3. SEDAR 73 RED SNAPPER ASSESSMENT PROJECTION REVIEW

3.1. Documents

Attachment 2. SEDAR 73 Assessment Report
Attachment 3. SEDAR 73 Working Paper 15 – Utility and Usage of Descending Devices in the Red Snapper Recreational Fishery in the South Atlantic
Attachment 4. Presentation on Descending Device Usage*
Attachment 5. SEDAR 73 Revised Projections*
Attachment 6. SEDAR 73 Revised Projections Presentation*

3.2. Presentation

Descending Device Usage: Dr. Julie Vecchio, FWC
Projection Overview: Dr. Kyle Shertzer, SEFSC

3.3. Overview

The Committee reviewed the Operational Assessment for Red Snapper prepared through SEDAR 73 and accepted the assessment as best scientific information available at their April 2021 meeting. The base assessment suggested that the stock was overfished and overfishing was occurring in the terminal year of the assessment (2019). The Committee requested additional information prior to recommending catch levels. Specifically, the Committee requested a presentation on usage rates of descending devices when releasing Red Snapper and description of the methods used in the new mixed forecasting method for ABC-setting.

The usage rates for descending devices when releasing Red Snapper are likely to change due to the 2020 implementation of a requirement to have descending devices on-board when harvesting

or possessing species in the Snapper Grouper complex when fishing in federal waters. A working paper (SEDAR 73 WP 15, Attachments 3 and 4) was developed to estimate usage rate of descending device in SEDAR 73 and the SEDAR 73 Panel approved the estimates in the four different blocks.

The mixed forecasting method for ABC-setting was a new approach for projections presented to the Committee in April (Attachments 5 and 6). The Committee requested additional information because the methodology was not provided before the meeting for review. The mixed approach uses the current assessment conditions to compute the $F_{rebuild}$ and a second iterative step to increase landings F based on the reduction in discard F associated with descending device usage. The mixed approach has similar trajectories of SSB and total removals but shifts some removals associated with discards to landed catch.

The Committee also discussed different recruitment scenarios as requested by the Council during the March 2021 meeting. The Committee indicated it was not comfortable using the most recent high recruitment values (last 6 years) as the high recruitment might not continue into the future. The Council requested a recruitment option of the last 10 years be considered for use in setting fishing level recommendations. The Council selected a 10-year period because this timeframe has been used in other assessments in the Southeast US and it does not assume that changes in climate has been static over the past 60 years. Therefore, the more recent 10-year period might better represent future conditions over the short-term (10 years, rebuilding target year is 2044).

The Council also wishes to consider alternative reference points for Red Snapper and requested projection runs for several different scenarios of SPR including F_{max}, $F_{20\%}$, $F_{25\%}$, $F_{30\%}$, and $F_{40\%}$. Instead of running full projections for all these scenarios and combinations, a request was made to describe the probability of overfishing and underfishing associated with different SPR levels to aid the Council's discussion of an appropriate F_{MSY} proxy for Red Snapper. A similar analysis was conducted for the SSC based on the results of SEDAR 41 (Red Snapper, provided in background material folder).

3.4. Public Comment

No public comment was provided.

3.6. Action

- Review methods to estimate descending device usage rate
    - Discuss the working paper developed for SEDAR 73 and additional analysis conducted afterwards.
        - *The SSC clarified that the value of 75% referred to in previous discussions of the SEDAR 73 Working Paper 15 actually reflects the percent change in fish from one impairment category to another in the discard mortality model (i.e., proportion moved from Vent or Impaired to Descend categories). The 75% value does not refer to the percent usage of descender devices on all released red snapper as some are in good condition and do not*

require barotrauma mitigation. The 75% descender usage refers to the impaired categories only (impaired or vented) for Block 4.

- *The SSC emphasized the following:*
  - *When properly implemented, both venting and descending reduce impact of barotrauma.*
  - *Reducing the time required to return fish back into the water is the most important factor in reducing mortality when a fish is not showing signs of barotrauma.*
- *The SSC noted that the projection model outcomes are not very sensitive to different discard mortality assumptions.*
- *The SSC recommended that discard mortality calculations and assumptions be reviewed and updated in future assessments for red snapper and other relevant species as new monitoring data and study results become available.*
- ***The SSC agreed with the assessment panel's assumption of 75% change in fish from one impairment category to another in the SEDAR 73 Working Paper 15 discard mortality calculations.***

- Provide justification if deviating from SEDAR 73 Panel recommendations.
  - *The SSC discussed the fact that there was considerable uncertainty regarding future overall use of descending devices, but acknowledged this was a difficult quantity to estimate and supported the panel's approach to calculating discard mortality for this assessment given the data currently available.*

- Provide fishing level recommendations
  - Discuss the alternative recruitment scenario requested by the Council to project future fishing level recommendations.
    - ***The SSC supported use of an alternative recruitment assumption requested by the Council (2010–2019, "recent mean recruitment") noting that it takes into account the recruitment variability, both high and low values, that appears to have occurred over the last 10 years.***
    - *The SSC noted that management restrictions have likely contributed to increased recruitment in recent years.*
    - *However, the SSC cautioned the Council that there is no theoretical support for assuming continued high recruitment (even at recent mean levels) over the next five years. There is no apparent stock-recruitment relationship, and we lack the ability to predict future recruitment, indicating that there is a high degree of uncertainty in any assumption made regarding future recruitment. Thus, higher recent recruitment may not be expected to continue even in the near future.*
    - *The SSC looks forward to the Catch Level Projections Working Group findings, and suggests the Working Group explore lag*

lengths in a time series analysis to predict what recruitment time period should be used in projections.

- ***The SSC supported the SEFSC's proposed "mixed" approach to incorporating discard mortality in projections.*** *This approach applies the Block 3 $F_{30\%}$ benchmark from the assessment period as the projected fishing rate, but decrements that rate based on the Block 4 reductions starting in 2021. The SSC supported this approach because it a) uses the prevailing conditions (requirement to have descender device onboard), b) prevents the rebuilding "goal post" from changing, and c) avoids penalizing the fishery for attempting to reduce bycatch mortality.*
- *Regarding the proposed projection modeling approach that would shift discards to landings:*
  - ***The SSC recommended that discards not be shifted to landings until substantial increases in spawning stock biomass are observed. It is counterintuitive to increase landings while simultaneously attempting to reduce fishing mortality by approximately half.***
  - *Shifting discards to landings would offset the benefits of increased descending device usage. The descender device savings could help to reduce fishing mortality, but the use of descending devices alone will not be sufficient to reduce fishing mortality to a sustainable level.*

- Discuss which recruitment scenario or scenarios are appropriate for use in setting the OFL and ABC.
  - ***The SSC recommended an OFL based on Scenario 13 as described in Attachment 5 (last 10-yr mean recruitment, Mixed, $F_{30\%}$, No reallocation of F toward landings).***
  - ***This $F_{30\%}$-based projection assumes a lower fishing mortality rate than the catch based on $F_{rebuild}$; therefore, the addition of a buffer between the OFL and ABC is not recommended.***
  - *The SSC noted that the projections assuming mean recruitment over the last 10-years indicate the stock should rebuild more quickly than 2044.*
  - *However, the SSC cautioned that there is significant uncertainty in estimated recruitment and that the estimated recruitment uncertainty incorporated in these projections may be underestimated. Also, that additional uncertainty is not being accounted for when OFL and ABC are set equal to each other.*
- Complete the fishing level recommendations table.
  - *See below.*
- Comment on any difficulties encountered in applying the Control Rule, including any required information that is not available.
  - ***The SSC cautioned that setting OFL=ABC=ACL for a species with a probability of rebuild = 0.5 is the riskiest action the Council can legally take.***

- Provide guidance to the Council on setting an appropriate SPR for Red Snapper
  - Review the analysis of alternative SPR levels provided.
  - Comment on the scientific risk associated with these SPR levels given the life history of the fish and assessment uncertainties.
    - *The SSC discussed the following aspects of the analysis:*
      - *Results of this analysis are predicated on the base assessment model and a Beverton-Holt stock-recruitment model.*
      - *YPR did not decrease when changing from an SPR of 30% to 40%. This implies the more conservative SPR alternative (e.g., 40%) would not substantially reduce yield.*
      - *Results are dependent on accurate estimates of natural mortality, selectivity, and fecundity.*
    - *In general, an SPR of 40% is widely used as a proxy for F_{MSY} in other regions and councils, such as New England, Mid-Atlantic, and North Pacific Fishery Management Councils.*
    - ***This analysis indicated there is no support for SPR levels equal to or lower than 30%.***
      - *The implied steepness at lower SPR levels would be unrealistically high despite the high recruitment observed recently. However, the SSC noted there has been rebuilding under $SPR_{30\%}$ which indicates $F_{30\%}$ may not be too low for this stock.*
      - *The meta-analysis completed by SEFSC that used most recent available data and explored the relationship between SPR levels and steepness suggested an SPR of 38% is the closest proxy of F_{MSY}.*
    - ***The SSC recommended repeating such an analysis to evaluate different SPR levels and identify a best proxy for F_{MSY} in future stock assessments.***

SSC RECOMMENDATION:

Table 1. Red Snapper Recommendations.

Criteria	Deterministic	Probabilistic
Overfished evaluation ($SSB/SSB_{MSY)}$	0.44	0.49
Overfishing evaluation	2.20	1.95
MFMT (F_{MSY})	0.21	0.21
SSB_{MSY} (eggs 1E8)	635426.4	594630.2
MSST (eggs 1E8)	476569.8	445972.6
MSY (1000 lbs. ww)	404.7	407.78
Y at 75% F_{MSY} (1000 lbs. ww)	398.97	401.84
ABC Control Rule Adjustment	17.5%	
P-Star	In a rebuilding plan	
M	0.11	

OFL RECOMMENDATIONS

Year	Landed LBS	Discard LBS	Landed Number	Discard Number
2022	284,000	983,000	25,000	195,000
2023	327,000	1,036,000	28,000	202,000
2024	368,000	1,076,000	31,000	207,000
2025	408,000	1,104,000	33,000	210,000
2026	446,000	1,122,000	35,000	211,000

ABC RECOMMENDATIONS

Year	Landed LBS	Discard LBS	Landed Number	Discard Number
2022	284,000	983,000	25,000	195,000
2023	327,000	1,036,000	28,000	202,000
2024	368,000	1,076,000	31,000	207,000
2025	408,000	1,104,000	33,000	210,000
2026	446,000	1,122,000	35,000	211,000