



Meeting: Conservation Services Programme Technical Working Group
Date: 25 July 2024
Time: 9:00 am – 1.00 pm
Place: Microsoft Teams Meeting
Chair: Lyndsey Holland (Acting Manager, Marine Bycatch and Threats team)

Attendees: Lyndsey Holland, Johannes Fischer, Olivia Rowley, Tiffany Plencner, Hollie McGovern, Igor Debski, Karen Middlemiss, Katie Clemens-Seely, Graeme Taylor (DOC), Karen Baird, Chris Gaskin, Edin Whitehead (NNZST), Dan Burgin, Simon Lamb, Sam Ray, Biz Bell (WMIL), Gaia Dell'Araccia (Auckland Council), Dave Goad (Vita Maris), Jason Hamill (NIWA), David Middleton (Pisces Research for SNZ IC), Peter Frost (Science Support Service), Heather Benko (FNZ)

Apologies: Kalinka Rexer-Huber, Graham Parker (Parker Conservation)

Presentations:

9:05 am	POP2022-01 Black petrel population monitoring	WMIL/NNZST
10:20 am	POP2021-04 Flesh-footed shearwater population monitoring/ POP2022-02 Flesh-footed shearwater juvenile survival and dispersal	WMIL
11:15 am	POP2021-08 Assessment of causes of low burrow occupancy rates in Westland petrels/POP2022-07 Westland petrel foraging movements and diving behaviour	DOC
11:45 am	Vertical movements of Procellaria petrels	VUW
12:15 pm	Motuhara seabird research 2024/ King shag survey 2024	Mike Bell

1. POP2022-01 Black petrel population monitoring

Biz Bell and Sam Ray (WMIL) presented the land component of the black petrel population monitoring project. Dan Burgin (WMIL) presented the at-sea captures summary from 2021-2024. Chris Gaskin and Edin Whitehead (NNZST) presented the at-sea capture summary from 2024.

Discussion:

WMIL land component

DM Is there information on weight loss information over a foraging trip for birds with and without trackers, to determine if there is any impact of carrying a tracker during a foraging trip?

BB We take weight of non-tracked (control group) and tracked birds (treatment group). Have not analysed that yet, but will make sure it's in the report. Have analysed in previous years, and sometimes the weight change is not significant.

PF Weight loss in some birds may indicate something about cost of breeding, which may be considerable. Urge more focus on changes in physical condition of birds through the breeding season. Tend to overlook non-breeding birds, which may be important. If burrow contains previous breeders that are taking a sabbatical, it would be interesting to look at banding records for these birds.

BB We check all study burrows and determine if breeding or non-breeding birds in there, and track whether bird is taking a gap year, or has come back and is not breeding. We have good info on burrow and parent changeovers, and behaviour of each bird season to season.

PF Urge you to look at that in relation to El Niño events in Pacific. Can provide some datasets on sea surface temperature and El Niño indices.

JF I don't think you can directly compare impacts on central-place constrained and less mobile guano birds with highly mobile petrels

JF Just to clarify, the chick tracking work was funded by DOC through Budget22 on top of the existing CSP funding.

JF Where does the assertion come from that the percentage of chicks returning is very low and worrying; are there any comparable studies of Procellaria?

BB Will look into that a bit more. Our average recapture rate is 10.5% and highest cohort recapture rate is 15.9% which seems pretty low. Detection is a big aspect and that was the reason for putting more effort into night work to see if it was a related thing. Overall, even with ad hoc surveys showing we are not getting many of our chicks back.

JF Not convinced recruitment is low for this species. If you consider $0.105^{1/6}$ (based on average first return) the estimated survival is ~69% per year assuming perfect detection, which is obviously not the case. Assuming only half the birds are found, that is $(0.105/0.5)^{1/6}$ which gives ~77% annual survival for chicks, which doesn't seem that low for a species like this. There clearly needs some more modelling and more nocturnal surveys to better understand.

BB We recommend increasing transect surveys or repeat of transect surveys, as will be able to capture more birds outside the study area.

WMIL at sea captures

PF Is there any other assessment, other than measurement of bill length and width, to assess

physiological condition? Wondering how to maximise return of information on the nature of these birds, considering the amount of effort put into catching them.

DB Absolutely, that has been included as a recommendation to be explored, balancing the costs to the individual.

DM What calculations have you made of population size, given mark rate found at sea? How many marked birds are in the population? Seems to be the most important calculation using these data.

DB Haven't done that yet but is something we would like to explore.

BB 9,538 birds banded from Aotea since 1962. Some of those birds won't be alive now, and over half are chicks. Marked population is low, but can look into that.

GT A key project aim is to use this cumulated dataset to look at another way of estimating population size, similar thing was done with Hutton's shearwater population. Got full mixture of birds of different ages and from different breeding sites coming into this area, so just need to get enough variability in capture rates between different parts of the year and in different years to understand and remove some biases out of methodology. Hope to be able to get a new estimate based on at-sea work of total population size. Other key aspect was to determine whether there was a large number of chick returns out at sea that were going to different areas outside of Biz's study. But have not seen that come through, as mostly unbanded birds being captured.

JF Yes, one would need to combine survival and detection estimates with the ratio of banded/unbanded birds caught at sea and as we all know, small deviations in the percentages of survival estimates will have major implications for the population estimate further down the road

DG Have you explored other avenues for getting a random sample of birds; presumably got number of captured dead birds that have bands on, and any plans to look at other platforms e.g. charter boats or commercial fishing boats?

GT Modelling will take into account all other datasets that are available. Ratios of banded to unbanded birds captured in fisheries will be important.

JF I don't think the Black Petrel population estimate is directly comparable with the Hutton's Shearwater population estimate that was conducted using at sea surveys as that was within one year and thus had to assume 100% survival between marking and detection at sea, which is obviously not the case here, but in general, yes it would use similar principles to derive a population estimate.

LH You could combine with genetic estimates for Ne if blood samples are taken.

NNZST at sea captures

No comments

2. POP2021-04 Flesh-footed shearwater population monitoring

Simon Lamb and Sam Ray presented on flesh-footed shearwater population monitoring on Ohinau, Lady Alice Island and Titi Island.

Discussion:

PF Do you know how long failed breeders will continue to return to the island?

SR No we don't know how long they are hanging around on the island.

PF Need to understand the nature of non-breeding birds., as there is currently some debate around using information on the proportion of breeders to non-breeders to adjust some population estimates.

EW We have done successful harness deployments on chick-rearing titi (sooties) with no difference between harness/tape/no device in term of impact on the birds chick. Have not done any chick tracking but happy to chat through those methods if it's helpful.

DM Estimates of number of breeding burrows is quite imprecise. Can see large drop in mean estimate of occupied burrows detected on Lady Alice, however overlapping 95% confidence intervals indicate low power to detect changes in burrow numbers due to the precision of the estimates. Survey design should be reconsidered; by defining fixed colony boundaries, then not considering any imprecision in the area of the colonies, and saying that density is even. For future work, approach of doing colony-based surveys needs to be revisited and alternative stratifications should probably be considered.

SL Agree, however takes a lot of time on the ground to understand colony boundaries. Increased variation by having each colony estimated separately to contribute to overall picture. Would love to hear more about different approaches to estimate these burrowing petrels.

GT It is challenging with burrowing petrels because the birds don't nest evenly and occur randomly across the habitat, often in clusters with large unused areas between.

DG It would be very helpful to know what the confidence is in the uncertainty.

SL Quite imprecise with these methods, more surveys required to help build the picture over time.

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

Graeme Taylor, Kate Simister, Samhita Bose and Jonathon Rutter presented a progress report on the Westland petrel projects.

Discussion:

DB WMIL have also noticed poor plumage on a few chicks too (Ohinau - FFSH and Aotea - BLPE). Last season (2022/23) for Ohinau, and several years running on Aotea (only one or two individuals).

KS Poor plumage quality has been observed since the 1970s for Westlands, the amount of birds effected varies between seasons. It impacted 25% of chicks in 2023.

SB The example of non-migratory track is from a non-breeding male. The GLS tag was deployed on the bird for 402 days.

KS Birds are found at the colony in Feb-March, perhaps these are birds who did not migrate in between seasons.

PF Is there any correlation with any fisheries production data off the West Coast for last few years where you have noticed a drop in number of birds breeding? Particularly wet weather can cause a large flow of freshwater into coastal waters which suppresses upwelling, which could feed through to primary and secondary production, which may be an explanation for reduced amount of breeding and poor body condition.

GT Poor body condition was in chicks, but that is indicative of adults not being able to feed them as much, or quality of food is varied. Trend data is showing that things are declining; it looks like the marine environment is changing, and highlights the need to understand how marine ecosystem affects these colonies.

JF Gibson's albatross also had a poor season.

KS We can investigate foraging trip length to see whether birds were away for longer trying to feed chicks last season. A number of chicks last season were at a really low weight and do not believe many of them fledged.

4. Vertical movements of Procellaria petrels

Maria Düssler presented on diving behavior among Procellaria petrel species.

Discussion:

PF Interesting that dive depth is inversely related to body mass; wonder if anyone has thought to calculate negative buoyancy of birds with different body mass.

MD Interesting to calculate descent rate over successive points in a dive to see at what point they got faster after reaching certain depth.

DG Interested in descent rate, the plots seemed to show that the gradient changed, which suggests the maximum depth may potentially be higher? And do you plan to look at whether GPS birds were following fishing boats at the time and whether their behaviour changed?

MD Yes will be looking at GPS birds and fishing vessels. In terms of maximum descent rate, some descent rates are faster than expected due to some residual noise. Previous literature on other Procellaria petrels suggests they don't really dive faster than 3m per second.

5. Motuhara seabird research 2024/ King shag survey 2024

Mike Bell provided an update on the Motuhara seabird research 2024 and the King Shag survey 2024.

Discussion:

Motuhara seabird research

GT Any evidence of problems from the flooding for northern giant petrels?

MB No there didn't seem to have any issues for them. A few birds died due to bad

condition, but nothing out of the ordinary.

GT Did you check dead northern royals for any evidence of plastics in the corpses that may have contributed to late failure?

MB Most were hollow carcasses, and there was no evidence of plastic.

King shag survey

GT Have heard that more breeding is occurring this year?

MB This breeding season is looking quite positive. Hopefully will have more settled weather and end up with a good king shag breeding season.

GT Will be a balancing act between the good and bad years.

MB Just starting to analyse resighting data from banding that we have been doing, looks like annual adult survival is pretty high. Need to do annual counts to understand species and they are relatively easy to do with one flight a year.

Any additional comments should be provided to csp@doc.govt.nz by 5pm, 8th August 2024.

Close of Meeting @ 12.30 pm