Overview

- Stock status
- Current primary measures
- Fishery Performance/AP Report
- SSC Recommendation
- Monitoring Committee

Outcome: 2023/2024 Specifications
Stock status

- Research Track Assessment
  - Management track assessment
  - Industry perspectives working paper

- “not overfished or experiencing overfishing...likely to be robust to the major sources of uncertainty”

- Uncertain what *would* cause overfishing
Current primary measures

- Limited access
- 3-inch mesh if more than 5,000 pounds
- Substantial discard set-aside (cap and other)
- Slowdown if within 1,000 MT of quota
  - 5,000 pounds
- 2022 ABC = 17,854 MT
- 2022 Quota = 11,495 MT
Fishery Performance/AP Report

Butterfish Inflation-Adjusted Price $/MT (2021 dollars)

- $3,000
- $2,500
- $2,000
- $1,500
- $1,000
- $500
- $0

Fishery Performance/AP Report

Butterfish Landings (MT, left and solid blue line) and Ex-Vessel Revenues (2021 dollars, right and dashed orange line) 1996-2021
Fishery Performance/ AP Report

- Other species more lucrative
- Covid issues persist re: shipping
- High fuel prices and good longfin fishing depressing interest for butterfish in 2022
- Concern about biomass precision and past negative effects on longfin
- Concern about overall prey availability and 2/3 M reference point.
Butterfish Specifications 2023: TOR #1-3

- The SSC reviewed the results of the RTA and received a Level 1 MTA (direct delivery) of the updated assessment through 2021.
- The SSC recommended the use of a F=2/3M biological reference point and catch limits of 17,267 mt for 2023 and 15,764 mt for 2024.

**Basis:**
- Set OFL CV at 100%. See Attachment 4 in SSC Report
- Set P*=0.49
- No change in estimate of natural mortality (M=1.3/yr)
- New state space model known as the Woods Hole Assessment Model (WHAM).
Butterfish TOR#4: Sources of Uncertainty

- Choice of reference points, especially $F_{50\%}$, since the value was estimated to be > 6.0 in the research track assessment, and 5.6 in the management track assessment. Biomass at $F_{40\%MSP}$ is lower than any estimate in 40+-year time series.
- Scale of the population. A $q$ of 0.2 for the Fall Albatross survey was needed to reasonably scale the population. However, a $q$ of 0.2 implies that up to 80% of the stock is not within the survey area, which is potentially problematic given that Butterfish are frequently captured throughout the survey area.
- Uncertainty in discard estimates, particularly early in the time-series.
- Gap-filling procedures potentially blending cohorts and potentially leading to bias in the age composition data.
- Estimated consumption removals account for only a small fraction of estimated M. Results seem inconsistent with Butterfish being considered a forage species.
Butterfish TOR #5: Ecosystem Considerations

• Changes in Butterfish condition were related to ecosystem indices and used to determine the appropriate stanza for recruitment projection starting in 2011.

• Considerable work estimating consumption of Butterfish by fishes, marine mammals, and seabird predators was completed. Unfortunately, this did not further resolve the Butterfish natural mortality estimate.
**Butterfish TOR #6: Research Recommendations**

- Research into survey catchability is a high priority.
- Examine shorter (sub-annual) model time steps.
- Evaluate maturity methods, impact on maturity ogive, and estimated reference points.
- Consider alternative ways to calculate discards.
- Evaluate adequacy of port sampling to support continued assessments (is full age structure sampled?).
- What is eating butterfish? Illex? Consider additional methods to estimate predation mortality.
- Evaluate methods for developing age length keys to avoid pooling.
SSC Recommendation

- Stay with 2/3 natural mortality = fishing mortality target

- Use 100% coefficient of variation (CV) for uncertainty when calculating risk policy deduction.
  - Minimal due to stock size. 51% chance not overfishing.
  - 2023/2024 ABCs = 17,267 MT / 15,764 MT
  - Same as staff recommendation
## Monitoring Committee

### Minor Changes

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<th>Specification</th>
<th>2023</th>
<th>2024</th>
<th>Rationale Summary</th>
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<td>17,631</td>
<td>16,096</td>
<td>from projections</td>
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<td>17,267</td>
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