

# Summary of Atlantic Herring SAW/SARC 54 Assessment

Jon Deroba

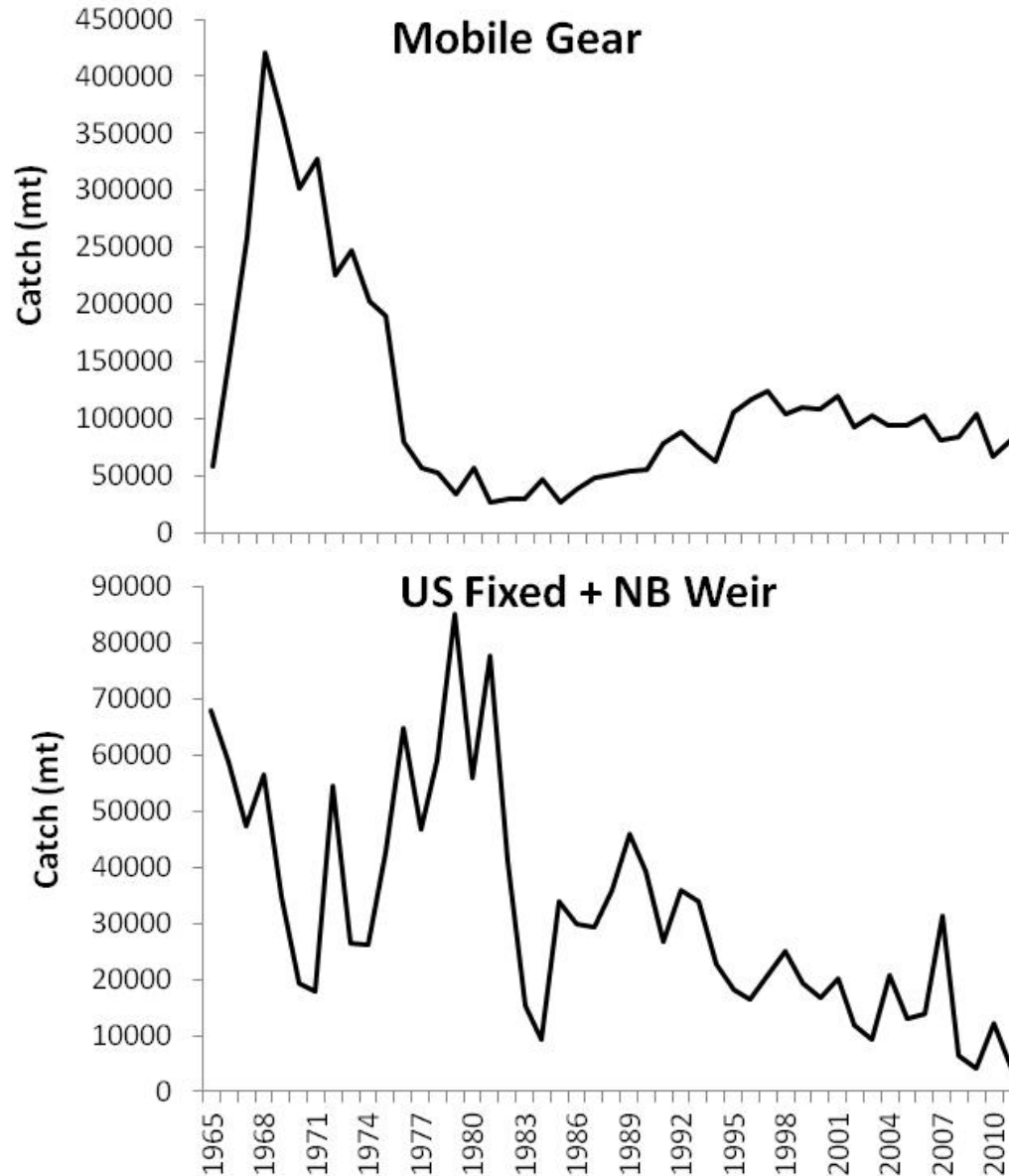
For SSC September 4, 2012

# TOR 4 – Stock Definition

Necessary to assess as single complex

- Topic of future research

# TOR 1 – Catch



Discards included since 96, but <1% of landings

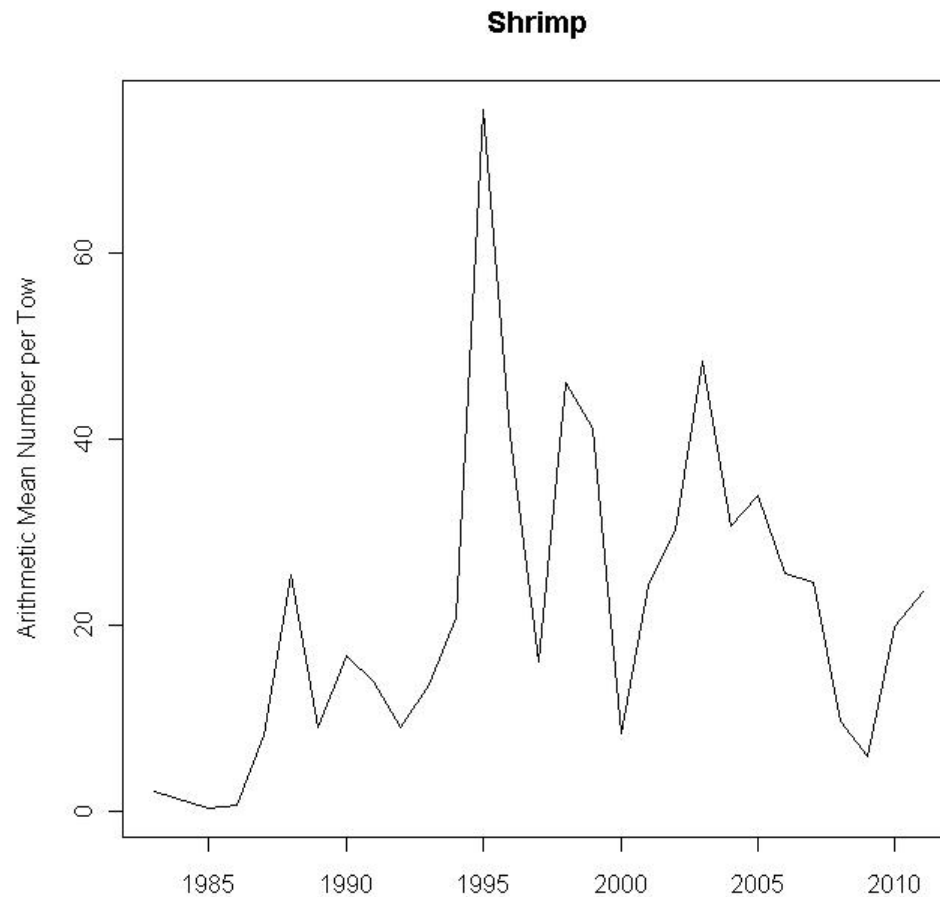
# TOR 2 – Surveys

Included:

spring split in 84-85 and calibrated

fall split in 84-85 and calibrated

shrimp



# TOR 2 – Surveys

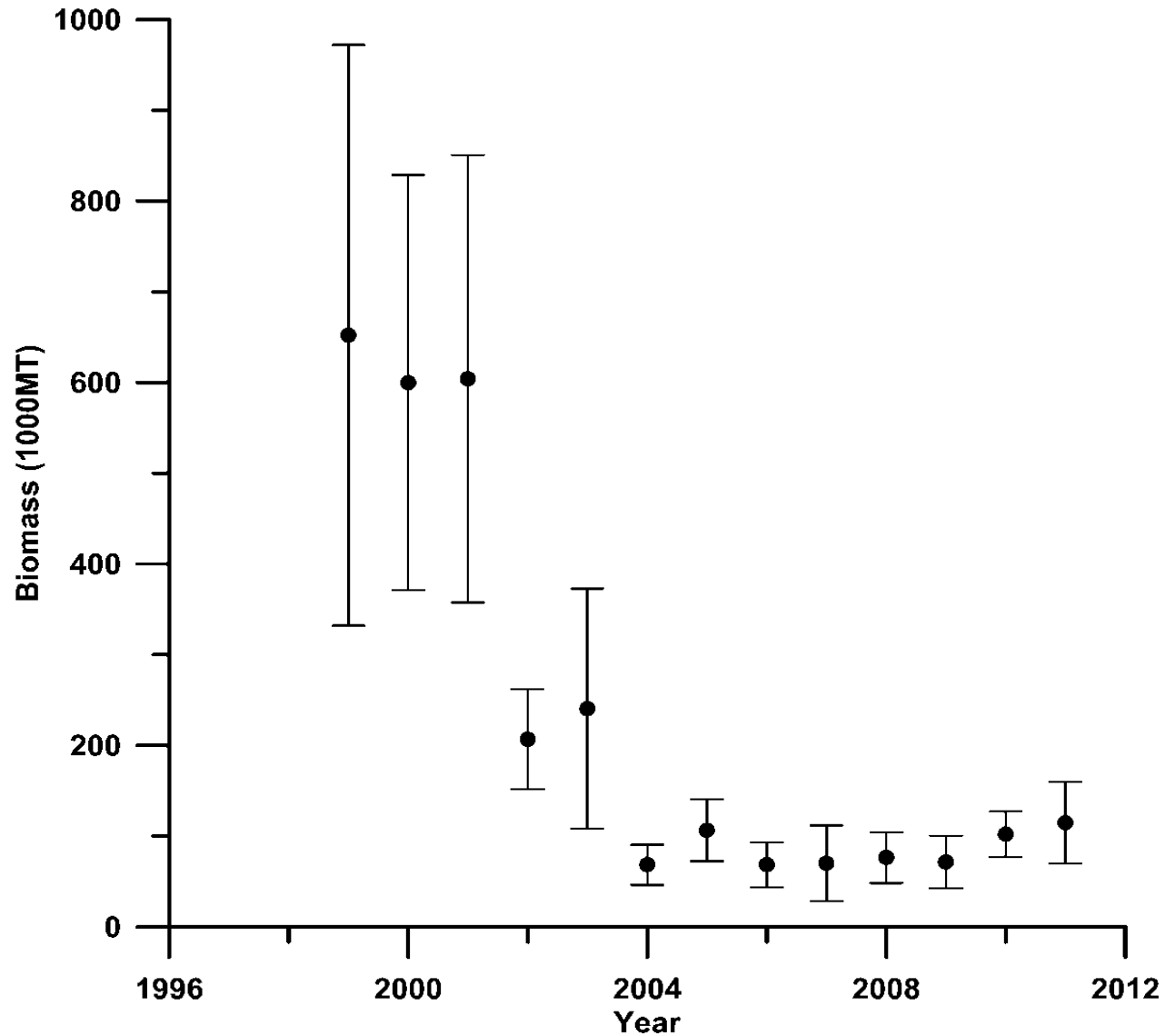
## Excluded:

winter survey (spatial coverage, fit)

larval survey (spatial and temporal coverage, fit,  
appropriate use)

state surveys (spatial coverage)

# TOR 3 – Acoustic Survey



# TOR 3 – Acoustic Survey

Standardized spatial and temporal coverage

No evidence of shift in spawning

Excluded:

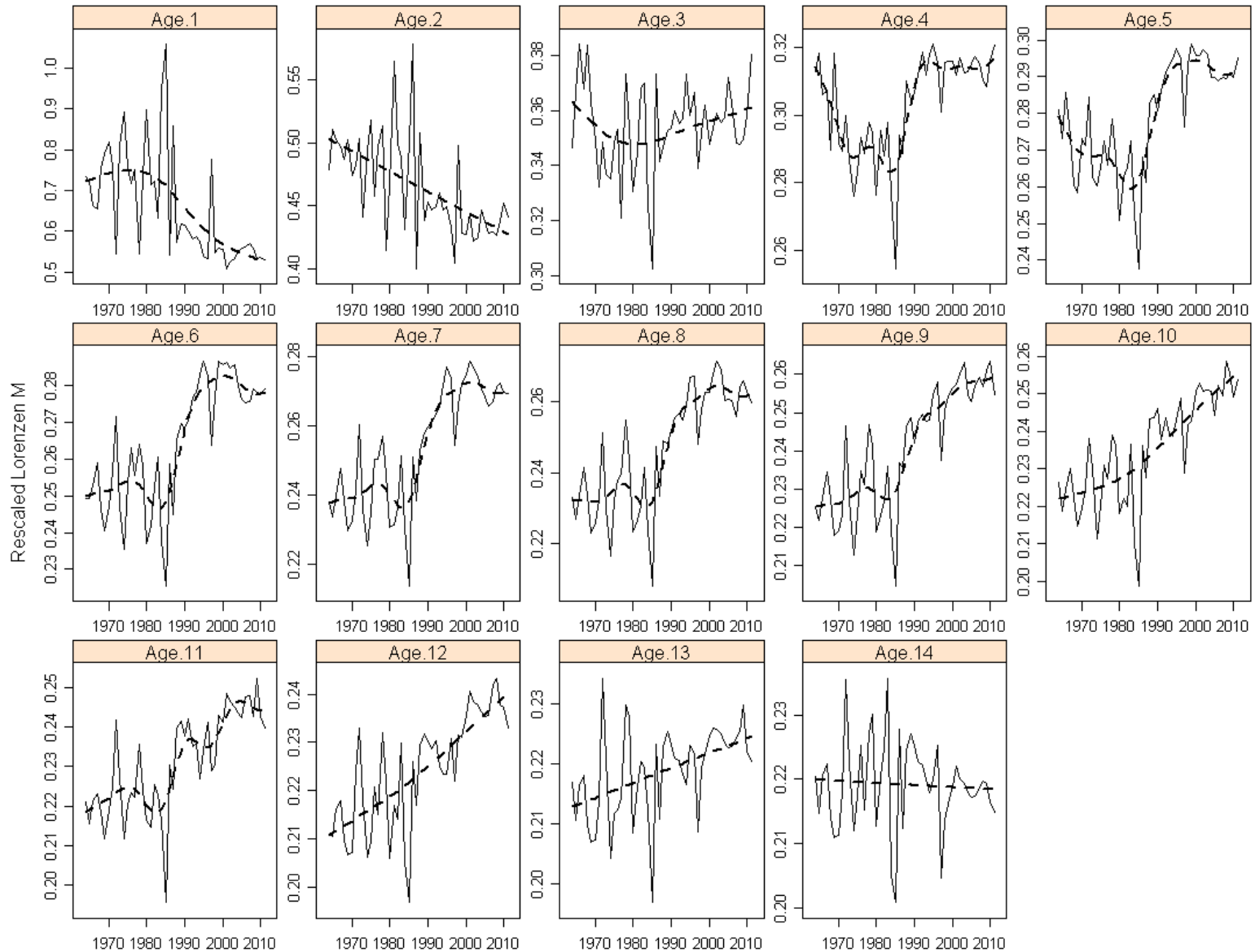
- inexplicable trend unlikely to have been caused by random noise
- coverage of variable proportion of stock
- Poor fit

# TOR 6 – Importance as Prey

1)  $M_{a,y}$  based on Lorenzen/Hoenig



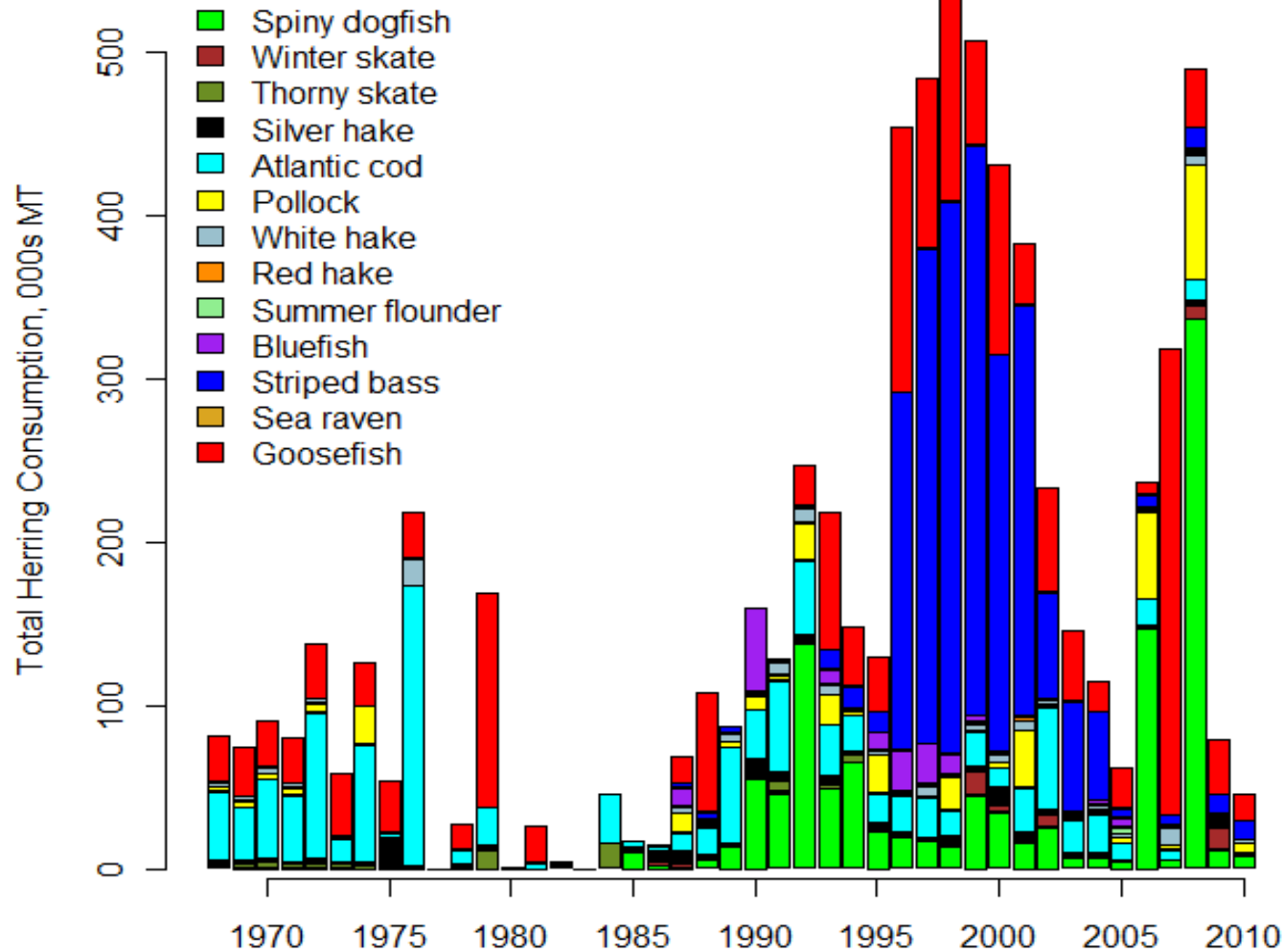
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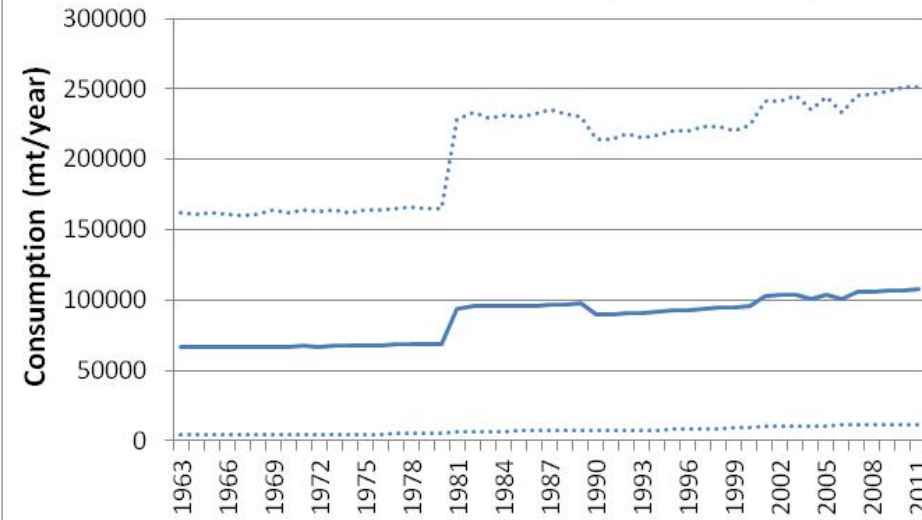
- 1)  $M_{a,y}$  based on Lorenzen/Hoenig
- 2) Estimates of consumption

# TOR 6 – Importance as Prey

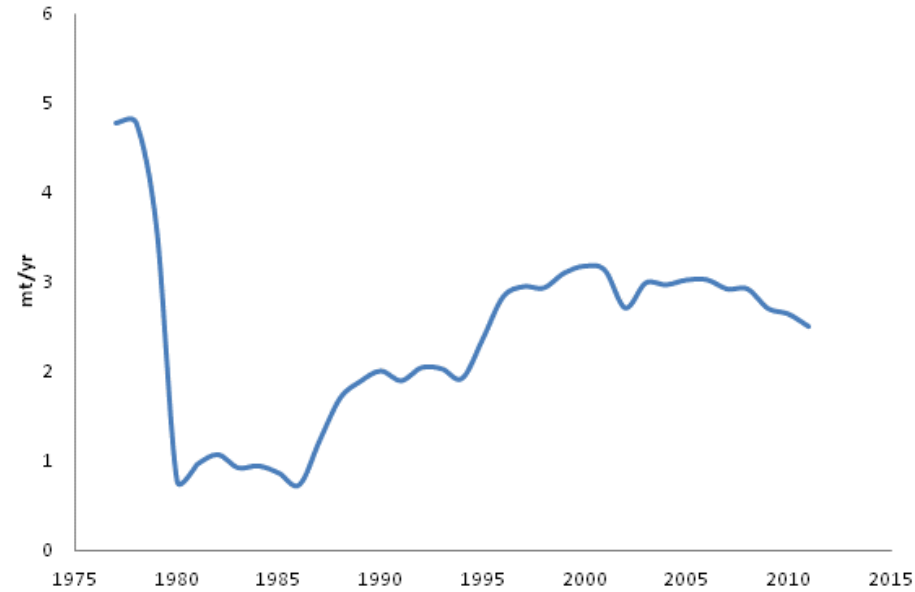


# TOR 6 – Importance as Prey

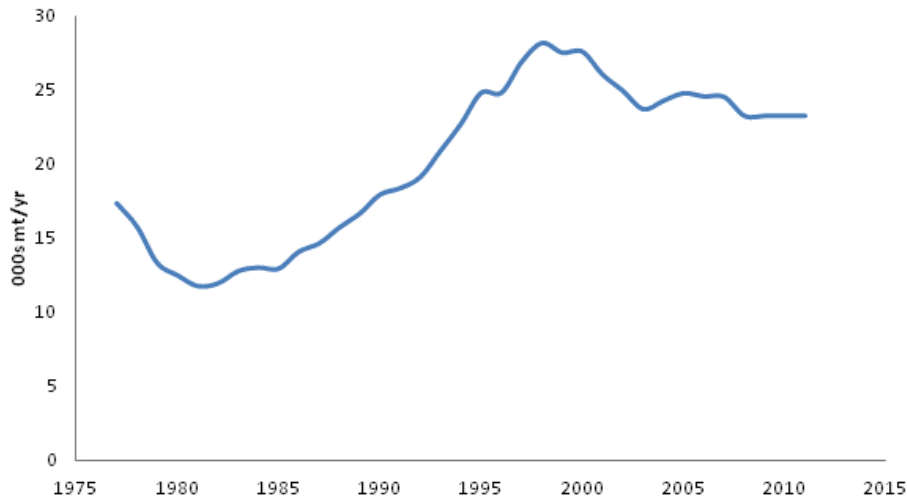
## Marine Mammal Annual Clupeid Consumption



## Seabird Consumption of Herring



## BFT & BS Consumption of Herring



# TOR 6 – Importance as Prey

- 1)  $M_{a,y}$  based on Lorenzen/Hoenig
- 2) Estimates of consumption
  - Concern over interannual variation
  - Not modeled explicitly, but informed M...

# TOR 5 – The Assessment

Continued use of ASAP

Major Changes from Previous:

$M = 0.2$  to  $M_{a,y}$

One Fleet to Fixed and Mobile Gears

Selectivity = 1 to Estimated

Maturity constant to Maturity time variable

Interesting features:

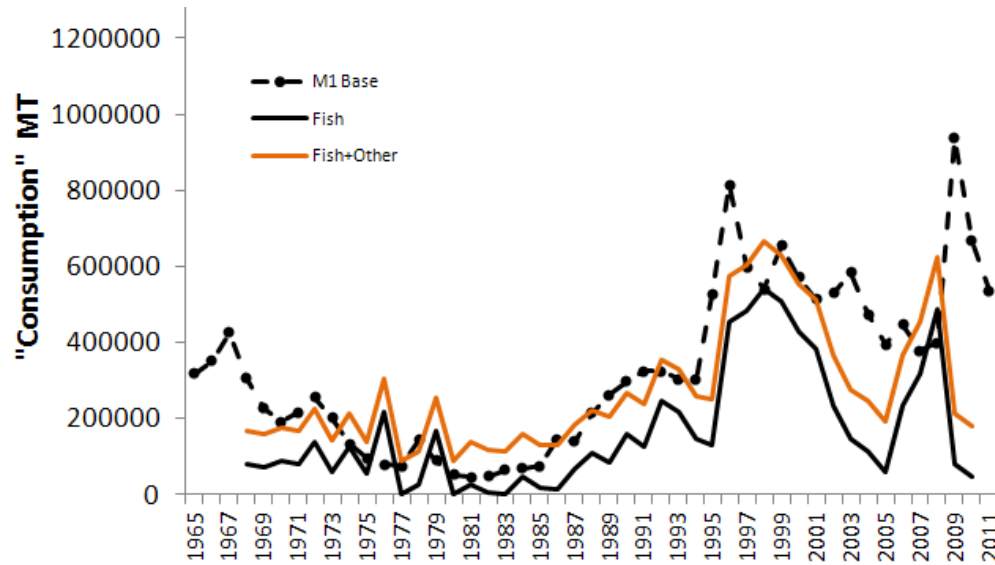
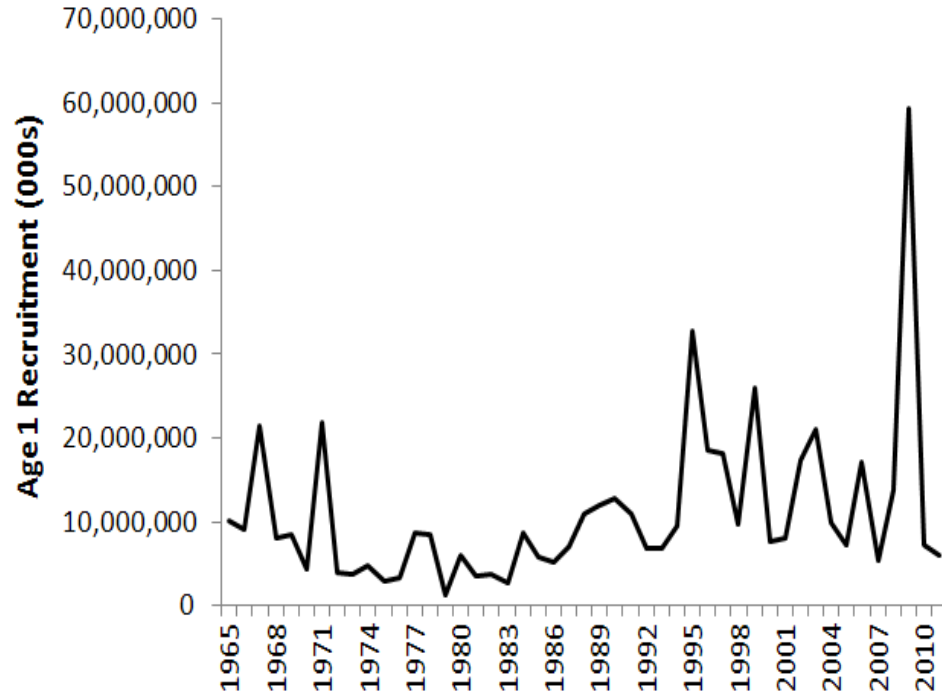
50% increase in  $M$  during 1996-2011

Estimated SR curve

# TOR 5 – The Assessment

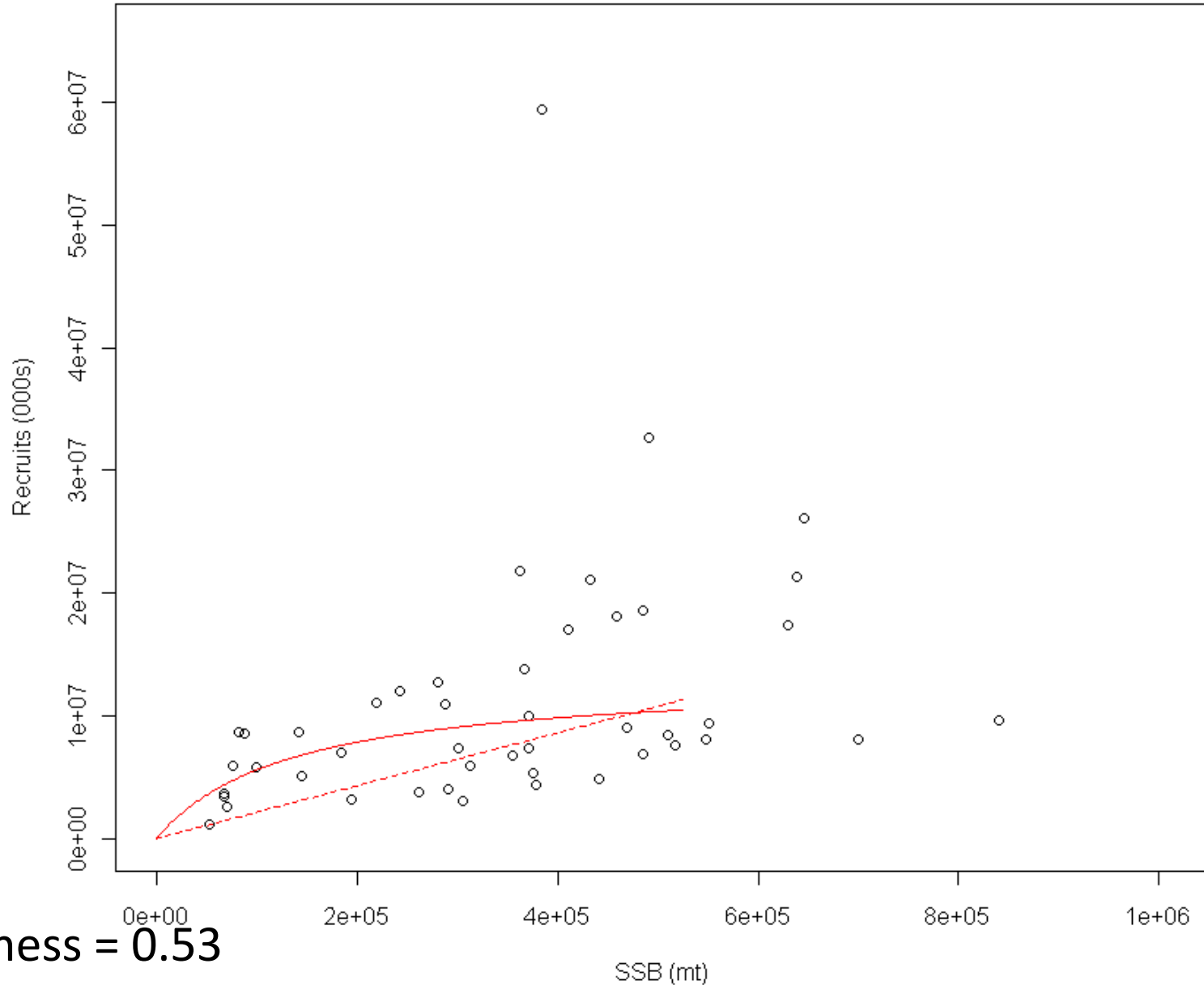


# TOR 5 – The Assessment





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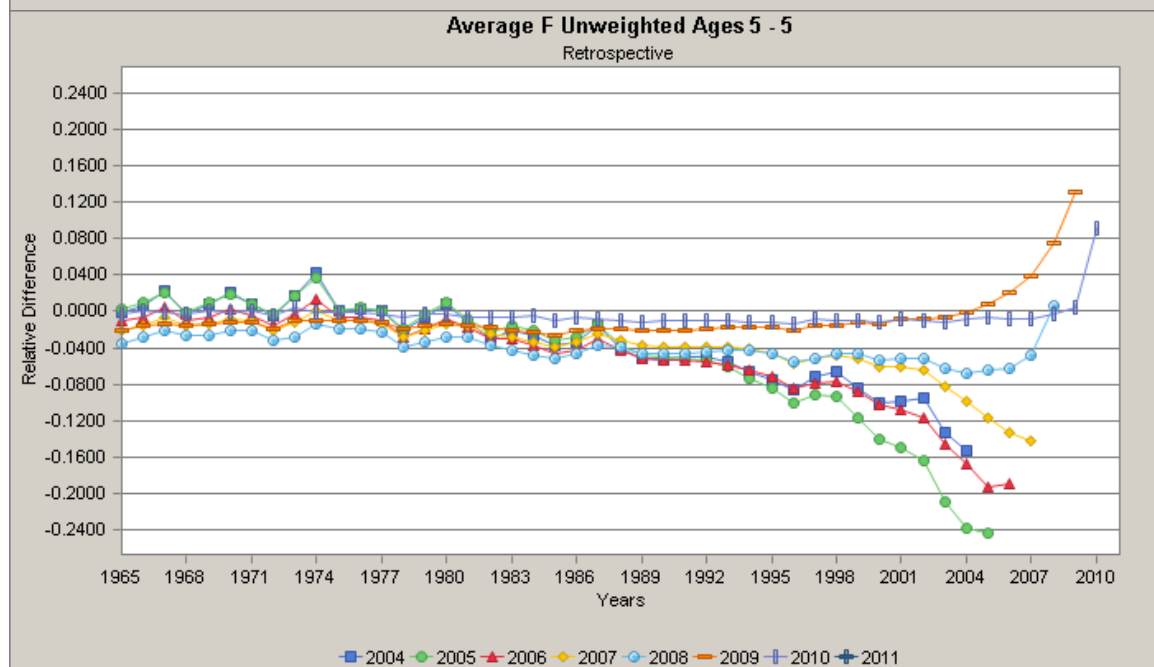
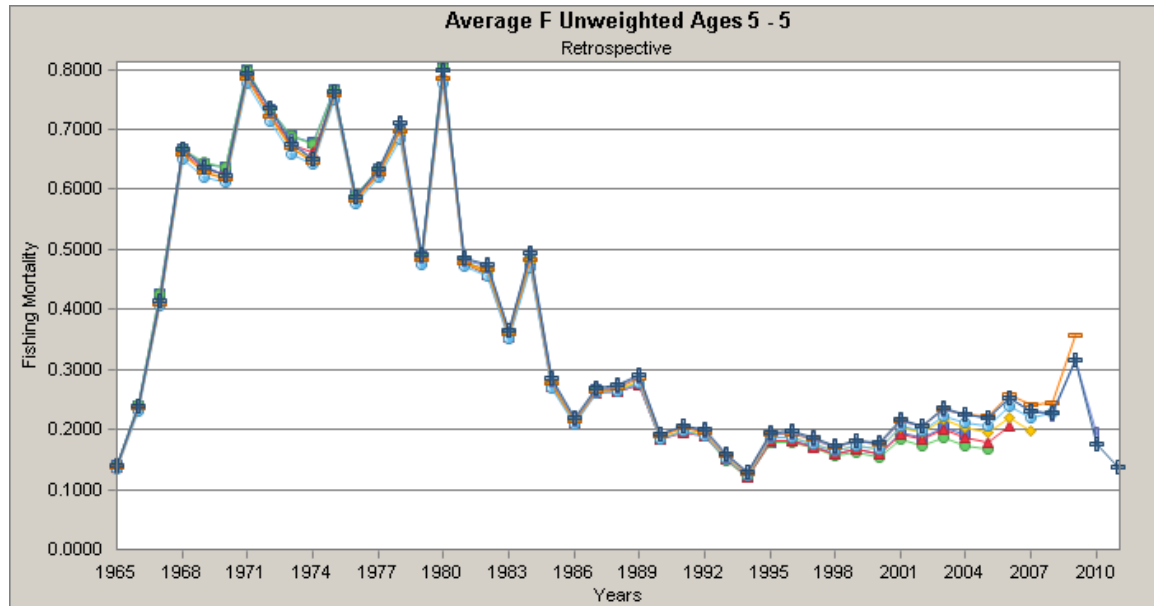


Steepness = 0.53

Unexploited SSB = 476,000 mt



# TOR 5 – The Assessment





# TOR 7 & 8 – BRPs and stock status

2009:

$$F_{msy} = 0.27$$

$$SSB_{msy} = 670,600 \text{ mt}$$

$$MSY = 178,000 \text{ mt}$$

2012:

$$F_{msy} = 0.27$$

$$SSB_{msy} = 157,000 \text{ mt}$$

$$MSY = 53,000 \text{ mt}$$

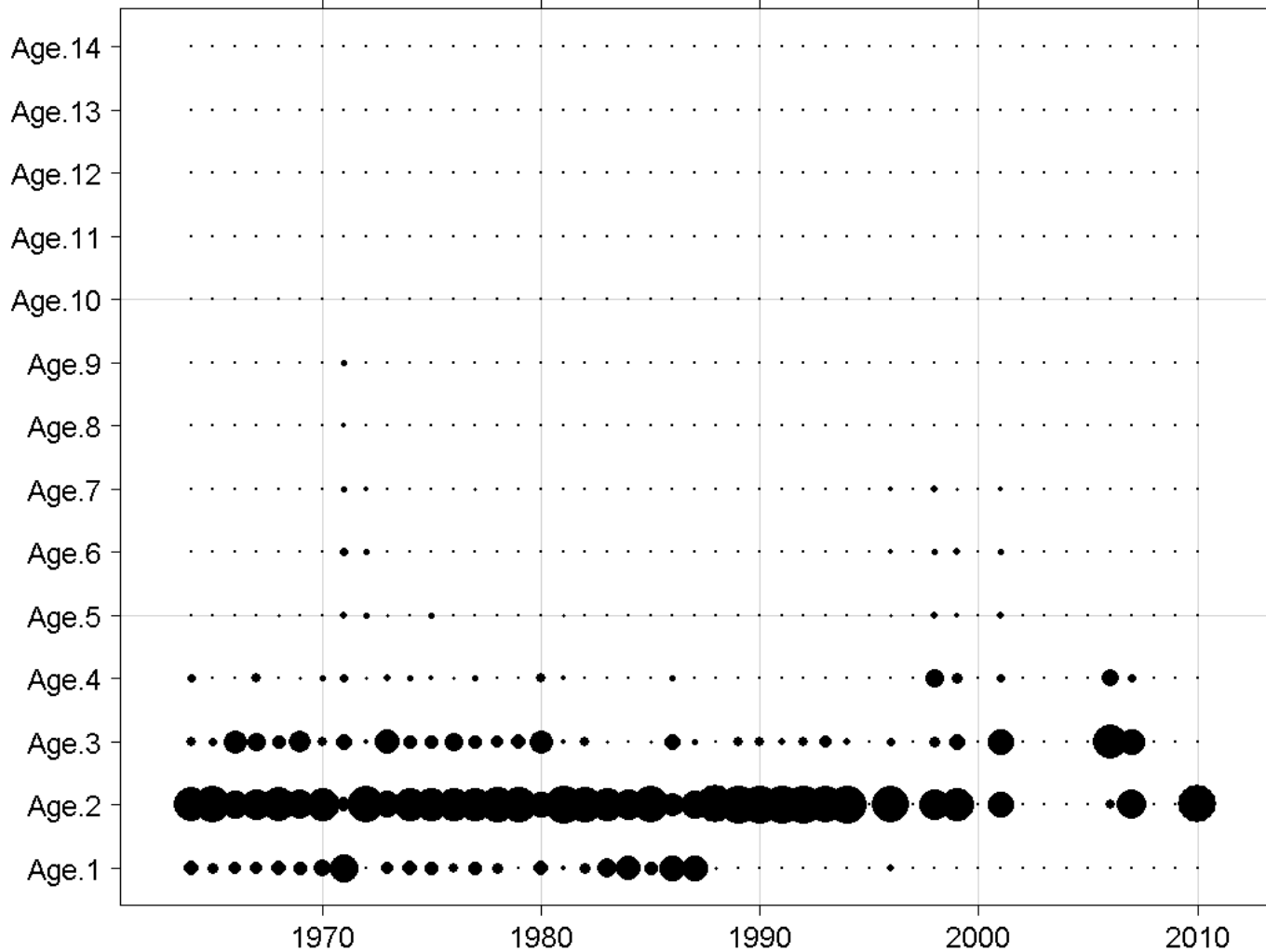
2011 SSB = 518,000 mt and  $F_5 = 0.14$

Questions?



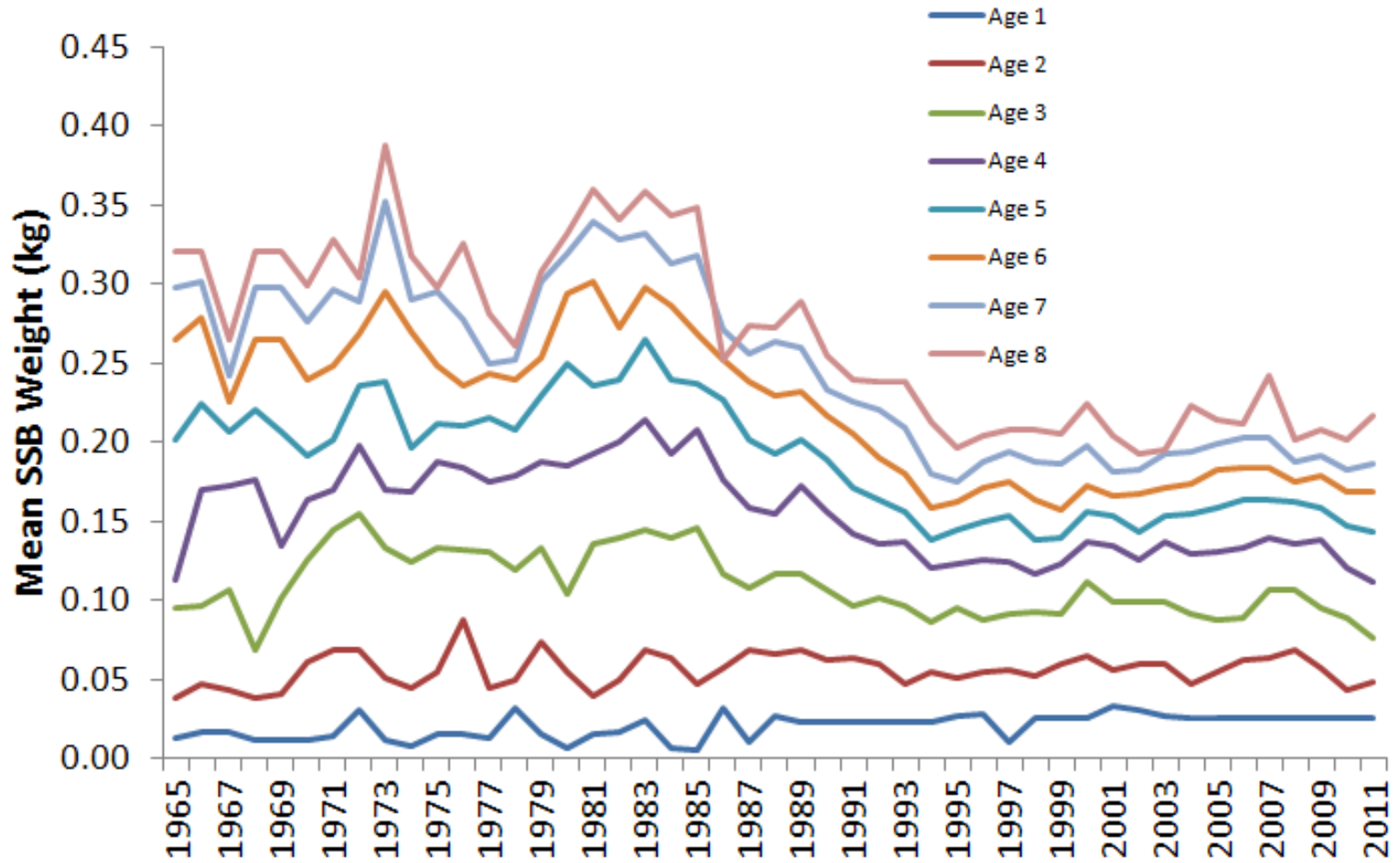
# TOR 1 – Catch

Fixed - Proportion of Catch



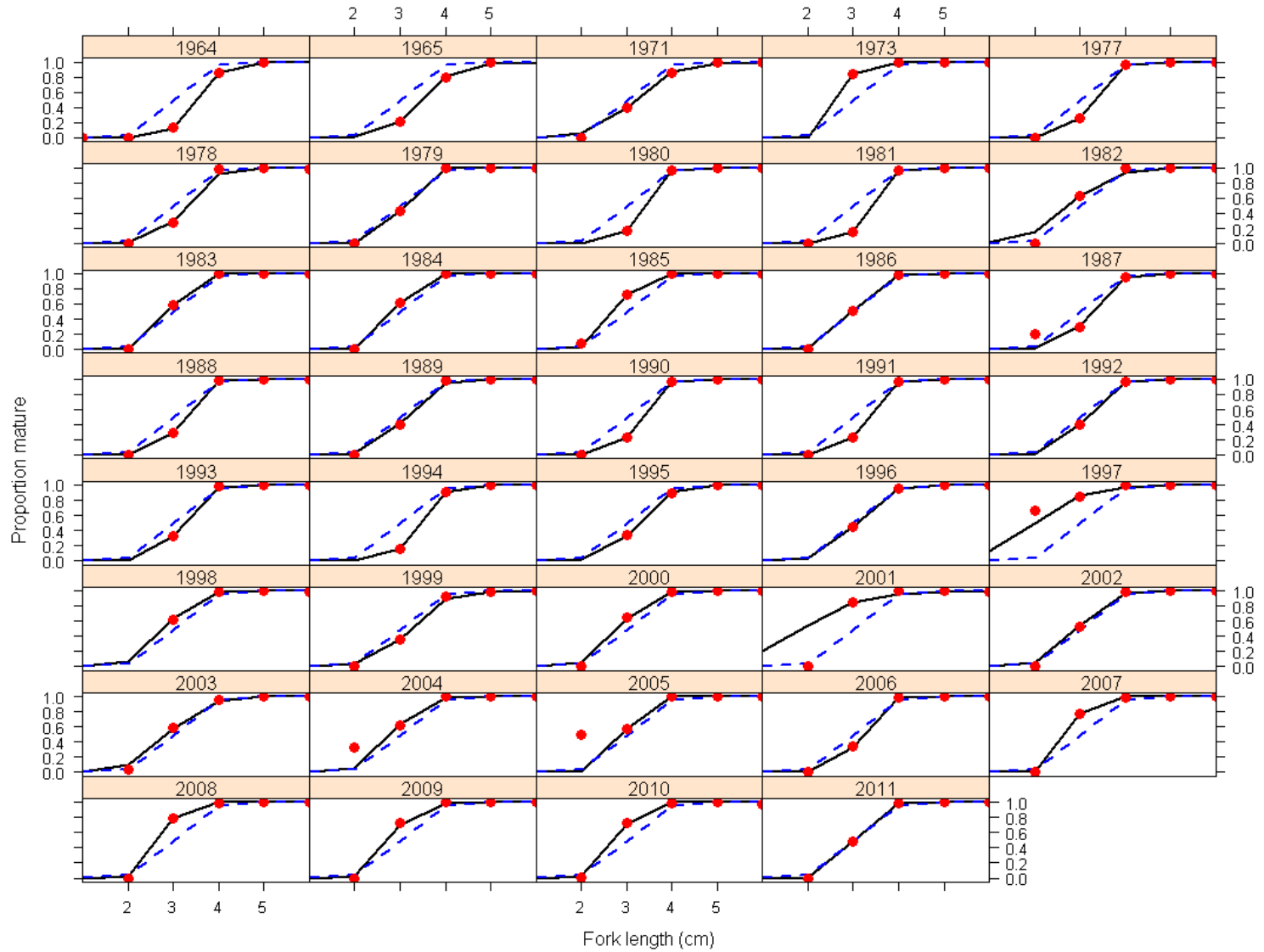


# TOR 1 – Catch



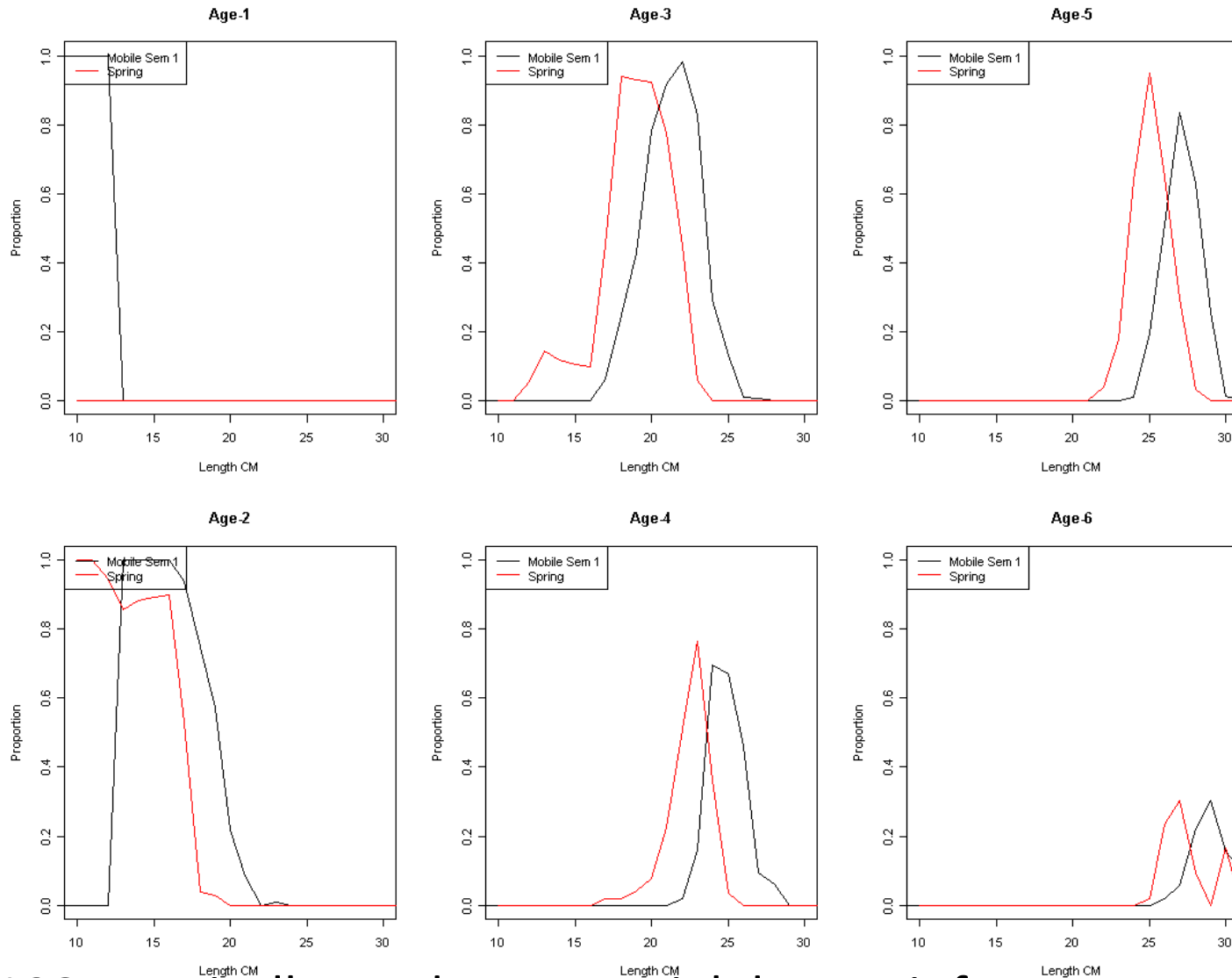
# TOR 1 – Catch

Maturity at age by year



Points = data, black line = fit, blue line = mean curve for all years

# TOR 2 – Surveys

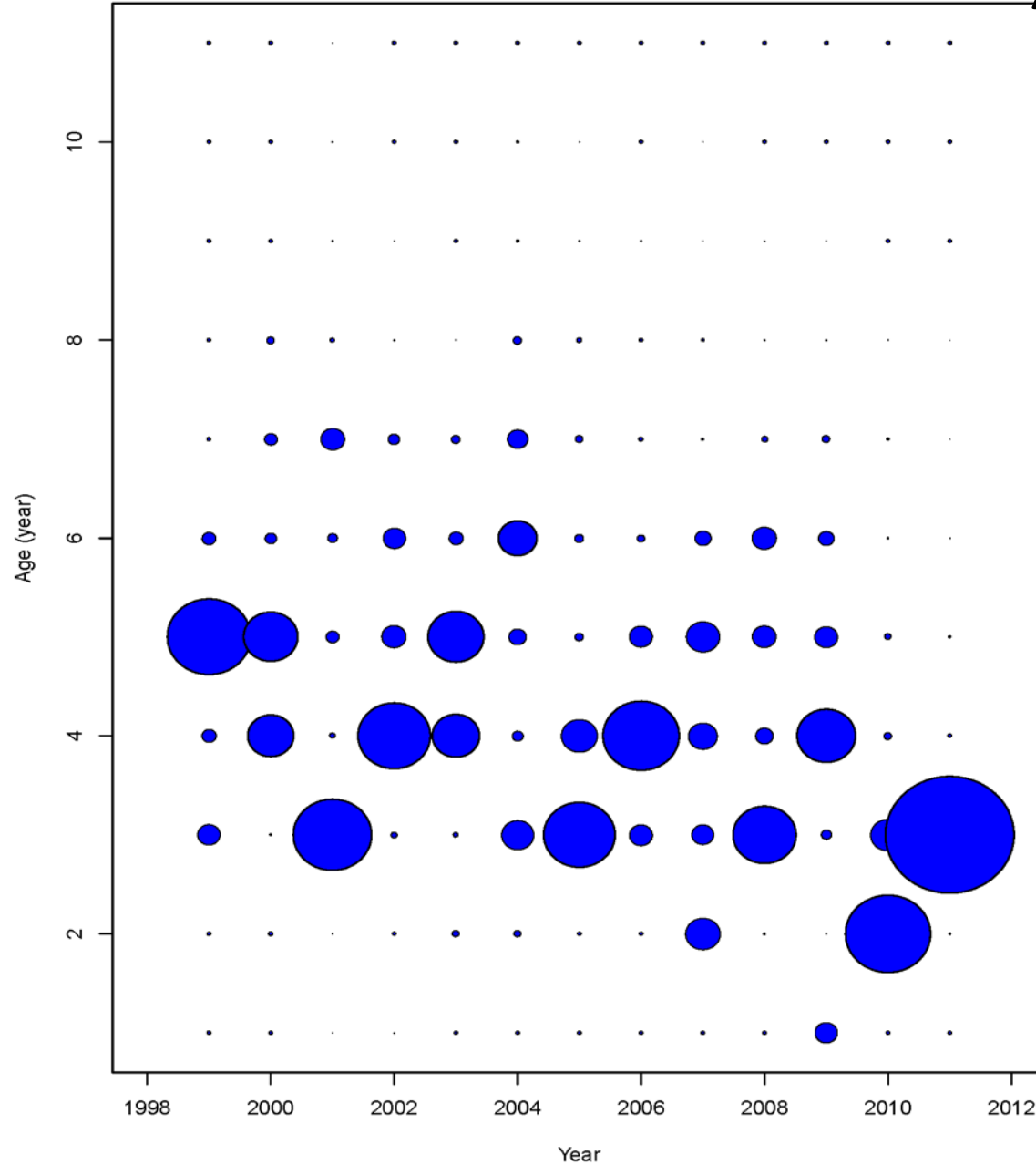


Prior to 1987, typically used commercial data to infer survey age structure. No more!

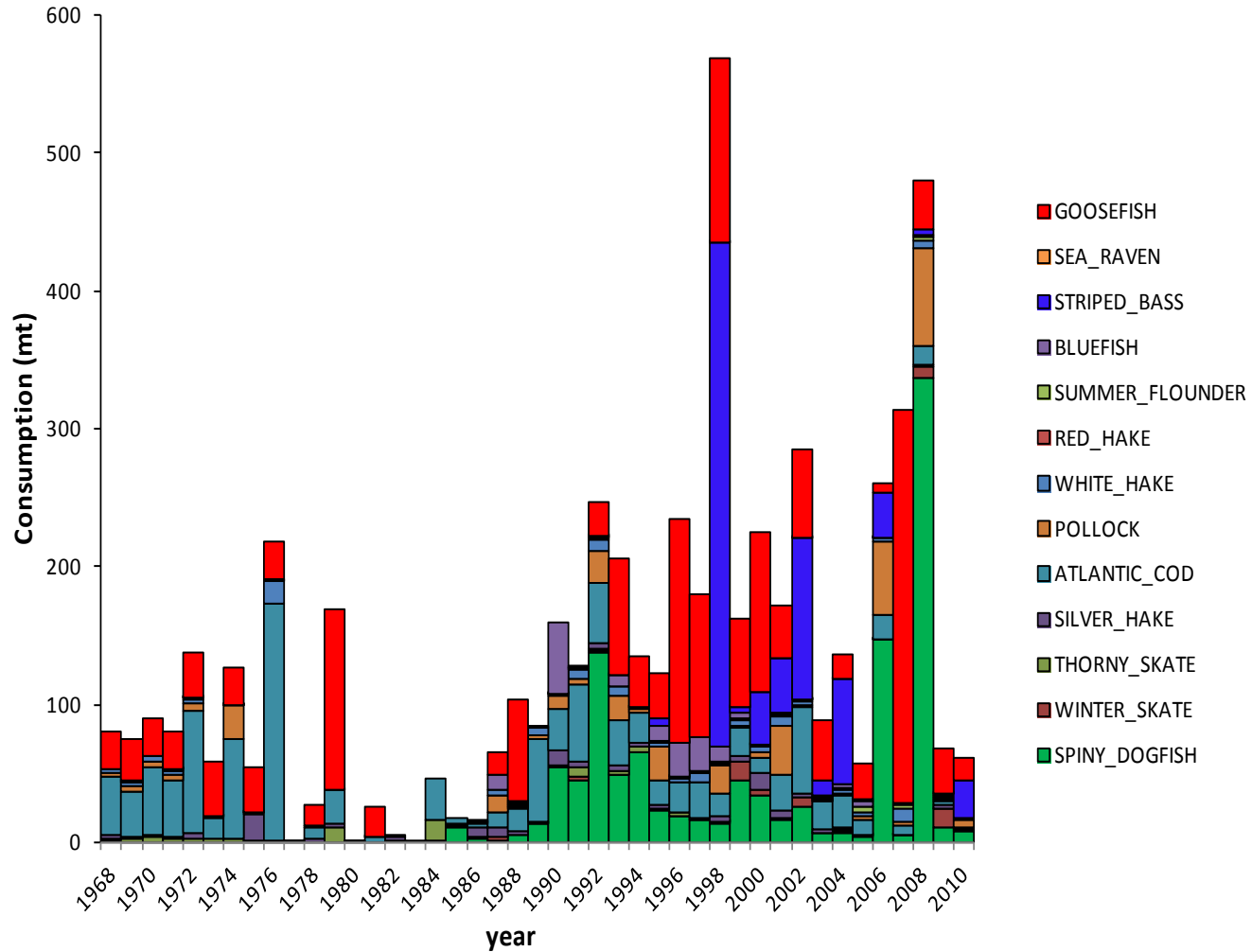




# TOR 3 – Acoustic Survey



# TOR 6 – M and Consumption



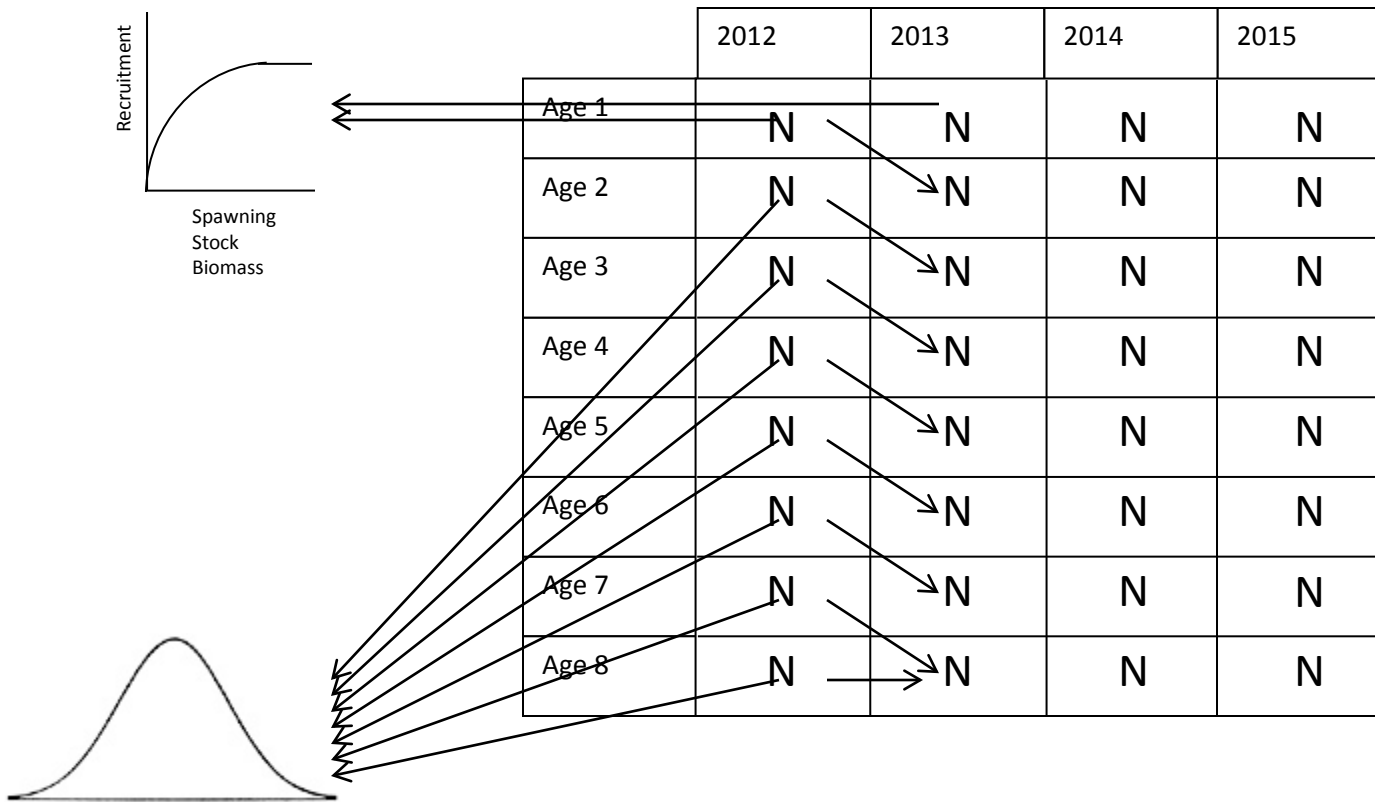
# TOR 9 - Simulations

Working papers and projects underway

Generally did not inform assessment



# TOR 10 – Projections



Repeat 1,000 times

# TOR 10 – Projections

	2013	2014	2015
	<b>F<sub>msy</sub></b>		
F	0.267	0.267	0.267
SSB	496,064 mt	368,501 mt	308,949 mt
80% CI	362,965 - 688,585 mt	275,695 - 517-815 mt	237,755 - 411,808 mt
Prob < SSB <sub>msy</sub> /2	0	0	0
catch	168,775 mt	126,589 mt	104,430 mt
80% CI	124,868 - 230,764 mt	95,835 - 171,145 mt	79,505 - 139,925 mt