



Meeting: Conservation Services Programme Technical Working Group

Date: 11th July 2023

Time: 09:00 am – 14.00 pm

Place: Microsoft Teams Meeting

Chair: Igor Debski, Principal Scientist Marine Bycatch and Threats

Attendance: Igor Debski, Johannes Fischer, Graeme Taylor, Karen Middlemiss, Tiffany Plencner, Claudia Mischler, Enzo Rodriguez Reyes (DOC); Mike Bell (Toroa Consulting); David Thompson, Paul Sagar, Jason Hamill (NIWA); Peter Frost (Science Support Service); Ben Sharp (Corvus North Ecological Consulting); Chelsea McGaw (Forest & Bird); David Middleton (Pisces Research); Gaia Dell'Araccia (Auckland Council), Jack Fenaughty (Silvifish Resources LTD), Javier Quinones Davila (Instituto del Mar de Peru (Peruvian Sea Institute)); Kalinka Rexer-Huber (Parker Conservation), Sue Maturin (Forest & Bird); Heather Benko, Alexander Hann, Will Gibson (FNZ); Chris Gaskin (NNZST); Janice Molloy (Southern Seabirds), Alice Pereira (Projeto Albatroz/Albatross and Petrel National Sample Bank – BRAZIL), Biz Bell (WMIL), Matt Rayner (Auckland Museum), Vanessa Barry (Otago University), Rosa Edwards (SNZ Inshore Council), Ben Leslie (DOC Liaison Officer).

Apologies: Barry Weeber (ECO).

Presentations:

09:05 am	POP2019-04 Southern Buller's albatross: Snares/Tini Heke population project	NIWA
09:50 am	POP2022-05/06 Albatross research on the Chatham's	Toroa Consulting/Science Support/DOC
11:05 am	POP2022-01 Black petrel monitoring	WMIL
11:50 am	POP2021-04 Flesh-footed shearwater population	WMIL
13:05 pm	POP2021-08 Assessment of low burrow occupancy rates in Westland petrels/POP2022-07 Westland petrel foraging movements and diving behaviour.	DOC

1. POP2019-04 Southern Buller's albatross: Snares/Tini Heke population project

Presented by David Thompson.

Discussion:

JM Birds that were relocated with GLS tags. How many were non-breeding and why? Were partners located alive?

DT Good questions, I don't think we did. The three tags retrieved were from birds not breeding this year. Paul might know the answer. Don't think partners were found. Something may have happened with partners and birds were just loafing.

PS I will check our records and report back in final report.

PF Did you have and count/monitor any nests occupied by non-breeding pairs (probably pre-breeders)?

DT Yes, we encountered birds sitting on nests but didn't include non-breeders, only active breeders.

PF Is there any correlation (direct or lagged) between any periodic drops in numbers over time and conditions in the eastern Pacific (e.g. in relation to ENSO)? El Niño conditions, warm waters, affects survival rates.

DT We will do that at some point. Birds fly to South America, primarily to feed and regain body condition. Not much time between end of breeding season and beginning of the next season to recondition. Clearly survival that estimates there is any number of reasons why that could be happening and may be outside of NZ. Good point.

PF It might also not just be sea temperature, and there for prey related, but also changes in behaviours of fishers and where their efforts are deployed. Worth bringing this in to focus in international waters when considering changes in populations.

JQD Comment - we had a southern Buller's stranded one week and a half in Punta negra (a beach at 45 km south of Lima) and had quite a lot of lepadomorph barnacles (juvenile *Lepas* sp) and the stomach will be analyzed this week, but apparently seems to be empty. Bird was quite weak and unable to fly, which is why barnacles were found in unusual places like primary and secondary feathers.

KRH Any chance that the barnacles would have attached after the bird died? How quickly do they attach?

JQD Is also another possibility, however our veterinary said that the Southern Buller was quite fresh and had no more than 5 days death, so I think the barnacles were attached while the bird was still alive, maybe was weak probably due to the lack of prey (we don't had evidence of interaction with fisheries during the necropsy).

JQD Comment that SST anomalies are really high right now, El Niño 2023 is heating us very hard. 4-5 degrees SST above historical levels.

DM Am I right in saying that there is no banding of chicks since 2004?

DT Not correct. That was the last year the complete cohort was banded. Done again in 2013/14, but not all chicks.

DM Not much banding effort in current studies in that case.

DM Survival estimates – report states effort made to band birds outside study colony. Are they included in estimates? Do records represent birds away from colonies?

DT No. Estimates of survival are of birds breeding in the study colony. Other birds have been banded at other times on the island when time permits and then record movements. But this study only includes adults.

DM Just adults then included in this study.

JM Is there enough tracking data now to see if there has been any changes in foraging areas across time that might help understand what's going on?

DT Probably is enough tracking data. Historical data from a decade ago and some more recent from deployment of GLS tags in the past few years. Those sort of shifts on a large scale could be looked and will probably show they will go to the same parts of the world at the same times. Devil will be in the detail and will be slightly limited due to lack of fine scale data.

ID Johannes will be presenting later on data from GLS tags and may be able to elaborate more.

DT Could compare between NZ species.

ID Trying to get a broader suite of monitoring so we can look at it.

JM Not just birds shifting, but also fishing effort.

ID Agree JM, looking at getting better spatial data to overlay with fishing effort.

JM Seems we have several NZ albatross species that are mirroring the same kind of changes in trends in survivorship and so on. Are we talking to the Australians on what's happening with their breeding birds?

DT Haven't spoken to them.

ID Only 1 species, the shy, unusual species and has smallest foraging range of southern albatross's and might not be particularly relevant, but worth looking in to.

GT Survival rate reduction of adults, compared with recruitment of each cohort of chicks. Recovery rate quite low, which is low for albatross in finding them again. Spaces created by mortality. Has there been an issue with the lack of space availability for breeding sites? Is space a limiting factor?

DT Space isn't limiting. Plenty of space on periphery and they are doing so. Agree, 1/3 bird returning from fledging to the island is low, and even lower recruiting to breed. Bearing in mind we don't have data for cohorts since 2004. It's not entirely a blackhole, but there is a gap in our understanding since 2004.

GT Age of first breeding goes down. Are birds breeding much younger than in the past?

DT That is what you'd predict to happen and not a limitless pool available. At some point it will run out.

KRH Recruitment ages quite old but lack of chick banding means we don't know a large part of the puzzle. Also, survival rates declining over time and at 2005 what happened then? Tipping point?

DT 2005/06 point was where population trajectory stabilised. Subsequently it is oscillating around same age. Average age of birds breeding is about 12.

KRH Survival rates. How does survival dropping below .92 stack up for mollys? For wandering rates that are low are very concerning.

DT No reason to think that's anything other than a bad thing. They are not producing new chicks each year and recruitment rates are not improving. Population size is OK, but when you look deeper it's not OK.

GT Caution. Old recruits. Possibility that those birds bred elsewhere and moved. Can happen 15-20 years after first breeding. Might have moved out of the study colony and into another site. Tail end of curve might be accounted for by this rather than non-breeding.

2. POP2022-05/06 Albatross research on the Chatham's (Toroa Consulting/Science Services/DOC)

This talk was presented by Mike Bell, Johannes Fischer and Peter Frost.

Discussion:

Mike Bell – Toroa Consulting overview

JF Mike, do you have a distinct area in which you are banding the NRAs, i.e., a "study area"? If so, is it starting to get "saturated" with banded birds?

MB Yes, we've got most of the regulars in the study area but non-breeders coming in. In the afternoon interlopers will try to take over nest and partners will come back later and turf them off so trying not to band those. Just banding breeding birds. No cohorts of chicks banded.

AP Mike, have you had positive cases of Influenza (HPAI) at the areas you visit?

MB No

GT With banded birds. Any really old ones from 80's 90's are from those who worked on the island then.

MB Over the 3 trips only 10 banded royals were caught from cohort in mid 90's. Surprising how few banded royals have been found. Given the level of checking of birds it's quite surprising. These birds are likely to have been from the Chris Robertson and Steve Sawyer previous banding trip.

STM Is toxicoses from ticks a known issue among seabird colonies? Has this been investigated further?

GT Yes, has been an issue in other colonies e.g. yellow-nose mollymawks. Not a big problem, and first major incident.

AP Brazil has many positives for terns so far.

JQ We had a positive case of h5N1 but in a Waved Albatross.

Johannes Fischer – DOC data analysis

WG Highlighted that the deaths include cryptic mortality for bycatch information.

KRH Is migration to South America further south, or is the return leg the southern one?

JF For northern birds yes, the outward migration is further south and the return migration is further north. For southern birds it wasn't always that clear and we have seen southern return migrations from southern Buller's and some stop around the polar front.

ID Could use some older GLS data to look at in work programmes going forward.

PF Given the strong El Niño currently developing, it will be interesting to see how the two taxa's distributions change (if they do) off South America. Any predictions?

JF Agreed

JQD There is a colleague from Ecuador that had a video of a Buller's albatross off salinas in Ecuador. At 02°S, really far north.

ERR They probably will migrate north, we already have southern birds moving towards north in Ecuadorian and Colombian waters.

JQD But maybe this will be work for more tropical or sub-tropical species, for example we had Peruvian boobies up to Costa Rica and also red legged cormorants up to middle Ecuador. But in NZ, albatrosses would be different, maybe they will spread more offshore, towards the southwest open waters of to go to Chile and remain there instead to venture to Peru.

ERR There are historical records of Buller's albatrosses getting stranded in Ecuadorian waters during the past El Niño.

KRH Suggest GLS loss minimised if mounted on the bird's metal band (not a GLS) since won't wear through that.

JF Kalinka, sorry if that wasn't clear, but the GLS was mounted on metal bands but there was room for some movement and the band wore through the epoxy of the tag over the course of two years causing water ingress and tag failure.

SM Has this work been used to inform the spatial temporal options in the current review of NZ SLL circular? As it looks like the proposed areas and times for 3/3 won't be sufficient?

ID Invite FNZ to follow up on this afterwards

KRH One thought I had was that recent extremes in the ENSO systems may influence wind directions, force and latitudinal trends. Assuming that seabirds use winds as a potential passive transport assistance maybe this may also impact on their survivorship to some extent? This in addition to changes in prey and potential fishing fleet movements.

Peter Frost Trail camera images

GT Vegetation shows barren landscape. Mike reported vegetation is recovering. Have you noticed a change and is it less vegetative over the year?

PF Yes, changed considerably and note some of the Buller's areas the leptinella seemed to grow and suddenly die in the winter months.

GT Thinking about chicks with heat stress. Any shelter for them? Hot rocks must make it hard for them.

MB Buller's end of island is devoid of vegetation.

GT Raises the question whether an exposed site like this is at greater risk in climate change.

PF Going back to images and getting a response curve to temp will help us to predict

impact of temperature increases. Chatham's has had a 1 degree rise in temp in the last 50 years. Vegetation grows back but is very low and gets trampled. Images support Mikes statement about a rocky bare landscape.

3. POP2022-01 Black petrel monitoring (WMIL)

Biz Bell and Dan Burgin presented this project.

Discussion:

JM Could these birds from "unknown colony" be from the Hirakimata colony and not picked up?

DB The monitoring on Aotea and little barrier shows there are many birds that aren't being found both petresla and FFS.

BB Basically because those birds were caught at sea and not at a colony we assume they are from Hauturu. Need to do more catching and banding and get a wider survey effort on Aotea to find out where the birds are coming back to.

WG Mark recapture data. There is now a new third effort with the at sea component. Has the model been changed to reflect that and rather than combining them all.

BB At the moment it is combined, but can do a finer scale look.

WG Recommend analyse separately for resight probability.

GD Last December monitoring on Hauturu recapture of bird banded at sea as a non-breeder.

PF Burrows in which you record non breeding birds present. Over years, do you see them being occupied. Pattern of burrow use. Presumably some previously used one year not used next.

BB Yes burrow use changes and some burrows deteriorate and aren't used. WMIL keep records of that.

PF Would be good to find out features of optimal burrows and is anybody from any university interested in looking at parasites/invertebrates (fleas/ticks) that might be negatively impacting survival.

BB No fleas or ticks with these birds.

PF Ecto-parasites – it may be that conditions are unsuitable for them to grow there.

ER What is the cost difference to banding birds at sea to on land and have you thought about expanding this project overseas to where black petrel juveniles spend the winter?

BB Have thought about overseas work and would be supportive of the opportunity. More expensive at sea because of boat costs and need a perfect weather window.

ID Logistics constraints; Equador might be easier to get out on the water. Keen to progress with our collaborations over there.

GT At sea work for this project is related to total population size and whether there are losses of chicks not turning up to colonies because they have gone somewhere else. Birds captured from Aotea and Hauturu returning – getting a good random mix of birds which will be really useful for future population work. At-sea is a nice compliment to the on-land work.

ID Great to see high capture rate at sea over a few days.

4. POP2021-04 Flesh-footed shearwater population (WMIL)

Dan Burgin presented this project.

Discussion:

KRH What was the rationale for the tail mounts please? And was that monofilament nylon, any knot issues?

DB Mike was a great source of info with looking at optimal ways to attach devices. Will touch base with KRH about use of other types of nylon.

GT Standard technique for a lot of seabirds and used on many species including taiko. Had planned to use a harness on the legs and had animal ethics approval but unfortunately after a trial with a deceased bird the mount couldn't be secured well enough. Previously all back mounts were used so maybe it's a problem for the birds and we should try a mixture. Tail mounts have problems with tail feathers overgrowing the solar panel.

KRH Tail mounts in other petrels wing tips held across tail and shield solar panel. Interesting that a challenge with the leg issue. Also, monofilament nylon not great for knots.

PF Wouldn't tail-mounted tags be easier for the birds to dislodge when preening compared with back-mounted transmitters, especially if mounted mid-back or higher?

AP Maybe you can collect oil from uropygial gland to investigate how phtalates from plastics are being incorporated by the adults

ID Definitely worth considering going forward and Johannes interested too.

PF In relation to plastics, I saw at least two cases of plastic bottle tops (one red, one green) alongside Northern Royal nests on Motuhara. Given that these nests are on a plateau 60-90m above sea level, on an island completely surrounded by vertical cliffs, I can only assume that these plastics were brought in by the birds, but perhaps regurgitated by chicks or not ingested by them.

CG Is slope a factor in burrows flooding? Would have been good to compare with Lady Alice. On Poor Knights with Buller's shearwaters we found (May 2023) the birds appeared to have done pretty well (at least in our study plots) with little evidence of flooded burrows, dead chicks etc. Despite islands being subject to very heavy rain.

DB Keen to study this more but currently data deficient.

CG Did get funding to check on birds at Poor Knights to see how the birds were faring. Waterfalls etc. Didn't find any burrow flooding and chick loss.

JF Is there any feeling that there is increased susceptibility to flooding because of recording devices used in borrows?

DB Need to investigate more looking at our impact.

JF More research needed. May pay to extend the control (burrow-scoping) burrows.

GT Low chick return rates. Worry is birds going up to central pacific tropical area but now appear to be coming south more. Regulations in equatorial fisheries of concern – no bycatch measures required in tuna fisheries. Maybe this is impacting on return rates. How much effort has been put in recently into birds on the surface.

DB Always a worry with international fishing. In terms of effort on the islands, loads of night work and spreading out further since 2016 and trying to detect birds coming back to study colony. Huge amount of work being put into that and always open to suggestions on what has worked well at other study colonies to learn from.

IG This work is showing these birds are actively foraging in zones where mitigation devices are not required. And low observer coverage.

GT Is there a way to detect birds coming into other locations that aren't monitored regularly. Find additional burrows and bring into the site.

5. POP2021-08 Assessment of low burrow occupancy rates in Westland petrels/POP2022-07 Westland petrel foraging movements and diving behaviour

Graeme Taylor presented this project with Kate Simister.

Discussion:

KS There has been a bit of a decline in breeding attempts.

GT You've increased the sample size, is that having an impact on estimates?

KS Yes in part, we are not just selecting active breeding burrows we are randomly selecting.

GT Numbers breeding was definitely around 21-52% in previous seasons.

GT Appears to be less than 50% breeding success in the past.

KS I'm using the same methods as used previously but will look harder at how breeding success is measured.

KS La Niña heat waves have had a massive impact on birds breeding on the west coast and they are having to hunt harder for food.

GT Does look like an environmental effect coming through related to foraging conditions at sea?

PF Could you do two analyses, the one shown here, all burrows included, and then just those 60 burrows that were set up in 2020 (assuming that they are marked or mapped)? That may allow you to identify any differences due to non-random selection of the 2020 sample.

KS Yes, at the conclusion of this season a more robust analysis will be done to investigate if that has had an effect

PF Were the birds foraging in the same areas during pre-laying/incubation and the chick-rearing periods, which might explain the deeper mean dive depths during chick-rearing. Perhaps these birds were foraging further and perhaps over deeper waters.

ID Resolution limited with GLS to be able to look at that in the data set.

PF You could also potentially look at trail camera footage to get return to nests and

departures off-shore to get timing of feeding bouts.

GT GLS tags have wet/dry sensors which helps determine time sitting in a burrow and could be combined with trail camera information at different stages.

JQD Graeme very interesting, do you think those Westland petrels reach southern Argentinian Patagonian through the Cape Horn or northern Drake passage, do you have the detail on that ?

JF Don't think we have that resolution to answer that with GLS tags.

GT Could make estimates with speed/time to look at that but other research coming up that will help answer that question.

WG Potentially quite a similar risk profile to the Antipodean albatross.

GT Birds dive regularly but mostly <4m and only a few dives exceed 10m.

GT Adult migration to South America to the seas of Chile and Argentina confirmed with GLS tracking and fledglings fly out to deep waters past the EEZ and then round North Cape in to the South Pacific Ocean.

AP Might they make it to southern Brazil.

JF Would be good to know.

JD Maybe the same path that the Black browed albatrosses take immediately south of Tierra del Fuego Island, so Cape horn and northern Drake passage as most procelariforms does.

ID Is there any evidence of plastic ingestion compared to other species?

KS Maybe 20 or 30 birds necropsied from different seasons by Otago University (MOU with DOC) looking at parasites, and no plastics mentioned. Not yet any evidence of it being an issue.

PF Automation of image analysis using AI is needed to deal with a large data set such as this.

PF Are there ectoparasites in these burrows which might accumulate over time and cause stress to birds using them or are the burrows free of them and why?

KS Did see a mite crawling around last season, first time in 6 seasons, but generally don't see them.

PF What about the burrows themselves, do you itch when you've had your hand in there?

KS No, nothing in the burrows that I've noticed.

GT I've seen ticks on birds, but on rocky islands. Rodents eat the ticks in places where there are no refuge. They do normally have fleas.

KS I've never seen anything crawling around except that one bird. It's pretty wet in the burrows which maybe isn't the best habitat for mites etc. to live.

JF To counter that I've studied two different petrel species and have not had ticks or fleas on Whenua Hou diving petrels but common diving petrels have all sorts crawling over them.

CM Ticks tend to be far more prolific here on penguins than other seabirds.

AP White-chinned are one of the most impacted by plastics (alongside Giant Petrel) among our samples in Brazil. How is it going with Westland?

JF I would expect that that is a signature from the SW Atlantic plastics hotspot so the

Westlands may not be as exposed to this risk as the White-chins from the S Atalantic.
AP – Brazil is within the hotspot.

JF – Provided a link to a communication on global assessment of marine plastic exposure <http://dx.doi.org/10.1038/s41467-023-38900-z>

Any additional comments should be provided to csp@doc.govt.nz by 5pm, 25th July 2023.

Close of Meeting @ 13:54 pm