



# **2015 Stock Assessment Update for Atlantic Striped Bass**

# Data Changes and Updates



- Discard estimates from 2007, 2011, 2012 revised (trawls in CB removed)
- Weights-at-age for 2012 updated, 2013-2014 added
- Connecticut added bonus fish (2011-2014) to harvest
- New York produced a new YOY index (sampling stations reduced)
- DE spawning stock index not available for 2014

# Data Changes and Updates (cont.)



- VA wave 1 estimated from tag vs NC wave-1 2005-2012 regression
- No tags reported by DE commercial fishery (used 2013 tags for commercial discards).
- Estimated the MRIP index with 2012, 2013 and 2014 added (2012 intercept data were not available for 2013 benchmark).

# Catch Data

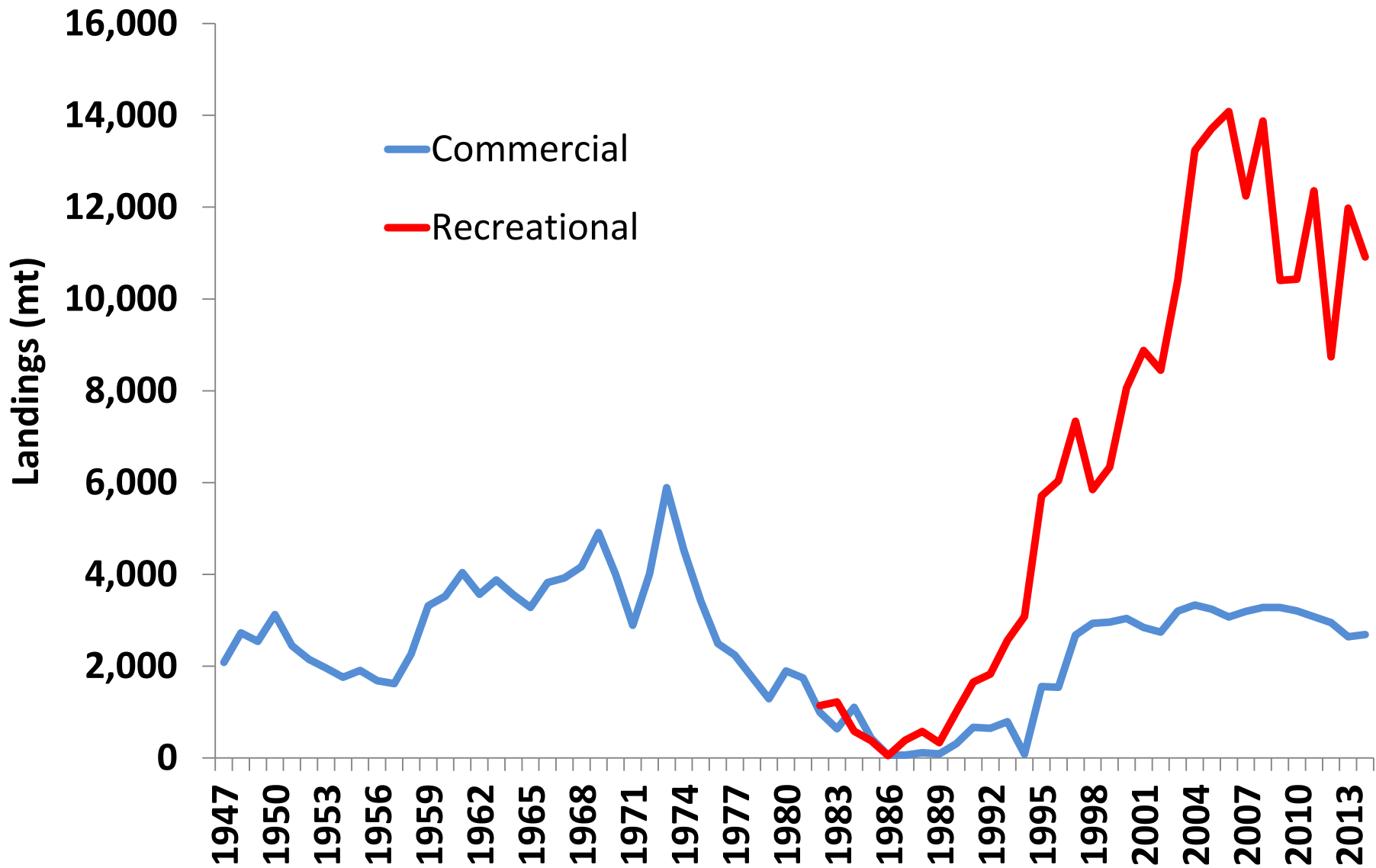


- MRIP estimates of harvest and dead releases for ME, NH, MA, RI, CT, NY, NJ, DE, MD, VA, and NC (ocean only)
- Reported commercial harvest for MA, RI, NY, DE, MD, PRFC, VA and NC (ocean only)
- Commercial dead discards estimated from tag and MRIP data

## Missing Catch and Removal Data

- Catch from major rivers (e.g., Hudson River, northern portion of Delaware River, etc.)
- Unreported catch (e.g., poaching, underreporting)

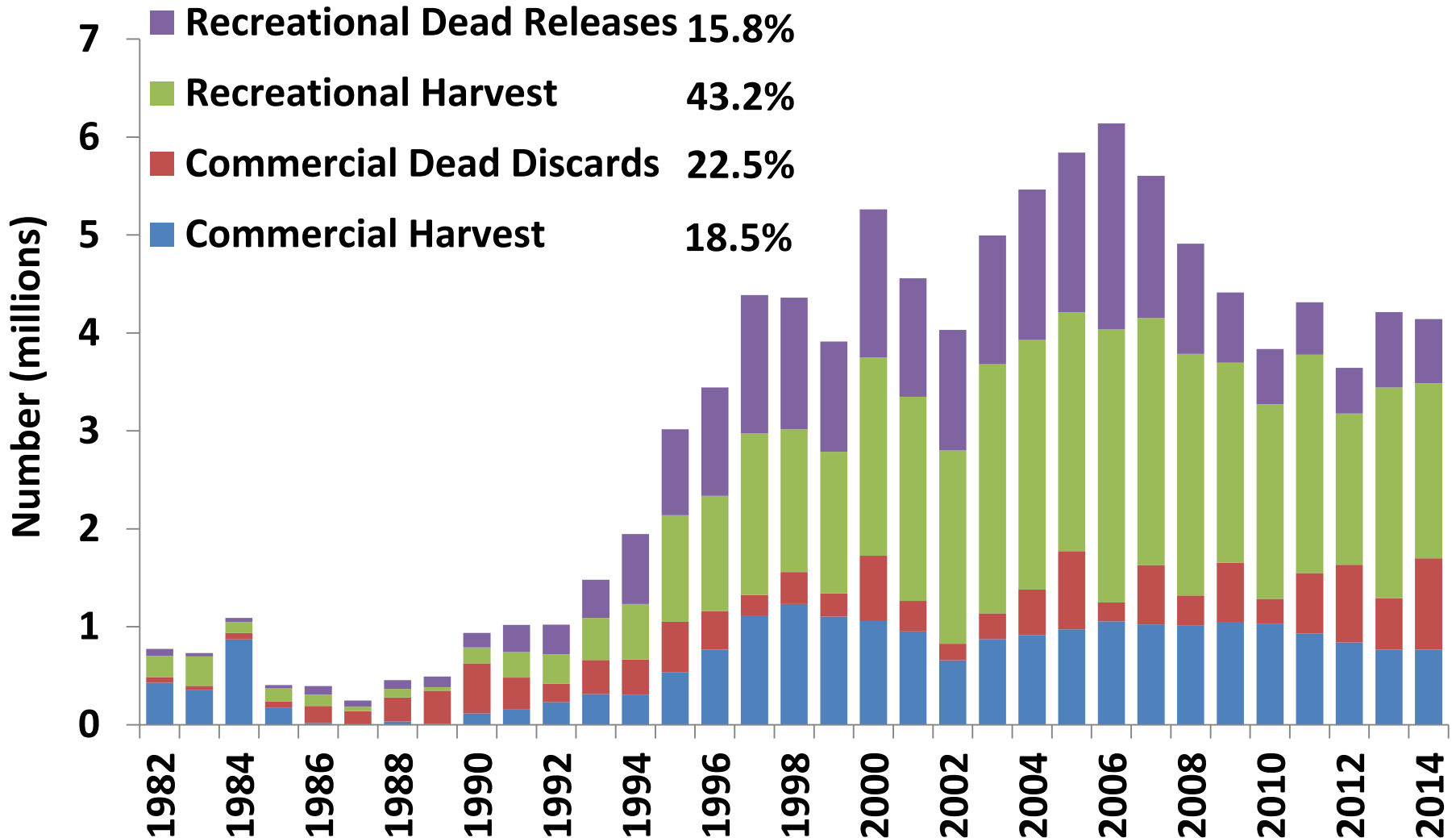
# Coast-wide Landings (mt)



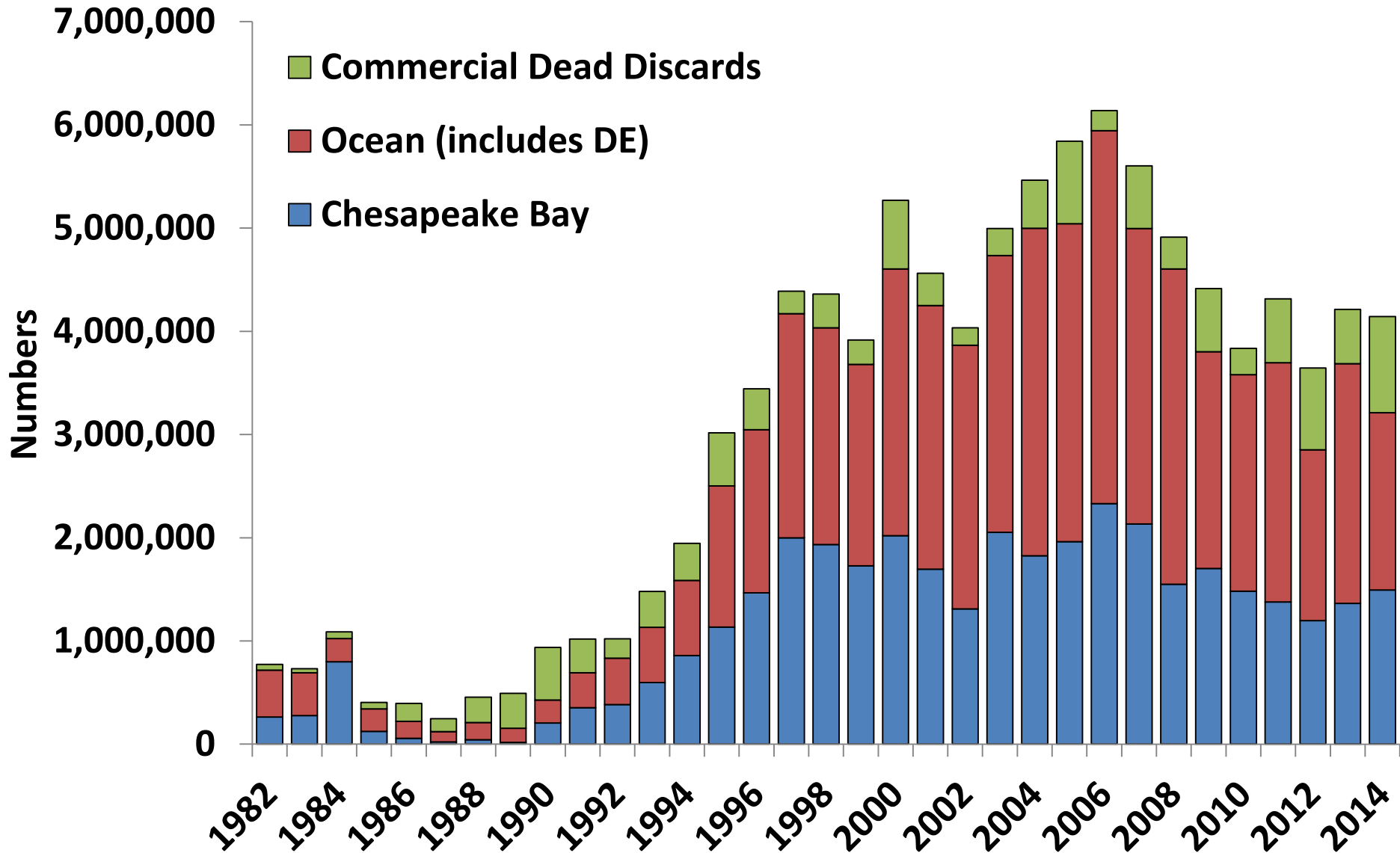
# Coast-wide Removals



**2014**



# Total Catch By "Fleet"

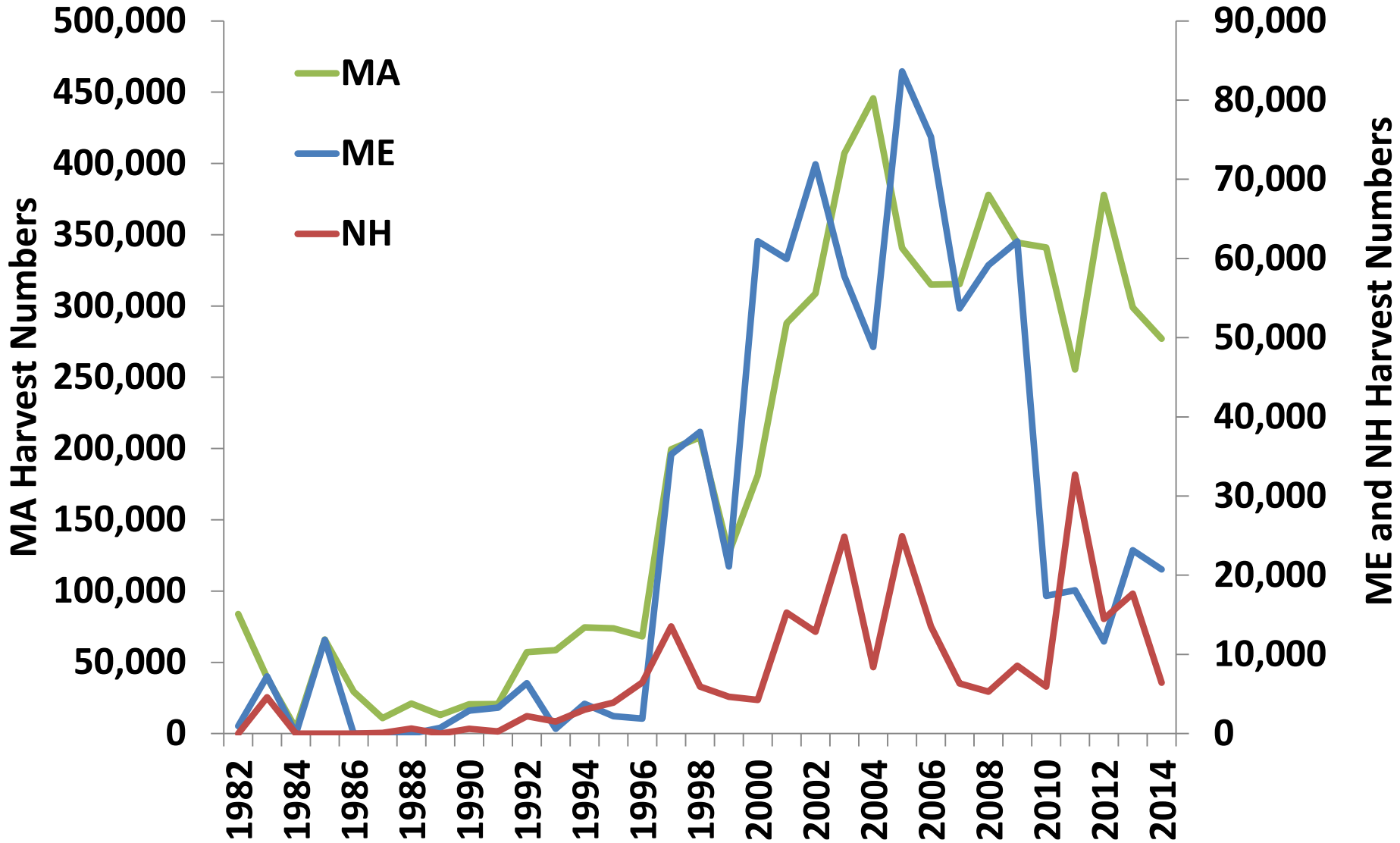




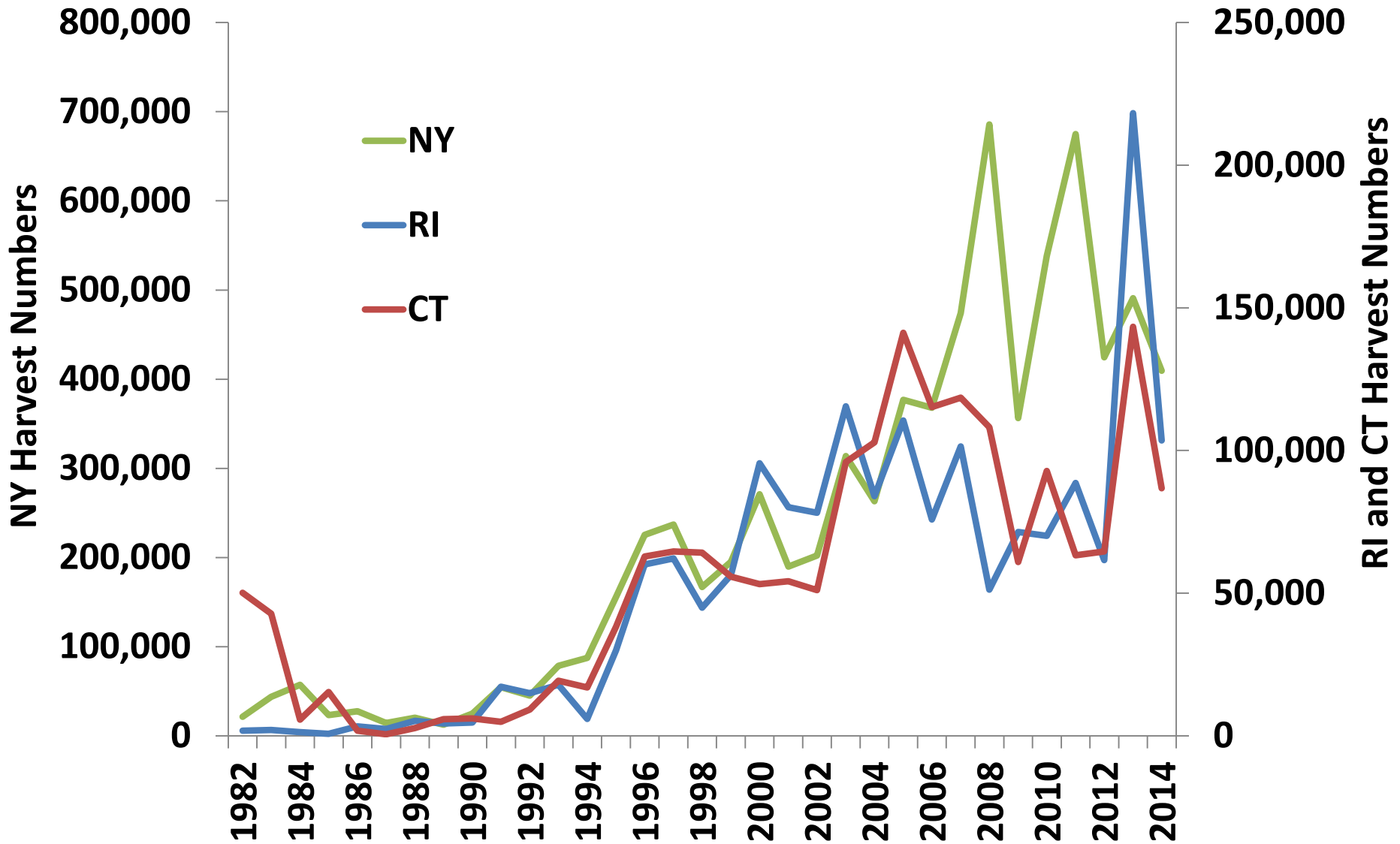
# **STATE TRENDS IN MRFSS HARVEST NUMBERS**



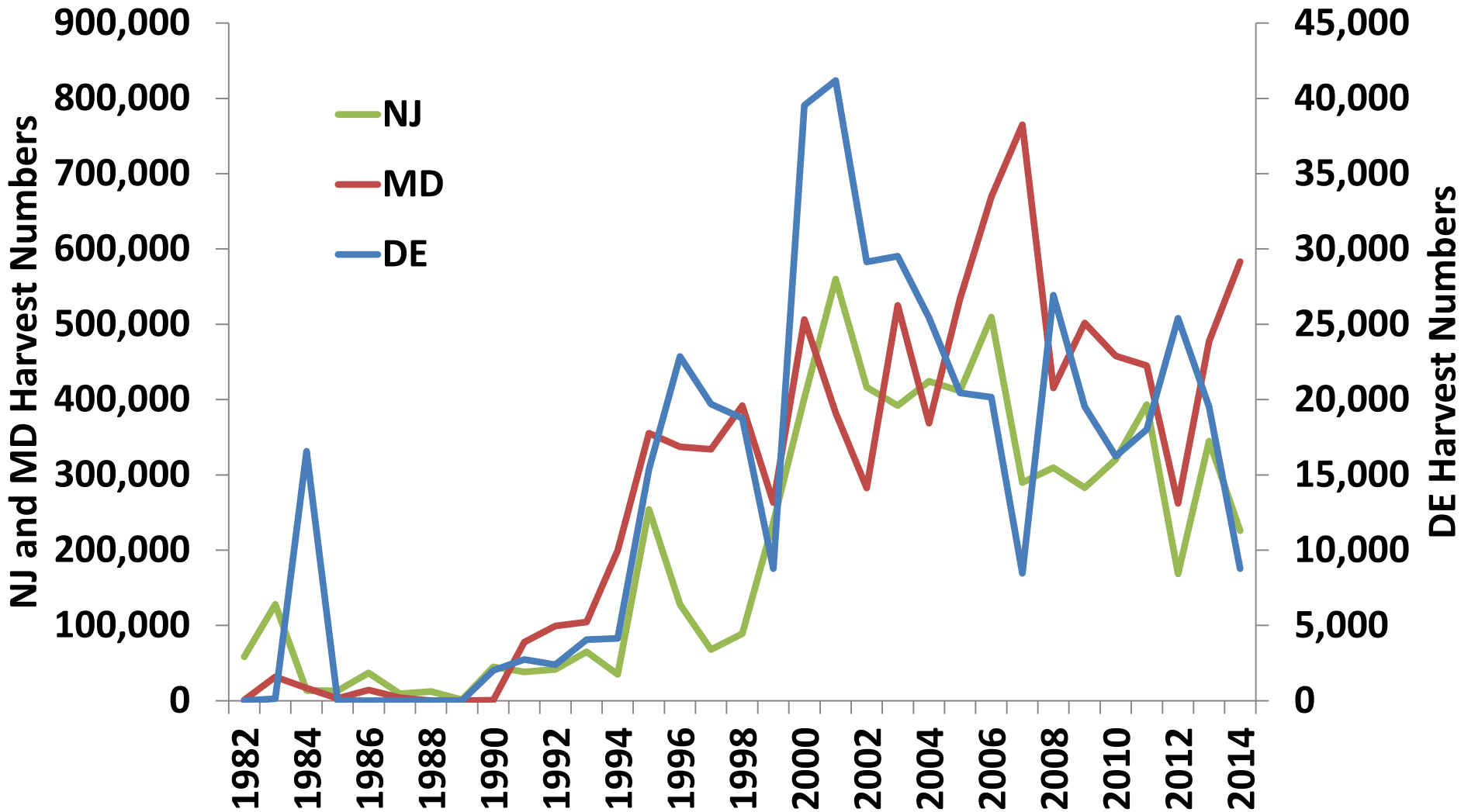
# Recreational Harvest



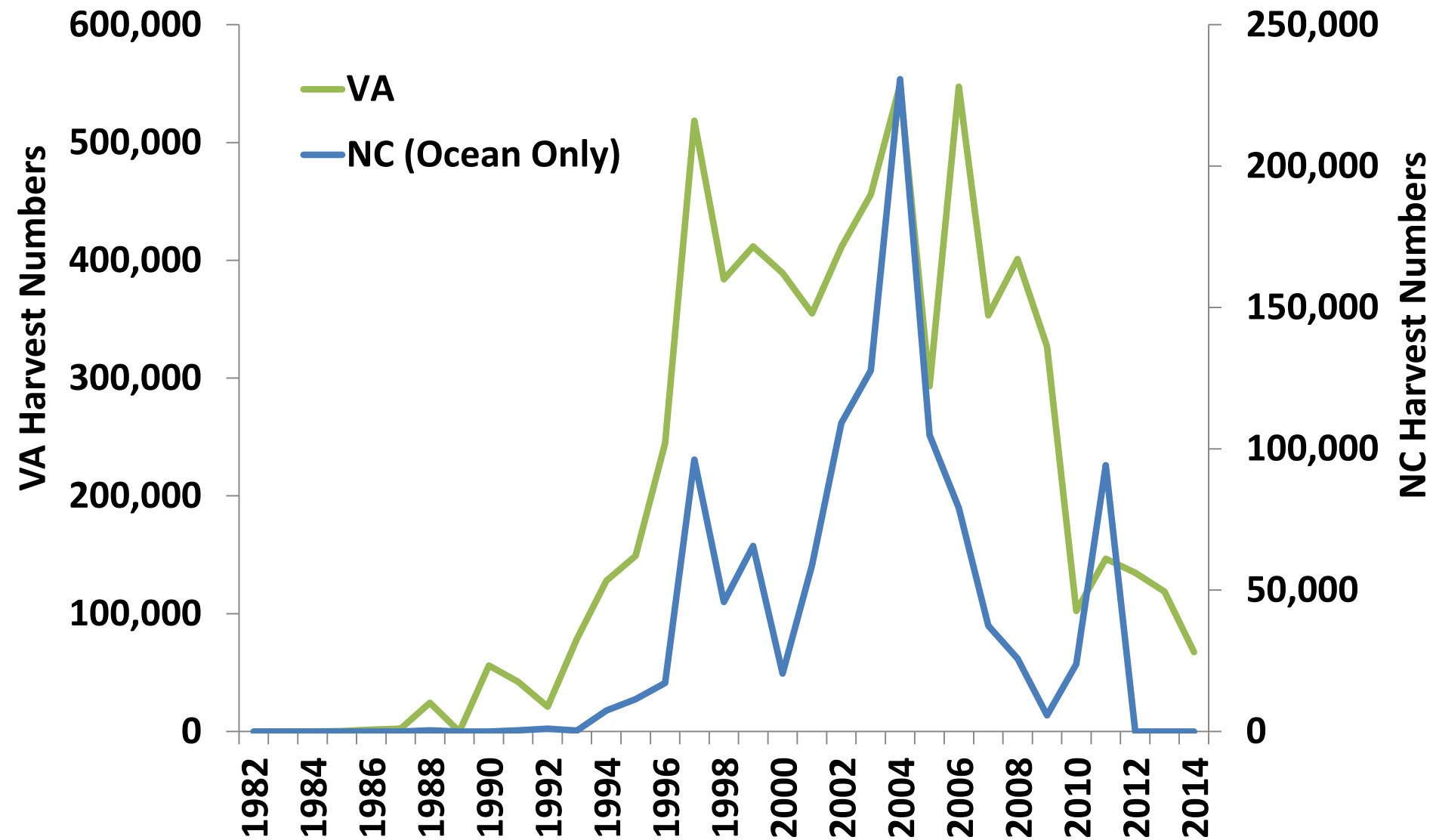
# Recreational Harvest



# Recreational Harvest (cont.)



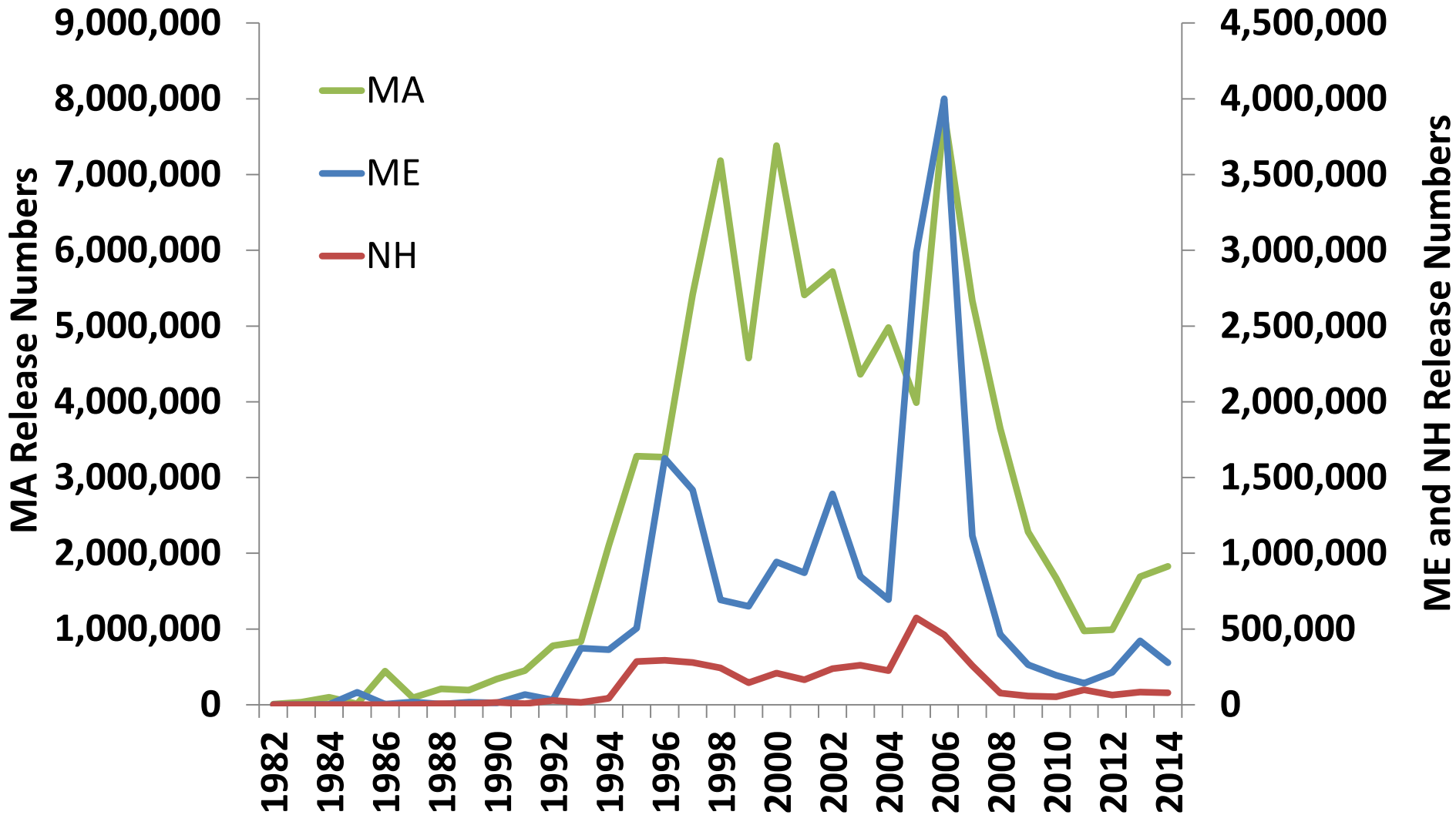
# Recreational Harvest (cont.)



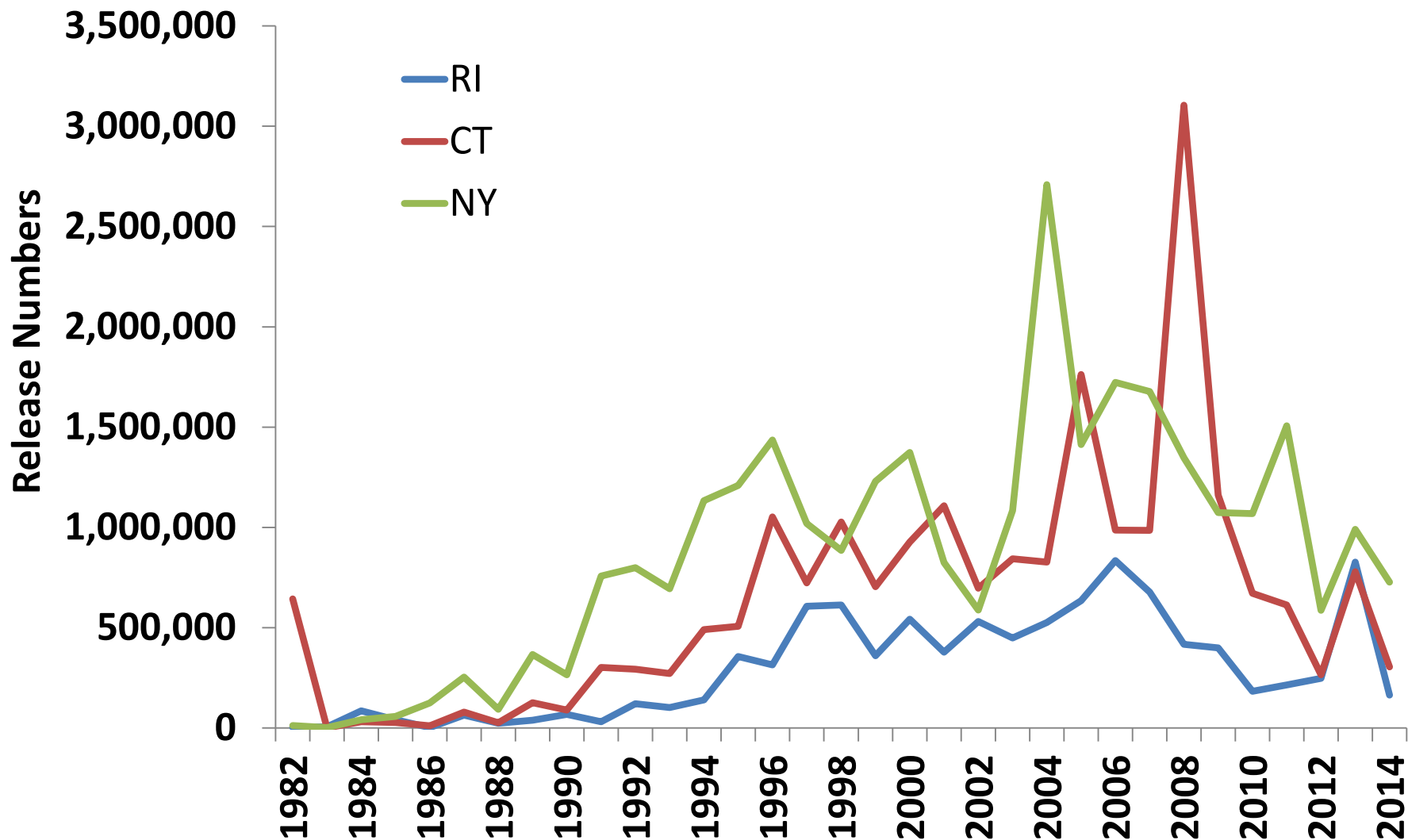


# STATE TRENDS IN MRFSS RELEASE NUMBERS

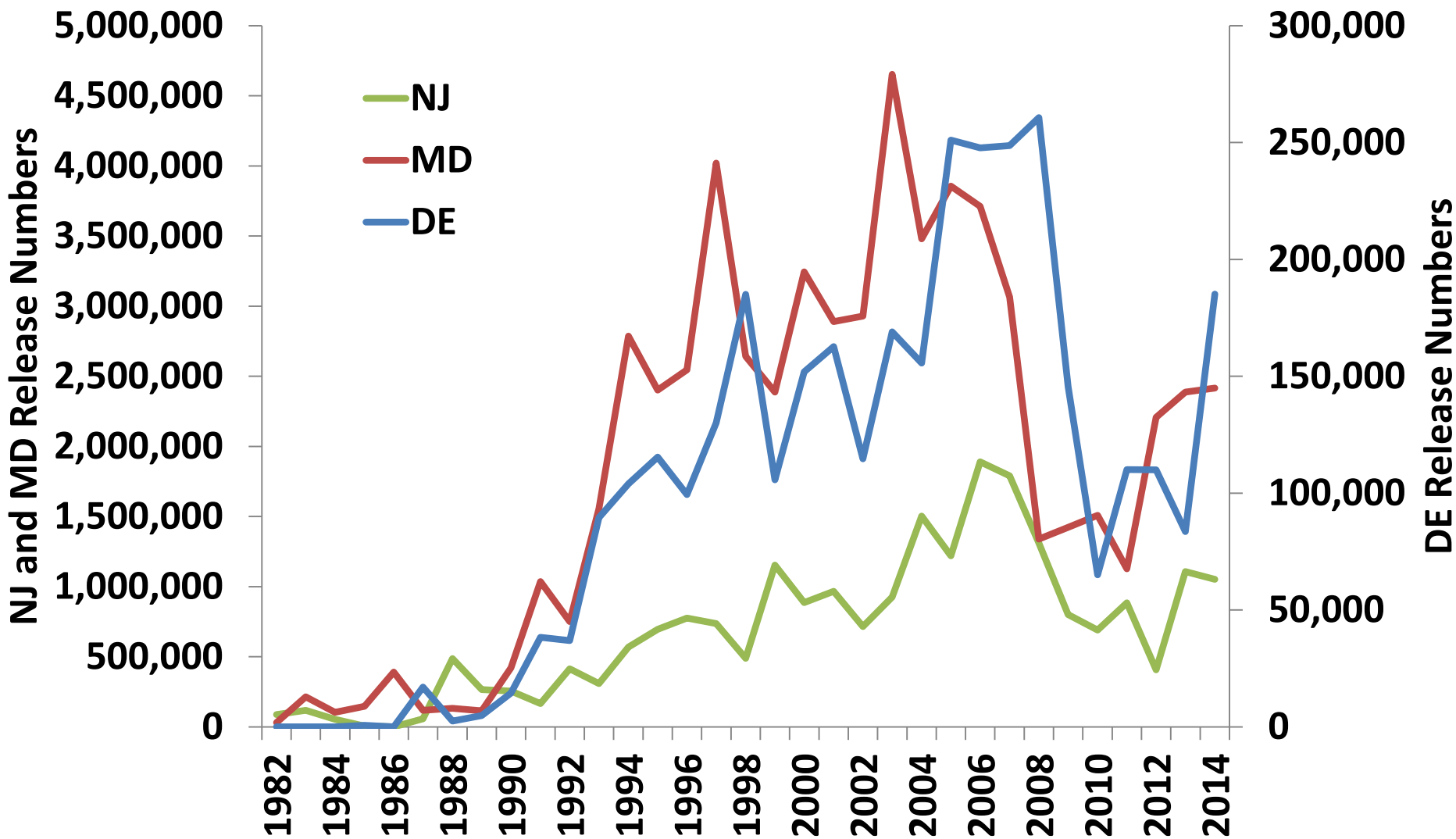
# Recreational Releases



# Recreational Releases (cont.)

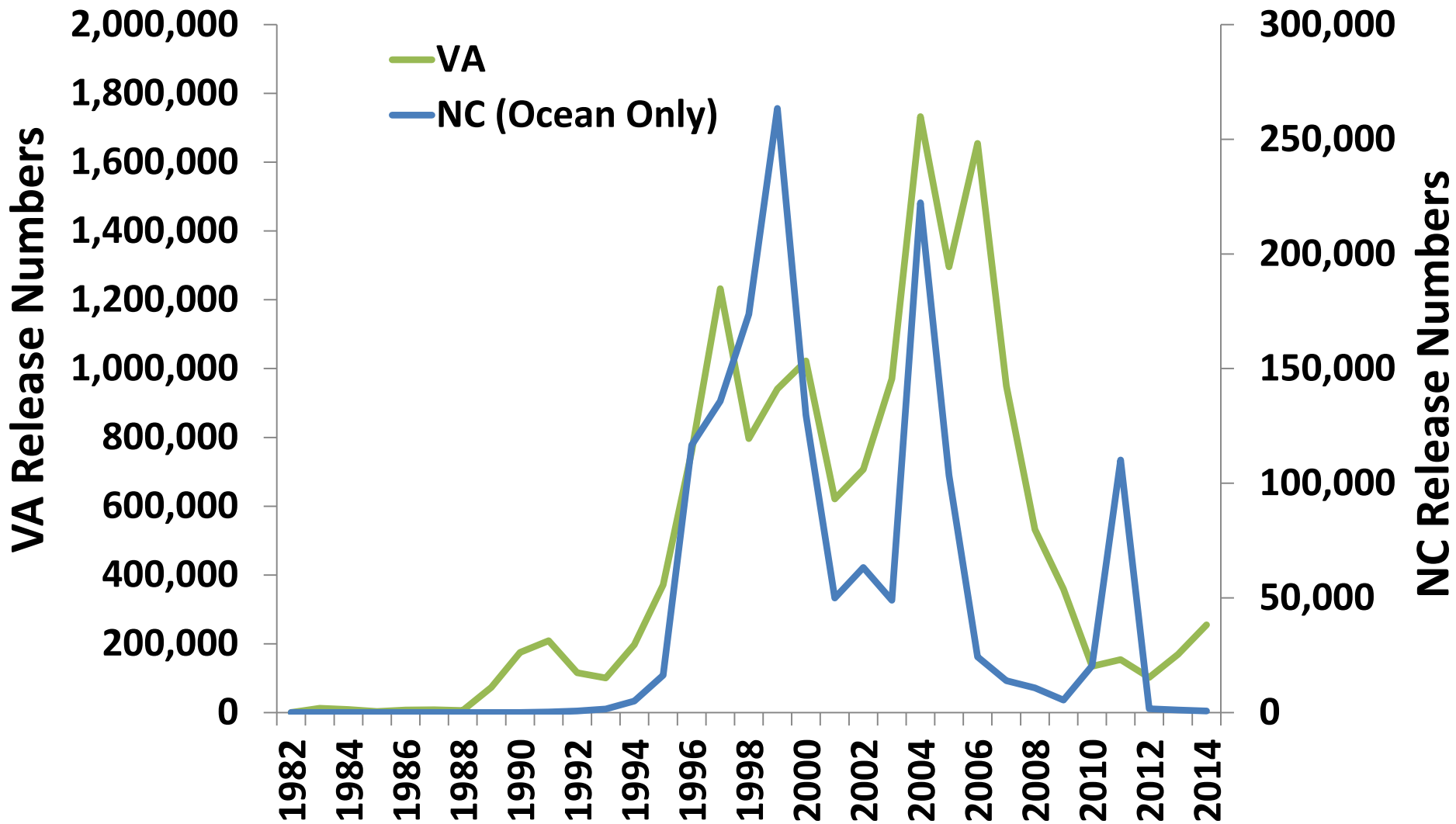


# Recreational Releases (cont.)



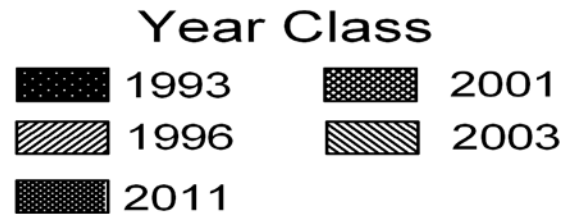
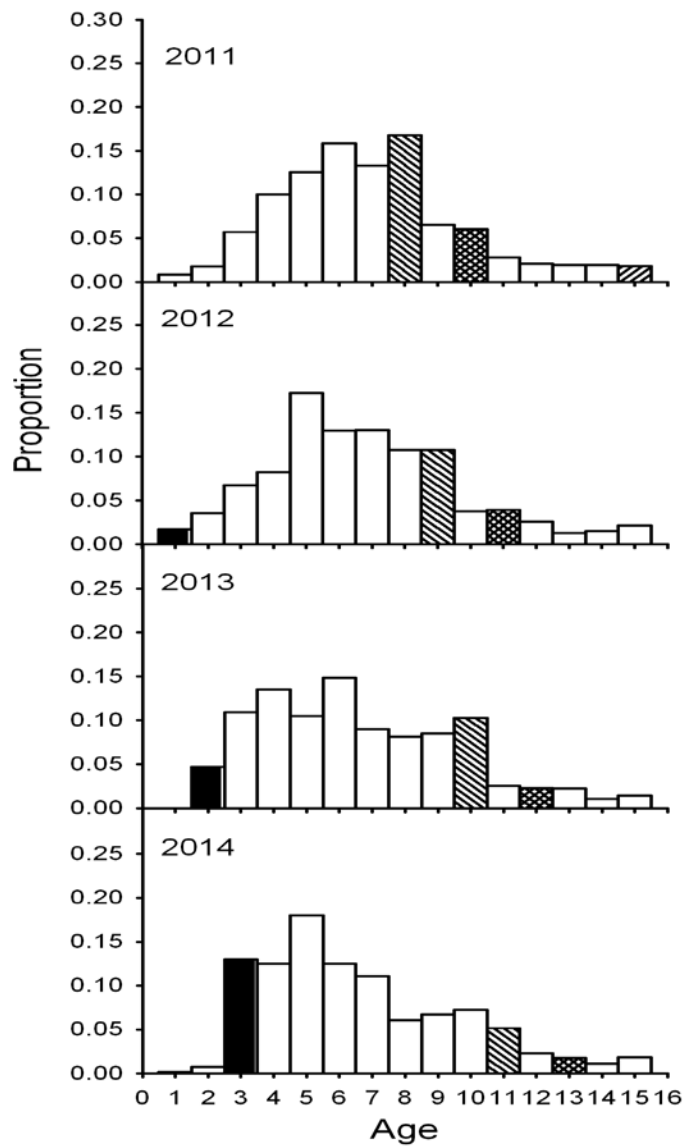
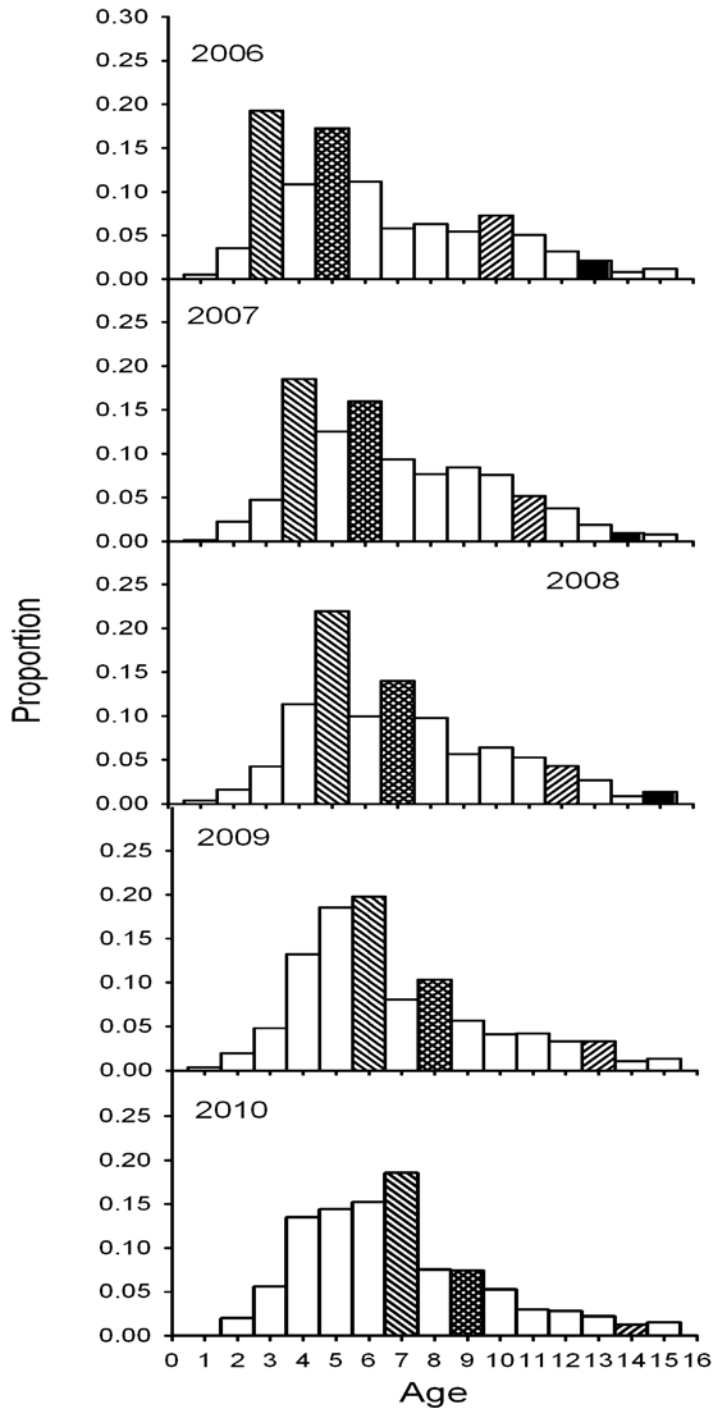


# Recreational Releases (cont.)





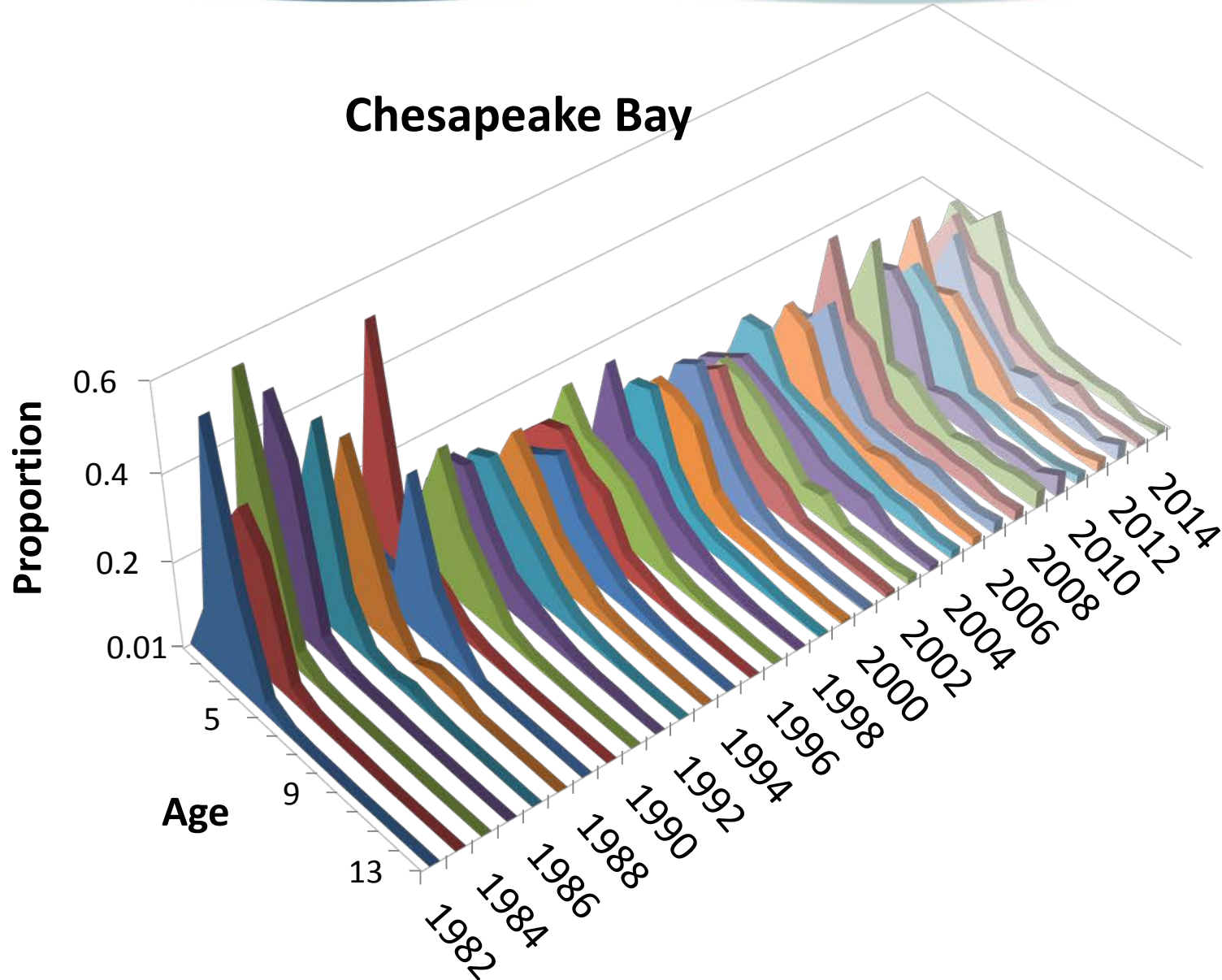
# Total Catch Composition



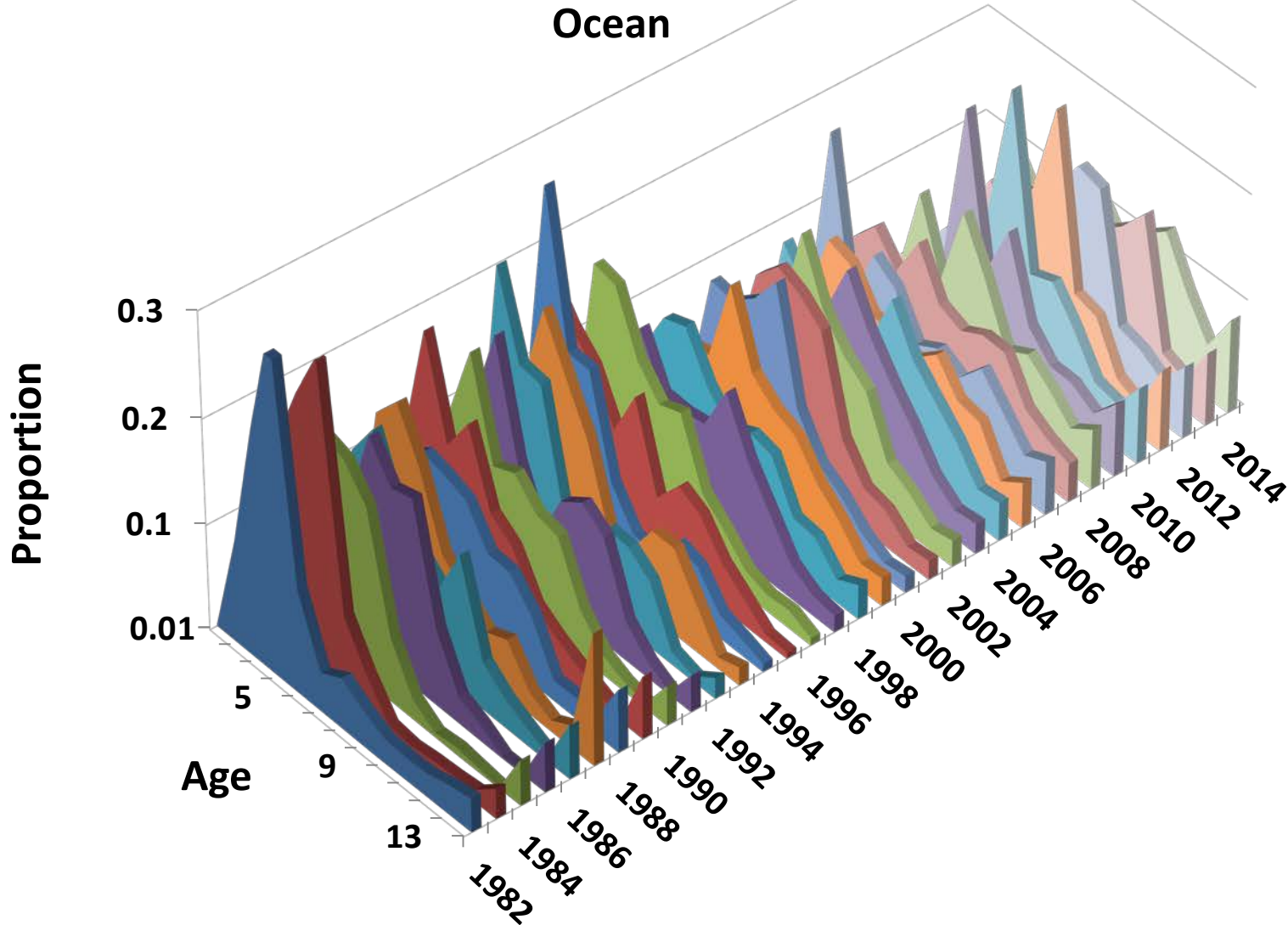
# Catch Composition (cont.)



## Chesapeake Bay



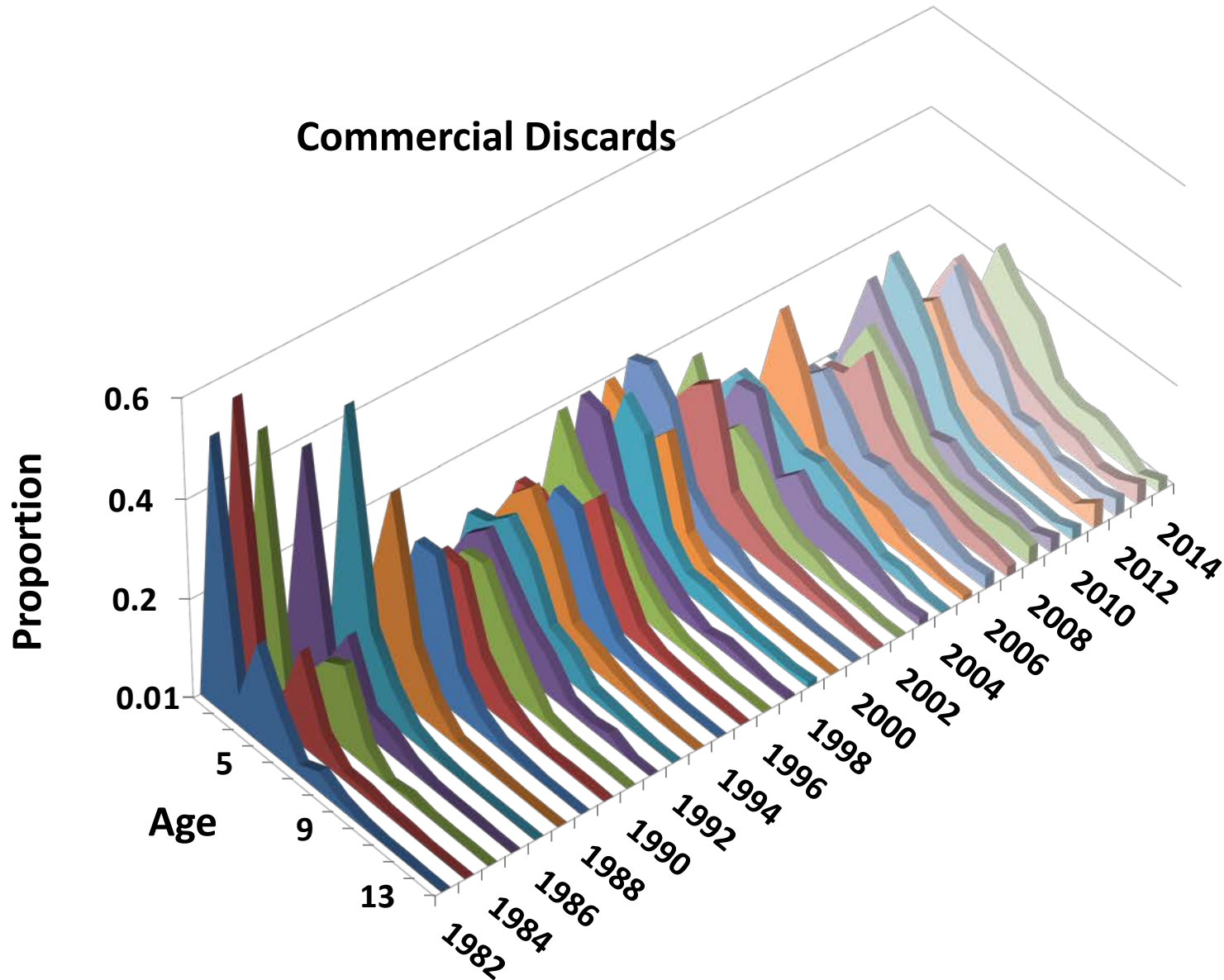
# Catch Composition (cont.)



# Catch Composition (cont.)



## Commercial Discards





# **YOY, AGE-1, AGGREGATE AND AGE COMPOSITION SURVEYS**

● YOY and Age 1

● Age 2+

# Distribution of Indices



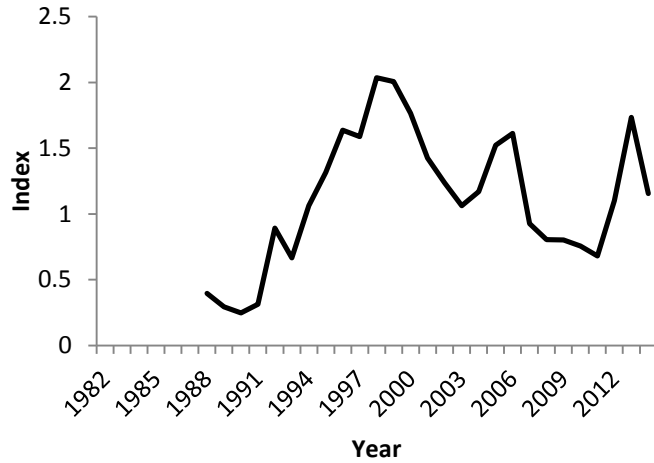
- Updated
- NY YOY changed

State	Index	Design	Time of Year	What Stock?	Ages
Marine Recreational Fisheries Survey	Total Catch Rate Index	Stratified Random	May-Dec	Mixed	Aggregate (3-13+)
Connecticut Trawl Survey	Mean number per tow	Stratified Random	April-June	Mixed	Aggregate (4-6)
NEFSC Trawl Survey	Mean number per tow	Stratified Random	March-May	Mixed	Aggregate (2-9)
New Jersey Trawl Survey	Mean number per tow	Stratified Random	April	Mixed	2-13+
New York Ocean Haul Seine Survey	Mean number per haul	Random	Sept-Nov	Mixed	2-13+
Delaware Electrofishing Survey	Mean number per hour	Lattice	April-May	Delaware	2-13+
New York YOY Seine Survey	Mean number per haul	Fixed	July-Nov	Hudson	0
New York W. Long Island Seine Survey	Mean number per haul	Fixed	May-Oct	Hudson	1
New Jersey YOY Seine Survey	Mean number per haul	Fixed/Random	Aug-Oct	Delaware	0
Virginia YOY Seine Survey	Mean number per haul	Fixed	July-Sept	Chesapeake	0
Maryland YOY and Age 1 Seine Survey	Mean number per haul	Fixed	July-Sept	Chesapeake	0-1
Maryland Gillnet Survey	Mean number per set	Stratified Random	April-May	Chesapeake	2-13+
Virginia Pound Net Survey	Mean number per set	Fixed	March-May	Chesapeake	1-13+

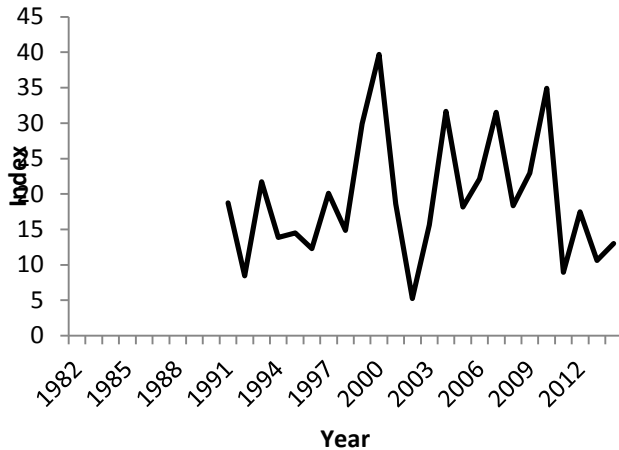
# Fisheries-Dependent

# Fisheries-Independent

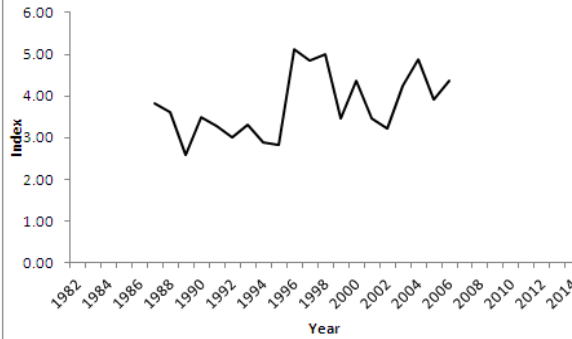
### MRFSS



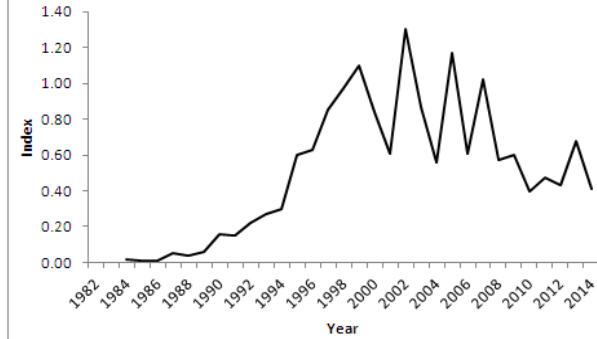
### VA Poundnet



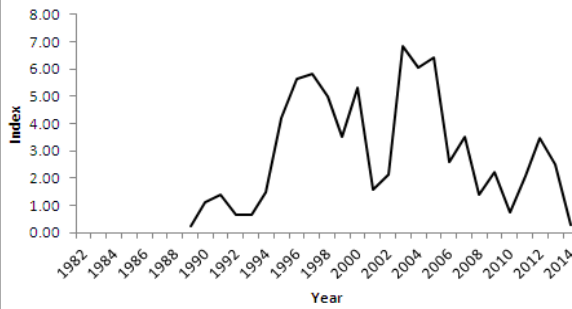
### NYOHS



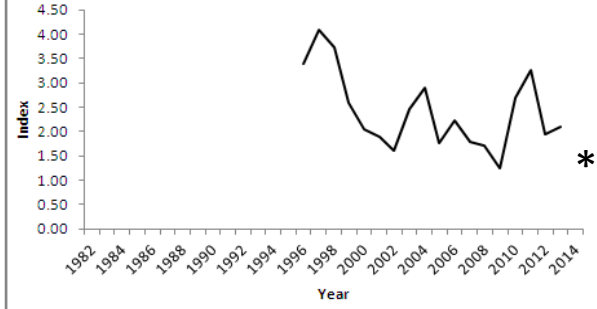
### CT Trawl



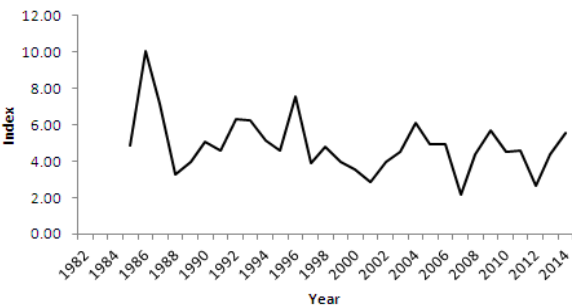
### NJ Trawl



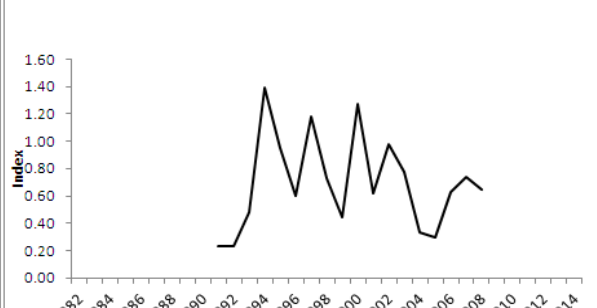
### DE SSN



### MD Gillnet



### NEFSC

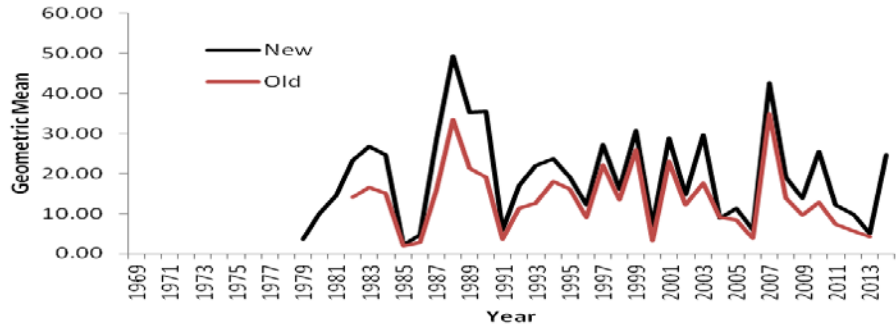




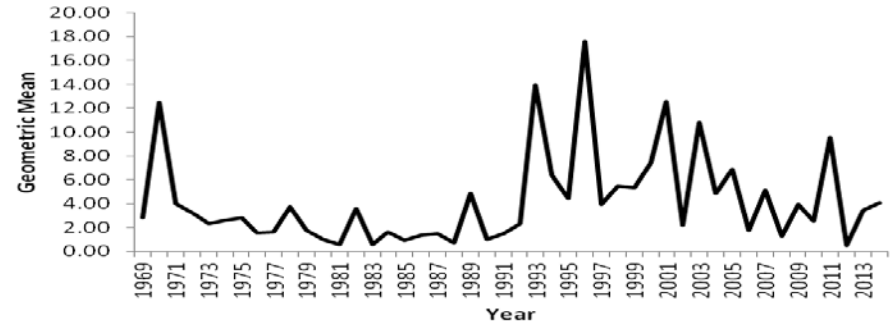
# YOY and Age 1



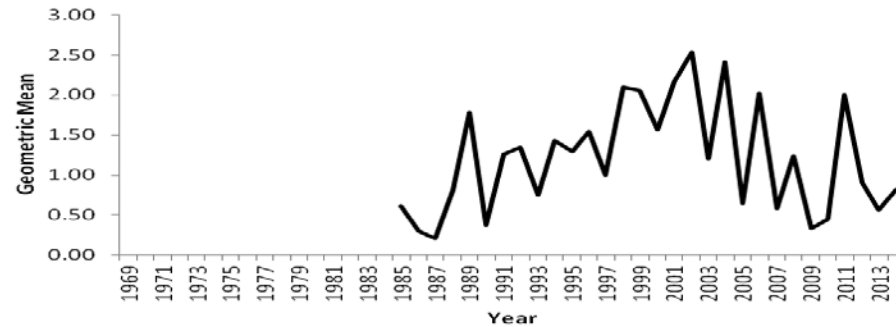
### NY YOY



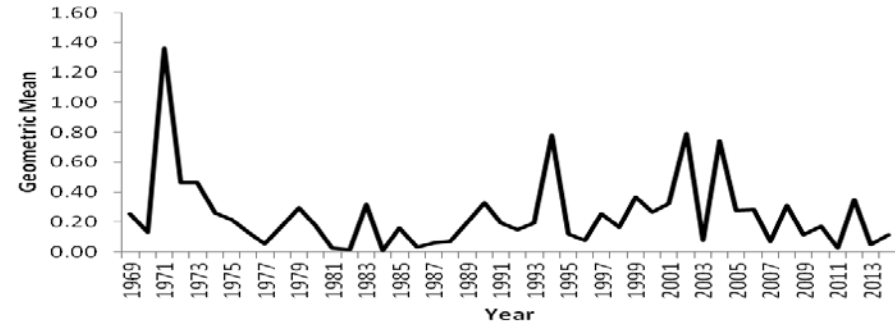
### MD YOY



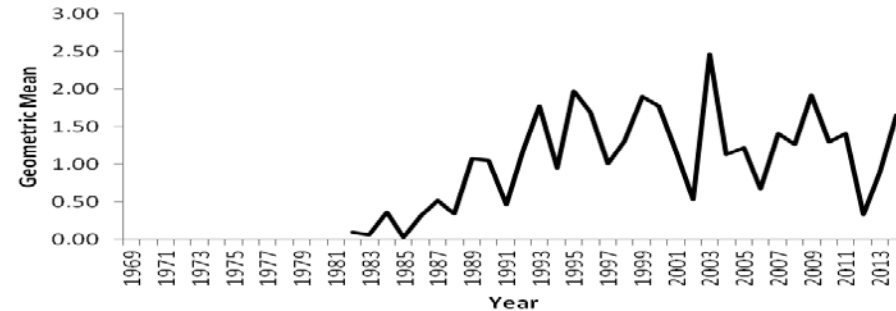
### NY Age 1



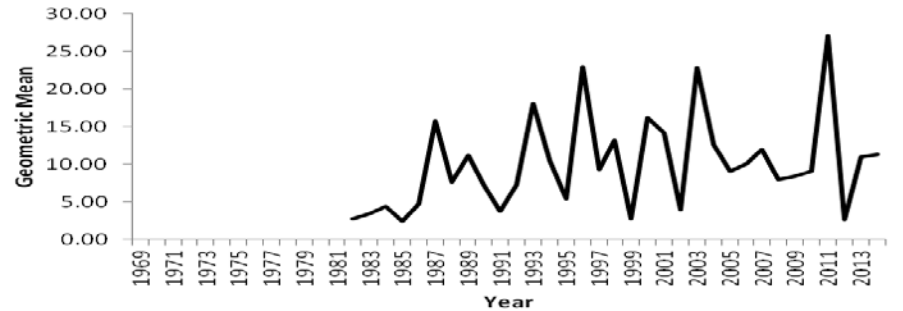
### MD Age 1



### NJ YOY



### VA YOY





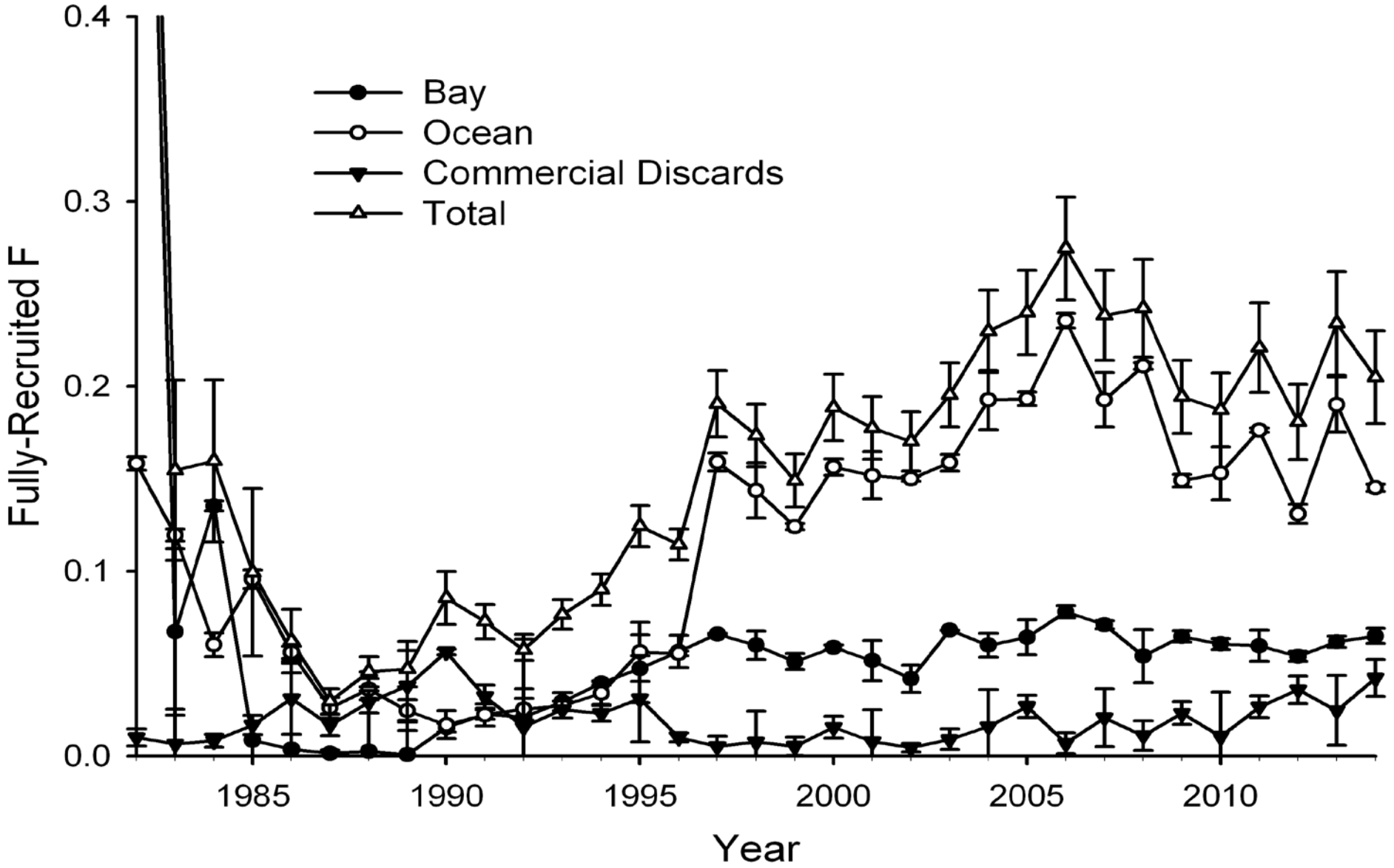
# STATISTICAL CATCH-AT-AGE MODELING

# Statistical Catch-At-Age Model

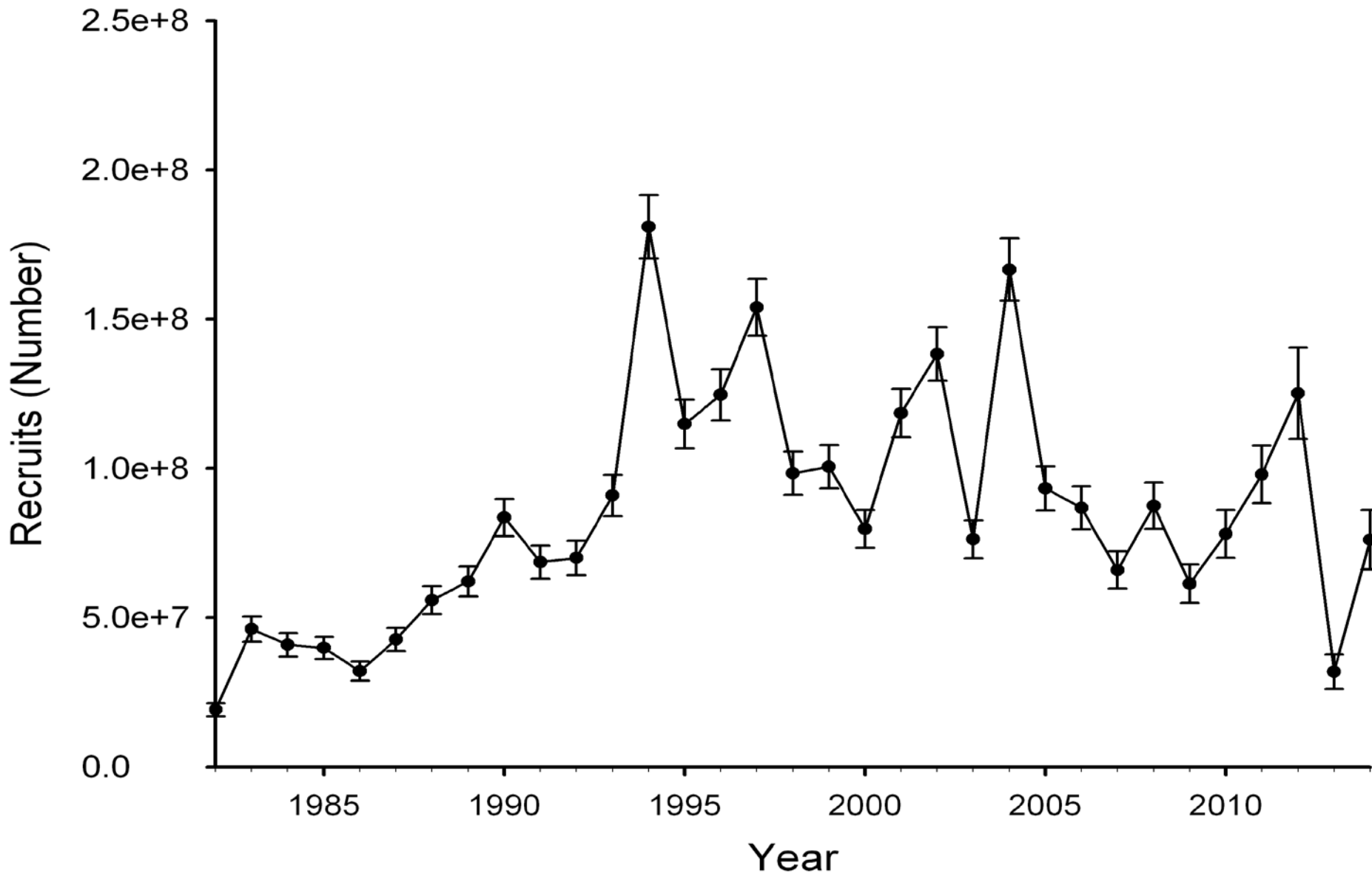


- Forward projecting statistical catch-at-age model
  - Age-1 abundance (recruitment) in each year
  - Fully-recruited F in each year
  - Catch selectivity in 4 regulatory periods
  - Catchability coefficients for all indices
  - Selectivity for each survey with age composition data
- Data are split into three “Fleets” based on regions
  - Chesapeake Bay, Coast and Commercial Discards
  - Improved selectivity fits
  - Provided partial F for each fleet
- Age-specific M were used
  - (1.13: age 1 to 0.15: age 7+)

# Fully-Recruited F ( $\pm 1$ SD) By "Fleet"



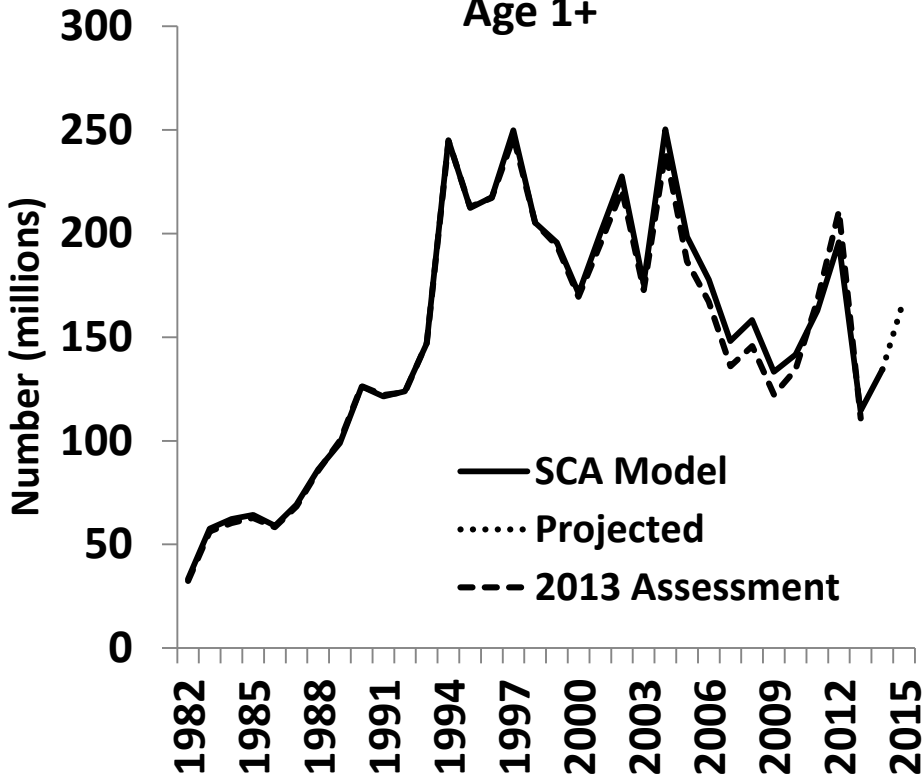
# Recruits (Age-1) ( $\pm$ SD)



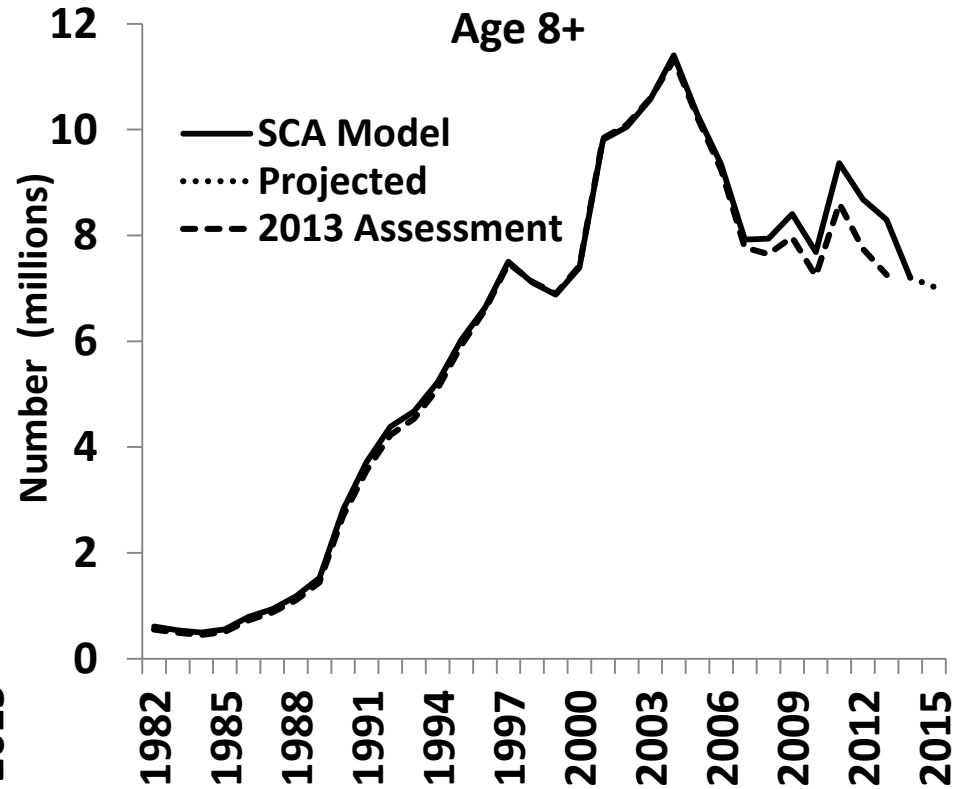
# Abundance



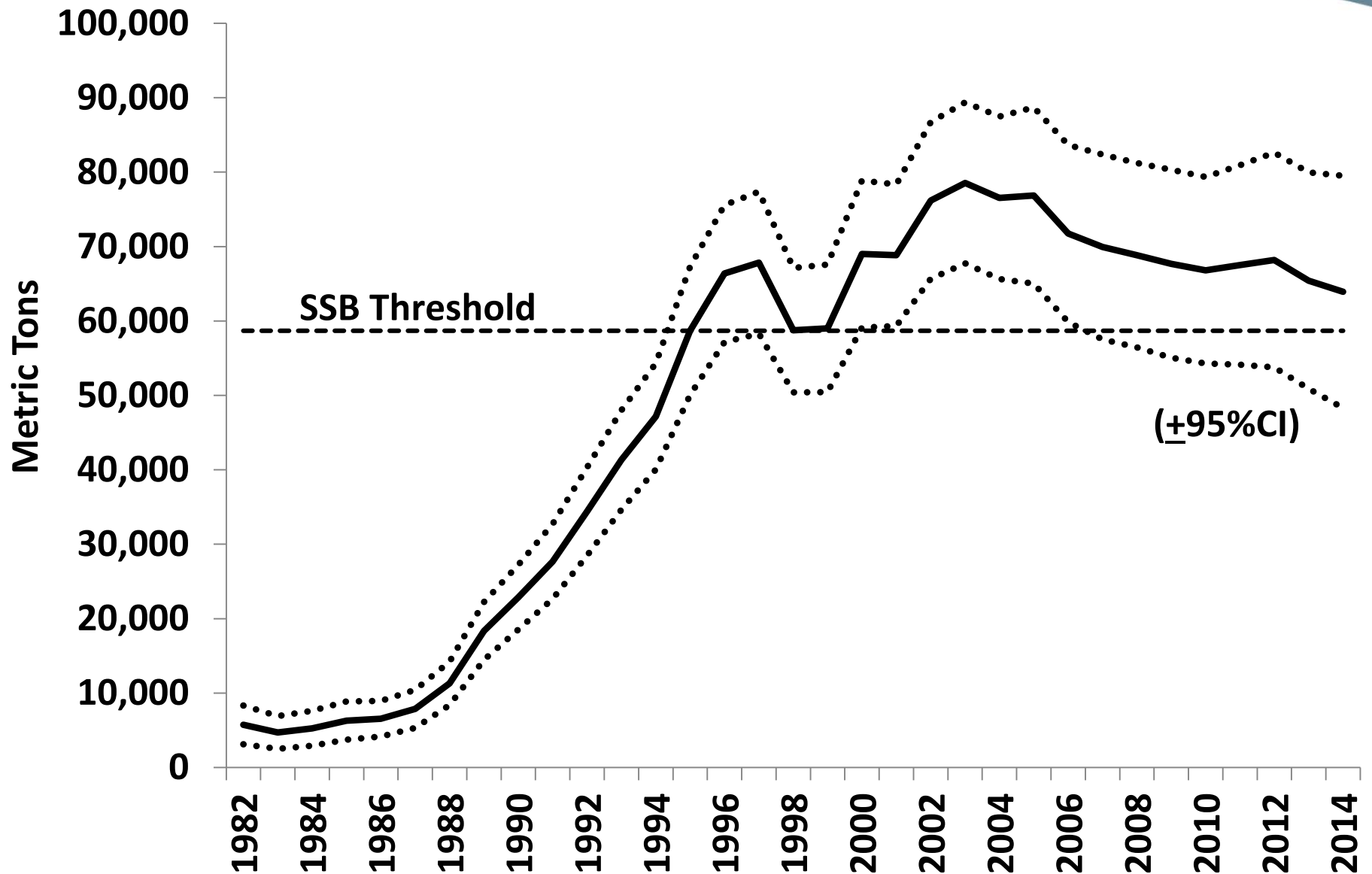
### Age 1+



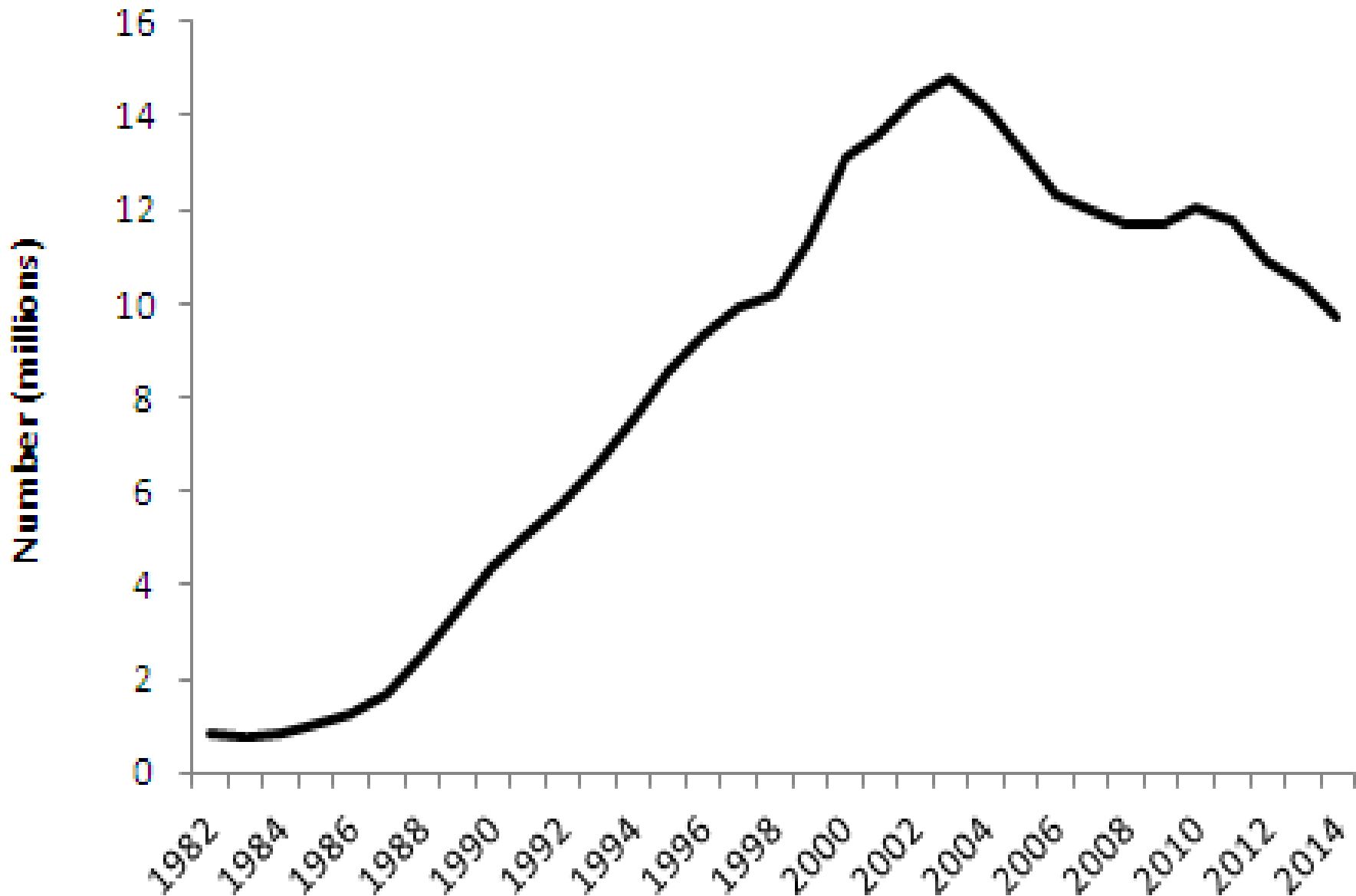
### Age 8+



# Female Spawning Stock Biomass



# Female Spawning Stock Numbers





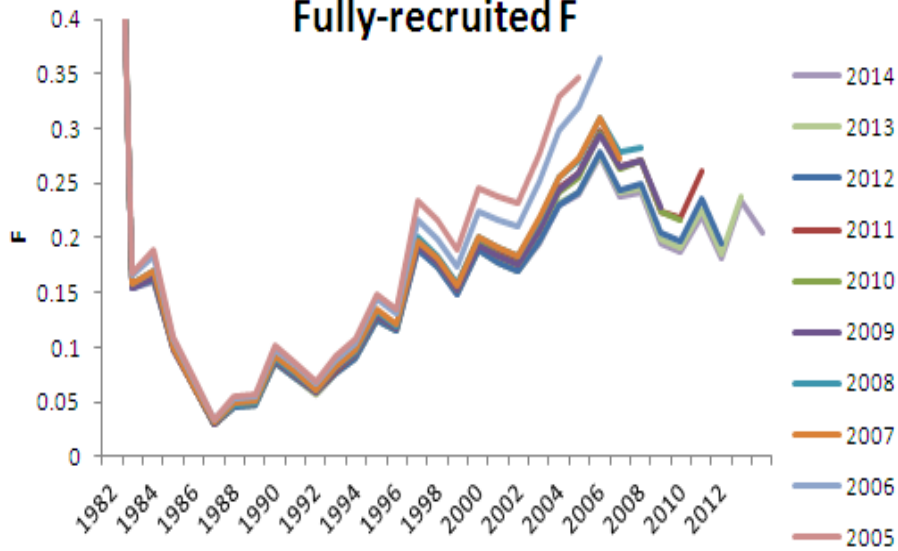


# RETROSPECTIVE

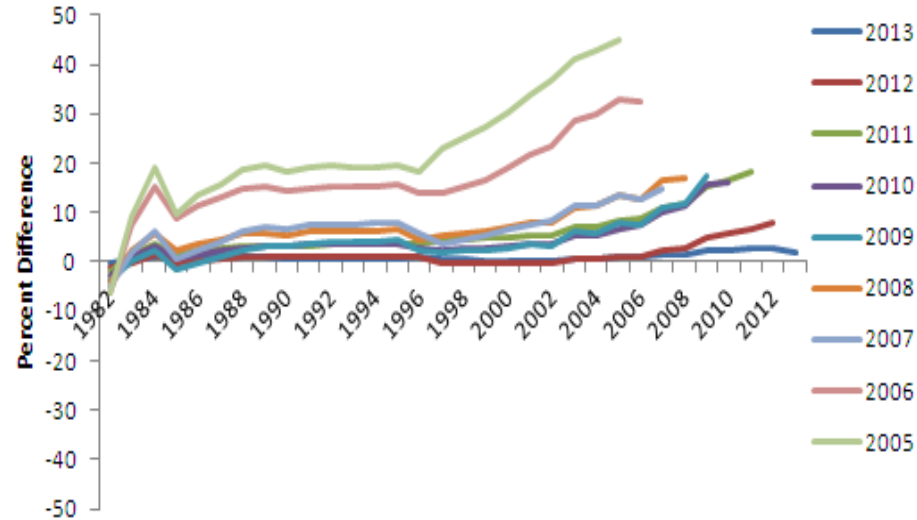
# Retrospective Analysis



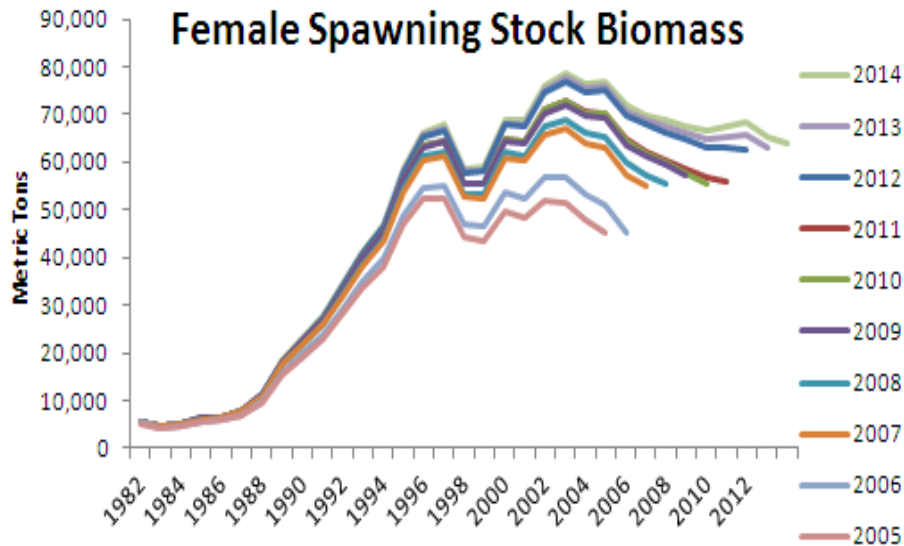
### Fully-recruited F



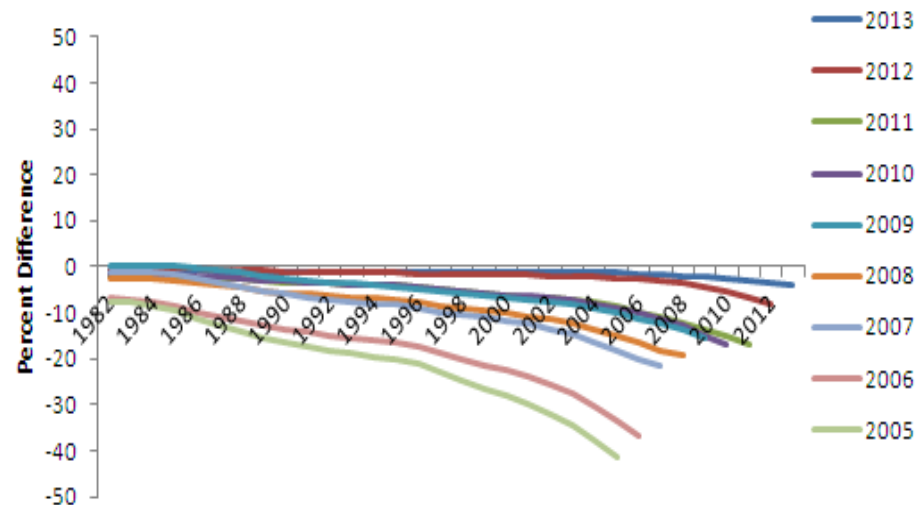
### Difference in F between 2014 and Peels



### Female Spawning Stock Biomass



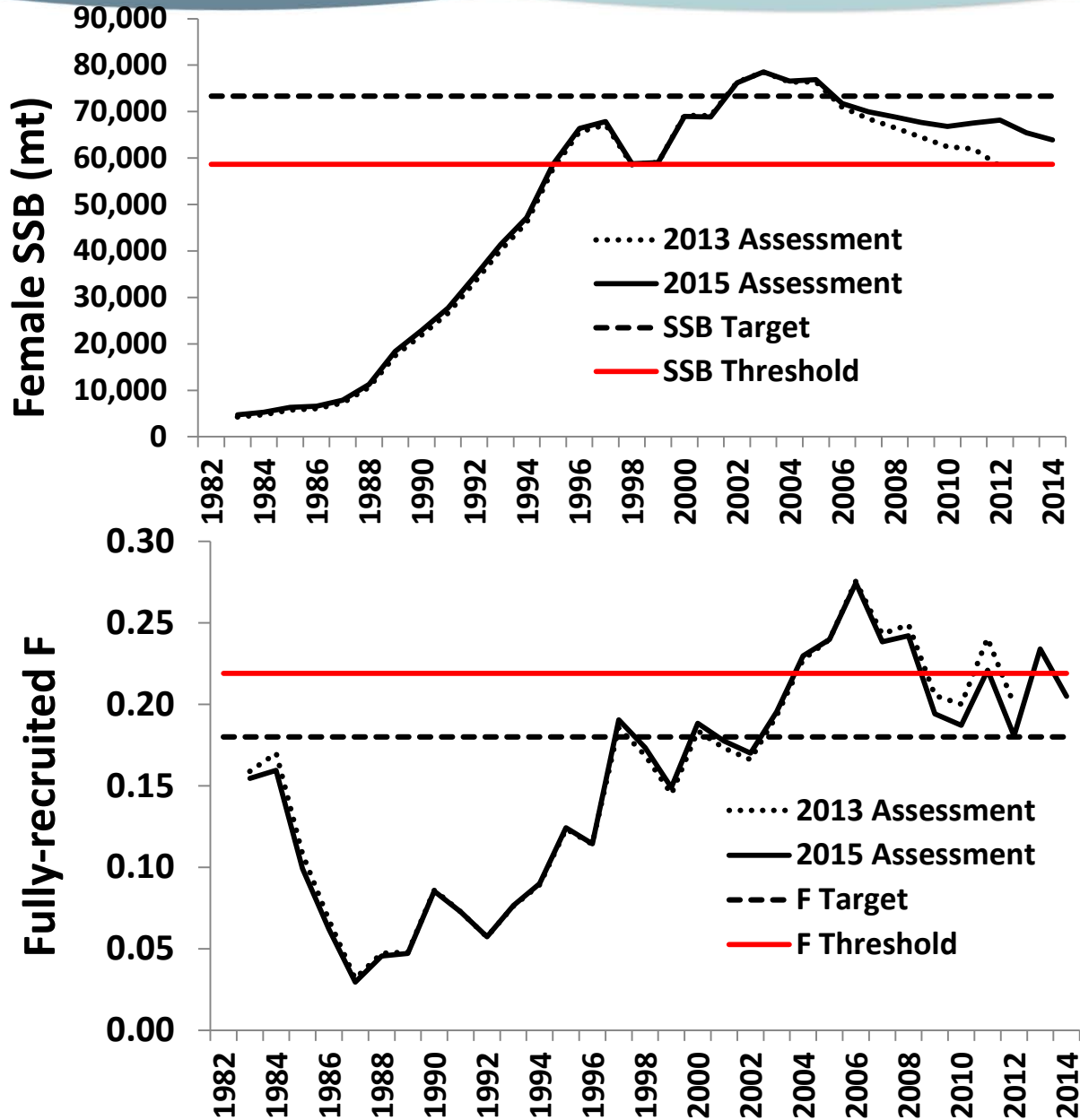
### Difference in SSB between 2014 and Peels





# STATUS OF STOCK

# Status of the Stock





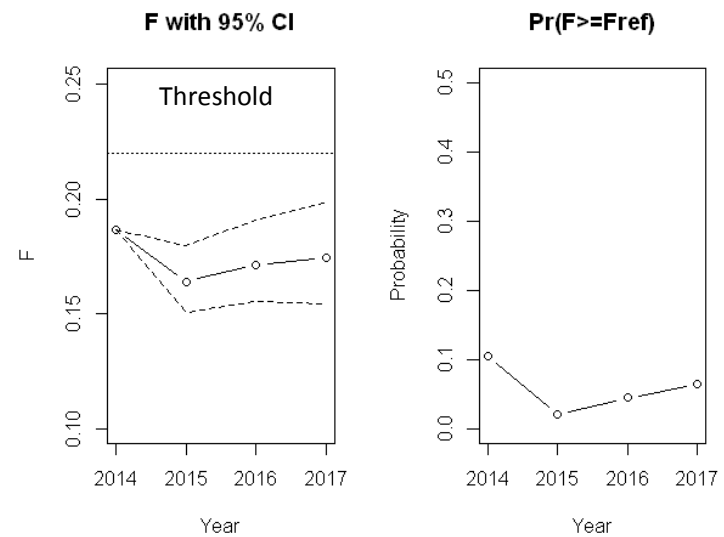
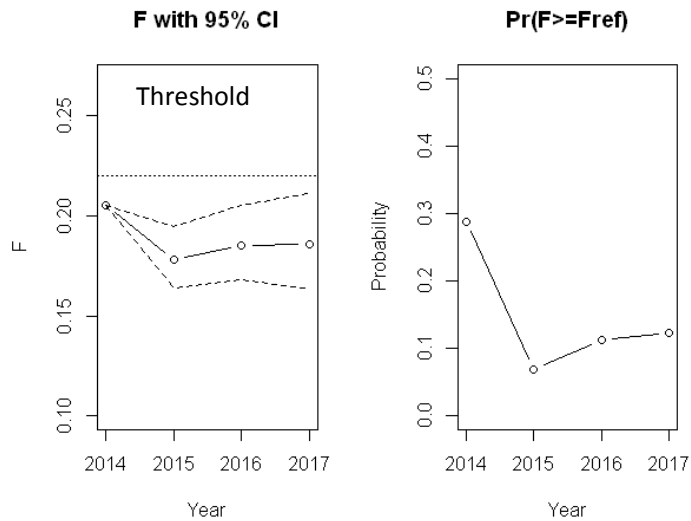
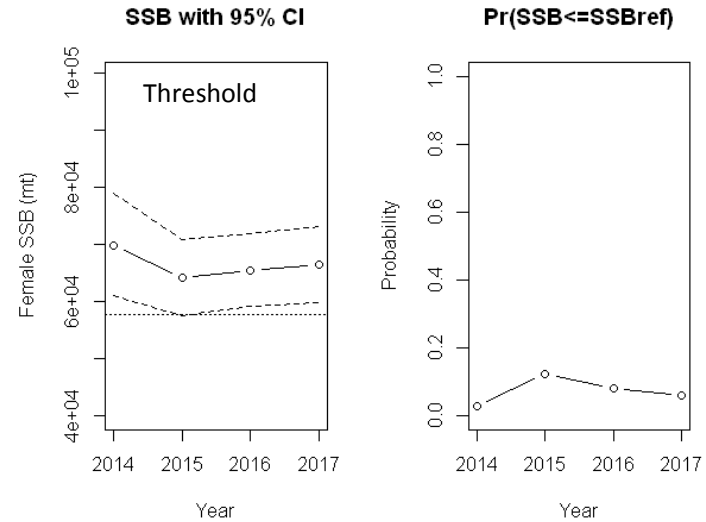
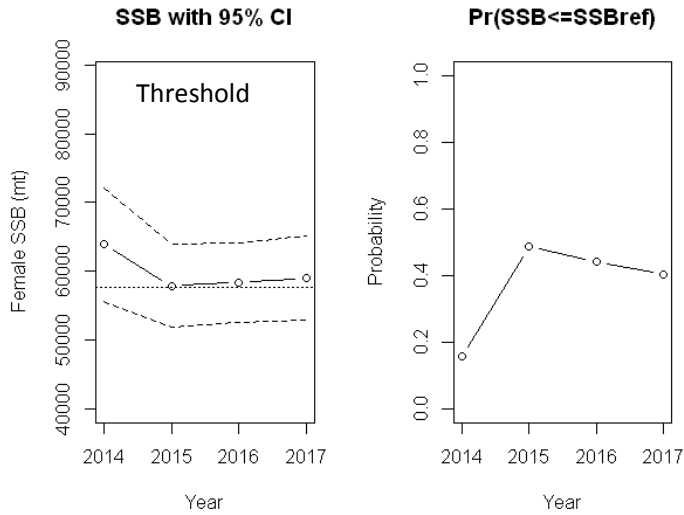
# PROJECTIONS

# Projections



## Unadjusted

## Retrospective Adjustment



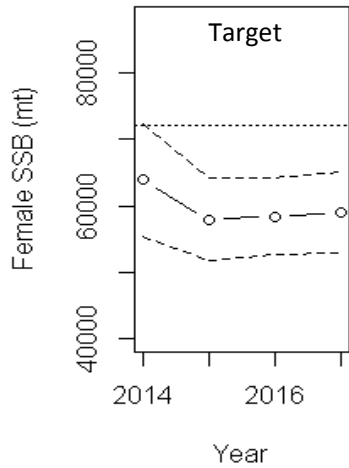
# Projections



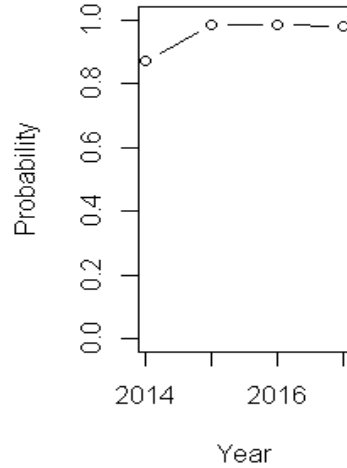
## Unadjusted

## Retrospective Adjustment

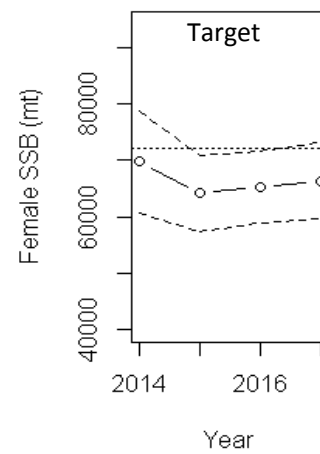
**SSB with 95% CI**



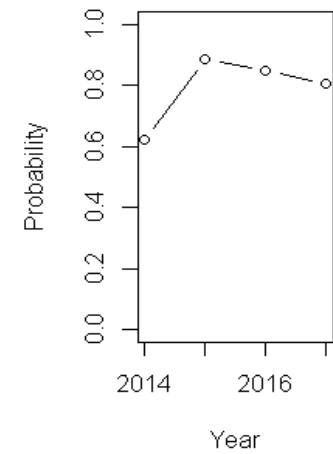
**Pr(SSB <= SSBtarget)**



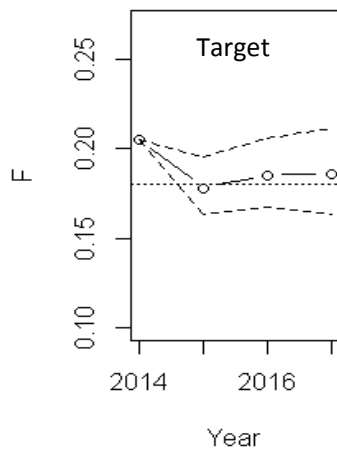
**SSB with 95% CI**



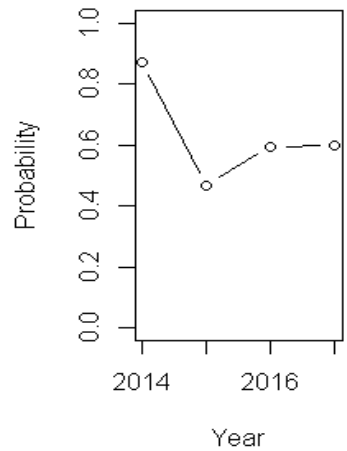
**Pr(SSB <= SSBtarget)**



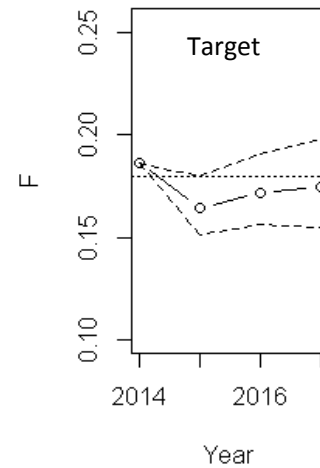
**F with 95% CI**



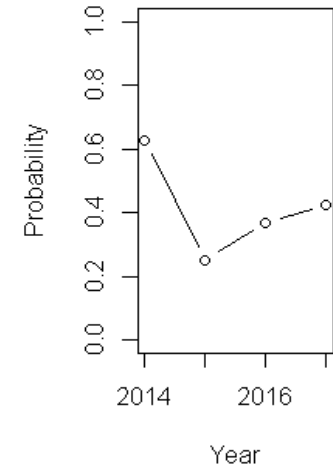
**Pr(F >= Ftarget)**



**F with 95% CI**



**Pr(F >= Ftarget)**



# Management Triggers



## Triggers 3 and 4:

- F and SSB are below target for two consecutive years
- Board required to reduce F to a level at or below the target within one year
- Board required to rebuild the biomass within the established timeframe
- 2015 Stock Assessment Update does not reflect Addendum IV regulatory changes





# **Striped Bass Fleet-Specific Fishing Mortality Reference Points**

November 4, 2015

Striped Bass Technical Committee

# Background



- Striped Bass stock assessment has three fleets: a Chesapeake Bay fleet, an ocean fleet, and a commercial discard fleet
- TC chose a 5 year time period (2008-2012) for calculating coastwide BRPs in the last benchmark assessment
- TC recommended coastwide BRPs for management use
- Addendum IV adopted those BRPs

	Target	Threshold
SSB	72,032 mt	57,626 mt
F	0.18	0.22

# Background



- After the benchmark assessment, the TC was tasked to develop Chesapeake Bay reference points
- The TC developed a methodology to define fleet-specific F reference points so that the impact of each fleet on the total coastwide population remains sustainable

# Background



- TC discussed the selectivity time period extensively during the development of the fleet-specific reference points
- TC chose and recommended the 5-year period
- Upon review in August, Board members expressed the position that the choice of the selectivity period should be a Board decision and tasked the TC to redevelop the F reference points using a composite selectivity over a longer time period for the Board's consideration

# Fleet-specific F Reference Points

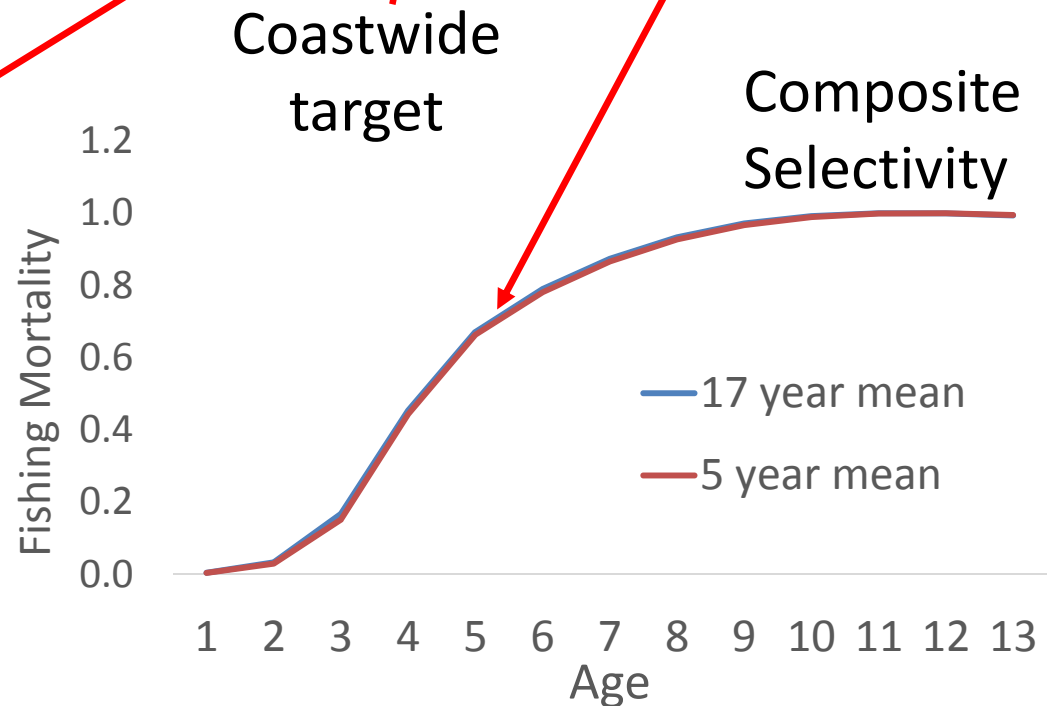


**Example:** F target for Chesapeake Bay via 5 yr and 17 yr

$$C. Bay F_{target \ 5 \ yr} = 0.438 \cdot 0.180 \cdot 0.663$$

$$C. Bay F_{target \ 17 \ yr} = 0.468 \cdot 0.177 \cdot 0.671$$

Ration of Means	1996-2012	2008-2012
C. Bay	<b>0.468</b>	<b>0.438</b>
Ocean	0.790	0.770
Comm. Disc.	0.111	0.163



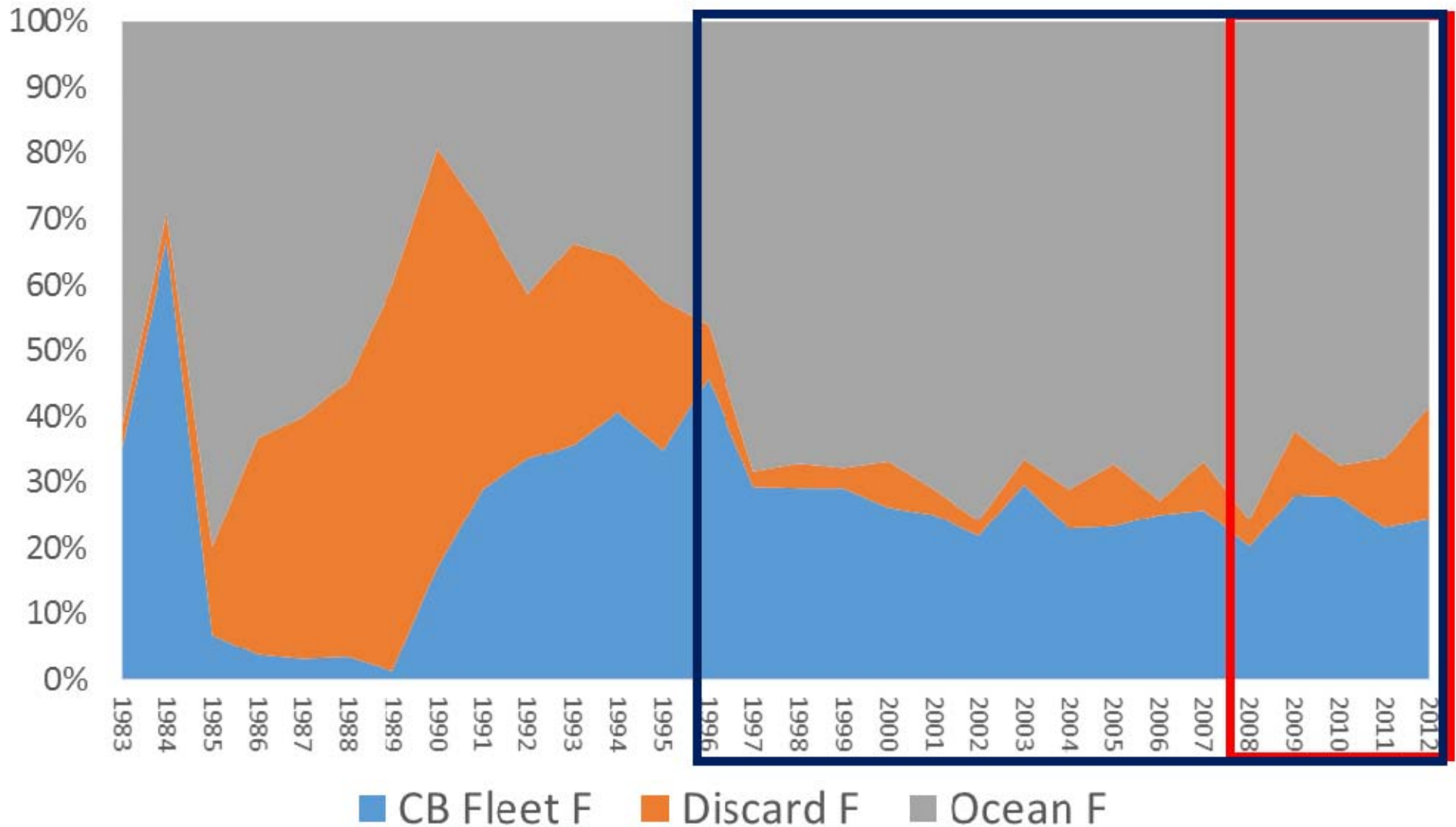
# Results



- Differences between the two methods are very small  
→ within the confidence intervals of the estimates of fleet-specific  $F$

	17- year selectivity (1996 - 2012)		5- year selectivity (2008 - 2012)	
	$F_{\text{target}}$	$F_{\text{threshold}}$	$F_{\text{target}}$	$F_{\text{threshold}}$
Coastwide	0.177	0.216	0.180	0.219
Ocean	0.142	0.173	0.141	0.172
C. Bay	0.056	0.068	0.052	0.064
Comm. Disc.	0.013	0.016	0.019	0.024

Full F by Fleet



- Differences between the two time periods are mainly driven by the recent increase in commercial discards

# Potential Management Issues



- The potential management issues raised in August still exist regardless of which time period is selected
- If the Bay and ocean fleets fish at their targets, the coastwide population could still experience overfishing if discard  $F$  is not controlled
- Cannot control discard  $F$  because discard  $F$  is primarily a result of regulations in directed fisheries
  - To reduce  $F$  on the discard fleet, you have to loosen regulations on the directed fisheries
  - If you loosen regulations on the directed fisheries, you effectively increase  $F$  in the Bay and ocean fleets



# Board Decisions



- Should the Board initiate an addendum to adopt fleet-specific reference points?
- What management triggers would be associated with fleet-specific reference points?
- If fleet-specific reference points are adopted, what is the role of the coastwide reference points?
  - If a fleet exceeds its target or threshold, but total F is below the coastwide target or threshold, does that fleet have to take a reduction?



**Questions?**