ISC24 Plenary Meeting Outcomes

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ISC Chair and Vice-Chair
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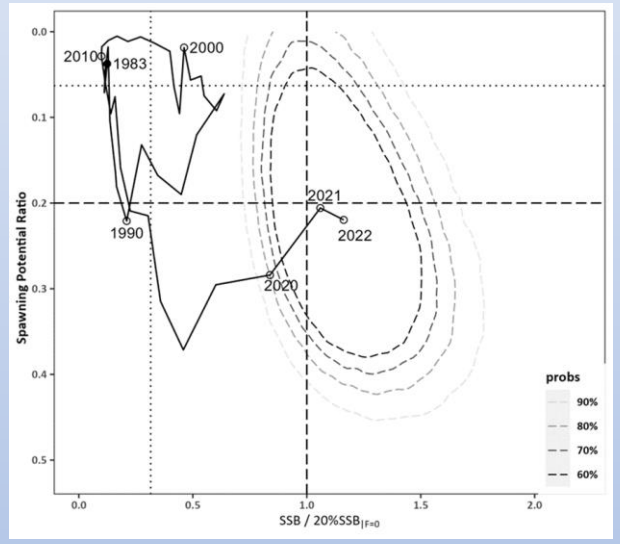
NC20
July 15-16, 2024
Kushiro, Hokkaido, Japan

Outline

1. Stock status & conservation information
   - Updates based on new assessments:
     - Pacific Bluefin Tuna
     - Shortfin Mako Shark
   - Existing information:
     - NPO ALB, WCNPO MLS, NPO SWO, BUM, NPO BSH
2. NPO SWO stock assessment (NC19 held in advance of ISC23)
3. Responses to NC requests for scientific information
4. WCNPO MLS external peer review process
5. Incorporating Climate Change Information into Stock Assessment Information and Advice
6. Open Science at ISC
7. ISC Chair and Vice-Chair Election Results

Pacific Bluefin Tuna

- Benchmark assessment; 1983-2022
- Stock is rebuilding and exceeded the second rebuilding target ($20\%SSB_{F=0}$) in 2021 and was above the target with a 76% probability in 2022.



Stock Status

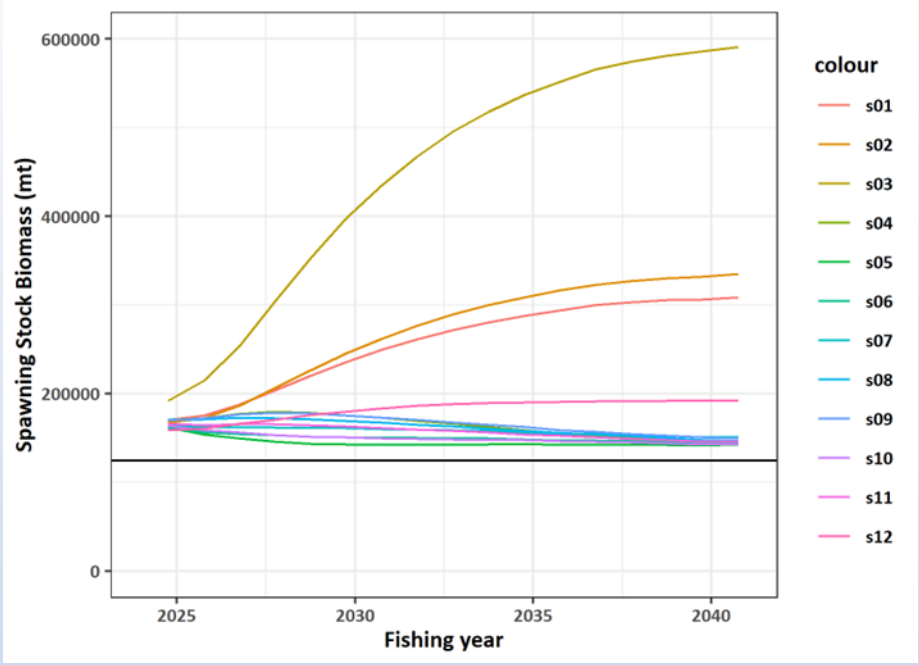
1. No biomass-based or F-based reference points established for PBF stock
2. Stock is not overfished relative to $20\%SSB_{F=0}$
3. Overfishing is not occurring relative to F-based reference points including F20% corresponding to the second rebuilding target

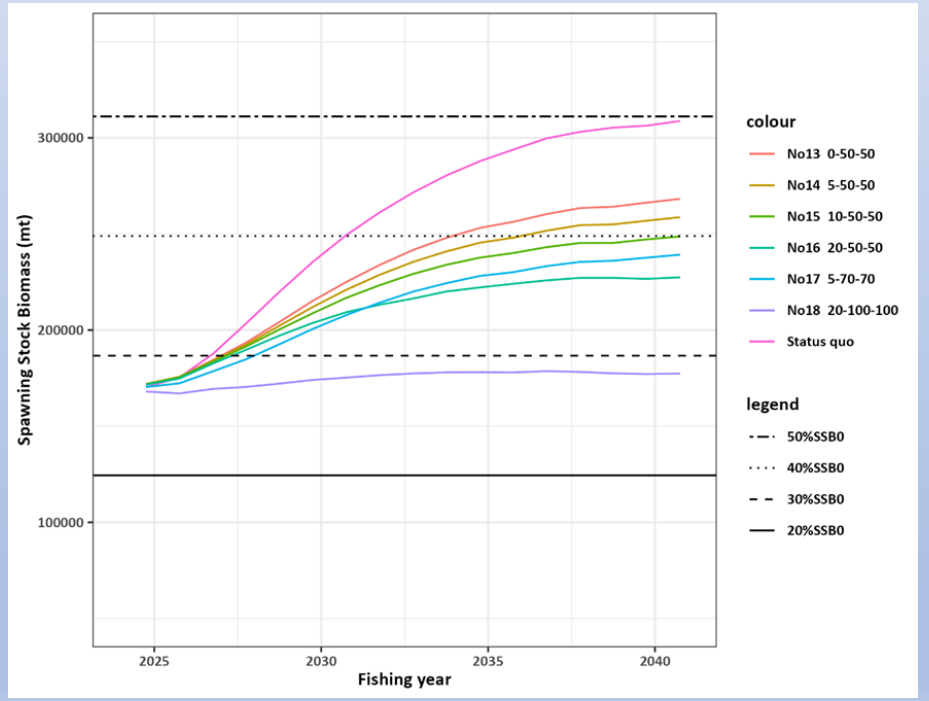
Pacific Bluefin Tuna

- 18 harvest scenarios differing in catch levels or EPO/WPO impacts evaluated; 12 scenario originally requested by JWG (top figure) and additional 6 scenarios in late JWG request (bottom figure)

Conservation Information

1. The stock is rebuilding and exceeded the second rebuilding target (20%$SSB_{F=0}$) in 2021. The risk of SSB falling below 7.7%$SSB_{F=0}$ (interim LRP for tropical tunas established by IATTC) at least once in 10 years is negligible;
2. The projection results show that increases in catches are possible. However, the risk of falling below the second rebuilding target will increase with larger increases in catch;
3. The projection results assume that the CMMs are fully implemented and are based on certain biological and other assumptions. For example, these future projection results do not contain assumptions about discard mortality; and
4. Given the uncertainty in future recruitment and the influence of recruitment on stock biomass as well as the impact of changes in fishing operations due to the management, monitoring recruitment and SSB should continue.





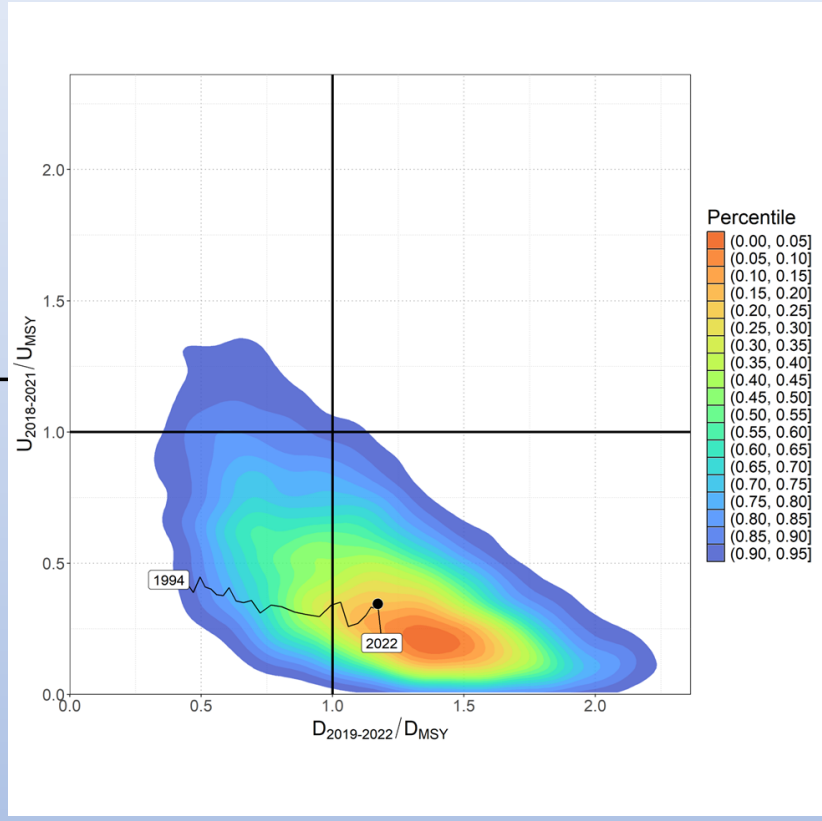
Shortfin Mako Shark

- Benchmark stock assessment, 1994-2022
- Bayesian state-space surplus production model (BSPM) combined with ensemble approach to capture: alternate prior configurations, treatment of catch, and choice standardized CPUE index used in model fitting.
- Reproductive capacity of this population was characterized using total depletion (D) rather than spawning abundance. D = total number of SMA divided by the unfished total number.
- Exploitation rate (U) was used to describe the impact of fishing on this stock. The exploitation rate is the proportion of the SMA stock that is removed by fishing.
- Ensemble of 32 BSPMs; 28 retained and joint posterior distribution used to characterize stock status

Shortfin Mako Shark

Stock Status

1. No biomass-based or F-based reference points have been established by either RFMO for this stock
2. Recent median D ($D_{2019-2022}$) is estimated to be 0.60 (95% CI = 0.23-1.00) and is 1.17 times D_{MSY} (95% CI = 0.46-1.92). The stock is likely (66% probability) not in an overfished condition relative to MSY-based reference points;
3. Recent U ($U_{2018-2021}$) is estimated to be 0.018 (95% CI = 0.004-0.07). U_(2018-2021) and is 0.34 times (95% CI = 0.07-1.20) $U_{MSY.}$ Overfishing is likely not occurring (95% probability) relative to MSY-based reference points;
4. The model ensemble results show that there is a 65% joint probability that the NPO SMA stock is not in an overfished condition and that overfishing is not occurring relative to MSY-based reference points; and
5. Key uncertainties may limit the interpretation of the assessment results including uncertainty in catch (historical and modeled period), uncertainty in biology and stock reproductive dynamics, and lack of CPUE indices that fully index the stock.

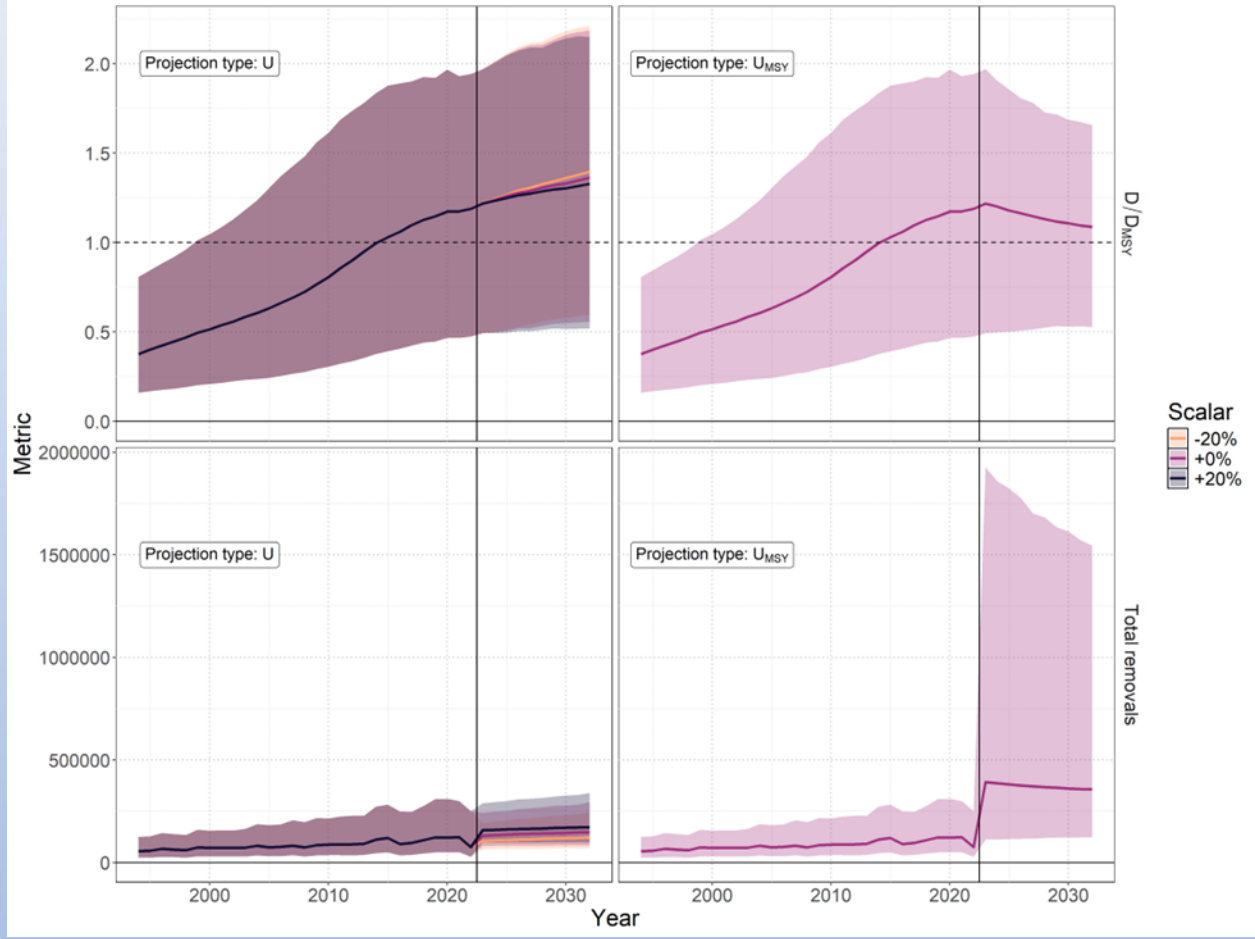


Shortfin Mako Shark

- Four harvest scenario projections: $U_{2018\text{-}2021}$, U_{MSY}, $U_{2018\text{-}2021}$+20%, and $U_{2018\text{-}2021}$-20%

Conservation Information

1. Future projections in three of the four harvest scenarios ($U_{2018\text{-}2021}$, $U_{2018\text{-}2021}$+20%, and $U_{2018\text{-}2021}$-20%) showed that median D in the North Pacific Ocean will likely (>50% probability) increase; only the U_{MSY} harvest scenario led to a decrease in median D.
2. Median estimated D of SMA in the North Pacific Ocean will likely (>50% probability) remain above D_{MSY} in the next 10 years for all scenarios except U_{MSY}; harvesting at U_{MSY} decreases D towards D_{MSY}; and
3. Model projections using a surplus production model may oversimplify the age structured population dynamics and as a result could be overly optimistic in this case.



North Pacific Ocean Swordfish

- Assessment and results reported to ISC23
- NC19 held in advance of ISC23
- M. Sculley (BILLWG Chair) will provide more detailed review of stock assessment results (Agenda 2.3.1)

Stock Status

1. When the status of NPO SWO is evaluated relative to MSY-based reference points, the 2021 SSB of 35,778 mt is 220% of SSB_{MSY} (16,000 mt) and the 2019-2021 F is about 49% below F_{MSY}; and
2. Relative to MSY-based reference points, overfishing is very likely not occurring (>99% probability) and the NPO SWO stock is very likely not overfished (>99% probability).

Conservation Information

1. The NPO SWO stock has produced annual yields of around 11,500 mt per year since 2016, or about 2/3 of the MSY catch amount;
2. NPO SWO stock status is positive with no evidence of F above FMSY or substantial depletion of spawning potential (Figure 13); and
3. It was also noted that retrospective analyses show that the assessment model appears to underestimate spawning potential in recent years.

Other Species – Forwarding ISC23 Information

Stock	Last Assessment
NPO ALB	2023
BSH	2022
NPO SWO	2023
NPO BUM	2021
WCNPO MLS	2023

These stocks were not assessed in 2023-24. Stock status and conservation information is from their last assessments and is considered acceptable by the ISC24 Plenary

NC Requests

North Pacific Albacore – NC20 Agenda #2.2

1. Define exceptional circumstances leading to the suspension or modification of the adopted harvest strategy - Preliminary results in 2023, completed in 2024 (see **ISC24/ANNEX/08/Attachment 5**)
2. Advice on how fishing intensity should be translated to management controls (catch or effort) under the adopted harvest strategy - Changes in fishing intensity can be translated to catch for all fleet groups; changes in fishing intensity can be translated to effort for surface fleets only (see **ISC24/ANNEX/08/Attachment 6**).

- ## Pacific Bluefin Tuna – NC20 Agenda #2.1
  - 6 additional harvest scenarios requested by JWG included as appendix in stock assessment (**ISC/24/ANNEX/13, 13A**) to assist JWG discussions – risk of falling below 20%$SSB_{F=0}$ is negligible for all additional scenarios

WCNPO Striped Marlin – NC20 Agenda #3.1

- 10 projection scenarios (6 catch, 4 fishing mortality) to support rebuilding plans for the WCNPO MLS stock based on 2023 assessment – 8/10 scenarios can meet the rebuilding target (rebuild to 20%$SSB_{F=0}$ by 2034 with a 60% probability) with small decreases in catch relative to recent average levels; F_{MSY} and $F_{2018\text{-}2020}$ failed to meet the rebuilding target (see **ISC/24/ANNEX/09** for projection results).
- New projection scenarios do not change existing stock status and conservation information.

WCNPO MLS external peer review process

- 2023 WCNPO MLS benchmark stock assessment reviewed by Drs. Hiromu Fukuda, Simon Hoyle, and Ian Stewart (IPHC) supported by the review chair Dr. Robert Ahrens (**ISC/24/ANNEX/11**).
- Goal was to improve the stock assessment and the presentation of the stock assessment results. Guided by comprehensive Terms of Reference focusing on technical aspects of the model, inputs, outputs, research needs and communication of the package through the assessment report.
- In-person review meeting took place April 15-19, 2024, at the Institute of Oceanography, National Taiwan University (IONTU), Chinese Taipei.
- Reviewers noted two key uncertainties in the 2023 assessment: 1) an apparent change in the level of estimated recruitment (population scale) before and after the mid-1990's, and 2) insufficient age at length data for older fish to estimate the growth curve.
- Many of the recommendations associated with the terms of reference are related to complication within the assessment arising from two main challenges. See **ISC/24/ANNEX/11** for more details.
- The BILLWG has compiled responses and was tasked by ISC24 Plenary to present their responses and action plan to the ISC25 Plenary.
- ISC24 Plenary discussed institutionalization of this external process and noted the close coordination with the WCPFC Secretariat as a potential model. The current ad hoc approach to funding requires a more permanent approach.
- Next peer review to focus on PBF; sometime between completion of the MSE in 2025 and the start of the next benchmark stock assessment currently scheduled for 2027.

Climate Change

- All ISC Member Countries engaged in climate change research & adaptation; some countries more advanced than others
- WG efforts to incorporate climate change related information into their work.
  - Differences in effects related to differing life histories were recognized.
  - Lack of data is a major concern and may become more acute as fishery-dependent data becomes more limited for a variety of reasons.
  - Need for greater collaboration in data gathering to bridge these gaps.
- ISC Working Groups tasked by ISC24 Plenary with compiling information on:
  1. the ways in which they have begun to incorporate climate considerations into ISC stock assessments; and
  2. the data they believe would be required in order to do so in the future.
- Information will support framework development at ISC25.

Open Science at ISC

- Proposal for adopting an Open Science Framework for ISC Stock Assessments was discussed by the ISC24 plenary (ISC/24/PLENARY/12).
- Goal is to support and continue the shift in methodology and culture surrounding stock assessments through the adoption of Open Science practices.
- Individual working groups are already implementing practices of Open Science to make the stock assessment model development process more efficient, collaborative, and transparent.
- Establish ISC-wide guidelines and standardized workflows, as well as creating an ISC GitHub to provide a central location to store assessment model code and outputs that can be worked on collaboratively
- ISC24 Plenary endorsed a year 1 implementation plan, consisting of organizing training and carrying out scoping of the governance and logistical requirements for implementing an open science framework.
- ISC database will continue to house all stock assessment files and outputs to provide an authoritative record of the assessments used to generate stock status and conservation information.

ISC Chair and Vice-Chair Elections

Incoming Chair: Robert Ahrens (USA – NOAA/PIFSC)

Incoming Vice-Chair: Shuya Nakatsuka, (JPN – JFR&EA/FRI)

QUESTIONS?