Summary report of the second informal intersessional meeting to review WCPFC CMM 2018-03 – Conservation and Management Measure to mitigate the impact of fishing for highly migratory fish stocks on seabirds.

The second informal intersessional meeting to review the Western Central Pacific Fisheries Commission (WCPFC) Conservation Management Measures (CMM) 2018-03 took place online on 7 May 2024 (NZT). The papers and presentations are on the WCPFC website here.

The meeting was attended by representatives from Australia, Canada, Cook Islands, China, French Polynesia, Japan, Republic of Korea, New Caledonia, New Zealand, Republic of the Marshall Islands, United States of America, and Chinese Taipei.

The meeting was also attended by representatives from the WCPFC Secretariat, ACAP, BirdLife International, Bumblebee SeaFood, Pacific Islands Forum Fisheries Agency (FFA) Secretariat, Seafood New Zealand, International Seafood Sustainability Foundation (ISSF), Organisation for the Promotion of Responsible Tuna Fisheries (OPRT), Safina Centre, The Pacific Community (SPC), The South Pacific Regional Environment Programme (SPREP), Sustainable Fisheries Partnership (US), Tuna Australia, Hawaii Longline Association (HLA), and the Western Pacific Regional Fishery Management Council.

Agenda item 1: Opening & brief background

The meeting was opened by Chair - Ms Danica Stent, from the New Zealand Department of Conservation, with a presentation on the background of the review of CMM 2018-03.

Agenda item 2: Overview of 1st informal intersessional meeting on the review of WCPFC CMM 2018-03

Dr. Igor Debski, from the New Zealand Department of Conservation, presented an overview of 1st informal intersessional meeting. This included the longline impacts on seabirds in the western central Pacific Ocean (WCPO), non-fisheries threats, the Marine Stewardship Council fishery standards as they relate to seabird bycatch, and insights and considerations relating to the effectiveness of different mitigation methods.

In relation to slide 3, a Japanese researcher highlighted that the number of breeding pairs of Short-tailed albatross is currently over 1,000 based on the latest research.

Agenda item 3: Seabird tracking, distribution, overlap with fishing effort, and population trajectories

- Dr Johannes Fischer, from the New Zealand Department of Conservation, presented new science on seabird distribution and population trends of threatened seabird species in the WCPO area and the underlying drivers of the trends.

Key points:

- The WCPO is a seabird hotspot.
- Threatened seabird populations in the southern hemisphere continue to decline.
- Global extinction is predicted for some species within decades.
- Bycatch in longline fisheries across the WCPO is likely to be the primary driver of some population declines, as well as the most manageable.
- Fisheries risk is more prevalent in the more northern latitudes of the southern hemisphere.

Discussion topic: is any further science on seabird distributions and population trends that should be considered?

- US noted that Oikonos has been working on additional seabird tracking in the Northwest Hawaiian Islands, and there will be a workshop in late 2024/early 2025 to update demographic information that would inform a black-footed albatross population assessment.
- There was a question about the detailed analyses of antipodean and gibson albatross distribution and trends (slides 33-46) and whether New Zealand has detailed overlap analyses for other species. The team answered that those two species have been monitored for over 30 years at a high level of detail, and the long-term data of each has been analysed by a sophisticated population model. Additionally, long-term satellite tracking data has enabled fine scale spatial temporal fisheries overlap studies.
- New Zealand commented that their research programme continues it is hoped that such analyses will be extended to other species.
- US commented that it would be helpful to see and explore the maps further, and asked if these maps could be made accessible especially given the perceived prioritized concern seems to be in the S. hemisphere.
- It was noted in the meeting chat that Dr Debski and the mapping team are working to make the maps accessible on a platform that will make it easier to look at all this spatial bird data - via the Seabird Safe Fishing Toolkit project. New Zealand will inform WCPFC members when the Toolkit website is available.

- Dr. Fischer noted that because there is good data on northern species including the short-tailed albatross, Laysan albatross, black-footed albatross, it would be possible to make a standardised map for northern hemisphere species as well.
- BirdLife International expressed support for a standardised combined map of northern and southern species.
- SPREP noted there was a 2013 study of the overlap between WCPFC longline fishing effort and albatross distribution in the North Pacific: https://www.bmis-bycatch.org/references/npzav2ph, and that this work needs updating.

Agenda item 4: Seabird diving ecology

Dr Igor Debski, New Zealand, presented new science from New Zealand and the United States on dive depth ecology.

Key points:

- Seabird diving ecology explores how seabirds forage vertically in the water column, which can influence how effective mitigation is at protecting birds when they dive for baited hooks.
- Measures in the northern and southern hemispheres have been different based on the assumption that northern species do not dive as deep as southern species. However preliminary information from a new study led out of Oregon State University show that black-footed and Laysan albatross dive deeper than previously thought.
- Baited hooks within 10m are available to some seabirds in both hemispheres.
- New data also shows that seabirds dive deep very fast. If dive speeds exceed typical hook sink rates, additional mitigation, such as tori lines, may be needed to protect seabirds from sinking hooks while they are within 10m of the water column.

Discussion topic: Is there any other evidence on dive depths that is relevant for considering the specifications of branch line weighting and tori lines between hemispheres?

- A Japanese researcher expressed surprise that the two northern albatross species have the presented diving ability. Some studies in Japan have showed the frequency of Black-footed albatross diving is rare. More information will be needed on the frequency of deeper dives to assess the required performance of bycatch mitigation.
- Dr. Fischer acknowledged that the new data is surprising, and that the new tag technology is revealing a new picture of how these seabirds forage. New Zealand agrees that more thorough analysis of the northern seabird data is important, and that further analysis will hopefully be prepared in time and presented to the Scientific Committee.

- ACAP highlighted that even if albatross don't dive much, the smaller diving petrels can bring the baited hooks to the surface and increase the risk for albatross. These secondary interactions are well documented in the southern hemisphere. If it is also occurring in the north, effective combinations of mitigation will be necessary in both north and south. ACAP provided a link to an article on this secondary interaction https://onlinelibrary.wiley.com/doi/abs/10.1002/aqc.2242
- Dr. Fischer noted that deeper diving had also been found in southern hemisphere albatross and provided a link to an article about deep diving in black-browed albatross: https://www.sciencedirect.com/science/article/pii/S0960982221015955

Agenda item 5: Seabird bycatch mitigation experiments in the Hawaiian deep-set fishery

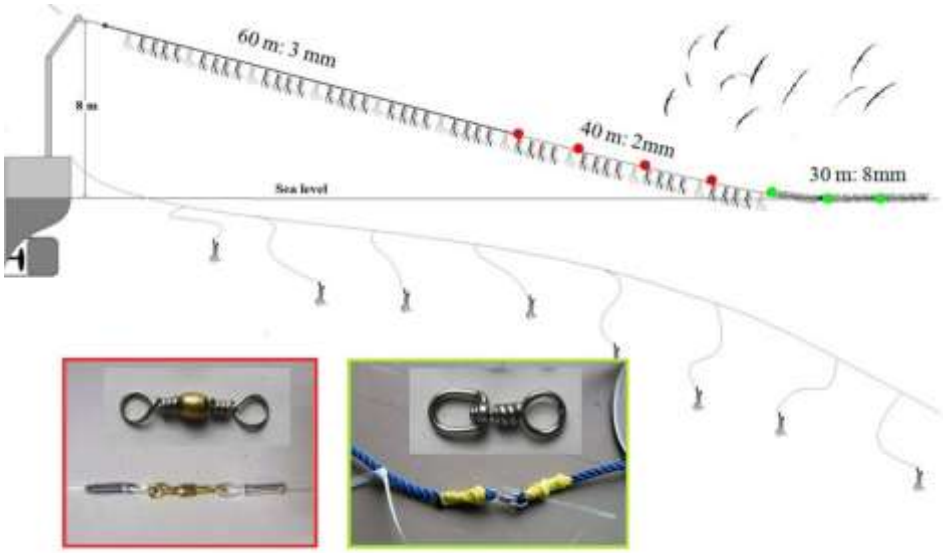
Ms Asuka Ishizaki from the US presented an update on mitigation experiments in Hawaii deep-set longline fishery.

Key points:

- Hawaii has two longline fisheries: a bigeye tuna deep-set fishery, and swordfish shallow-set fishery.
- Hawaii longline vessels have been required to use bycatch measures since 2001. Since measures were brought in there has been reduction of seabird bycatch by 70-90%
- The specific domestic regulations for each fishery were explained.
- Significant efforts have gone into developing effective tori lines for the deep-set fishery, including a design that addresses the challenge of entanglement. Fishers were involved in the process and trials.
- The shallow-set fishery is quite different from the deep set. The effort is further north, in rougher seas, and fishing is mostly at night. The hauling speed is much faster, and there are more safety concerns with line weighting. The sink rate is also different, which means the tori lines may need a longer aerial extent.
- The shallow-set tori line project to test tori line designs is ongoing with results likely in September.
- Reduction in black-footed albatross interaction rates since 2021 are likely associated with La Nina and negative Pacific Decadal Oscillation conditions (less seabird-fishery overlap).
- Population modelling shows that even if increased bycatch rates (peaking in 2018) persisted in the Hawaii deep-set longline fishery, the impact on black footed albatross is likely to be imperceptible. However, the population is projected to decline if bycatch rates are consistently elevated across the wider north Pacific fisheries.

Participant comments

- ACAP commented that the detail on the process for developing tori lines is very helpful. The representative shared his experience from developing tori lines in Brazil which had a backbone of 100m monofilament and mainline (very light). The first 60 m of the backbone is made of 3 mm monofilament (the same used as longline mainline) and the last 40 m made of 2 mm monofilament (the same used for branch line). A thinner line was used in the last 40 m to allow the tori line to break if entangling with the fishing line during longline setting, preventing operational problems and safety issues. In the drag section small packing strips were tied to the rope to increase drag. To overcome problem of twisted tangled tori lines swivels were attached every 10 m of the last 40 m of the backbone and every 10 m of the drag section. Swivels were very effective at stopping the twisting.
- Following the meeting the ACAP representative shared some pictures of the Brazilian tori line design and its use:



- Ms. Ishizaki explained that in the Hawaii design the braided rope helped prevent the twisting. The team did look at monoline but found that it might sag a bit too much. New Zealand and Japanese experts recommended dyneema.
- Dr. Fischer noted that it is interesting to see how Pacific Decadal Oscillations effected seabird distribution, and therefore risk, in the north Pacific, and that New Zealand has not seen this in the southern hemisphere.
- SPREP noted the original 2017 workshop, and that it is great to see the amazing progress since then. The representative was interested to see the streamers are black, and enquired whether US researchers have tested the effect of colour, and why they chose the short streamers rather than long or streamer less designs.
- Ms. Ishizaki elaborated that they didn't see any strong evidence that streamer colour had a significant effect. They focused on finding materials that were readily available, durable, and UV resistant. They decided against the streamerless tori lines because the fishermen had the perception that there needed to be some streamers to deter the seabirds. The hybrid design fell out of selection because it

was a longer line, and deployment took more time and was more difficult. Also, the evidence was that short streamers were still effective, and was the more practical option.

- ACAP noted that short streamers are used in Brazil because evidence is that they can be effective, and they are much lighter and easier to use.

Agenda item 6: Preliminary Evidence on effectiveness of combinations of mitigation methods

Dr. Debski and Fischer presented preliminary evidence on the effectiveness of combinations of mitigation options.

Key points:

- Dr. Debski gave a recap on the rationale for combining mitigation methods including that individual methods have limitations which can be addressed by combining the methods with other methods. There can also be some practical advantages of combining methods, for example, both line weighting and tori lines work together to prevent bycatch on the set, but also weights help sink the line and prevent tori lines becoming tangled in the line.
- Standalone best practice mitigation options such as hook-shielding devices and underwater bait setters have been designed to overcome the limitations of other single mitigation methods.
- Dr. Fischer presented the preliminary results of an application of the methods developed by James Bell et al to the WCPFC area. The method quantifiably compares the relative effectiveness (via estimating Standardised Interaction Rates) of different mitigation combination.
- Dr. Fischer also presented data on the reporting of mitigation use per CCM (not weighted by fishing effort).

Discussion topic: Do you have any evidence to share on the effectiveness of combinations of mitigation methods, either in the northern or southern hemispheres?

- US highlighted the omission of efficacy of blue dyed bait from the analysis. While studies show low confidence in it as a standalone method, it might still have some merit in combination with night setting. (US has sent relevant studies to New Zealand, which have been saved in the shared drive). NZ noted that the scope of the combinations presented were focused on those methods considered effective by ACAP.
- US commented that the quantitative method of looking at combination effectiveness is very interesting and is keen to understand the methodology further e.g. how “effectiveness” is defined. It would be good to have something to read about the methodology, and more time to consider this approach.

- Dr. Fischer explained that New Zealand is still working to fully apply the approach to the WCPFC and has not yet written up the method but will do so and share it with interested parties.
- A Japanese researcher questioned how seabird abundance is dealt with, noting it will affect the interaction rate. Studies need to be weighted and be made comparable.
- Dr. Fischer agreed that abundance is an important factor, which has been considered as this approach provides a relative effectiveness metric that was extracted from each study or trial individually.
- US expressed gratitude for the effort to bring together the different studies and analyse them and raised a question about the statistical significance of the findings.
- Dr. Fischer explained that currently the results provide the mean and standard deviations of the relative effectiveness of each method. New Zealand has not yet looked at further statistical tests but can do if it is a useful approach.
- US asked if New Zealand has access to observer data to expand on the controlled experiments presented in the scientific literature?
- Dr. Fischer answered that this approach focussed on effectiveness as published in the literature and did not include regular observer data.

Discussion topic: regarding the data on reporting of mitigation use per CCM (not weighted to by fishing effort), participants were asked: does anyone have any more science on preferences for or trends over time for different mitigations?

BirdLife International noted that an analysis by the Global Fishing Watch looked at the implementation of night-setting and found inconsistencies between what is reported and what is verified. This puts into question how the official reporting can be used. BirdLife also noted that some studies show that tori lines and weighted branch lines is one of the most effective 2/3 options – and the reporting of use of these is high.

Agenda item 7: Implementation of southern hemisphere mitigation options: a New Zealand industry perspective

Ms Rosa Edwards, Fisheries manager with Seafood New Zealand, gave a presentation on a NZ industry perspective on southern hemisphere mitigation measures.

Key points

- New Zealand has a small, diverse fleet, setting between 1-1.5 million hooks per annum.
- Different fisheries (tuna versus swordfish) use different seabird bycatch mitigation.
- Ms Edwards set out domestic mitigation requirements.

- The fleets have learned a lot via trial and error and are an active part of the solution, figuring out what works best for their vessel to reduce bycatch.
- Line weighting has increased with better training of how to safely use line weighting by reducing line tension while hauling. Many fishers feel confident in understanding and mitigating the risk of flybacks, and they are willing to try new designs of weighted hooks.
- Tori lines have been accepted as a baseline standard in New Zealand – all vessels need to use them unless Hookpods are being used. Streamers are key, bright colours are good. Tori pole needs to be movable. Line tension, setting speed, and sea state are important determinants on how it must be used. Small vessel tori lines need to be tailored specifically to vessels arrangements.
- Hookpods have been used sporadically and during trials for many years but have not been embedded into any fishery until recently. Now 14 vessels are using them, no LEDs being used because risk to shark attraction. Loss rate is low. Fishers have found that they need to add additional weights if using Hookpods, most are using 40g lumo led between the hook pod and hook or 40g swivels attached to the hook.
- It does take a little extra time to learn to use Hookpods, but vessels generally think it's worth it.
- Highest risk fisheries also use blue dyed-bait and hauling mitigation too, and some fishers consider blue-dyed bait to be an effective mitigation method when using squid bait. Fishers generally do not use blue-dye for fish bait.
- Strong engagement and support for our fleets has been essential for mitigation uptake. New Zealand Government runs an engagement and outreach programme (Protected Species Liaison Programme) and has technical mitigation experts to help fishers respond to captures. Industry helps and more recently has lead fleetwide engagement for the surface longline fleet which has enhanced mitigation uptake. The fishers feel comfortable calling the programme experts for support if captures are escalating.
- Allowing vessel to choose combinations that will be most effective for them and having industry as a key lead for mitigation engagement has worked for New Zealand.

Participant discussion

- A Japanese researcher thanked Ms Edwards for a very interesting presentation, and asked: why does additional weight help the implementation of Hookpods?
- Ms Edwards explained that some operators in the high-risk fishery found that the weight in the Hookpod alone was not enough to keep the hook down on the soak in some weather conditions.

- The US asked what incentives fishers have to use Hookpods as Hookpods are expensive relative to other mitigation methods; and why are some fishers still using blue-dyed bait?
- Ms Edwards explained that there was a combination of drivers in New Zealand including: roll out of electronic monitoring on the fleet, regulatory review of mitigation requirements, and significant increase in engagement on the industry side to raise awareness among the fleet about risk to seabirds and the importance of mitigation.
- Additionally, the New Zealand government provided financial support to enable fleets to meet the best practice mitigations, this has included government funding to reduce the implementation costs of Hookpods.
- On the question of blue-dyed bait – fishers found in some weather, hooks could still become exposed during the soak, needed more mitigation. Some fishers like using blue-dyed bait. However, others prefer not to use it. The choice to use it remains at the discretion of the skipper.
- ACAP commented about his experience with trialling Hookpods with LED and Hookpod mini. In Brazil, fisherman also wanted to use weighted swivels with Hookpods. They also don't believe the hooks will stay as deep as they should without the weight. It also increased sink rate and reduces bait loss.

Agenda item 8: Implementation of northern hemisphere mitigation options: a US industry perspective

Mr. Eric Kingma – from the Hawaii longline association provided a presentation about a US industry perspective on northern hemisphere mitigation measures.

Key points:

- Mr. Kingma provided a description of the fleet. There are 150 vessels. The deep-set fleet targets bigeye tuna, setting 63 million hooks annually. The shallow-set fleet targets swordfish (sets around one million hooks annually). The deep-set fleet moves around and goes further south, shallow-set fishes mostly in the north.
- The Hawaiian longline fleet sets 7% of the total hooks in the WCPO.
- Mr. Kingma described the regulatory and monitoring framework, discussed the pros and cons of blue-dyed bait, side setting, line weighting and tools for preventing flybacks, and tori lines.
- Mr. Kingma summarised the factors that support success and uptake of seabird bycatch mitigation including measures that are effective, practical, inexpensive, easy to use, enforceable, supported by fishers. Training for crew is important and continued research into gear safety.

Participant discussion

A representative from New Zealand Industry commented that the cost of squid bait is also a problem for the New Zealand industry.

Additional industry presentation by Tuna Australia

Mr. Phil Ravanello, from Tuna Australia presented an Australian perspective on southern hemisphere mitigation measures.

Key points:

- Tuna Australia is an industry association that represents longline fleets around Australia (tuna and billfish), setting 8-9 million hooks per year. Works to continually improve fishery, works with Marine Stewardship Council, universities, and Government.
- Mr. Ravanello set out the Australian regulatory framework, operating requirements, and reporting and monitoring.
- The management system is effective due to 1) high transparency (100% Electronic Monitoring and public reporting), 2) responsive regulator e.g. high-risk vessels have more scrutiny 3) commitment to seabird conservation (fishers actively involved in research/ trials/ solutions), and 4) supportive industry association (working to address key issues such as safety).
- An active research programme focused on safety and flyback mitigation uses a flyback simulator to develop physical barriers, bars, and screens. They are also trialling different tori line materials; automated tori line deployment; tori line poles that can be moved around the vessel; and line weighting options.
- Mr. Ravanello set out future research priorities, what they support and what they do not support, and key concerns and questions they want to see addressed.

Participant discussion

- An industry participant from China shared concern of the safety of the weighted branch line, and agreed it is an important consideration for this review.

Agenda item 9: Monitoring, compliance, and surveillance tools: an overview of reported data and a New Zealand perspective on data collection

Mr. Jordan Owczarek, from the New Zealand Ministry for Primary Industries, International Compliance team provided a presentation on monitoring, compliance, and surveillance of WCPFC fisheries with respect to seabird bycatch mitigation.

Key points:

- Operation Nasse and other Regional Fisheries Operations are critical to understand at sea activities by the high seas fleet.

- Mr. Owczarek outlined what New Zealand sees during aerial surveillance & High Seas Boarding and Inspections, including the trends in vessel activity, setting times (night setting), tori line use.
- Port inspections are important to ensure that vessels entering or returning from the high seas are compliant with relevant seabird conservation and management measures.
- Mr. Owczarek discussed the use of inspection forms to report on tori lines, weighted branch lines, and the various methods and tools to monitor night setting.

Participant discussion

- A Japanese researcher suggested a recent decrease in self-reporting could reflect effects of Covid 19, and asked whether the table reflects compliance data also.
- Mr. Owczarek confirmed that the data presented here is scientific data – not compliance data.
- Dr Fischer posed a question for participants - Is there a way to improve the reporting of northern hemisphere mitigation measures?
- Dr Fischer questioned whether the northern mitigation options reporting category may be too broad and may not provide enough detail on what mitigation is being used.
- US commented that it would be good to identify the information needed, ask the SC to look into the quality of the information being provided, and consider what further information from CCMs might be useful to request.
- BirdLife International commented that there are clear obligations for CCMs to report, but requirements are not consistently met. It may help to have some verification of the reporting to WCPFC for scientific purposes.
- Australia noted that countries have limited assets available to conduct boardings at sea. Seabird mitigation methods which are detectable without getting onboard a vessel (e.g. plane, satellite, VMS/AIS) are particularly useful for compliance officers. Australia has also seen some issues arise from at sea inspections in attempting to determine a vessel's compliance with mitigation requirements south of 30°S once they have moved into the 25°S-30°S region, even if they were only south of 30°S a day or two prior. Adherence to night setting can be critical in determining a vessel's compliance south of 30°S. There are some programmes that can help to verify night setting. We find vessels often start setting at night, but continue after nautical dawn, which does not appear to be consistent with the definition of night setting under the current conservation and management measure.
- An industry participant from China noted that all Chinese vessels fishing south of 20°S have tori lines on board, but if we put all the swivels on the line, it becomes too heavy. We would welcome if New Zealand or French Polynesia would share

their designs. Also, the Chinese fleets deploy branch lines south of 30°S, vessels set at night and then change to lines with weights at dawn. Hook-shield devices look promising, but it is too expensive at the moment. China is interested to look at options to reduce cost and provide hook-shielding devices for the whole fleet.

- BirdLife International notes that BirdLife has been running a port-based outreach programme in Suva – with women who are making tori lines for vessels. BirdLife offered to work with the industry participant from China to make tori lines available for free when vessels visit Suva.
- Mr. Owczarek commented that in relation to the issue of sagging tori lines, the current measure doesn't have any specification about sag or drag, and perhaps further specification may help achieve the aerial extent.
- Industry participant from China noted that in relation to data collection, seabird identification is difficult to collect right now. He suggested the observer programme should be further encouraged to collect data on seabird interactions.
- Dr. Fischer notes that data on fishing effort in the different latitudinal bands would be useful.

Agenda item 10: Room for other CCMs to present their work

- No other members presented work.

Agenda item 11: Further work and suggestions for submissions to SC20 and TCC20

- US requested that all the documents and presentations are provided so members can look at the information in more detail and provide more thought-out comments and responses on the various questions.
- Dr Fischer responded that all the presentations and the notes from the meeting will be shared on the WCPFC website.

Agenda item 12: Next steps & closing remarks

The Chair – Ms Stent outlined the next steps of the WCPFC review:

- New Zealand will work with all speakers and the WCPFC secretariat to upload the presentation slides onto the WCPFC website.
- New Zealand will circulate draft meeting notes for input and a final meeting record will be uploaded to the WCPFC website.
- New Zealand will present the key science findings from this informal review to SC20 and set out management options for a revised CMM 2018-03 for decision at WCPFC21 in December 2025.
- We thank everyone for their participation in this important work.

Meeting closed at 5:52pm NZT.