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Groundfish Assessment Oversight Panel 2015

Review of Plans for Operational Assessments

Clark Conference Room

Woods Hole, MA

Population Dynamics Stock Assessment Lead Scientists

<http://www.nefsc.noaa.gov/groundfish/operational-assessments-2015/>

July 27, 2015

Goals for Today's Webinar and Onsite Meeting

Quickly Review the 2015 groundfish assessment process and timeline

Review PLANS for individual stock assessments

Allow the Assessment Oversight Panel, SSC, Council Staff, GARFO and Public the opportunity to ask questions about the assessment plan (Group)

Summarize key decisions and prepare report for NRCC and Website

You are here



Northeast
Regional
Coordinating
Council
meeting

Assessment
Oversight
Panel
meeting
July 27, 2015

Assessments
conducted
August-early
September

Peer Review
Meeting
September
14-18

Final
assessment
report
delivered to
the NEFMC
October
2015

<http://www.nefsc.noaa.gov/groundfish/operational-assessments-2015/>

Northeast Regional Coordinating Council—Guidance on topics that can be considered as part of the operational assessment.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543-1026

June 30, 2015

Dear NRCC Partners:

At our May 2015 meeting, we discussed the upcoming suite of Operational Assessments for 20 New England groundfish stocks. The NRCC recognized the value in this operational approach, in that it provides information useful to making fishery management decisions for a larger number of stocks and more rapidly and frequently. However, the NRCC also understood that trade-offs are inherent with this approach.

To provide more rapid assessments, these Operational Assessments are conducted using the existing, peer-reviewed assessment model for each stock, updated with new data collected since the last assessment. There is little to no scope for revising the underlying assessment model, as any such changes would require significant analytical work and would also require expanded peer review and discussion. This additional analytical work and peer review are typical of Benchmark Assessments, which are conducted for stocks that require incorporation of significant new information or a different analytical approach.

The NRCC supported completion of the upcoming 20 Operational Assessments and also recognized the importance of setting clear constraints on modifications to the existing models and data streams for each Operational Assessment. These constraints are essential to avoid the possibility for greatly increasing the complexity of each assessment, with resultant delays and reduction in our capacity to complete such a large number of assessments. Communication of these constraints is necessary to discourage external scientists or stakeholders from investing in developing new approaches or data streams that could not be accommodated within the Operational Assessment framework.

In the interest of setting and communicating these constraints, the NRCC reviewed a comprehensive list of types of modifications and agreed whether each type of modification could be accommodated within an Operational Assessment or if the modification could only be considered within a Benchmark Assessment. Since efficiency is essential to the success of the Operational Assessment concept, the majority of modifications could not be accommodated. However, in addition to incorporating new data from existing data streams to update current parameters in the existing assessment models, the NRCC felt that Operational Assessments could make minor adjustments to account for (a) updated information on growth and maturation of fish; (b) changes in values of reference points, but not the underlying basis for the reference



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What's New?

NRCC Guidance on Changes

Allowed

- Updated growth and maturity data
- Updated values of reference points
- Look for inconsistent results in estimates of stock size or related variables
- New data on recreational discard survival for some stocks

Not allowed

- New data streams
- Changes in measures of scale (catchability, selectivity)
- Bases for reference points
- Model configuration
- Changes in natural mortality

Operational Assessment Process

- Operational assessments will be prepared by NEFSC or Council/Commission staff.
- A senior NEFSC assessment scientist, and the chairs of the Mid-Atlantic and New England SSCs will constitute the Assessment Oversight Panel and will be advised by staff of the NERO, NEFMC, MAFMC, and ASMFC.
- The public may participate in the deliberations of the AOP.
- Peer review of operational assessments will be conducted by an Integrated Peer Review team including at least the lead assessor(s), the SSC member responsible for the stock, and an assessment scientist either from outside of NMFS or if from within NMFS, from outside of the lead assessor's working group.
- Results from the peer review will then be forwarded to the PDT/TC/SSC for the Councils' use in the ABC setting process.

Generic Terms of Reference

- Update all fishery-dependent data (landings, discards, catch-at-age, etc.) and all fishery-independent data (research survey information) used as inputs in the baseline model or in the last operational assessment.
- Estimate fishing mortality and stock size for the current year, and update estimates of these parameters in previous years, if these have been revised.
- Identify and quantify data and model uncertainty that can be considered for setting Acceptable Biological Catch limits.
- If appropriate, update the values of biological reference points (BRPs).
- Evaluate stock status with respect to updated status determination criteria.
- Perform short-term projections; compare results to rebuilding schedules.
- Comment on whether assessment diagnostics—or the availability of new types of assessment input data—indicate that a new assessment approach is warranted (i.e., referral to the research track).
- Should the baseline model fail when applied in the operational assessment, provide guidance on how stock status might be evaluated. Should an alternative assessment approach not be readily available, provide guidance on the type of scientific and management advice that can be.



Useful Documents

Overview of NEFMC Multispecies Groundfish: Data and Model Configuration Summary

For
Groundfish Operational Assessments
Assessment Oversight Panel Meeting
July 27, 2015

The assessments of all twenty stocks in the Northeast Multispecies Fishery Management Plan will be updated in 2015 by following the operational assessment process. The

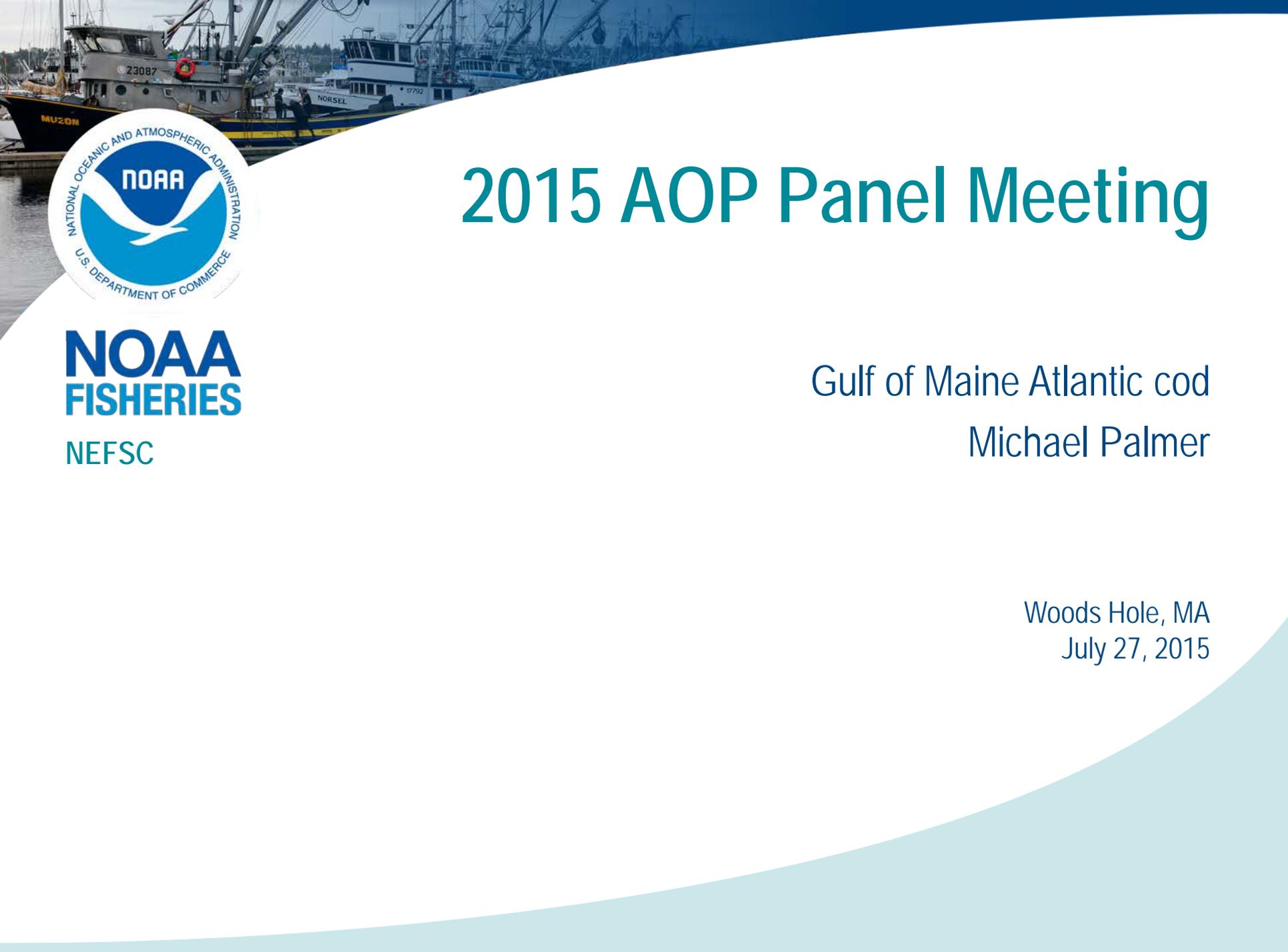
Summary of Stock Assessment Prospectuses
Population Dynamics Branch
Northeast Fisheries Science Center
Last Update: July 24, 2015

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For More Information

- <http://www.nefsc.noaa.gov/groundfish/operational-assessments-2015/>



2015 AOP Panel Meeting



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Gulf of Maine Atlantic cod
Michael Palmer

Woods Hole, MA
July 27, 2015

2014 update assessment

- Stock status

Assessment	Proxy reference points	M=0.2	M-ramp
2014 update	$F_{full, 2013}$	1.33 (0.89 - 1.92)	1.24 (0.84 - 1.78)
	F_{MSY}	0.18	0.18
	$F_{full, 2013}/F_{MSY}$	7.39	6.89
	Overfishing	Yes	Yes
	SSB_{2013} (mt)	2,063 (1,561 - 2,774)	2,432 (1,819 - 3,230)
	SSB_{MSY} (mt)	47,184 (32,903 - 67,045)	69,621 (53,349 - 89,302)
	SSB_{2013}/SSB_{MSY}	0.04	0.03
	Overfished	Yes	Yes
	MSY (mt)	7,753 (5,355 - 11,162)	11,388 (8,624 - 14,750)
	Median age1 recruitment (000s)	4,665 (1,414 - 14,649)	9,173 (2,682 - 16,262)

- Issues and uncertainties

- Two accepted models (M=0.2 and M-ramp), overall uncertainty in current levels of natural mortality
- M=0.2 model exhibits major retro pattern, M-ramp has minor retro pattern
- Recent low recruitment compromise rebuilding potential

2015 update: anticipated challenges

- Switch NEFSC survey station acceptance criterion from SHG to TOGA (minor)
- Update of MRIP catch estimates to reflect data updates (minor)
- Revise the discard mortality assumption for the recreational fishery from 30% to 15% following Capizzano et al. study (minor)
- Consideration of retrospective adjustment for $M=0.2$ model (moderate)
- Natural mortality assumptions for short-term projections (moderate)

2015 update: modelling approach

- Update the SAW/SARC 55 ASAP models through 2014
- Update $F_{40\%}$ F_{MSY} proxies
 - Use recent 3-year average weights
- Update SSB_{MSY} proxies
 - 2010-2014 geometric mean for 2015 t+1 recruitment
 - 1982-2012 median for 2016 and beyond (model w/ recruitment declining to zero below hinge point)
- Update short-term projections (2016-2018)

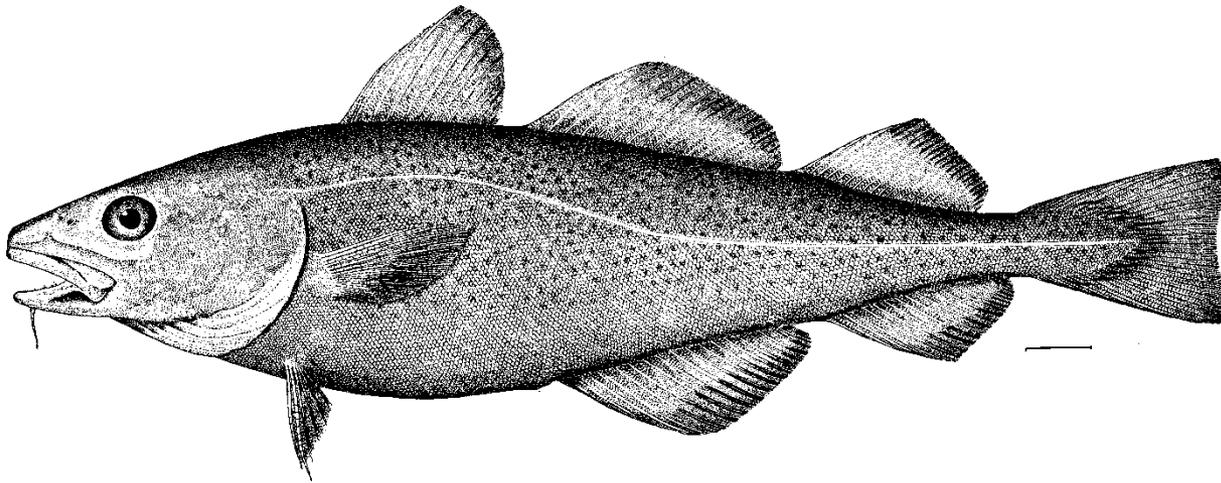
2015 update: backup in the event of model failure

- Framework 53 set catch specifications from FY2015-2017

The end

[Additional info as needed]

Georges Bank Atlantic Cod



Gadus morhua

Loretta O'Brien
2015 Georges Bank cod Assessment Update
Assessment Oversight Panel
Woods Hole, Ma.

July 27, 2015

2015 Georges Bank Cod Assessment Update

Lead Scientist: Loretta O'Brien

Team members: Nina Shepherd, Yanjun Wang (DFO)

Last Assessment: SARC 55 Dec 2012; Benchmark ASAP

❖ Update CATCH DATA from 2012-2014:

- US commercial landings – AA tables
- US commercial discards – SBRM methodology
 - large & small mesh otter trawl, scallop dredge, gillnet
- US MRIP recreational landings & discards
- CA commercial landings & discards

❖ Update SURVEY DATA

- NEFSC Spring: update to 2015
- DFO February: update to 2015
- NEFSC Autumn: update to 2014

❖ BIOLOGY

- Update maturity at age; 5 year moving average
- No change for natural mortality ($M = 0.2$) or timing of spawning

❖ REFERENCE POINTS

- No change in methodology ($F_{40\%}$) ; values will be re-estimated

❖ ASSESSMENT

Virtual Population Analysis (VPA)

- Catch-at-age: 1-10+
- Years: 1978-2014
- 3 Surveys
- Present standard diagnostics and retrospective analysis
- Bootstrap for projections
- Apply retrospective adjustment for stock status and catch projections

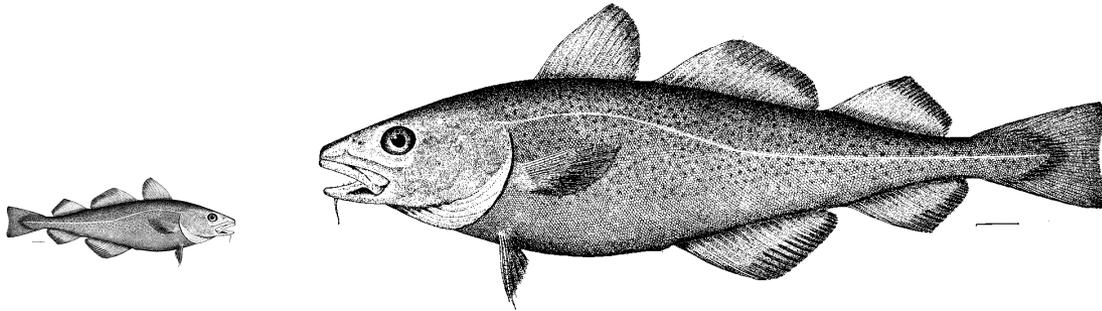
❖ PROJECTIONS

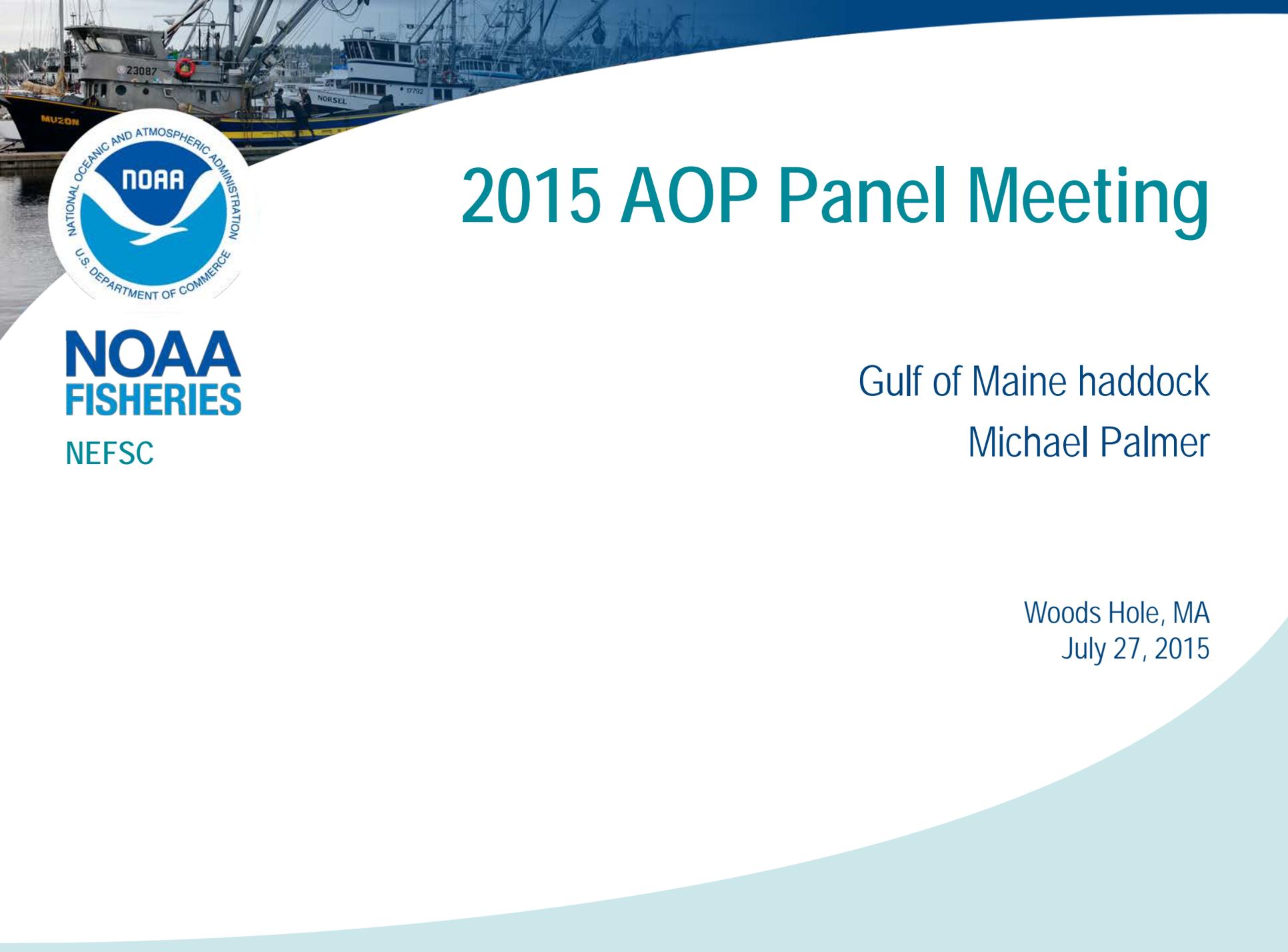
- $F_{2014} \sim$ status quo, $F_{40\%}$, & $0.75 \times F_{40\%}$
- Recruitment model: two stage CDF, 50,000 mt breakpoint
- Retrospective bias: apply 7-yr age-specific rho-adjustment factor

❖ FALLBACK – if updated ASAP not accepted

- Provide average of recent (3 years) quota and/or catches

Georges Bank Atlantic Cod





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Gulf of Maine haddock
Michael Palmer

Woods Hole, MA
July 27, 2015

SAW/SARC 59 benchmark assessment (2014)

- Stock status

Assessment	Proxy reference points	Base
SAW/SARC 59	$F_{full, 2013}$	0.39 (0.24 - 0.60)
	F_{MSY}	0.46 (0.36 - 0.54)
	$F_{full, 2013}/F_{MSY}$	0.85
	Overfishing	No
	SSB_{2013} (mt)	4,153 (2,960 - 6,043)
	SSB_{MSY} (mt)	4,108 (1,774 - 7,861)
	SSB_{2013}/SSB_{MSY}	1.01
	Overfished	No
	MSY (mt)	955 (421 - 1,807)
	Median age 1 recruitment (000s)	1,121 (205 - 6,500)

- Issues and uncertainties
 - Generally good model diagnostics
 - Size of the 2012 year class

2015 update: anticipated challenges

- Update of MRIP catch estimates to reflect data updates (minor)
- Impacts of ASAP likelihood constants on model results (moderate)
 - Sensitivity run on SAW/SARC 59 model suggest positive rescaling of recruitment and SSB (4,153 → 6,130 mt) and negative rescaling of F (0.39 → 0.26)
- Survey trends suggest that there may have been another large year class spawned in 2013
 - Absolute size of the 2012 and 2013 year classes will be uncertain
 - Will have minor impact on model SSB and F estimates, but could have implications for the projections (potentially moderate)
 - May want to consider carrying forward SAW/SARC 59 sensitivity model that down-weighted terminal recruitment or consider the uncertainty when setting catch advice (e.g., constant catch)

2015 update: modelling approach

- Update the SAW/SARC 59 ASAP model
- Update $F_{40\%}$ F_{MSY} proxy
 - Use recent 5-year average weights
- Update SSB_{MSY} proxy
 - 1977-2014 geometric mean for 2015 t+1 recruitment
 - 1977-2012 median for 2016 and beyond
- Update short-term projections (2016-2018)

2015 update: backup in the event of model failure

- Framework 53 set catch specifications from FY2015-2017

The end

[Additional info as needed]

D. Georges Bank Haddock

Liz Brooks

NEFSC

July 27, 2015

Update Existing VPA (Ages 1-9+)

- Add US landings and discards (2011-2014)
- Add Canadian landings and discards (2011-2014)
- Add 2011-2014 NEFSC Fall BTS (ages 0-5)
- Add 2012-2015 NEFSC Spring BTS and DFO Spring (ages 1-8)

Update Stock Status

- 2012 Stock Status:
 - Not overfished ($SSB_{2010}/SSB_{MSY} = 1.33$)
 - No overfishing ($F_{2010}/F_{MSY} = 0.46$)
- Current Reference Points (based on $F_{40\%}$)
- $F_{MSY} = 0.39$; $SSB_{MSY} = 124,900$ mt; $MSY = 28,000$ mt
- Will update with recent 5 yr. average biological information

Projections

- Short-term projections at F_{MSY} and $0.75 * F_{MSY}$
- Projection inputs: same assumptions as at GARM-III and 2012 Update:
 - Recent 5 yr. average for WAA, maturity AA, selectivity
 - Sample cdf of recruitments, exclude 1963, 2003, 2010, 2013 and 2 most recent point estimates (2014, 2015)
 - Sensitivity projection will include the large year classes, but still exclude most recent 2 point estimates
 - Perform bootstrap of VPA to obtain 1000 vectors of NAA in year T+1 (2015) to initiate projections

Fall Back Plan

- No retrospective pattern in last assessment; if retrospective pattern emerges, examine diagnostic and “rho adjust” if appropriate
- If VPA diagnostics not acceptable, use recent average catch



E. Cape Cod-Gulf of Maine Yellowtail Flounder

Larry Alade and Chris Legault
2015 Groundfish Operational Assessment Plan
Population Dynamics Branch
Northeast Fisheries Science Center

July 27, 2014

Previous 2012 Groundfish update

- Last assessed in the 2012 Groundfish update assessment
- VPA Model (1985-2010); Ages 1-6+
 - VPA tuned to six age-specific Surveys:
 - NEFSC and Mass DMF (Spring 1-6+; Fall 1-5)
 - ME/NH surveys (Spring 2-5; Fall 2-4)
 - Age and time invariant $M = 0.2$
 - Commercial Catch (landings plus discards)
- Stock Status – Overfished and overfishing occurring

Plan: Update Existing VPA (Ages 1-6+)

- Update US landings and discards (2011-2014)
- Add NEFSC, Mass DMF, and ME/NH surveys: Spring (2012-2015) and Fall (2011-2014)
 - Bigelow length based calibration factors available from peer review in TRAC 2010 for GB yellowtail
 - NEFSC survey strata was modified in the last assessment due to Bigelow depth limitations (Inshore Strata 53 or 68).
- Fishery dependent data for years 1994-2010 will be updated to account for any changes to databases since the last assessment update
- No changes to M, maturity, or timing of spawning
- Sensitivity Analyses
 - Account for any major revisions in data input for years 1994-2010

Biological reference points and Stock Status

- 2015 Operational Assessment Update
 - Update Stock Status with 2014 values:
 - Current Status: Overfished ($SSB_{2010}/SSB_{MSY} = 0.24$), Overfishing ($F_{2010}/F_{MSY} = 1.4$)
 - Update Biological Reference Points
 - Fishing reference points (based on $F_{40\%}$)
 - Biomass reference points:
 - Recruitment (1985-2012 + Hindcast)
 - 5 yr mean WAA, maturity and selectivity
 - Current reference points
 - $F_{MSY} = 0.26$; $SSB_{MSY} = 7,080$ mt; $MSY = 1,600$ mt

Projections

- Short-term projections (Median catch 2016-2018)
 - $F_{\text{status quo}}$ ($F = F_{2014}$)
 - $F_{\text{MSY}} = F_{40\%}$ (YPR)
 - $75\%F_{\text{MSY}}$
- CCGOM under rebuilding plan (End date = 2023)
 - F_{rebuild} (Iterative approach for yrs 2016-2023)
- Projection inputs same assumptions as GARM III = 2012 groundfish assessment update:
 - Recent 5 yr. average for WAA, maturity AA, selectivity
 - Sample cdf of recruitments (including hindcast)
 - Bootstrap VPA to obtain 1000 vectors of NAA in year T+1 (2015) to initiate projections

Fallbacks (only if necessary)

- In the last 2012 GARM assessment update
 - Fit to the model was improved over GARM III
 - However there was the emergence of retrospective pattern
- If retrospective pattern continues, apply “SSB and F rho adjustment”
- If model diagnostics further deteriorates with regards both precision and retrospective bias
 - Apply recent three year average of catch or quota.



F. Southern New England-Mid Atlantic Yellowtail Flounder

Larry Alade

2015 Groundfish Operational Assessment Plan
Population Dynamics Branch
Northeast Fisheries Science Center

July 27, 2014

Previous Assessment

- Last assessed: 2012 SARC 54 benchmark assessment
- ASAP Model (1973-2010); Ages 1-6+
 - ASAP tuned to three age-specific surveys and a larval index:
 - NEFSC (Spring 1-6+; Fall 1-6+ for years 1973-2011)
 - Larval abundance Index (Summer 1977-1987; 1995-2011)
 - Time invariant, age-specific M
 - Commercial Catch (Landings plus discards)
 - Discards: Apply 90% Discard Mortality (Barkley and Cadrin, 2012)
 - Minor to no retro pattern (no “rho adjustment”)
- Stock Status – Not Overfished and overfishing is NOT occurring

Update Existing ASAP model (Ages 1-6+)

- Update US landings and discards (2012-2014)
- Add NEFSC, Spring (2012-2015), Fall (2012-2014) and larval abundance index (2012-2014, and 2015?)
 - Bigelow length based calibration factors available from peer review in TRAC 2010 for GB yellowtail
- Fishery dependent data for years 1994-2010 will be updated to account for any changes to databases since the last assessment update
- No changes to M, maturity, or timing of spawning
- Sensitivity Analyses
 - Account for any major revisions in data input for years 1994-2010

Update Existing Biological Reference Points and Stock Status

- 2015 Operational Assessment Update
 - Update Stock Status:
 - Current status: Not Overfished ($SSB_{2011}/SSB_{MSY} = 1.29$), and Overfishing is Not occurring ($F_{2011}/F_{MSY} = 0.38$)
 - Update Biological reference points:
 - Fishing Reference Points (based on $F_{40\%}$)
 - Biomass reference points:
 - Recruitment series (1990-2013)
 - Recent 5 yr mean WAA, maturity and Selectivity (2010-2014)
 - Current reference points:
 - $F_{MSY} = 0.32$; $SSB_{MSY} = 2,995$ mt; $MSY = 773$ mt

Projections

- Short-term projections (median catch 2016-2018)
 - $F_{\text{Status quo}}$ ($F = F_{2014}$)
 - $F_{\text{MSY}} = F_{40\%}$
 - $75\%F_{\text{MSY}}$
- Projection inputs assumptions = SARC 54:
 - Recent 5 yr. average for WAA, maturity AA, selectivity (2010-2014)
 - Sample cdf of recruitments series (1990 - 2013)
 - ASAP MCMC simulations to obtain 1000 vectors of NAA in year T+1 (2015) to initiate projections

Fallbacks (only if necessary)

- Minimal to no retrospective pattern in last assessment; if retrospective pattern emerges, split surveys or consider “rho adjustment”
- If model diagnostics deteriorates with regards both precision and retrospective bias
 - Apply recent three year average of catch or quota.



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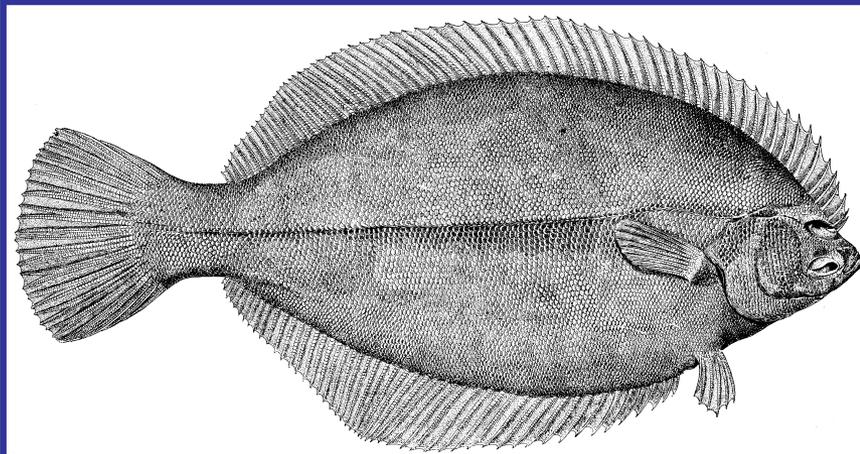
Northeast
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G. GB Winter Flounder

Pseudopleuronectes americanus

2015 Operational Stock Assessment Plan

by Lisa Hendrickson



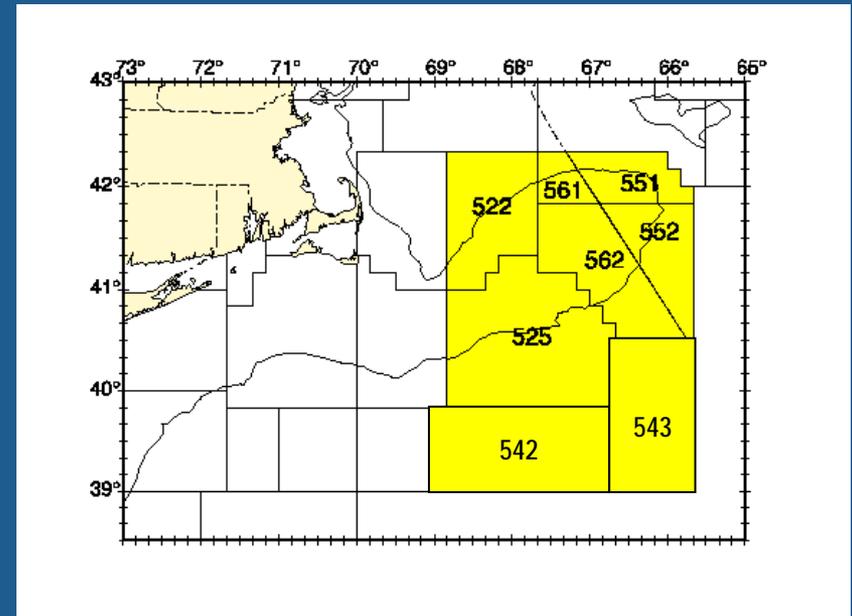
AOP Meeting
July 27, 2015

Most recent assessment

Type: Operational, Aug. 2014

Model: VPA (1-7+), 1982-2013

Stock Status: Not overfished
Overfishing not occurring



Important assessment considerations:

Rebuilding deadline is 2017 (76% prob. at F_{reb} = 0.27)

Since 2006, 2-17% of catch is CA

FMSY estimate based on fixed steepness parameter ($h = 0.78$)

Minor F and SSB retros, unadjusted but borderline

Update VPA, 1982-2014

Catch: Add 2014 data

US LAA

US DAA (small-mesh, lg-mesh and scall dr.)

CA landings and scall dr. discards (bump-up US nos.)

Surveys: Indices-at-age, length-based CF to convert HB catches to ALB equivalents

NEFSC spring – add 2015

CA spring – add 2015

NEFSC fall – add 2014 (lagged fwd one yr and age)

Biological data: no change in M, maturity-at-age or timing of spawning

Update VPA, 1982-2014

Estimate avg F (ages 4-6), SSB and R (age1)

Run retrospective analysis (seven-year peel), adjust F and B if needed

Examine model diagnostics

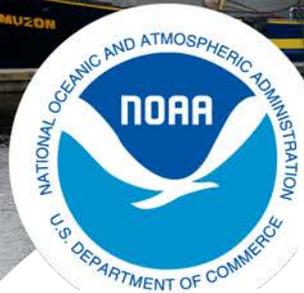
Update BRPs: $FMSY = 0.44$, $SSBMSY = 8,100$ mt,
 $MSY = 3,200$ mt

SRFIT using VPA estimates of R and SSB for 1982-2013 YC
100-year stochastic projection with B-H model params. and
the CDF of observed R values

Projections: assume CA+US catch in 2015 and fishing at
 $FMSY$ during 2016-2018

Fallback Plan

1. AIM
2. Expand survey biomass indices to population biomass using assumed q if AIM fails

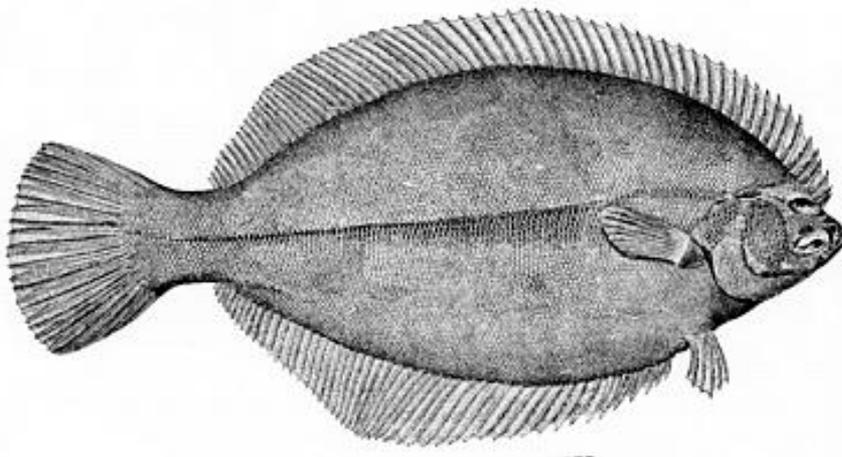


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Assessment Oversight Panel Multispecies Groundfish Updates

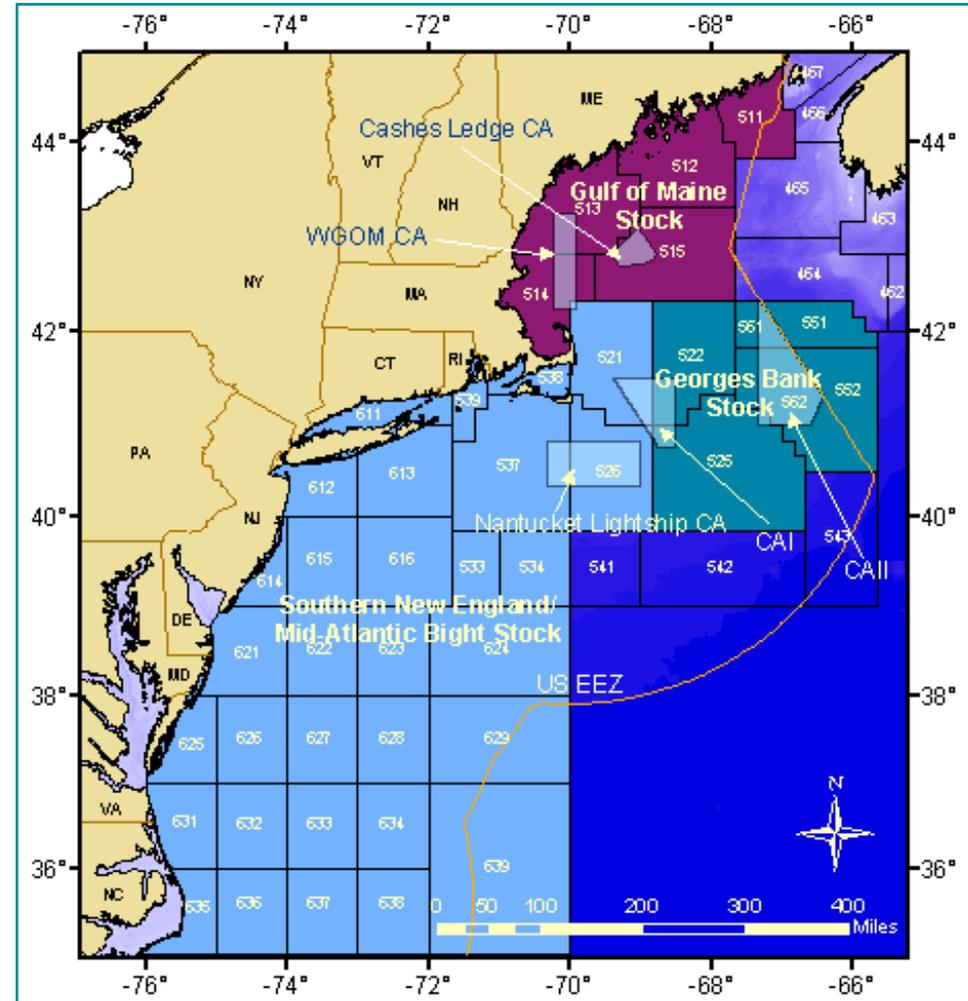
Southern New England Winter Flounder
Pseudopleuronectes americanus

July 27th 2015



Southern New England Winter Flounder

- Assessment scientist: Tony Wood
- Last assessment: SARC52 in 2011 (Lead: Mark Terceiro)
- Statistical catch-at-age model: ASAP ages 0-7+, years 1981-2014
- Stock status from SARC52: overfished, overfishing not occurring



Fishery Dependent: 1981-2014 ages 1-7+

- Commercial Landings: AA Tables, market category by quarter or half year
- Commercial Discards: SBRM
- Recreational Landings: MRIP (A+B1)
- Recreational Discards: MRIP (B2)
- Update these data from 2011 through 2014

Fishery Independent: 1981-2014 ages 0-7+

- NEFSC winter, spring, and fall
- MADMF spring
- RIDMF spring
- CTDEP spring
- NJDFW ocean and river
- Recruits: MADMF, RIDFW, CTDEP, NYDEC (ages 0-2)
- NEW at SARC52: URIGSO, NEAMAP
- Update these data from 2011 through 2014

Biology

- $M = 0.3$
- Maturity: MADMF Spring survey data provide maturity information
 - Data from 1982-2008 used in SAW52
 - Age 1: 0%, Age 2: 8%, Age 3: 56%, Age 4: 95%
Age 5+: 100%
- Retain these values for 2015 update assessment

Reference Points: Beverton-Holt SR

- SARC52 Status Evaluation: Overfished, not overfishing
- $F_{2010} = 0.051$, $SSB_{2010} = 7,076$ mt
- $F_{MSY} = 0.290$ ($F_{threshold}$)
- $SSB_{MSY} = 43,661$ mt (B_{target})
- $\frac{1}{2} SSB_{MSY} = 21,831$ mt ($B_{threshold}$)
- $MSY = 11,728$ mt
- $F_{2010}/F_{threshold} = 18\%$, $SSB_{2010}/B_{target} = 16\%$
- $SSB_{2010}/B_{threshold} = 32\%$
- Update reference points for 2015

Sensitivities, Projections, and Fallback

- Sensitivities:
 - different values for M carried over from SARC52
 - profile over fixed steepness
 - different reference points ($F_{40\%}$ from SARC52)
- Projections: Assume catch taken in 2015, project 2016-2018 at F_{MSY} , F_{2014} , and $F = 0$
- Fallback: Recent average catch or expand survey biomass using assumed q



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2015 Acadian Redfish Operational Assessment

Assessment Oversight Panel Meeting

Woods Hole, MA

July 27, 2015

Data Inputs

- Previous assessment: 2012 operational assessment
- Years: 1913-2014
- Ages: 1-26+
- Number of fleets: 1
 - Commercial fishery
- Number of surveys: 2
 - NMFS spring bottom trawl survey
 - NMFS fall bottom trawl survey

Data Inputs (continued)

Source	First Yr	Last Yr (2012)	Last Yr (2015)
Commercial Landings			
Total (mt)	1913	2010	2014
Numbers at age	1969	1985	1985
Commercial Discards			
Total (mt)	1989	2010	2014
NMFS Spring Survey Index			
Total (N/tow)	1968	2010	2014
N/tow at age	1975	1990	1990
NMFS Fall Survey Index			
Total (N/tow)	1963	2010	2014
N/tow at age	1975	2007	2013

- Mean weight at age (constant across years)
- Maturity at age (constant across years)
- Natural mortality (constant across years and ages; not updated)

Assessment Approach

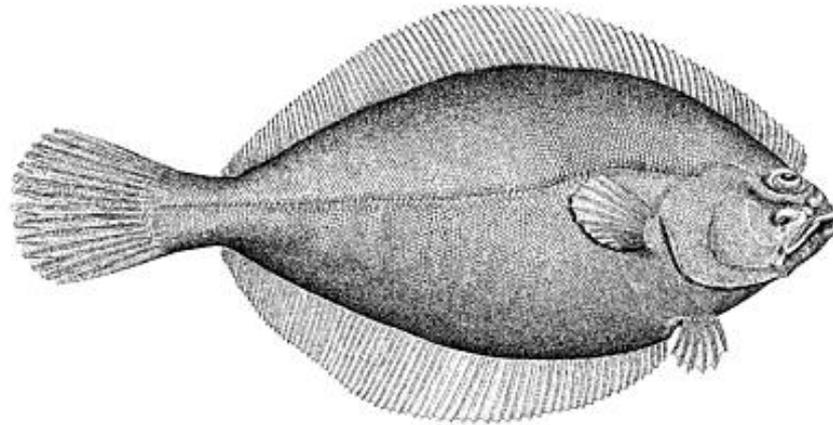
- Assessment model: ASAP
 - Flat-topped fishery and survey selectivity patterns
 - Fishery selectivity time blocks: 1
 - Ramp down recruitment CVs for recent year(s) without age data
- Forecast model: AgePro
 - Forecast years: 2015-2018
 - 2015 preliminary catch estimate to be provided by GARFO
 - Forecast F: F_{MSY} proxy of F50%
- Alternative approach: Base management advice on an analysis of recent catches and quotas

Assessment Changes

- Likelihood constants will be excluded from likelihood calculations in ASAP to avoid potential bias caused by one of the recruitment likelihood “constants”, which is the sum of the log-scale predicted recruitments

$$-\ln(L) = n_{rec} \frac{\ln(2\pi)}{2} + \sum_{Y_f}^{Y_l} \ln(\widehat{R}_y) + n_{rec} \ln(\sigma) + \frac{1}{2} \sum_{Y_f}^{Y_l} \frac{(\ln(\widehat{R}_y) - \ln(\overline{R}_y))^2}{\sigma^2}$$

Gulf of Maine -Georges Bank American Plaice



Hippoglossoides platessoides

Loretta O'Brien
September 2015 Assessment Update
Assessment Oversight Panel
Woods Hole, Ma.

July 27, 2015

2015 American Plaice Assessment Update

Lead Scientist: Loretta O'Brien

Team members: Josh Dayton

Last Assessment: Feb. 2012 Update ; VPA

❖ Update CATCH DATA through 2014:

- US commercial landings – AA tables
- US commercial discards – SBRM methodology
 - large & small mesh otter trawl, northern shrimp trawl
- CA commercial landings

❖ Update SURVEY DATA

- NEFSC Spring: update through 2015 (all data in Alb IV units)
- NEFSC Autumn: update through 2014 (all data in Alb IV units)

- MADMF Spring: update through 2015
- MADMF Autumn: update through 2014

❖ ASSESSMENT

- Virtual Population Analysis (VPA)
 - Catch-at-age: 1-11+
 - Years: 1980-2014
 - 4 Surveys
 - Present standard diagnostics and retrospective analysis
 - Retrospective rho-adjustment : 7-yr peel, as in Feb. 2012
 - Stock status and catch projections determined by rho-adjustment for SSB and F

❖ BIOLOGY

- Update maturity at age; 5 year moving average
- No change for natural mortality ($M = 0.2$) or timing of spawning

❖ REFERENCE POINTS

- No change from Feb. 2012 methodology (F40%) ; update values

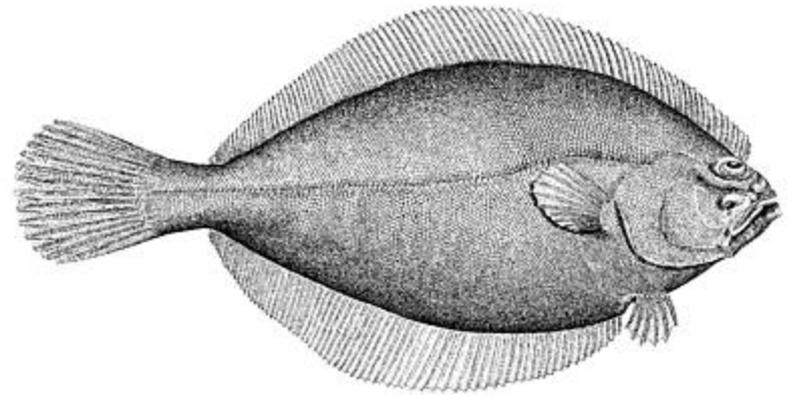
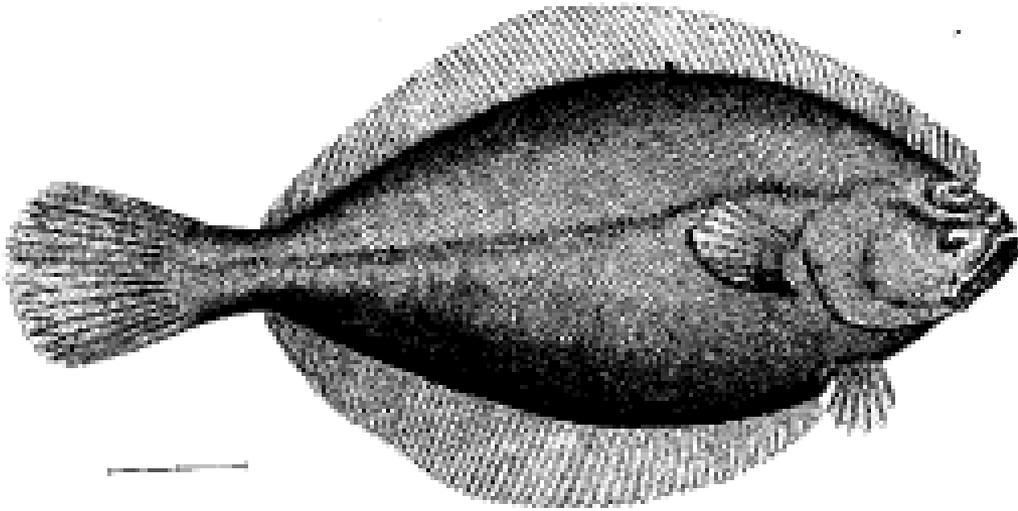
❖ PROJECTIONS

- $F_{2014} \sim$ status quo, $F_{40\%}$, lower of $F_{rebuild}$ or $0.75(F_{40\%})$
- Recruitment model: empirical CDF
- Retrospective bias: apply 7-yr age-specific rho-adjustment factor

❖ FALLBACK – if updated VPA not accepted

- Provide average of recent (3 years) quota and/or catches

American plaice



K. Proposed Update for WITCH FLOUNDER

Lead Scientists: Susan Wigley

Team members: Sarah Emery

Last Assessment: 2012 Operational Assessment

Catch

US Commercial Landings:

Update 2010, add 2011-2014, from AA tables

US Commercial Discards: Update 2010, add 2011-2014, SBRM approach by gear type (large mesh otter trawl, small mesh otter trawl, and shrimp trawl)

US Recreational Landings and Discards: N/A

Foreign Landings and Discards: N/A

Witch Flounder, continued

Surveys

NEFSC spring survey: add 2012-2015

NEFSC fall survey: add 2011-2014

Convert 2012-2015 from Bigelow to Albatross units.

Witch flounder calibration (# 3.257177; wt 3.257201)

Witch Flounder, continued

Biology

No changes from 2012 Operational Assessment values for natural mortality (0.15) or time of spawning

Update annual maturity at age (use annual ogives based on NEFSC spring 5-yr pooled data thru Spring 2015)

Reference Points

No changes from 2012 Operational Assessment values

$F_{40\%}=0.20$, $SSB_{msy}=11,447$ mt, $MSY=2,352$ mt

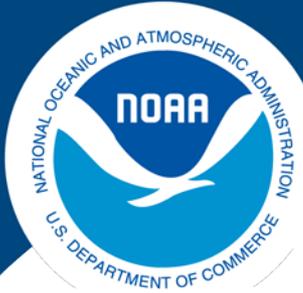
Witch Flounder, continued

Assessment

Virtual Population Analysis using ages 3 to 11+, years 1982-2014, surveys are split between 1994 and 1995 (due to retro in GARM III), standard diagnostics of residuals and retrospective analysis

Projections assume catch in 2016, project Fmsy using 5-year (2010-2014) averages for partial recruitment, stock weights, catch weights, maturity (2011-2015), and the 1982-2013 series of Age 3 recruitment, and $M = 0.15$

Fallback Recent catches or quotas



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White Hake Plan

Kathy Sosebee and Michele Traver

July 27, 2015



Previous Assessment – SAW 56

- ASAP
- 1963-2011
- CAA 1989-2011
- Survey CAA 1963-2011
 - Pooled ALKS for 1963-1981, autumn 2003
- $F_{\text{msyproxy}} = F_{40} = 0.2$
- $SSB_{\text{msyproxy}} = 32,400$ mt
- $SSB_{2011} = 26877$, $F_{2011} = 0.13$
- Not overfished, no overfishing

Data updates-Catch

- US Commercial Landings: Update 2011, Add 2012-2014, from AA tables by market category
- US Commercial Discards: Update 2011, Add 2012-2014, SBRM approach by gear type (large mesh otter trawl, small mesh otter trawl, scallop dredge, longline and gillnet)
- Split red/white market category using proportion by area fished and add to small market category
- US Recreational Landings. Discards will be estimated, but not included (no DAA).
- Foreign Landings and Discards: Assume same CAA as US landings and discards
- CAA-use spring and fall age data from 2012-2014 except for spring 2014, use pooled ALK for first half of 2014

Data updates-Survey

- NEFSC spring survey: Update 2013-2015
 - CAA update 2012-2013 with annual ALKS 2014 with pooled
- NEFSC fall survey: Update 2012-2014
 - CAA update 2012-2014 with annual ALKs

Assessment model- ASAP

- Total catch - 1963-2014
- CAA 1989-2014, second half of 2003 and first half of 2014 pooled
- fall survey CAA 1963-2014, 1963-1981 and 2003 pooled
- spring survey CAA 1968-2014, 1968-1981 and 2014 pooled
- surveys are not split

Reference Points

- Update F40 with updated weights and maturities
- Run 100-year projections with resampling from empirical CDF of recruitments from 1963-2012.

Projections

- Assume catch in 2015 TBD
- Project F_{msy} for years 2016-2018
- Resample from empirical CDF of recruitments from 1995-2012.

Plan B

- Catch for 2016 as in Framework 51 – OFL 6314, ABC 4645, ACL 4420



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2015 Pollock Operational Assessment

Assessment Oversight Panel Meeting

Woods Hole, MA

July 27, 2015

Data Inputs

- Previous assessment: 2014 operational assessment
- Years: 1970-2014
- Ages: 1-9+
- Number of fleets: 2
 - Commercial fishery
 - Recreational fishery
- Number of surveys: 2
 - NMFS spring bottom trawl survey
 - NMFS fall bottom trawl survey

Data Inputs (continued)

Source	First Yr	Last Yr (2014)	Last Yr (2015)	Source	First Yr	Last Yr (2014)	Last Yr (2015)
Commercial Landings				Spring Survey Index			
Total (mt)	1970	2013	2014	Total (N/tow)	1970	2013	2014
Numbers at age	1970	2013	2014	N/tow at age	1970	2013	2014
Commercial Discards				Fall Survey Index			
Total (mt)	1989	2013	2014	Total (N/tow)	1970	2013	2014
Numbers at age	1989	2013	2014	N/tow at age	1970	2013	2014
Recreational Landings				Mean weight at age			
Total (mt)	1981	2013	2014	Start of year	1970	2013	2014
Numbers at age	1981	2013	2014	Mid-year	1970	2013	2014
Recreational Discards							
Total (mt)	1981	2013	2014				
Numbers at age	1981	2013	2014				

- Maturity at age (constant across years)
- Natural mortality (constant across years and ages; not updated)

Assessment Approach

- Assessment model: ASAP
 - Dome-shaped fishery and survey selectivity patterns
 - Commercial fleet selectivity time blocks: 4
 - Recreational fleet selectivity time blocks: 3
 - Sensitivity run with flat-topped survey selectivity patterns
- Forecast model: AgePro
 - Forecast years: 2015-2018
 - 2015 preliminary catch estimate to be provided by GARFO
 - Forecast F: F_{MSY} proxy of F40%
- Alternative approach: Base management advice on an analysis of recent catches and quotas

Assessment Changes

- Likelihood constants will be excluded from likelihood calculations in ASAP to avoid potential bias caused by one of the recruitment likelihood “constants”, which is the sum of the log-scale predicted recruitments

$$-\ln(L) = n_{rec} \frac{\ln(2\pi)}{2} + \sum_{Y_f}^{Y_l} \ln(\widehat{R}_y) + n_{rec} \ln(\sigma) + \frac{1}{2} \sum_{Y_f}^{Y_l} \frac{(\ln(\widehat{R}_y) - \ln(\overline{R}_y))^2}{\sigma^2}$$



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NEFSC

Proposed Update for Atlantic Wolffish

Lead Scientist: Charles Adams

Team Member: Paul Nitschke

Last Assessed: 2012 Operational Assessment

July 27, 2015

Current Status

- Overfished
- Overfishing not occurring
- Projections unreliable

SCALE run	2012 Final Model	
Selectivity	slope = 0.15 op conversion = 4.58	
Length of maturity	40cm	65cm
F_{MSY} proxy	$F_{40\%}$	$F_{40\%}$
F_{MSY}	0.334	0.243
YPR	0.864	0.824
SSB per Recruit	5.818	5.155
Initial Recruits (000s)	302	302
MSY (mt)	261	249
SSB_{MSY} (mt)	1,756	1,556
SSB_{2010} (mt)	505	371
F_{2010}	0.069	0.069
SSB_{2010}/SSB_{MSY}	29%	24%
F_{2010}/F_{MSY}	21%	28%

Assessment Plan

- Statistical Catch at Length (SCALE) model
 - Forward projecting age-structured model tuned with
 - Total catch (mt)
 - Catch at length (port samples/NEFOP)
 - Recruitment at age 1 (1-7 cm spring NEFSC survey)
 - Survey indices of abundance of the larger/older fish (40+ cm)
 - Survey length frequency distributions
 - Used in 2008 DPSWG & 2012 Operational Assessment

Assessment Plan

Input data	Parameters	Update Status
General Data	Years: 1968- 2014 Ages: 30 Maximum Length: 145 1 Selectivity Block 1 Recruitment Index 3 Adult Indices 1 Survey with LF (Spring NEFSC)	
Biological	Mean Lengths at Age	Same as 2008 assessment; modified growth from Nelson & Ross (1992)
	Natural Mortality	Same as 2008 assessment
	Length-Weight Parameters	update with 2011-2014 data
Catch Length Frequency	Observed Catch LF Distributions	Same as 2012 update; new data for 2011-2014 using observed kept/discard LF
Fishery Data	Total Catch in Weight (mt)	Corrected sum of catch for 1968-2010; new data for 2011-2014; MRIP calibration
Recruitment		Same as 2008 assessment
Recruitment Indices	NEFSC Spring Age 1	Same as 2012 update; no new data for 2011-2014
Adult Indices	NEFSC Spring 40+	Same as 2012 update; new data for 2012-2014 ; no new data for 2011
	MADMF Spring 40+	Same as 2012 update; new data for 2012 ; no new data for 2011, 2013-2014
	NEFSC Fall 40+	Same as 2012 update; new data for 2011-2012, 2014 ; no new data for 2013
Survey Length Frequency	Observed LF Distribution	Same as 2012 update; new data for 2012-2014 ; no new data for 2011
Selectivity	Selectivity Bounds	Same as 2008 assessment
Parameter Estimation		Same as 2008 assessment

Backup Plan

- Depletion Corrected Average Catch (DCAC) model
 - Estimates sustainable yields for data-poor fisheries
 - 2008 Data Poor Stocks WG thought that results from the DCAC model corresponded well with SCALE model results
- An Index Method (AIM) model
 - Can be used to construct BRPs based on relative abundance indices and catches

Slide Title

- List item 1
 - List item 2



Assessment plan 2015 Atlantic halibut

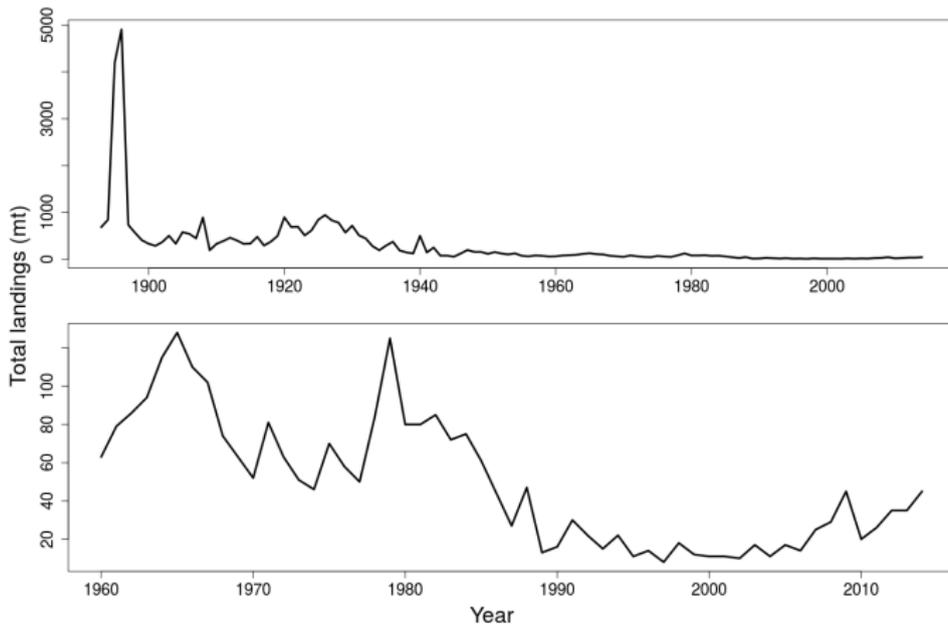
Dan Hennen

NEFSC

July 20, 2015

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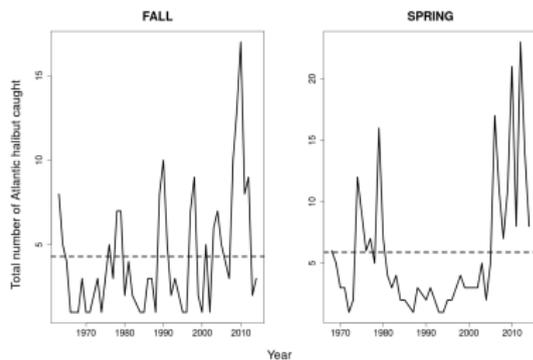
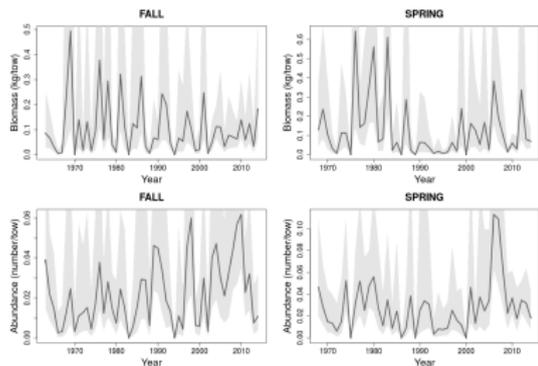
2012 GARM Update: overfished, but not overfishing



Plan

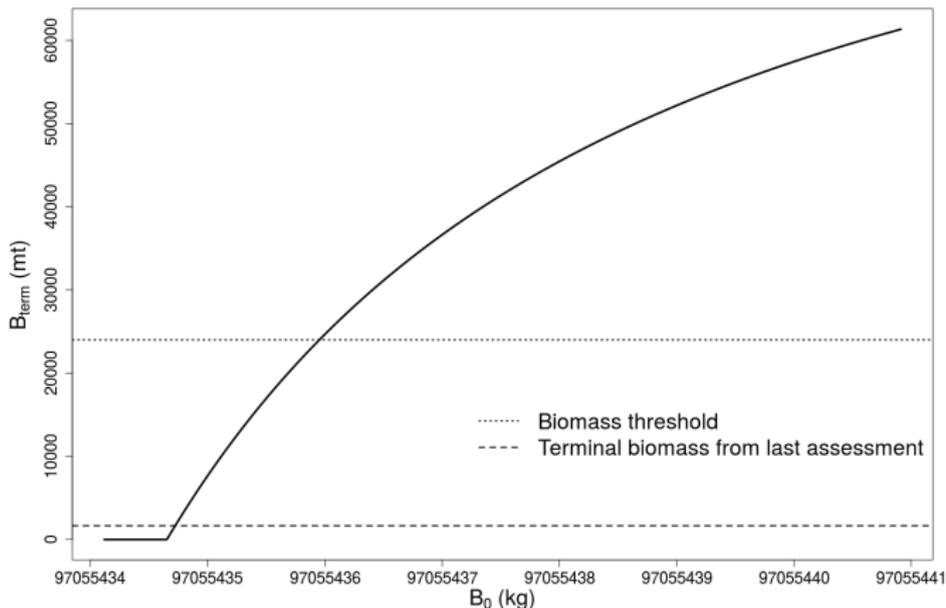
Update 2012 Assessment (RYM model)

- Surplus production model tuned to survey index
- Intrinsic growth rate from YPR
($r = 2F_{0.1} = 2F_{MSY(proxy)}$)
- Estimates one parameter (B_0)



Problems

- Extreme sensitivity to starting conditions
- RYM model assumes closed population (one of many known surplus production model issues)
- The US population is almost certainly no longer a stock



Alternative

- Status quo regulations (1 fish per trip)



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P: Proposed update for GOM-GBK windowpane flounder

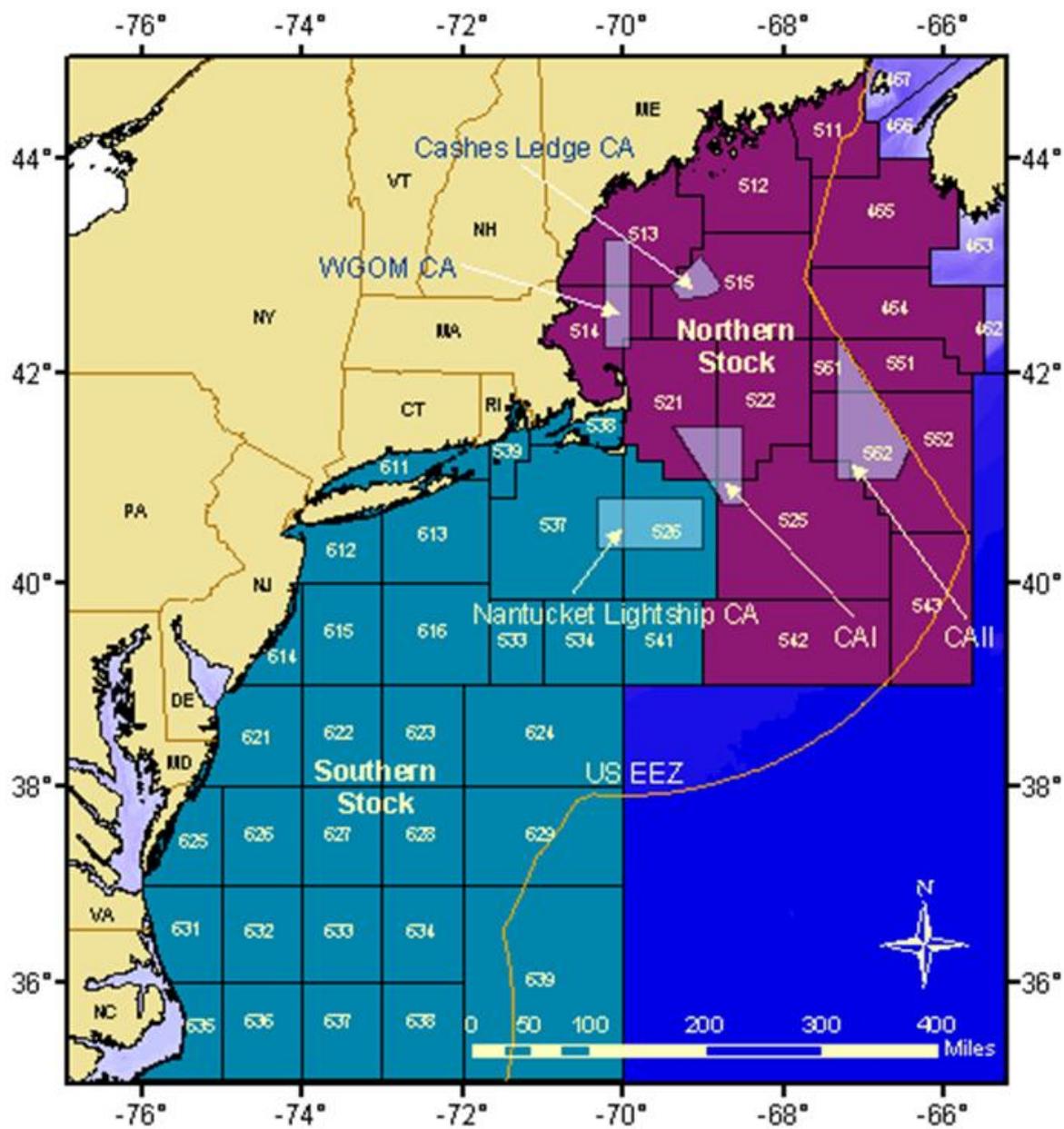
Lead scientist: Toni Chute/Lisa Hendrickson

Previous assessment: GARM 2012, using AIM, an index-based model

Data used: Catch (landings + discards) and NEFSC fall BTS biomass indices, 1975-2010

2012 status: Overfished and overfishing occurring; rebuilding deadline 2017

Considerations: No directed fishery since 1993; "No possession" regulation since May 2010



2015 assessment

- **Model:** AIM

Input data: 1975-2014

- **US commercial landings:** Add 2011-2014 from AA tables
- **US commercial discards:** Use NE 2012 discard estimates (large mesh bottom trawl, small mesh bottom trawl, limited access scallop dredges/trawls), assume 100% discard mortality; add new estimates for 2011-2014
- **No** recreational landings or discards; Canadian landings and discards not available
- **NEFSC fall survey:** Add 2011-2014 biomass indices converted from Bigelow to Albatross units using calibration factors from Miller et al. (2010)

Model output and reference points

- **Model output:** annual relative F estimates, stock replacement ratios, and F_{MSY} proxy
- **Update existing BRPs:** (F_{MSY} proxy = 0.44 kt/kg per tow and B_{MSY} proxy = 1.60 kg per tow). Estimate F_{MSY} proxy using AIM. Based on assumed MSY proxy of 0.70 kt (median catch 1995-2001; a period when the stock was able to replace itself, rounded up to the nearest 100 mt), $B_{MSY} = 0.700/F_{MSY}$ proxy
- **Projections:** Using AIM, project relative B indices for 2016-2018 based on assumed catch in 2015 when fishing at F_{MSY}
- **Fallback:** Estimate swept-area population biomass from survey data using an assumed q ; GARM 2012 AIM $p = 0.09$



Q: Proposed update for SNE-MAB windowpane flounder



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Lead scientist: Toni Chute/Lisa Hendrickson

Previous assessment: GARM 2012, using AIM, an index-based model

Data used: Catch (landings + discards), NEFSC fall bottom trawl survey index through 2010

2012 status: Not overfished and overfishing was not occurring; rebuilding goal was 2014, rebuilt by 2010

Considerations: No possession regulation since May 2010

2015 assessment

Model: AIM

Model input (1975-2014)

- **US commercial landings:** Add 2011-2014 from AA tables
- **US commercial discards:** Use GARM 2012 discard estimates (large mesh bottom trawl, small mesh bottom trawl, limited access scallop dredges/trawls), assume 100% discard mortality; add new estimates from 2011-2014
- **No** recreational or foreign landings or discards
- **NEFSC fall survey:** Add 2011-2014 indices converted from Bigelow to Albatross units using calibration factors from Miller et al. (2010)



Model output and reference points

- **Model output:** annual relative F estimates, stock replacement ratios, and F_{MSY} proxy
- **Update existing BRPs:** (F_{MSY} proxy = 2.09 kt/kg per tow and B_{MSY} proxy = 0.24 kg per tow). Estimate MSY proxy using AIM. Based on assumed MSY proxy of 0.500 kt (median catch 1995-2001; a period when the stock was able to replace itself, rounded up to the nearest 100 mt), $B_{MSY} = 0.500/F_{MSY}$ proxy
- **Projections:** Using AIM, project relative B indices for 2016-2018 based on assumed catch in 2015 when fishing at F_{MSY}
- **Fallback:** Estimate swept-area population biomass from survey data using an assumed q ; AIM $p = 0.006$



R. Proposed Update for OCEAN POUT

Lead Scientists: Susan Wigley

Team members: TBD

Last Assessment: 2012 Operational Assessment

Catch

US Commercial Landings: Update 2010, Add 2011-2014, from AA tables

No possession after May 1, 2010

US Commercial Discards: Update 2010, Add 2011-2014, SBRM approach by gear type (large mesh otter trawl, small mesh otter trawl, scallop dredge, and gillnet)

US Recreational Landings and Discards: N/A

Foreign Landings and Discards: N/A

OCEAN POUT, continued

Surveys

NEFSC spring survey: add 2012-2015,
Convert 2012-2015 from Bigelow to Albatross
units using ocean pout calibration
(Rho_N = 4.5752; Rho_W = 3.911546)
Length-based conversion factors not
established; not needed)

NEFSC fall survey: N/A

OCEAN POUT, continued

Biology

No changes from 2012 Operational Assessment values

Reference Points

No changes from 2012 Operational Assessment values

Fmsy proxy=0.76, Bmsy proxy=4.94 kg/tow,
MSY= 3,754 mt

Assessment

Index using catch, survey indices and exploitation ratios; years 1968 -2014

OCEAN POUT, continued

Projections N/A

Fallback

Recent catches or quotas
(no possession for this species)



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NEFSC

Proposed Update for Gulf of Maine Winter Flounder

Lead Scientist: Paul Nitschke

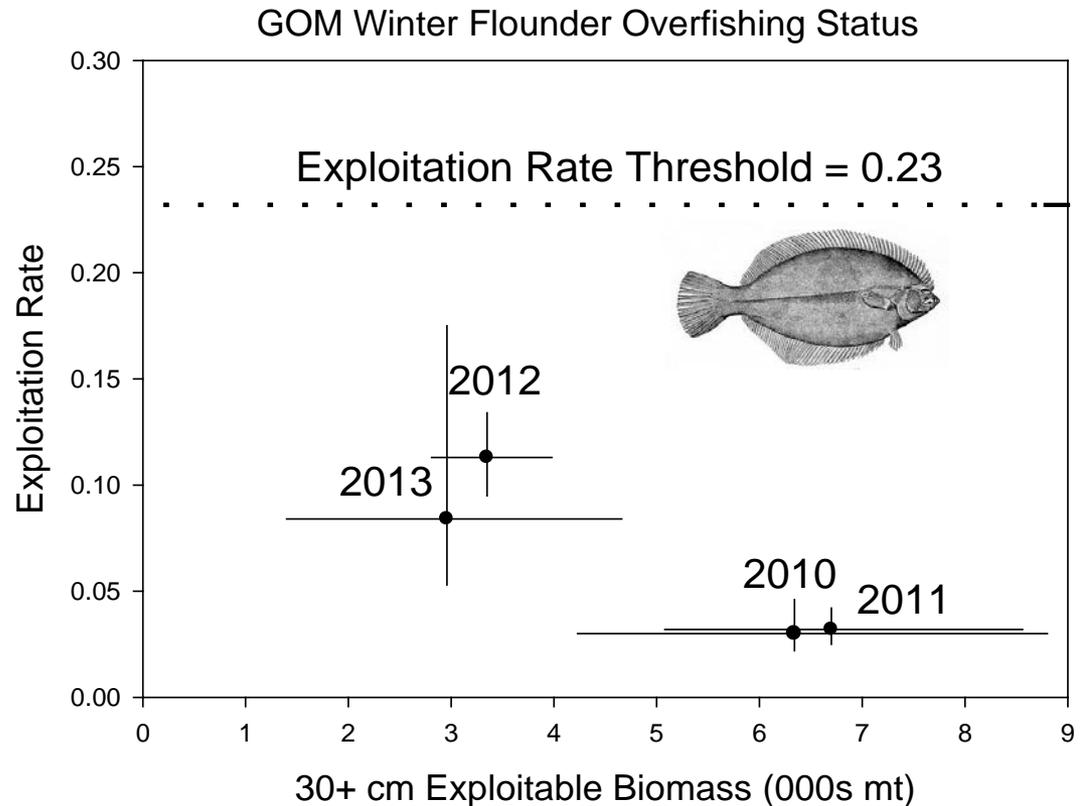
Last Assessed: 2014 Operational Assessments

30+ Survey Area Swept

July 27, 2015

Current Status

- Overfished status is Unknown
- Overfishing not occurring



Assessment Plan

- Update trends in the NEFSC, MDMF, and MENH surveys.
- Estimate 2015 catch (commercial & recreational landing, recreational discards, lg mesh trawl discards and gillnet discards).

Assessment Plan

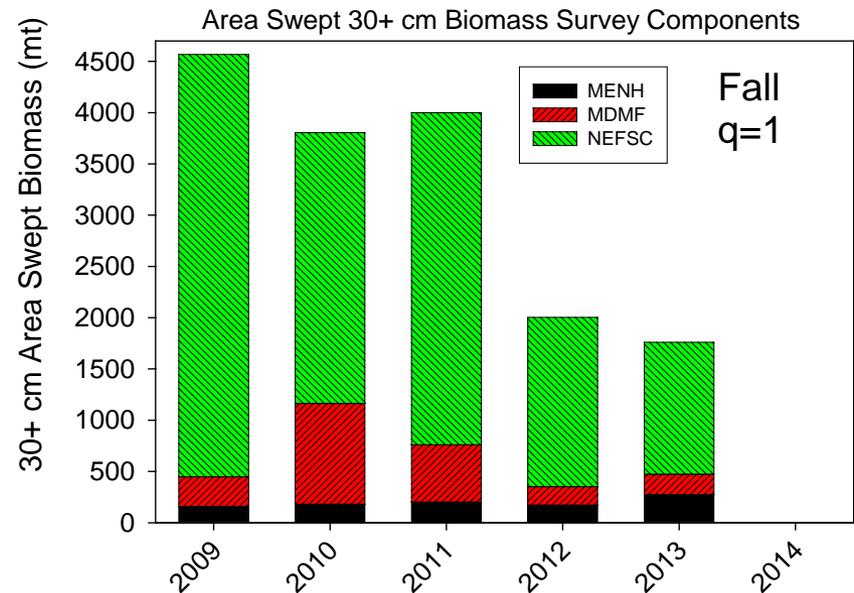
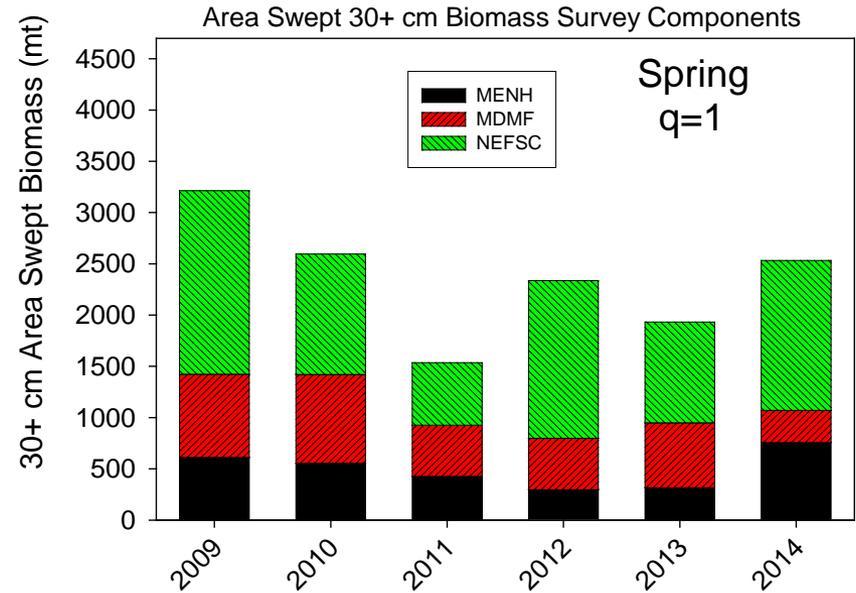
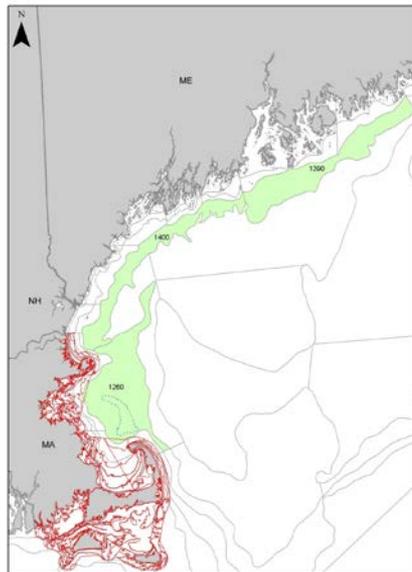
30+ cm Survey Area Swept Biomass Estimate

Used in SARC 52 (2011) & 2014 Operational Update

- Exploitable Biomass = 30+ cm biomass index per tow x total survey area / tow footprint x q
- Exploitation rate = catch / 30+ cm biomass
- Overfishing BRPs based on F40% from Length based YPR (Not planning on updating).

Assessment Plan

- Estimate Fall 2014 and Spring 2015 30+ cm biomass from the NEFSC, MDMF and MENH surveys.



Backup Plan C

- Average catch for recent years.





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Groundfish Assessment Oversight Panel 2015

Paul Rago and Population Dynamics Stock
Assessment Lead Scientists

July 27, 2015

Georges Bank Yellowtail Flounder

- Lead Scientist: Chris Legault
- Team Members: Larry Alade, Dheeraj Busawon (DFO), and Heath Stone (DFO)
- Last Assessed: 2015 TRAC (earlier this month)
- Not for review here
 - Information provided for completeness
 - SSC meeting September 1
 - TMGC meeting September 9-11

Georges Bank Yellowtail Flounder

- Empirical approach
- Average three bottom trawl surveys expanded to population biomass
- Apply exploitation rate (2%-16%)

