SAW/SARC-59 Summary
(NEFSC CRD#14-07)

Public Presentation: Sept 2014

SAW/SARC Process

1. SAW Working Groups

2. External Peer Review Panel: Center of Independent Experts (CIE) + SSC.

   - Emphasis on reviewing the science/assessment.

3. Products: (Reviewer's Reports) + (2 Science Reports)
   http://www.nefsc.noaa.gov/nefsc/saw/ (see SAW59)
   http://www.nefsc.noaa.gov/publications/ (see Ref. Docs.)

4. Management advice:
   - SAW/SARC reports support SSC in making ABC recommendation.

The 59th Northeast Regional
Stock Assessment Review Committee   (59th SARC)
Stephen H. Clark Conference Room – Northeast Fisheries Science Center
Woods Hole, Massachusetts
July 15-18, 2014

SARC Chairman:
J.-J. Maguire
(Canada; NEFMC SSC)

SARC Panelists:
Dr. Panayiota Apostolaki
(UK; CIE)

Dr. Coby Needle
(UK; CIE)

Dr. Vivian Haist
(Canada; CIE)

A. **Gulf of Maine haddock**

B. **Sea scallop**

# (A.)   Gulf of Maine Haddock

GOM Haddock | Assessment TORs (shortened)

1. Estimate catch from all sources. Is LPUE a measure of relative abundance?

2. Present the survey data being used in the assessment.

3. Evaluate haddock migration from Georges Bank.

4. Estimate annual fishing mortality, recruitment and stock biomass. Include historical retrospective.

5. State the existing stock status definitions, and updated or redefined BRPs.

6. Evaluate stock status.

7. Conduct stock projections.

8. Review research recommendations and ID new ones.

- **Assessment is accepted. Uncertainty was explored well.**

- **Stock was not overfished and overfishing was not occurring in 2013. Status is good. Several large recent year-classes and relatively low fishing mortality. SSB forecast to rise.**

- **However, weights-at-age in the catch data showed considerable reductions over time for older fish, with more stability in the most recent 5 years. No hypothesis was proposed to explain this.**

- **Magnitude of recent recruitment is largest source of assessment uncertainty.**

- **It was not possible to determine an "inter"stock mixing rate from the evidence provided. A model investigated potential impact of "spillover" of GB haddock, but results were not definitive. Only a single movement parameter was estimated (appropriately, given the limited data to estimate movement).**

- **More scientific research needed to reach firmer conclusions about mixing. For management, the conclusion of low mixing between separate stocks is reasonable.**

- **The conclusions from all projections were similar. SSB stayed well above SSB_{MSY}.**

- **Haddock LPUE not reliable indicator of status or dynamics.**
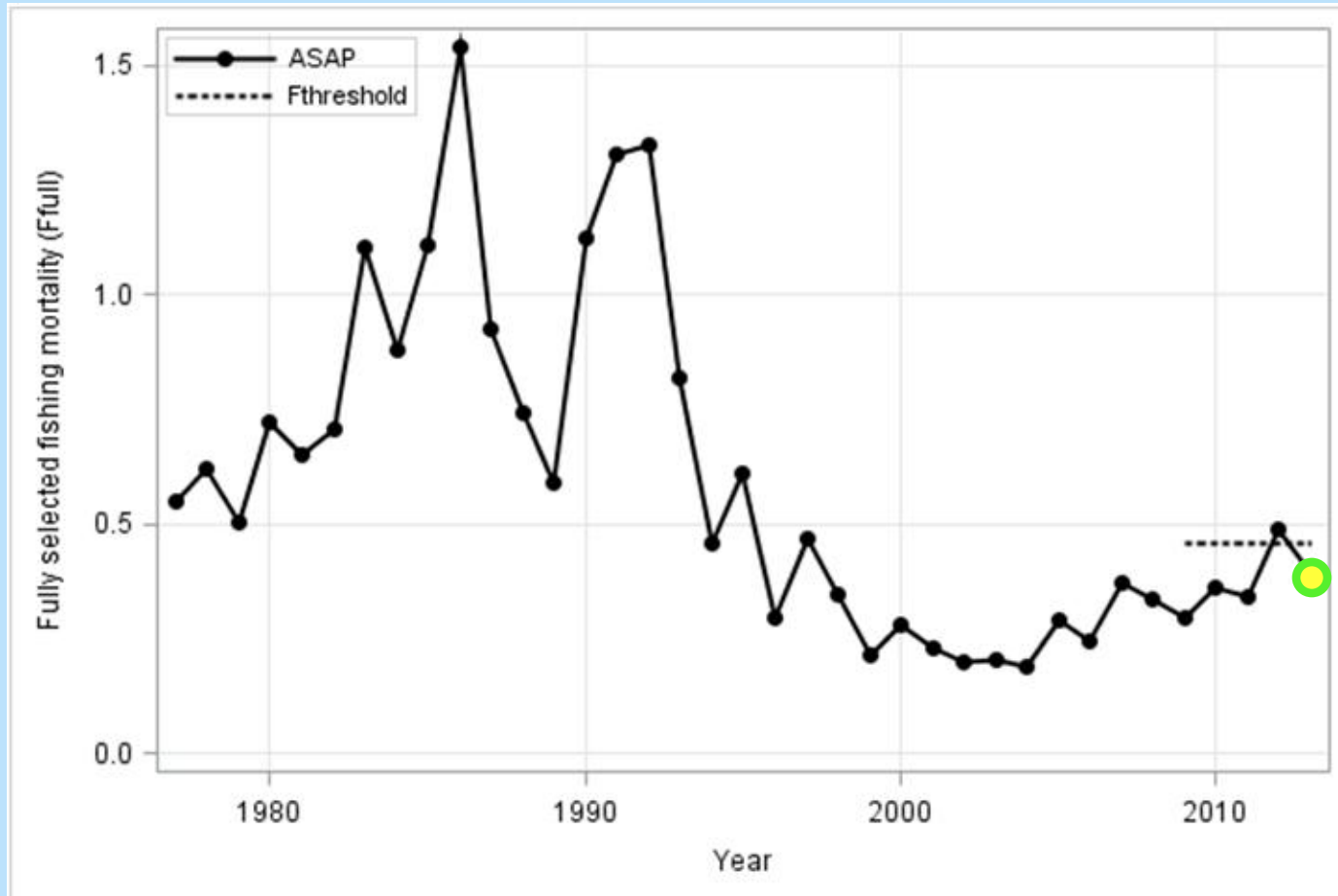
GOM haddock: Fishery Catch, 1977-2013
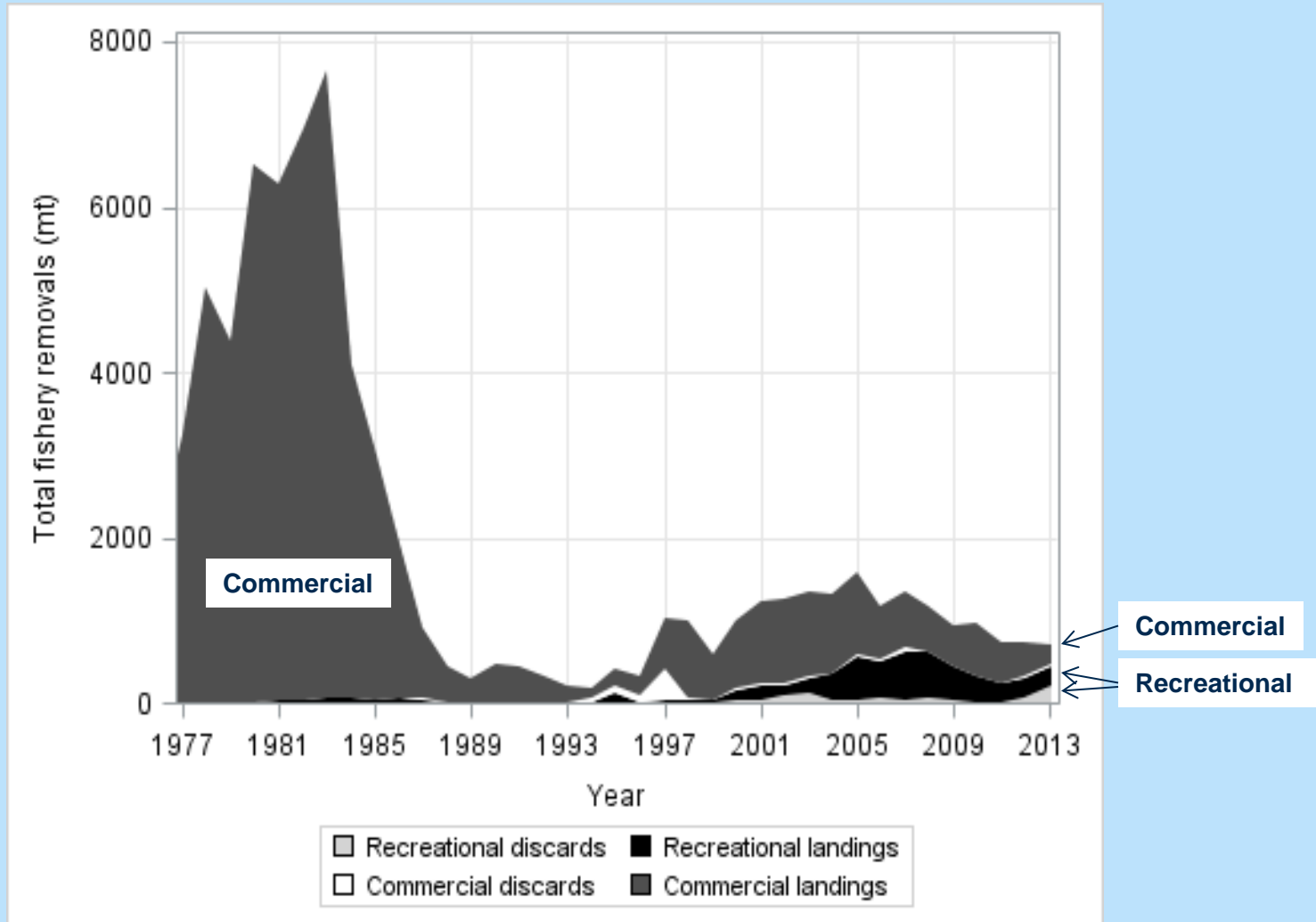
Recreational portion of catch has increased in recent years. Rec discards were estimated in this assessment, as recommended by previous peer review panel.
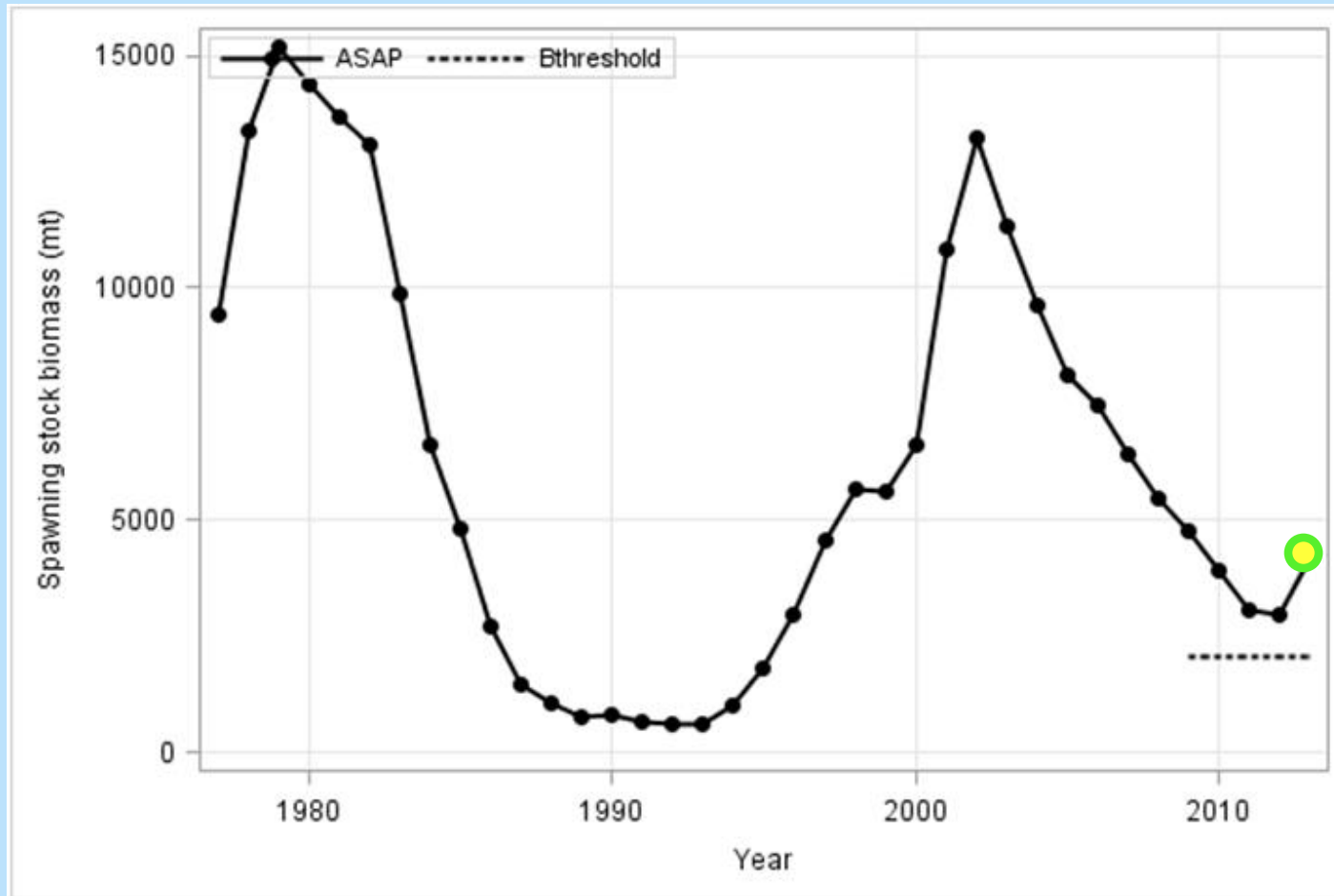
GOM haddock: Recruitment
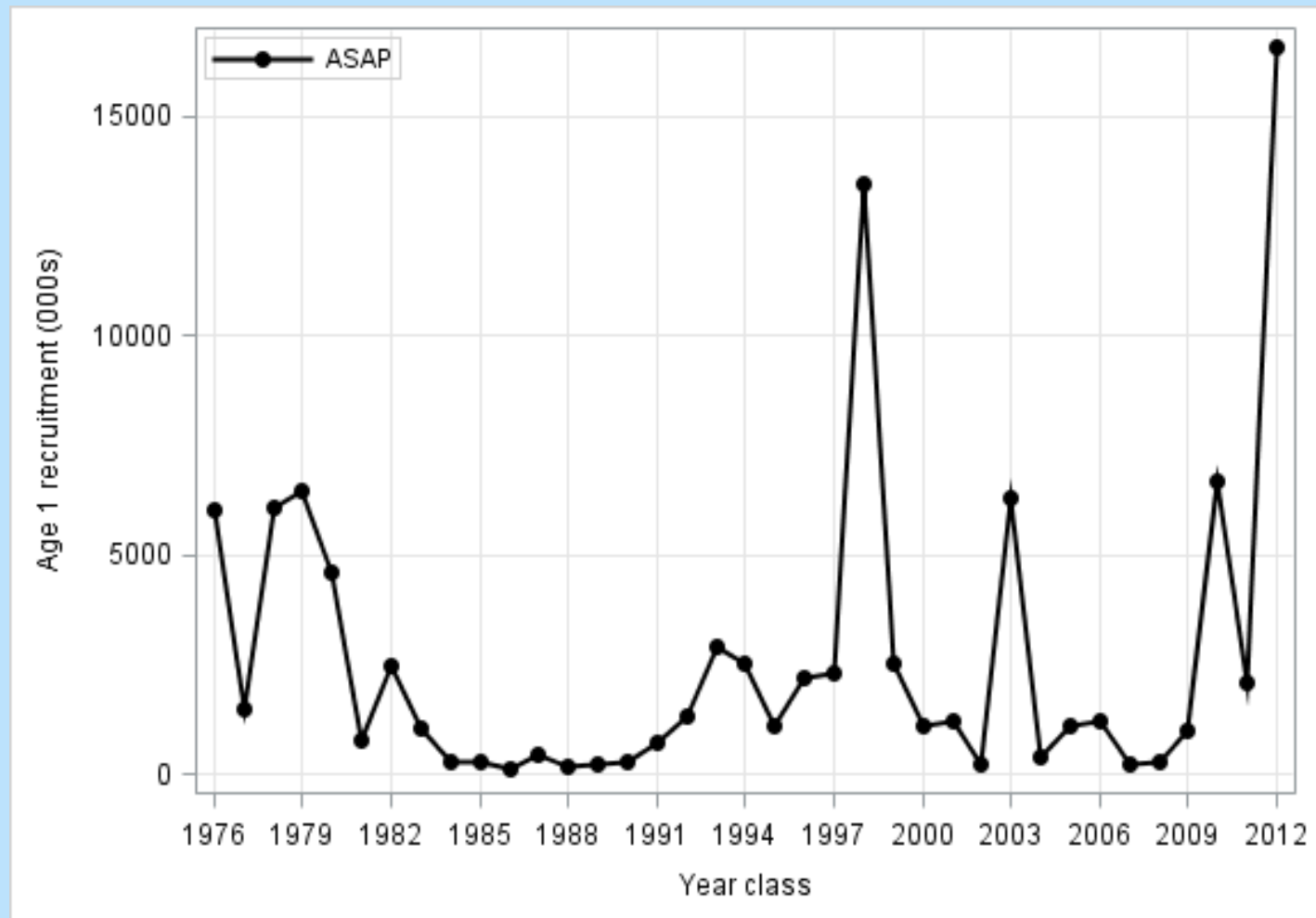
Highly episodic. Recent strong year classes: 1998, 2003, 2010, 2012. Size of 2012 YC highly uncertain.

GOM haddock

$F_{threshold} = F40\% = 0.46$

$F_{,13} = 0.39$
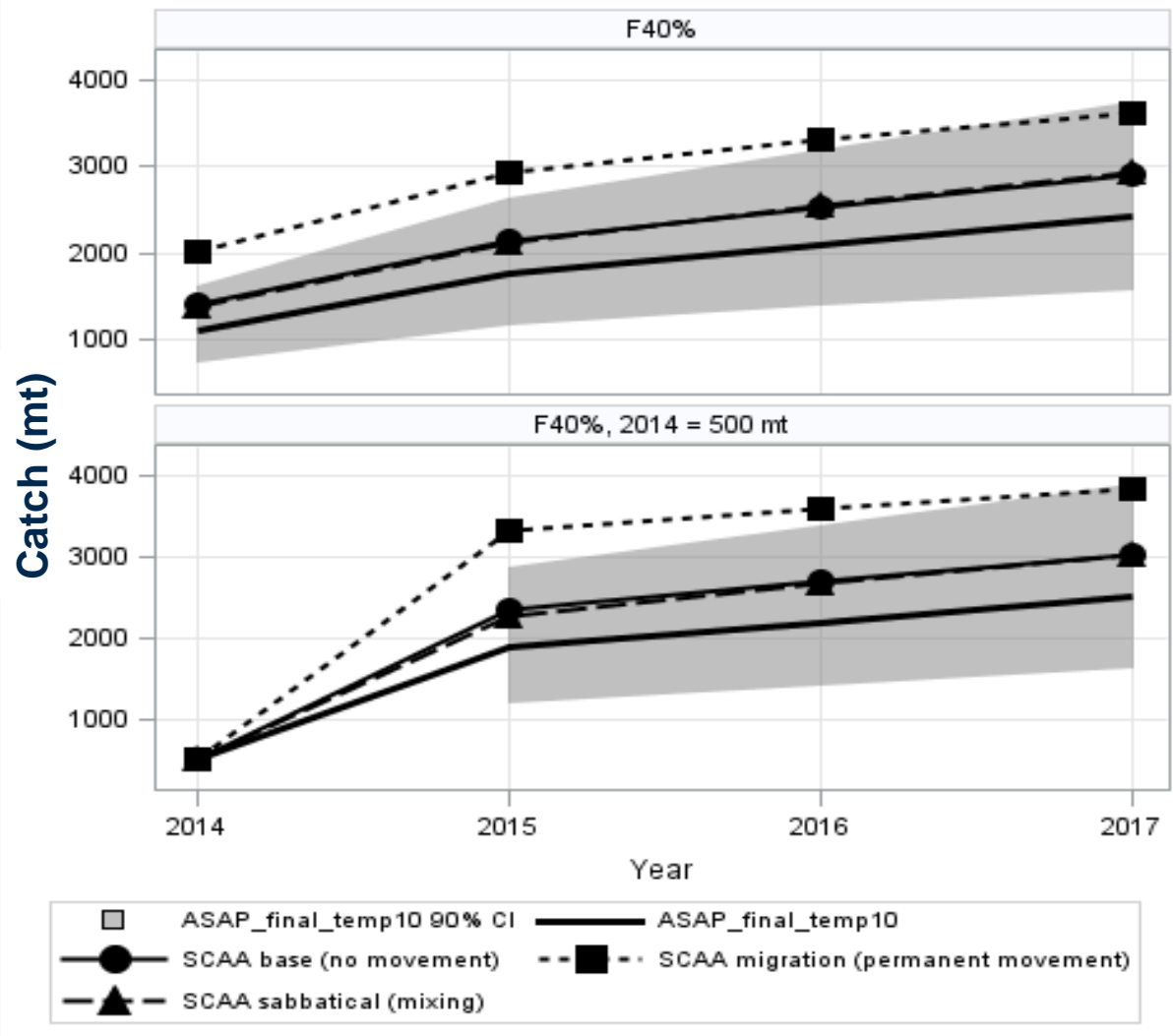
GOM haddock

$SSB_{'13}$ = 4,153 mt

$SSB_{threshold}$ = 2,054 mt

Stock is well above the SSB threshold and slightly above the SSB target.

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GOM haddock: Sample Catch Projections

The peer review did <u>not</u> determine an "inter"stock mixing rate. Projection lines are based on different assumptions about migration from GBK, and are just examples.

- **Do additional work to refine the recreational discard survival estimate.**

- **Further explore the assumed value of natural mortality (M).**

- **Explore different starting years for the model, taking into account available time-series of catch data.**

- **Collect data to allow comparison of commercial and recreational age length keys.**

- **Consider using the *Bigelow* survey time series as a separate index.**

- **If concerns about mixing rates and stock structure remain, appropriate types of new studies include: tagging studies, egg dispersal modeling, genetic differentiation determination or otolith microchemistry.**

- **Increase frequency of assessment (with stock monitoring).**

(B.)　　Sea scallop

1. Estimate removals from all sources (including incidental mortality)

2. Present the survey data being used in the assessment

3. Investigate the role of environmental and ecological factors in determining recruitment success.

4. Estimate annual fishing mortality, recruitment and stock biomass. Include a historical retrospective.

5. State the existing stock status definitions and updated or redefined biological reference points.

6. Evaluate stock status.

7. Stock and catch projections.

8. Review research recommendations and ID new ones.

- Sea scallop stock: not overfished and not experiencing overfishing in 2013.

- Methods used to reconstruct the scallop resource, estimate parameters (F, R, and B) and do projections are sound. A scientifically credible basis for management.

- Past assessments overestimated biomass and underestimated fishing mortality, and may continue to do so (retros and residuals). Assessment uncertainty possibly underestimated.

- F_{MSY} estimates for GB and the Mid-Atl differ greatly. Concern: applying the combined estimate (0.48) to the whole stock could imply that GB could be fished harder than biologically advisable and v.v. for the Mid- Atl

- **Stock does not appear to be at risk of overexploitation. However, based on retrospective patterns and recent survey trends, projection results might be optimistic.**

- **Sources of uncertainty: magnitude of incidental and discard mortality, possible age- and time-dependent natural mortality (M), CV on camera survey catchability, modeling survey time series (dredge survey, HABCAM and SMAST) as independent**

- **Incorporation of mortality from discards in the calculations was appropriate.**
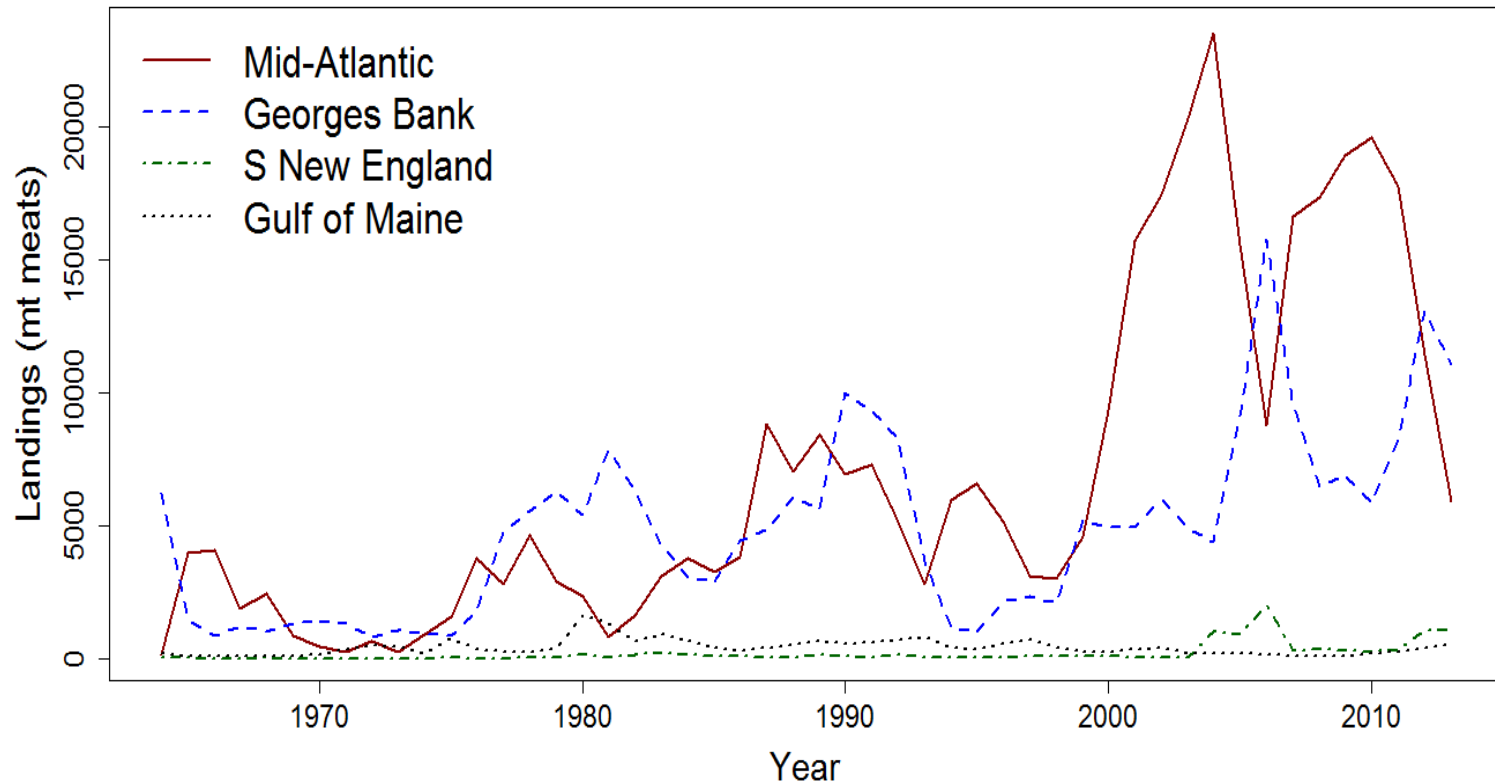
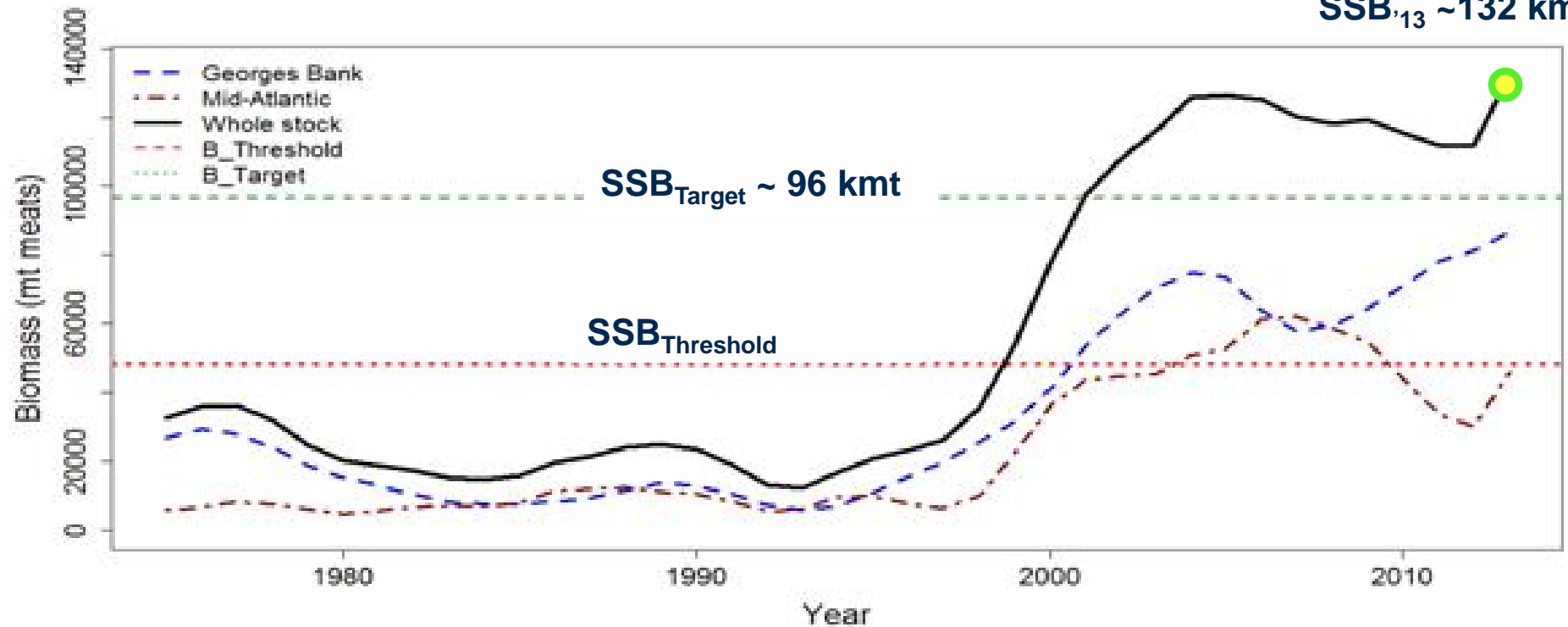**US landings during 2004-2013 have been about 2x the long-term average.**
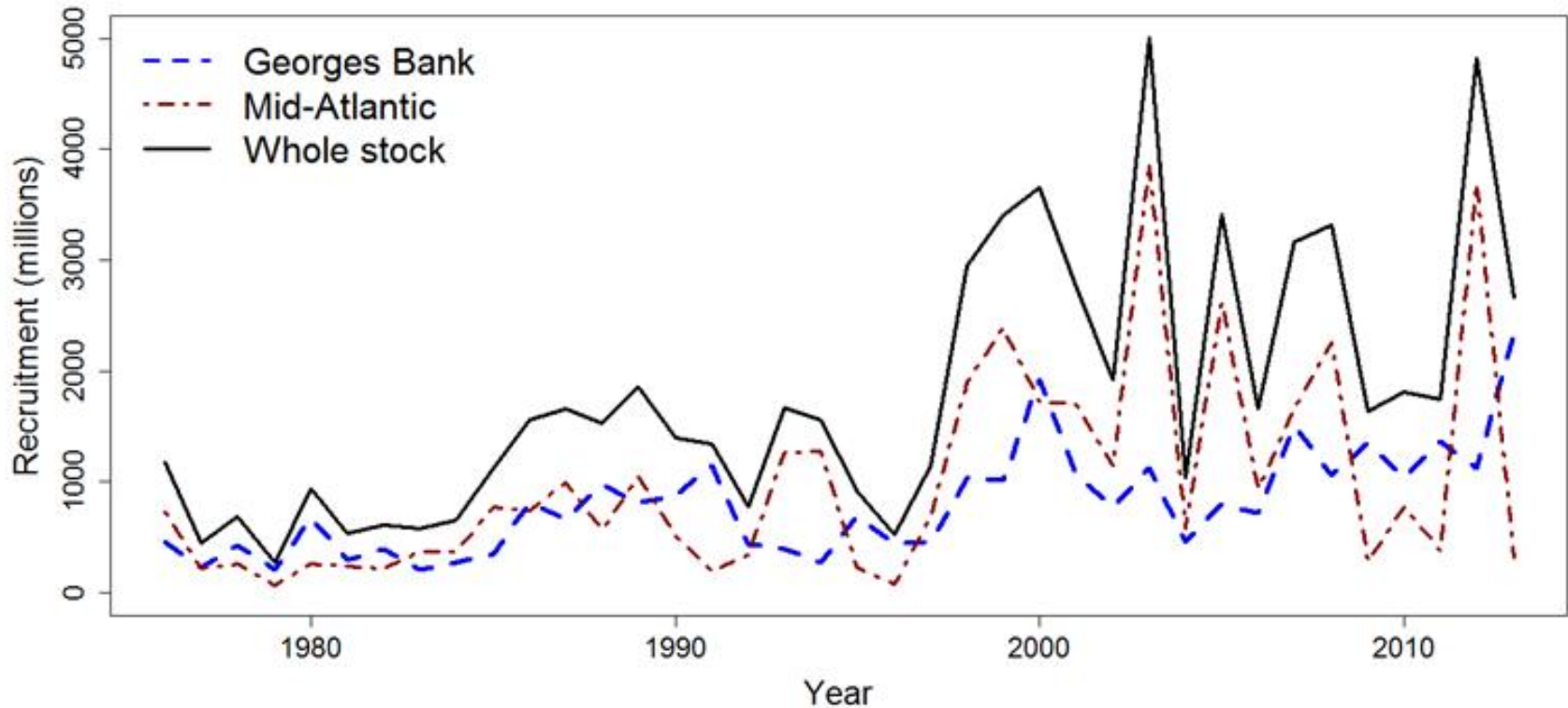
GBK: R relatively high since 2006, with a max in 2013.
Mid-Atl: R was below average in 2009-2011 and 2013.
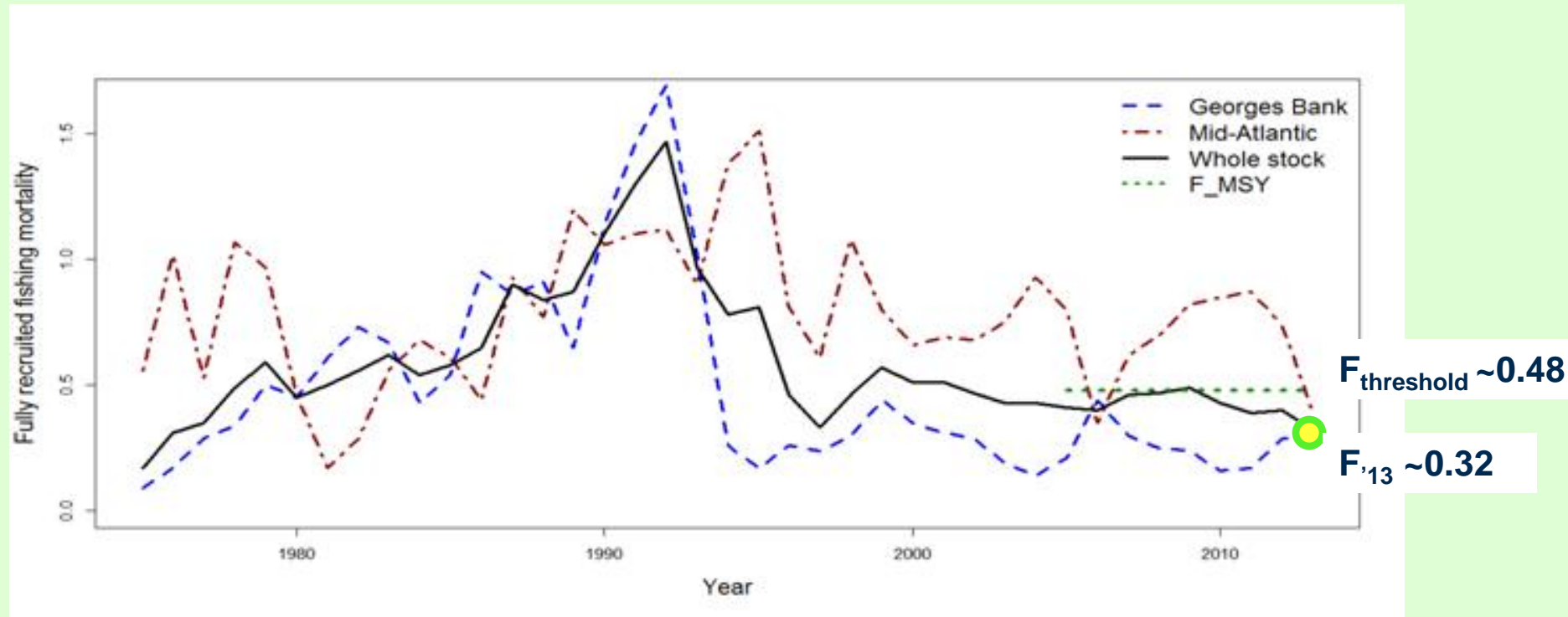**Whole stock:** R has been above average since late 1990's.
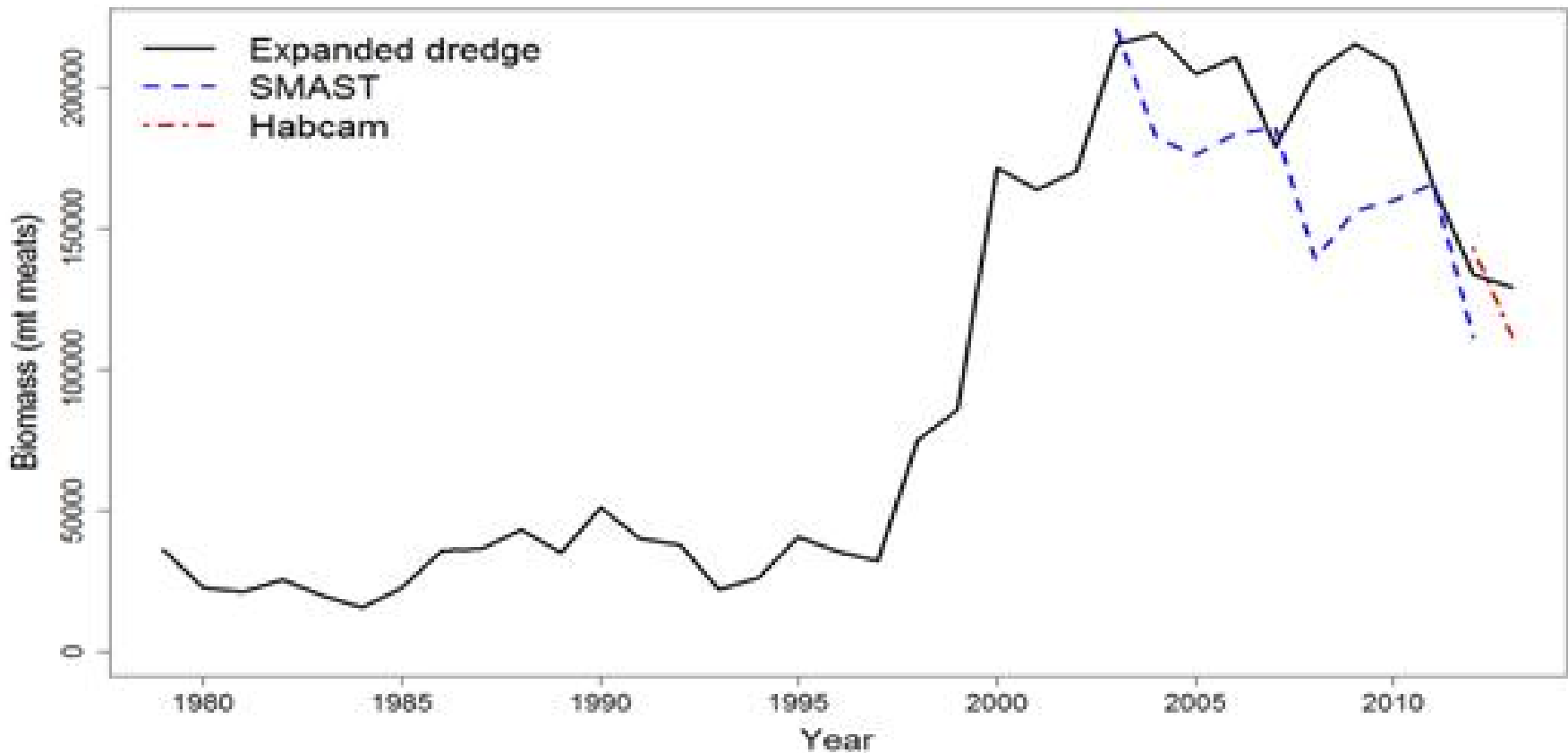
Three main survey time series were used in this assessment. Their biomass estimates are relatively consistent with each other.
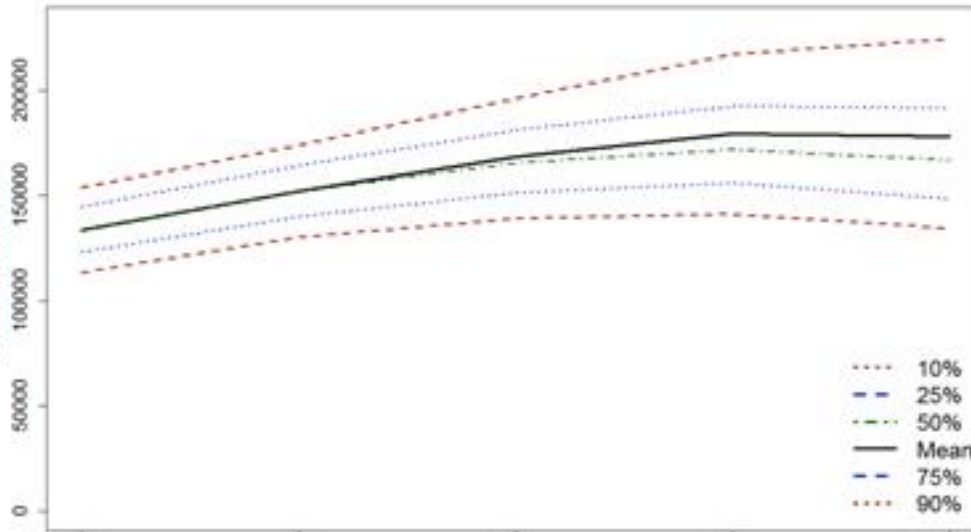
$SSB_{'13} \sim 132$ kmt

$SSB_{Target} \sim 96$ kmt

$SSB_{Threshold}$

**B (40 mm+ SH; CASA model) has increased since late 1990s.
Stock is not currently overfished.**

Fishing mortality chart showing Georges Bank, Mid-Atlantic, Whole stock, and F_MSY with $F_{threshold} \sim 0.48$ and $F_{'13} \sim 0.32$

Overfishing is not occurring.

Biomass (mt meats)

10%
25%
50%
Mean
75%
90%

Landings (mt meats)

10%
25%
50%
Mean
75%
90%
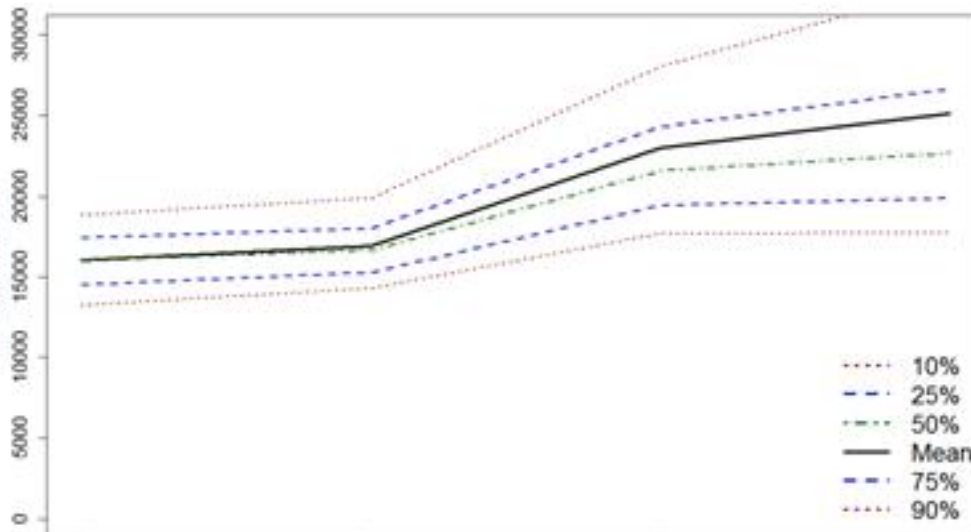
2014   2015   Year   2016   2017

The SARC noted that past projections have produced optimistic results, and may continue to do so.

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- **Consider using relative catchability among surveys, rather than assuming independent survey estimates.**

- **Explore causes for changes in observed growth at size. Possible explanations: fast growers were removed from the population during fishing, and/or an actual change in the growth patterns.**

- **More investigation regarding possible size- or density-dependent mortality**

- **Provide more narrative to justify the use of a length-based model**

- **Better documentation of management history.**