**Department of Conservation**
*Te Papa Atawhai*

Meeting:        Conservation Services Programme Technical Working Group

Date:           Wednesday 26 April 2023
Time:           10:00 am – 11.45 am
Place:          Microsoft Teams Meeting
Chair:          Kris Ramm (Manager, Marine Bycatch and Threats team)

Attendance:
Kris Ramm, Johannes Fischer, Claudia Mischler, Graeme Taylor,  Igor Debski, Karen Middlemiss, Hollie McGovern (DOC), Richard Wells (Resourcewise), Peter Frost (Science Support Service), Jack Fenaughty (SRL for Sanford), Lucy Waller (West Coast Penguin Trust), Miriam Pierotti (Victoria University of Wellington), Alexander Hann, Heather Benko, Campbell Murray (FNZ), Ben Steele Mortimer (SNZ Deepwater Council), Chelsea McGaw (Forest and Bird), Karli Thomas (DSCC), Di Tracey, Malcom Clark, Kareen Schnabel, Owen Anderson, Jaret Bilewitch, Jason Hamill (NIWA), Gaia Dell'Ariccia (Auckland Council), Barry Weeber (ECO)

**Presentations:**

10.00 am        POP2022-11 Campbell Island seabird research        DOC

11:00 am        POP2021-02 Identification of protected coral hotspots        NIWA
                using species distribution modelling

## 1.  POP2022-11 Campbell Island seabird research (DOC)

Claudia Mischler presented the draft report for POP2022-11. Limited nests sighted during the February 2023 Operation Endurance trip to Campbell Island, coupled with low nest counts during the 2019/20 trip continues to suggest a concerning decline in the southern royal albatross population at its stronghold. An in-depth population study, including (preferably island-wide) nest count, is recommended to further assess the population status.

Discussion:
**RW** Note that recommendation to repeat surveys over at least two years is sensible as birds are biennial breeders. We should look to find an alternative to Operation Endurnace in the future. Note in the bar chart that there was a low count in 1987/88 that also had two gap years after, then increased greater than intrinsic rate growth, which suggests swings in count. The fact that you have measured two cohorts, if not fully, suggests issues (not proven but does suggest). It has been suggested that, since stock was fully removed from island 30 years ago, revegetation around the island has made it difficult for some colonies to access where they used to nest. If true, then that could be a reason for birds nesting somewhere else on island?

**GT** The 1987/88 survey was carried out by Peter Moore and think it is a true count. Ground based surveys were conducted from vantage points in the early days, which was a good methodology at the time given the ground was so bare due to grazing stock, however after removal of sheep the vegetation became thicker and therefore had to move to sweeping counts. The vegetation has been thickening up by the scrub line, however there is no shortage of breeding sites higher up so do not think it's a limitation of available habitat.

**RW** Was more worried it was affecting study sites rather than habitat availability.

**GT** Climate change may have an effect as well, there are researchers looking into that. These birds are adaptable so if they can't access an old nest site they will just go a bit higher up. They need a good runway point so if they need to will walk from a nest site up to runway point to take off.

**KR** In terms of reliance on the Navy, CSP is planning on having a more substantiative and targeted field season on Campbell this year, and therefore planning to use an independent vessel.

**PF** Regarding the buffered nest counts that were overlayed with previous years, were the 50m and 80m numbers adjusted to fit Dec-Feb timing of the previous counts?

**CM** No they were not as there was no way to apply correction factors that account for uncertain nest location and uncertain nest failure.

**PF** Important to note there should be an overlap period when changing survey methods, in order to see how comparable/incomparable the results are. Also regarding timelapse cameras, from reviewing the northern royal footage, a picture is taken every two hours and often will not capture a chick leaving then nest then returning to be feed and then wandering off again. Don't make the assumption that if a chick hasn't come back to the nest it has died.

**JF** Congrats Claudia for the impressive amount of work you completed in such a short timeframe. Regarding the current study areas and whether they are still suitable, appreciate that a new study site would not give historical comparisons however it would future proof studies on Campbell Island.

**GT** In terms of banding and restarting a banding area, could look into starting to mark a high-altitude colony, i.e. Honey study site.

**BW** From previous data we must know in terms of cohorts, with failed breeders have that breed the next year, what proportion of birds shift between cohorts? Additionally, will you be reporting on the tracking data at some stage?

**CM** GLS store data in the tracker so we won't be getting those back until the birds return. In terms of birds shifting between cohorts, it's expected that at least half would stick to one cohort.

**GT** The birds will breed the following year only if they fail really early, anything later and they will skip the whole season. They try to stick to the biennial pattern, and mixing of two cohorts does happen but not very often.

**PF** Have you looked into using AI detection methods on very high-resolution data? And in regard to collaborating with the Defence Force, is it possible to come to an agreement with

them to use the P8 aircraft to fly over Campbell Island, as they have very high resolution cameras and we could cover the island with transects.

**ID** CSP is aware of a range of technologies to collect imagery and working to progress collaborations, however it's a work in progress.

## 2. POP2021-02 Identification of protected coral hotspots using species distribution modelling (NIWA)

Owen Anderson and Kareen Schnabel presented the coral hotspots modelling results for POP2021-02. A draft report will be made available to CSP stakeholders in the next couple of weeks.

Discussion:

**BSM** When referring to individuals per 1000 m², how have you defined individual?

**OA** A coral head is counted as one; there are no estimates of individuals in a colony.

**BW** Was there any analysis of Receiver Operating Characteristic (ROC) thresholds?

**OA** No ROC thresholds, however we did calculate cut off values.

**BW** It would be useful to see maps with thresholds, which would make it easier to work out high value points.

**OA** There might be value in defining ROC thresholds in terms of presence and absence models, but these models have true presence / absence data in combined hurdle models, so not sure they are appropriate in terms of abundance models.

**BW** Could fishing effort prior to 1990 be included as ongoing problem with how it's dealt with.

**OA** Agreed, however we do not have those data in sufficiently fine resolution to include in these models.

**JF** Looking at next steps, rather than gather additional sample data from less sampled areas, would be keen to see ground truthing of definitive results with DTIS.

**BSM** Agreed. Why is there higher uncertainty for some coral species around the shelf edge on some of the maps?

**OA** This is due to using standard deviation in calculations. Where higher values of the mean predictions of abundance, there will be higher standard deviation. In all these predictions there is similar congruence in the certainty and abundance estimates.

**LH** In terms of cumulative effort, does the fishing effort layer take into account areas that have been trawled on multiple occasions?

**OA** Fishing effort layer is calculated as total swept-area from all cells. The brightest yellow area is where highest level of fishing has occurred.

**LH** Black coral distribution around Challenger was unexpected but with low confidence, do you know why?

**OA** The distribution was surprising, however there were a lot of DTIS samples taken in that Challenger area whether there is a high abundance of black corals. We started comparing these maps to presence/absence data maps to see how well they match up

and most of them do, however black corals not as strongly predicted. A future piece of work could be to compare these distributions with other work NIWA has done.

**JB Is** there potential role to use presence only records from the NIWA Invertebrate Collection to validate your model?

> **OA** It would be hard to get abundance information from museum records, however it could be useful to plot some locations of presence / absence alongside these maps, and how we can incorporate those data into future modelling efforts.

**BW** Agree with Jack's comment regarding ground truthing. Ground truthing is useful however could you look to exclude a proportion of the survey data and test whether the model predicts what the DTIS shows in the areas that were excluded? Could also put some point records in and show them on maps which would be useful down to species level to see how accurate the predictions are.

> **OA** Agreed, however that could be a bit misleading as just presence locations. In terms of ground truthing- we did calculate performance measures based on data excluded from modelling

Any additional comments should be provided to [csp@doc.govt.nz](mailto:csp@doc.govt.nz) by 5pm, 17 May 2023.

Close of Meeting @ 11:45 am