



Meeting: Conservation Services Programme Technical Working Group

Date: Thursday 8th June 2023

Time: 9:00 am – 4.10 pm

Place: Microsoft Teams Meeting

Chair: Katie Clemens-Seely (Science Advisor, Marine Bycatch and Threats team)

Attendance: Tiffany Plencner, Enrique Pardo, Katie Clemens-Seely, Johannes Fischer, Hollie McGovern, Lyndsey Holland, Graeme Taylor, Ellen Cieraad, Kath Walker, Graeme Elliott (DOC) James Robertson, Bill Chisholm (NZ RLIC), Dave Goad (Vita Maris), David Middleton (Pisces Research, for SNZ Inshore/DWG), William Gibson, Philip Heath (FNZ), Richard Wells (SNZ Deepwater Council), Rosa Edwards (SNZ Inshore Council), Chelsea McGaw (Forest & Bird), Jack Fenaughty (SRL for Sanford), John Cleal (DSNZ Deepwater and Inshore DOC Liaison Officer), Heather Benko (FNZ HMS), Graham Parker, Kalinka Rexer-Huber (Parker Conservation), Darryl MacKenzie, Rachel Hickox, Stefan Meyer (Proteus), Karli Thomas (DSCC), Chris Gaskin (NNZST), James Bell, Miriam Pierotti, Maria Dussler (Victoria University), Rob Tilney (Thalassa Fishery support for DWG Council), Peter Frost (Science Support Service), Zak Olsen (Skipper)

Apologies: Tom Clark, Ben Leslie (DOC Liaison Officer), Karen Middlemiss (DOC), Igor Debski (DOC)

Presentations:

9.00 am	MIT2022-07 Inshore trawl warp mitigation	Proteus
9:50 am	INT2021-02 Characterisation of protected coral interactions	Proteus
10:50 am	INT2022-05 Determining the resilience of Fiordland corals to fisheries impacts	Victoria University
11:35 am	MIT2021-03 Methods for increasing sink rates for bottom longline	Vita Maris
13:05 pm	MIT2022-06 Light mitigation: reducing vessel interactions with seabirds	Vita Maris
13:50 pm	POP2021-07 Foveaux shag census	Parker Conservation
14:50 pm	POP2022-10 Antipodes Island seabird research: Antipodean albatross and white-chinned petrel	Parker Conservation

15:35 pm POP2022-08 Auckland Islands seabird research: Albatross Research
Gibson's and white-capped albatross

1. MIT2022-07 Inshore trawl warp mitigation (Proteus)

Rachel Hickox presented results from a review of warp strike mitigation methods on <28m commercial trawl vessels in New Zealand.

Discussion:

RW Important to note the difference where warp deflectors may deter by visual presence or physical barrier.

RW Dispute statement that tori lines are the best mitigation option. Highly dependent on variables such as vessel operation, weather and bird behaviour, and there are times when it is not the best option.

JC Tori lines are a good option for large trawlers, however they are not going to be as effective for smaller trawlers, as the warps are far more outboard of the hull than large trawlers.

RW Design to remove conflation and reduce number of variables is admirable but unsure how achievable this is. Recommend talking to Dunn and Edwards¹ about their work on net captures in the squid fishery.

RW Recommend consideration of offal management and excluding use of term 'offal' as this could be misconstrued by fisherman as offal only meaning fish guts, rather than all biological material that that leaves the deck. All results will be biased based on what is occurring in regards to discharge management. Note work by Maree et. al² in South Africa, which has some misleading outcomes. Conflation between fish waste management and any of these mitigation devices has to be really well thought out. No mitigation devices will fully remove risk to birds if there is poor discharge management.

JFen Agree, particularly on use of term 'offal' as well as separating the 'confounding' effect of managing food sources for birds. Reduction in attractants to seabirds is the most important consideration in mitigating seabird injury and death.

GP Agree with Richard. Limited inference to be made from studies, as such a small amount of literature and most of that does not relate well to NZ vessel size or diversity of species. Same problem with observer data especially in south-east and south coast of NZ. Most fishers only use pinky buoys because they have been told to and do not like using them as they get easily tangled in the warps. Concern that the workshop expert input did not involve any fishers. Proactive fishers are required to represent different vessel classes and input into study design. Fishers have noted the importance of Dyneema colour so should be considered in future trials. Regarding

¹ This paper is available to download at <https://docs.niwa.co.nz/library/public/NZAEBR-266.pdf>

² This paper is available to download at <https://zslpublications.onlinelibrary.wiley.com/doi/10.1111/acv.12126>

recommendation to monitor warp strike/capture data, it is important to note these should be monitored as two separate measures.

RW Need to be certain of terminology in regard to warp strikes and warp captures. Previously the term strike was used for a retention event. If it is now being applied to “aerial strikes” i.e. birds flying onto a warp as opposed to being on the water and struck or entrapped by the warp. If Dyneema is used with other mitigation then results will be conflated. Another matter is that the Australian ‘baffler’ is actually a baffler with a tori line off its end boom. Notably Australia have regulated the specification for this but have an exemption process which allows the tailor making of a design and application on vessel by vessel basis³. The field work should be ‘operational science’, not statistical science. Rigorous and codified but will not get a mathematical answer. The number of observed null events will inform the ability to get any robust stats. While focusing on the capture events, it is the number of nulls that inhibit the ability to measure mathematically (i.e. as per Edwards and Dunn net capture report 2022).

WG Agree with Richard. Sample size for the squid fishery net warp interaction project was approximately 5000; if combined with range of warp strikes analysed by Proteus as part of update to cryptic multipliers desktop exercise, will probably be an order of magnitude above that to find any kind of interaction rate. Only a handful of recorded strikes out of thousands of warp strike data analysed. Strike rate will be miniscule compared to deepwater fleet. Due to sparsity of data, I would not recommend continuing the at-sea component of this project.

DG If carrying out at-sea trials, be wary of pros and cons of running different devices on different vessels.

DMac Agree with point regarding the large sample size required. Tried to keep recommendations more general as the at-sea component is not contracted to Proteus.

JC Trial would need to be carried out in same area, at the same time with the same boat set up with a few different treatments, otherwise there are too many variables. Essential to get vessels right. There are three classes of vessels that will run quite different mitigation options. First is small boat with hardly any effort and no discharge; none of the information reflects this kind of boat. Next tier is a larger boat that may have to discharge sometimes, with warp in different position. Then bigger class, 60 ft or more that is out everyday, discharging every tow and the warp is also in different position. Coupling this, huge variables in warp position and warp danger zone. Nothing like what information is being presented on. The amount of effort to get statistics that could be analysed is virtually impossible. It is not about the warp, but rather the fish waste discharge.

JFen Suggest that when trials are carried out there be much greater participation from the involved inshore fishers. In particular, a conversation between the research team and participating fishers detailing what is needed from the experiment, and allow the fishers to have major input in how things are configured to achieve the desired result. Focus on the outcome and let the fishers work out the detail and implementation.

³ More information can be found here: <https://www.afma.gov.au/reducing-bycatch/bycatch-reduction-devices/bird-baffler>

2. INT2021-02 Characterisation of protected coral interactions (Proteus)

Stefan Meyer presented the draft report for characterization of protected coral interactions and gave a demonstration of dashboard.

Discussion:

KT Regarding eyeball estimates mentioned, there was a New Zealand study undertaken for SPRFMO in 2018⁴ in which all higher coral bycatch reports were revalidated against any photo or video available.

SM In that report provided, I don't think that accuracy of eyeballed weights was verified. It mentioned in that report that very high volumes of coral catch need to be released by opening the cod end prior to hauling. Therefore suspect that associated eyeball estimates are inaccurate and imply that there are erroneous amounts of coral bycatch. This means the reported catch weights are not directly comparable across capture events given the variation in determining catch weights and potential for bias due to subjective eyeballing by different observers.

LH It would be good to understand from fishers whether opening the cod end prior to haul is ever practiced, either on high seas or domestically.

LH Also of note, CSP have planned a project to look at high catch events in zone this year using images.

KT What is the overlap of fisher reported and observer reported, is there some sort of etiquette where the fisher does not report if there is an observer on board?

SM Data not available to look at that, however it would be interesting to see where those reported captures occurred relative to presence of observer.

KT Given how shocking some of the figures are and how big some of the variation is, it would be useful to look back into the fishing patterns of those years to see if anything overlays. What sort of patterns could have driven high levels of fisher bycatch reporting in 2015/16. Note the spike in observer reported bycatch in 2021. I hate to think what more recent data looks like to see if there has been an increase in coral impacts in recent years. Note the lack of observer coverage for fishery with the highest coral bycatch, lower than most of other major fisheries; higher observer coverage should be considered for recommendations.

SM Will include recommendation to work on observer coverage so equalised or comparable across different fisheries/methods.

WG Smaller catchweight values are able to be entered into the PSI interaction form, however if using Other fish table from COD, observers are required to enter a minimum value of 1 kg in this table, whereas fishers are able to enter down to 0.1 kg. This could potentially inflate overall catch weight if values are being rounded up.

SM Do fishers use same methodologies to determine catch weight as observers?

WG May use same methodology however can enter into their system down to 0.1kg.

⁴ Available for download from <https://www.sprfmo.int/assets/Meetings/02-SC/2018-SC6/Meeting-Documents/SC6-DW14-Benthic-bycatch-summary.pdf>

LH Up until recently, our understanding is that DW OP guidelines for reporting coral requested fishers to round down to nearest kg. It would be interesting to compare granularity of reporting weights.

BC Is it possible to distinguish what type of potting have coral interactions i.e. deepwater ling, rock lobster or blue cod?

SM Will look at target species to determine and provide details post-meeting.

KT It would be useful to add a figure on percentage of all trawls by sector that have coral bycatch (on the figure with total amount and total number of trawls with coral bycatch) since there are quite different number of trawls in the different sectors. Would also like to see estimates that take the coral bycatch rates (observed) and estimate the likely total bycatch of each sector, given that the vastly highest coral bycatch is from the fishery with one of the lowest levels of observer coverage.

3. INT2022-05 Determining the resilience of Fiordland corals to fisheries impacts (Victoria University)

James Bell presented a progress report for year one of determining the resilience of Fiordland corals to fisheries impacts.

Discussion:

BC Not a lot of blue cod fishing occurs in Fiordland and do not believe this project should be industry funded. Regarding lost pots that were found, the amount of commercial potting activity is lower than in previous years, so pots could be historic. Electronic reporting data will provide steer on current versus historic activity. Another consideration is that the pots could be recreational as there are quite a lot of recreational boats fishing in the Sounds. Suggest distinguishing between keep pot and catch pot activity, as a lot of both occurring in the inner sounds. Concern regarding population modelling, as the age of corals is not being taken, and growth measurements only appears to be in one area of Doubtful Sound. Is it possible to age corals in situ without damaging them?

LH This project is currently 100% crown funded.

JB Agree pots could be historic, as some of them are quite overgrown which suggests they may have been there for some time. Recreational pots are often smaller than commercial pots, and some of the pots that were found are quite large. In terms of growth rates, measurements will be taken in multiple locations, not just from one location. Aging coral is difficult, so have looked at them in terms of size classes. The model is more of a learning tool and will hopefully represent these populations as accurately as possible, however all models have limitations.

JR How was site selection determined in Doubtful and Dusky Sounds, and was there a detailed sampling design in terms of lost pots or more of an ad hoc approach?

JB Planned to cover a range of different sites and habitats, with no specific site selection, however plans were determined by weather as well as constraints on deploying the ROV at deeper sites. Open to suggestions for particular areas to survey.

JR Interested to hear feedback on large disparity between the John Island sites and outer Thompson sound sites.

JB We plan to survey more sites outside the protected area zone, as previous experience shows that most of the corals are quite small and the larger ones tend to be deeper down into the fiord, which could relate to fishing but also could relate to environment.

JR Suggest including habitat and depth profile breakdown for each site in order to reconcile the (*sic* size/age data with habitat variation).

JB Noted, habitat and depth profile can be included in the report. All abundance survey sampling is based on fixed depths, either between 15 and 20 m or 50 and 70m for deep ROV sampling. The pots are not being specifically looked for, have just come across them during surveying.

JR Query why abundance might drop off suddenly between Thompson 1 outer site and 3 John Island and 5 John Island before shooting back up in Breaksea.

JB Possible that small scale variations like that are driven by habitat type.

LH Interested in emerging trend of bigger colonies on inside of fiord versus smaller colonies on outside. As we know *A. fiordensis* occurs outside of the Fiords as far away as Kapiti Island, it would be interesting to include samples from elsewhere to see any potential linkage once the genetic markers are developed; elsewhere examples of deepwater emergence research have shown that fiords may be refuges.

JB Higher budget would allow more samples to be included.

JBil If interested, the NIWA Invertebrate Collection holds quite a large record of Antipathella from outside the fiords, including samples from the Norfolk Ridge, east coast of Northland, Kermadecs and Eastern Chatham Rise.

JB Noted.

4. MIT2021-03 Methods for increasing sink rates for bottom longline (Vita Maris)

Dave Goad presented the draft report for reducing sink times to depth in the small vessel manual baiting demersal longline fishery targeting species such as ling and bluenose.

Discussion:

RE Was there consistency of minimal aerial extent throughout the duration of setting?

DG We weren't shooting hooks for most of the trial, and did not run tori lines when shooting gear. Towed for a while, counting streamers and taking photos then saying aerial extent between those two. Saw bigger variation with slower speeds and would expect to see more variation in poorer weather. Average is a fair thing to use as things change quite quickly.

RE Based on trials with other vessels, are you confident acknowledging that vessels should be able to meet and maintain this minimum aerial extent while shooting?

DG Trials gave 100 m of aerial extent for 3 knots. However I have more confidence in

a tori line with a 70 m aerial extent versus 100m when it comes to ensuring it is effective along its whole aerial extent. 70 m is reasonably achievable to ask.

JC Regarding drag section description, 18 m of rope would almost be length of a boat and could not be operationalised on a lot of vessels.

ZO Not that cumbersome in practice as it is streamlined and only a small drum of tori line. In high wind conditions it towed well; an aerial extent of 70 m is very achievable for control.

DG Definitely doable as surface fleet run very long drag sections.

DM When setting with and into the current, was vessel speed measured over ground in both cases?

DG Sat at same revs on the boat for all tests and did not attempt to measure vessel speed through water versus GPS speed. Current was measured with GPS beacon with sea anchor.

DM When referring to line tension does this mean setting of the drum?

DG Fishers mostly shoot at low tension, especially if trying to float gear.

DM How was line tension measured?

DG It was measured using a purpose built tension meter.

ZO Different vessels apply tension in different ways; there is potential to cause damage if applied incorrectly.

DM Were the assumptions around tori line extent based on setting with the tide?

ZO We towed with tide and into tide, and got same extents. Tide does not seem to have same effect as it does with line setting into the water.

JC – Was any bottle testing undertaken to compare to TDR?

ZO Did not see the value in adding another crew to the expenses to test something, known to be inaccurate and unreliable.

5. MIT2022-06 Light mitigation: reducing vessel interactions with seabirds (Vita Maris)

Dave Goad presented the draft report for light mitigation: reducing vessel interactions with seabirds.

Discussion:

DM Title in presentation suggests this project focuses on any vessel operating at sea rather than commercial fishing vessels specifically.

DG As this project is cost recovered from fishing industry, so the focus is on fishing vessels, however outputs could be applied to various other vessels.

JF We are investigating ways to engage with other marine users about reducing light pollution, particularly cruise ships.

PF Was the order of treatments in a trial randomized or were they run through in a fixed order?

JF The order was randomised using a random number generator.

RW What is seen around the Stephens Island lighthouse tower in regard to grounded or collision birds?

JF Unsure, but from my experience at different islands, there is a very little collision evidence around lighthouses. I am unsure if that is due to familiarity of birds with the stationary light or due to the highly focused nature of the beams of lighthouses. The lighthouse I have visited on seabird colonies also used the warmer spectra lights.

EC - Inferring from what Karen Middlemiss has told me previously, when prions are stressed or collide, they often vomit, and the light house glass needs to be cleaned every few days or so as it is covered by pink (krill) vomit. Sounds like there are a few collisions.

JF This will need to be looked into, as prion feces are pink as well and assuming that pink traces indicate collisions would be premature.

JFen Wonder if there is a frequency effect, when we view seabirds at night from a vessel there is a distinct strobing effect.

DG We did look at the flicker of lights; apparently the DC LEDs do not flicker, whereas the AC ones do.

DM In terms of problem definition, how is the problem of vessel strikes characterized i.e. birds landing on vessel, or collision with vessel? How certain can you be that nature of lights is the key issue versus particular environmental conditions.

JF It is well known that there are serious issues with vessel strikes, and while these events are statistically rare, this does not mean they are not problematic. The statistical rarity has made vessel trials difficult, and thus land based trials are a better way to investigate the problem. I am aware of several instances of large numbers of birds colliding with fishing vessels, including near Stephens Island. Often those birds either succumb directly, or indirectly through contamination from chemicals on board. Vessel strikes are poorly understood and warrant further investigation. Additional environmental factors exacerbate the issue which we tried to capture in this study.

KR Happy to continue this discussion offline; draw parallel to offal management work done where abundance around the vessel is used as a proxy for risk.

PF Would it be possible to use radar (perhaps an enhanced radar that the usual boats instrument) to see the behaviour of birds away from the immediate vicinity of the light field?

DG Did look into using radars, they are not that expensive for looking at groups of birds on the water, but a bespoke radar would be required to look for individual birds. Mitigation standards are a good starting point for any at-sea work, in addition to testing different colour lights if vessel needs to use a light.

JFen Suggest consulting with the South Georgia & the South Sandwich Islands (SGSSI), as quite a lot of work done over there in terms of vessel strikes.

JC Need to ensure that lighting plan falls within minimum work requirements for safe work practices in terms of lighting in commercial industrial area.

DG Light mitigation standards addresses that quite well. Will need to come up with lighting plan for vessel to contain light as much as possible, and when big, bright

lights are required for tasks such as hauling up gear or shooting gear, then vessels will need to make sure they are careful when turning the lights on, or changing colour of the lights.

KR This will be addressed in the implementation phases.

DM Difference between lighting intent and mitigation standard, which is about not attracting birds to vessels because of the problem that they are visual foragers and will be able to see the gear and therefore at risk of interacting with the gear, think that's different to mass vessel strike so just seeking clarity on that.

JF There are vessel-strike specific mitigation standards⁵ that address this specific issue. These have been developed together with MNZ to ensure that they represent work safe conditions and do not give the idea that mitigation of vessel strikes is prioritised over people's safety.

6. POP2021-07 Foveaux shag census (Parker Conservation)

Graham Parker presented the results of the Foveaux shag census.

Discussion:

PF Do you have any sense of why the historical sites were abandoned i.e. were they abandoned due to failure or more suitable sites of colony in relation to proximity to food source.

KRH All of the above, there is evidence of shags moving around due to big storms, prey source, parasite buildup in nesting locations etc. Unambiguously, all shag species are known for moving their colony location quite regularly.

GP Swell could also be a factor as well, some sites certainly get swept over by swell in big storm events.

PF Regarding possible impact of parasites on seabird dynamics, particularly on close colonial nesting species, this is perhaps an aspect that needs more investigation. Colonial-nesting species have always been challenged by this, but is the nature of the challenge, or the birds' abilities to withstand this, changing?

7. POP2022-10 Antipodes Island seabird research: Antipodean albatross and white-chinned petrel (Parker Conservation)

Kalinka Rexer-Huber and Graham Parker presented the draft report for Antipodean albatross and white-chinned petrel research 2022-23.

Discussion:

WG Antipodean albatross Multi Threat Risk Assessment is currently underway and results will be available in the near future. Tracking data shows difference in sex distribution, with

⁵ Available for download from <https://www.mpi.govt.nz/dmsdocument/56320-Mitigation-Standards-to-Reduce-Light-induced-Vessel-Strikes-of-Seabirds-with-New-Zealand-Commercial-Fishing-Vessels>

females heading further north and they also utilise the Tasman disproportionately, which could have some really interesting results for management scenarios.

PF Similarly seen with wandering albatross in Crozet and South Georgia⁶ where heavy bodied males with high wing aspect ratios are more capable of riding winds further south whereas lighter-bodied females tend to forage further north where they are likely to overlap with fisheries to some extent. Suggest compare fishing intensity data to see if any potential overlaps between these birds distributions at sea and how that might be affected by their sex.

KRH The goal is to overlap data with fishing effort, part of what William was referring to with the SEFRA and multi-threat-risk assessment analyses.

WG Looking at various fishing data, should be quite comprehensive compared to previous work.

8. POP2022-08 Auckland Islands seabird research: Gibson's and white-capped albatross (Albatross Research)

Graeme Elliot and Kath Walker presented the draft report for Auckland Islands seabird research.

Discussion:

WG In regard to tracking, this work is fully funded by DOC but we are looking to support tracking of additional species this year.

JFen How have the birds reacted around drones? Have found when using a drone on the farm it does get a reaction from various birds, including black-backed gulls.

GE Skuas approach the drone but do not touch it, while Albatross take no notice, as it is flying in a low straight line so rather predictable. Have also had falcons approach but never contacted. Good to work out a strategy when something comes close, going straight up or down seems to work.

KRH There is a common thread across studies where gulls will often respond to drones, but have not heard of any contact or causing damage to the drone or the bird.

Highlights need for continued monitoring of animal responses to drones.

PF When looking through a daily cycle, how much variation is there in number of loafers? Trail cam footage of Northern Royal albatrosses on the Chathams shows considerable amount of variation in daily cycle but seems to be consistently low around the middle of day. Wondering whether that might not be partial control on getting consistency over time, to time drone flights for particular times of day.

KW Considerably variable and seems to be a matter of wind, rather than time in the day, so probably too hard to account for when droning.

PF Regarding image of nesting birds, a chick and some loafers, in what sense are those birds loafing i.e. not nesting this year, failed earlier in the year etc?

⁶ Available for download from <https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2656.13267>

KW A lot of birds were loafing in the sense that they did not have a chick or an egg now, look like they probably might have in the past, because the aggregations of birds that may not have had any tried attempt of breeding that year tended to be on the high spots rather than a pedestal.

KRH Almost impossible to tell with such short time on Disappointment Island.

GP A lot of variables that contribute to the data noise of non-breeders in the colony, plus weather, also proximity of fishing vessels in the area. Wonder what the effect of mark-recapture calculation that has been established there are largely successful incubators, i.e., banding birds at the end of incubation or during brood-guard stage and if there's some selection in the cohort of birds that we've banded and if that has any implications of mark-recapture data.

Any additional comments should be provided to csp@doc.govt.nz by 5pm, 29 June 2023.

Close of Meeting @ 16:10 pm