



**Meeting:** Conservation Services Programme Technical Working Group  
**Date:** 04 May 2015  
**Time:** 9.15 am – 1:00 pm  
**Place:** Level 4 National Office, Manners Street, Wellington  
**Chair:** Igor Debski (ph: 04-4713189; email: [idebski@doc.govt.nz](mailto:idebski@doc.govt.nz))

**Attendance:** Graeme Elliott, Kath Walker (Albatross Research), David Thompson (NIWA), Barry Baker (Latitude 42), Tiffany Bock, Nathan Walker (MPI), Peter Frost (Birds NZ), Jana Wold (VUW), Karen Baird (BirdLife International), Kalinka Rexter-Huber (University of Otago), Graham Parker (Parker Conservation), Richard Wells (DWG), Elizabeth Bell (WMIL), Jo Hiscock, Graeme Taylor, Katherine Clements, Paul Crozier, Kris Ramm, Katie Clemens-Seely (DOC)

**Apologies:** Pat Reid (Area 2 Inshore Finfish Management Company Limited), Tom Clark (FINZ)

**CSP presentation:**

- 1      **INT 2013-02 Identification of seabirds captured in New Zealand fisheries**      **Elizabeth Bell (WMIL)**

KW – What does iwi do with the necropsied birds?

EB – They use them for cultural purposes such as making feathered cloaks. I've asked for photos and they're excited to share their work and have some publicity with what they're making.

KW – I see there are 44 birds photographed but without information?

EB – These birds will be included in the final report once all information comes through from the MPI database extracts

KW – Do the photographs add any new species?

EB – No, these birds are already included in the extract

- 2      **POP2014-02: Black petrel population work (Great Barrier & Little Barrier Islands)**      **Elizabeth Bell (WMIL)**

GT – Although the presentation mentions cat predation as a major threat to black petrels on Great Barrier Island, this isn't mentioned much in the study reports.

EB – This is because there is low cat predation at the study colony. Cats are controlled from Feb-Oct by DOC, so they are mainly impacting other burrows not included in the study grids and transects. Cat control has been beneficial for the environment at the top of the island because they no longer hunt towards the summit.

BB – How reliable are the bird detecting dogs?

EB – They are very reliable but you can only go for a limited time. The dogs are trained to detect the bird in the burrow so they are only picking up breeding burrows. They are trained on a number of seabirds, not just black petrels. This was helpful because they found some Cook's petrels' burrows.

ID – On GBI there are census grids where we know every burrow location, so we should trial the dogs there to determine how reliable they are.

EB – The dogs have been used on GBI so far and have detected a few new burrows in our census grids.

PF – At LBI would you be able to stratify and then conduct random transects in the areas that are deemed suitable?

EB – This is possible, but all of LBI is pretty dangerous. The best option is to walk the entire former cat trapping lines and gather an estimate from these numbers.

KRH – Point transects can be randomized and less dangerous.

EB – Point transects have been attempted on GBI, but this doesn't work for black petrels because you won't get any burrows. Three 20 x 20 grids had very few burrows, so consequently they had to increase to 40 x 40 meters, which only gave us 17 burrows. The main problem on LBI apart from the ridges is trying to identify the extent of the colonies.

EB – The first question to answer is whether or not Mike Imber's LBI population estimates are out of date. So far, it seems like LBI is only a satellite population to GBI because the Cook's petrels are much more numerous and much louder at this location.

GT – Black petrels are present on the sonograms on the LBI from time to time with the Cook's petrels, but not at the density of GBI.

ID – Is there potential for there to be other black petrel colonies outside of Little Barrier and Great Barrier Island?

EB – There is potential to put up acoustic monitoring at Moehau Range, and there has been egg-shell found in the Hunua Range so it would be good to put up acoustic devices elsewhere on the mainland next year. As for the other Hauraki Islands, most of these have been extensively surveyed during other bird studies so there most likely are not colonies of black petrels on these islands.

EB – Fishermen have been more proactive in reporting bird sightings. Mike used to colour band as well, which could be useful to do now so that it's easier to see the bands. Fisherman are seeing birds with the white paint on their head but not seeing the bands, even though these birds are definitely banded.

RW – What is the scientific value of the re-sights at sea?

EB – The colour banding wouldn't be done just for fishermen's information, it would need to be a more formal scientific study. It's useful to keep up that relationship and to put in a few more points about sightings.

ID – methodology of any future study will be discussed at a later TWG in the lead up to next field season.

RW – Has there been a detailed analysis about the returned juveniles and about the expectation for them to return to their original burrow?

EB – Male chicks will go back to their natal burrow, and will even try to out-compete their father, but they're not usually successful, they most often move next door. Females will be attracted to the male, so the recaptured chicks are biased towards males. Banded birds are sometimes found outside the main colony zone. A combination of night work and bird-sniffing dogs is allowing us to best find every bird present in the colony.

### **3 POP2014-02: White-capped albatross – aerial study**

**Barry Baker (Lat 42)**

RW – Does the proportion of breeders to loafers (defined: birds present in a colony but which do not appear to be associated with an active nest at the time of observation) vary throughout the season?

BB – The albatross finish laying in December, and progressively lose eggs as the year goes on. Even when they lose an egg, however, the birds typically stay on the nest to protect it from other birds. Therefore it is important to consider what time of year the photographs are taken.

KW – It could be that the birds are sitting on nests because they are without a partner and not because they have lost an egg.

GP – In the example photo in the presentation (slide 6), I am not certain that the birds you have marker as ‘breeding’ are in fact breeding because the nest does not look well-formed and their legs are showing.

KW – In the first data table, ground truthing shows the proportion of loafers to be 22 percent (slide 11), whereas close up counts shows 5.8 percent (slide 10). Why is there such a discrepancy?

BB – This is a difference noted between the different census methods. The variation comes from a variety of factors such as the wind. The time of day is similar between the two methods, so this is less likely a factor.

RF – How are you choosing the photographs, and how much variation is there overall with all photographs?

BB – I just randomly shoot. I would have to go back to the data to know the exact variation.

ID – In comparison to previous years, 420 birds counted on nest is low. Why?

BB – The 420 birds are from 15 photographs, whereas the previous years are from 30 photographs. This reduction is due to deadlines for the report. In total, about 50 close-up photos are taken each time.

KW – It’s interesting to note that ground truthing shows that even on the same day, a little bit of difference in time leads to very different numbers.

KRH – There is not enough data to show that there is a better time of day than others.

BB – A couple hours before sunset, birds pour into the colony. So there would be many more loafers around sunset or sunrise, and this would not be an ideal time to conduct the counts seeing as it would skew the data.

BB – For the close up counts chart (slide 10), the counts were conducted in December for the years 2006-2010. Therefore, these numbers are different to the 2012-2013 years. But since these numbers are just used to adjust the estimations, this isn’t suggesting a step change in population numbers or trends.

ID – It would be useful to show another column in this chart mentioning the time of year the photo was taken, in order to avoid confusion.

DT – For each of the ground transects, the proportion of birds on eggs that were on nests was quite variable between transects (e.g. some might be more sheltered from the wind), which might reflect some of the discrepancies encountered. If this work was to be repeated, it might be useful to tease out this potential variation rather than just averaging across all transects.

BB – Because the numbers come from a random variation of transects, these numbers take into consideration this source of variation already.

ID – One option is to address the error associated with breeding pair estimates. Another option is to report all birds on nests, but we ultimately are interested in estimating breeding pairs. If we are looking for trends, we need to know about the error with these estimates.

GT – In the 1980s I visited Campbell Island and noticed that there were hardly any loafing Campbell black-browed and grey-headed albatross during breeding season. It turned out that these populations were in decline. So the counts of loafing birds actually provide an initial understanding about potential population trends and survival rate.

ID – It will be important to investigate further analysis on ground truthing methodology and data. If people are interested in contributing to this discussion, please contact CSP and Barry. Feedback will be appreciated.

KB – How do you scale up from the numbers of breeding pairs to the population estimate?

BB – I adjust raw counts by removing loafers and turning this number into breeding pairs. Across all of the numbers of raw counts I have used the aerial close up photographs. Disappointment Island is a restricted island, so only recently have we been allowed to conduct ground counts. This is why previous estimates have been based only on aerial photos.

BB – From our findings, population trends observed on Southwest Cape are representative of trends occurring throughout the whole population. Perhaps research can just be targeted here in the future.

GT – Southwest Cape data analysis is risky because of predation by pigs, because this could curtail population expansion.

BB – Not sure this has a big impact because the pigs cannot reach all parts of the colony, although safety is a concern.

ID – In addressing a null hypothesis of stability in population trend, as reported, how appropriate is it to include knot in the spline used to plot change, as this indicates an assumption that trend is changing (i.e. not stable)? In particular, there is a change in methodology after the 2010 season, where the knot is.

BB – Ross Cunningham believes that our current analysis is the best form of analysis and we have taken this change in methodology into account. High inter-annual variance is an issue, but these numbers wouldn't be changed. More variation comes from one year to the next rather than from other sources of error.

GT – Are white-capped albatross annual or bi-annual breeders?

BB – Chris Francis's study suggests that they are probably somewhere in between annual and bi-annual breeders.

*General discussion on sources of error due to time of day, wind, etc. Overall, the present analysis is run through with the numbers as they are, not trying to account for every different source of error.*

**Actions:**

- **Include a month column in the 'close up counts' chart.**
- **Include the methodology of the ground truthing study in the same report as this aerial study report.**
- **Revisit ground truthing methodology and data. If people are interested in contributing to this discussion, please contact DOC CSP and Barry.**

4 **POP2014-02: Gibson's wandering albatross population estimate**

**Kath Walker and  
Graeme Elliot  
(Albatross Research)**

NW – How many birds were used in the geolocator study?

KW – About 60 for each gender in satellite tracking. But they Loggers last 5-6 years, so data is accumulating, but overall the increase in sample size doesn't seem to explain the larger ranges. GWA are going further east, where they will be in competition with the Antipodean albatross.

BB – This pattern shift could be due to change in fishing effort.

PF – Another possibility is it could be due to changes in oceanic conditions.

KW – We also banded more non-breeders (birds of breeding age without a partner) because breeders were more likely to die.

KW – Although it's easy to see a dramatic decline in population in 2004-2005, there's a chance that it's been declining all along, which might be due to overall changes in oceanic temperatures due to climate change and increase in Tasman Sea temperatures. This is speculation, but with a 20 year data set, it's useful to contemplate these overall changes.

GE – However, statistically, catastrophic decline is still the better explanation.

KW – It's interesting to notice that in Biz's data on black petrels there also was a 2005 decrease, which may suggest an ocean related impact.

BB – In an inter-annual breeding species, this spike down might not be so dramatic of a decrease.

KW – It's been ten years since this decrease and we have not yet seen a return to original population levels.

NW – The current dip we are now observing is the result from the original dip in 2005, now that the initial reserves of non-breeders have been used up.

BB – It would be interested to compare with the level of bycatch overlapped with the foraging ranges and with these population trends.

## 5 Gibson's albatross aerial census methodology

Barry Baker (Lat 42),  
Kath Walker &  
Graeme Elliot  
(Albatross Research)

### *Presentation by Kath Walker & Graeme Elliott*

*Low-res photographs (Hand-held camera takes oblique and near vertical photos out the door of a helicopter)*

KW – When you are closer to the ground, you have more photos to stitch and this is more challenging.

BB – It's easier to stitch photos by eye when you are lower to the ground.

*High-res photographs (Computer controlled camera in a pod slung under a helicopter; GPS unit integrated with system)*

BB – many of the techniques described here are also used in the low-res method. The assumption that a computer could stitch them together in a high-res photo should be questioned. The main difference is the vertical position of the camera. There would be issues with this when there is some cloud cover.

GE – There will be a cost for technology only to be used once.

### *Aerial transects*

GE – To produce an island-wide estimate of population size, as required for the risk assessment, this method is not practical because we do not have an accurate estimate of the colony extent, but this might be useful for monitoring trends.

BB – when you are trying to photograph vastly distributed birds such as these, there is high error in the stitching.

#### *Ground count*

GE – There are parts of the island covered in scrub which are very hard to count.

KW – There are far fewer birds here, so even though we cannot see these areas with aerial photographs, we won't miss many for the areas that we cannot reach.

#### *Combination of aerial and ground*

*Discussion about the issue of efficiently marking where ground counts have been conducted and excluding this from the photograph counts. There was a general consensus that some kind of low-cost solution could be achieved.*

ID – There are core breeding areas and then there are more dispersed breeding birds in the scrub. Could the ratios based on area vary from year to year?

GE – The birds are very fixed on their areas so this change in ratio is not likely.

GT – Does breeding success depend on exposure to southerly storms?

KW – Studies have shown that their research is not affecting breeding success.

GE – If we are going to do aerial counts, it would be important to have people on the ground each time to determine a correction factor for that time of day and weather condition, although it would be hard to get a large enough sample size in a small window frame due to large dispersion of the birds.

RF – How do you see this playing out over a number of years now that you will have a few years with great precision?

GE – These island-wide counts are useful to recalibrate our numbers, but we would need to use the same methodology which means a ground count.

KW – But if we do these island-wide counts every 20 years or so, it's not practical to assume we would use the same methodology as technologies advance.

BB – Different techniques aren't necessarily a bad thing, it's just important to know the most accurate island-wide estimates.

RW – Southern Buller's at the Snares there have been censuses with the same methodology for years, and we can understand the value of maintaining the same methodology.

RW – The most important data for the risk assessment is with fishing activity in the Tasman Sea rather than lack of knowledge in population estimates, so it would be more worthwhile to invest here.

#### ***Gibson's albatross aerial census methodology continued, presented by Barry Baker***

*Discussion on feasibility of using high-tech drones, NW mentioned possibility of renting this equipment. Most likely is the appropriate equipment will be outside the budget.*

BB – Photo resolution trialled in 2014/15 was fit for purpose, some areas were missed but with low dispersal of breeding birds, this wouldn't change the raw counts by much. Weather conditions caused a few issues with photography; this will be an on-going problem with aerial photography. Therefore, an aerial platform would be necessary.

PC – Is there software to help differentiate between white rocks and birds?

BB – There is the possibility of using thermal imaging technology, which is currently being used to count deer in Tasmania. This would more accurately count the birds ashore, but it will still require a ground truthing to know the proportion breeding.

BB – Transect method is preferred for loosely colonial species, as compared to aerial landscape method. It is necessary to specify the lens/camera/over-flight height specification that has been field tested.

KB – What is the cost as compared to ground surveys?

BB – Because the helicopters go down there already for the sea lion team and white-capped albatross, they only charge for two hours per day for 5-6 days. So the costs are low in comparison.

KW – This would not be the case if we were to use aerial photographs for the island-wide census because the helicopters would not be already going down to these islands at the appropriate time of year.

BB – It is \$20,000 to bring a chopper down and back, so it's important to think through logistics with aerial work.

PF – Biodiversity surveys for red-billed gulls are using a company that are producing very high-quality and effective photographs, which would be useful to look into.

BB – It's not feasible to fly Adams Island in its entirety in one season because of the weather conditions. This would be more effectively done a few blocks at a time over the period of a series of 2-3 years.

PC – Could thermal technology be able to distinguish between birds on eggs and birds without an egg?

EB – Thermal imaging was trialled with black petrel burrows to determine whether there was a chick in a burrow. It was okay, but not always accurate if the chick was pretty far in. Not sure if it would differentiate between breeding and non-breeding birds.

KB – Is there any other information that can be collected from ground counts that won't be gathered from aerial besides proportion breeding?

GT – Banded birds.

ID – Emigration of birds out of study sites could also be assessed.

GE – These birds don't typically emigrate, the biggest move documented was a female who moved 600 metres.

**Actions: BB will continue to analyse the comparative counts and investigate thermal aerial photography. Reports from the investigations by both BB and KW/GE will be circulated prior to the next meeting.**

### **CSP Reports tabled**

POP2014-02 Southern Buller's albatross at the Snares – report will be circulated by the end of the week and made available for comment on the meeting web page.

ID – updates will be provided via email as projects conclude and are finalised. Further comments on the material presented at this meeting are welcomed by email to [csp@doc.govt.nz](mailto:csp@doc.govt.nz) by 18 May 2015. The next CSP TWG meeting will be the 17<sup>th</sup> of June.

### **Close of the meeting**