

The Science of Rebuilding Fisheries: State of Play and Current issues

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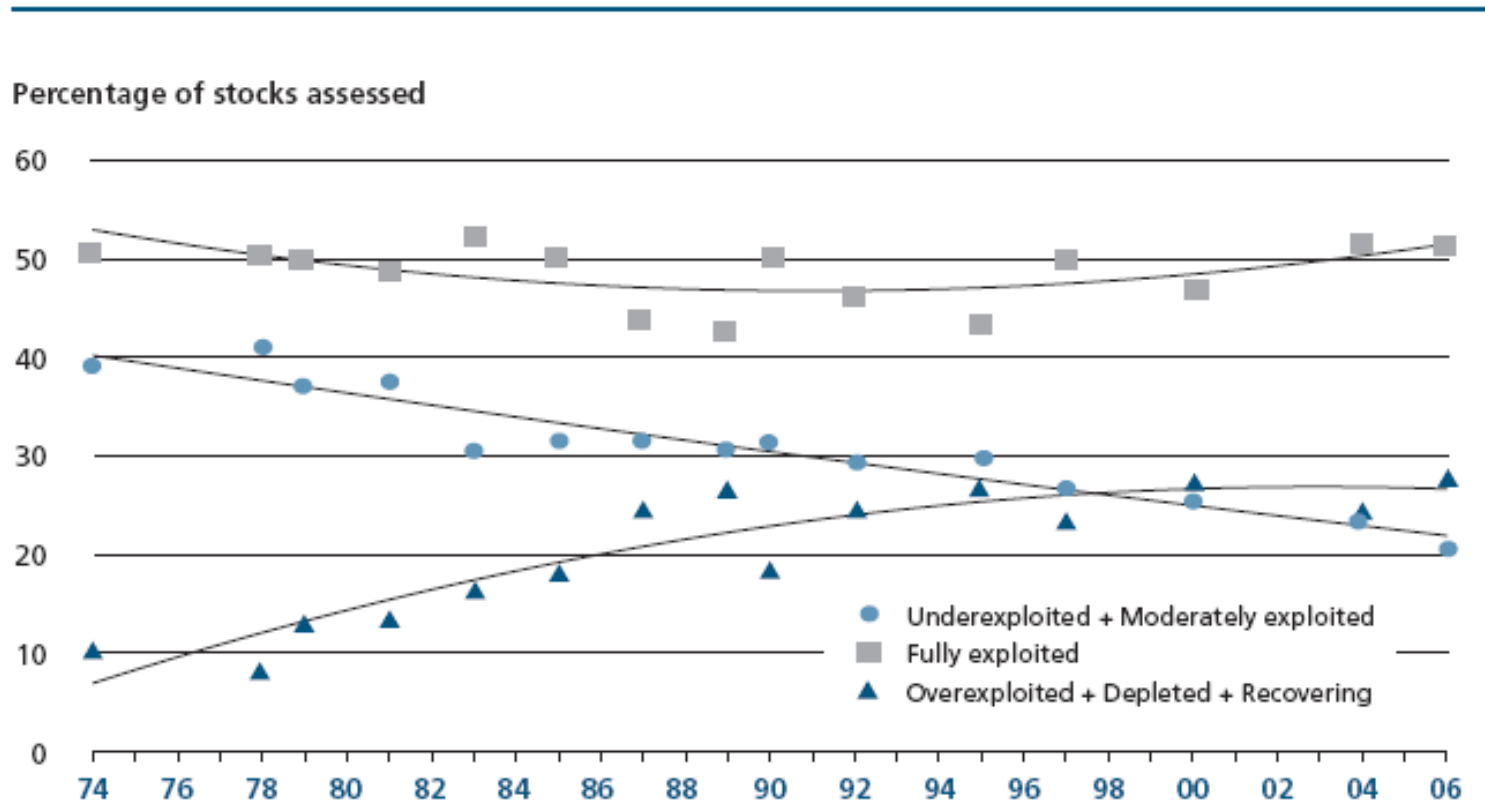
Outline

- Background & Requirements for Rebuilding Plans
- Progress in Stock Rebuilding
- Status of Rebuilding Plans
- Experiences in Formal Rebuilding Plans
(good, bad, ugly)

Stock Rebuilding: Why? SOFIA 2008, FAO

Figure 21

Global trends in the state of world marine stocks since 1974



A comprehensive Review

An overview of recent global experience with recovery plans for depleted marine resources and suggested guidelines for recovery planning J.F. Caddy & D.J. Agnew

Reviews in Fish Biology & Fisheries 2004

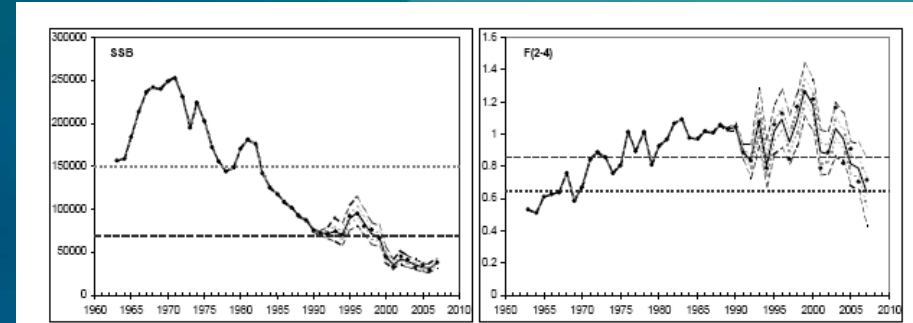
60 case studies

- Pelagics more successful than demersals
- Non-Discretionary Controls Important Condition
- Center of geographical range
- Decadal Time Spans

Basic Scientific Requirements of Rebuilding

- Sufficient science to warrant a stock rebuilding plan
- Stock Assessment capability to adequately measure progress
- Biological reference points in stock size & fishing mortality rate
- Ad hoc or decision theoretic basis for determining rebuilding targets
-

North Sea Cod

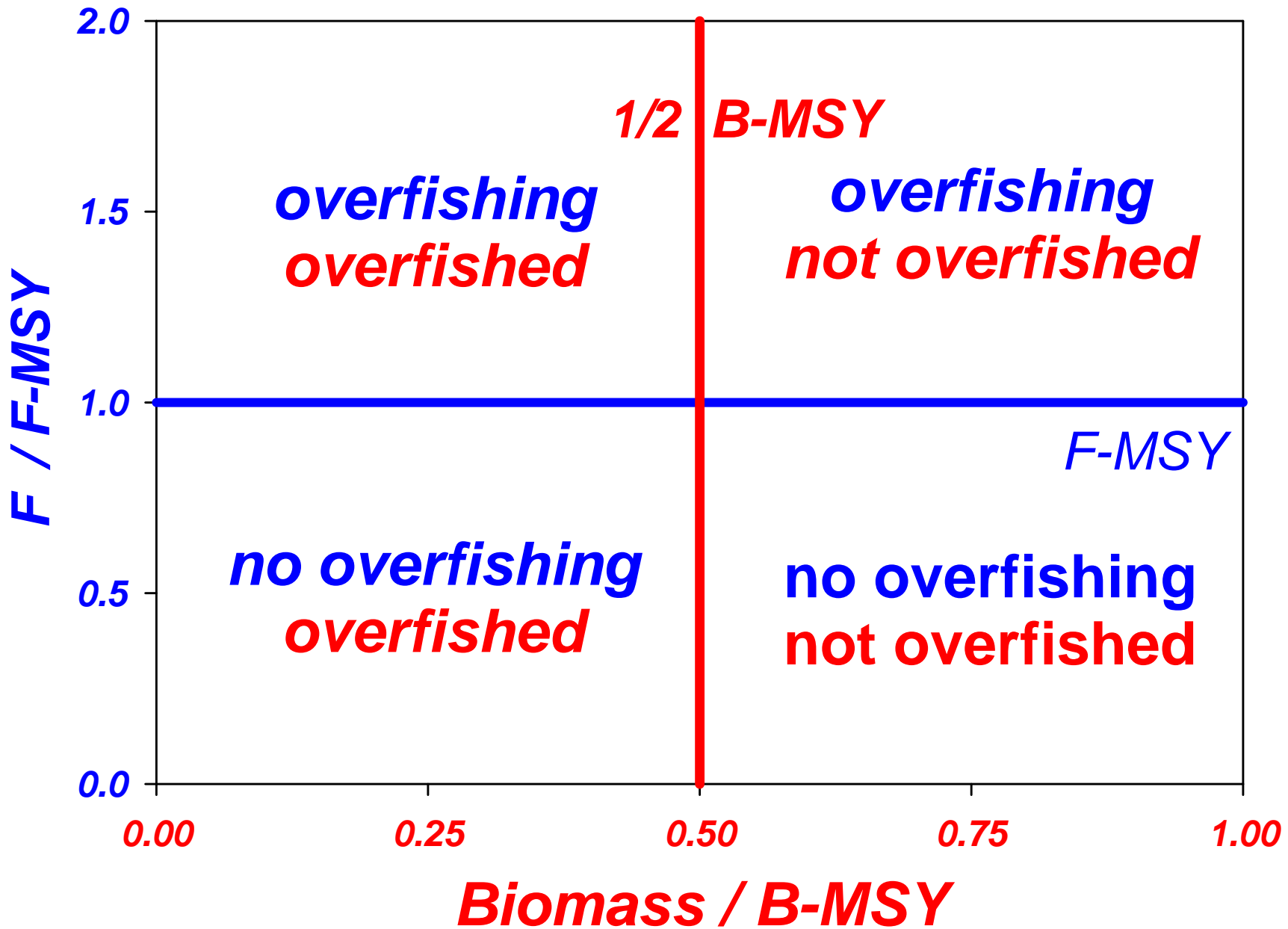


Article 6: Procedure for setting TACs.

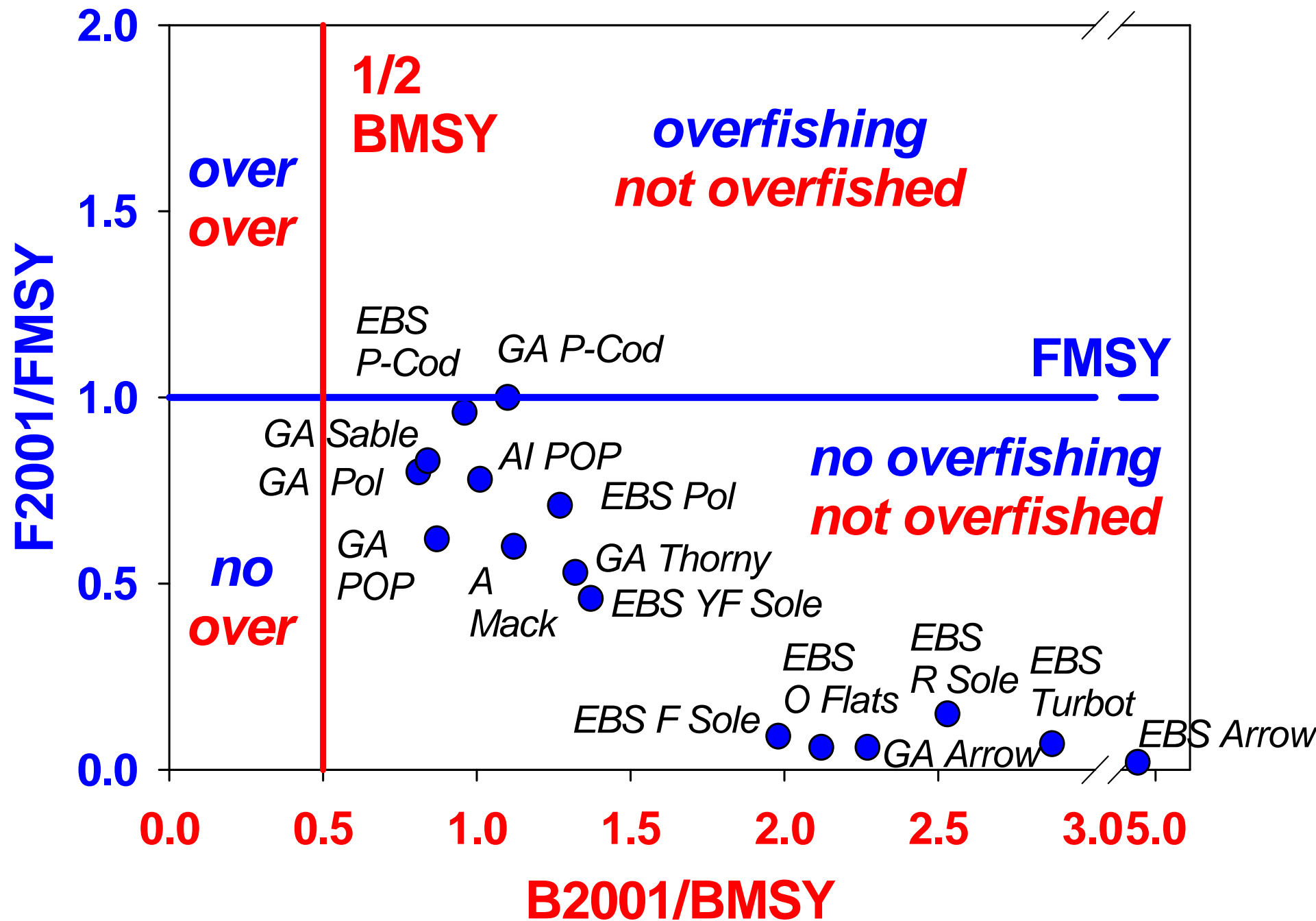
The TACs shall not exceed a level of catches which a scientific evaluation has indicated will result in an increase of 30 % in the quantities of mature fish in the sea at the end of the year not adopt a TAC whose capture is predicted to generate in its year of application a fishing mortality rate greater than 0.65

Except for the first year of application of this Article: (a) where the rules provided for in paragraphs 2 or 4 would lead to a TAC which exceeds the TAC of the preceding year by more than 15 %, the Council shall adopt a TAC which shall not be more than 15 % greater than the TAC of that year; or (b) where the rules provided for in paragraphs 2 or 4 would lead to a TAC which is more than 15% less than the TAC of the preceding year, the Council shall adopt a TAC which is not more than 15 % less than the TAC of that year.

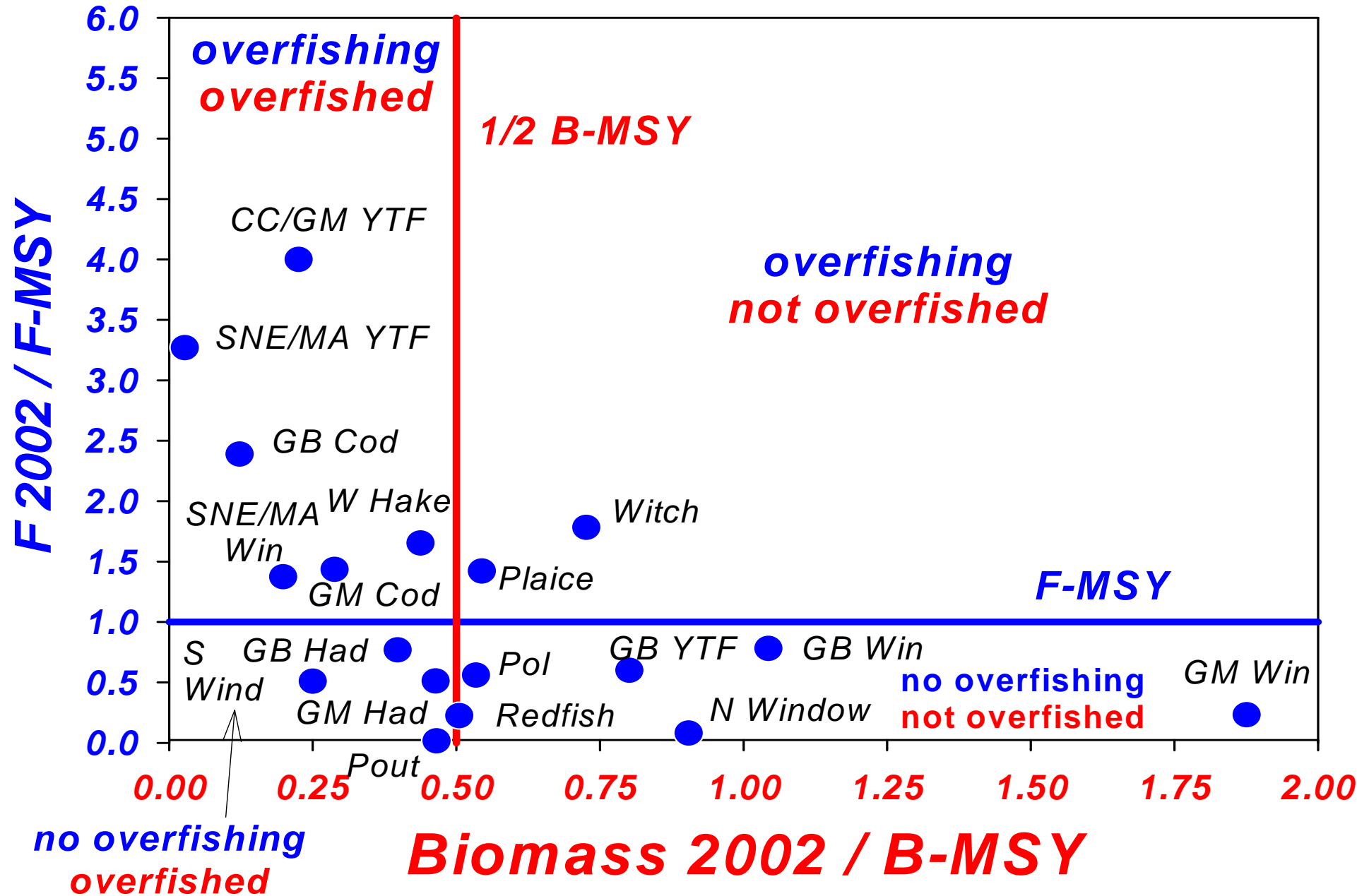
Current Year Stock Status - Status Determination



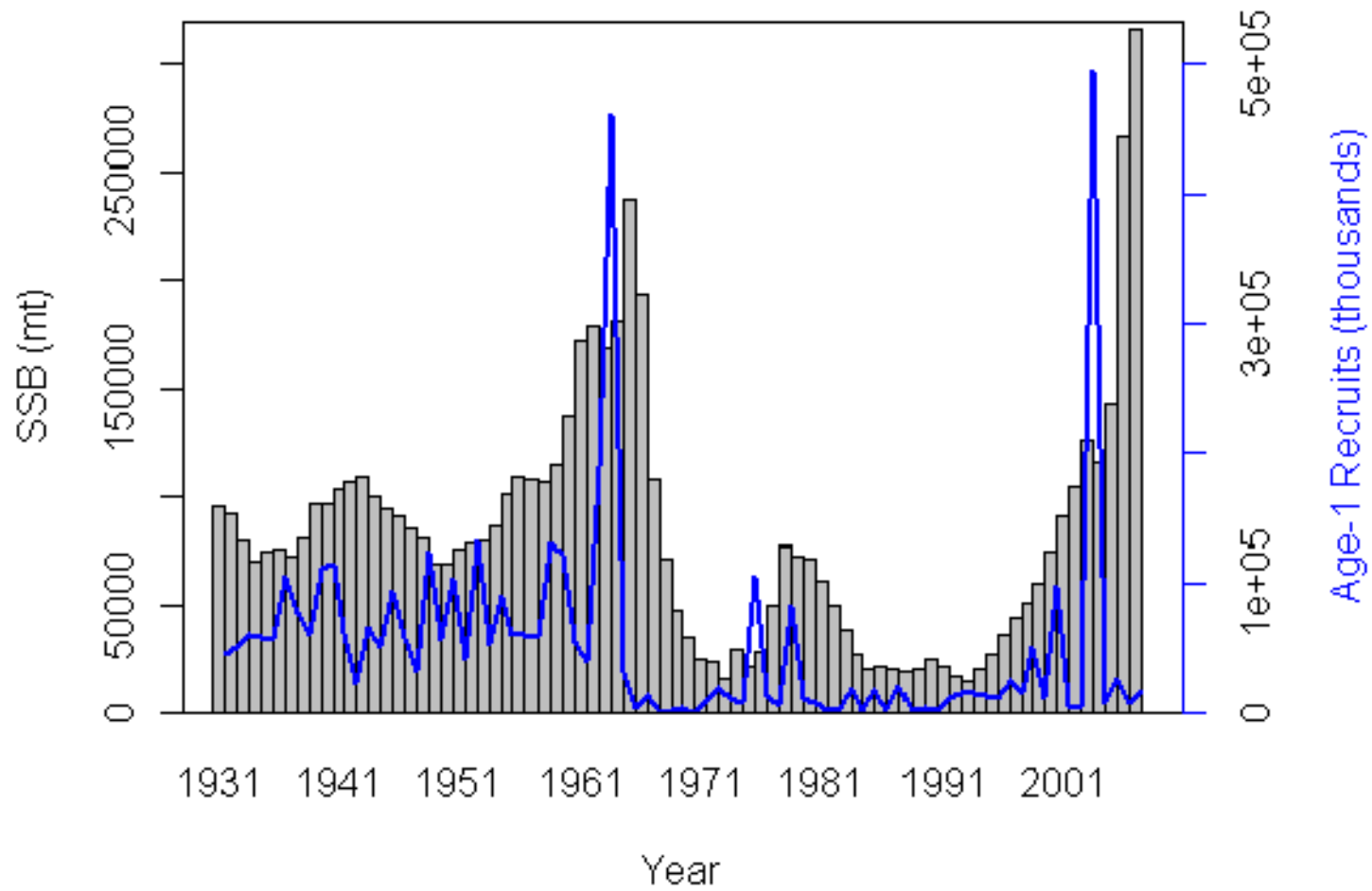
Alaskan Groundfish Stock Status 2002



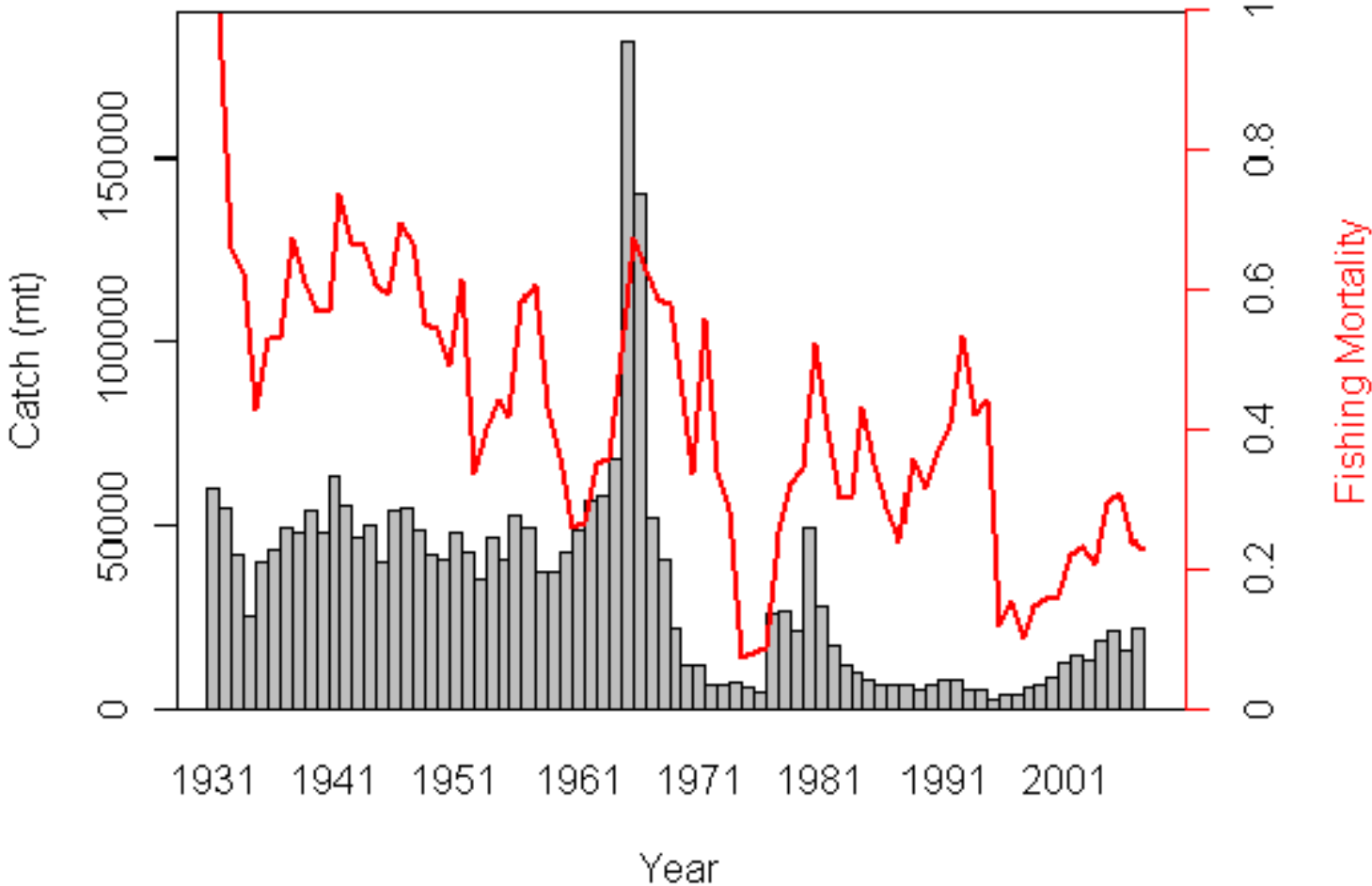
Groundfish Stock Status - 2002



Georges Bank Haddock

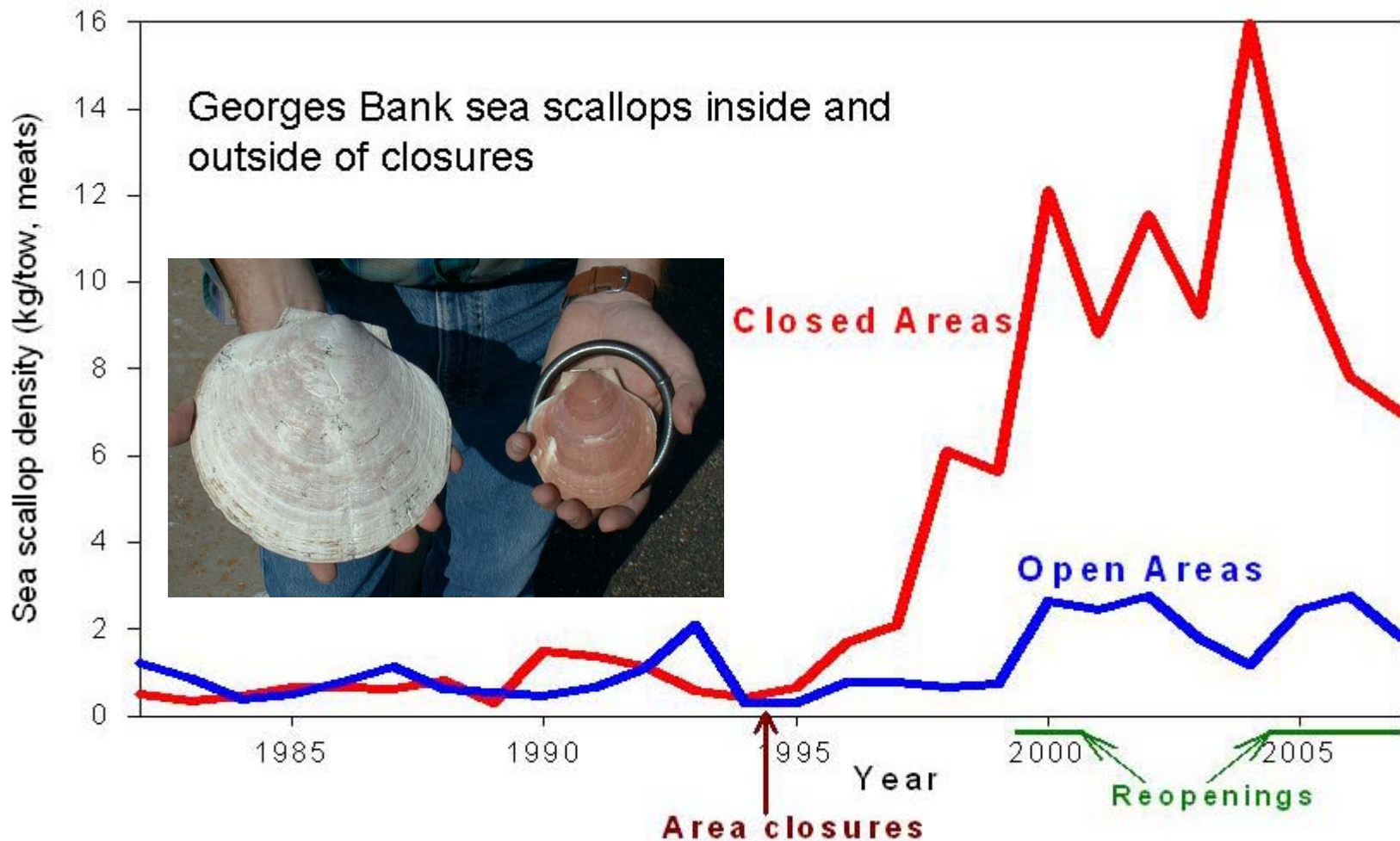


Georges Bank Haddock – Catch and F

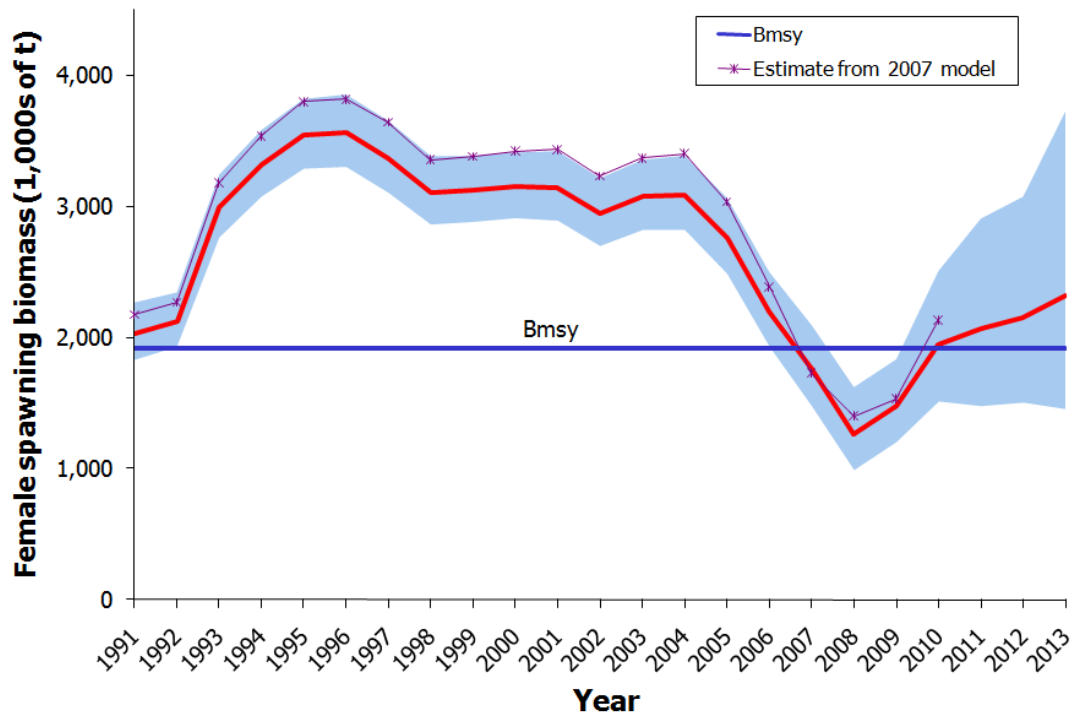
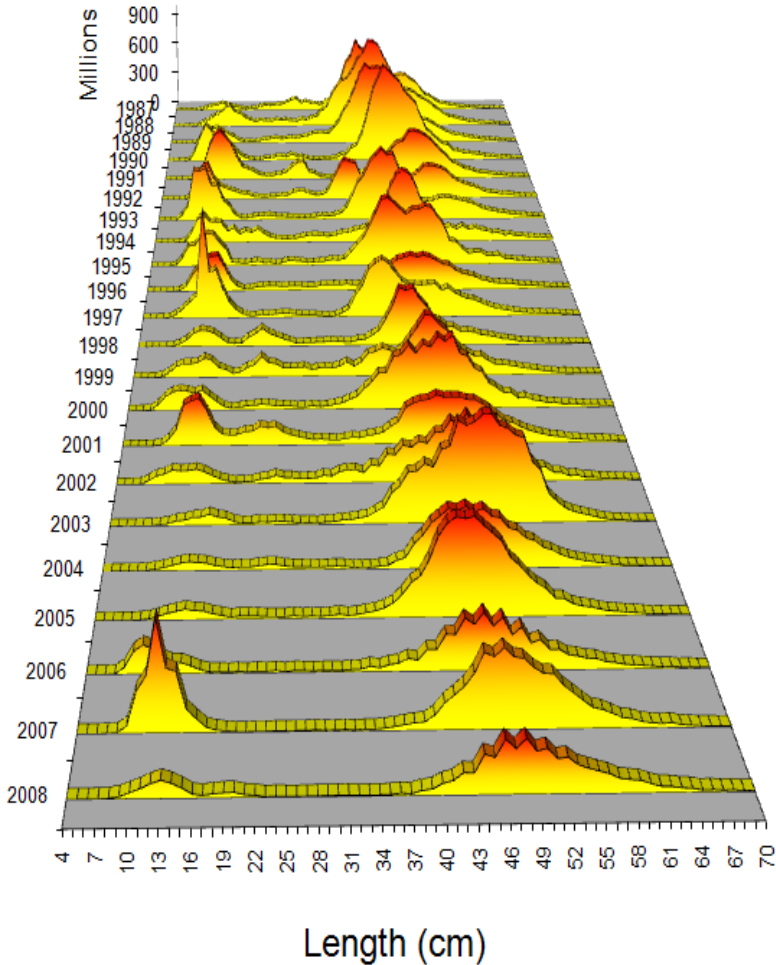
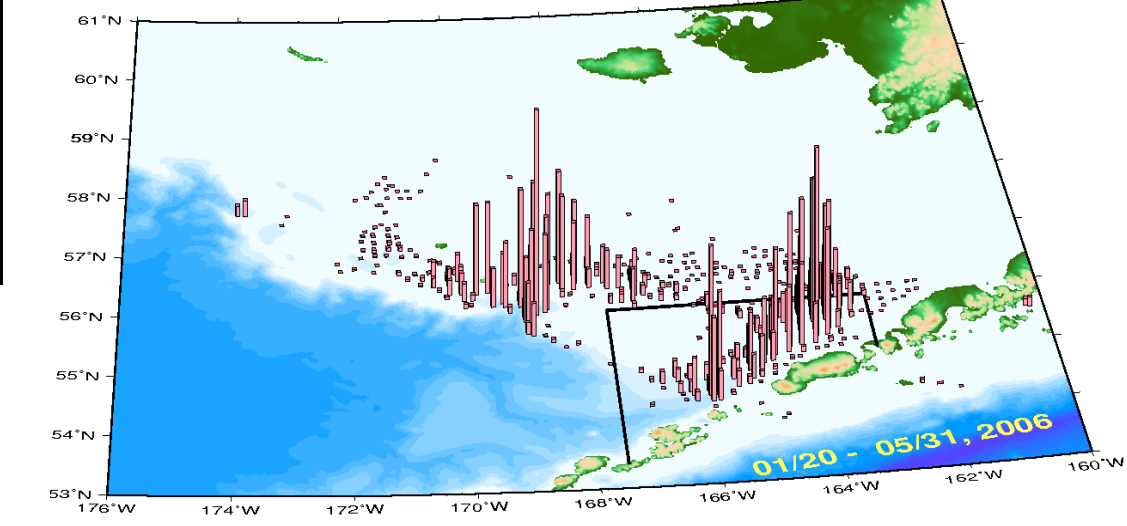


Sea Scallop Abundance from NMFS Dredge Surveys

Anticipate Supply will increase due to Exceptional Recruitment & Area Rotation Strategy



Bering Sea Pollock



Overfished Stocks (47) – as of CY 4th quarter 2008

New England:

1. Cod – Gulf of Maine
2. Cod – Georges Bank
3. Haddock – Gulf of Maine
4. Haddock – Georges Bank
5. American Plaice
6. Yellowtail flounder – Georges Bank
7. Yellowtail flounder – Southern New England/Middle Atlantic
8. Yellowtail flounder – Cape Cod/Gulf of Maine
9. White Hake
10. Windowpane Flounder – Southern New England/Middle Atlantic
11. Winter Flounder – Southern New England/Middle Atlantic
12. Ocean Pout
13. Atlantic Halibut
14. Winter skate
15. Thorny Skate
16. Smooth Skate
17. *Atlantic Salmon

North Pacific:

1. Blue King Crab – Pribilof Islands

Pacific:

1. *Chinook salmon - Northern California Coast: Klamath (fall)
2. Bocaccio
3. Darkblotched Rockfish
4. Cowcod
5. Yelloweye Rockfish

Western Pacific

1. Seamount Groundfish Complex – Hancock Seamount

Mid-Atlantic:

1. Scup
2. Butterfish (Atlantic)

South Atlantic:

1. Pink shrimp
2. Snowy grouper
3. Black Sea Bass
4. Red Porgy
5. Red Snapper

Gulf of Mexico:

1. Red Snapper
2. Greater Amberjack
3. Gray Triggerfish

Highly Migratory Species:

1. Blue Marlin – Atlantic
2. White Marlin – Atlantic
3. Sailfish – West Atlantic
4. Albacore – North Atlantic
5. Bluefin Tuna – West Atlantic
6. Sandbar Shark
7. Porbeagle Shark
8. Dusky Shark
9. Blacknose Shark

Caribbean:

1. Grouper Unit 1
2. Grouper Unit 2
3. Grouper Unit 4
4. Queen Conch



*Indicates non-FSSI stock

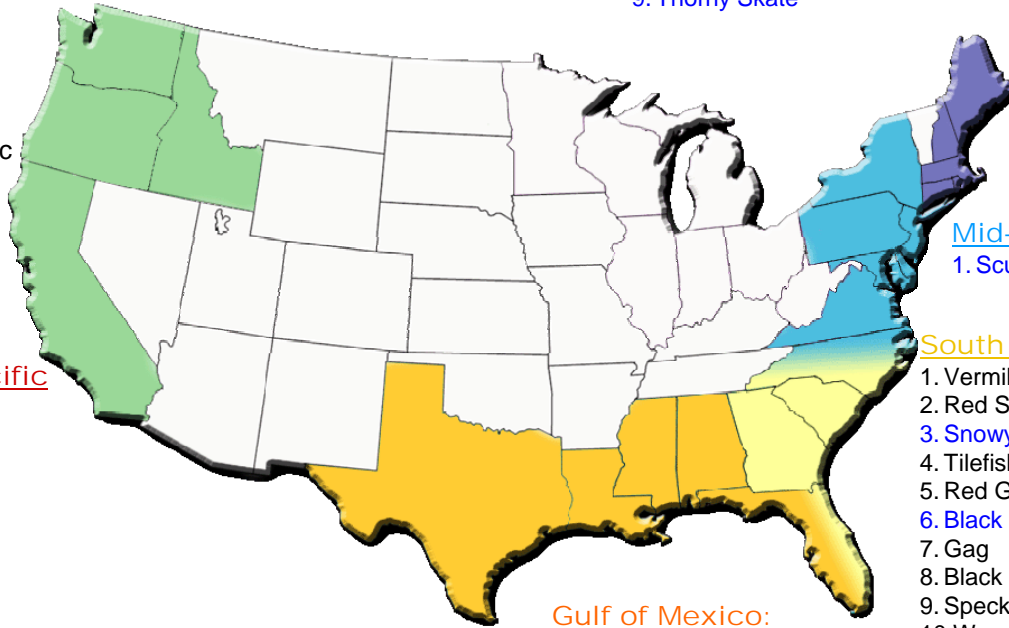
NOTE: This map does not include the results of GARM III. Northeast multispecies stock status is based on GARM II (assessed in 2005).

Stocks “Subject to Overfishing” (42) – as of CY 4th quarter 2008



New England:

1. Cod – Gulf of Maine
2. Cod – Georges Bank
3. Yellowtail flounder – Georges Bank
4. Yellowtail flounder – Southern New England/Middle Atlantic
5. Yellowtail flounder – Cape Cod/Gulf of Maine
6. White Hake
7. Winter Flounder – Georges Bank
8. Winter Flounder – Southern New England/Middle Atlantic
9. Thorny Skate



Pacific:

1. Yellowfin Tuna – Eastern Pacific
2. *Chinook salmon – Northern California Coast: Klamath (fall)

Pacific and Western Pacific

1. Bigeye Tuna – Pacific



Mid-Atlantic:

1. Scup

South Atlantic:

1. Vermilion Snapper
2. Red Snapper
3. Snowy Grouper
4. Tilefish
5. Red Grouper
6. Black Sea Bass
7. Gag
8. Black Grouper
9. Speckled Hind
10. Warsaw Grouper

Highly Migratory Species:

1. Blue Marlin – Atlantic
2. White Marlin – Atlantic
3. Sailfish – West Atlantic
4. Albacore – North Atlantic
5. Bluefin Tuna – West Atlantic
6. Sandbar Shark
7. Dusky Shark
8. Blacknose Shark
9. Shortfin Mako - Atlantic

Gulf of Mexico:

1. Red Snapper
2. Greater Amberjack
3. Gag
4. Gray Triggerfish
5. Pink Shrimp – Gulf of Mexico



Caribbean:

1. Snapper Unit 1
2. Grouper Unit 1
3. Grouper Unit 4
4. Queen Conch
5. *Parrotfishes



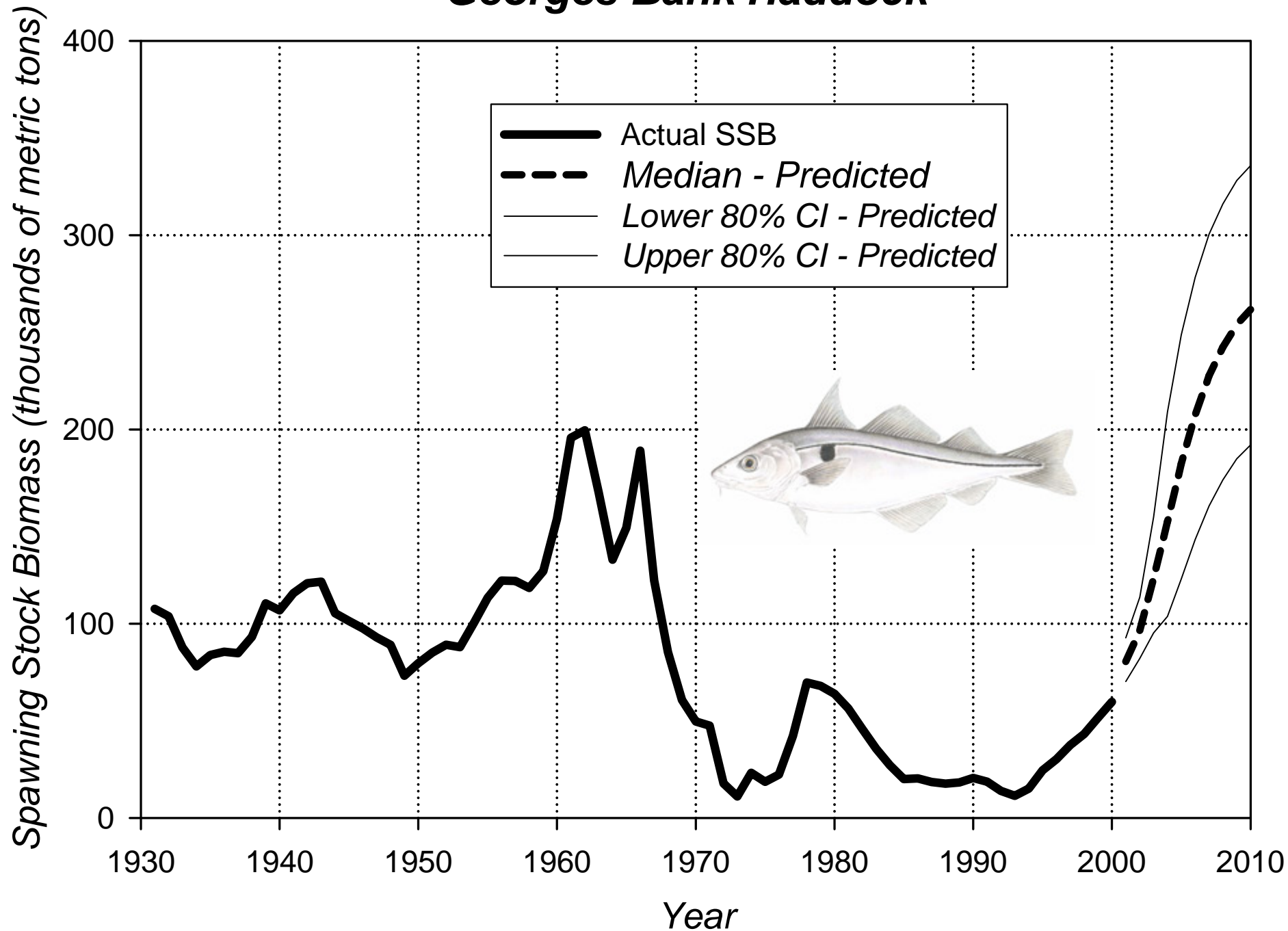
U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Sustainable Fisheries

* Indicates non-FSSI stock

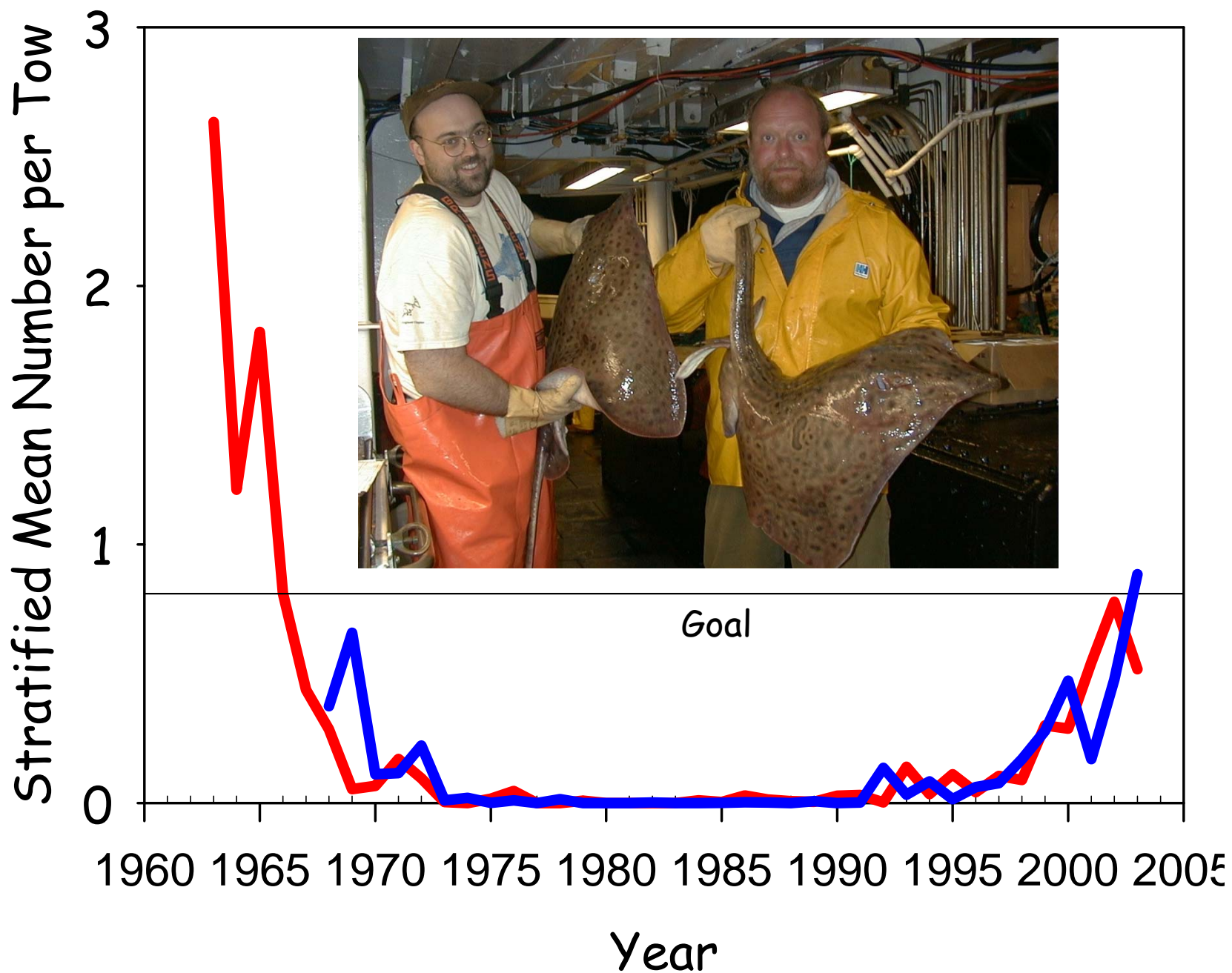
Blue = Also Overfished

NOTE: This map does not include the results of GARM III. Northeast multispecies stock status is based on GARM II (assessed in 2005).

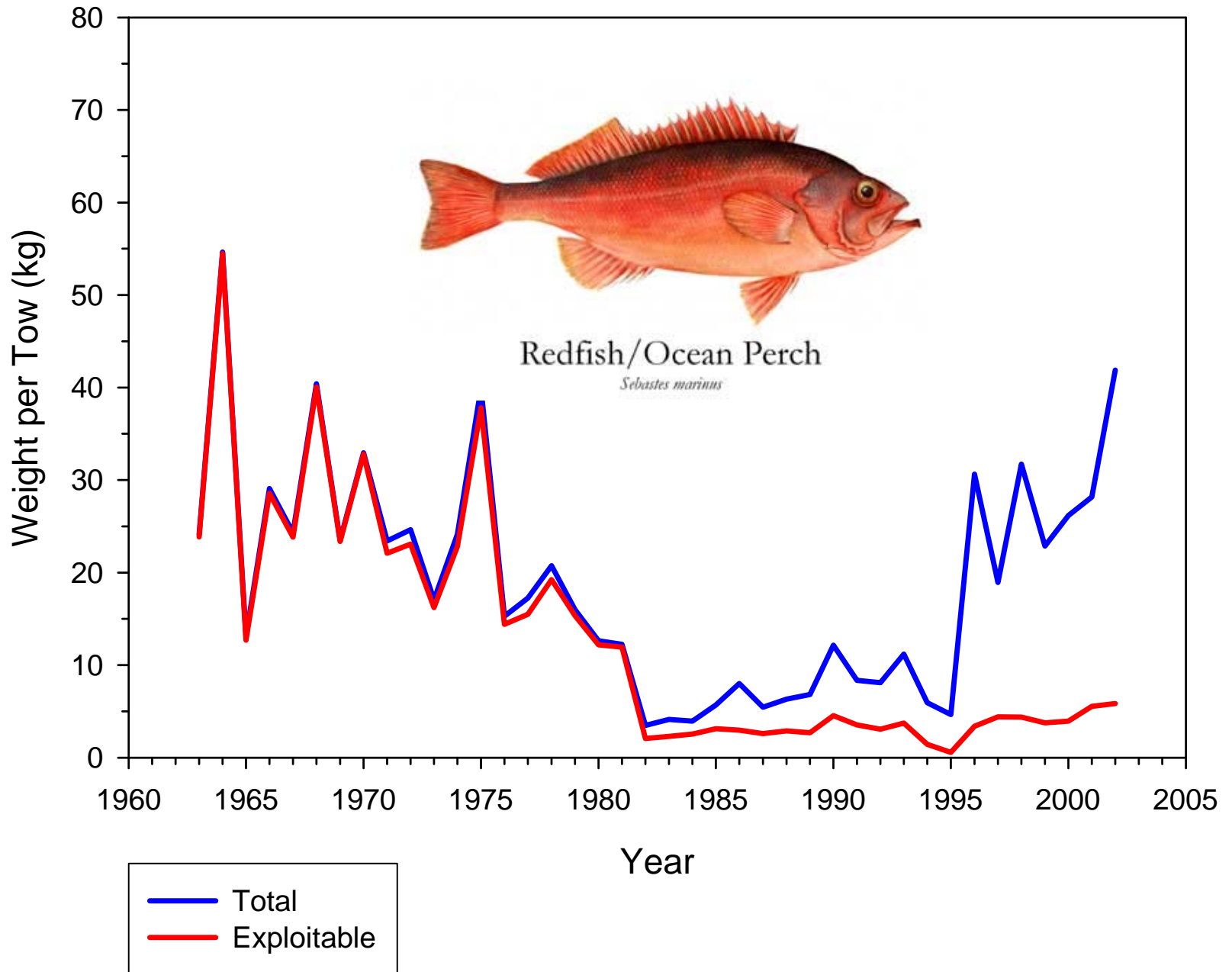
Georges Bank Haddock



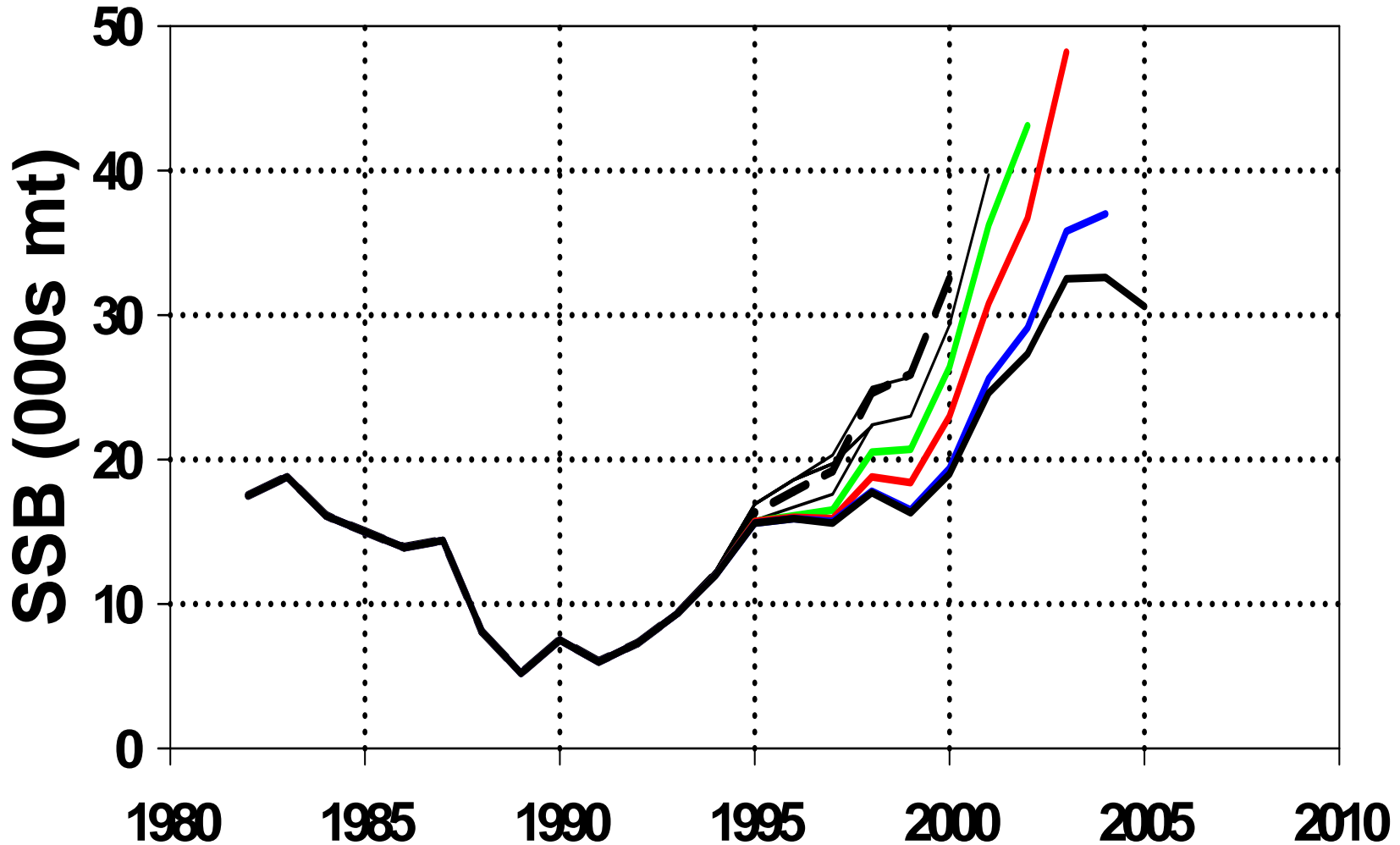
Barndoor Skate - back from the dead...



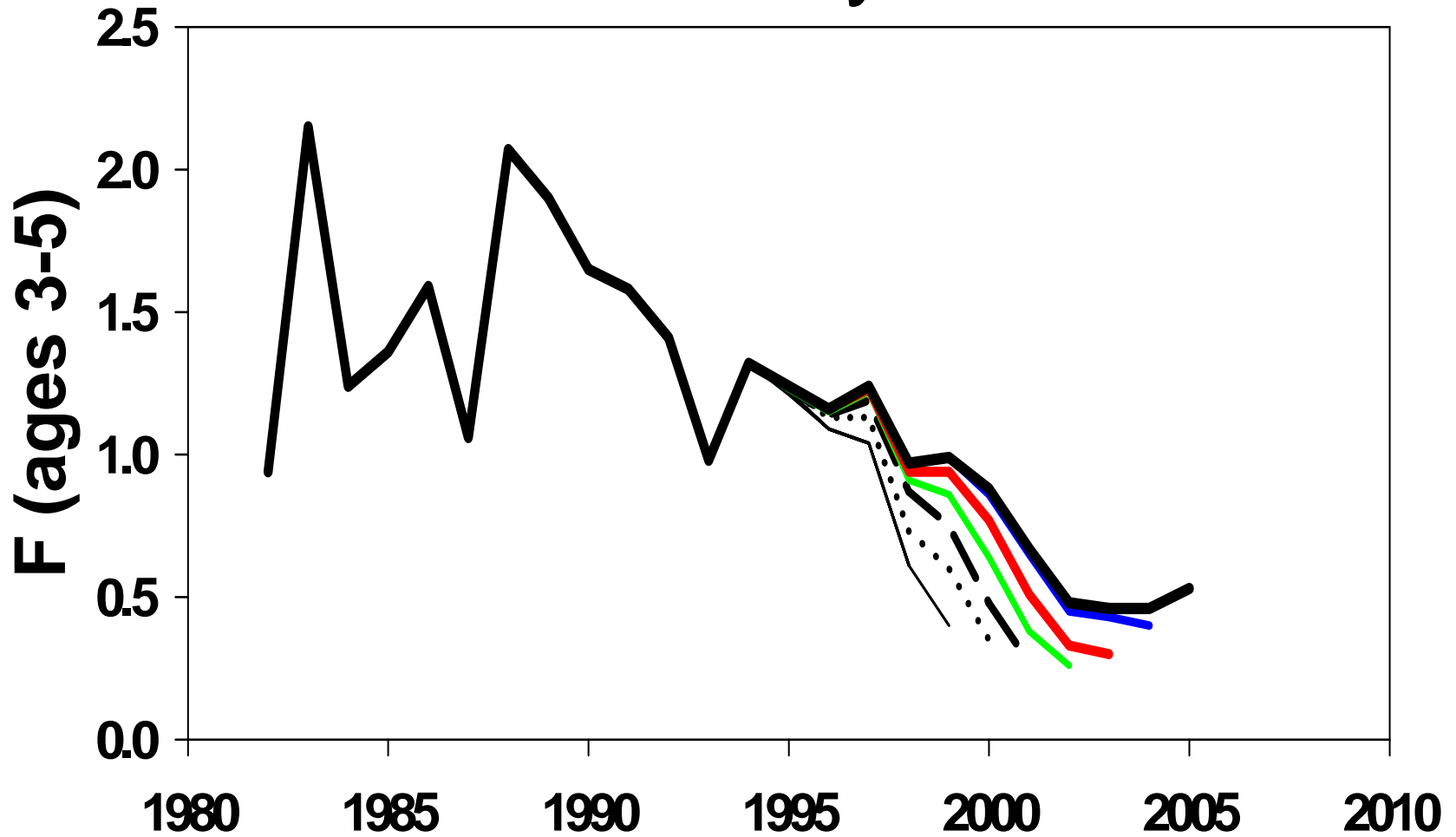
Survey Documents Recovery of Depleted Fishery Stocks



Retrospective Bias Summer Flounder SSB



Retrospective Bias – Fishing Mortality

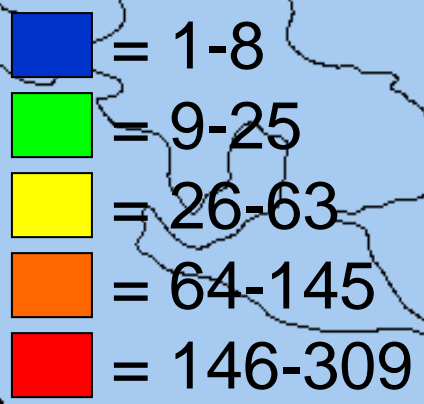


Some Considerations in Stock Rebuilding

- **Transparent and credible process**
- **Predefined Control Rules**
- **Complications of Control Measures (e.g., MPAs)**
- **Difficulty in ad hoc approaches**

2003
VMS

Vessel Hours



Microsoft
erPoint Presents

