Department of Conservation
Te Papa Atawhai

Meeting: Conservation Services Programme Technical Working Group
Date: 25 June 2024
Time: 9:00 am – 12.15 pm
Place: Microsoft Teams Meeting
Chair: Katie Clemens-Seely (Acting Manager, Marine Bycatch and Threats team)

Attendees: Katie Clemens-Seely, Jody Weir, Tiffany Plencner, Hannah Hendriks, Mel Young, Hollie McGovern, Jim Fyfe, Graeme Taylor, Steve Pilkington (DOC), Richard Wells (Resourcewise), George Shillinger, Sierra Fullmer, Kristin Reed, Kayla Sargent (Upwell Turtles), Dave Goad (Vita Maris), Olivia Hamilton, Heather Benko, Campbell Murray, Charity Puloka, Sasha Arkhipkin, William Gibson (FNZ), Matt Dunn, Brit Finucci, Jason Hamill, Richard O'Driscoll (NIWA), Ben Steele-Mortimer (SNZ Deepwater Council), Chelsea McGaw (Forest & Bird), Scott Benson, Karin Forney (NOAA Southwest Fisheries Science Center USA), Sean Williamson (Monash University), David Middleton (Pisces Research for SNZ), Karen Baird (SPREP), Jack Fenaughty (Silverfish Resources for Sanford), Denham Cook (Pelco NZ), Leena Riekkola (University of Auckland), Rosa Edwards (SNZ Inshore Council), Shaun McConkey (NZ Sea Lion Trust), Hanna Ravn (Otago University + NZ Sea Lion Trust), Warick Lyon (Independent), Amélie Augé (WildCoast)

Presentations:

9:05 am	POP2023-01 Leatherback aerial survey methodology	Upwell Turtles
9:50 am	MIT2023-02 Understanding and mitigating seabird and turtle bycatch during the pelagic longline soak period	Vita Maris
10:45 am	POP2023-05 Auckland Islands sea lion research	DOC
11:30 am	Motuhara seabird research 2024/ King shag survey 2024	Toroa Consulting

1. POP2023-01 Leatherback aerial survey methodology

George Shillinger presented the proposed plan to aerially survey leatherback sea turtles off the NE North Island of NZ.

Discussion:

OH Will availability bias be incorporated, considering turtles dive quite deep?

> **SB** Would require dive time information from turtles within Bay of Plenty habitat, which is out of scope of this project. So will be using TDR data on leatherbacks in California current**.**
>
> **KF** Water tends to be shallower in California than Bay of Plenty, therefore g(0)

correction applied would be minimum correction factor, and abundance and density estimates derived would be a minimum.

OH Considering observer bias, how many observers will be used?

SB Single observers will be used; one on the left side of the plane and one on the right. Won't be having two independent teams.

OH Not common to have control sight and hotspot sight when doing distance sampling, how can that be used to estimate abundance for greater area?

MD Was a contractual request in original design that specified two areas. The purpose was to confirm that the area is a particular hotspot for turtles, not to extrapolate and make a global biomass estimate.

OH Is there scope to do a more stratified design to cover a greater area?

MD Down to a financial restriction, not enough money to cover the full range of habitat for leatherbacks.

AA Will video cameras be used as back up for observers?

SB No, cameras are not used as a backup in the California surveys; have found that humans are better than cameras at finding things.

KB Will seabird aggregations, and any associations with leatherback turtles, be included in general megafauna surveys?

SB Can make notes on flocks of birds but may not be able to get species level identification from 200m altitude. There is a limit to how much information observers can reliably record and manage.

KF Can be quite intense where there is a great diversity of marine life; there is a tradeoff between collecting as much valuable data as possible without compromising the information we are after. We can take requests for information i.e. seabird feeding flocks, broad categories of hotspots for seabirds, but would not be able to do a strict transect for seabirds as that requires dedicated seabird effort in order to do it properly.

SB We know of aerial surveys for seabirds being carried out, but they are flying at a much lower altitude (200ft).

GT How will you deal with sun angle and reflectivity off the water?

KF The survey location is at a similar latitude as in California, so typical regime can be flipped to avoid glare. Glare can be mitigated with lower Beaufort Sea State conditions, as glare gets worse as sea state increases.

CM When flying fine scale, will you fly coarse scale as well as the transects in between so there is 4km spacing? Or will you fly the transects in between that were not flown in the coarse scale?

SF We intend to initially fly coarse scale and then only fly alternating lines, not duplicating those until flight hour availability has been determined; essentially another coarse scale, but offset by 4km.

CM If you fly coarse scale transects, then significant amount of time passes will you

fly fine scale, or just fly coarse scale again?

SB In California surveys, we use a set of transect lines at a coarse scale and then if habitat or turtles are encountered, we can adjust to fine scale so that we are putting greater survey effort into area where there is habitat and potentially turtles.

KF Current budget and air hours would suffice to be able to do two 8km coarse transects as planned, which will give a single fine scale set of transect lines within the study area (hotspot and control area). If there are additional flight hours left then there is the option to replicate surveys in areas of interest.

SF We are accounting for temporal aspect to some degree, as even though the ideal leatherback season is a three month period, the intention is to have a much narrower temporal window; ideally one week at control location and one week at hotspot location.

DM How big are the proposed survey areas in NZ compared with areas typically surveyed off California? What are your expectations around relative densities of leatherbacks?

SB Size is quite comparable. In terms of density, California's population is in severe decline, so would expect to see more in NZ. California only gets adult and subadult leatherbacks, but suspect there might be adult, subadults and potentially some smaller leatherbacks in NZ, as well as some other hard-shell turtles, given the slightly warmer water temperature in NZ.

KF Based on NZ bycatch data, we would expect to see more than would typically see in California, caveating that high bycatch data may just be an unusual circumstance.

WL How well can you see subadult turtles from 600ft?

SB Leatherbacks from 50cm up to full size are quite readily detectable from the plane, especially in lower Beaufort Sea State.

KF That altitude has shown to be quite effective for California surveys, however if we do experience difficulty recording smaller animals then that could be a lessons learned for future surveys to adjust altitude.

2. MIT2023-02 Understanding and mitigating seabird and turtle bycatch during the pelagic longline soak period

Dave Goad presented a progress update on this project.

Discussion:

WL When lifting a hooked shark or fish to the surface, does that lift up the next hook to the surface, making it available to birds or turtles?

DG Refer to tuna example (figure 5), it did bring the hook two snoods away up shallower (~80m away), but not right up to the surface.

HB Is there scope to look at behaviour of hooks with hook-shielding devices unweighted as well as weighted?

DG Every change made to the gear was aimed at increasing depth and reducing risk, don't think vessels would be happy to take weights off. Huge amount of variability hook to hook, even within the basket, so would be needing a lot of data to answer that question. Might be easier to test in a controlled environment.

HB Did you look at seabird capture rates based on this configuration and this trial?

DG Not statistically, as didn't get any birds in baskets that had TDRs on. Actively trying to shoot in dynamic bits of water, line going to act differently with drift.

RE Have you had feedback from the skipper, did they find this helpful or insightful?

DG Skipper was interested at the time but haven't communicated much since the trial. It was their idea to add weight to the float rope, however it would be more effective to make the float rope longer rather than put a weight on. They are always thinking about how they can do things better. Once the wet tag data starts flowing back to skippers they are going to potentially be able to make changes straight away.

RE Have heard from other skippers that float rope length is something they do as a mitigation measure for seabird interactions. How many vessels are yet to be included in the project, and how many more trips are planned?

DG Another specific trial trip is planned for the summer time, and four sets of repurposed wet tags are currently out with boats. Not presented today, but there is some historic TDR data from trips focussed on line weighting which can feed into the body of what is current practice.

RE I can ask around to see if anyone willing to take the place of the skipper who is now bottom longlining. Will be in touch about presenting this work at the next HMS workshop in November.

DG Hopefully will have some wet tag data available by then.

JM Will the project look at the sink depth and response if a fish is caught on hook, when there is no additional weight on branch line? Seems like a useful thing to look at as Hookpods are being promoted as a standalone mitigation approach. Are any vessels just using Hookpods and haven't taken up weights additionally?

RE A lot of boats are already putting weights on. Feedback is that no one is comfortable using just Hookpods, and have gone back to just weighting, as well as tori lines and night setting.

TP There may be some vessels outside of that ECSI fishery that were just using Hookpods, but would need to doublecheck.

JM Quite telling that skippers are feeling uncomfortable just using Hookpods. Regarding bycatch of seabirds on the trip, did you note the hook that birds were caught on and draw any conclusions?

DG Think it's something on an adjacent hook bringing the gear up to the surface and so more likely to be driven by if you are catching them by the float, driven by the fact that whatever got on that hook likes to be shallower rather than deeper. Video would need to be used to investigate that, and would need at least a years' worth of data for the whole fleet.

JM Are any NZ vessels using line shooters? Is there any relevance or use in this situation?

DG Some boats may have shooters but not sure if they are being used. Shooters are a good way to get the basket deep, but does give slack in the mainline. If gear is shot without a shooter then it will have less sag in the basket, which may be harder for a fish to bring the hook up. So much movement in the gear that bits of line are tight and slack anyway.

JC Shooter great if setting at 100 to 200m deep so in NZ we set much shallower, hence very few boats with shooter/ think we have two boats. Australia use them as often setting at 3x depth as NZ.

WG These conclusions seem to align with some anecdotal evidence, especially from the Korean high seas fleet, which uses a deep set method (~80m). Might be interesting to trial whether deeper set in NZ is an effective mitigation for these type of events.

DG Could look at historical observer data (e.g. basket size, shooting speed) to see how deeper set influences catch.

JC Would be great to know if setting 30/50m deeper will still catch fish (same rate/kg/hook as shallower set), and then will those fish/sharks still lift gear within 10m surface anyway.

3. POP2023-05 Auckland Islands sea lion research

Mel Young presented the field report for this project.

Discussion:

SM What is the reason for not microchipping pups on Dundas, given that will be a subset of the population you will not be able to resight through microchips.

MY Historically have only flipper tagged 300 female and 100 male pups, with occasional seasons where there has been microchipping done. Microchips stay in animals much longer than flipper tags do, but we are limited by amount of time on island. Microchipping doesn't add more time, it's just complexity of working in that environment in a short period of time. It's something that needs review.

JR There has been a partial recovery in pup production, similar to 2002 and 2009. Despite stabilization in pup production, demographic population data up to 2022 estimates a slight decline in breeding numbers over time, which has been masked by simultaneous increase in pupping through time. The mark-recapture data will be fundamental in disentangling whether this decline is caused by pupping rate or survivorship.

MY It shows value of variety of data collected in the subantarctic, particularly on Enderby. Exploratory analysis currently being undertaken by Amélie Augé will help inform not only why it is happening, but also what management actions we can take to improve pup production.

WG Sea lion risk assessment will be going out for procurement in coming months. FNZ Draft research plan can be found online.

JR Simultaneous to estimating an increase in annual breeding rate, we are seeing a poor period of pup survivorship, which points to lack of food being a particular issue plus whatever is killing the pups.

BSM Is qualitative or quantitative information collected on condition of females that return to pup? If so is there any indication of nutritional stress on females?

> **MY** Have been able to collect measurements of some females caught for satellite tagging so have snapshots in time of female body condition, but do not collect qualitative or quantitative information on female body condition through time. We are making a commitment to collect faecal samples, particularly from females, to give an indication of diet.

BSM Is there a *Klebsiella* study going on currently or proposed work for future?

> **MY** Annie Pagé is a pathologist that joined two trips to do post mortem on the pups. Not sure if work will continue next season, but interested in knowing if it's a major cause of death for pups later in the season.
>
> **AP** Have preliminary gross data; tissue samples are being processed so will have more finalised results shortly which will help indicate the prevalence of *Klebsiella* vs. other causes of mortality.

HR How many scat samples were collected, and were they from females?

> **MY** 44 samples collected most likely from subadult and adult males, then 20 that were exclusively female adults and pups. Should be able to sex the animals from scats by keeping sub-samples for genetics.

JR A good diagnostic to add at the end of a field season is whether there are good numbers of females aged 4-5 with a pup, as that would be a sign of good nutritional status in females. Dependent on getting good numbers of recaptured females.

> **MY** Will add that as a diagnostic.

SA What is the rationale for spending a short period on Dundas which is the largest population vs spending time on Figure of Eight where there are less pups?

> **MY** Restriction is around logistics. Main reason work is continued on Figure of Eight Island is that it is combined with a pickup trip for the Adams Island seabird team. That has traditionally been a one-day survey, for more than 20 years. Interesting that the number of pups on Figure of Eight is declining, and whether that will continue to be counted as a colony remains to be seen, could potentially result in the work being prioritised.
>
> **JR** Quite concerned about the Figure of Eight colony, not quite as much movement as the other colonies, so wondering if that colony should become a priority. Quite different in terms of diet, forage to south of Auckland Islands so more subantarctic in character.

HR Is the individual behaviours and movements of females being looked at if they are shifting? Are we seeing some shift from Enderby to Dundas, or Figure of Eight to Enderby?

> **MY** Haven't seen that in the data, don't get time to do resights on Dundas in the short weather window. Will be in a better position to answer if we can improve the

quality of data from Dundas, and Figure of Eight.

HR Could the females be shifting between seasons?

MY Fidelity would suggest that they only move once to their pupping location.

JR Don't recall seeing any evidence of them moving in historical data.

SM Have pups been historically tagged at Figure of Eight? It will be difficult in the future to see whether females are moving between breeding sites if you are no longer tagging.

MY Believe that no tagging has occurred in the last 5-6 years. Agree that in order to get that movement data we need to be tagging pups.

KCS Think the last year pups were tagged was 2017.

4. Motuhara seabird research 2024/ King shag survey 2024

This item was postponed to the next CSP Technical Working Group, scheduled for Tuesday, 25 July 2024.

Any additional comments should be provided to csp@doc.govt.nz by 5pm, 9th July 2024.
Close of Meeting @ 11:30 am