



MINISTRY OF FISHERIES
Te Tautiaki i nga tini a Tangaroa

**Meeting: Conservation Services Programme Technical Working Group
National Plan of Action – Seabirds Technical Working Group**

Date: 19 September 2008

Time: 9.30 am – approx. 1:30 pm

Place: Department of Conservation, 18-32 Manners Street, Wellington

Chair: Johanna Pierre (ph: 04-471-3204; email: jpierre@doc.govt.nz)

Attendees: David Middleton (SeaFIC), Greg Lydon (SeaFIC), Nathan Walker (MFish), Martin Cryer (MFish), Eric Mellina (MFish), Aoife Martin (MFish), Igor Debski (DOC), Dave Gilbert (NIWA), Paul Breen (NIWA), Martin Cawthorn (Cawthorn & Associates), Kirstie Knowles (Forest & Bird), Darryl MacKenzie (Proteus), Louise Chilvers (DOC), Rob Matlin (MFish), Ian Angus (DOC).

Apologies: Richard Wells (DeepWater Group), Ed Abraham (Dragonfly), Pat Reid (Area 2), John Reid (Area 2).

Population studies (New Zealand sea lion):

POP2007/01 - New Zealand sea lion Auckland Island field trip - Louise Chilvers

- LC presented results from the 2007/08 field season and plans for the 2008/09 season (presentation available on MCS website).
- RM – did daily pup counts at Sandy Bay show normal timing?
- LC – yes.
- RM queried whether factors other than tag pin size may have contributed to higher tag loss.
- LC – the bigger hole reduced the margin of skin and examples were seen where rips occurred. Next year the tags will be punched further towards the centre of the flipper to obtain the same margin that old tags had.
- RM – do the pin holes increase in size over time?
- LC – they can do, e.g. in big males, but not generally.
- MCawthorn queried the Allflex tag loss rate, as tag placement had been variable.
- LC – yes, previous inconsistent placement may have contributed to higher previous rate, now very careful on placement [position illustrated].
- DMiddleton – in which year was there a manufacturing fault with the pins?
- LC – last year, did not have much impact as most pins were double checked after fault identified.
- DMiddleton – how long are individual foraging trips?
- LC – will be reported with full foraging analyses when fishing data obtained.
- GL – were field staff on the first trip experienced?

- LC – yes, two of them had been three times – important in maintaining consistency in data collection.
- RM – have foraging trips got longer over time?
- LC – latest analysis show similar foraging patterns over time.
- DMiddleton – were other parts of the Auckland Island coastline checked for sea lions during the trip down to Figure of Eight Island?
- LC – no, due to boat transport limitations.
- PB – were pup weights or milk samples collected?
- LC – only birth weights for branded female pups as part of ongoing data series.
- PB – are tag colours distinguishable in the field?
- LC – yes, have tested all colours, exclude any confusable ones.
- PB – do you ensure all observers can distinguish the colours?
- LC – yes.
- AM – do the colours fade?
- LC – yes over extended time periods, experience helps to distinguish between them.
- MCawthorn – have you written off the use of Allfex tags?
- LC – yes for foreseeable future – now have good data series using Dalton Jumbotags and analyses based on this series.
- DMiddleton – have you spoken to MFish Observer Services about electronic tablets?
- ID/LC – yes, hope to trial the device they choose.
- RM queried the placement of satellite tags.
- LC – placed on highest point of body
- NW queried the timing of foraging data.
- LC – males will be captured as soon as the second team arrives, females will be captured after the mark-capture work when the harems have dispersed, tags will be removed prior to departure.
- DMiddleton/MCawthorn/LC/RM – there was some discussion on the use of archival tags for longer term deployment, but given limited movements (e.g. compared to seabirds) consensus was not reached on how feasible this would be.
- GL queried how the data collected would be analysed and used in fisheries management, for example through the PMP and SMP.
- JP and AM summarised processes for analyses and use of the information for management. DG and DMacKenzie will report on their analyses, data feeds into modelling and Operational Plan for 6T, and modelling also feeds into the PMP process. The SMP considers all management issues around sea lions rather than just fishing, so has broader inputs. IA later gave an update on the SMP and PMP processes being led by Simon Banks' Marine Conservation team at DOC (in the newly formed Aquatic and Threats unit).
- RM suggested that research and management questions need to be more clearly stated and linked to the data in research planning documents.
- DMiddleton requested the number of animals marked and recaptured be reported.
- LC – will add these to the report, and noted that recounts can be affected by weather conditions etc.

- GL – are pup numbers now stabilised at a new, post-2000 level?
- LC – no, not that simple, likely that multiple factors are at play – mortalities due to disease do not account for drop in pup production, fishing mortality likely to be important.
- MCawthorn – do you have any data on shark predation?
- LC – is being investigated, but is a natural process, approx. 40 % of females have shark scars.
- DG noted that disease and direct fishing mortality are not enough to explain the current low pup numbers.
- PB added there appears to be an order of magnitude difference between direct fishing mortalities and the reduction in pup numbers recorded.
- LC – said that presumes the fishing mortality is known correctly and other fisheries impacts are low.
- RM – SLED survival is also an important issue.
- PB – these factors still do not account for the pup production decline, as the difference in mortality required to explain this is an order of magnitude.
- DMacKenzie – also presumes pupping rate is constant (e.g. no changes in energetics or resources available).
- PB/DG – do not consider the data support changes in pupping rate – only the 1998 disease cohort is different from other cohorts.

POP2006/01 objective 3 - Final results from sea lion pupping rate estimation - Dave Gilbert

- DG presented draft final results, following previous presentations to the group (presentation available on MCS website).
- GL – would direct pupping rates calculated from field data underestimate pupping rate?
- DG/LC – yes.
- DMiddleton – can authorship of comments in the sea lion database be identified?
- LC – no, but only a limited number of comments can be entered.
- DG – 95% of comments are easy to categorise and are used consistently.
- MCawthorn – how are suckling yearlings treated?
- LC/DG – are identifiable, but very rare.
- DMiddleton/LC/DG – there was some discussion about scanning for PIT tags – generally only animals with flipper scars are scanned, but some random scanning has been done in the last two seasons. Some breeders with only one or two sightings may be PIT tagged only animals – DG will investigate.
- DG/LC/PB – there was discussion on the finding that up to 20% or all females may not turn up at the colony – however, some may show only briefly and PIT tagged only animals may not be recorded – it is unlikely animals would be obscured in the bushes as females are guarded by males on the beach.
- GL – which years were PIT tags applied and why was it stopped.
- LC – PIT tags applied to 1998-2002 pups, branded and adult tagged animals, no longer applied due to loss rate, cost and difficulty in re-reading.
- DMiddleton – are the high 1st year and low 2nd year mortality separable with the data, or just by the model?
- DG – there is some data, but aliasing could be occurring.

- LC noted that the 1987 and 1991-93 cohorts don't have resighting data until 2000.
- DG – could be some aliasing as mortality and tag loss over time are not separable.
- PB – using your survival and reproductive schedules can the population replace its self?
- DG – haven't yet calculated (will report), based on earlier results, probably not. Data is mainly from 2000-2007 so should not necessarily be typical of long term trends.

POP2007/01 objective 3 - Draft results from sea lion data analyses 2008 - Darryl MacKenzie

- DMacKenzie presented initial results, following a previous methodological presentation to the group (presentation available on MCS website).
- DMiddleton – does the logistic-quadratic model have a minimum age for breeding, and how many parameters does it have.
- DMacKenzie – no minimum age, but could be set to zero for ages 0-3. The model has 3 parameters (as the other models).
- DMiddleton – is the breeding status used that assigned by Louise's team?
- DMacKenzie – yes, but could use any definition.
- DMiddleton – is the assignment of number of tags reliable?
- LC – observations are made with great care to record correct number of tags – much less variability than assigning breeding status for example.
- DMacKenzie – eyeballing sequences seems good.
- DG – how are unconfirmed number of tags treated?
- DMacKenzie/LC – very few animals with unconfirmed number of tags, can use future sightings.
- DG noted there was some inconsistency in the recording of branded animals.
- LC – very few records would be incorrect.
- DMacKenzie – didn't notice any problems.
- PB – were likelihoods calculated?
- DMacKenzie – not explicitly. Calculations made using WinBUGS, priors were uninformative.
- DMiddleton requested MCMC traces be shown.
- DMacKenzie – will include in the report.
- DG/DMacKenzie – there was some discussion on precise sample sizes and data used by each investigator with some differences identified.
- DG – the logistic-quadratic model being symmetrical could be quite a problem as there is no reason to expect it to be so.
- DMacKenzie – yes, extra terms could be added to overcome this. The symmetry also forces artificial confidence intervals.
- ID – for the age group model, how many age groups would the data support?
- DMacKenzie – probably four or five, would prefer more than just three age groups for this type of model.
- DG – could use an age-specific parameter.

- DMiddleton/DG noted that the models do need to be compared in order to choose which one to use, and for this the fit to the data needs to be reported and some diagnostics are needed.
- DMacKenzie – agrees, but there are no established techniques for comparing mark-recapture models.
- DG noted that there were a number of similarities between his findings and those of DMacKenzie, but there were also some big differences such as the difference in pupping rate between breeders and non-breeders, and survival rates.
- PB – in regards to the methods for calculating population size, exact population size is not important for management purposes. Survival and reproductive schedules are much more important, and it should be shown whether they can produce a sustaining population.
- DMacKenzie – will investigate whether population is self-sustaining using calculated parameter estimates.
- ID/JP suggested that a further technical session of interested parties be organised to consider the differences between the methods of DG and DMacKenzie, and to address some of the discussion points raised by DMacKenzie (e.g. choosing the most appropriate model type). An initial date of late November was proposed. Further details will be circulated to the CSP TWG e-mail list.

JP called for written comments on any of these presentations and their associated reports by 3 October 2008.

Close of meeting.