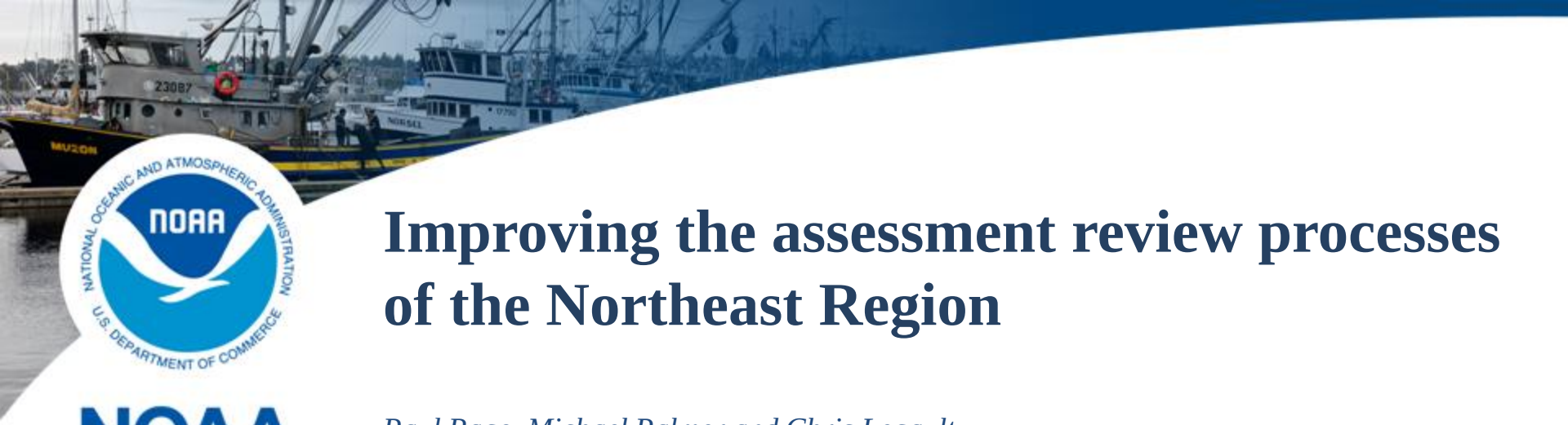

Improving the assessment review processes of the Northeast Region

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Past initiatives to improve

- Various attempts have been made to improve the quality, efficiency and consistency of the assessment review process
  - 2009: NEFSC ACL Working Group – *An Evaluation of Scientific and Assessment Needs to Support the Development of Acceptable Biological Catches (ABC) and Annual Catch Limits (ACLs) for Managed Fishery Resources in the Northeast Region.*
  - 2011: NOAA/NRCC – *A New Process for Assessment of Managed Fishery Resources off the Northeastern United States.*
  - 2014: NEFSC – *Stock Assessment Process and Modelling Program Review*
- Many of the proposed solutions are still evolving (operational assessments) or have not been fully implemented (research track)
- Despite these initiatives, many of the challenges still remain
  - *"In general, panelists found the assessment process to be highly complex and burdensome." – 2014 NEFSC Program Review Chair Summary*

What has happened since 2011?

- Operational Assessments
  - 2012—12 groundfish stocks in Feb 2012,
  - 2013—N&S monkfish stocks
- 2014 Pollock, GB winter flounder, GM winter flounder and GM cod
- 2015 Atlantic herring
- 2011-15 TRAC
- 2015 Twenty groundfish stocks-Sept.
- Model and Data updates for MAFMC SSC (fluke, scup, bluefish, dogs, SMB) and NEFMC SSC (small mesh groundfish, skates).
- Changes in policy re format, participation, conflict of interest, etc.

Assessments postponed to allow inclusion of new research

- Atlantic herring 2012
  - Extensive analyses of environmental effects + predation
- GOM cod back to back SARCs (+4 meetings) 2012
- Georges Bank Yellowtail (TRAC) 2014—extensive analyses of catchability
- Butterfish 2014—incorporation of thermal habitat
- Sea Scallop Methodology Review 2015
- Black Sea Bass 2016
- Mackerel 2016
- Real-time discard estimation 2016
- Monkfish tbd

Assessment Bucks and Efficiency Initiative (1of 2)

- ***Objectives***
  - Improve ability to produce useful assessments in a timely and regular manner
  - Increase pool of assessment talent and distribute workloads
- ***Improving database structures to support assessments***
  - Surveys, Commercial, Biological
- ***Improving data handling***
  - Estimating relative abundance
  - Processing of landings and discard estimation
  - Catch at Age estimation
  - Full documentation (meta data)
- ***Models (Toolbox and beyond)***
  - Inputs and outputs
  - Diagnostics
  - Comparisons among models

Assessment Bucks and Efficiency Initiative (2 of 2)

- ***Report Preparation***
  - Streamlining report
  - Database of tables, figures, maps, diagnostics, model results
- ***Assessment Bucks***
  - Internal costs are decreasing
  - Review Costs are variable
  - External cost accounting is challenging (eg PDT, FMAT, reviews)
  - Variable influence of timing
  - Cost Order: Age structured>Length based>Index

Challenges

- **Difficulty establishing assessment priorities**
  - Of the 50 managed stocks, only approximately 12 are assessed annually and many go 3 years or more in between assessments

- **Inconsistencies in assessment review approaches**
  - Over the last decade at least 7 different assessment review processes have been used
  - Example:
    - NEFMC has begun to use the operational assessment process for updates
    - MAFMC employs a less formal updates process which varies in scope from year to year

- **Binding nature of the existing benchmark process**
  - External peer review panels are often not familiar with fisheries management in the Northeast
  - Ever-changing composition of assessment review panels
  - Lack of local familiarity and small sample size random fluctuations have led to interesting outcomes with unintended consequences for management

- **Rigidity of the operational assessments**
  - Little opportunity to make incremental improvements in base stock assessment models
  - Potential stagnation of input data and assessment models

Perspective

- Many of the challenges facing fishery management in the Northeast Region are unique

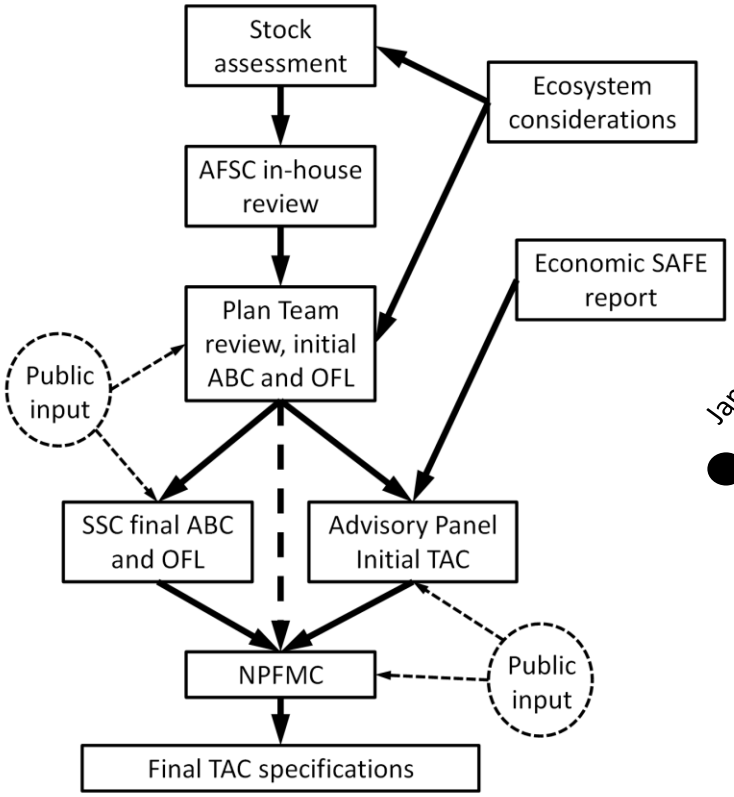
- However, perspective on how a revised Northeast assessment review process could work may be informed by the processes employed in other regions

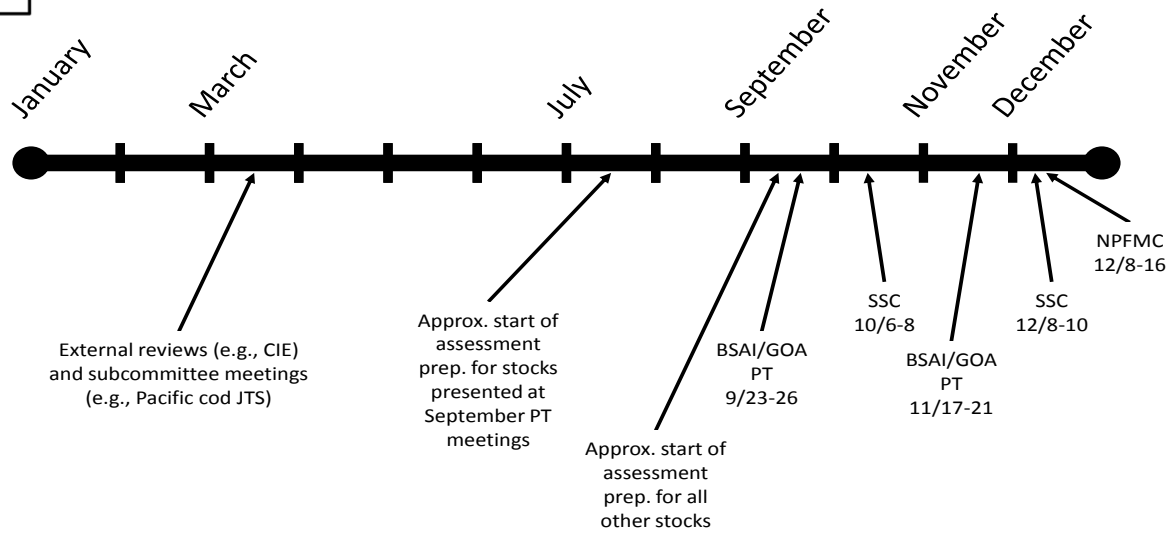
- Comparatively, the AFSC/NPFMC groundfish assessment review process had the ***appearance*** of a streamlined and more efficient process
  - Are there lessons to be learned from the Alaska Region's review process?
  - Could something similar, but custom tailored, work in the Northeast?

- The NEFSC sent two staff members from the Population Dynamics Branch to observe the AFSC/NPFMC groundfish assessment review process
  - GOA/BSAI Plan Team meetings: November 17-21, Seattle WA
  - SSC and NPFMC meetings: December 8-11, Anchorage AK

AFSC/NPFMC groundfish review process

- Between the GOA and BSAI FMPs, approx. 48 stocks/stock complexes reviewed annually
  - Not all stocks are assessed annually, but stocks of major economic importance are
  - For off-year stocks the SAFE report includes partial updates containing executive summaries and any newly available data
- Single assessment review process used to set groundfish catch specifications





Summary of the NPFMC Plan Team process

- The NPFMC Plan Teams ***are not*** similar to the NEFMC PDTs or MAFMC FMATs
  - ***Role:***
    - Primary responsibility is to serve as an assessment review body
      - Compile the Stock Assessment and Fisheries Evaluation (SAFE) reports
    - Generally don't play a role in the development and evaluation of management actions

  - ***Membership:***
    - Appointed from government (federal, state, intergovernmental) and academic institutions having expertise relating to groundfish fisheries
      - 3-4 members with population dynamics and assessment modelling expertise
      - Other areas of expertise include: Council processes, ecosystem considerations, fish biology, observer deployment and data collection, and in-season catch accounting
    - The absentee rate of Plan Team members is low
    - Consistency of membership over time with many of the Plan Team members having served for over a decade (consistency in process and advice and familiarity with assessments)

  - ***Review process:***
    - Meet twice per year (September and November)
    - November meeting agenda is intense and demanding (40^{+} stocks reviewed)
    - The level of review at any individual Plan Team meeting is often less than assessments are subjected to in the SARC process
      - Since assessments are reviewed frequently, there is a high degree of familiarity

Summary of the NPFMC SSC process

- Meet 5 times a year in conjunction with AP and Council
- Primary role to select Tier
  - OFL and ABC formulaic
  - Max possible ABC reported and reasons for any reductions
- Groundfish two bites
  - Oct: new models/data, feedback to leads
  - Dec: final models (no surprises), OFL and ABC
- Written suggestions provided in SSC reports
  - Section of SAFE report responds to these suggestions
  - Clear feedback cycle
  - CIE recommendations can be dismissed
- SSC leads (2-3) assigned to each stock
  - May be the only ones who actually read that SAFE chapter
  - Draft text of SSC report for that stock
  - Fast turn-around, deliver report one day later
- Trust
  - Easy when all stocks healthy
  - ACL usually set well below ABC (role of AP and Council)
- Review Ecosystem and Economic SAFE reports
  - Not used in setting OFL or ABC

Tiers used to determine ABC and OFL for groundfish stocks.

(1) Information available: Reliable point estimates of B and B_{MSY} and reliable pdf of F_{MSY}.

1a) Stock status: $B/B_{MSY} > 1$
$F_{OFL} = m_A$, the arithmetic mean of the pdf
$F_{ABC} \le m_H$, the harmonic mean of the pdf

1b) Stock status: $a < B/B_{MSY} \le 1$
$F_{OFL} = m_A \times (B/B_{MSY} - a)/(1 - a)$
$F_{ABC} \le m_H \times (B/B_{MSY} - a)/(1 - a)$

1c) Stock status: $B/B_{MSY} \le a$
$F_{OFL} = 0$
$F_{ABC} = 0$

(2) Information available: Reliable point estimates of B, B_{MSY}, F_{MSY}, $F_{30\%}$, and $F_{40\%}$.

2a) Stock status: $B/B_{MSY} > 1$
$F_{OFL} = F_{MSY} \times (F_{30\%}/F_{40\%})$
$F_{ABC} \le F_{MSY}$

2b) Stock status: $a < B/B_{MSY} \le 1$
$F_{OFL} = F_{MSY} \times (F_{30\%}/F_{40\%}) \times (B/B_{MSY} - a)/(1 - a)$
$F_{ABC} \le F_{MSY} \times (B/B_{MSY} - a)/(1 - a)$

2c) Stock status: $B/B_{MSY} \le a$
$F_{OFL} = 0$
$F_{ABC} = 0$

(3) Information available: Reliable point estimates of B, $B_{40\%}$, $F_{30\%}$, and $F_{40\%}$.

3a) Stock status: $B/B_{40\%} > 1$
$F_{OFL} = F_{30\%}$
$F_{ABC} \le F_{40\%}$

3b) Stock status: $a < B/B_{40\%} \le 1$
$F_{OFL} = F_{30\%} \times (B/B_{40\%} - a)/(1 - a)$
$F_{ABC} \le F_{40\%} \times (B/B_{40\%} - a)/(1 - a)$

3c) Stock status: $B/B_{40\%} \le a$
$F_{OFL} = 0$
$F_{ABC} = 0$

(4) Information available: Reliable point estimates of B, $F_{30\%}$, and $F_{40\%}$.
$F_{OFL} = F_{30\%}$
$F_{ABC} \le F_{40\%}$

(5) Information available: Reliable point estimates of B and natural mortality rate M.
$F_{OFL} = M$
$F_{ABC} \le 0.75 \times M$

(6) Information available: Reliable catch history from 1978 through 1995.
OFL= the average catch from 1978 through 1995, unless an alternative value is established by the SSC on the basis of the best available scientific information
ABC ≤ 0.75 × OFL

AFSC/NPFMC process: strengths and weaknesses

- **Strengths:**
  - There is a single review process for all groundfish stocks
  - The objectivity of Plan Team and SSC membership
  - Consistency of Plan Team and SSC membership
  - Allows for a high-frequency of stock assessment results
  - Limited terms of reference
  - Ability of lead scientists to explore new models and approaches without the overhead of a benchmark process
  - Healthy stocks allow natural fluctuations to be absorbed more easily

- **Weaknesses:**
  - Resource intensive process from September through December
  - Thoroughness of the peer-review
  - Potential for “group think” with a particular stock assessment
  - Lack of consistency in the SAFE report format (tables and figures and model diagnostics)
  - The size of the SAFE reports

Room for improvement?

- The Northeast assessment review process is continually evolving
  - Continual improvements can build on the advice from previous initiatives

- **Overarching goals:**
  - Improve the quality, consistency and efficiency of the regional review process
  - Streamline the Northeast Region stock assessment review and catch specifications process
    - Use the same process throughout the region
  - Increase the frequency of stock assessments
    - Employ a regular schedule for operational assessments (e.g., every 2-3 years)
    - National initiative for assessment prioritization could be used to guide scheduling of research track assessments
  - Formalize the rules for timing, responsibilities, standardization
  - Enhance continuity, reduce wild swings in status, catch limits
  - Ensure an informed and invested group of reviewers
  - Result in incremental improvements without the need to benchmark for modest changes

Next steps

- The NEFSC has devoted some time to thinking how to meet these goals and wants to work with our NRCC partners to implement changes to address these goals

- The NEFSC could distribute a white paper as a discussion starter in the next two weeks and host a workshop this summer to flesh out details

END