



**SCIENTIFIC COMMITTEE
TWENTY-SECOND REGULAR SESSION**
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Apia, Samoa (Hybrid)

**WCPFC PROJECT 130 — JOINT BYCATCH ASSESSMENT WORKSHOP FOR BILLFISH AND SHARKS:
PROGRESS AND OUTCOMES OF THE FIRST STEERING GROUP MEETING**

**WCPFC-SC22-2026-SA-IP21_Rev01
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i Revision 1. This revision corrects the attendance entries in the steering group table (Table 1).

Executive summary

Providing consistent scientific advice for stocks such as billfish and shark species has proven a challenge across Pacific tuna RFMOs (tRFMOs). These stocks span a wide range of data availability, are assessed with a correspondingly wide range of methods. In several cases, stocks are shared among more than one tuna Regional Fisheries Management Organisation (tRFMO), each with its own terminology, potentially different reference points, and assessment schedule. WCPFC Project 130 was commissioned to provide guidance to tRFMOs on navigating this landscape, by developing a consistent framework for assessing billfish and shark bycatch stocks in the Western and Central Pacific Ocean (WCPO). The project is coordinated by the Oceanic Fisheries Programme of the Pacific Community (SPC) together with Dragonfly Data Science, and began in early 2026. Its central deliverable is a technical workshop, supported by a review of bycatch assessment methods across global tuna RFMOs — focused on sharks, rays, and billfish — that we will complete ahead of the workshop. It was not possible to convene the workshop before SC22, given the time required to organise it and the regional meeting schedule; with the joint tuna-RFMO longline CPUE workshop scheduled for October, the second half of 2026 is also not available. The workshop is now planned for early 2027, with reporting to SC23, and a no-cost one-year extension to the project will be requested.

To guide the scope, structure, and participation of the workshop — and to help align assessment practice across the Pacific tRFMOs, namely WCPFC, the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific (ISC), and the Inter-American Tropical Tuna Commission (IATTC) — we convened a project steering group. The group met for the first time, online, on 8 July 2026.

The first steering group meeting refined the scope and intended outcomes of the workshop, discussed a four-day programme and session format, and considered prospective participants, potential donors, and options for venue and timing. Several points of guidance for the project emerged from this first meeting that can guide the scope and structure of the workshop: (i) assessment approaches need to be aligned with the management objective - method choice should follow from explicit management objectives and priorities. By adopting a management-strategy framing, a tiered approach based on harvest strategies, impact-based strategies, and risk-management could be considered; (ii) frame assessment methods along a tiered, data-quality gradient rather than as competing alternatives; (iii) pursue technical collaboration and schedule alignment with ISC and IATTC; and (iv) reserve time to consider how to address management needs for species that are not currently assessed.

SC22 is invited to:

- **Note** the establishment of the Project 130 steering group and the progress reported here, including the plan to complete the review paper ahead of the workshop;
- **Note** the proposed workshop scope, draft programme, and indicative timeline (Table 2 and Table 3);
- **Comment and provide guidance** on the proposed scope and outcomes, in particular the intended tiered framework for providing assessment advice by management strategy, data availability and certainty; and
- **Encourage** the participation of, and technical collaboration with, ISC and IATTC, to support alignment of assessment methods, terminology, reference points, and schedules across the Pacific tRFMOs.

1 Introduction and background

Billfish and sharks are caught across WCPO tuna fisheries as target species, as well as retained (byproduct) and non-retained bycatch. They are managed under a range of instruments, including the Conservation and Management Measure (CMM) for sharks (CMM 2025-06), the CMM for the South Pacific swordfish stock (CMM 2009-03), and the CMM for Southwest Pacific striped marlin (CMM 2006-04). The Scientific Committee coordinates the associated scientific work through the Shark Research Plan (Brouwer & Hamer, 2020) and the Billfish Research Plan (Brouwer et al., 2023), which are reviewed and updated periodically.

Providing status advice for these species is not straightforward. They span a wide range of data availability and assessment tractability, from a small number of stocks with relatively informative data (e.g., Oceanic whitetip) — which can support integrated, age-structured models — to stocks that are considered information-poor, and for which only fishery characterisation or risk-based advice is likely feasible (e.g., Mobulids, Whale sharks). The appropriate method is rarely obvious, and recent WCPO assessments have repeatedly had to confront conflicting data, structural uncertainty, and the question of how much model complexity the available data can support. Compounding this, assessment approaches, terminology, reference points, and schedules differ among species.

WCPFC Project 130 — the *Pacific tRFMO bycatch assessment methods workshop* — was established to address these issues. Its objectives are to:

- **Deliver a technical workshop** to evaluate modelling successes and failures, manage structural uncertainty, and develop rules for combining or selecting among candidate models.
- **Provide recommendations to facilitate collaboration and alignment of methodology** across the Pacific tRFMOs (SPC, ISC, IATTC): developing best practice for both data-intensive and information-poor stock assessments of billfish and sharks; and providing common terminology and reference-point concepts.
- **Coordinate strategic planning**, in particular the alignment of North and South Pacific assessment schedules, so that the Scientific Committee receives a cohesive advisory framework.

2 Project scope and deliverables

The project comprises three components, delivered in sequence between mid-2026 and mid-2027.

The review of bycatch assessment methods across global tuna RFMOs catalogues the methods currently in use for sharks, rays, and billfish, and contrasts data-intensive integrated frameworks (e.g. Stock Synthesis, MULTIFAN-CL) with more parsimonious alternatives (e.g. dynamic/state-space surplus production models, risk- and indicator-based frameworks) and emerging approaches (e.g. close-kin mark-recapture, genomics, environmental DNA). We hope to submit the review as a peer-reviewed journal article; it will also provide the technical foundation and scene-setting for the workshop.

The technical workshop is where we will weigh the strengths and limitations of these methods given management needs and data availability, work towards common terminology, reference-point concepts across tRFMOs, and develop a tiered framework that links method choice to management strategies and advice, data availability and quality.

Recommendations on methods, schedule, and advice alignment will be reported to the Scientific Committee (SC23) following the workshop. This report will summarise the workshop outcomes, set out the tiered framework for grading assessment advice by data availability and certainty, and recommend an alignment of North and South Pacific assessment schedules.

3 The steering group

To guide the design and delivery of the workshop and the associated review, and to broker technical collaboration among the tRFMOs, we convened a steering group (Table 1). It brings together stock assessment scientists and species specialists from SPC and Dragonfly, who are delivering the project, alongside representation from the ISC, the IATTC, and WCPFC members. Dan Ovando (Center for the Advancement of Population Assessment Methodology, CAPAM) was suggested as an additional member; he is organising a CAPAM workshop on data-limited stock assessments later in 2027.

Table 1: Project 130 steering group invitees and affiliations, with attendance at first steering group meeting.
*: Apologies received

Member	Affiliation	Attended
Philipp Neubauer	Dragonfly Data Science	Yes
Paul Hamer	Pacific Community (SPC)	Yes
Claudio Castillo Jordan	Pacific Community (SPC)	Yes
Nick Hill	Pacific Community (SPC)	Yes
Nicholas Ducharme-Barth	NOAA Fisheries, Pacific Islands Fisheries Science Center	No*
Felipe Carvalho	NOAA Fisheries, Pacific Islands Fisheries Science Center	Yes
Michael Kinney	NOAA Fisheries, Pacific Islands Fisheries Science Center	No
Michelle Sculley	NOAA Fisheries, Pacific Islands Fisheries Science Center	Yes
Mark Maunder	Inter-American Tropical Tuna Commission (IATTC)	Yes
Carolina Minte-Vera	Inter-American Tropical Tuna Commission (IATTC)	Yes
Mikihiko Kai	Fisheries Research and Education Agency, Japan	Yes
Hidetada Kiyofuji	Fisheries Research and Education Agency, Japan	Yes
Leyla Knittweis	Fisheries New Zealand	No*
Rohan Currey	Department of Agriculture, Fisheries and Forestry, Australia	Yes
Laura Tremblay-Boyer	CSIRO, Australia	Yes
Zhe Geng	Shanghai Ocean University, China	No
Yi-Jay Chang	National Taiwan University, Chinese Taipei	Yes

4 First steering group meeting (8 July 2026)

We held the first steering group meeting online on 8 July 2026. Discussion followed the meeting agenda — a project overview, the scope and intended outcomes of the workshop, likely sessions and session leads, potential participants, venue and dates, and next steps — and the main points are summarised below.

4.1 Refined scope and outcomes

The group confirmed that the workshop should focus on **sharks and billfish**, while reserving time to discuss how far the same approaches carry over to other, currently un-assessed species (rays and non-assessed sharks, for example). A recurring theme was that the comparison of methods — integrated models such as Stock Synthesis and MULTIFAN-CL against simpler population models, risk assessments, and newer approaches such as close-kin mark-recapture — is most useful when it is organised around **management needs and data availability**. The outcome we are aiming for is a **tiered framework** that ties the acceptable form of assessment output to the certainty and quality of the underlying data, and consideration of the management needs and types of advice required for them.

The group also agreed on what the post-workshop paper to the Scientific Committee should contain: a background summary drawn from the review; a summary of the workshop outcomes; guidelines for consistent advice graded by data availability and certainty; and a suggested alignment of North and South Pacific assessment schedules.

4.2 Points of guidance from the steering group

A handful of points emerged as guidance for the workshop and the review:

- **Management objectives and priorities first.** Assessment approaches need to be aligned with management objective: the choice of method should follow from explicit management objectives and priorities, not the other way around (while recognising that data and methods may not be available to support certain management strategies - e.g., explicit MSY-based strategies cannot be supported when MSY cannot be estimated from available data). A management-strategy framing provides a potential approach to a tiered framework based on management requirements, data availability and quality. In this framework, MSY-based harvest strategies, impact-based approaches — measuring the likely scale of the impact of fisheries on a given stock, and risk-based management via fisheries characterisation and prioritisation frameworks are matched to the management objective and to the information available for each stock.
- **A data-quality gradient, not competing alternatives.** Assessment methods — integrated models such as Stock Synthesis and MULTIFAN-CL, simpler population models, risk assessments, and newer approaches such as close-kin mark-recapture — can be viewed along a tiered, data-quality gradient rather than presented as competing alternatives, with the acceptable form of assessment output tied to the certainty and quality of the underlying data in a given management context.
- **Cross-tRFMO collaboration.** There is scope for technical collaboration and schedule alignment with ISC and IATTC, including alignment of terminology and reference points, and coordination of North and South Pacific assessment schedules.
- **Un-assessed species.** Time should be reserved to consider how to address management needs for species that are not currently assessed (for example mobulids and whale sharks).

4.3 Draft workshop programme

The group endorsed a draft four-day programme — with a possible fifth day (Table 2) — that moves from the management needs, strategies, and data, through methods, to practical application and, finally, to operationalising a tiered framework. A fifth day was proposed for small-group focus sessions on selected assessments, which not all participants would need to attend. The draft structure and candidate topics are shown in Table 2; session leads are still to be confirmed.

Table 2: Draft workshop programme (session leads to be confirmed).

Day	Theme	Indicative sessions
1	Management, data, and methodological thresholds	Management needs (conventions, CMMs, CITES, status; target vs bycatch and retention vs non-retention; MSY/utilisation vs risk-based management); presentation of the review; cross-tRFMO harmonisation of terminology and reference points; data availability and quality audit defining “data-poor” vs “data-intensive” thresholds.
2	Methods	Comparative evaluation of assessment frameworks — integrated models (SS3, MULTIFAN-CL), simple/state-space surplus production models, risk assessments, close-kin mark-recapture and genomics/eDNA, and other approaches; matching methods to data quality.
3	Practical application	Case-study retrospectives of recent assessment successes and failures; managing structural uncertainty, including protocols for objective multi-model ensemble averaging and rules for reconciling model conflicts.
4	Operationalising the tiered framework	Defining guidelines by data-certainty level (acceptable outputs for low- vs high-data species); combining models vs accepting single models; interpreting outputs from different models against reference points.
5 (optional)	Assessment focus groups	Small-group deep-dives on selected assessments — North and South Pacific swordfish and striped marlin, oceanic whitetip shark, and possibly makos. Not all participants need remain for this day.

4.4 Participants, venue, and dates

We discussed additional steering group and workshop invitees, canvassed potential donors and partner organisations whose support could allow us to bring in additional RFMO and subject-matter experts, including specialists for currently un-assessed species. A workshop of four to five days was proposed for the window from late January to early March 2027, with Hawaii and New Zealand identified as candidate venues. These arrangements, including cost, will be finalised at the second steering group meeting and pending advice from the Shark and Billfish Informal Small Groups (ISGs) at SC22.

5 Next steps and recommendations

5.1 Timeline

The remaining project milestones are summarised in Table 3.

Table 3: Project 130 milestones and indicative timing.

Milestone	Indicative timing
First steering group meeting	July 2026
Report to SC22 (this report)	August 2026
Second steering group meeting (workshop detail)	Q3 2026
Review paper (background)	Late 2026
Technical workshop	Early 2027 (late Jan – early Mar)
Report of workshop outcomes to SC23	July 2027

5.2 Recommendations

SC22 is invited to:

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- **Comment and provide guidance** on the proposed scope and outcomes, in particular the intended tiered framework for providing assessment advice by management strategy, data availability and certainty; and
- **Encourage** the participation of, and technical collaboration with, ISC and IATTC, to support alignment of assessment methods, terminology, reference points, and schedules across the Pacific tRFMOs.

References

- Brouwer, S., Farthing, M., & Hamer, P. (2023). *Billfish research plan 2023–2027* (Nos. WCPFC-SC19-2023/SA-WP-16 Rev 1). Western and Central Pacific Fisheries Commission.
- Brouwer, S., & Hamer, P. (2020). *2021–2025 shark research plan* (Nos. WCPFC-SC16-2020/EB-IP-01 Rev1). Western and Central Pacific Fisheries Commission.