

Tab B, No. 7(b)



NOAA
FISHERIES
SEFSC, Miami

SEDAR 61: US Gulf of Mexico Red Grouper

Gulf of Mexico Fishery Management Council
Assessment Review

October 22, 2019



Outline

- Review of data inputs
- Model results
- Projections
 - 2018 red tide
 - Stakeholder input

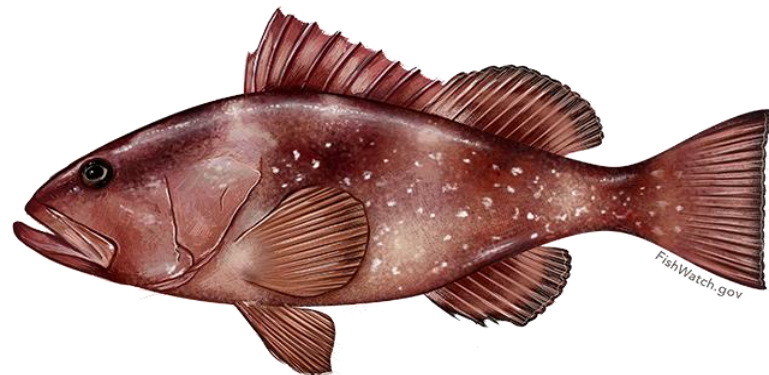
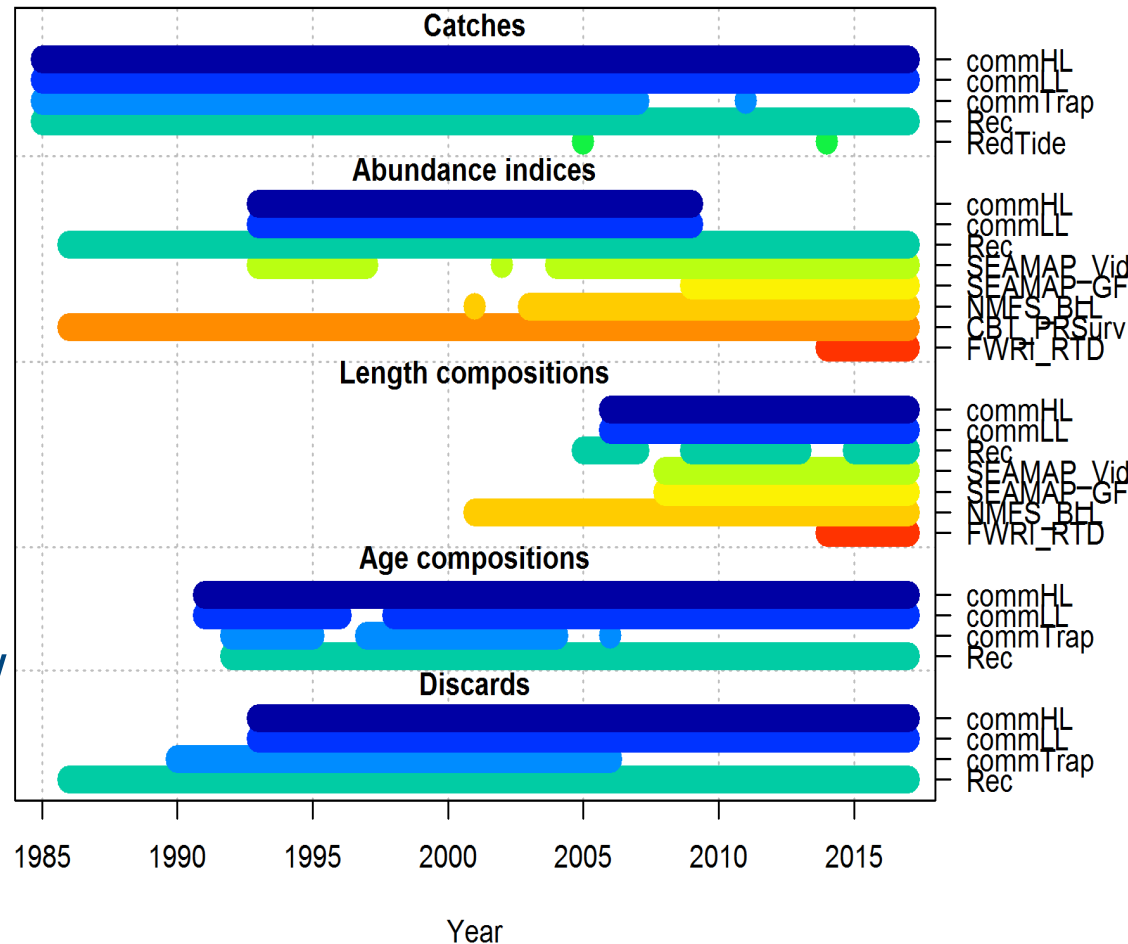


Photo Credit: Ed Walker, Venice Area, August 2018

Review of Data & Updates

Data Updates:

- Recreational data
- Commercial discards
- Combined video index & length composition
- Recreational age composition
- Growth and natural mortality
- Fecundity

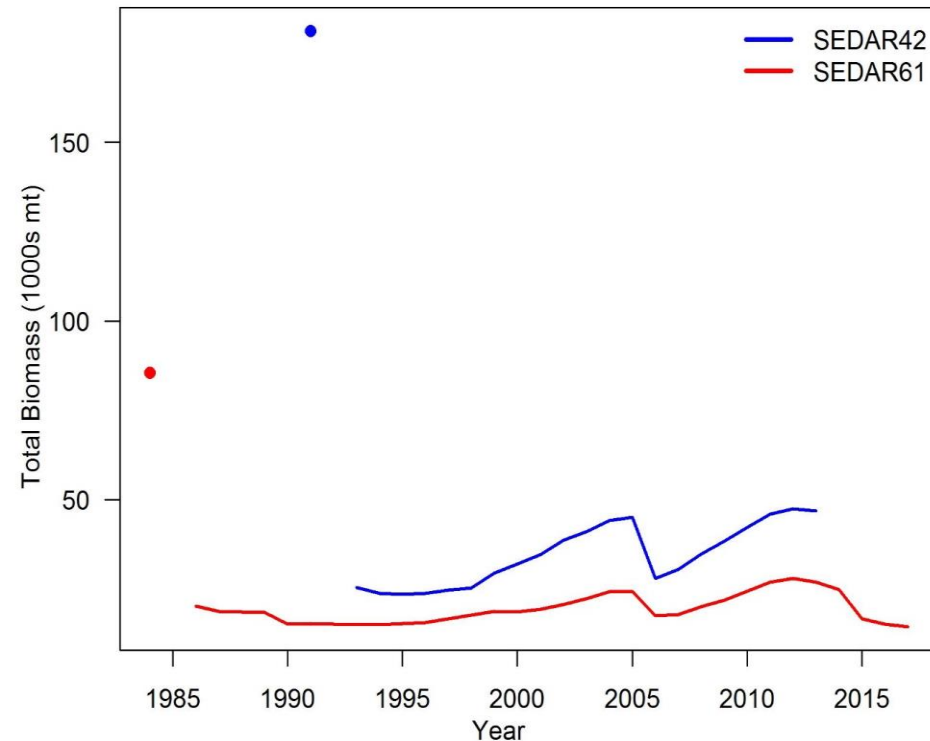


New Data:

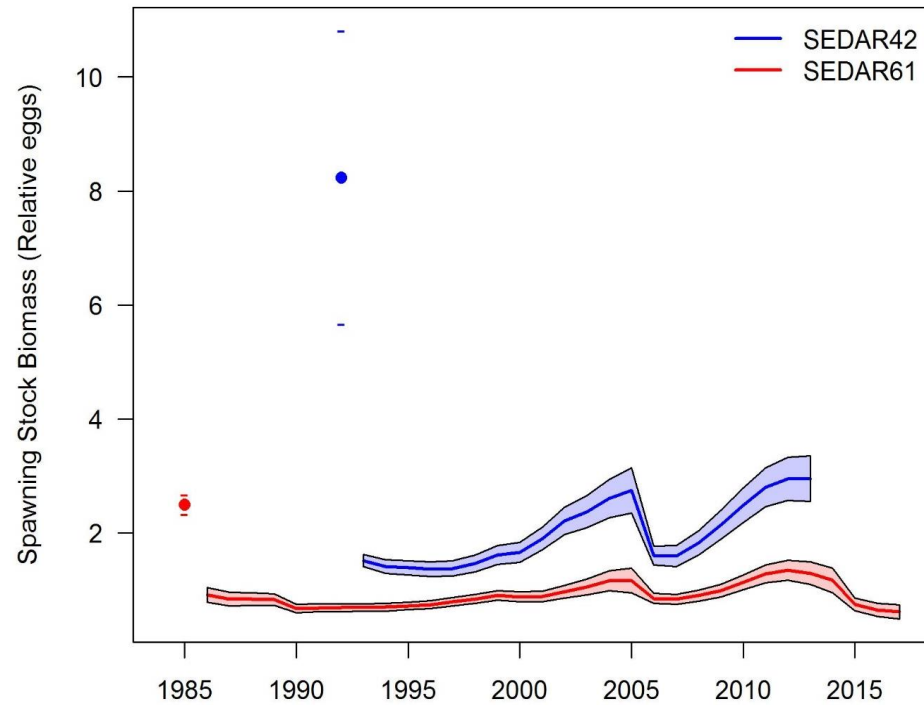
- FWRI repetitive time drop index and length composition

Biomass

Total Biomass (mt)



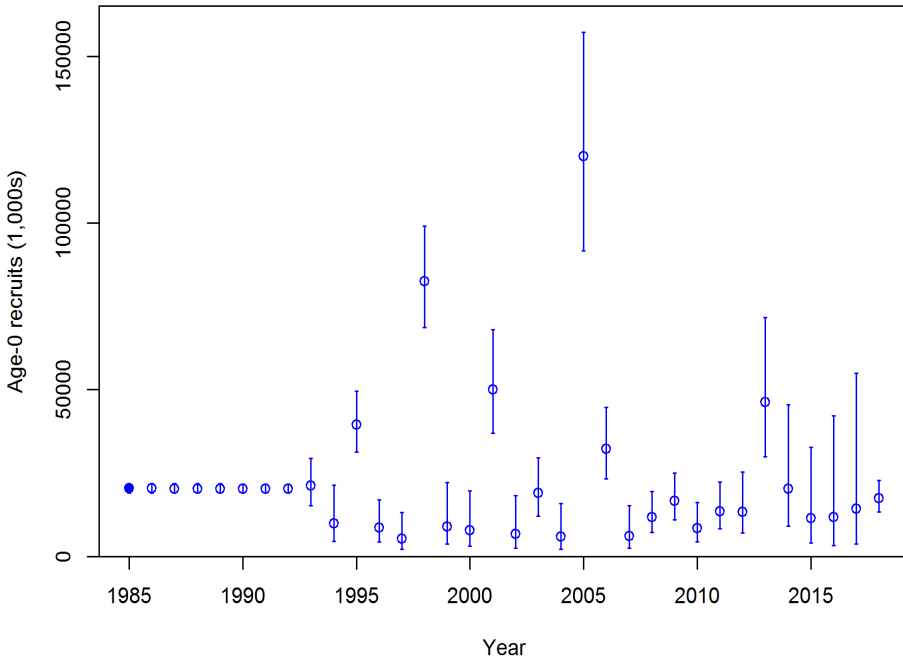
SSB (scaled # of eggs)



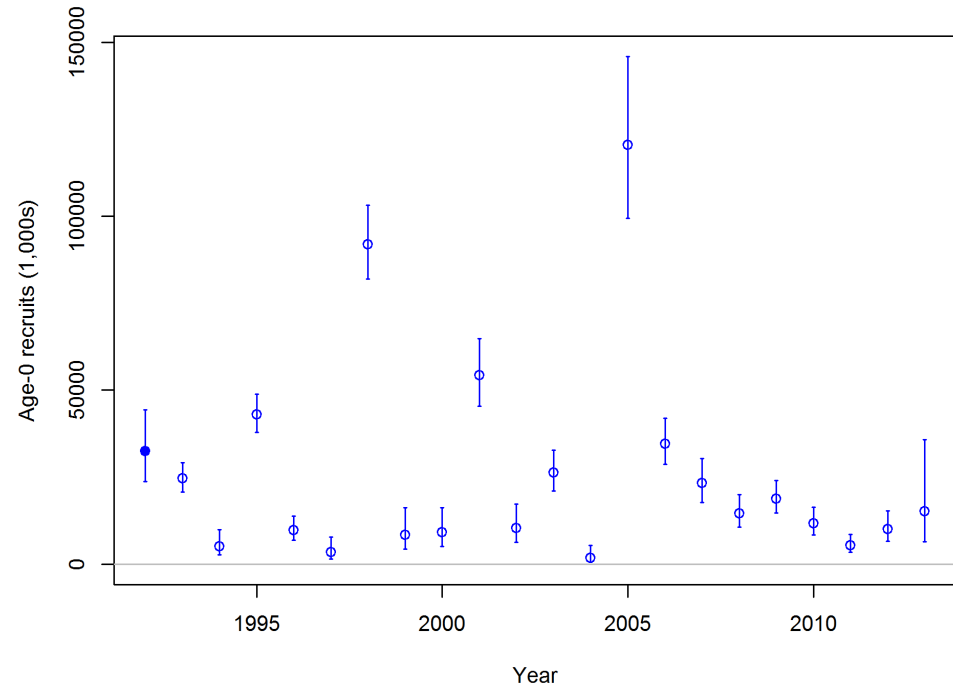
- Higher biomass in SEDAR42 model was a computational error
- Declines in 2005 and 2014 following severe red tides

Recruitment

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SEDAR42

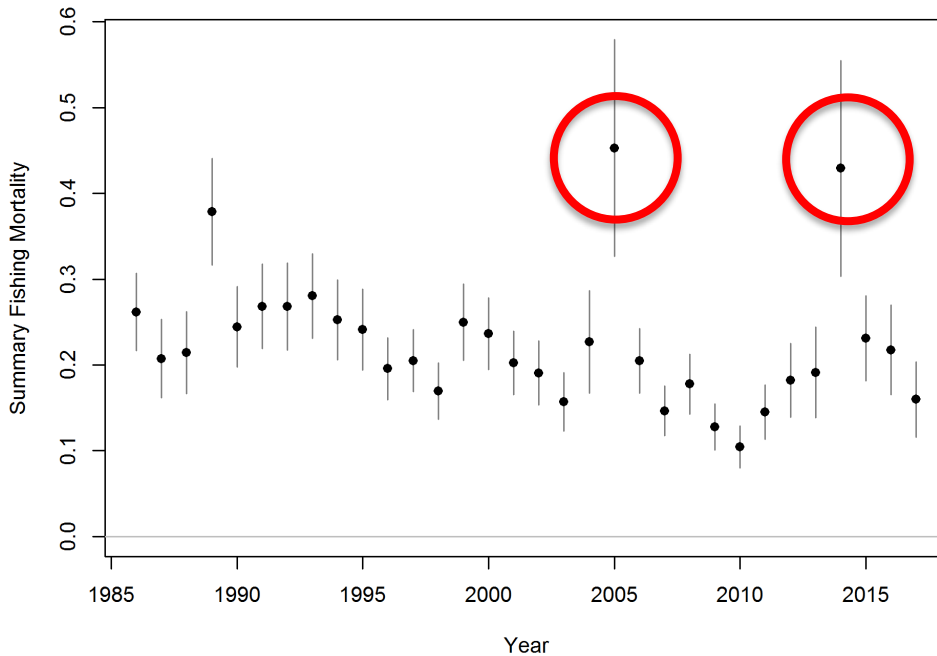


- Strong recruitment events in 1995, 1998, 2001, 2005, and 2013

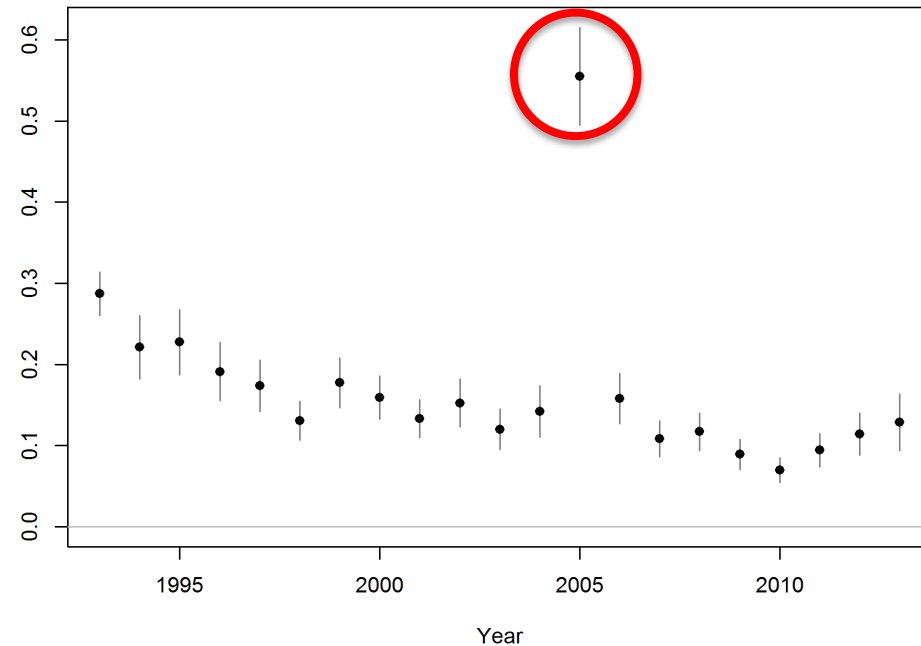
Exploitation Rate

- Fraction of population removed in biomass

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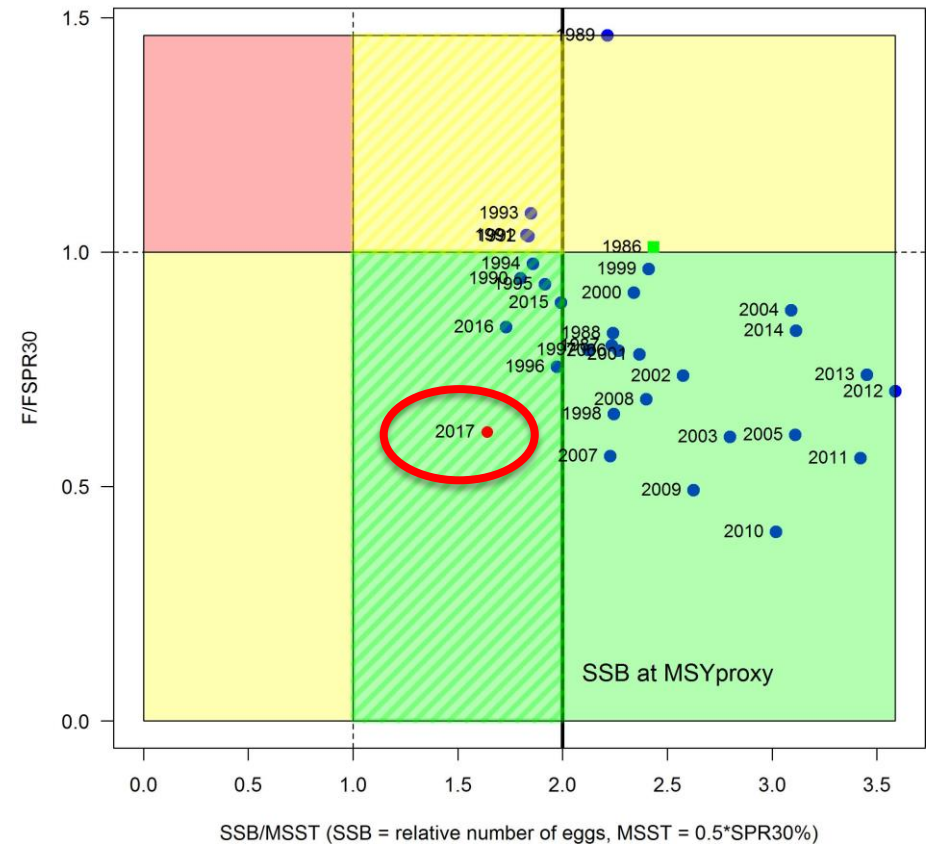
SEDAR42



- Red tide mortality included
- Recent fishing mortality rate one of lowest in time series

Gulf Red Grouper Stock Status in 2017

- In 2017:
 - Overfishing is not occurring
 - Not overfished but remains below the target
 - Would be considered overfished under previous Minimum Stock Size Threshold defined as: $(1 - M) * SSB_{SPR30\%}$



Projection Settings

- Constant recruitment, selectivity, retention, and discard mortality based on recent period (2010-2017)
- Catch allocation by fleet: 76% Commercial, 24% Recreational

| Fleet | Landings | Landings (pounds) | ACL | Breakdown of landings (2017 ratio) |
|---|------------------|-------------------|-----------|------------------------------------|
| 2018 (Final Landings Estimates) | | | | |
| Commercial vertical line | 296 (mt) | 652,360 | 8,190,000 | |
| Commercial longline | 759 (mt) | 1,673,305 | | |
| Recreational | 210,613 (Number) | - | 2,580,000 | |
| 2019 (Emergency Rule effective 5/17/2019) | | | | |
| Commercial vertical line | 430 (mt) | | 3,160,000 | 948,000 (30%) |
| Commercial longline | 1,003 (mt) | | | 2,212,000 (70%) |
| Recreational | 210,613 (Number) | | 1,000,000 | |

Stakeholder Observations

2018, GMFMC “Something’s Fishy with Red Grouper”

Keepers:

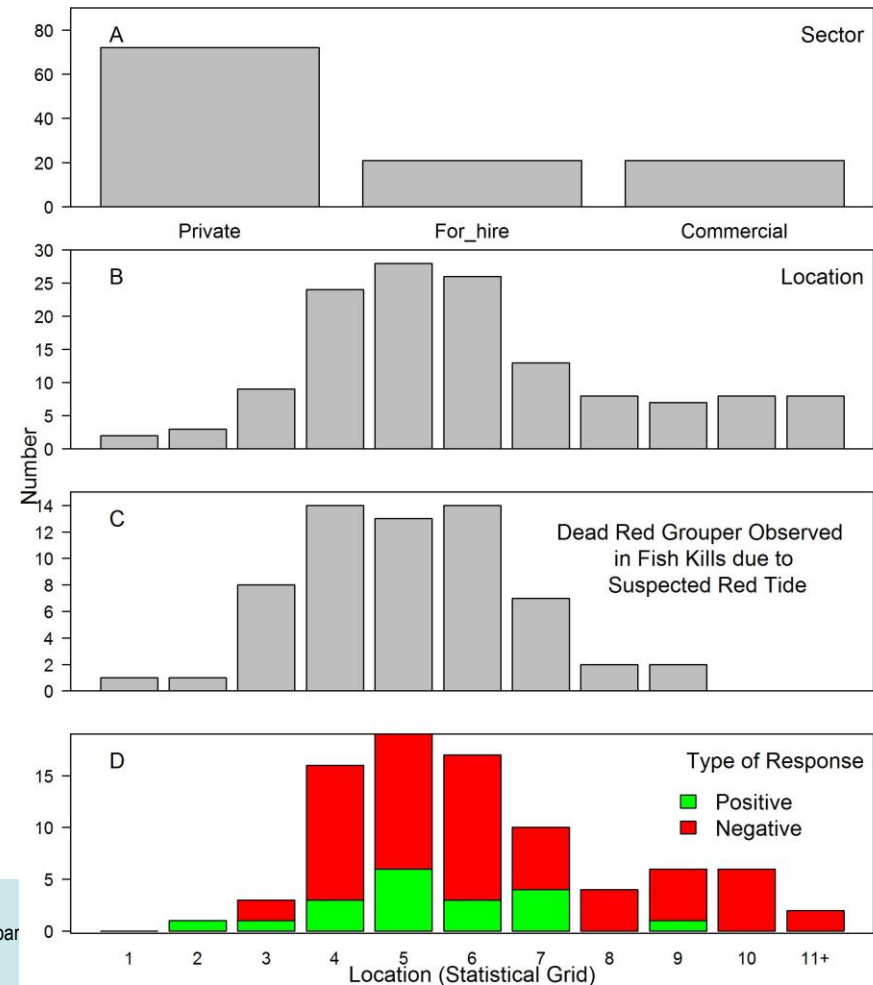
- Deeper than historically
- Fewer in recent years

Recruitment:

- Recent increase in smalls

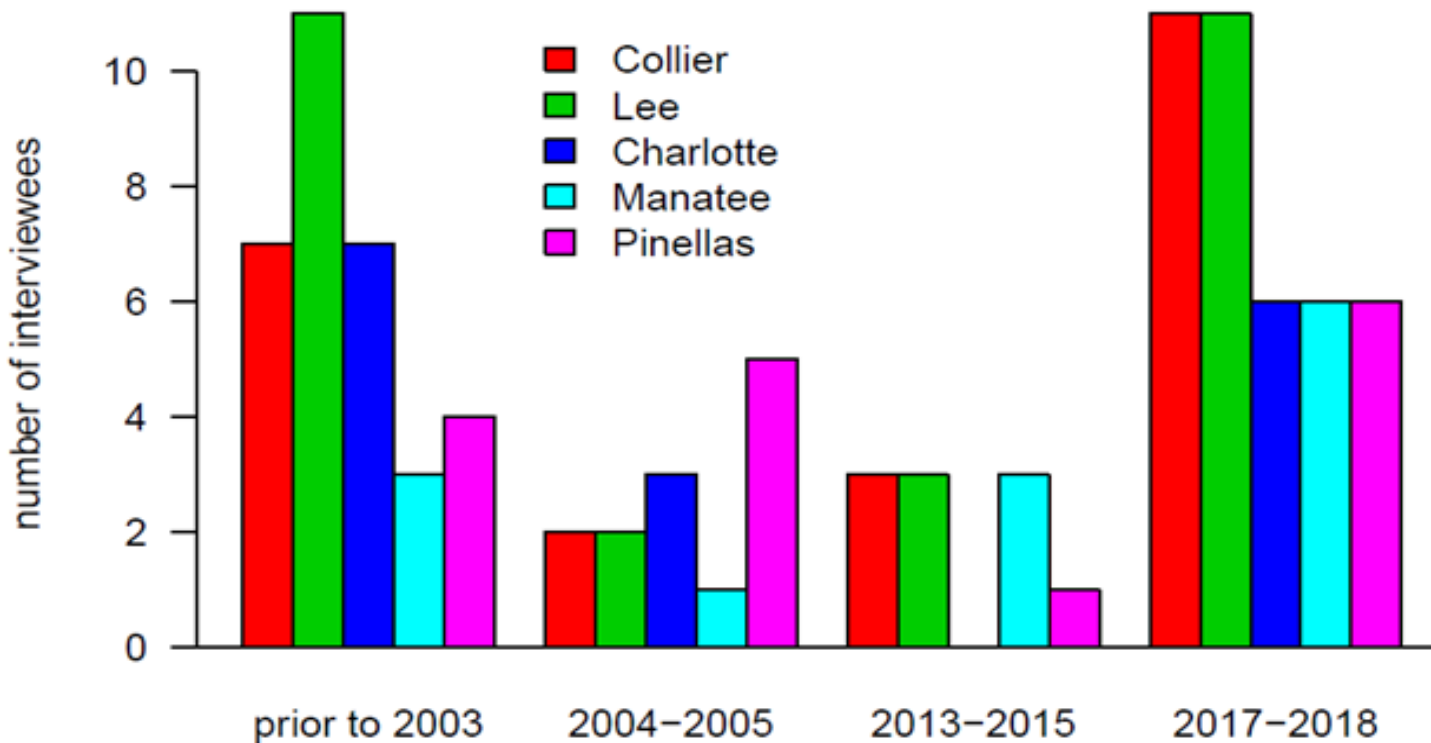
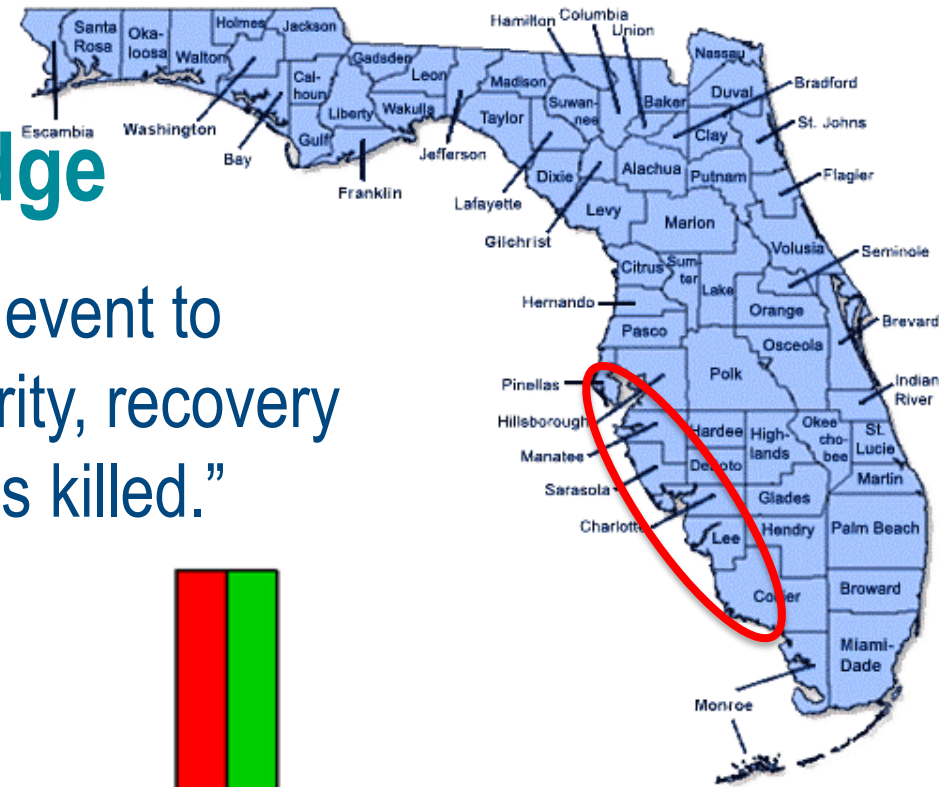
Environment:

- May shift location due to storms
- Being displaced by red snapper
- Depredation on discards is increasing
- Population hasn’t recovered since the 2014 red tide event



Local Ecological Knowledge

- “Compare the recent 2017-2019 event to previous events in terms of severity, recovery time, temporal extent and species killed.”



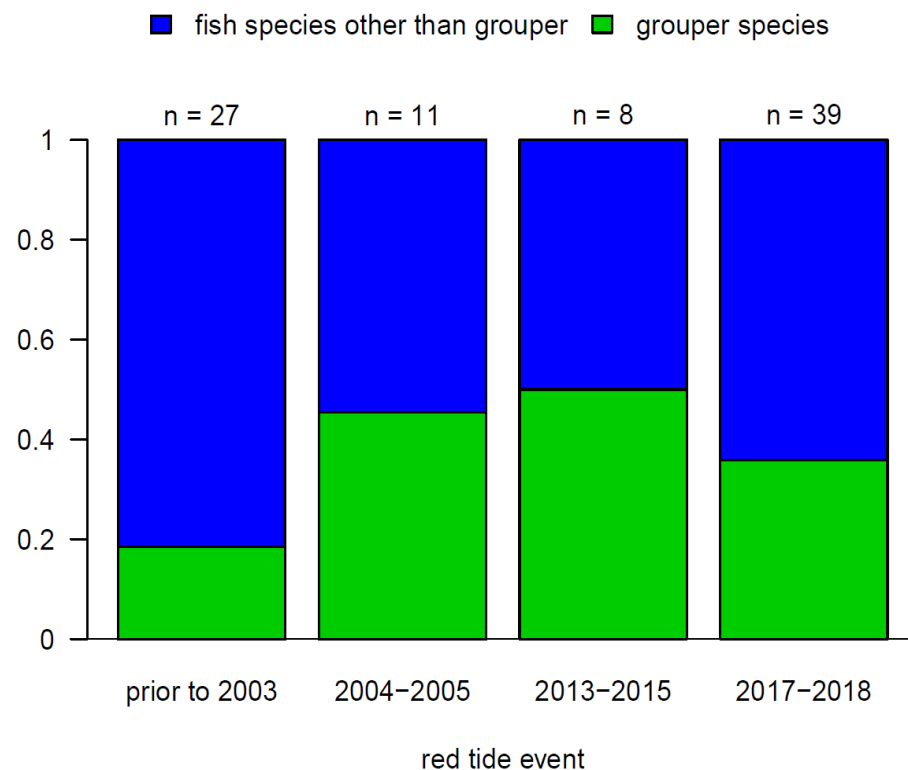
County Image:
<http://edr.state.fl.us/content/area-profiles/county/index.cfm>

Local Ecological Knowledge

By Event



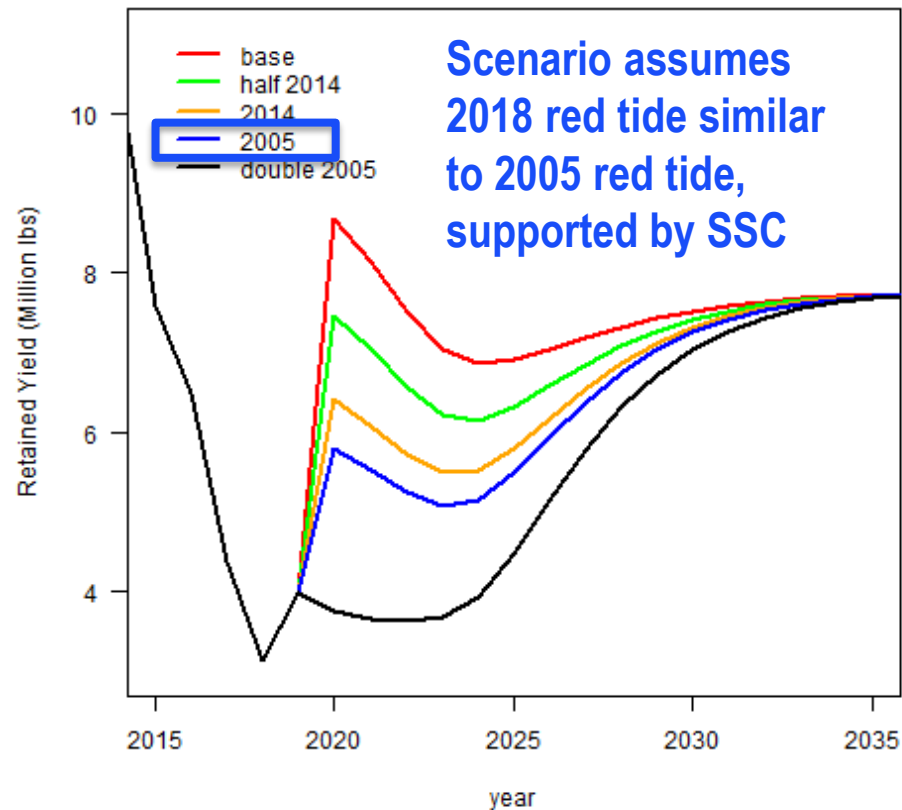
By Species Type



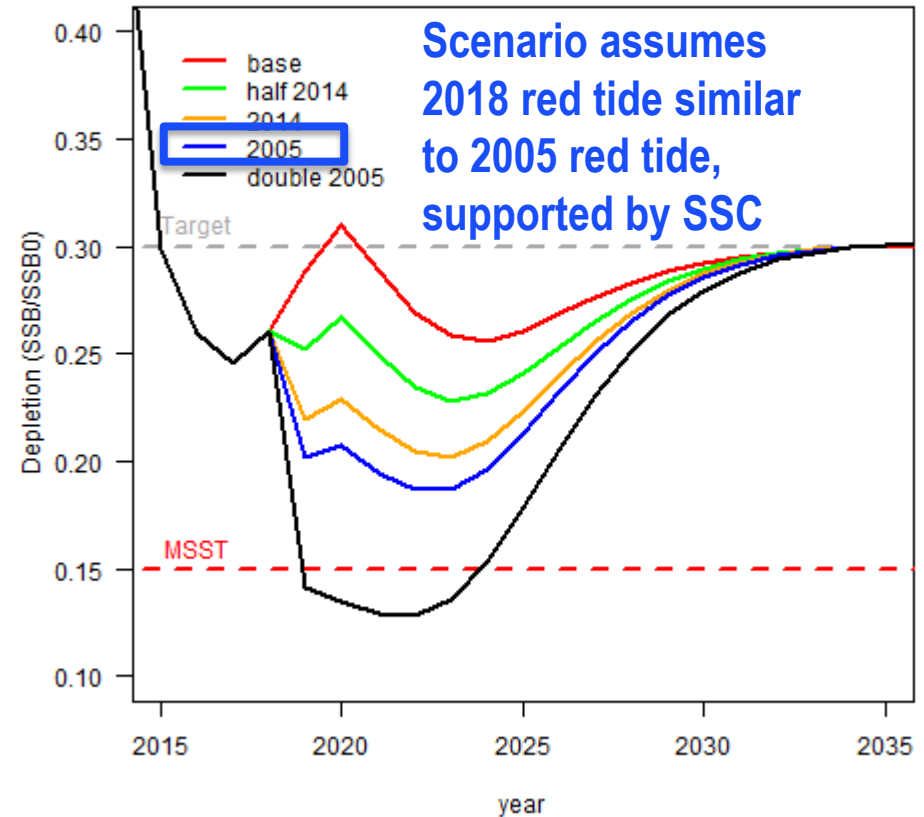
- 2018 frequently ranked as devastating across regions and lasted longer than previous red tide events

Projections: $F = F_{30\%SPR}$

Retained Yield



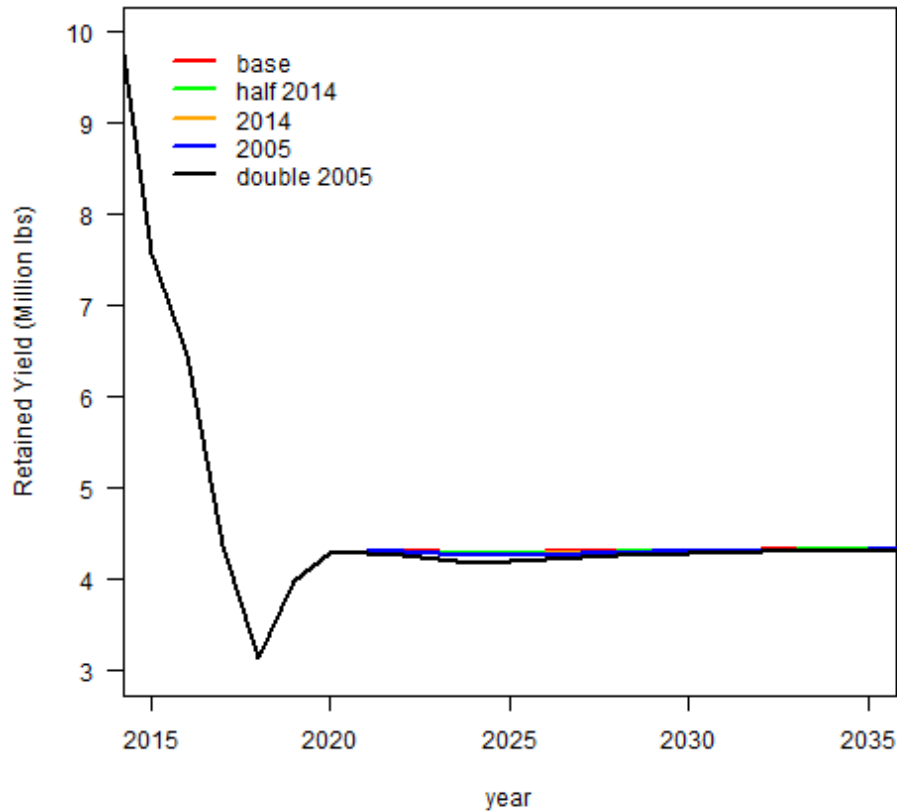
Depletion



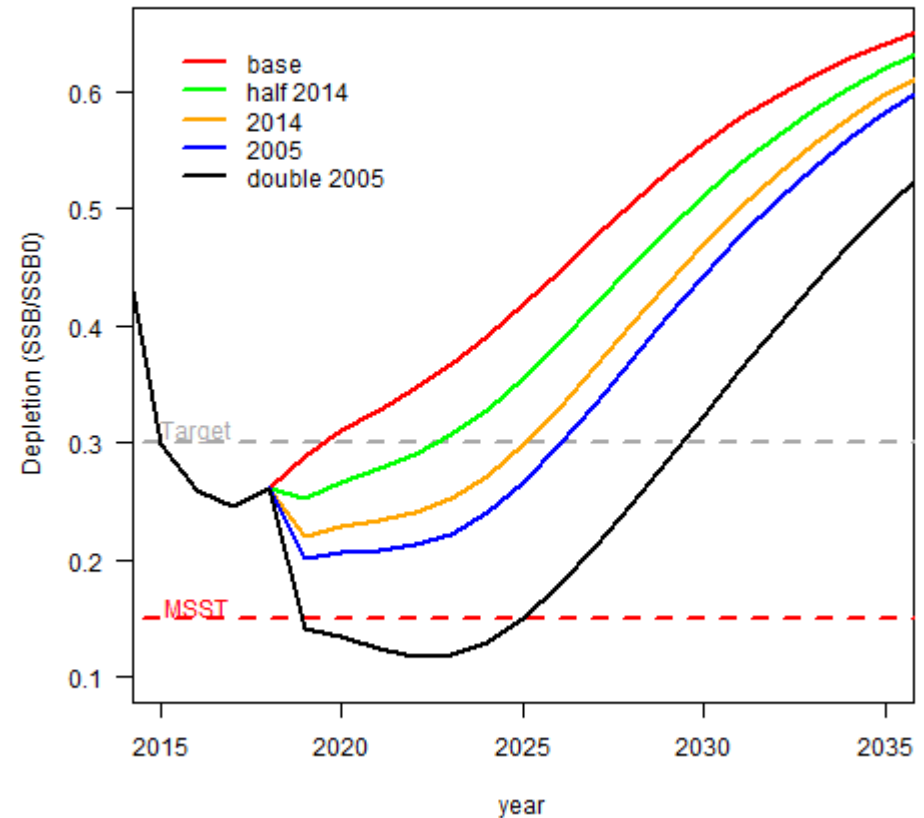
- 2020: below SSB Target if 2018 red tide event was severe
- Reach SSB Target after 2035 for all scenarios

Projections: Landings fixed at 2017 target

Retained Yield

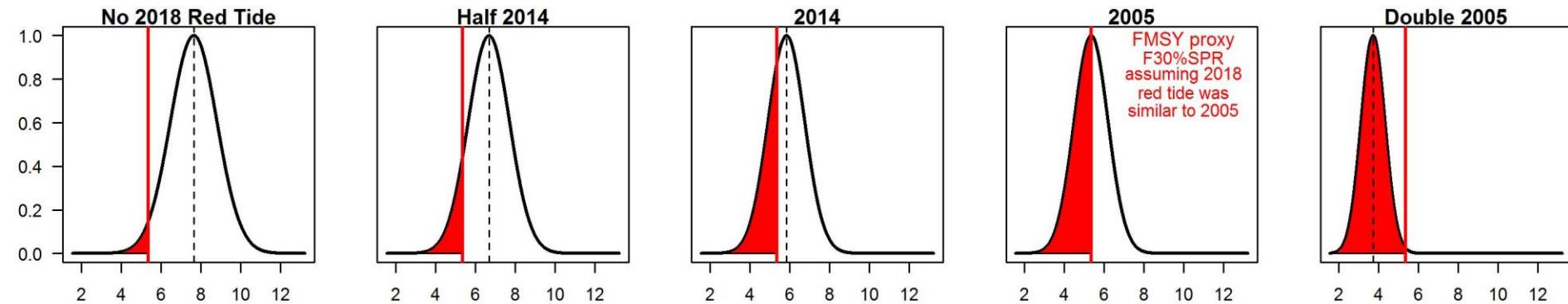


Depletion



- 2020: below SSB Target if 2018 red tide event was severe
- Reach SSB Target between 2023 to 2029 depending on severity

Probability of Overfishing



| Scenario | Catch (Lbs) | No 2018 Red Tide | Half 2014 | 2014 | 2005 | Double 2005 |
|---------------|-------------|------------------|-----------|------|-------------|-------------|
| F30SPR | 5,348,324 | 0.03 | 0.10 | 0.30 | 0.50 | 1.00 |
| | 5,190,960 | 0.02 | 0.08 | 0.24 | 0.43 | 0.99 |
| | 5,130,000 | 0.02 | 0.07 | 0.22 | 0.40 | 0.99 |
| | 4,900,000 | 0.01 | 0.04 | 0.16 | 0.30 | 0.98 |
| 2017 Landings | 4,305,711 | 0.00 | 0.01 | 0.05 | 0.11 | 0.83 |

Summary

- SSC recommended setting OFL and ABC under the assumption that the 2018 red tide event was similar in magnitude to the 2005 red tide event
 - Growing evidence suggests 2018 had a large impact on population, largely from stakeholder input and updated indices of abundance from fishery-independent surveys.
- Maintaining current catch levels reduces this risk.

| Scenario | No 2018 Red Tide | Half 2014 | 2014 | 2005 | Double 2005 |
|-------------------------------|---------------------|--------------|------|------|----------------|
| Landings fixed at 2017 target | 0.00 | 0.01 | 0.05 | 0.11 | 0.83 |

MRIP Source and 2017 Landings

- 2019 ACL in Emergency Rule based on 2017 landings
 - Included preliminary 2017 MRIP-AP AIS adjusted landings

| Year | Total Landings | Comm Landings | Rec Landings |
|------|----------------|---------------|--------------|
| 2017 | 4.16 | 3.16 | 1 |

- 2017 landings with preliminary MRIP-FES landings

| Year | Total Landings | Comm Landings | Rec Landings |
|------|----------------|---------------|--------------|
| 2017 | 5.26 | 3.16 | 2.10 |

****All pounds gutted weight**

Questions?

**Thank you to all SEDAR61 data providers
and for your attention!**



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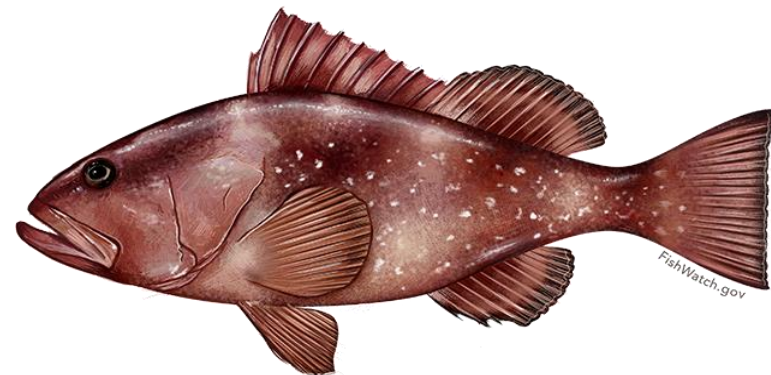
Allocation Considerations

October 22, 2019



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- Model outputs (OFL, ABC) based on MRIP-FES landings
- Allocations were set based on MRFSS landings
- For consistency, allocations should be updated to MRIP-FES
- Changing allocation changes model outputs



Example result of not changing allocation

- ACL and allocation based on historical landings
 - Sector A = 100 lbs Sector B = 100 lbs
 - ACL = 200 lbs, allocation 50:50
- New data for the same years
 - Sector A = 200 lbs Sector B = 100 lbs
 - ACL = 300 lbs
- If allocation stays 50:50
 - Sector A quota = 150 lbs Sector B quota = 150 lbs
- If maintain balance from the historical years
 - Sector A quota = 200 lbs Sector B quota = 100 lbs
 - Allocation 67:33

Recalculate allocations

- From Reef Fish Amendment 30B:
 - Preferred Alternative 3.** Establish an interim allocation of TAC between the recreational and commercial fisheries as the average share during the years **1986 through 2005**.
- Update using MRIP-FES data for **same time series**
 - Results in allocation of: 40.52% recreational, 59.48% commercial

| Year | Commercial Landings (lb) | Recreational Landings (lb) |
|---------|--------------------------|----------------------------|
| 1986 | 6,362,152 | 3,263,991 |
| 1987 | 6,765,052 | 2,212,589 |
| 1988 | 4,782,141 | 4,663,440 |
| 1989 | 7,525,865 | 7,627,118 |
| 1990 | 4,827,541 | 3,592,118 |
| 1991 | 5,051,171 | 3,679,978 |
| 1992 | 4,456,701 | 6,052,839 |
| 1993 | 6,285,767 | 4,006,451 |
| 1994 | 4,854,337 | 3,874,344 |
| 1995 | 4,657,659 | 3,494,795 |
| 1996 | 4,311,702 | 930,581 |
| 1997 | 4,658,395 | 1,180,299 |
| 1998 | 3,701,433 | 1,510,457 |
| 1999 | 5,779,980 | 3,430,881 |
| 2000 | 5,655,138 | 4,229,175 |
| 2001 | 5,698,637 | 2,458,170 |
| 2002 | 5,739,032 | 3,137,871 |
| 2003 | 4,784,668 | 2,128,405 |
| 2004 | 5,505,332 | 7,939,062 |
| 2005 | 5,228,527 | 3,223,589 |
| AVERAGE | 5,331,561 | 3,631,808 |
| % | 59.48 | 40.52 |



New OFL and ABC based on revised allocations

Using SSC recommended parameters:

- $F_{30\%SPR}$
- 2018 red tide equal to 2005
- OFL: $P^* = 0.50$
- ABC: $P^* = 0.30$
- Use average values for 2020-2024

| OFL | ABC | ACL | Rec (40.5%) | Comm (59.5%) |
|---------|---------|---------|----------------|-----------------|
| 4.67 mp | 4.27 mp | 4.27 mp | 1.73 mp | 2.54 mp |



2018 landings were higher (2.05 mp FES)