

SAW/SARC-45 Summary

(Presentation 8/07)

SAW/SARC Process

- **External Peer Review by Center of Independent Experts (CIE).**
- **Emphasis on reviewing just the science/assessment.**
- **CIE provides Consensus Summary + Individual Reports**
- **Management advice is not in the SAW/SARC reports.**
- **Management advice is developed by Tech. Committees, Working Groups, PDTs.**

**The 45th Northeast Regional
Stock Assessment Review Committee
(45th SARC)**

**Stephen H. Clark Conference Room – Northeast Fisheries Science Center
Woods Hole, Massachusetts
6/4 – 6/9, 2007**

**SARC Chairman:
Dr. Mike Prager
(SEFSC, N. Carolina)**

**SARC Panelists (CIE):
Dr. Nick Caputi
(W. Australia)**

**Dr. JJ Maguire
(Quebec, Canada)**

**Dr. Jake Rice
(Ottawa, Canada)**

**A. Northern
shrimp**

B. Sea scallops

Assessment

Review Outcome

A. Northern
shrimp

Accepted

B. Sea scallops

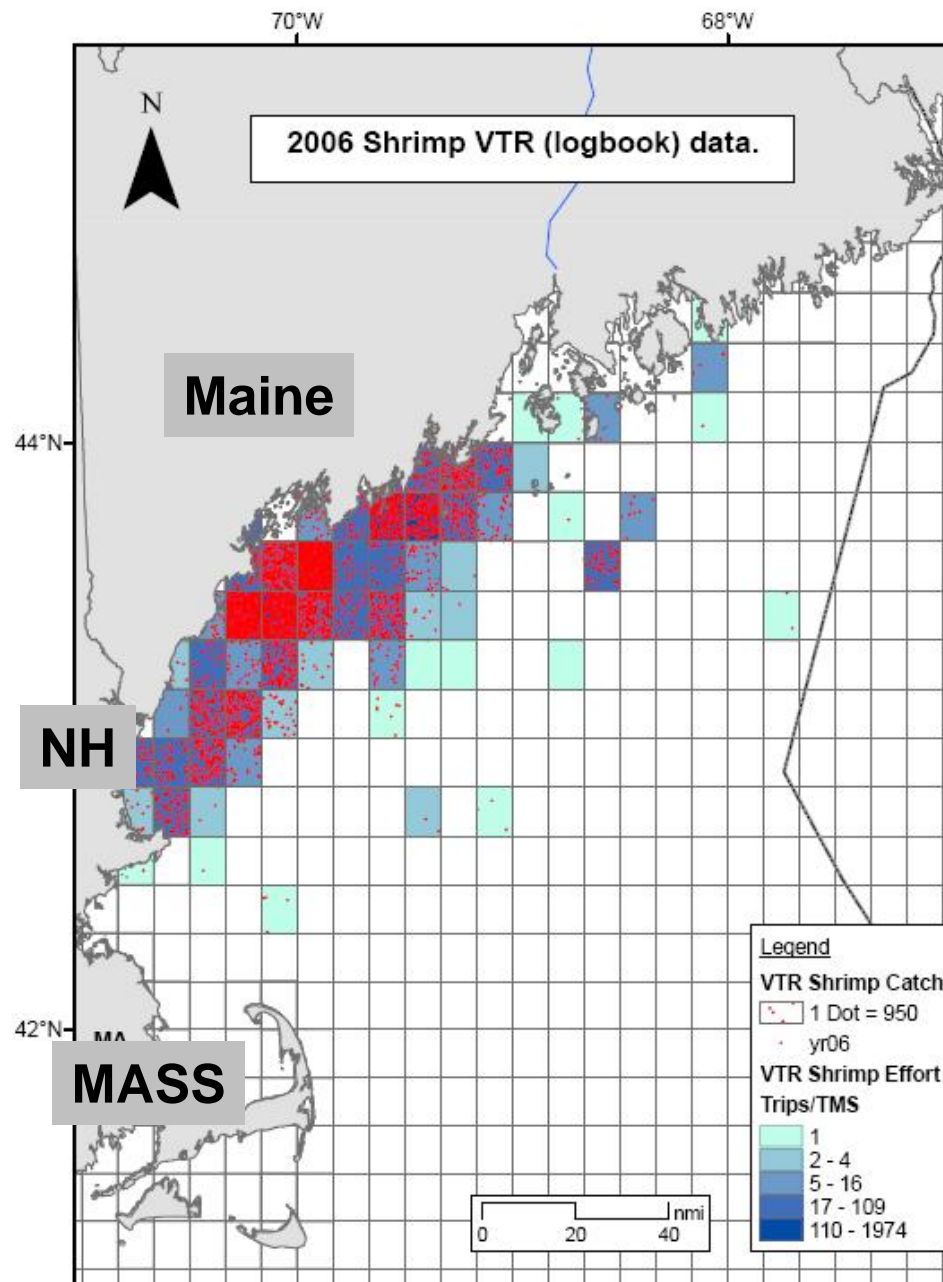
Accepted

Reports available at: www.nefsc.noaa.gov/nefsc/saw/

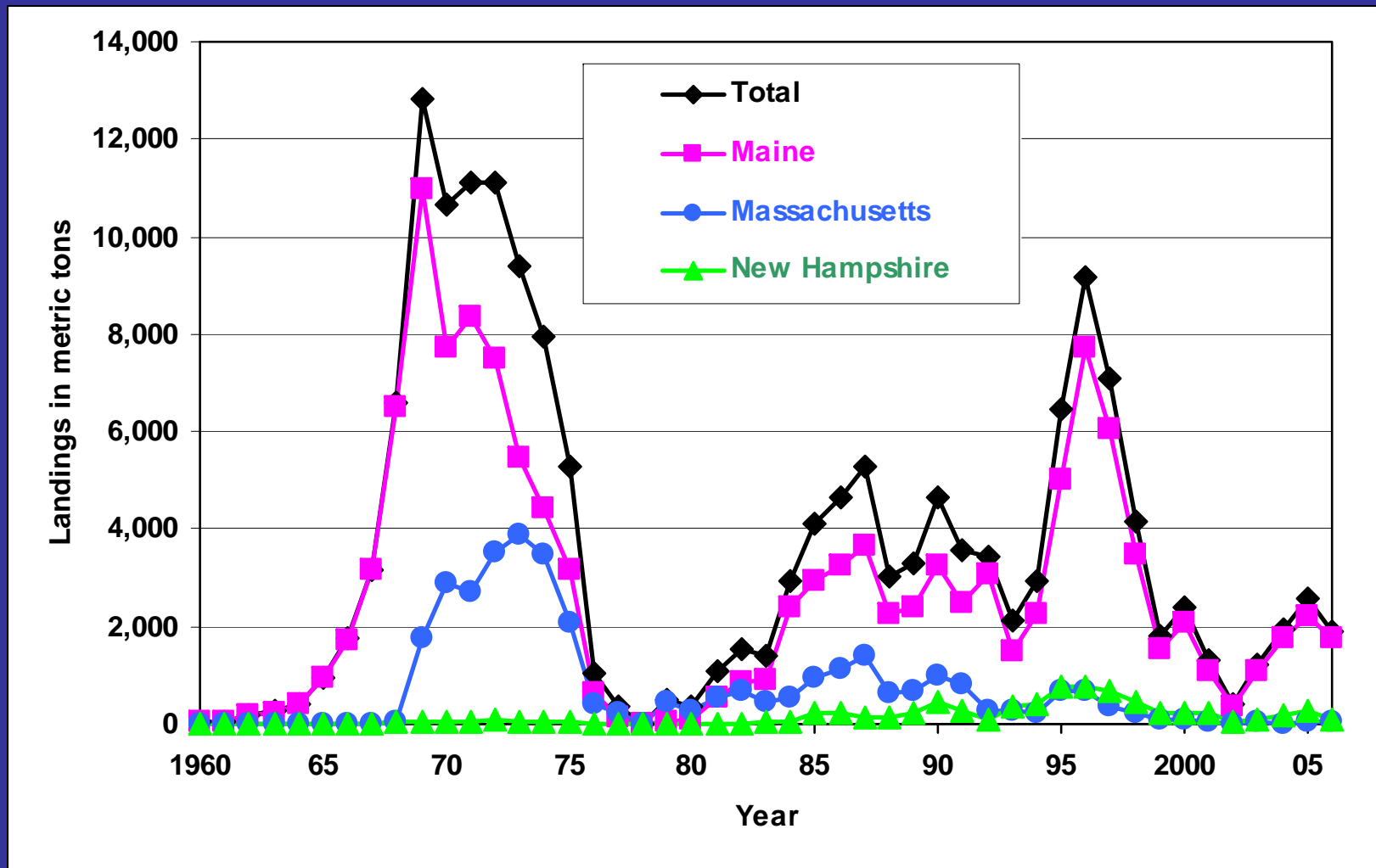
Northern shrimp - TORs

1. Characterize the Gulf of Maine northern shrimp commercial catch, effort, and CPUE, including descriptions of landings and discards of that species.
2. Estimate fishing mortality and exploitable stock biomass in 2006 and characterize the uncertainty of those estimates. Also include estimates for earlier years.
3. Comment on the scientific adequacy of existing biological reference points (BRPs).
4. Evaluate current stock status with respect to the existing BRPs.
5. Perform sensitivity analyses to determine the impact of uncertainty in the data on the assessment results.
6. Analyze food habits data and existing estimates of finfish stock biomass to estimate annual biomass of northern shrimp consumed by cod and other major predators. Compare consumption estimates with removals implied by currently assumed measures of natural mortality for shrimp.
7. Review, evaluate and report on the status of the 2002 SARC/Working Group Research Recommendations.

N. shrimp – Commercial Catch & Effort:

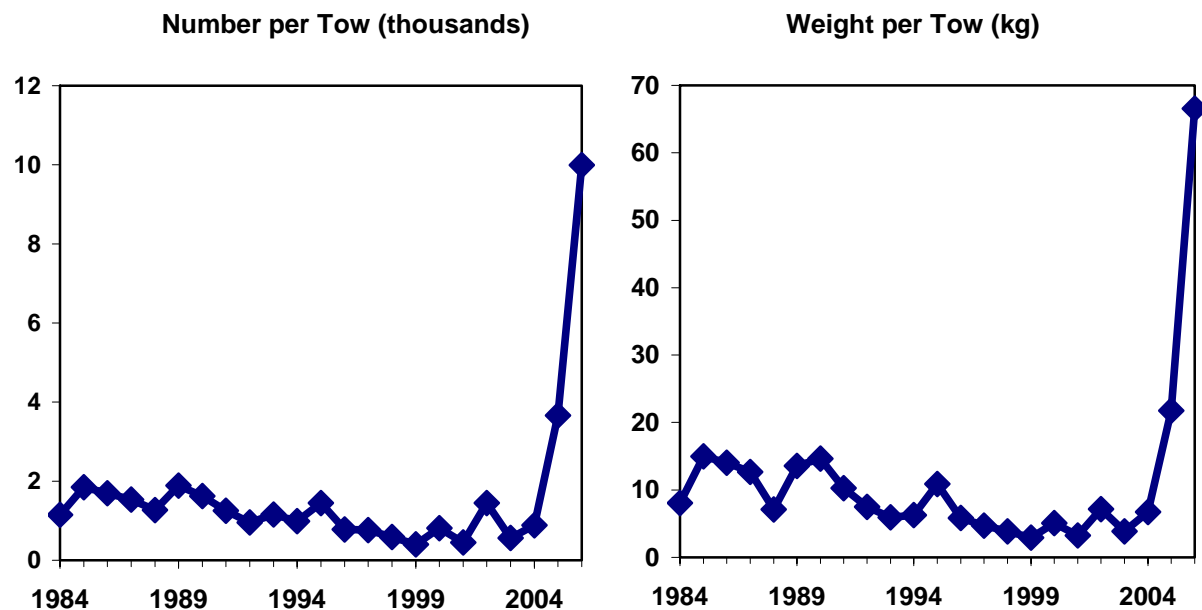


N. shrimp – Commercial Landings:

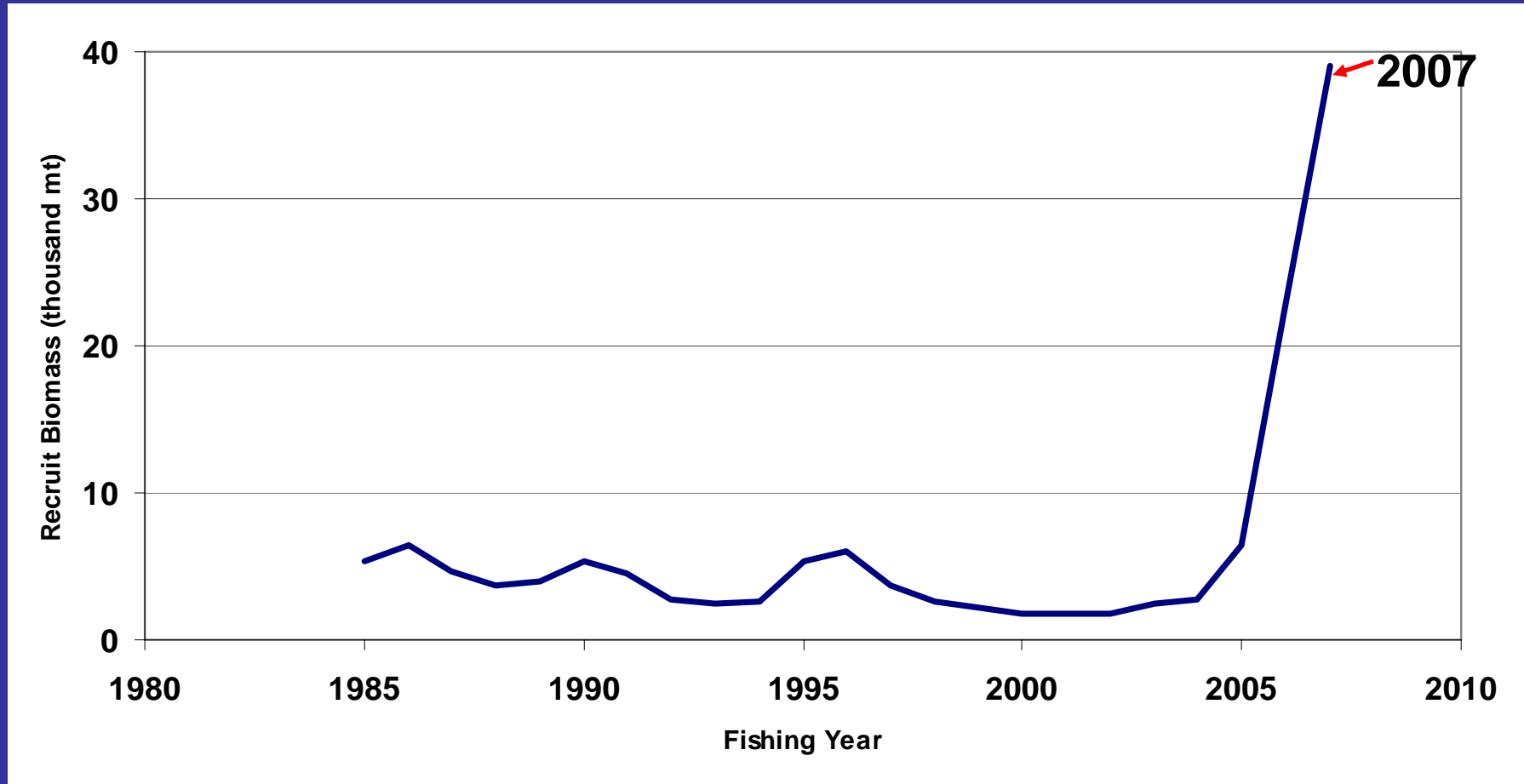


N. shrimp – Summer State/Fed Surveys :

Indices are up
in '05 – '06.

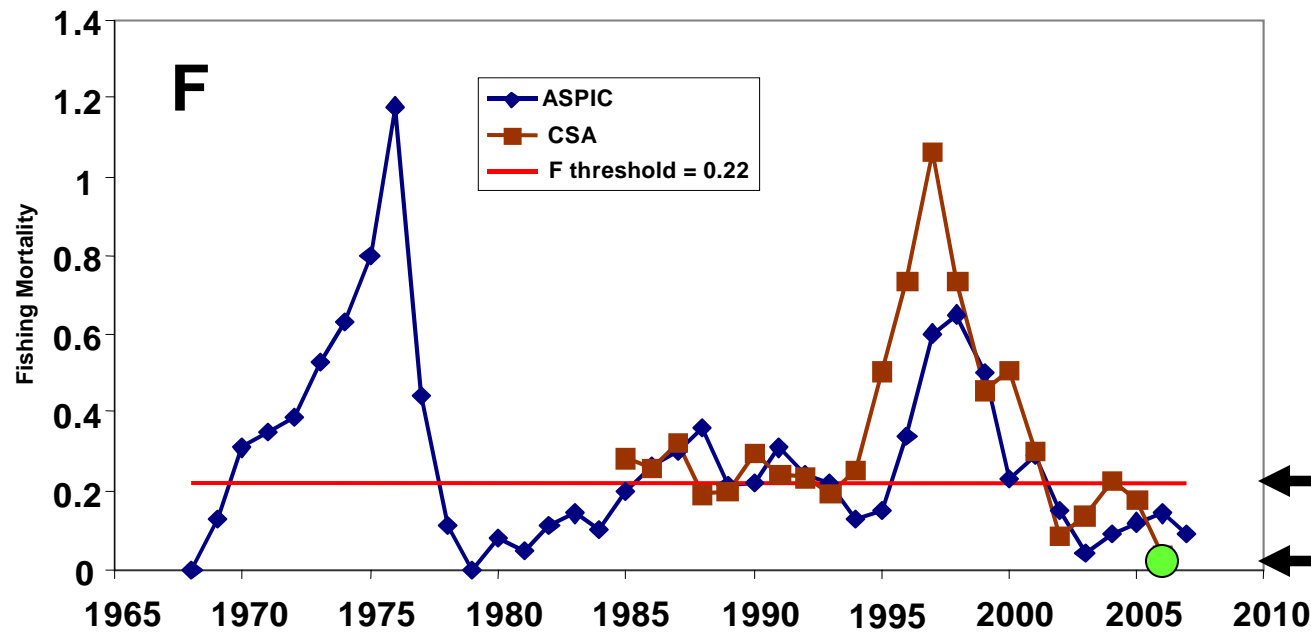


N. shrimp – Recruitment:



Annual recruit biomass (those shrimp that will recruit to the fishery in the coming fishing year) for Gulf of Maine northern shrimp from CSA analyses.

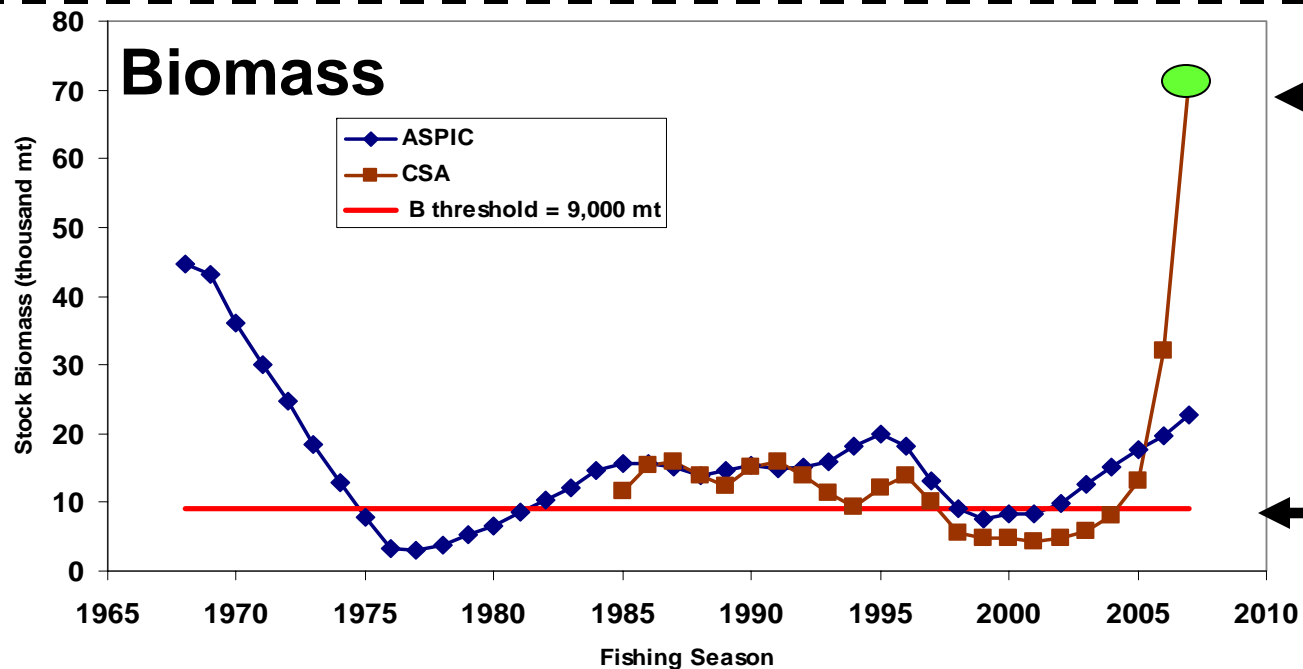
N. Shrimp: Biomass, Fishing Mortality and Stock Status



Status:

F threshold

Not Overfishing
(0.03/yr)

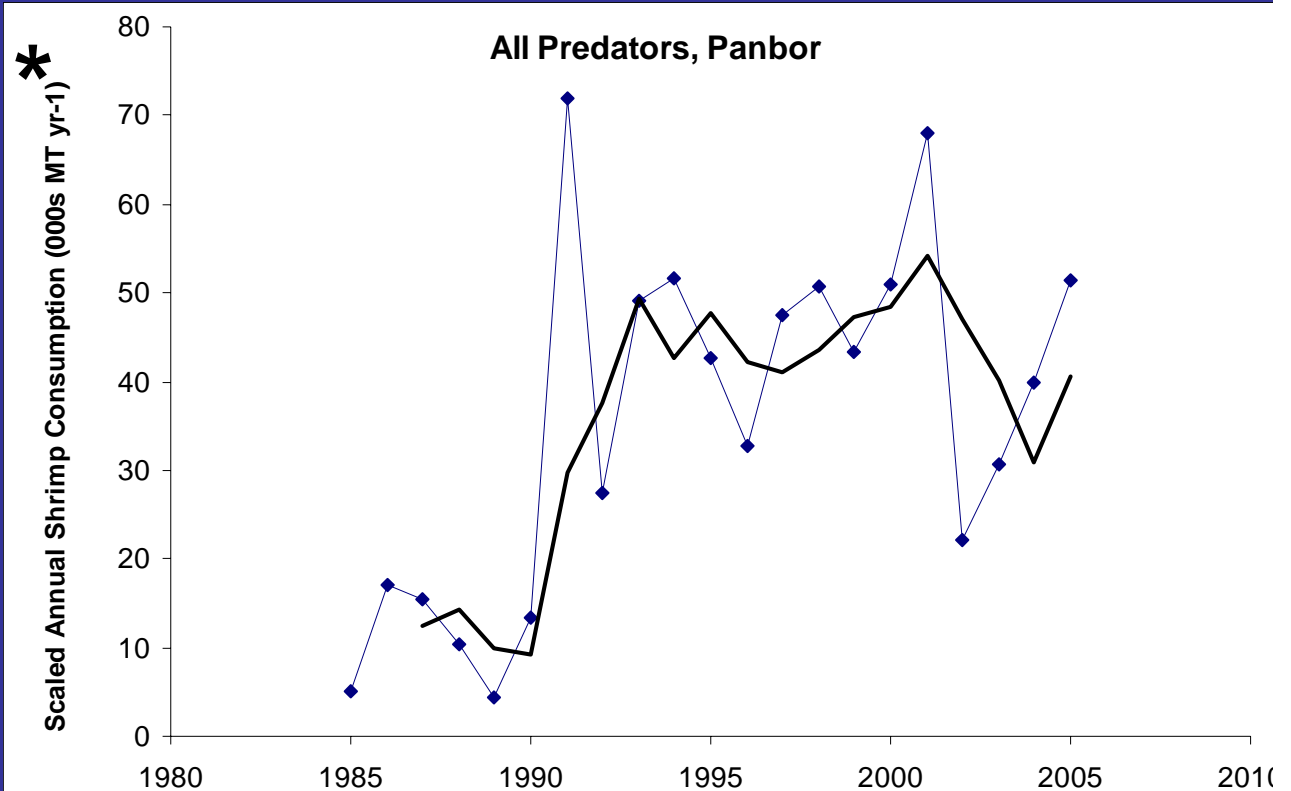


Not Overfished
(71.5 kmt)

B threshold

Predators on pandalid shrimp :

- Thorny skate
- Silver hake
- Atl. Cod
- Pollock
- White hake
- Red hake
- Four-spot flounder
- Windowpane flounder
- Longhorn sculpin
- Sea raven



***These estimates have numerous sources of uncertainty.**

N. shrimp – Reviewer Comments :

- 1. All Terms of reference were completed successfully.**
- 2. Current abundance is high, but may be overestimated. Uncertainty exists.**
- 3. Assumed natural mortality rate ($m = 0.25/\text{yr}$) is very likely too low.
Will need to update population estimates and BRPs.**
- 4. Given low market demand and high stock size, there is minimal short term risk to the stock of using the current BRP estimates.**
- 5. N. Shrimp -- major source of prey to numerous fish. Consumption estimates need to be refined.**

N. shrimp – Reviewer Recommendations :

- 1. Re-estimate natural mortality rate (M).
Use it in next assessment and recompute BRPs.**
- 2. Continue use of consumption estimates to bound M.
Refine consumption estimates.**
- 3. Target and threshold F Ref. Points are equal to
each other. Better to have a buffer between them.**
- 4. Try using a model with a more detailed treatment
of shrimp population dynamics (e.g. CASA).**
- 5. Get better estimates: survey size-class selectivity,
commercial discards, and catch size composition.**

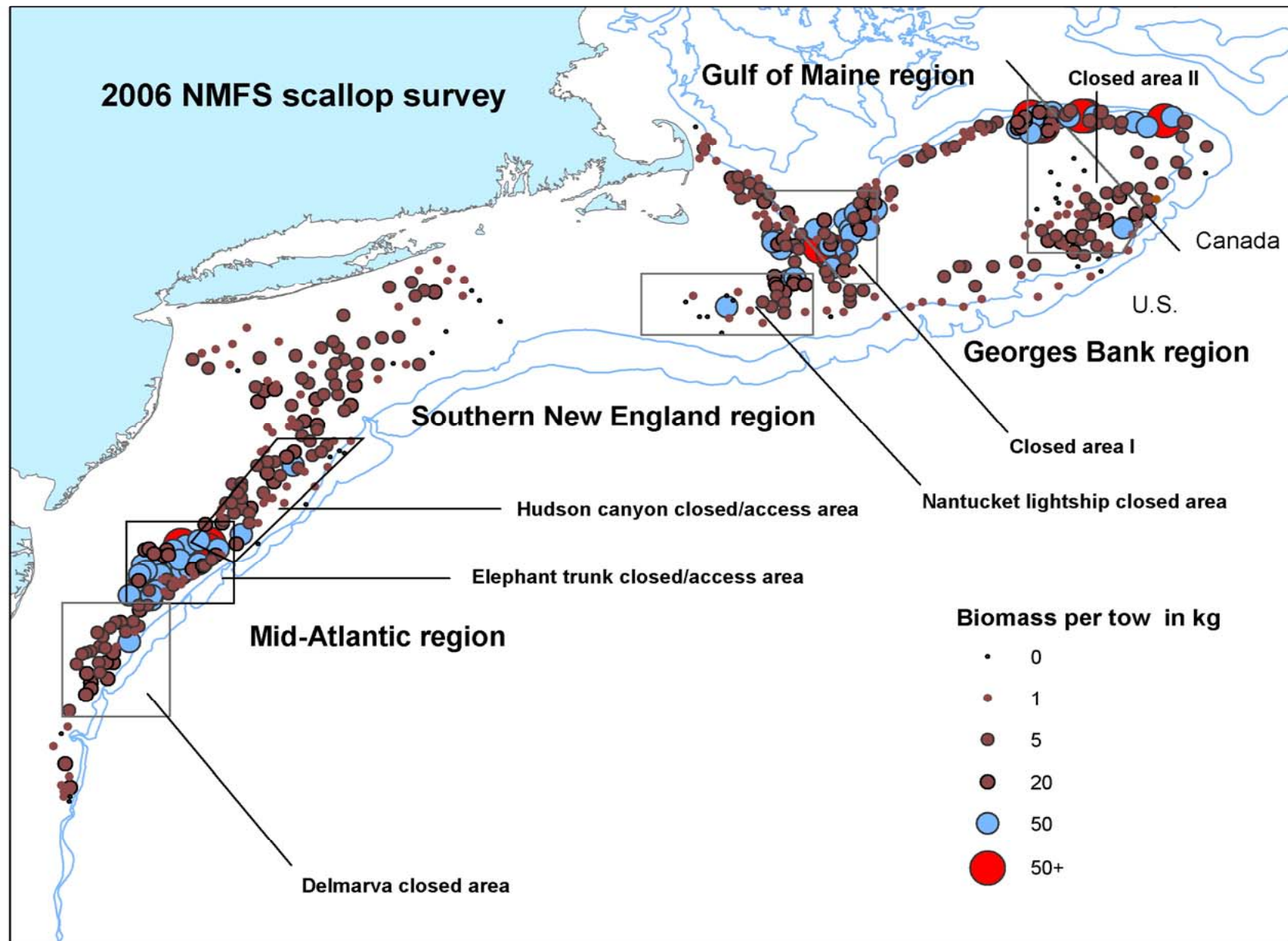
Sea scallops

Sea scallop :

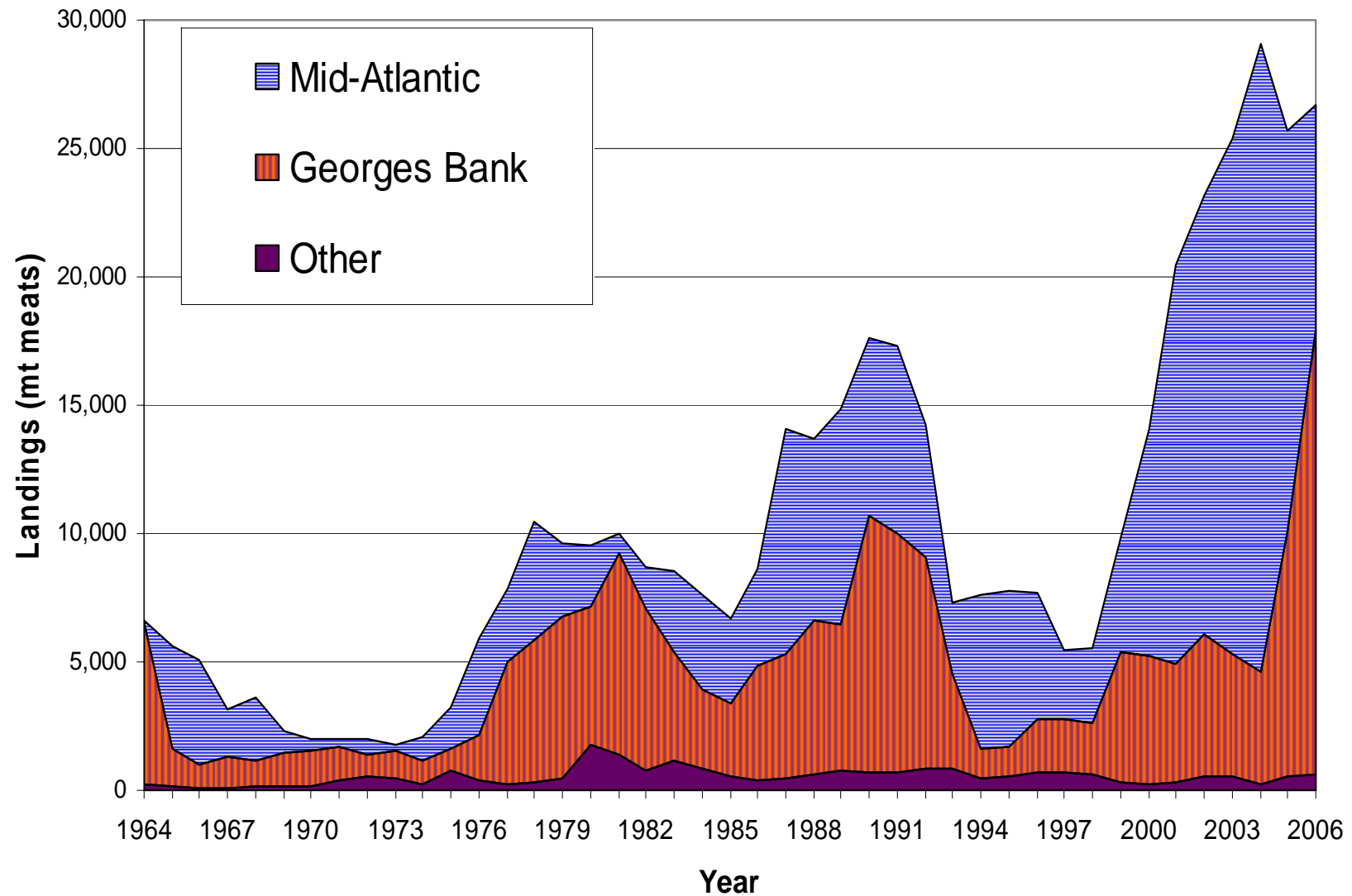
Terms of Reference

1. Characterize the commercial catch, effort and CPUE, including descriptions of landings and discards of that species.
2. Estimate fishing mortality, spawning stock biomass, and total stock biomass for the current year and characterize the uncertainty of those estimates. If possible, also include estimates for earlier years.
3. Either update or redefine biological reference points (BRPs; proxies for B_{MSY} and F_{MSY}), as appropriate. Comment on the scientific adequacy of existing and redefined BRPs.
4. Evaluate current stock status with respect to the existing BRPs, as well as with respect to updated or redefined BRPs (from TOR 3).
5. Recommend what modeling approaches and data should be used for conducting single and multi-year stock projections, and for computing TACs or TALs.
6. If possible,
 - a. provide numerical examples of short term projections (2-3 years) of biomass and fishing mortality rate, and characterize their uncertainty, under various TAC/F strategies and
 - b. compare projected stock status to existing rebuilding or recovery schedules, as appropriate.
7. Review, evaluate and report on the status of the SARC/Working Group Research Recommendations offered in recent SARC reviewed assessments.

Sea scallops – 2006 NEFSC Scallop Survey:



Sea scallop – Commercial Landings:



Sea scallop Biomass Reference Points (B_{target}) were Revised.

What is new in the calculation?

1. Current Value

Derived from older life history and selectivity information, and an estimate of recruitment based only on the NEFSC survey.

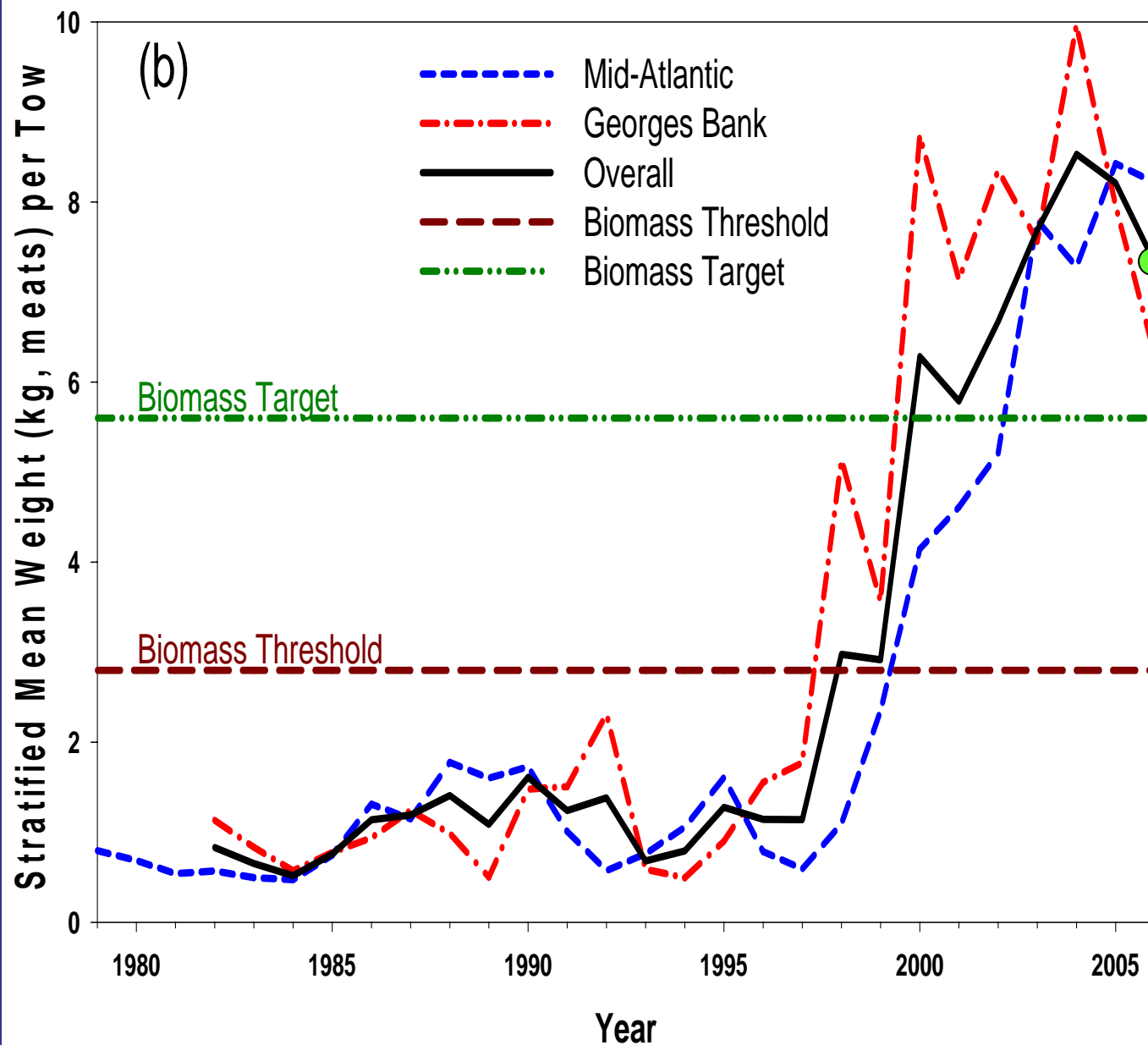
Units are (kg/survey tow).

2. Revised (Proposed NEW) Value from SARC45

Derived from new life history and selectivity information, and an estimate of recruitment for entire stock from “CASA” assessment model.

Units are (mt of meats for whole stock, ≥ 40 mm).

Sea scallop: Survey Weight per Tow Biomass Index



Status based on
Current Definition:

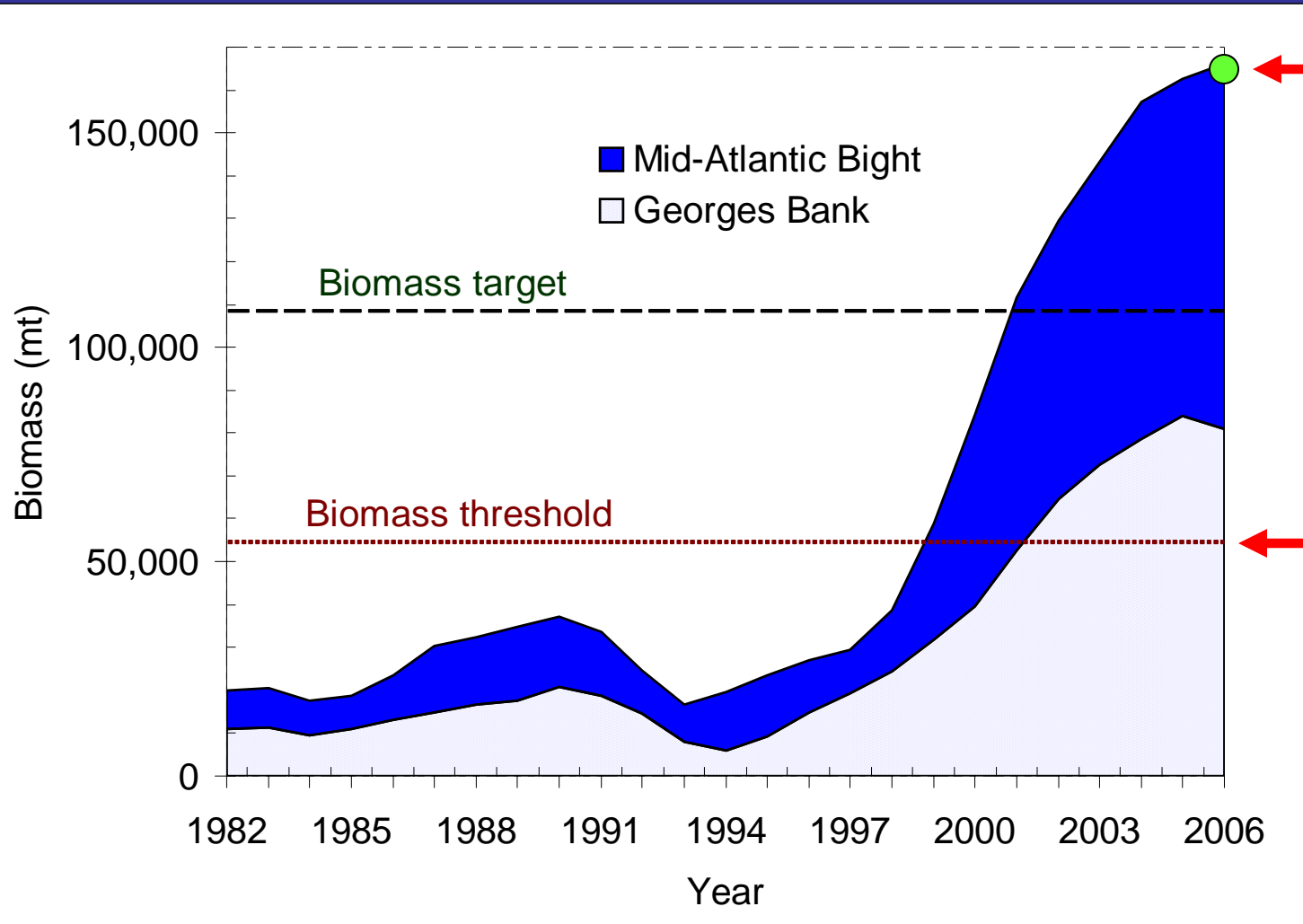
**Not
Overfished
(7.3
kg/tow)**

**B threshold
(2.8 kg/tow)**

Sea scallop: Stock Biomass (CASA model) and Status

Status based on:

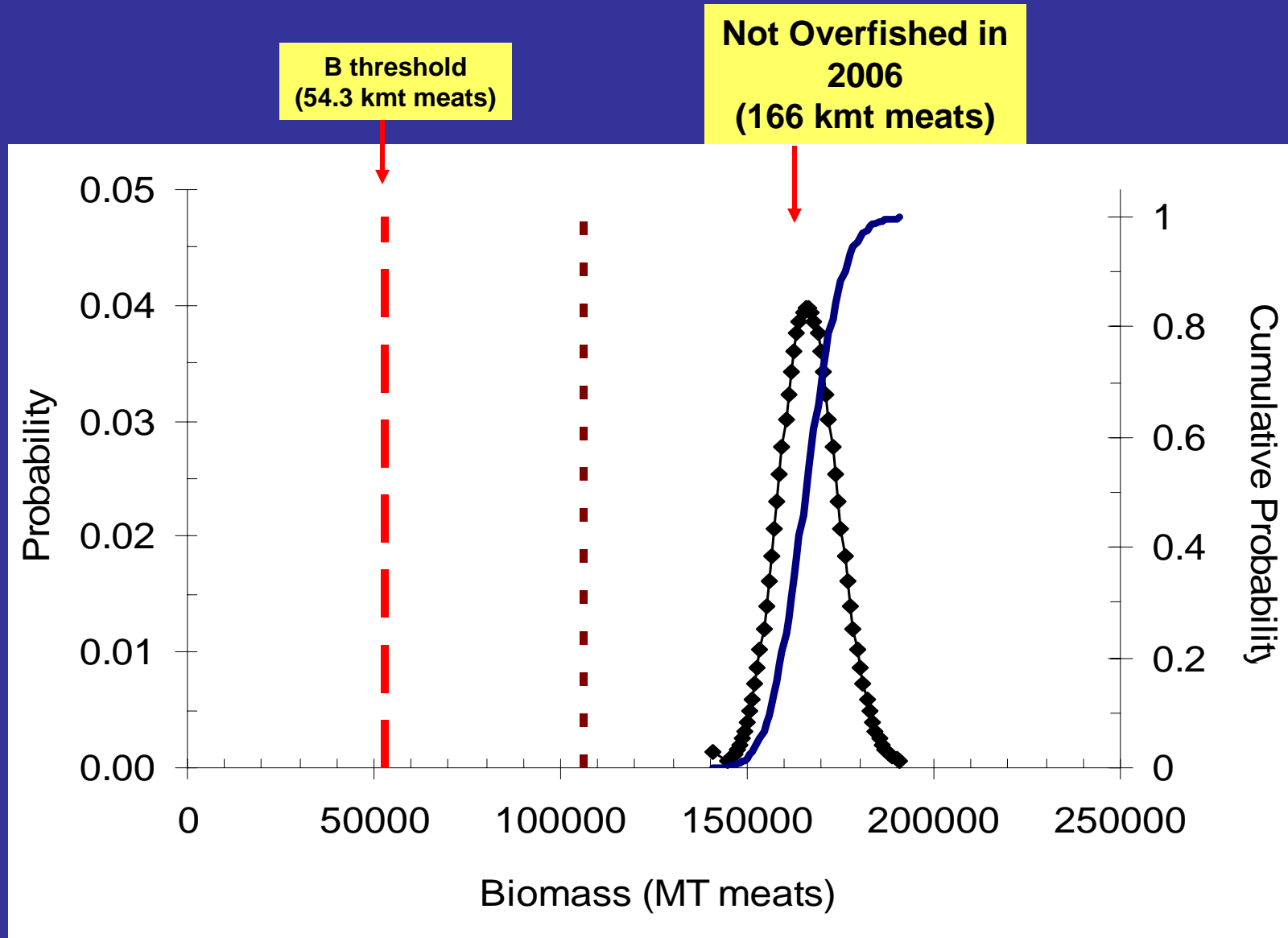
New (Proposed)
Definition:



**Not
Overfished
(166 kmt
meats)**

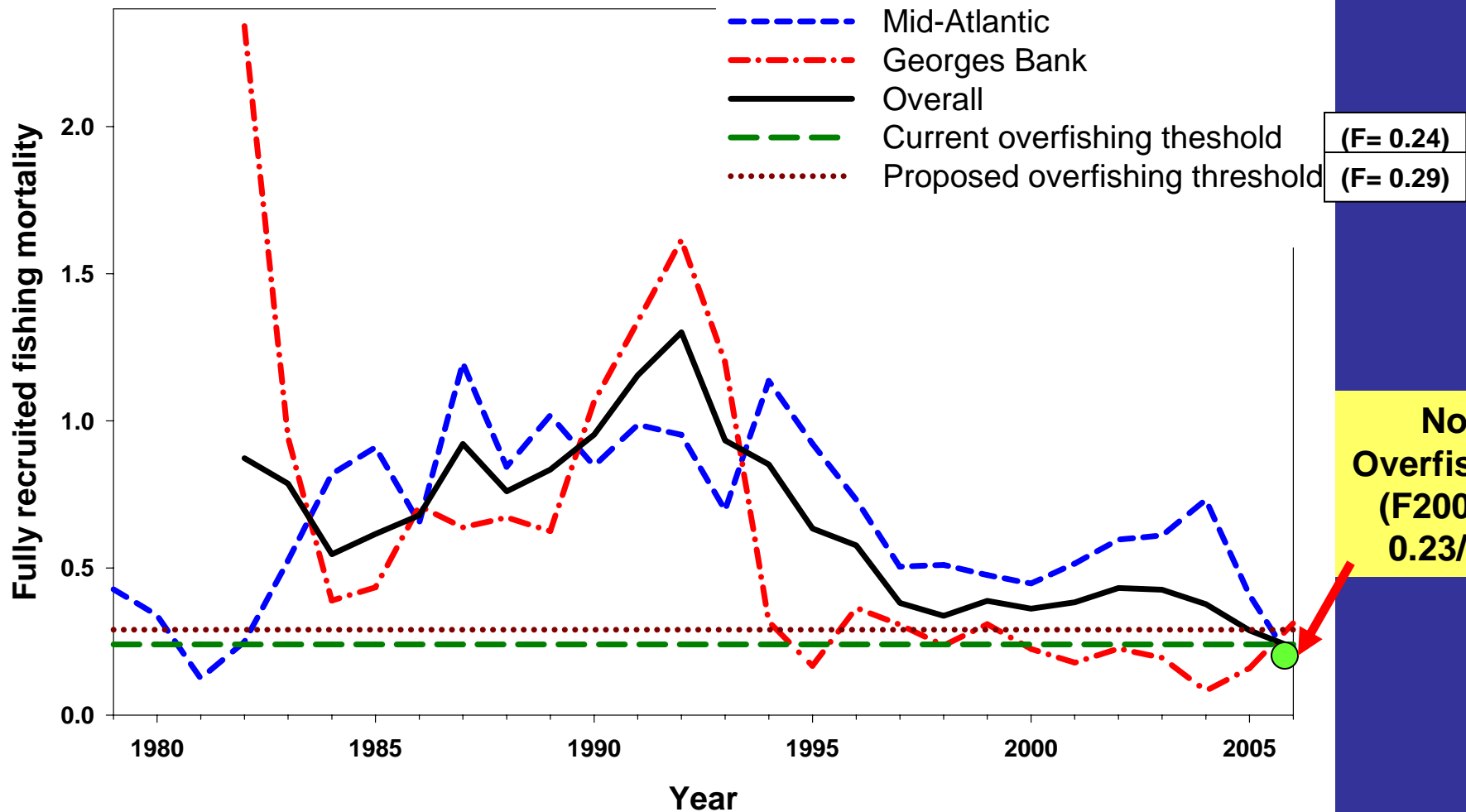
**B threshold
(54.3 kmt meats)**

Sea scallop: 2006 Stock Biomass (CASA model) and Status based on **NEW** (Proposed) Definition

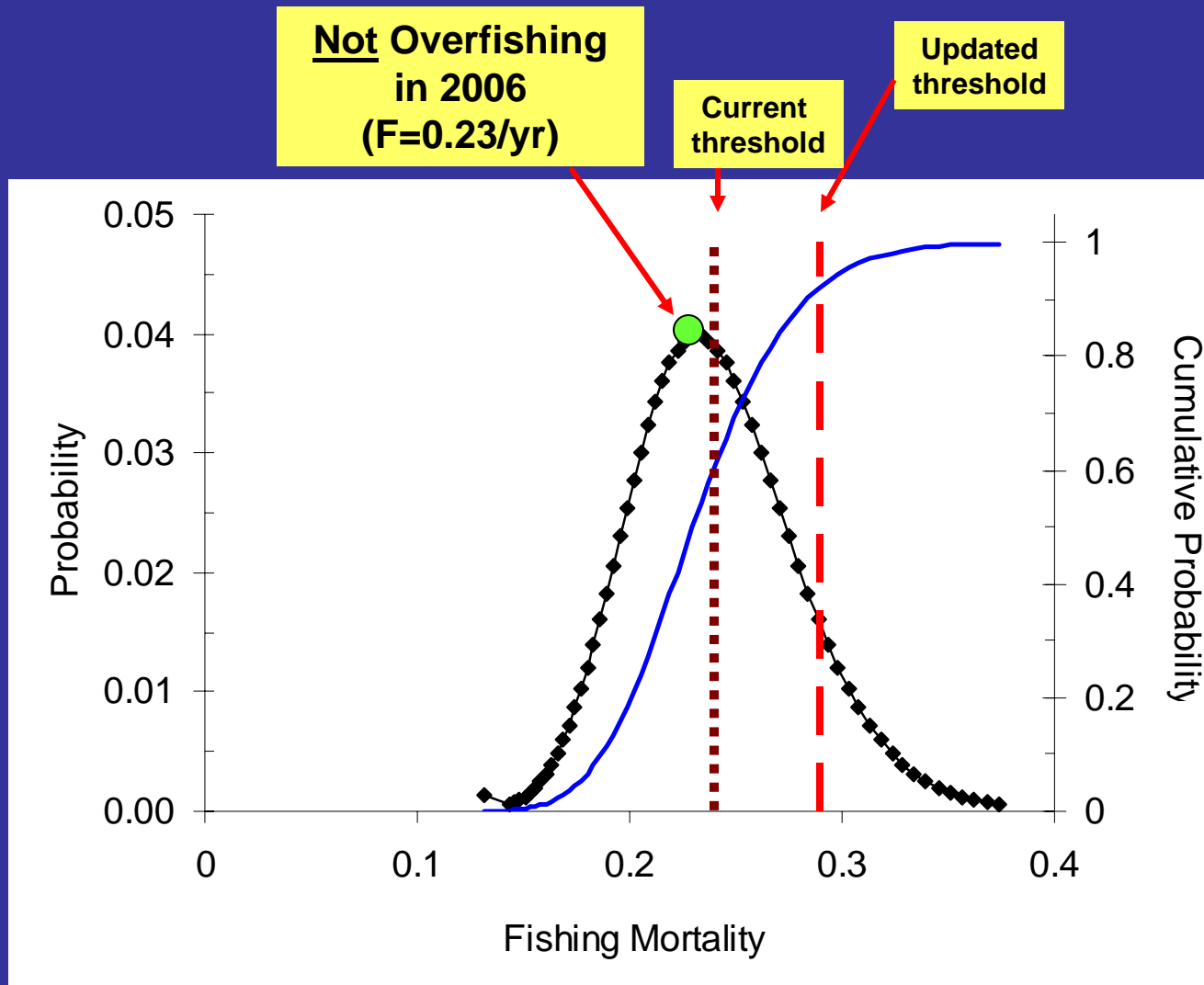


Sea scallop: Fishing Mortality (CASA model) and Status

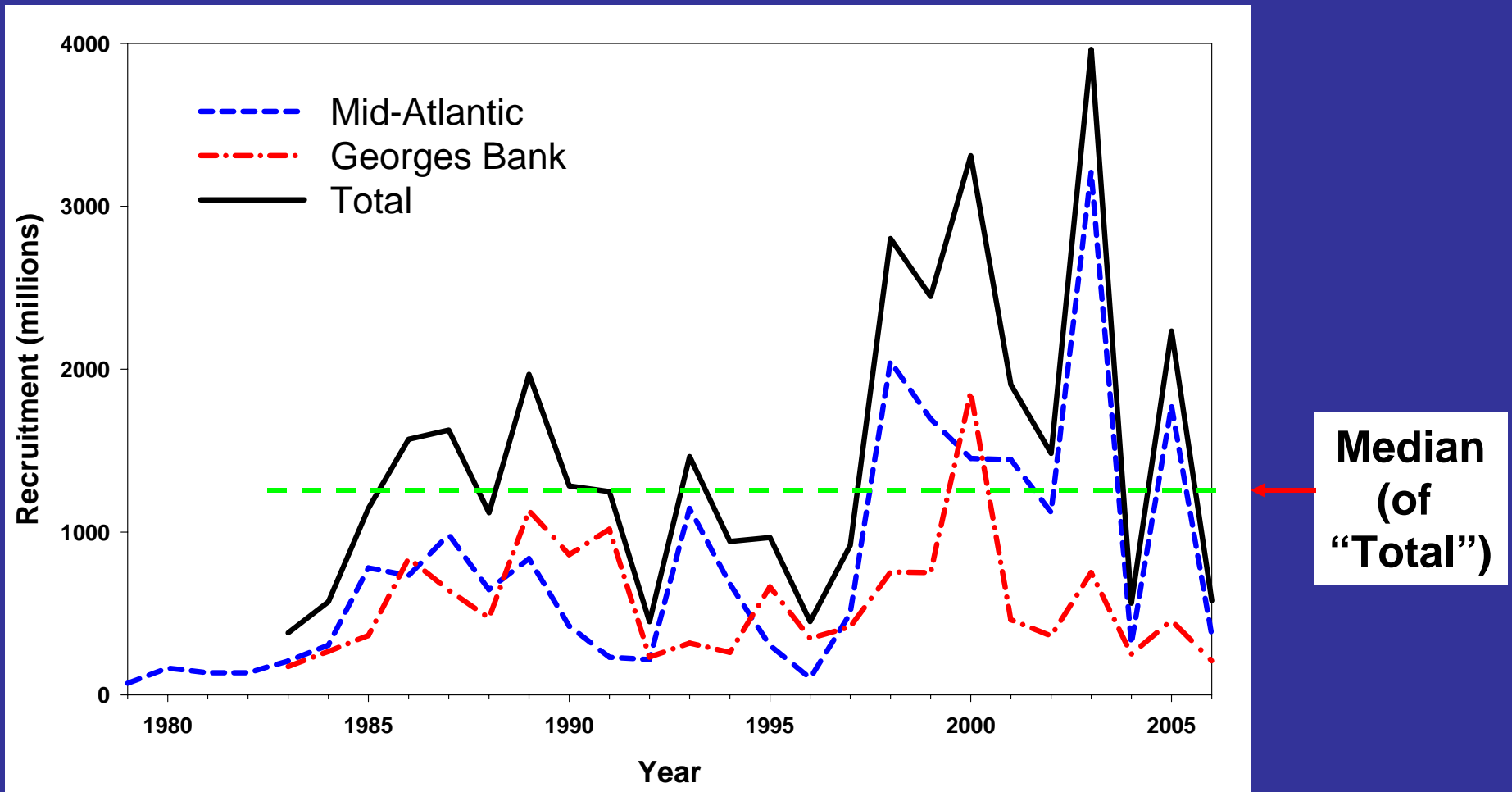
Based on Current
and Updated (Proposed)
Definition:



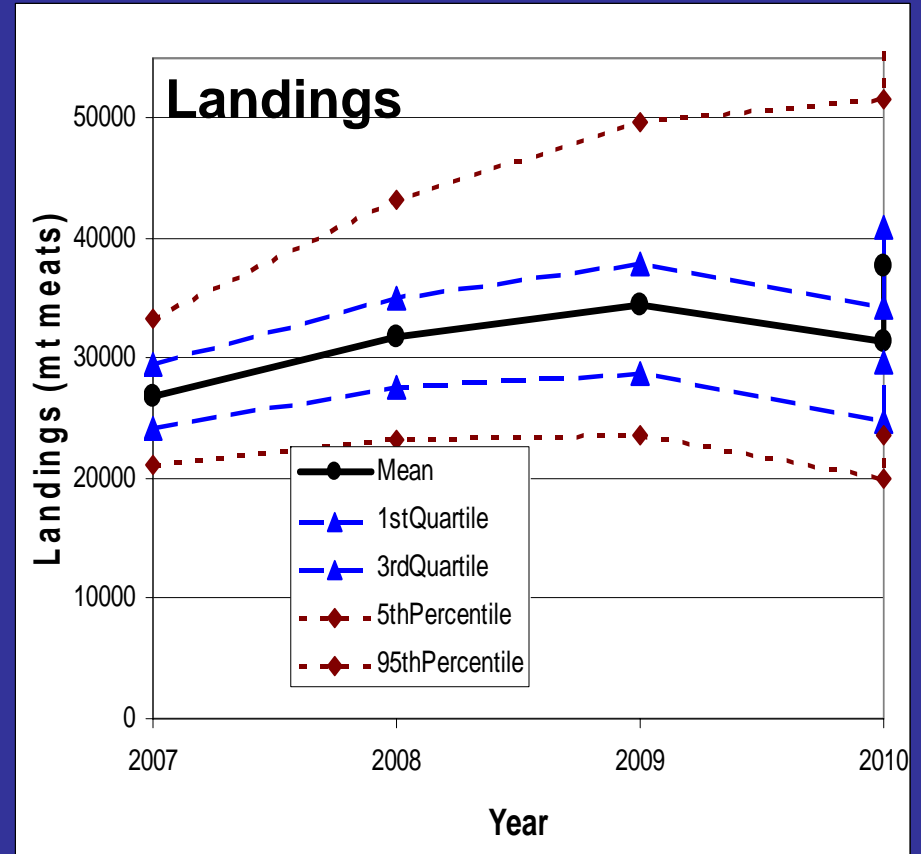
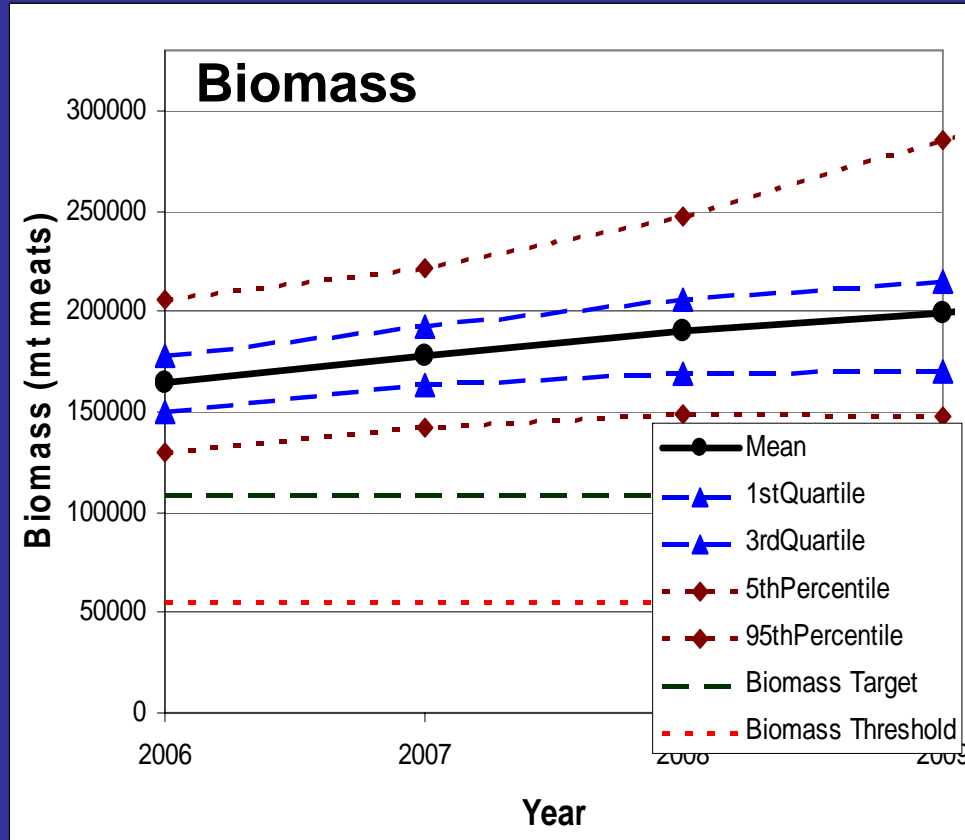
Sea scallop: 2006 Fishing Mortality (CASA model) and Status based on **Current** and **Updated** Definition



Sea scallop – Annual Recruitment:



Sea scallop – Example Projections:



Example short-term forecasts of sea scallop biomass and landings, assuming that whole-stock fishing mortality in 2007-9 is 0.24.

Sea scallop – Reviewer Comments :

- 1. All Terms of reference were completed successfully.
Much has been accomplished since last assessment.**
- 2. Length-based assessment model (CASA) was appropriate
(Growth probability matrix). Improved precision, less bias.**
- 3. Supports modeling the 2 areas separately and then combining.
However, area-specific retrospective patterns exist, and need further work.
Retrospective pattern goes away, fortuitously, when areas combined.**
- 4. BRPs were appropriately recomputed to reflect new information
on growth and selectivity.**
- 5. Magnitude of the yield per recruit based F benchmark
seems reasonable compared to other mortality components.**

Sea scallop – Reviewer Recommendations :

- 1. Consider BRPs based on stock-recruitment relationships (a more dynamic approach), rather than yield-based BRPs. F_{max} may not be best F_{msy} proxy.**
- 2. Strengthen data collection on:
growth, discard mortality, spatial characteristics of the fishery.**
- 3. In future, maintain a comprehensive dredge survey of the stock to support future stock assessments.**
- 4. Support research on stock-recruitment relationship, including:
environmental/oceanographic influences.**