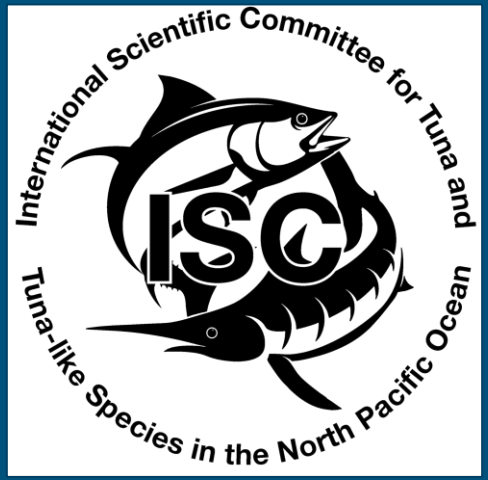
Request from NC20 on the Feasibility of an MSE for NP SWO

"NC20 requested the ISC to explore the feasibility of implementing an MSE for NPO SWO, including its potential timeline and needs for human and financial resources, and present its views at NC21."

- *At this time none of the ISC BILLWG member countries have the capacity to provide a scientist to produce an MSE for NPO SWO*
- *The WG believes a full MSE could be completed in 5 years if a dedicated analyst was assigned to the task*
- *This would include:*
  - *2 years of stakeholder engagement and meetings prior to model development*
  - *3 years of model development and engagement with NC*
  - *Travel to ISC BILLWG meetings and NC meeting annually, and to stakeholder meetings*
  - *After 5 years, any additional time to refine harvest strategies*
- *The analyst could be hired for only model development if WCPFC or NC managed stakeholder engagement*

ISC Billfish Working Group
WCNPO MLS Rebuilding analysis



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Request from WCPFC21 for WCNPO Striped Marlin

WCPFC21 adopted a new CMM for WCNO MLS - CMM 2024-06

Rebuilding projections provided by the BILLWG in 2024 assumed the catch by fleet from 2025-2034 would be proportional to the catch by fleet from 2018-2020

The catch limits set in CMM 2024-06 use the proportion of catch from CMM 2010-01, which are calculated as 80% of the fleet's highest catch from 2000-2003

WCPFC21 requested the BILLWG to run additional projections using the catch limits adopted in the new CMM for 2025-2027 to determine the maximum catch limit to reach the rebuilding target of 3,660mt with a 60% probability by 2034.

CMM 2024-06 Revision to CMM 2010-01 for WCNPO Striped Marlin

- *Total catch limit of 2400 mt*
- *In 2025-2027, each country can take up to 165 mt of additional catch to their individual limit if the catch limit in 2023-2025 is not reached*
  - *In 2023 there was an underage of 826 mt therefore countries are allowed to increase their limit by 165 mt in 2025*
  - *Any underage in 2024 can be applied to 2026, and 2025 to 2027*
- *No country is allowed to increase their catch by more than 165 mt*
- *If underage is less than 826 mt, then there will be decisions made about who gets that extra catch*
- *Overage for each country is subtracted from their next year's individual limit*
- *Link to CMM 2024-06*

Country	**Catch Limit**
Japan	1454.4 mt
Chinese Taipei	358.4 mt
Korea	214.8 mt
United States	228.4 mt
China	68.8 mt
Other SIDS	75.2 mt
Total	**2400 mt**

Summary of WCNPO MLS Rebuilding Model

- *Projections are run using Agepro - an age structured production model*
- *Three recruitment scenarios: long term (stock recruitment curve, 4%); medium term (last 20 years, 12%); and short term (last 5 years, 84%)*
- *Initial population structure from 100 bootstrapped assessment runs*
- *10,000 model runs per scenario*
- *Fleet structure is consistent with the stock assessment - fleet specific selectivity is used to remove catch from the population*
- *From 2021-2024 reported catch is used by fleet to account for removals**
- *From 2025-2027 catch is removed based upon three scenarios from the CMM, from 2028-2034 the model determines the catch necessary to meet the rebuilding target*

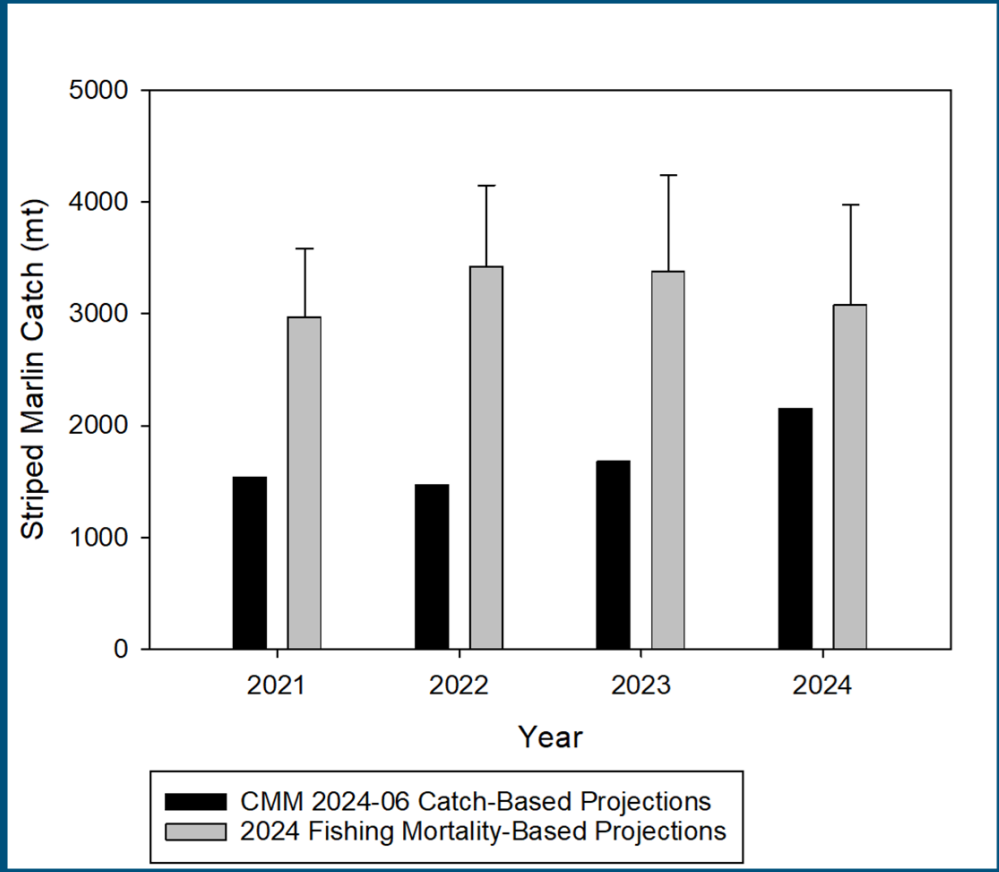
Major differences between 2024 and 2025 projections: Catch in 2021-2024

Catch in the 2024 projections:

- *Estimated from average fishing mortality from 2018-2020*

Catch in the 2025 projections:

- *Reported yearbook or country provided catch from 2021-2024 with 2024 assumed to be equal to 2023 unless otherwise provided*
- *JPN and US provided fleet specific catch*



Additional Projection Scenarios

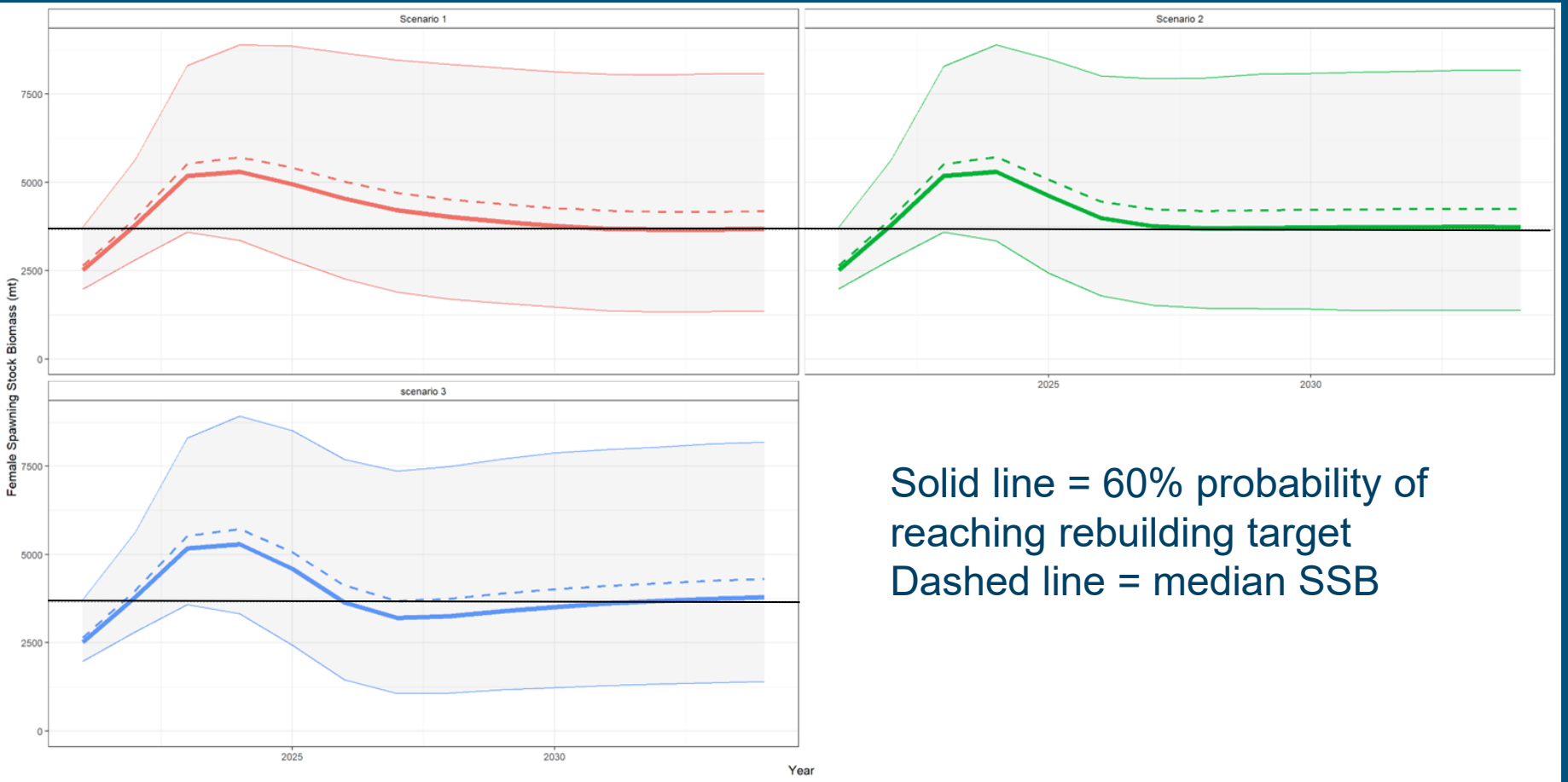
	2024 Rebuilding Projections	2025 Rebuilding Projections	Difference
Country	2025 - 2027	2025 - 2027	
Japan	1558.6 mt	1454.4 mt	-104.2 mt
Chinese Taipei	370.4 mt	358.4 mt	-12 mt
Korea	59 mt	214.8 mt	155.8 mt
United States	324 mt	228.4 mt	-95.6 mt
China	51 mt	68.8 mt	17.8 mt
Other SIDS	36 mt	75.2 mt	39.2 mt
Total	2400 mt	2400 mt	0

Alternative Projection Scenarios

	2025	2026	2027	2028-2032	2033-2034
Scenario 1	2400 mt	2400 mt	2400 mt	2300 mt	2200 mt
Scenario 2	3225 mt	2400 mt	2400 mt	2200 mt	2200 mt
Scenario 3	3325 mt	3235 mt	2400 mt	2150 mt	2150 mt

- **Scenario 1** assumed no carryover catch is used in 2025-2027
- **Scenario 2** assumes maximum carryover catch (165 mt per country) is used in 2025 but not in 2026-2027
- **Scenario 3** assumes maximum carryover catch (165 mt per country) is used in 2025-2026 but not 2027
- Catch in 2028-2034 is calculated to reach 60% probability of being at the rebuilding target in 2034

Spawning Stock Biomass estimates



Solid line = 60% probability of reaching rebuilding target
Dashed line = median SSB

Conclusions

- *The 2024 projection with 2400 mt in 2025-2027 required a limit of 2150 mt in 2028-2034 to reach the rebuilding target*
- *The 2025 projection with 2400 mt in 2025-2027 (scenario 1) requires a limit of 2300 mt in 2028-2032 and 2200 mt in 2033-2034 to reach the rebuilding target*
- *This is driven mainly by the lower than expected catch by fleets in 2021-2023 giving the stock the chance to recover*
- *Changing the relative proportion of catch by fleet from the 2018-2020 average to the 2000-2003 level had minimal impact on the projections*
- *Allowing for up to 825 mt of carryover catch requires larger cuts to the limit in 2028-2034 to reach the rebuilding target*
- *Generally the additional projection runs are consistent with those provided in 2024*

**Note CMM 2024-06 will "be reviewed and amended in 2027, pending the completion of a new stock assessment"*