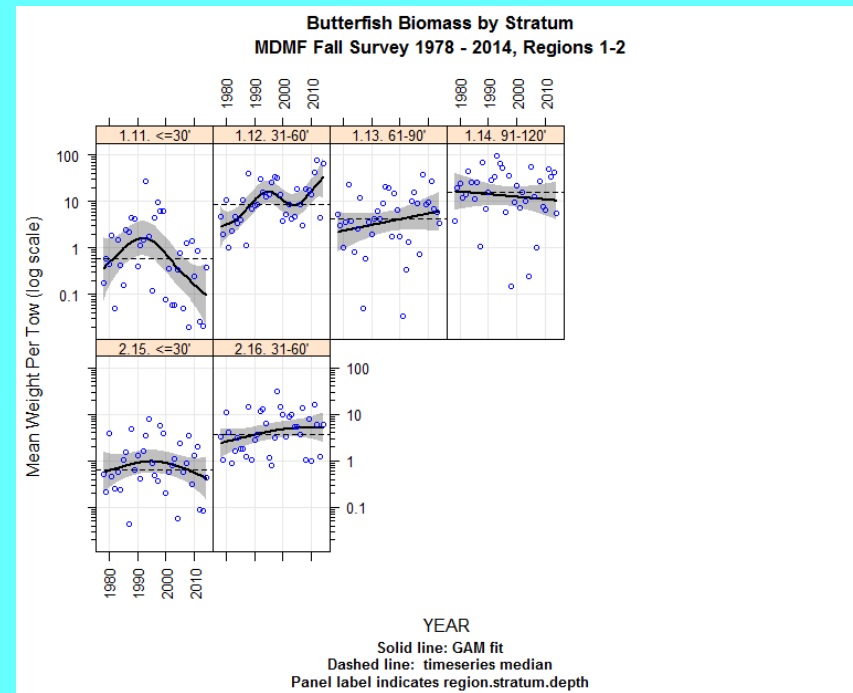
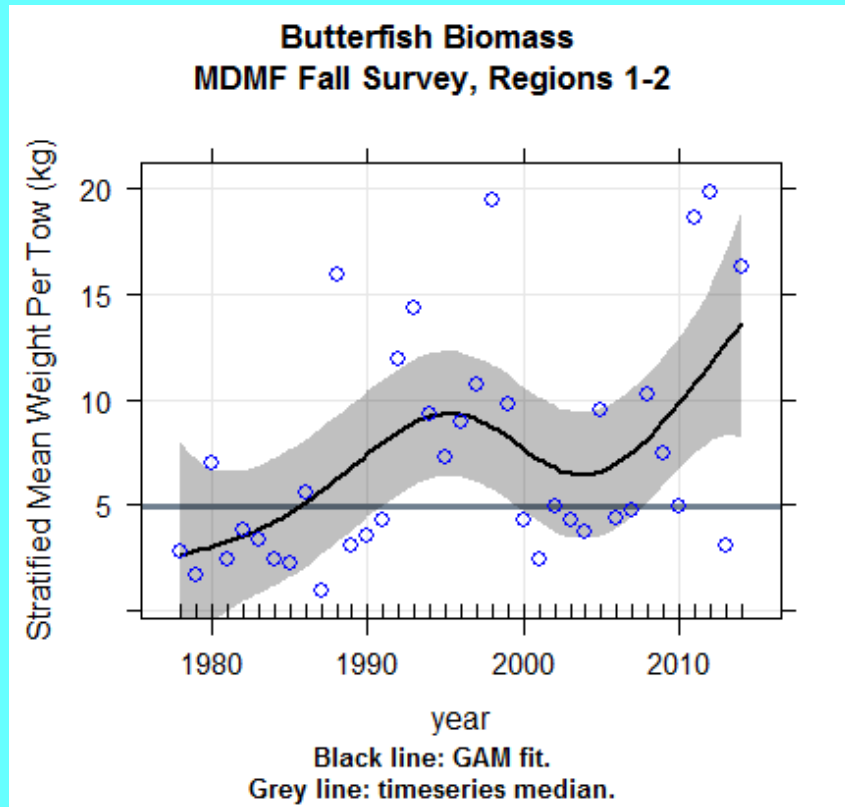


- 5 Geographic Regions
- 6 Depth Zones
- 23 Strata
- Strata range from 20 sq.nmi (14) to 210 sq.nmi (16)
- Total survey area over 1,800 sq.nmi
- Includes both GOM and SNE stock areas.
- Some overlap with NEFSC surveys

# Stratum Trends in Aggregate Biomass



# Butterfish





# NEAMAP SNE/MA Report to NM Board February 2015

- Accomplishments
- Additions to Sampling
- Sample Results

# NEAMAP SNE/MA Accomplishments

- Field Collections - sampled 150 sites for each of the spring & fall cruises
- Ageing - processed nearly all samples collected through 2013 (except skates), progressing on 2014. Plans in place to decrease backlog of skate verts.
- Diet - processed all samples through Spring 2014, samples from Fall 2014 progressing
- Greatly increased video capture during trawl tows.

# NEAMAP SNE/MA Accomplishments

## Stock Assessments - (2014 ONLY)

### Included In:

- Butterfish
- Atlantic Menhaden
- SNE American Lobster

### Anticipate Inclusion In:

- Black Sea Bass
- Scup
- Bluefish
- Weakfish

### Contributed Data To:

- Red Drum
- Horseshoe Crab
- Smooth Dogfish



# NEAMAP SNE/MA Accomplishments (cont.)

- Ageing Exchanges
  - Black Sea Bass – 2013
  - Summer Flounder – 2014 / continuing
  - Scup – 2014
  - River Herring - 2014
  - Atlantic Menhaden – March 2015

# NEAMAP SNE/MA Accomplishments (cont.)

- Collaborative Efforts – 2014 Only
  - Striped Bass Fecundity - (MD DNR & ASMFC TC)
  - Atl. Menhaden Fecundity – (ASMFC TC)
  - Genetic Samples from:
    - Weakfish (VIMS)
    - Tautog (VIMS)
    - Silver Hake (VIMS)
    - Rough Scad (University of Pretoria)

# NEAMAP SNE/MA

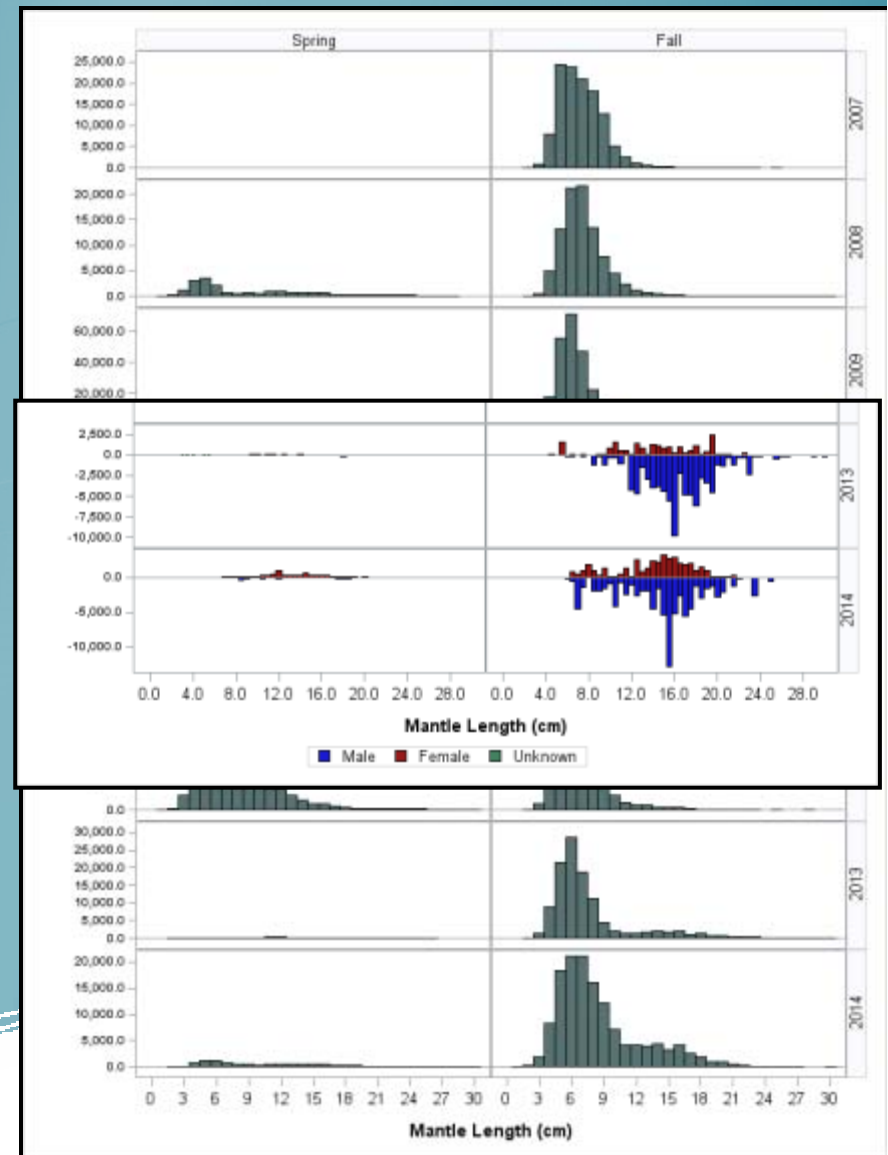
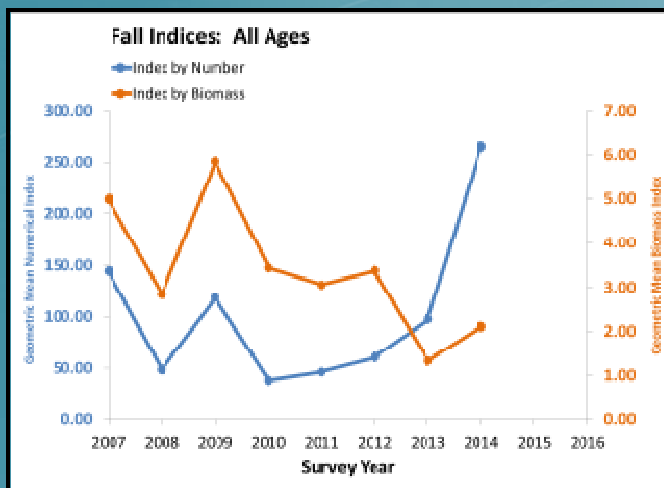
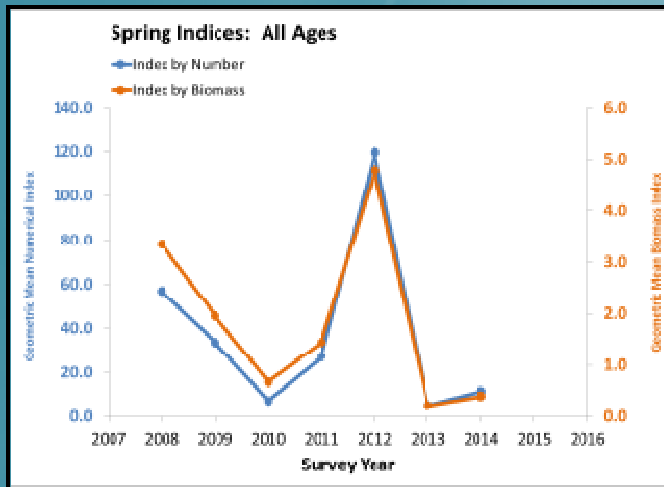
## Additions to Sampling

- Horseshoe Crab Sex & Maturity Stage
- Longfin Squid Sex & Maturity Stage
- American Lobster Ageing Structure
- Atlantic menhaden & summer flounder gonad sampling (for fecundity)
- Butterfly Rays Priority “A” Species
- PAR Profiles for Each Tow



# NEAMAP SNE/MA Sample Results

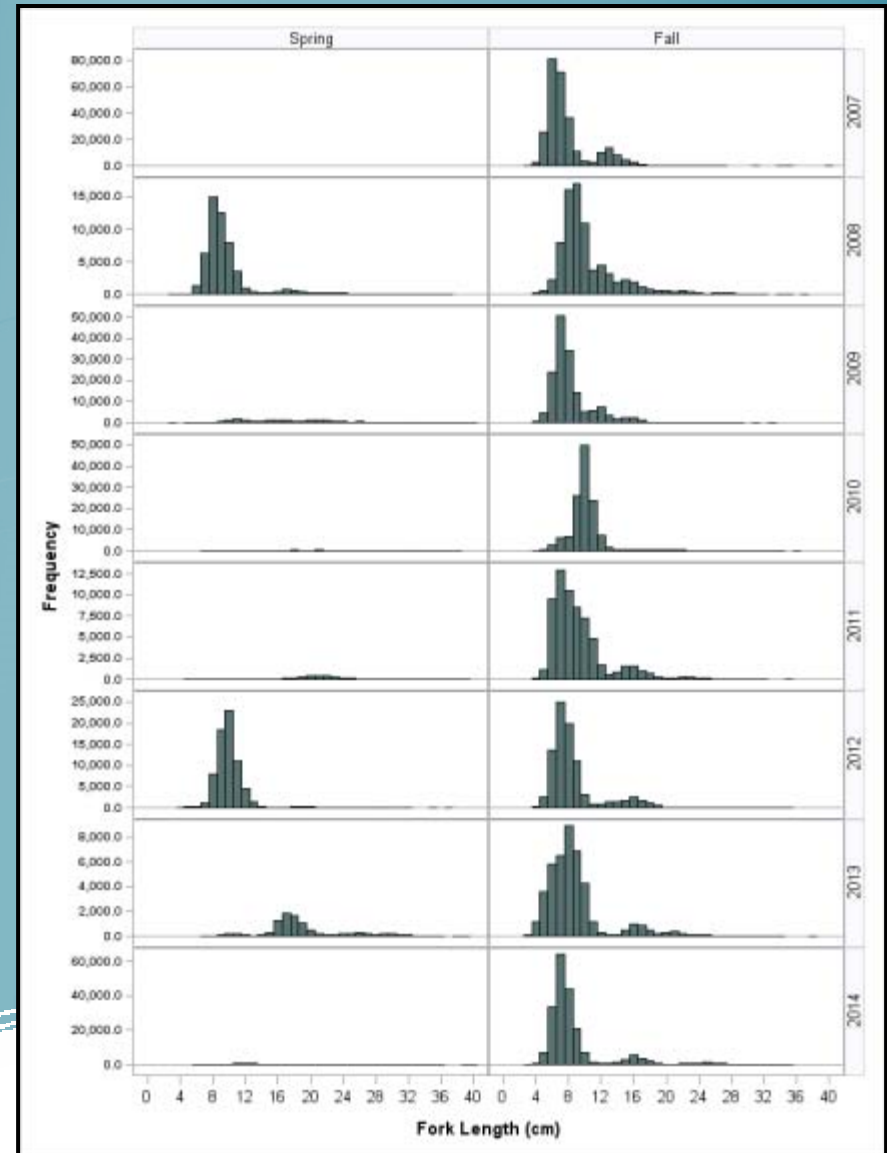
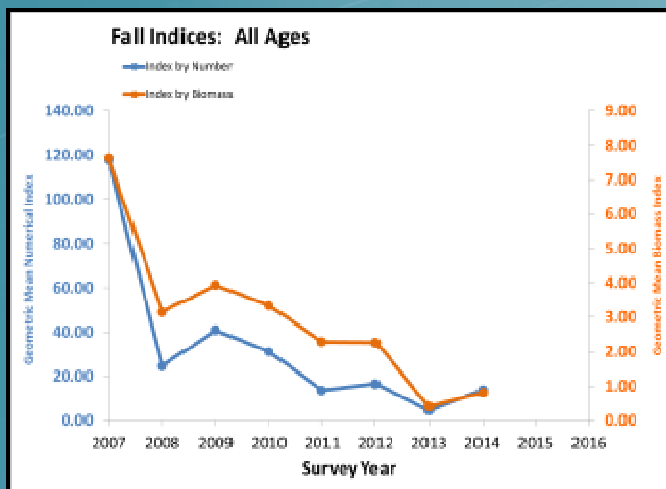
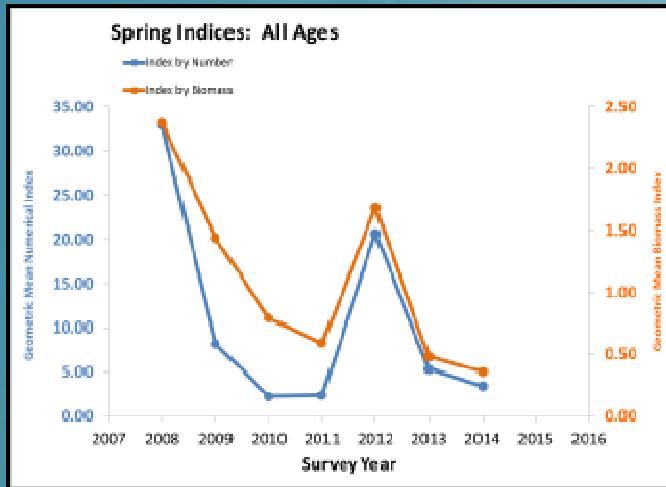
## Longfin Squid



# NEAMAP SNE/MA

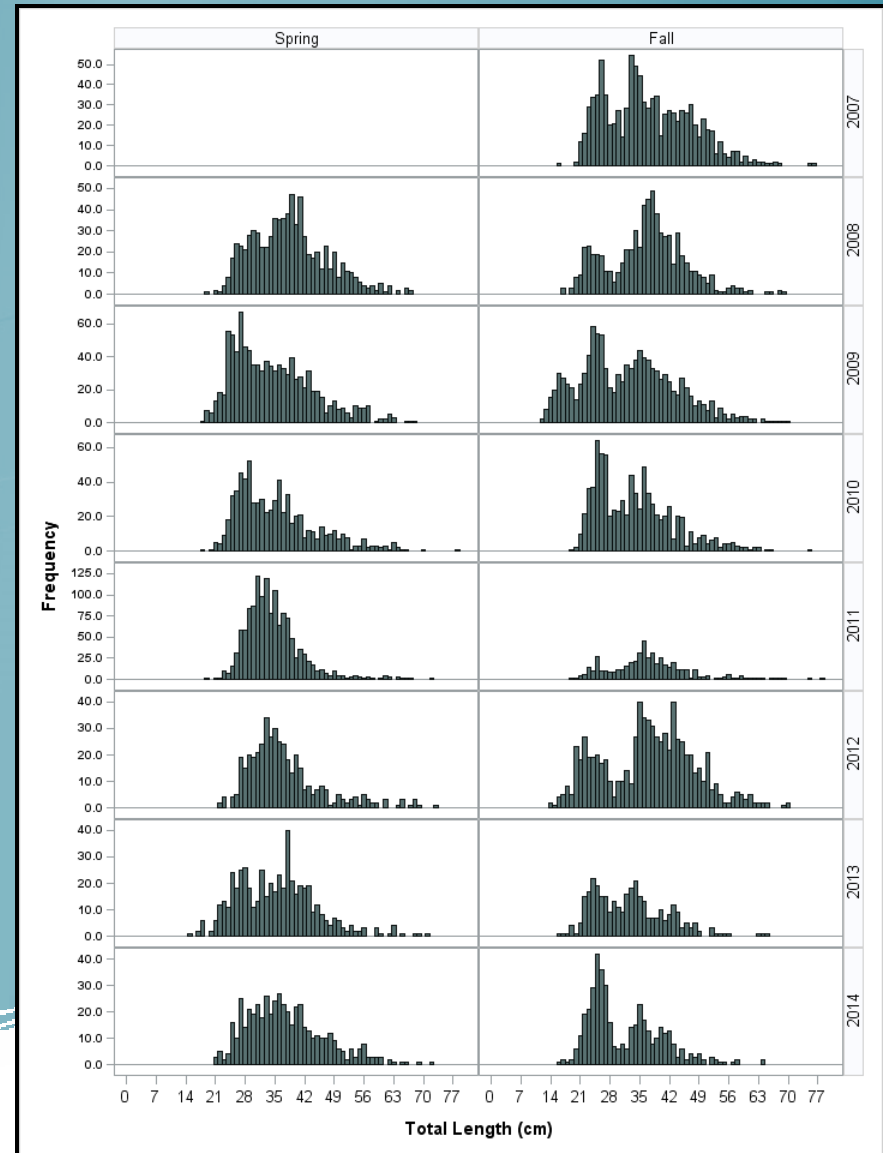
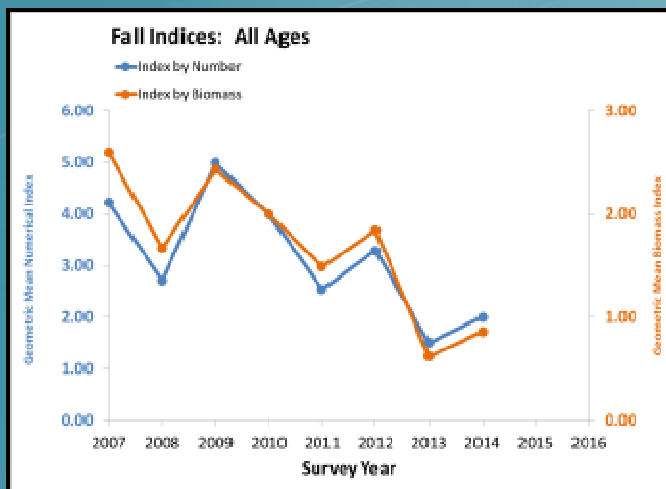
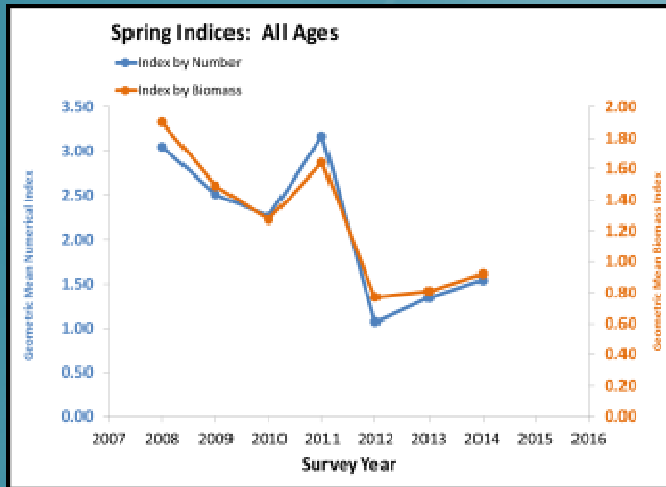
## Sample Results

### Scup



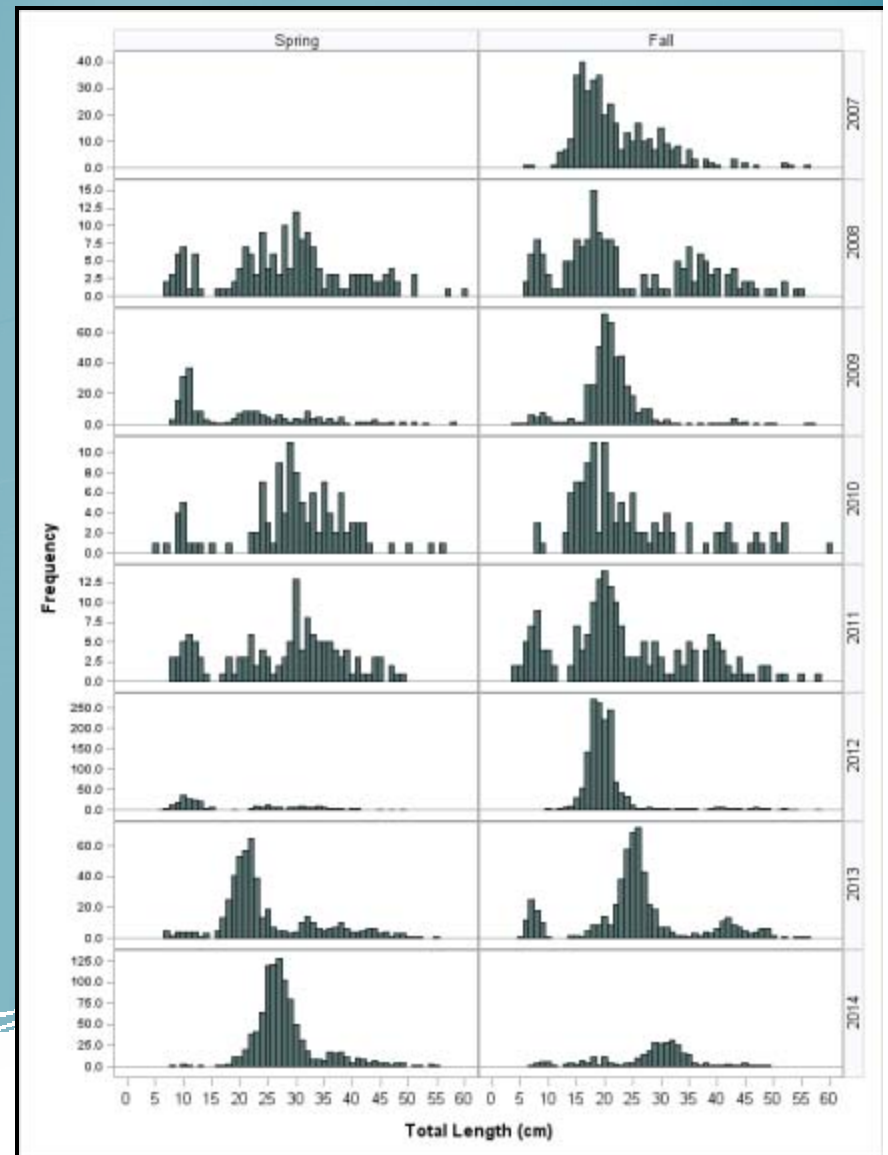
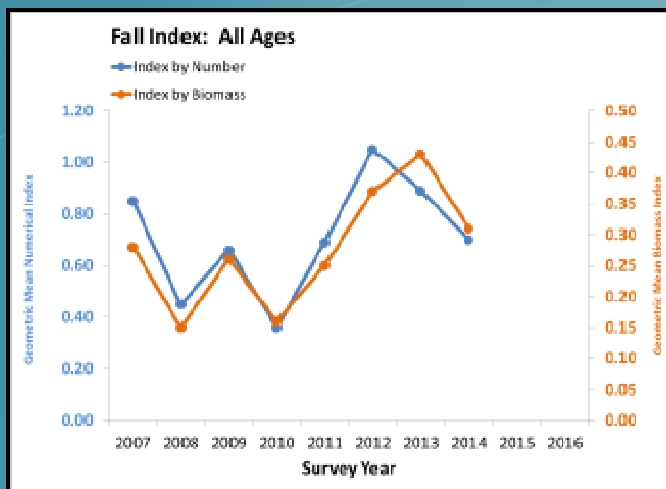
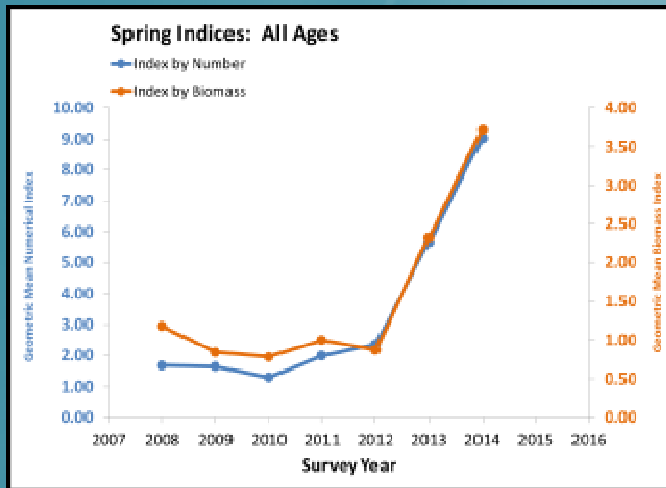
# NEAMAP SNE/MA Sample Results

## Summer Flounder



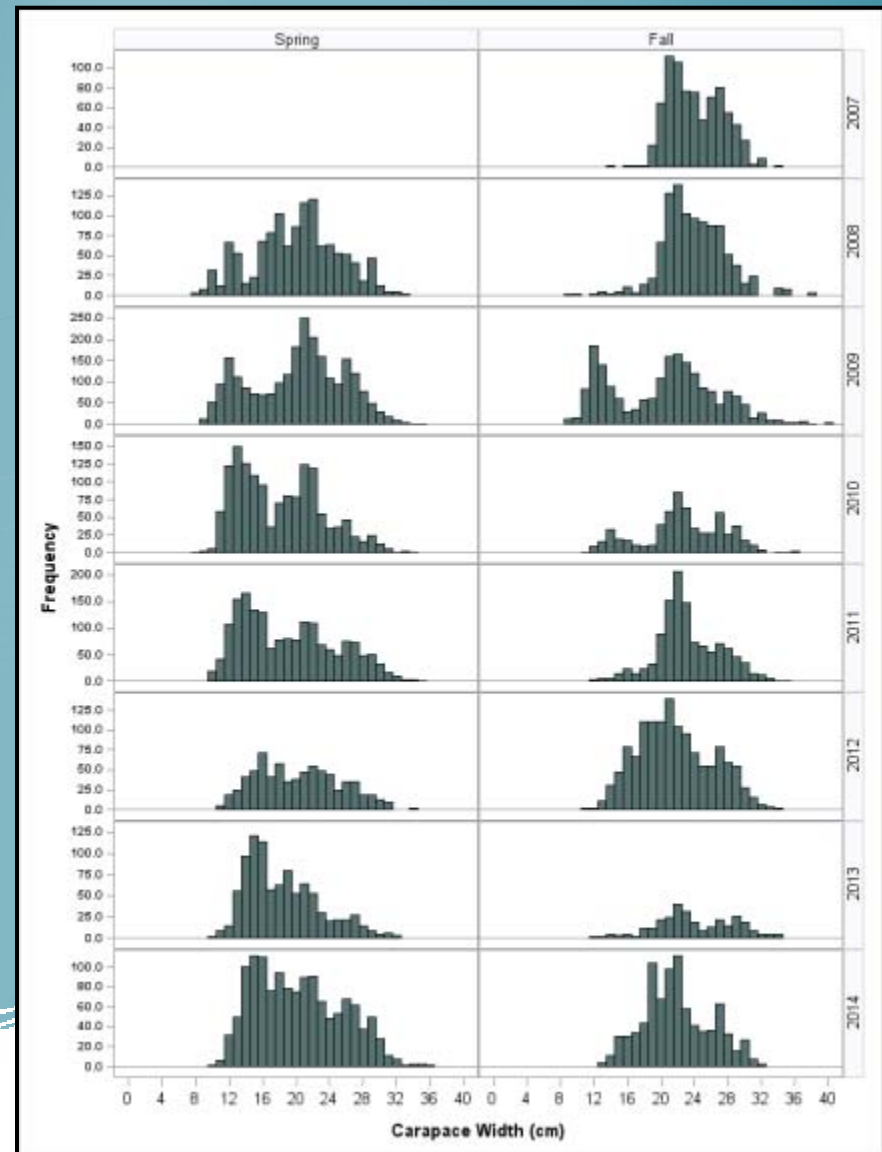
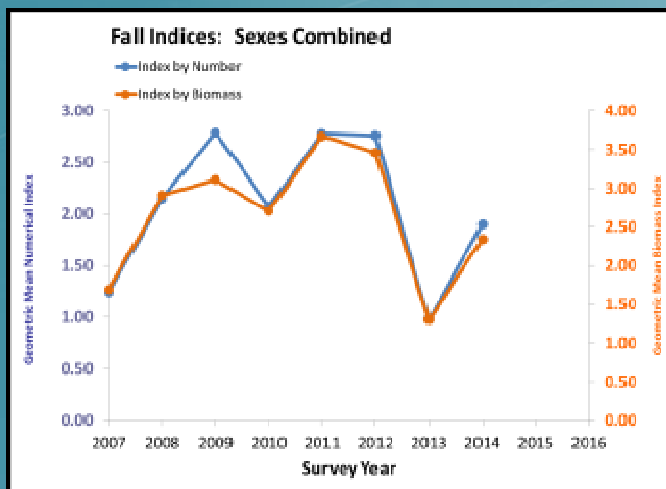
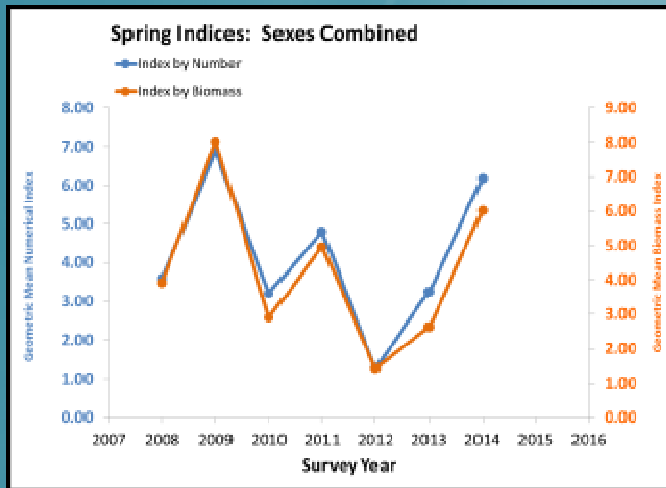


# NEAMAP SNE/MA Sample Results Black Sea Bass



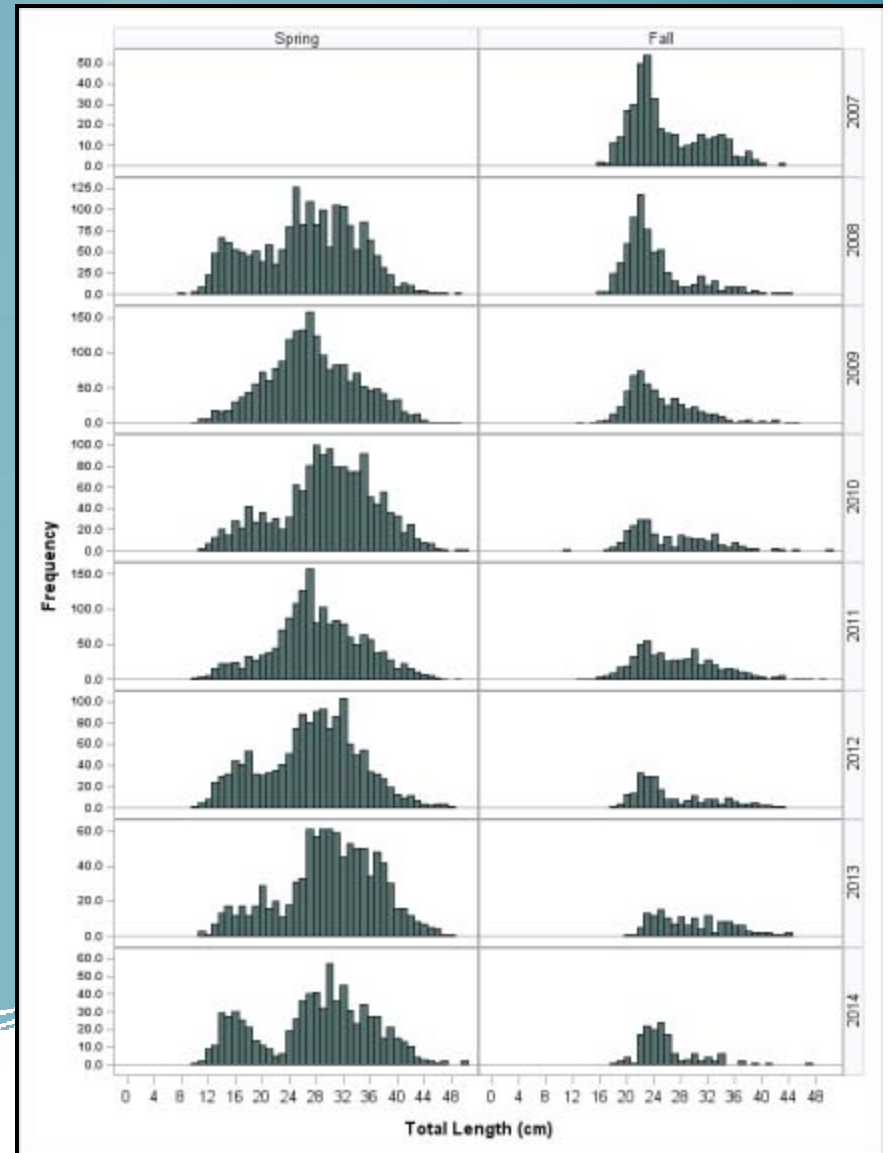
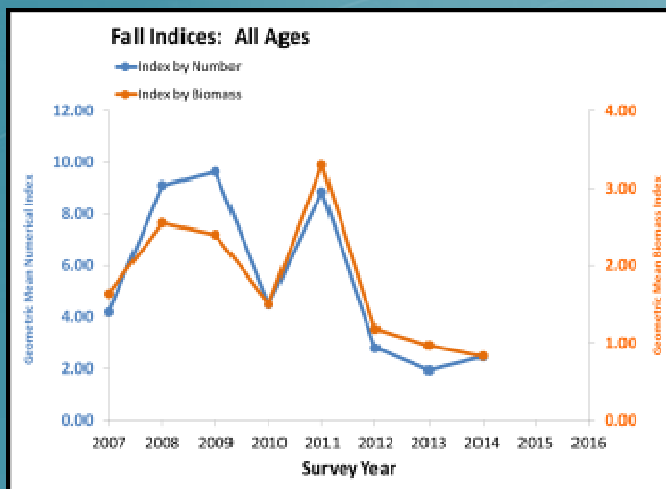
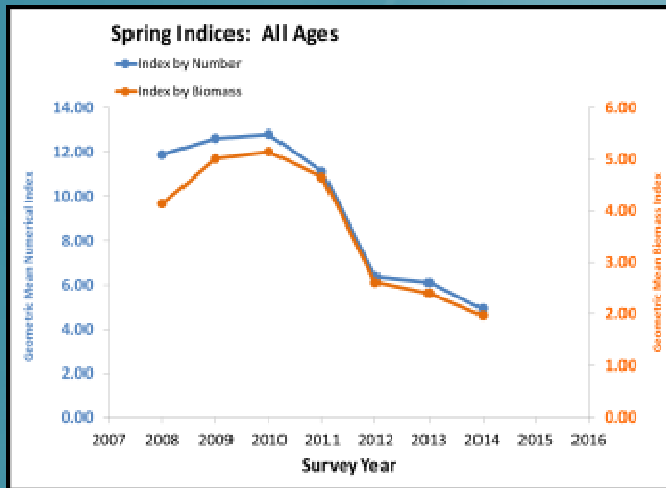
# NEAMAP SNE/MA Sample Results

## Horseshoe Crab



# NEAMAP SNE/MA Sample Results

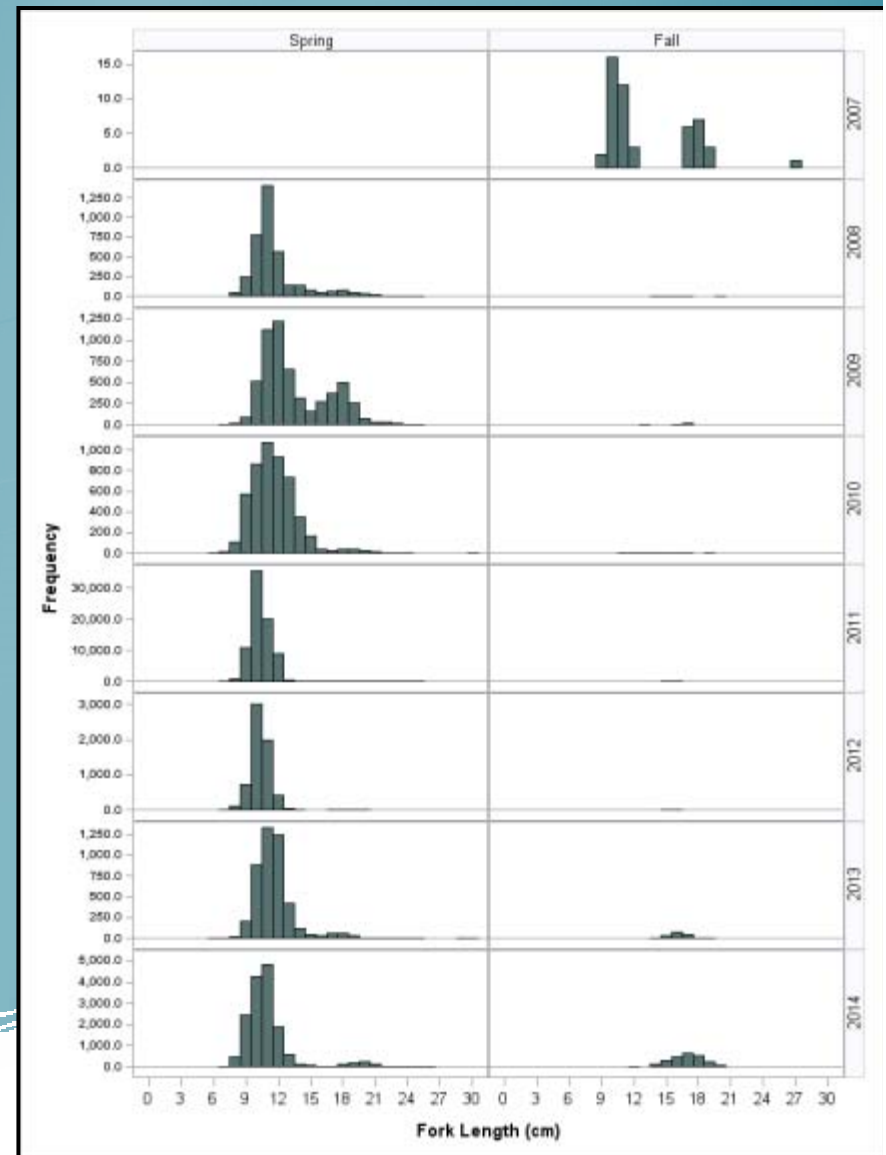
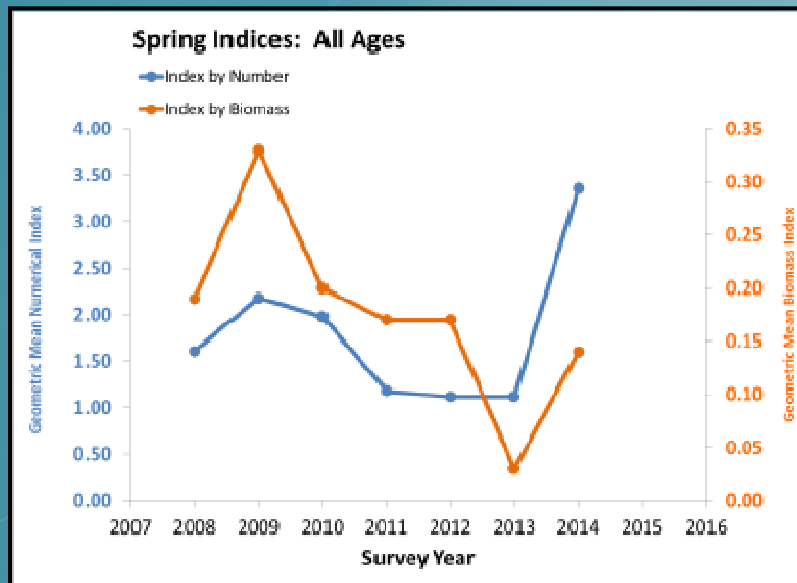
## Winter Flounder





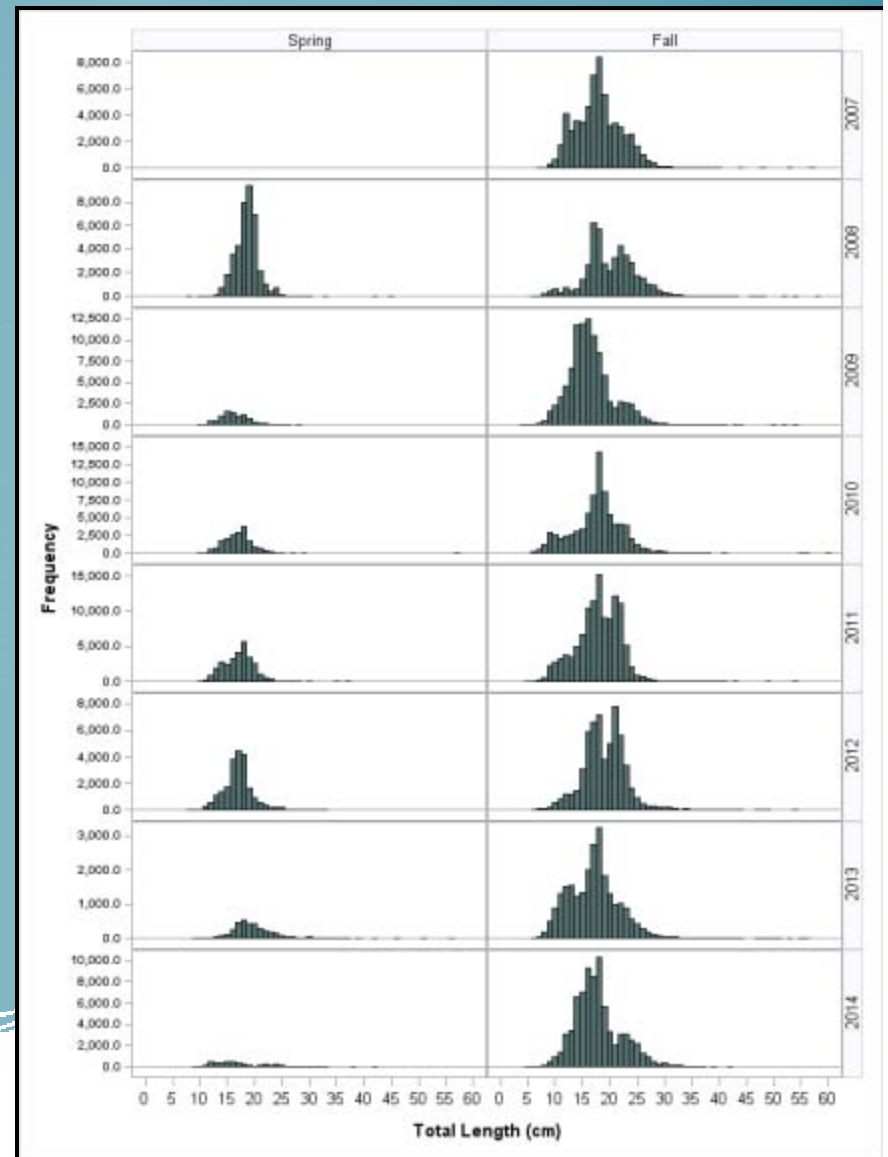
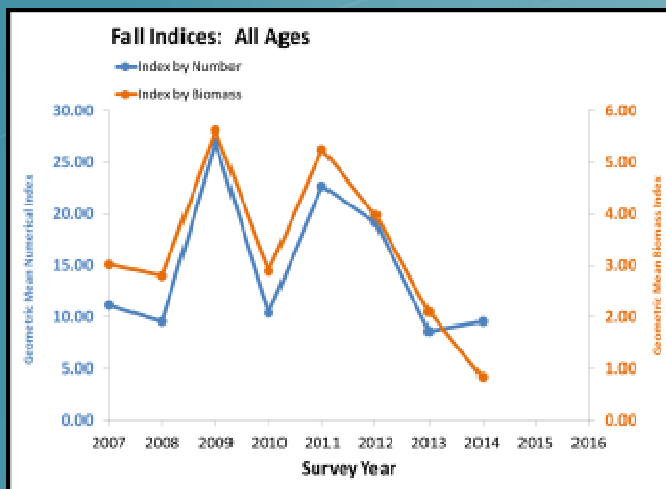
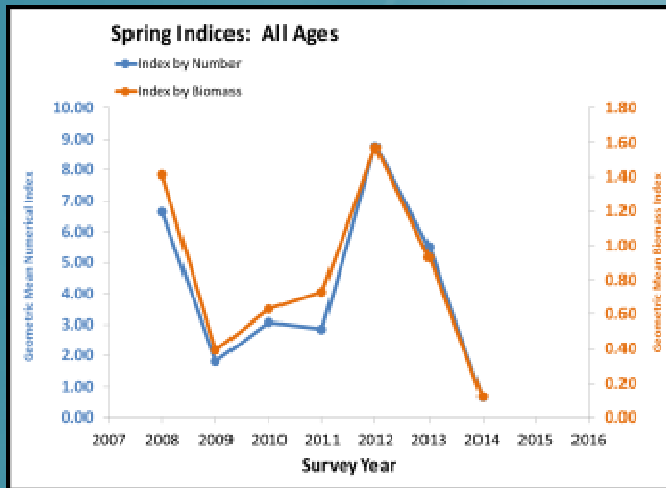
# NEAMAP SNE/MA Sample Results

## Blueback Herring



# NEAMAP SNE/MA Sample Results

## Weakfish

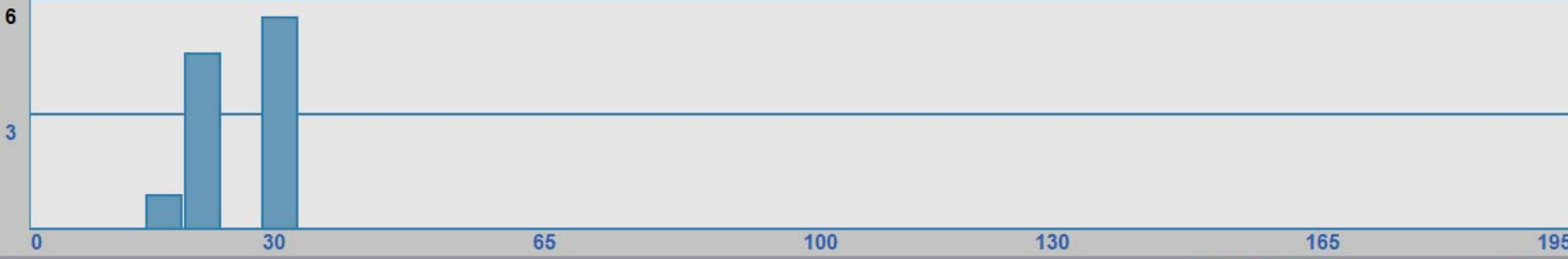


# NEAMAP SNE/MA Questions



# NEAMAP Data Management

**VIMS** Fisheries Environment for Electronic Data **FEED Demo Project** FM BigFin



**Station** Station

Water Body  Date(mm/dd/yyyy)  Beg Time(hh:mm)  End Time(hh:mm)  Gear Code

Remarks

**Entered By (Pan#)** Entered By

**Species (VIMS Code)** Species Code

**Modal Size Group** Size Group  Group Weight

**Measured Fish** Length  Weight  Sex

**Full Workup Fish** Specimen #  Fork Length  Total Length  Tot Weight  Sex  Maturity

Gut Full (Y/N)  Evic. Weight