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SEFSC, Miami

# Interim Analysis timing and Use for Management

## A Case Study: Gulf of Mexico Red Grouper

GMFMC & SAFMC

Joint Workgroup

Gulf and Caribbean Branch, SEFSC

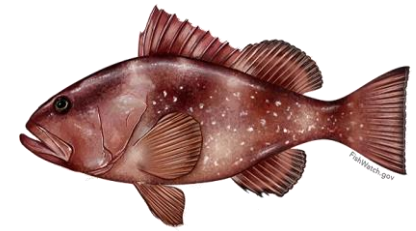
September 10, 2020



# Interim Assessments

- A quantitative method of adjusting catch advice
- Occurs between accepted SEDAR stock assessments
- Preferably, uses an index of abundance supported by an MSE

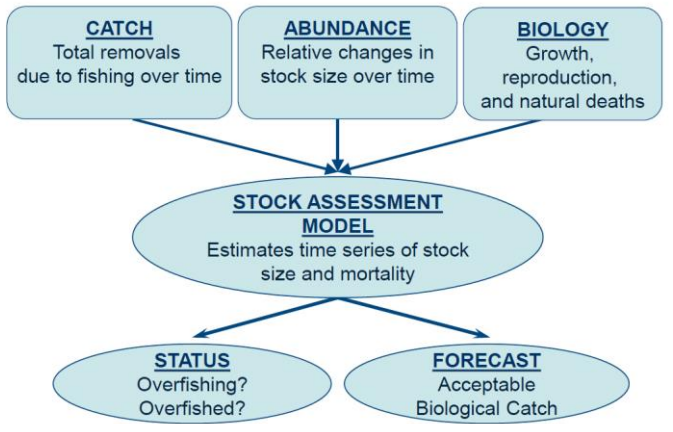
# The Case Study:



- Review Interim Analyses for Gulf red grouper
  - Recent assessment history
  - Data requirements
  - Approach

# Interim Analysis Process

## Operational



## Data Collection & Analyses:

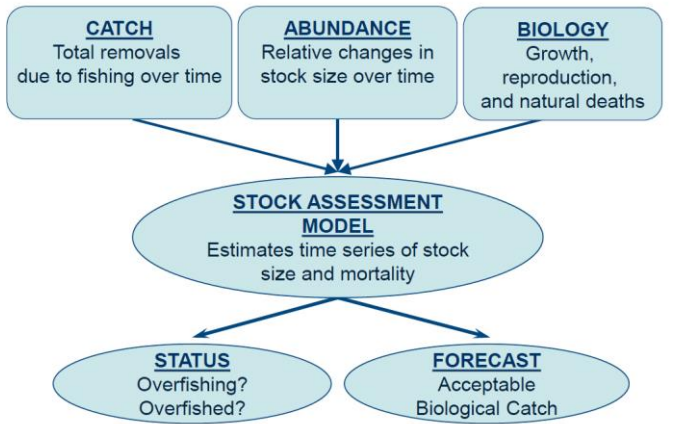
- Catch
- Survey Indices

Year  $y-1$

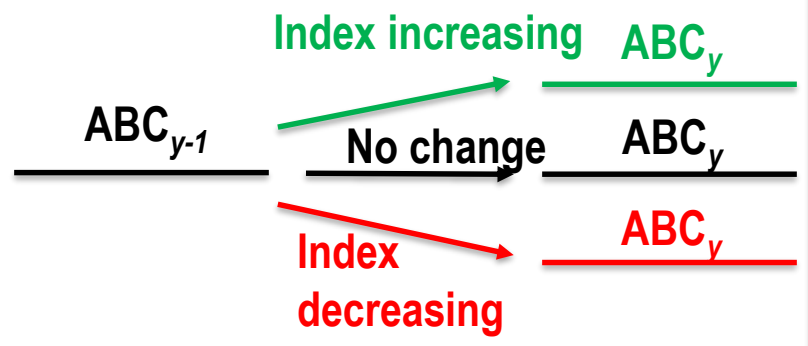
Year  $y...$

# Interim Analysis Process

## Operational



## Interim Analysis



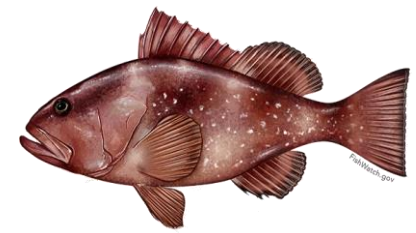
## Data Collection & Analyses:

- Catch
- Survey Indices

Year  $y-1$

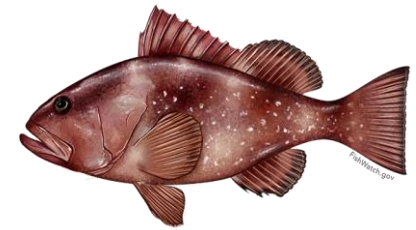
Year  $y...$

# Red grouper recent assessment history

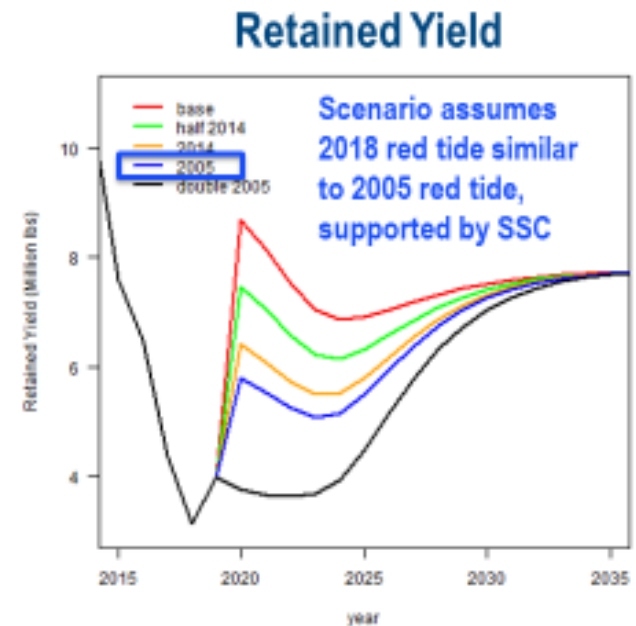


Assessment	Timing of Completion	SSC Outcome
SEDAR 42	2015 – October	ABC increased to 13.92 mp gw
Interim Analysis	2018 – October	IA suitable for management for the Council to set 2019 ACL at 4.6 mp gw
SEDAR 61	2019 – July	Recommended ABC of 4.9 mp gw, which assumed 2018 red tide similar to 2005 event
Interim Analysis	2019 – December	Not used to adjust ABC but provided support for assumption of severe red tide in 2018

# Interim analysis history



- First conducted following concerns over condition of stock before completion of SEDAR61
- Second conducted following concerns over 2018 red tide event
  - SEDAR61 terminal year: 2017  
(2020 was first year of projections)
  - Made assumptions in projections regarding the impact of 2018 red tide



# Data requirements: index of abundance

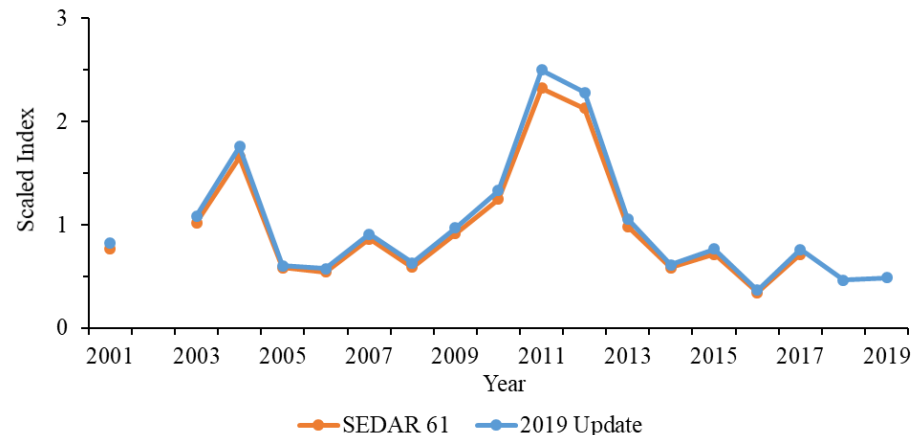
An Updated Index of Relative Abundance for Red Grouper Captured During the NMFS Bottom Longline Survey in the Northern Gulf of Mexico

Adam G. Pollack

Riverside Technology, Inc.  
NOAA Fisheries, Southeast Fisheries Science Center,  
Mississippi Laboratories, Pascagoula, MS

Recommended by SEFSC  
for use because of:

1. Widespread spatial coverage
2. Consistent sampling design
3. Prevalence of red grouper

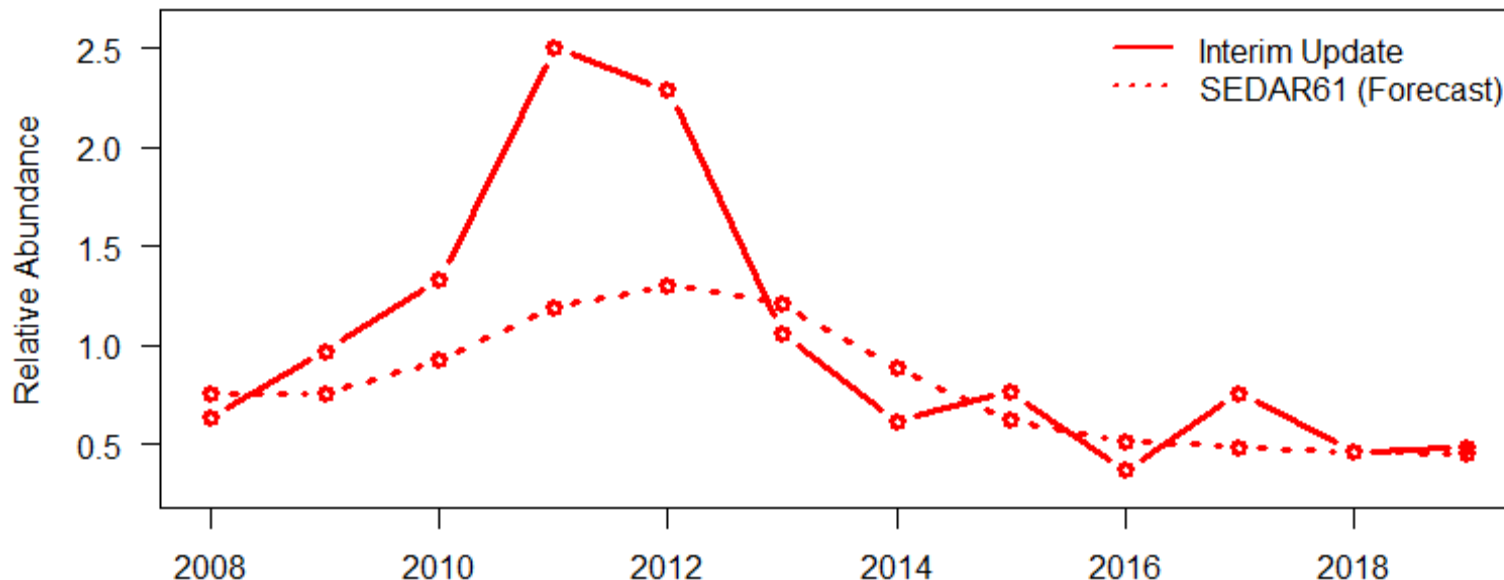


**Document submitted as meeting material  
during January 2020 SSC meeting (08b item)**



# How the Index of Abundance Works...

- Compare where we are now to where we want to be
  - Where we want to be = Forecasted index value
  - Where we are now = Observed index value
    - Good agreement between values



# Harvest Control Rule (HCR)

$$ABC_y = ABC_{assess} \left( \frac{O_y + \beta}{F_y + \beta} \right)$$

- Where  $ABC_{assess} = 4.9^*$  million pounds gutted weight

\*Sep 2019 SSC recommendation  
(76%com, 24%rec)

$O_y$  = Observed index value in year y,

$F_y$  = Forecasted index value in year y,

$\beta$  = Scalar to adjust responsiveness of HCR x SE  
of index

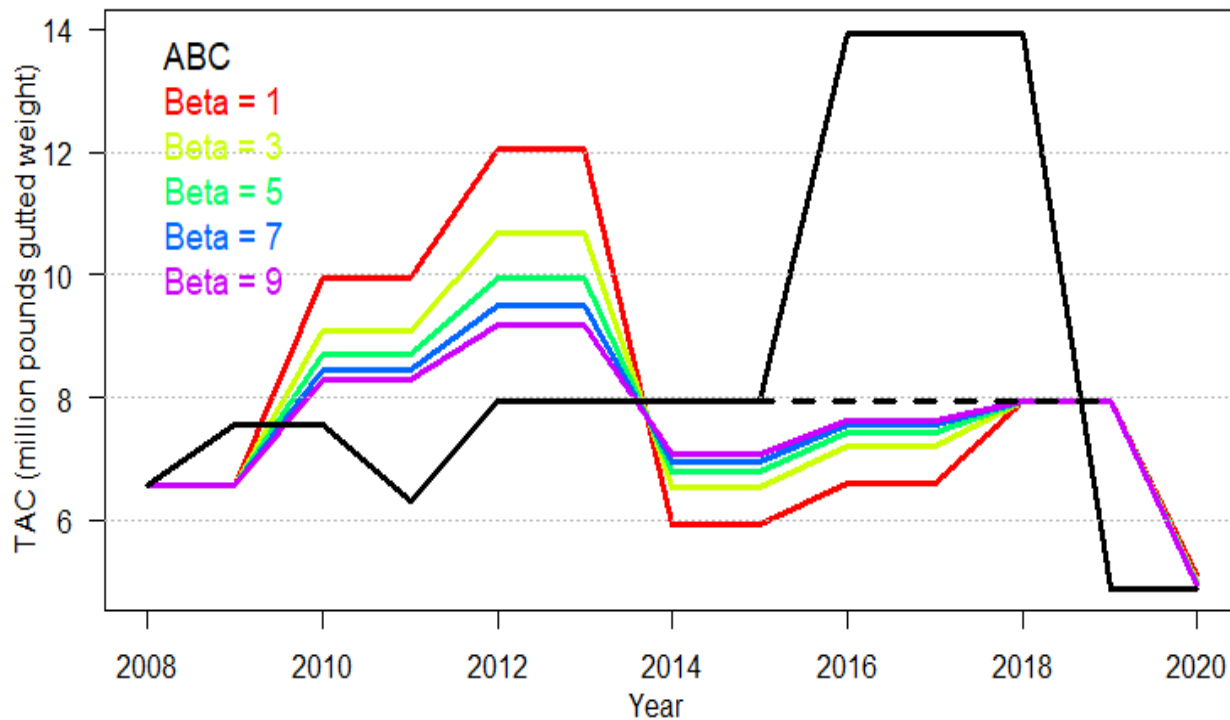
- Changes to ABC only implemented every other year

$ABC_{assess} = 4.9^*$  million pounds gutted weight  
 \*Sep 2019 SSC recommendation (76%com,24%rec)

# Effect of $\beta$

- Previously recommended: (1) excluding ABC change following SEDAR42; and (2)  $\beta = 1$ 
  - Low  $\beta$  tracks index more closely
  - High  $\beta$  tracks ABC

$\beta$	Adj ABC (million pounds gutted weight)
1	5.097
3	5.004
5	4.971
7	4.954
9	4.943



The dashed black line indicates ignoring the ABC increase that resulted from SEDAR42

# Desk Management Strategy Evaluations (MSEs)

Address the following for the IA:

- How much time should pass between full stock assessments?
- How does uncertainty in the index combined with the HCR affect management?
- Which index is best for use in the IA?

MSEs may need to be redone periodically to address specific questions, but not every time an IA is conducted.

# Pilot MSE for Grey Triggerfish

- Will be presented to the GMFMC SSC in mid-September.

# Timelines for future IAs

- SEFSC receives official request from Council for an IA.
- 3-6 months are required to develop the MSE tool to choose the index (if a new species to IA, or if a new assessment has been accepted).
- IA, once the index is chosen, the timeline is limited by the time it takes to develop the index of abundance.
  - Some are internal to the SEFSC, and have been automated (days)
  - Some are external and require a month or more, and the latest year of data may only be available later in the following calendar year (e.g. Video index)