FIRST INFORMAL INTERSESSIONAL WORKING GROUP MEETING (STIIWG01)
REVIEW OF CMM 2018-04 (SEA TURTLES)

8 and 10 April 2026 (Pohnpei)| 10 AM-2 PM
Virtual Meeting

CHAIRS' SUMMARY REPORT

Table of Contents

The Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean

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CHAIR'S SUMMARY REPORT

EXECUTIVE SUMMARY

The Informal Intersessional Working Group reviewed the Conservation and Management Measure (CMM) 2018-04 for Sea Turtles to address limitations in its scope, inconsistent data reporting, and to potentially expand mitigation measures. The primary objectives of the review are to clarify sea turtle interaction reporting requirements and consider expanding the scope to include mitigation measures for deep-set longline fisheries. The review was conducted via virtual platform over two (4-hour) days, April 8 and 10, 2026.

Population Status and Fisheries Bycatch:

- Pacific sea turtle populations are vulnerable to extinction, with fisheries bycatch in longline fisheries in the Western and Central Pacific Ocean (WCPO) identified as one of the main threats.
- Populations of high concern include the West Pacific Leatherbacks and South and Pacific Loggerheads, both assessed as Critically Endangered.
- Mitigation is currently only mandated for shallow-set longline gear, despite deep-set longline effort contributing ~85% of the total longline fishing effort.

Mitigation Measures and Best Handling and Release Practices:

- The combination of large circle hooks and finfish bait remains the most effective mitigation strategy for reducing interaction and mortality rates in shallow-set longline fishing operations, though some studies did not support this and questioned efficacy in deeper set gear.
- Recent research has indicated that, for longline interactions, leatherback turtles are predominantly entangled in the line rather than biting baited hooks.
- Best handling and release practices are useful to improve survivorship once animals are captured in fishing gear. A weakness in WCPFC's CMM 2018-04 is the lack of a mandatory training requirement for safe handling and release practices.

Data Gaps and Uncertainty:

- Uncertainty exists regarding the true extent of sea turtle bycatch due to limited observer coverage and a bias in distribution of observer placement in relation to fishing effort in the WCPO.
- Proposed changes to sea turtle data reporting requirements are expected to improve the understanding of bycatch (eg., environmental drivers), specifically regarding regions and species.
- The current mandate for annual Scientific Data (SciData) submissions has led to inconsistent interpretations among Cooperating Non-members, Members, and Participating Territories (CCMs) regarding the necessary data level (operational or summary).
- Proposed revisions to SciData include renaming catch reporting sections to include sea turtles and revising language in CMM 2018-04 reporting requirements to ensure consistent interpretation among CCMs.

- The majority of participants expressed support for a joint analysis, led by the United States, of WCPFC Regional Observer Programme sea turtle interaction data: participants stressed the importance of transparency regarding the scope (time period and region) and the inclusion of national scientists, and data confidentiality.
- A survey was conducted that identified that most participants agreed that a joint analysis could lead to a stronger CMM 2018-04. (Respondents rated the value of this exercise as 4.3 (On a scale of 1-5; n=23 participants).

Key Takeaway Messages

- **Expand Mitigation Scope to Deep-Set Longlines:** A key concern is CMM 2018-04's limitation to shallow-set longline gear, despite deep-set longlines accounting for ~ 85% of WCPO longline fishing effort. Strengthening the measure by including deep-set mitigation is suggested to further reduce impacts to sea turtle populations.
- **Prioritize Data Clarity and Collaborative Analysis:** There is a strong need to clarify sea turtle interaction reporting requirements to improve estimates and understanding of bycatch. Participants agreed that a joint analysis, led by the United States, of shared WCPFC Regional Observer Programme (ROP) and national data will be useful to strengthen CMM 2018-04. There was strong support for this type of analysis, with the provision that data confidentiality issues would be clarified and that national scientists would be included in the process.
- **Investigate Bycatch Hotspots and New Concepts:** Future work could include a Spatially Explicit Fisheries Risk Assessment (SEFRA) for sea turtles in the WCPO. Emerging concepts to explore for mitigation include the "Move On" rule (ceasing/shifting fishing activity when encounter thresholds are met) and the "Catch Fish, Not Turtles" strategy (setting gear deeper than 100m).
- **Focus Research on Leatherback Bycatch:** Further research is needed regarding effective bycatch mitigation measures for leatherbacks, as their primary interaction mechanism is entanglement rather than hooking. Better data on interactions would assist in identifying spatial and temporal bycatch hotspots, information that may be useful to refine management strategies.
- **Mandate Safe Handling and Release Training:** WCPFC's CMM lacks a mandatory training provision for safe handling and release, a requirement included in IATTC Resolution C-21-04. Recommendations include completing turtle handling and release training for skippers and crew to improve post-release survival rates.

AGENDA ITEM 1: OPENING OF MEETING AND WORKSHOP OBJECTIVES

1. The Chairs**, Yonat Swimmer and Emily Crigler**, opened the Informal Intersessional Working Group Review of Conservation and Management Measure (CMM) 2018-04 for Sea Turtles and welcomed all participants to the virtual meeting. The Workshop agenda is included as Annex

2. At WCPFC21, the Commission agreed to review and revise the WCPFC Conservation and Management Measure for Sea Turtles (CMM, 2018-04) in 2026, to ensure that the reporting requirements are clearly defined and to consider expanding the scope of the measure for consideration by SC22, TCC22 and WCPFC23 (WCPFC21 Summary Report, Para. 204). At WCPFC22, the Commission endorsed the formation of an informal intersessional working group, led by the United States, to review CMM 2018-04 in 2026 and report back to SC22, TCC22, and WCPFC23 (WCPFC22 Provisional Meeting Outcomes, Para. 16). The United States offered to lead a two-day virtual workshop in 2026 to facilitate this review.

3. The current WCPFC Conservation and Management Measure for sea turtles (CMM 2018-04) includes requirements for shallow-setting longline and purse seine fisheries to ensure the safe handling, release, and reporting of captured sea turtles. Additionally, it mandates that shallow-setting longline fisheries must use either circle hooks or finfish bait. To ensure the measure's future effectiveness, CMM 2018-04 includes a clause stipulating that the Commission would review the measure in 2021, specifically to consider expanding the scope of the measure to include mitigation measures for deep-set longline fisheries. This consideration was to be based on advice from the Scientific Committee (SC) and the Technical and Compliance Committee (TCC), as well as information provided by Cooperating Non-members, Members, and Participating Territories (CCMs) pursuant to the measure.

4. The primary objective for this review is to consider expanding the CMM's scope to incorporate mitigation measures for deep-set longline fisheries and to establish clear sea turtle data reporting requirements. A key concern noted was the measure's potential limitation in scope, as mitigation requirements were only mandated for shallow-set longline gear, despite the fact that deep-set longline effort contributed a significantly larger proportion of the total longline effort in the CA. The review also seeks to clarify sea turtle interaction reporting requirements, as the current mandate for vessels to record and report all incidents in annual Scientific Data (SciData) submissions has led to inconsistent interpretations among CCMs regarding the necessary data level (operational or summary). A core goal is to clarify or modify these requirements to improve the accuracy of bycatch estimates and understanding.

5. The goals of the workshop are to: 1) share relevant information for science-based decisions regarding an effective sea turtle CMM, 2) consider expanding the scope of the measure to include mitigation measures for deep-set longline fisheries, 3) and clarify sea turtle data reporting requirements to improve estimates and understanding of sea turtle bycatch, and 4) consider ideas for draft revised sea turtle CMM to be discussed at SC22, TCC22 and WCPFC23.

AGENDA ITEM 2: SUMMARY OF CURRENT SEA TURTLE CONSERVATION MEASURES

6. Chair **Yonat Swimmer** presented on the current requirements outlined in CMM 2018-04, which replaced CMM 2008-03. The adoption of CMM 2018-04 was informed by a WCPFC/ABNJ analysis of confidential Pacific observer data (1989-2015, over 2,300 turtles, 34 fleets, ABNJ 2017). This analysis found that the combination of large circle hooks (size 16/0 or larger) and finfish bait was the most effective sea turtle

bycatch mitigation strategy, significantly reducing interaction and ingestion rates compared to tuna/J-hooks and squid bait, respectively, thus increasing post-release survival. CMM 2018-04, based on these findings, mandates that all shallow-set longline vessels (operating <100m) use either large circle hooks or finfish bait. The ABNJ report recommended extending this mitigation to deep-set longlines. SPC and others differentiate set types based on hooks between floats (HBF): shallow is ≤10 HBF, and deep is >10 HBF. Currently, CMM 2018-04 only applies to shallow sets, despite deep sets accounting for 85% of WCPO longline fishing. While interaction rates are higher in shallow sets, the high effort and greater at-vessel mortality in deep sets suggest strengthening the measure could further reduce impacts on WCPO sea turtle populations (Fig 1).

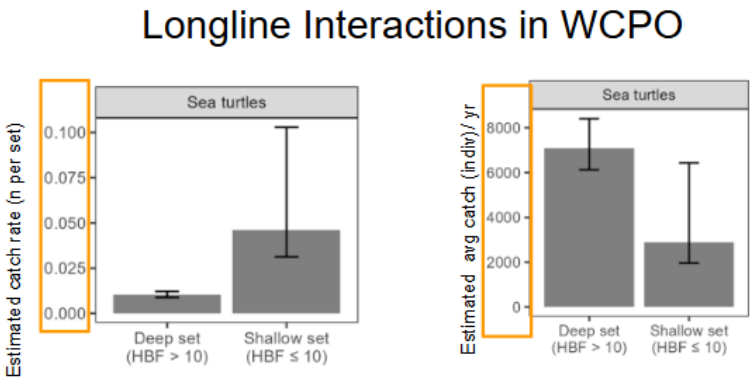

Figure 1. Histograms indicated relative rates of sea turtle interactions with deep and shallow set longline gear (left), as well as estimated average annual catch (by individual sea turtles) per year. (Peatman and Nicol 2026)

7. The main focus of the current review is centered around the impacts of longline fishing, particularly deep-set longline; however, CMM 2018-04 does also include mitigation requirements for purse seine vessels. As an aside, data analysis by Peatman and Nicol indicate relatively low overall catch rates by WCPFC purse seine vessels, and research indicates that at-vessel survival is relatively high (> 75%).

8. Sea turtle CMMs across Pacific Tuna Regional Fisheries Management Organizations (RFMOs), specifically the Inter-American Tropical Tuna Commission (IATTC) and the WCPFC, share common requirements for mitigation measures for shallow-setting longline vessels, as well as safe handling and release requirements for all longline vessels. However, IATTC Resolution C-21-04 is unique in that it includes a mandatory training provision for safe handling and release, a requirement not found in the WCPFC's similar CMMs.

AGENDA ITEM 3: OVERVIEW OF SEA TURTLE POPULATION RANGES & STATUS WITHIN THE WCPO

A3.1 Overview of sea turtle population ranges and status within the WCPO

9. **Dr. Bryan Wallace (USA**) provided a presentation on sea turtle populations in the Western and Central Pacific Ocean (WCPO), which contains six of the seven global species. These populations exhibit all life stages—nesting, foraging, and long-distance migration—but their slow life history makes them highly susceptible to various threats. A primary, pervasive threat is bycatch—the incidental capture in both large- and small-scale fisheries using multiple gear types. Other significant threats include coastal development, pollution, direct takes (hunting), and climate change. Conservation status is assessed by defining spatially explicit populations, or Regional Management Units (RMUs). These units are

delineated using combined data from nesting, genetics, tracking, and sightings (see Wallace et al. 2023).

10. The Current Red List status by species and subpopulations in WCPO (Table 1) illustrates the varied conservation status of these populations. Several subpopulations are listed under the highest risk categories, including West Pacific Leatherbacks and South Pacific Loggerheads, both assessed as Critically Endangered. The West Pacific Leatherbacks are specifically identified as a population facing high risk and high threats, most notably from bycatch in longline fisheries. Conversely, other RMUs, such as the East Indian/West Pacific Green turtles and the North Pacific Loggerheads, are categorized as Least Concern. Species assessed globally also appear on the list, with Hawksbills designated as Critically Endangered and Olive Ridleys as Vulnerable.

Table 1. Current Red List status by species and subpopulations in WCPO.

Species	RMU	Category	Assessment year
Green turtles	Southwest Pacific	Vulnerable	2025
Green turtles	East Indian/West Pacific	Least Concern	2025
Green turtles	Hawai'i (Central North Pacific)	Least Concern	2019
Green turtles	Central South Pacific	Endangered	2023
Green turtles	Central West Pacific	Near Threatened	2025
Leatherbacks	West Pacific	Critically Endangered	2013
Leatherbacks	North Indian	Data Deficient	2013
Loggerheads	North Pacific	Least Concern	2015
Loggerheads	South Pacific	Critically Endangered	2015
Loggerheads	Southeast Indian	Near Threatened	2015
Hawksbills	Global only	Critically Endangered	2008
Olive ridleys	Global only	Vulnerable	2008
Flatbacks	Global only	Data Deficient	1996

A3.2 An Ecological and Cultural Perspective of Sea Turtles

11. **CJ Cayanan (USA**) gave a presentation that focused on the author's recent publication on "Sea Turtles and Traditions in the Pacific Islands" (SWOT REPORT VOLUME 21, 2026), which provides a different perspective on sea turtles. It blends biological data, such as nesting and satellite data, with the cultural connections the peoples of the Pacific Islands hold with sea turtles. The Pacific Islands Region can be divided into three subregions: Melanesia, Micronesia, and Polynesia with each nation or territory having its own unique relationship between sea turtles and conservation with some similarities throughout the Pacific. The article provides some examples of how cultural traditions and western science are working

together to protect these culturally and ecologically important species.

A3.3 Extinction Risk Analysis for sea turtles in the Pacific Ocean

12. **Dr. Nicolas Pilcher (SPREP)** presented the value and importance of sea turtles in the Pacific region to local communities, noting that populations have declined significantly due to over-harvesting, bycatch in fisheries, retention when accidentally-caught, and a number of other, lesser threats. An assessment of the risk of extinction for sea turtles in the Secretariat of the Pacific Regional Environment Programme (SPREP) region was undertaken recently (Pilcher 2021), supported by a model called *vTurtle*, which simulated turtle life histories alongside possible harvest and bycatch scenarios.

13. Dr Pilcher noted that while the IUCN Red List is an extremely powerful tool, it relies on substantial data sets, such as long-term data series of numbers of nesting turtles, and knowledge of biological traits and of distribution and threats. Due to data deficiencies, these criteria are hard to meet for sea turtles in the Pacific region. Other data gaps include not knowing how many turtles might be taken in a fishery, or the proportion of these they represent of the entire turtle stock. Not all fishery interactions result in turtle mortality, and in most cases, fishery bycatch numbers are not representative of the overall impact due to low observer and reporting coverage

14. When these critical data points are missing, mathematical models such as *vTurtle* can help predict what could be happening with a population. The model revealed that the two key interventions to reverse declining trends were increasing early-stage survivorship (numbers of eggs and hatchlings that survive), and reduction in bycatch. Both actions, combined, can result in growing turtle population numbers.

15. Key actions recommended at national and regional levels to improve the conservation outlook for sea turtles in the Pacific region include addressing mortality of eggs and hatchings on nesting beaches; addressing incidental capture of all age classes in commercial and artisanal fisheries; addressing the loss of nesting females on nesting beaches, and addressing local consumption of sea turtles and their products.

Discussion:

16. A question was posed concerning the modeling of leatherback population recovery. Specifically, clarification was requested regarding the estimated rates of bycatch of juveniles and their post-release survival rates. Dr. Pilcher responded that due to model sensitivity, population recovery is dependent on both a reduction in bycatch and an increase in survival rates.

AGENDA ITEM 4: OVERVIEW OF SEA TURTLE BYCATCH IN WESTERN AND CENTRAL PACIFIC OCEAN (WCPO) FISHERIES

A4.1 Sea turtle interactions with WCPO fisheries

17. **Dr. Tom Peatman and Simon Nicol (SPC)**, via pre-recorded video presentation, presented a summary of estimated sea turtle interactions with purse seine and longline fisheries in the WCPO. Statistical models were fitted to observe sea turtle interactions from available at-sea observer data. These models were then used to predict interaction rates and raised to total estimated interactions using reported effort data. The estimated interactions do not cover small-scale domestic longline and purse seine

fisheries in the EEZs of the Philippines, Indonesia and Vietnam, due to limited representative observer data available for these fisheries.

18. Summaries of estimated interactions and interaction rates were provided by set-type for purse seine fisheries, and by inferred set-depth for longline fisheries. The majority of estimated sea turtle interactions were accounted for by the longline fishery, with relatively low estimated interactions for the purse seine fishery. However, there was greater uncertainty in estimated longline interactions, due to a range of limitations including the low rates of observer coverage along with limited representative data for key longline fleets. Interaction rates of sea turtles were highest for shallow-set longline effort, defined as effort with hooks per basket ≤ 10, though the majority of estimated interactions in recent years were from deep-set longline effort (hooks per basket > 10), due to the larger volume of effort.

Discussion:

19. Participants discussed the temporal trends in loggerhead bycatch, specifically the recent increase in interactions despite existing mitigation measures. This led to a comparison with similar trends in Hawaii's shallow-set longline data, which are thought to be influenced by specific regional regulations. It was also highlighted that the observer data used in the analysis is disproportionately weighted by the contribution from the Hawaii data.

A4.2 Characterising surface longline fishing fleet behaviour in relation to leatherback bycatch and Post-release survival for leatherback turtles caught in New Zealand surface longline fisheries

20. **Dr. Matt Dunn (New Zealand**) discussed his recent publication, Dunn et al. (2024), which examined surface longline fishing fleet behavior in New Zealand in relation to leatherback turtle bycatch. Leatherback turtles are caught incidentally in New Zealand's surface longline fisheries. Statistical models revealed that higher bycatch was linked to shallow-set lines, warmer water, proximity to frontal zones, and other environmental factors. Catches of target species, such as swordfish and bigeye tuna, showed similar associations. However, three different statistical models produced slightly varying predictions. Consequently, it appears challenging to confidently pinpoint specific small-scale areas and times within the New Zealand EEZ where surface longline fishing (particularly for swordfish and bigeye tuna) could be prohibited to effectively avoid leatherback bycatch.

Discussion:

21. Discussion regarding direct mortality indicates a low (~ 5%) rate of at vessel-mortality for leatherbacks turtles in this shallow-set fishery, with uncertain rates of post-release survival. Other colleagues in NZ noted no dead turtles upon hauling. Dr. Dunn also noted that hookings are rare, as most leatherbacks are entangled in the line. With regards to refinements of models to inform ways to avoid leatherback interactions, Dunn believes that predictive models are unlikely to provide this as a solution. Rather, Dunn believes action is required elsewhere as fishers should be alerted about risk of potential leatherback capture.

A4.3 Hooking location of leatherback turtles by hook types in longline fisheries and Bycatch risk analysis for three sea turtle species in the WCPO under data-limited conditions

22. **Dr. Kei Okamoto (Japan)** reported the results of an analysis regarding hooking locations of sea turtles in longline fisheries, showing that in leatherback turtles, foul-hook or entanglement accounted for the

majority of cases. Furthermore, in conjunction with past research findings on hook types and bycatch rates, it was shown that leatherbacks frequently experience foul hook or entanglement regardless of hook type, that the mechanism of bycatch differs from that of other sea turtle species, and that the bycatch rates of leatherback in deep-set longlines by the Japanese tuna hook is similar to that of large circle hook. He concluded that further research is needed regarding effective bycatch mitigation measures for leatherbacks. He also presented the results of an analysis of sea turtle bycatch risk in the WCPO using scientific observer data and environmental factors. It showed that leatherbacks and olive ridleys face relatively higher risks in tropical waters, furthermore, leatherbacks and loggerheads face relatively higher risks in shallow-set longlines. Based on these results, the study indicated that extending bycatch mitigation measures to deep-set longline fisheries is less effective to reduce leatherback bycatch, and that if such measures are to be introduced, focusing them on tropical waters would be more cost-effective.

A4.4 Leatherback Sea Turtle Interaction Rate

23. **Dr. Rob Ahrens (USA)** presented his work whereby observer data from the Hawaii deep-set longline fishery were used to estimate sea turtle interaction rates over the period 2005–2024. This data set included 5,757 observed trips, 191 million hooks, and 55 recorded turtle interactions. A ratio estimator with Taylor linearization variance was applied to correctly account for the clustered sampling design, where the trip — not the individual hook — is the primary sampling unit, yielding a pooled interaction rate of 0.288 per million hooks (95% CI: 0.211–0.365, CV ≈ 14%). Annual rates showed considerable interannual variability, ranging from zero interactions in 2017 to a peak of 0.854 per million hooks in 2024, with wide annual confidence intervals reflecting the inherently small number of interactions per year. Applying the pooled Hawaii DS rate to WCPO-wide deep-set longline effort — which ranged from approximately 596 million to 1,066 million hooks per year over the study period — yields an estimated 172–303 turtle interactions per year across the WCPO, totaling approximately 4,770 interactions between 2005 and 2024 (95% CI: 3,490–6,050). Models indicate that sea surface temperature is the dominant determinant of leatherback turtle presence, as well as indicators of highly active water columns (e.g., EKE). At vessel (direct) mortality was noted as 23.6% with an estimated likelihood of post release mortality at 19.4% (range: 0-60%). With regards to rates of interaction and mortality, regional projections should be interpreted cautiously, as they assume the Hawaii deep set interaction rate is representative of the broader WCPO deep-set fleet, whereas gear configuration, target species, operational depth, and spatial overlap with turtle distributions vary considerably across WCPO fleets.

Discussion:

24. The discussion highlighted concerns about data uncertainty, particularly regarding the accuracy of bycatch rate estimates. Post-release survival rates were determined based on the amount of gear remaining on the animal, a calculation that involves uncertainty. Dr. Ahrens emphasized the importance of integrating fishery-independent data, such as tagging data, into the models and highlighted that he is actively seeking permission from WCPFC members to access broader WCPFC ROP interaction data to include in the model.

AGENDA ITEM 5: REVIEW OF SEA TURTLE BYCATCH MITIGATION METHODS AND RESEARCH

A5.1 Inputs for Fisheries Management Strategy Evaluation of Multispecies Bycatch | WCPFC Meetings

25. **Dr. Eric Gilman (USA)** discussed a recent publication by the International Seafood Sustainability

Foundation (ISSF 2024) that provides databases of mitigation methods for at-risk species captured in pelagic longline, tuna purse seine and drift gillnet fisheries. There are tradeoffs given that mitigation measures have the potential to be effective to reduce bycatch of certain protected taxa (e.g., sea turtles) yet may inadvertently result in higher capture of other non-target species. The databases enable the discovery of bycatch mitigation methods and enable accounting for multispecies effects of alternative bycatch mitigation strategies across exposed populations and stocks of at-risk species. The report also defines key inputs for multispecies bycatch management strategy evaluation of: (1) the size of the effect of an intervention on catch and fishing mortality rates; (2) multispecies conflicts and mutual benefits; (3) strength of evidence, including in practice; (4) commercial viability costs; (5)compliance likelihood; and (6) rates of components of fishing mortality. The robust evaluation of alternative bycatch management strategies against this suite of criteria enables simulating the outcomes of alternative strategies to determine which best meets objectives.

Discussion:

26. Discussion related to the quality of the data in the tables in the ISSF report and if a precautionary approach was used. There is an evidence hierarchy in the table to rank the quality of the data in the tables.

A5.2 Characterising surface longline fishing fleet behaviour in relation to leatherback bycatch and post-release survival for leatherback turtles caught in New Zealand surface longline fisheries

27. **Dr Matt Dunn (New Zealand)** discussed a recent paper (Finucci & Dunn, 2024) that reports that at-vessel survival for leatherbacks has been relatively well-documented, but there have been very few studies on post-release survival. The qualitative method for evaluating post-release survival of Ryder et al. (2006) was agreed as still "best practice" and used to score probability of post-release survival for New Zealand leatherback shallow-set surface longline bycatch. Post-release survival was estimated to be about 78%, based upon 23 interactions. Recommendations to improve knowledge and conservation outcomes for leatherbacks included completing turtle handling and release training for skippers and crew, so they can remove as much of the hooked or entangled fishing gear as possible, as this was believed to improve post-release survival rates.

AGENDA ITEM 6: BRIEF OVERVIEW OF DISCUSSION OF SESSION 1

AGENDA ITEM 7: REVIEW OF SEA TURTLE BYCATCH MITIGATION METHODS AND RESEARCH

A7.1 A Meta-Analysis of Bycatch Mitigation Methods for Sea Turtles

28. **Dr. Cheng Zhou (China)** presented research on the meta-analysis published (in Yan et al. 2025) which indicates that circle hooks are generally effective in reducing the bycatch of loggerhead, olive ridley, and leatherback turtles. Notably, the findings demonstrate that bait type actually yields a stronger bycatch mitigation effect compared to hook type. However, it is important to emphasize that responses to these mitigation measures vary across different geographical regions and turtle species. Overall, current research on sea turtle bycatch remains somewhat fragmented, with limited sample sizes for certain species restricting broader conclusions.

A7.2 Habitat Distribution Modeling of the Loggerhead Turtle (Caretta caretta) in the Western and Central Pacific Ocean using Integrated Multi Sources Fisheries Data

29. **Lianhuan Xie (China)** presented research on habitat distribution modelling of loggerhead sea turtles in the WCPO using integrated multi-source fisheries observer data from longline and purse seine fisheries. The analysis compared models developed from longline-only, purse seine-only, and combined datasets, and found that the integrated model produced broader and more connected hotspot patterns and showed better overall predictive performance and stability across years. Environmental drivers differed somewhat between fisheries, but dissolved oxygen and sea surface temperature were consistently important predictors across models. The model also identified that areas of high habitat suitability overlapped with both longline and purse seine fishing effort, indicating potential bycatch risk hotspots. These results demonstrate the value of integrating multiple fishery data sources to support spatially explicit bycatch mitigation and to inform future conservation and management measures for sea turtles in the WCPO.

Discussion:

30. Questions were raised regarding loggerhead distribution and risk, specifically concerning the data presented and for potential inaccuracy in species identification. The presentation highlighted a high risk of loggerhead catch in tropical waters, yet this is inconsistent with other studies, thereby raising concern regarding the accuracy of sea turtle species identification; however, it was noted that this work is still in progress.

A7.3 International community's efforts to mitigate sea turtle bycatch and status of implementing relevant measures by Korean tuna longline fishery

31. **Dr Mikyung K Lee (Korea)** referred to her recent publication (Lee et al. 2022) on international efforts and conservation trends to reduce sea turtle bycatch and analyzed the results of domestic and international research on the effectiveness of various bycatch reduction measures. In addition, the effectiveness of measures to reduce sea turtle bycatch in the Korean tuna longline fishery was evaluated by analyzing scientific observer data and survey results from the captains. The findings revealed that using circle hooks helps to reduce sea turtle interactions, while simultaneously maintaining or increasing catch rates for target species like bigeye tuna. According to survey results, 89% of captains reported no negative impact on target catch productivity when using circle hooks, despite minor concerns regarding operational costs. Additionally, the proportion of the fleet using circle hooks and whole finfish bait are increasing. Consequently, these results demonstrate that Korea's voluntary adoption of proactive measures effectively aligns with global biodiversity standards while ensuring the economic sustainability of its distant-water fishing operations.

AGENDA ITEM 8: UPDATES OF BEST HANDLING AND RELEASE PRACTICES

32. Chair Yonat Swimmer opened the agenda item to review sea turtle handling and release practices, to compare CMM 2018-04 with similar measures from other Tuna RFMOs and identify opportunities for improvement, with the goal of strengthening the measure and further reducing sea turtle mortality.

33. All TRFMOs mandate that caught sea turtles be handled using specific onboard tools to minimize harm and injury. Specifically, CMM 2018-4 requires all WCPFC members to ensure fishers follow standardized guidelines for the handling and release of any caught sea turtle to minimize injury. This includes:
    - Using proper tools (long-handled de-hookers, line cutters, and dip nets) for hook removal.
    - Bringing comatose turtles onboard for revival if feasible.

- Releasing turtles only after they have recovered sufficiently.

34. A significant weakness identified across most RFMOs, however, is the lack of a mandatory training requirement. Although specific actions and equipment are required, the precise method of execution often remains unspecified due to the absence of formal training. The Inter-American Tropical Tuna Commission (IATTC) is the sole exception, as it mandates training.

A8.1 Developing Best Handling & Release Practices for Sea Turtles for IATTC Fisheries

35. **Dr. Melanie Hutchinson (IATTC)** spoke on the importance of developing and adopting best handling and release practice (BHRP) guidelines for vulnerable species captured in fishing gears under the IATTC purview. The IATTC Scientific Staff developed a workplan, framework, and timeline towards the adoption of BHRPs for sharks, sea turtles, seabirds, rays and marine mammals (captured incidentally). The IATTC has taken action to improve the existing BHRP guidelines for sea turtles in purse seine, hook and line, and net fisheries (gillnet and set net) of the Eastern Pacific Ocean (EPO). The presentation provided lessons learned as well pointed to existing data reviews and BHRP guidelines available in the IATTC meeting document repositories. The presentation highlighted the importance of engagement across stakeholders and especially with industry in the development of BHRP guidelines to ensure recommended practices can be easily implemented across the various fleets operating in the EPO and made reference to ensuring BHRP guidelines are accompanied by resources for creating infographics and outreach and education materials.

A8.2 Protected Species Workshops & Crew Training Program (Hawaii/American Samoa Longline fleet)

36. **Jason Mehlinger (USA)** presented on Protected Species Workshops and Crew Training Program for the Hawaii and American Samoa longline fleets, emphasizing that effective conservation requires practical education to shift crew habits. NOAA Fisheries provides weekly workshops to train vessel owners and operators on mitigation techniques, regulatory requirements, and species identification. Notably, these regional regulations are more stringent than WCPFC rules, particularly regarding annual training, required handling tools, and resuscitation protocols. This includes the incoming "2-and-1" rule requiring two trained individuals onboard all vessels and one on deck during all protected species interactions. The programs provide comprehensive resources, including translated handling and release guidelines and animated training videos available online. Recently, a standardized 6-step handling pattern was developed for all protected species interactions to prioritize efficiency, safety, and gear removal. This streamlined approach simplifies communication on board, reduces complex decision-making, and ensures better preparedness prior to engaging with animals or gear.

Discussion:

37. The discussion highlighted potential difficulties in using long-handled de-hookers for removing circle hooks from sea turtles, leading to the suggestion that more training is necessary to improve success rates.

AGENDA ITEM 9: REVIEW CURRENT CMM 2018-04 DATA REPORTING REQUIREMENTS

38. **Chair Emily Crigler**, on behalf of Tiffany Vidal (SPC) presented issues related to the current reporting requirements included in CMM 2018-04. The presentation was centered around a paper recently reviewed by the Scientific Committee, SC21-ST-WP-05. *Strengthening Scientific Data Reporting to*

Support Sea Turtle Conservation (CMM 2018-04). CMM 2018-04 established a suite of operational guidelines, mitigation measures, and reporting requirements relating to sea turtle interactions and bycatch; however, identified gaps exist in how this information is included in the annual SciData or otherwise reported to the Commission. In response to an SC20 request (paragraph 76, SC20 2024 Summary Report), SPC developed a proposal outlining specific enhancements to the SciData standards for longline and purse seine fisheries to improve data quality, consistency, and conservation outcomes, for SC21 to consider. Specifically, it was suggested that SC21 consider:

- rewording the catch reporting sections in the SciData, currently labelled as 'Number of fish per set' (longline) and 'Weight of fish caught per set' (purse seine), to include turtles (e.g., changing `fish' to individuals or catch, respectively);
- ensuring established CCM criteria to characterize shallow sets can be determined from operational data fields (e.g., number of hooks between floats, hook depth, etc.); and
- adding additional longline gear characteristics to the SciData, including hook size and type, while elevating the importance of existing voluntary operational data fields (e.g., bait type).

39. SC21 endorsed the formation of an informal intersessional working group led by the United States to review CMM 2018-04 for sea turtles, noting that an examination of sea turtle data reporting requirements could be undertaken as part of this review. SC21 requested that this informal intersessional working group report back to SC22 and TCC22 on the outputs of its discussions.

40. Workshop participants were asked to provide feedback on the proposed enhancements to the SciData standards for longline and purse seine fisheries, as well as any potential revisions to CMM 2018-04, to improve data on sea turtle interactions.

Discussion:

41. Participants discussed the importance of reporting bait type, particularly given concerns about the inability to discern hook type effects if bait type reporting is voluntary, and the challenges this poses given that CCMs often use different or mixed bait types. In CMM 2018-04, bait and hook type are given equal weight in the reporting requirements. A question was also raised about the accuracy of logbook data regarding species identification.

AGENDA ITEMS 10 & 11: CCMS INPUT ON POTENTIAL MODIFICATIONS TO CMM 2018-04 AND DATA REPORTING REQUIREMENTS AND CONCLUDING REMARKS AND NEXT STEPS

42. **Chair Yonat Swimmer** provided an overview of workshop discussions, including a summary on sea turtle populations and bycatch within the Western and Central Pacific Ocean (WCPO), highlighting the following key areas:

Population Status and Threats:

- Pacific sea turtle populations are facing a high vulnerability to extinction, with fisheries bycatch identified as a primary threat.
- Purse seine fisheries are thought to have a minimal impact at the population level.

Data Limitations and Uncertainty:

- Significant uncertainty exists regarding the true extent of sea turtle bycatch in WCPO fisheries due to limited observer coverage. This is especially true in deep set fisheries given high variability of bycatch rates and limited spatial coverage of observers.

- Data issues are notable, particularly the minimal data collected by observers, leading to a discrepancy between observed and actual effort. This is compounded by a clear bias, as a disproportionate amount of observer data originates from Hawaii longline fisheries. The limited amount of ROP (Regional Observer Programme) data was also discussed.

Mitigation Challenges and Measures:

- A clear overlap between fishing activities and sea turtle habitats creates challenges in catching fish while avoiding turtles.
- For longline fisheries, most studies suggest that large circle hooks and fish bait are effective in reducing sea turtle bycatch, though this is not universally supported.
- Questions remain about the effectiveness of terminal gear (hook/bait) for leatherbacks, as they are predominantly entangled in the line rather than biting the hooks. Leatherback interactions with longline gear are largely linked to the sea turtles' specific range.

Emerging Concepts:

- **"Move On" Rule Concept:** This management measure, which would require fishing activity to cease or shift when specific protected species encounter/bycatch thresholds are met, remains a promising option. Studies indicate the existence of bycatch hotspots, making this an idea that warrants further exploration.
- **"Catch Fish, Not Turtles" Strategy (Deeper Setting):** This strategy proposes setting gear deeper (greater than 100 m) to reduce sea turtle bycatch and was mentioned in the ABNJ report (2017) that motivated the changes from CMM 2008-03 to CMM 2018-04. While scientifically supported, it currently has minimal empirical evidence to substantiate its effectiveness. It is currently being implemented in American Samoa longline fisheries to reduce green sea turtle bycatch.
- Expanding the use of electronic monitoring to collect interaction data will help mitigate concerns about the current geographic limitations of ROP data.

Discussion:

43. The discussion on outcomes and next steps primarily focused on identifying additional needs and the potential for a collaborative analysis of sea turtle interaction data to better understand spatial and species-specific trends. Key points raised included:

Data and Analysis Needs:

- **Limited Observer Data:** There was an acknowledgement that the low volume of observer data limits the interpretation of sea turtle interactions, emphasizing the need for more information on sea turtle habitats and areas of overlap with fisheries to better predict interaction risks.
- **Value of Data Sharing:** ROP observer data is limited and fishery-dependent (biased), but sharing this national interaction data is considered valuable.
- **Recommendation for a SEFRA:** A recommendation was made to support a Spatially Explicit Fisheries Risk Assessment (SEFRA) for sea turtles in the WCPO, similar to the one conducted for seabirds in CCSBT in 2025 (by NZ).
- **Improving Data Reporting:** Proposed changes to sea turtle data reporting requirements are expected to improve the understanding of bycatch, specifically concerning regional and species hotspots. Members were encouraged to submit documented information regarding mortality.

Data Sharing and Joint Analysis:

- **Support for shared ROP plus national data for a joint analysis:** Participants supported a U.S.

request for access to WCPFC Regional Observer Programme data to undertake an analysis of sea turtle interaction data. Participants stressed the importance of transparency regarding the scope (time period, region, fields) of the data request and the inclusion of national scientists in undertaking the analysis. The U.S. agreed to provide additional information via a circular to be distributed to all CCMs.

- The Workshop encouraged CCMs to submit analyses of sea turtle bycatch as well as mitigation measures in their national waters to supplement existing and future WCPO-scale analyses.
- A survey was conducted that identified that most participants agreed that a joint analysis would lead to a means to strengthen CMM 2018-04. (On a scale of 1-5, respondents rated the value of this exercise as a 4.3 (n=23 participants).

44. The Chair Yonat Swimmer outlined the next steps of the WCPFC review, including that she would work with all the presenters to ensure their work is captured for a Summary Report, as well as to upload presentations to this informal review's WCPFC website. The U.S. will present the key findings from this informal review to SC22 and TCC.

45. The Chairs thanked everyone for their participation in this important work.

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References for CMM 2018-04 Review

ABNJ 2017. Joint Analysis of Sea Turtle Mitigation Effectiveness.

Baez et al. 2024. Challenges and Opportunities in Monitoring and Mitigating Sea Turtle Bycatch in Tuna Regional Fisheries Management Organizations

Beverly et al 2009.Effects of eliminating shallow hooks from tuna longline sets on target and non-target species in the Hawaii-based pelagic tuna fishery

CONSERVATION AND MANAGEMENT OF SEA TURTLES CMM 2018-04. https://cmm.wcpfc.int/measure/cmm-2018-04.

Dunn et al 2024. Characterising surface longline fishing fleet behaviour in relation to leatherback bycatch: csp reports.

FAO 2009. Guidelines to reduce sea turtle mortality in fishing operations.

Finucci, Dunn 2024. AEBR 345 Post-release survival for leatherback turtles caught in New Zealand surface longline fisheries

Gilman et al 2024. Individual and fleetwide bycatch thresholds in regional fisheries management frameworks | Request PDF

Hutchinson et al. 2025. Best-handling-and-release-practice-guidelines-(BHRP) for sea turtles IATTC -Doc EB-03-05 REV.

ISSF 2024. ISSF 2024-04: Inputs for Comprehensive Bycatch Management Strategy Evaluation in Tuna Fisheries - International Seafood Sustainability Foundation

Kinan et al 2024.Leatherback Sea Turtle Interactions in Western and Central Pacific Deep-Set Longline Fisheries

Langford et al 2025: Sea turtle bycatch mitigation and circle hook workshop review paper.

Lee et al. 2022 International community's efforts to mitigate sea turtle bycatch and status of implementing relevant measures by Korean tuna longline fishery.

Lewison et al 2014. Global patterns of marine mammal, seabird, and sea turtle bycatch reveal taxa-specific and cumulative megafauna hotspots.

Okamoto et al 2018. Review of studies on catch rates of commercial and bycatch species by hook type using in pelagic tuna longline fisheries | WCPFC Meetings

Peat et al 2024.Literature Review of Soak Period Bycatch Mitigation Measures for New Zealand's Surface Longline Fleet New Zealand Department of Conservation

Peatman et al. 2023. Estimating trends and magnitudes of bycatch in the tuna fisheries of the Western and Central Pacific Ocean

Pilcher 2021. Review of the Status of Sea Turtles in the Pacific Ocean 2021.

Ryder, C.E., T.A. Conant, and B. A. Schroeder. 2006. Report of the Workshop on Marine Turtle Longline Post-Interaction Mortality. U.S. Dep. Commerce, NOAA Technical Memorandum Report

Santos et al 2022 A review of reported effects of pelagic longline fishing gear configurations on target, bycatch and vulnerable species

SPC 2025. Sea turtles data reporting req WCPFC-SC21-2025/ST-WP-05. SC21-ST-WP-05.pdf

SPC 2023. An update on the status of aggregate catch/effort and size composition data available to the SCTB - WCPFC-SC19-ST-WP-01 Data Gaps (FINAL - rev3).pdf

Swimmer et al 2017. Sea Turtle Bycatch Mitigation in U.S. Longline Fisheries

SWOT REPORT VOLUME XXI. State of the World's Sea Turtles. Sea Turtles and Tradition in the Pacific Islands pages 16-28.SWOT Report Vol XX1

Wallace et al. 2023. Marine turtle regional management units 2.0: an updated framework for conservation and research of wide-ranging megafauna species.

Yan, Zhou et al 2025. A Meta-Analysis of Bycatch Mitigation Methods for Sea Turtles Vulnerable to Swordfish and Tuna Longline Fisheries - Yan - 2025

Annex 1

The Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean

FIRST INFORMAL INTERSESSIONAL WORKING GROUP REVIEW OF CMM 2018-04 (SEA TURTLES)

10:00 am – 2:00 pm (Pohnpei Time), 8 and 10 April 2026
Electronic Meeting

AGENDA

APRIL 8TH, 2026 (10:00 AM - 2:00 PM)

1. **10:00 AM - 10:15 AM | Meeting Objectives**
   - Speakers: Y. Swimmer (USA), E. Crigler (USA)
2. **10:15 AM - 10:25 AM | Summary of current sea turtle conservation measures**
   - Speakers: Y. Swimmer (USA)
3. **10:25 AM - 11:30 AM | Overview of sea turtle population ranges & status within the WCPO**
   - Speakers: B. Wallace (USA), CJ Cayanan (USA), N. Pilcher (SPREP)

   — 30 min Break—
4. **12:00 PM - 1:20 PM | Overview of Sea turtle bycatch in WCPO fisheries**
   - Speakers: SPC, M. Dunn (NZ), K. Okamoto (Japan), R. Ahrens (USA)
5. **1:20 PM - 2:00 PM | Review of sea turtle bycatch mitigation methods and research**
   - Speakers: E. Gilman (USA), M. Dunn (NZ)

APRIL 10TH, 2026 (10:00 AM - 2:00 PM)

6. **10:00 AM - 10:15 AM | Brief overview of discussion of Session 1**
7. **10:15 AM - 11:00 AM | Review of sea turtle bycatch mitigation methods** (continued)
   - Speakers: C. Zhou (CH), Xie (CH), Mi K Lee (Korea)
8. **11:00 AM - 11:30 AM | Updates of best handling and release practices**
   - Speakers: M. Hutchinson (IATTC), J. Mehlinger (USA)

   — 30 min Break—
9. **12:00 PM - 12:30 PM | Review current CMM 2018-04 data reporting requirements**
   - Speakers: E. Crigler (USA)
10. **12:30 PM - 1:45 PM | CCMs input on potential modifications to CMM 2018-04 and data reporting requirements**
11. **1:45 PM - 2:00 PM | Concluding remarks and next steps**

Annex 2

The Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean

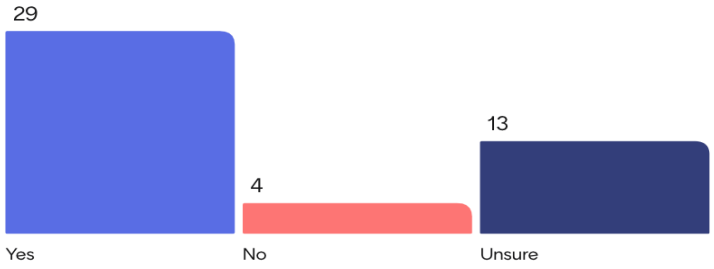
FIRST INFORMAL INTERSESSIONAL WORKING GROUP REVIEW OF CMM 2018-04 (SEA TURTLES)

10:00 am – 2:00 pm (Pohnpei Time), 8 and 10 April 2026
Electronic Meeting

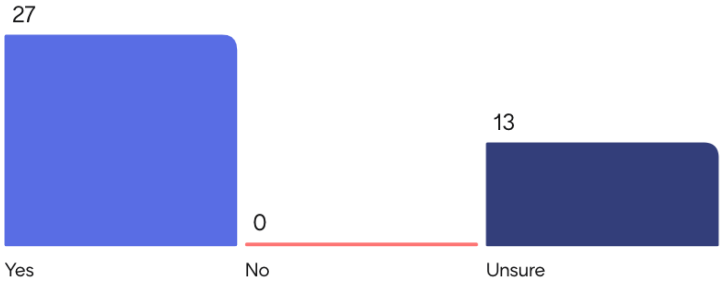
SURVEY RESULTS TAKEN DURING THE CMM 2018-04 REVIEW

After agenda item 3, participants responded via online survey to the following questions:

Do you think there is value in revising the CMM (2018-04)?



Do you believe fisheries bycatch is a significant source of mortality for sea turtles in the Pacific?



Prior to the continuation of the Workshop on Day 2, the following survey was conducted, seeking input from participants on their takeaways from the first day. The word cloud results indicate the shared belief in the importance of data issues as a paramount concern.

What are your primary takeaways from today's session?