



**SCIENTIFIC COMMITTEE  
SEVENTEENTH REGULAR SESSION**

Online meeting

11-18 August 2022

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**Updates to table 9 of the evaluation of CMM 2021-01**

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**WCPFC-SC18-2022/MI-IP-06**

**6 July 2022**

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This paper provides an update (inclusion of 2021 data) to Table 9 of the evaluation of the CMM 2020-01 ([Hamer et al. 2021](#)), noting that CMM 2020-01 was rolled over into CMM 2021-01. Changes to the CMM during that roll-over do not affect the calculations in Table 9. Other aspects of the regular CMM evaluation will be updated for WCPFC19, pending the completion, and SC18 acceptance, of the 2022 skipjack stock assessment.

## Background

Since the inception of the tropical tuna measure (CMM 2018-01, subsequently reviewed and reinstated with minimal changes as CMM 2020-01 and now [CMM 2021-01](#)), SPC has conducted an annual evaluation of its expected performance. The evaluation has a number of components, a key component being the estimation of expected scalars on purse seine FAD sets, and longline catches of bigeye, relative to the baseline period of 2016-2018. The scalars determined for bigeye are assumed to apply to yellowfin catches. Detailed methods behind the calculation of these scalars can be found in the most recent version of the full tropical tuna CMM evaluation ([Hamer et al. 2021](#)). The evaluation scalars are used to indicate changes in FAD sets and longline bigeye and yellowfin catches that would be expected under the implementation of the CMM compared to the baseline period of 2016-2018 average conditions. Further, to account for alternative assumptions of how effort and catches might change under the restrictions imposed by the CMM, alternative scenarios have been evaluated; an ‘optimistic’ scalar and a ‘pessimistic’ scalar.

### The ‘optimistic’ scalar assumes:

- **FAD sets:** CCMs maintain 2016-2018 averages or the specified limits under the CMM, whichever is lower.
- **Longline catches:** CCMs with catch limits take their specified limit, 2,000 mt catch limit, or their 2016-2018 average catch level whichever is lower, other CCMs take 2016-2018 average catch level.

### The ‘pessimistic’ scalar assumes:

- **FAD sets:** CCMs fish on FADs up to their specified limits where applied, others fish at the 2016-18 average.
- **Longline catches:** limited CCMs take their specified catch limit, 2,000 mt catch limit, other CCMs take their 2016-2018 average catch level.

A further assumption in calculating these scalars is that purse seine ‘overall’ effort does not increase significantly into the future. Changes in FAD sets under the CMM lead to an increase or decrease in free-school sets to maintain the overall effort level.

These scalars are then used in stock projections to estimate the long-term status and risk levels for the stock in terms WCPFC tropical tuna CMM management objectives. These projections can be updated when new stock assessments are completed. The most recent projection results are in [Hamer et al. \(2021\)](#), and are based on the 2019 skipjack stock assessment and the 2020 bigeye and yellowfin assessments. It is expected that the projections for skipjack will be updated pending the review and acceptance of the 2022 skipjack assessment by SC18, and in late 2023 for bigeye and yellowfin, after the scheduled assessments for these stocks.

Table 9 from the full evaluation paper ([Hamer et al. 2021](#)) compares how the actual reported FAD sets and longline catches compare to those predicted by the CMM evaluation scalars for each year since its implementation. This paper simply provides an update by inclusion of 2021 data into Table 9.

## Results

FAD set levels and their scalars for 2019, 2020 and 2021 were all less than predicted under the CMM evaluation ‘optimistic’ scenario.

Longline bigeye and yellowfin catches, and their scalar values, in 2019 were higher than expected under the CMM evaluation ‘optimistic’ scenario, but lower than the ‘pessimistic’ scenario. In both 2020 and 2021, bigeye and yellowfin catches, and their scalar values were lower than the CMM evaluation ‘optimistic’ scenario.

**Table 1 Comparison of predicted CMM 2021-01 performance (scalars) relative to baseline 2016-2018 average levels with actual patterns of purse seine effort (FAD sets) and longline bigeye and yellowfin catches and associated relative scalars for 2019, 2020, 2021 .**

Gear	CMM Scenarios and baseline			Actual fishery outcomes					
	Average 2016-18	Optimistic CMM scalar and (FAD set /catch level)	Pessimistic CMM scalar	2019 reported	Scalar 2019 reported	2020 reported	Scalar 2020 reported	2021 reported	Scalar 2021 reported
Purse seine FAD sets	16,316	1.11 (18,111)	1.13 (18,437)	14,934	0.92	15,250	0.93	17,107	1.05
Longline bigeye catch (mt)	59,312	1 (59,312)	1.51 (89,561)	65,267	1.10	53,659	0.90	44,907	0.76
Longline yellowfin catch (mt)	67,653	1 (67,653)	1.51 (102,156)	86,417	1.28	57,588	0.85	55,634	0.82

**Note:** minor updates in catches and FAD set reported levels have occurred for 2019 and 2020 compared to Table 9 in Hamer et al. (2021). These are due some minor corrections to the updated databases, they have minor influence on the scalars for these years.

Catches and effort in this table exclude those from Vietnam and archipelagic waters that are not within the scope of CMM 2021-01.