

Research and Management priorities for New Zealand Penguins

By Kerry-Jayne Wilson¹ and Helen Otley²

¹ West Coast Penguin Trust, P.O. Box 70, Charleston, 7865, West Coast.

² Department of Conservation, Hokitika.

This workshop was a follow up from two day New Zealand seabirds research and management workshop held at Te Papa in May 2013. In 2013 the time devoted to determining priorities for penguins was limited and the Oamaru Penguin Symposium (10-11 July 2014) presented an opportunity to review, reassess and refine the recommendations arising from the May 2013 workshop. Prior to the Oamaru workshop we requested that people undertaking research or conservation management on New Zealand penguins provide an outline of their current or recently completed research and or management. These fact sheets were circulated to workshop participants prior to the workshop and are included as Appendix 3 of this report.

The report from the 2013 seabirds workshop prepared by Kerry-Jayne Wilson and Susan Waugh which includes the priorities for penguins as determined by that workshop (pages 35-36) is available at

<http://www.birdlife.org.au/images/uploads/branches/documents/ASG-Seabird-Priorities-may13.pdf>

Participants identified the need to develop an online archive of data from past monitoring, research and management programmes on all species, in particular for little penguins that have not been written up. This issue was also raised during the DOC review of the research permit system. This online archive needs to be regularly updated and accessible to all people working with New Zealand penguins. A bibliography would be a useful addition to this database. DOC is not the best institution to host this archive. Dave Houston's New Zealand penguins website <http://penguin.net.nz/> could be reinvigorated and perhaps host this archive and bibliography.

For several species, but in particular yellow-eyed penguin and little penguin management has often been reactive and there is need for greater communication between researchers and managers. In this workshop conservation management matters continued to be reviewed in less detail than research priorities. Perhaps the next workshop should be devoted to conservation management.

Priorities recommended by the 2014 workshop were assigned as high, medium or low priority. Within each category actions are listed in approximate order of priority.

Yellow-eyed penguin

Highest priority

- Revise the yellow-eyed penguin recovery plan. A review was completed in 2010 but not all parties were involved. The recovery plan gives Yellow-eyed Penguin Trust credibility when seeking funding and underpins their work.

High Priority

- Marine ecology including foraging locations. Some breeding season data is available, still required are multi-year and year-long studies.
- Reassess current terrestrial management.
- Fisheries interactions; the threat posed to yellow-eyed penguins by new fisheries remains unknown, assess both direct threats (by-catch) and indirect threats
- Develop techniques to minimise bycatch such as net colours, pingers etc
- Relate foraging location data to local breeding productivity
- Diet studies – concern was expressed regarding the effects of stomach flushing, urgent need to develop alternative techniques perhaps try identifying foods using DNA analysis.
- (competition for prey and food web changes) must be assessed.
- Quantify the impact disease has on yellow-eyed penguin populations.

Medium priority

- Establish new populations once techniques to achieve this are developed.
- Eradicate pigs from the main Auckland Island.

Immediate actions

- Send possibly disease killed yellow-eyed penguins to Wildbase at Massey University for post mortem. They are funded by DOC to carry out post mortems of threatened species if disease is suspected.
- Wildbase to produce a one page set of instructions for handling of birds requiring post mortems and have Phillipa circulate this to all workshop participants.

Little (blue) penguin

Medium priority

- Continue current population monitoring programmes to quantify population trends where ever there is more than 5 years of data. These include; Harris Bay Banks Peninsula (30+ years), Motunau Island (30 years), Oamaru (?? Years), Matiu/Somes Island (seven years), Charleston (6 years).
- Marine ecology including foraging behaviour. Some breeding season data is available, still required are multi-year and year-long studies.
- Chris Challies to publish his invaluable long term demographic study of little penguins on Motunau Island.
- Develop standardised monitoring methods for the species that identify land based and/or marine based threats.
- Investigate the threat posed to local blue penguins by the expansion of Port Lyttelton.
- Need to better understand population dynamics of this species.
- Determine why 14 Matiu/Somes Island chicks starved f in 2013-14 when none had in the previous seven seasons and look out for similar starvation events there and elsewhere.

Discussion

The question was asked if there should be a little penguin recovery plan. The species is widespread but probably consist of two taxa perhaps with differing conservation needs. Perhaps the need is for improved communication between people and groups working on these penguins rather than a recover plan *per se*.

Fiordland crested penguin

High priority

- Determine population trends
- If the population is indeed declining firstly determine whether the key threats are at land or at sea, secondly quantify the impact of different threats.
- Research projects planned to commence in 2014 need funding.
- DOC to make the Fiordland crested penguin recovery strategy available by putting it on the DOC website.

Medium priority

- Monitor demography over time not just numerical trends.
- Standardise the transponder type used with this species. Haast has used a different transponder type which requires a different reader to that used in Otago and Southland.
- Quantify the impact of terrestrial pollution.

Low priority

- Translocation of Fiordland crested penguin to their former range in Otago.

Eastern rockhopper penguin.

High priority

- Map and census Auckland Island colonies. Most are on the almost inaccessible west coast.
- Population trends on Antipodes where there baseline census data exists.

Medium priority

- Relate foraging ecology to Campbell Plateau oceanography in an attempt to understand why the species has declined so dramatically

Erect crested penguin

High priority

- Barry Baker to check if his aerial photos of Bounty Islands are accurate enough to census penguins.
- DOC to undertake second census on Bounty Islands in November 2014.
- DOC to continue population monitoring on both Antipodes and Bounty Islands at five year intervals.

- Recent landslides mean that a resurvey of Erect crested penguins on the Antipodes Islands is urgent.

Medium priority

- Over-winter tracking of Antipodes Island penguins.

Snares Crested Penguin

The Snares Crested Penguin is the only one of the six New Zealand breeding species not in decline, therefore research on this species is less urgent than for the others.

Medium priority

- Determine why the Snares penguin population is stable when all others are in decline.
- Census of Western Chain colonies.
- Over-winter tracking at sea is underway
- Genetics study to compare Snares Island with Western Chain penguins.

Appendix 1. Autopsy of sick penguins found dead

DOC funds Massey University's Wildbase pathology laboratory to undertake post mortems of threatened species that have been ill or found dead when death due to illness is suspected. Either contact their wildlife pathologist Stuart Hunter directly (S.Hunter@massey.ac.nz) or go find the Wildbase online enquiry form on the Massey University website. The link to that is; http://www.massey.ac.nz/massey/learning/departments/centres-research/wildbase/wildbase-pathology/pathology_home.cfm. This can be found by typing in Wildbase Pathology on the main Massey page and follow the instructions.

There are links to the forms that must be filled out for the bird to be submitted – this is the **Huia wildlife database submission form**. Also there is information about how to preserve and package the bird for transport and the address to which it should be sent.

The main post mortem service is for threatened species but in unusual circumstances such as mass die offs they may be able to undertake post mortems on non-threatened little penguins or to identify the predators responsible. Please contact Stuart Hunter in the first instance.

Appendix 2. CCAMLR protocols for mass mortality events

PROTOCOLS FOR COLLECTION OF SAMPLES FOR PATHOLOGICAL ANALYSIS IN THE EVENT OF DISEASE BEING SUSPECTED AMONG MONITORED SPECIES OF BIRDS

Part IV, Section 6., pages 222-233 of **CCAMLR ECOSYSTEM MONITORING PROGRAM STANDARD METHODS**, published by CCAMLR, Hobart, Australia.

This detailed document provides all the information you might need for autopsy and sample collection of diseased birds in remote locations. The url is; <http://www.ccamlr.org/en/system/files/CEMP%20Standard%20Methods%20Jun%202014.pdf>

Appendix 3 Fact sheets provided by New Zealand penguin researchers prior to the workshop.

Little (blue) penguin

Location(s): Matiu/Somes, Makaro, and Mokopuna Islands

Researcher name: Ros Batcheler and Mike Rumble
Research organisation: Matiu/Somes Little Penguin Project Team
Email: the.rumbles@paradise.net.nz

(1) Recent and current research, monitoring and management efforts:

The project has been conducted in stages, each of which has a different focus/outcome:

Stage One (2007-2011) - A five-year study looking at the impact of flipper bands on the ability of the bird to forage. A summary of the findings will be presented to the 2014 Conference.

Stage Two (2012-2014) - A three-year nest-based study looking at nest fidelity, particularly breeding success and colony health. A summary of the findings from the first two years of this three-year programme will be covered in the presentation to the 2014 Conference.

(2) Research, monitoring and management planned and/or under consideration:

Short Term:

- Nest and track maintenance
- Colony health and nest occupancy rates

Longer-term:

- Regional link-ups and sharing of information
- Impact of ecological changes and mitigation strategies

Location(s): Kaikoura Peninsula

Researcher name: Lindsay Rowe
Research organisation: Self
Email: Lindsay.jan.rowe@xtra.co.nz

(1) Recent and current research, monitoring and management efforts:

Monitoring about 15 pairs at South Bay; 3 pairs in nest boxes under the Coastguard building; 2 pairs in natural burrows; the balance in nest boxes under various vegetation cover.

(2) Research, monitoring and management planned and/or under consideration:

More intensive monitoring of PIT tagged birds

Location(s): Quail Island and Flea Bay at Banks Peninsula

Other species worked on at same site: yellow-eyed penguin

Researcher name: Anita Spencer and Wayne Beggs

Research organisation: Department of Conservation

Email: aspencer@doc.govt.nz

(1) Recent and current research, monitoring and management efforts:

We do monitoring of colonies at two locations: Quail Island and Flea Bay. These consist of a one-off count of the colony during the breeding season. For Quail Island this takes place every 2 years in conjunction with the Quail Island Trust. The count at Flea Bay is organised by the landowners Francis and Shireen Helps and is undertaken every 4 years and we spend two days doing the public conservation land section. Other than this there are sometimes ad hoc surveys when landowners request information about penguin numbers on their properties.

There is also a quite extensive predator control programme focussed around penguin colonies on the southeast side of Banks Peninsula called 'the Wildside'. This is joint work between landowners and agencies undertaken because of the high natural values in the area, white-flipped penguins, yellow-eyed penguins, spotted skinks, jewelled geckos, sooty shearwaters etc.

(2) Research, monitoring and management planned and/or under consideration:

Locations: Motunau Island, Banks Peninsula – Harris Bay and elsewhere.

Researcher name: Chris N. Challies

Research organisation: Private

E-mail: challies@xtra.co.nz

(1) Recent and current research, monitoring and management efforts:

The following is a summary of the data sets that presently exist and their potential use.

Motunau Island Projects: Island supports a safe, closed colony of 1500-2000 pairs on 3.4 ha. Projects based on banding *c.*500 chicks and recovering *c.*900 banded birds / season for 30 years, and mark-recapture analyses. Colony contained *c.*2200 known age birds from 10th year of study.

- Age specific survival by year classes from age 1, 20 years data; *c.*10 000 birds.
- Longevity by year class regressed from age 10 for 10 cohorts monitored for 25 years.
- Sex ratio by year class from age 1; based on bill measurements, *c.*1500 birds.
- Colony size and composition from # banded and ratio banded to unbanded; 20 years.
- Effect of nest site on survival to age 1; 4 strata and *c.*5000 birds.
- Dispersal and seasonal movement of juveniles from band recoveries; *c.*250 birds.

Harris Bay Projects: Small nest-boxed, predator-protected colony, mean 25 pairs, below bluffs on Godley Head. All fledglings and immigrants banded and their presence, nesting success, partners and fledglings recorded year round from 1976 to the present.

- Characteristics and variation in the egg & chick stages of the breeding cycle; 38 seasons.
- Timing and character of the moult by season, age and breeding status; 38 seasons.
- Pattern of presence during non-breeding season; checked day & night for 12 seasons.
- Timing of the pre-laying presence(s) and egg formation; 12 seasons/10 eggs.
- Recruitment into the breeding population by age, sex and origin; 20 seasons.
- Fidelity, proportions breeding in natal, adjacent and distant colonies; 10 seasons.
- Initial trials of chick-transfer technique; c.300 birds in 12 seasons monitored to 2nd year.
- Operational scale chick-transfers; c.150 birds in 3 seasons monitored to 4th year.
- Impact of predation, species involved, seasonality, and age/sex of prey; 20 years.

Miscellaneous Projects:

- Characteristics of set-net catches by age, sex and location; from band recoveries.
- Monitoring penguin numbers before and after introduction of RHD; 5 colonies, 20 years.

Location(s): Oamaru

Researcher name: Philippa Agnew
Research organisation: Oamaru Blue Penguin Colony
Email: research@penguins.co.nz

(1) Recent and current research, monitoring and management efforts:

Analysis of long-term monitoring data to obtain reproductive performance and survival parameters

Foraging ecology – GPS and TDR deployment 2010-2012

Analysis of long-term parameters in relation to environmental variables (SST and storm events)

On-going weekly monitoring and predator control

(2) Research, monitoring and management planned and/or under consideration:

Population modelling

Individual foraging strategies

Location(s): Oamaru

Name: John Cockrem
Organisation: Massey University, Palmerston North
Email: J.F.Cockrem@massey.ac.nz

(1) Recent and current research, monitoring and management efforts:

Stress and corticosterone responses. Also similar research on Adelie, emperor in Antarctica.

(2) Research, monitoring and management planned and/or under consideration:

Stress and corticosterone responses in little penguins at locations throughout New Zealand.

Location(s): Te Rere penguin reserve, Southland

Other species worked on at same site: yellow-eyed penguin, sooty shearwaters

Researcher name: Fergus Sutherland

Research organisation: Forest and Bird Society Southland

Email: fergus@catlins-ecotours.co.nz

(1) Recent and current research, monitoring and management efforts:

Penguin numbers monitoring

Wildlife camera monitoring

Management by pest control and stock exclusion

(2) Research, monitoring and management planned and/or under consideration:

As above

Location(s): West Coast

Researcher name: Inger Perkins on behalf of

Research organisation: West Coast Penguin Trust

Email: info@bluepenguin.org.nz

(1) Recent and current research, monitoring and management efforts:

At the end of last breeding season, the Trust agreed to reduce the level of monitoring of trapped and un-trapped colonies after six years as the understanding of the benefit of trapping is now clear. Stoats have a negligible effect on the breeding success of blue penguins in those areas monitored, and this is assumed to apply across the West Coast, but mortality due to vehicles and dogs is very high. (The report is due to be completed.) Some colonies will continue to be monitored to ensure that long term data is collected.

Although the WCPT has been working to protect blue penguins from vehicles and dog attacks for a few years, work in both areas is ramping up, most notably with the current construction of a 2.3km penguin fence along a priority section of the Coast Road (SH6) to prevent penguins accessing the road. The DOC/WCPT mortality database shows that 60 penguins have been killed there (Pahautane area) since records began in 2006.

A flier is being provided to the three District Councils to be enclosed with dog licence renewal notices reminding of the presence of penguins and the need to keep dogs under control.

The Trust conducted a small pilot foraging study of blue penguins last breeding season, primarily to test and establish methods and protocols.

(2) Research, monitoring and management planned and/or under consideration:

It is expected that the foraging study will be undertaken during this and the next breeding season.

Means of working with dog owners to reduce the risk of dog attacks on penguins will be developed, with current proposals including working with Councils, DOC and the SPCA to offer bird aversion training. In addition, social psychology tools to encourage responsible dog ownership will be tested with a view to rolling out successful initiatives.

Further sections of penguin fencing along the coast road are planned, but may not be installed until 2016.

Location(s): Australia and New Zealand

Researcher name: Stefanie Grosser

Research organisation: University of Otago, Department of Zoology

Email: grosser.stefanie@googlemail.com

(1) Recent and current research, monitoring and management efforts:

PhD project on population genetics of little blue penguins:

In 2002 a genetic analysis of mitochondrial DNA (mtDNA) by Banks et al. found a split of *E. minor* into two deeply divergent lineages. One contained birds from Australia and New Zealand's Otago region and one contained birds from the rest of New Zealand. This split has since been confirmed in other studies on mtDNA and it was suggested that these two distinct groups should be reclassified as two separate species but there has been no confirmation for this split from the nuclear genome so far. For my PhD study I am analysing mtDNA, together with 20 nuclear microsatellite loci and a nuclear intron marker to examine the population structure of little blue penguins across their whole distributional range (approx.. 500 samples from 16 Australian and New Zealand locations). My preliminary analyses confirm the presence of two major genetic lineages, with little evidence of hybridization, suggesting that they do indeed represent distinct biological taxa. I am also analysing ancient DNA from bones found in archaeological middens to test the timeframe of the Australian lineage's arrival in Otago. It was previously thought this event happened approximately 180,000 years ago. In contrast to previous analyses, our preliminary ancient-DNA data support a recent (post-human) timeframe for this intriguing colonisation event.

The finding of my PhD (and a potential split of *E. minor* into two species) might have implications for conservation of little blue penguins in New Zealand given the on-going population decline in most areas.

Location: Bay of Plenty

Researcher name: Karin Sievwright, Phil Battley, Kerri Morgan, Helen McConnell

Research organisation: Massey University, Palmerston North

Email: Karin.sievwright@gmail.com

(1) Recent and current research, monitoring and management efforts:

Following the Rena oil spill, the post-release survival and productivity of rehabilitated little blue penguins has been monitored at three colonies in Tauranga (Mount Maunganui, Leisure Island and Rabbit Island). Mass and behavioural data have also been collected.

(2) Research, monitoring and management planned and/or under consideration:

Survival monitoring is continuing this year and may continue for a few years. It is uncertain whether the third post-spill breeding season will be monitored; this depends on whether a student is found who is willing to continue this work, as well as conducting a study on nest site selection as part of a Master's project.

Yellow-eyed penguin**Location: Quail Island and Flea Bay at Banks Peninsula**

Other species worked on at same site: White-flipped penguin

Researcher name: Anita Spencer and Wayne Beggs

Research organisation: Department of Conservation, Christchurch

Email: aspencer@doc.govt.nz

(1) Recent and current research, monitoring and management efforts:

Our yellow-eyed penguin work is again joint agency and landowner work and occurs on Banks Peninsula on the coastline between Flea Bay and Le Bons Bay. We survey for nesting YEP each year and then monitor nests and undertake targeted predator control around them. Chicks are micro-chipped before fledging.

There is also a quite extensive predator control programme focussed around penguin colonies on the southeast side of Banks Peninsula called 'the Wildside'. This is joint work between landowners and agencies undertaken because of the high natural values in the area, white-flipped penguins, yellow-eyed penguins, spotted skinks, jewelled geckos, sooty shearwaters etc.

(2) Research, monitoring and management planned and/or under consideration:

Location: Moeraki

Researcher name: Chris Lalas, Hiltrun Ratz, Rosalie Goldsworthy
Research organisation: Katiki Point Penguin Refuge Charitable Trust
Email: ithaki@xtra.co.nz

(1) Recent and current research, monitoring and management efforts:

The only “new” (not referenced in B&B 2013) management effort is creation of a new breeding location through translocation of rehabilitated penguins.

(2) Research, monitoring and management planned and/or under consideration:

Three “new” aspects of conservation management research:

- Recruitment rate of rehabilitated juveniles (age 1 year) into the breeding population.
- Mitigation of effects of human disturbance by tourists.
- Maximum nest density to deduce optimal use of managed breeding areas.

Location: Otago

Researcher name: Philip Seddon & Yolanda van Heezik (and students)
Research organisation: University of Otago
Email: philip.seddon@otago.ac.nz; yolanda.vanheezik@otago.ac.nz

(1) Recent and current research, monitoring and management efforts:

- Life-time reproductive success
- Impacts of research manipulations
- Effects of oceanographic conditions on penguin survival and productivity
- Population viability analysis
- Impact of disease events
- Efficacy of PIT tag marking versus flipper banding
- Foraging ecology

(2) Research, monitoring and management planned and/or under consideration:

- Identification of super-breeders in populations
- Foraging plasticity and individual productivity
- Diet, nutritional value of prey items, and stable isotope analyses
- Parental feeding behaviour

Location: Otago

Researcher name: Kate McInnes
Research organisation: DOC - Wellington
Email: kmcinnes@doc.govt.nz

(1) Recent and current research, monitoring and management efforts:

DOC continues to investigate disease issues in NZ breeding penguins. Specifically in 2014/2015 YEP's in Otago will be monitored for recurrence of “diphtheritic stomatitis” which is a cyclical outbreak of oral lesions causing poor growth and death

in young chicks. This work is collaborative with a wide range of individuals and institutions and the research programme is currently being developed.

(2) Research, monitoring and management planned and/or under consideration:

Location: Otago

Researcher name: Mel Young
Research organisation: DOC - Dunedin
Email: myoung@doc.govt.nz

Recent and current research, monitoring and management efforts:

(1) Use of transponders and automatic readers I am currently collecting data on the reliability of manual detection of subcutaneous transponders in association with Phil Seddon at Otago University. Transponders have been used as a primary mark for some YEP since 2004, but issues surrounding their detection have arisen, which has had implications for data collection.

(2) Ongoing monitoring of selected sites on Otago Peninsula, Catlins and North Otago. Complete nest searches every five years in other parts of the Catlins.

(3) Maintenance of YEP Database to curate and build life history of the species (with Otago University; Stein 2012).

(4) Boulder Beach: Closure of the breeding area during chick-rearing to prevent human disturbance and potential impacts on chick mass (after McClung et al. 2004). This management action needs to be reviewed to determine its effectiveness (Otago University).

(5) Trapping at 24 of 52 breeding sites in Otago. Trapping is ad-hoc across these breeding areas and data management is not centralised.

(6) Coordinate removal of underweight chicks at all monitoring sites to release adults for pre-moult fattening. Removal of sick and injured birds to rehabilitation. There is a reasonable sized data set that could be analysed to determine if this management action has an effect on survival of breeding adults (chick removal). There are published results that indicate that rehabilitation of sick, injured or starving YEP increases annual breeder survival (Ratz and Lallas 2010).

(7) Research, monitoring and management planned and/or under consideration: I am currently working with the Katiki Point Penguin Trust and Stu Cockburn (DOC) to develop an automated transponder reader for yellow-eyed penguins, to determine whether high-power automated set-ups are more reliable means of obtaining identity information than manual detection of transponders.

Location: Te Rere penguin reserve, Southland

Other species worked on at same site: little blue penguin

Researcher name: Fergus Sutherland
Research organisation: Forest and Bird Society Southland
Email: fergus@catlins-ecotours.co.nz

(1) Recent and current research, monitoring and management efforts:

Penguin numbers monitoring

YEP nest counts
YEP chick weighing
Wildlife camera monitoring
Management by pest control and stock exclusion

(2) Research, monitoring and management planned and/or under consideration:

As above

Location: Auckland Island

Researcher name: Jo Hiscock
Research organisation: DOC - Invercargill
Email: jhiscock@doc.govt.nz

(1) Recent and current research, monitoring and management efforts:

Volunteer trip to the Auckland Islands collecting beach count data, and some nest search effort to truth and interpret the beach count data.

(2) Research, monitoring and management planned and/or under consideration:

Still developing the methodology, and hoping to get a phd student involved to build depth to this work.

Location: National, but focus on YEP range

Species worked on: Penguin species at risk from fisheries bycatch, highest risk being yellow-eyed penguin (mainland population).

Researcher name:
Research organisation: Conservation Services Programme (DOC) and MPI
Email: csp@doc.govt.nz

(1) Recent and current research, monitoring and management efforts:

“Risk of commercial fisheries to New Zealand seabird populations” was updated to include setnet fisheries (those posing highest risk to penguins): Abraham & Thompson (2013). Further updates to YEP input data are underway. This work is MPI commissioned.

Reference: Richard Y.; Abraham, E.R. (2013). Risk of commercial fisheries to New Zealand seabird populations. New Zealand Aquatic Environment and Biodiversity Report No. 109. 58p.

(2) Research, monitoring and management planned and/or under consideration:

Three hundred and ten days of observer coverage in setnet fisheries off south-eastern South Island are proposed for 2014-15 with a joint objective of better understanding the nature and extent of interactions with YEPs by setnet fisheries. This programme is joint DOC-MPI funded.

Location(s): Geographical range of species

Researcher name /Research organisation: Yellow-eyed Penguin Trust

Email: yept@gmail.com

(1) Recent and current research, monitoring and management efforts:

- Management: predator trapping and revegetation at 5 Trust owned reserves (East Otago/Otago Peninsula/Catlins).
- Management: assistance with trapping and revegetation at 2 Trust managed sites (Otago Peninsula), revegetation only at 1 site (Moeraki Peninsula) and trapping only at 1 site (south Catlins).
- Monitoring: productivity monitoring at the 5 Trust owned reserves (3 checks: nest search, nest check, fledging check & transpondering).
- Monitoring: productivity monitoring Stewart Island (Codfish / Bravos Islands / the Neck) - on Codfish 2 checks (nest search & fledging/transpondering) and on the Bravos & the Neck 3 checks (nest search, nest check & fledging/transpondering check).
- Research: YEPT contracted scientist examining “historic diet quality of yellow-eyed penguins” using stable isotopes of carbon and nitrogen and pre-historic and historic feather samples; involving two methods: - investigating the changes in the proportion of prey species in yep diet over time within the South Island and Stewart Island populations and – comparing historical changes in carbon and nitrogen stable isotopes between sub-populations that are subject to changes in the marine environment in contrast to sub-populations with little or no human impact. Expected to provide insight into the drivers of yep population dynamics over the last 200 years and indications as to changes in marine ecosystem health since European settlement.

(2) Research, monitoring and management planned and/or under consideration:

- Management: predator trapping and / or revegetation at Trust owned or managed sites to continue. Two new sites for revegetation in East Otago are being considered.
- Management: audio-attraction for yeps; Trust trialling audio-attraction at Tavora Reserve in association with penguin silhouettes and paint splashes.
- Management: Dune nesting area plantings (Okia /Otapahi), climate change resilience plantings of trees and shrubs to establish optimum nesting conditions (shade and coolness).
- Monitoring: productivity monitoring at Trust owned reserves to continue
- Monitoring: review of Stewart Island monitoring (report commissioned from Wildland Consultants) with following changes: Codfish nest search and

fledging / transpondering check, including a double count at nest search, return to Anglem Coast after absence of several years using cameras to examine causes of early chick mortality identified in earlier Anglem coast monitoring, dropping of Bravos monitoring and continue with the Neck (2 checks).

- Research: Funding application being prepared for a 5 year marine focused research project, in collaboration with researchers at Otago & Massey universities. Key questions include: “How is variability and change in the marine environment affecting top predators such as penguins?”

Location: Otago

Name: John Cockrem
Organisation: Massey University, Palmerston North
Email: J.F.Cockrem@massey.ac.nz

(2) Research, monitoring and management planned and/or under consideration:
Corticosterone responses

Fiordland crested penguin

Location(s): West Coast, Fiordland and Southern Islands

Researcher name: Erina Loe, Hannah Edmonds, Jo Hiscock, Helen Otley
Research organisation: DOC
Email:

(1) Recent and current research, monitoring and management efforts:
Double count monitoring at sites in South Westland, Fiordland and on Codfish Island.

(2) Research, monitoring and management planned and/or under consideration:
Single count of Solander nests 1 more trip to Solander to get repeat of nests there.
Foraging ecology project (with Thomas Mattern and Ursula Ellenberg) – should start in August 2014

Location(s): Fiordland and Southern Islands

Name: John Cockrem
Organisation: Massey University, Palmerston North
Email: J.F.Cockrem@massey.ac.nz

(2) Research, monitoring and management planned and/or under consideration:
Corticosterone responses.

Location: South Westland

Researcher name: Thomas Mattern, Ursula Ullberg and Phil Sedddon

Research organisation: University of Otago

Email: philip.seddon@otago.ac.nz

(1) Recent and current research, monitoring and management efforts:

- Foraging ecology, hopefully to commence in August 2014
- Impacts of research and tourism

(2) Research, monitoring and management planned and/or under consideration:

- 3 year foraging ecology project at South Westland, Fiordland and Codfish Island
- Impacts of research and tourism

Location(s): South Westland

Researcher name: Inger Perkins on behalf of

Research organisation: West Coast Penguin Trust

Email: info@bluepenguin.org.nz

(1) Recent and current research, monitoring and management efforts:

(2) Research, monitoring and management planned and/or under consideration:

A bid has been made to the DOC Community Conservation Partnerships Fund to establish what predators, if any, are threatening Fiordland crested penguins at Jackson Head. Trail cameras will be used to monitor burrows with a view to developing a predator control programme.

The Trust is also working with Robin Long who plans to survey Fiordland crested penguin colonies south of Gorge River this nesting season. She will be provided with two trail cameras and a GPS and it is hoped that the survey will be comparable with a survey done in the area in 1995(?).

The Trust is also part of the Fiordland crested penguin foraging study being led by Thomas Mattern.

Snares crested penguin

Location: The Snares

Researcher name: Jo Hiscock

Research organisation: DOC

Email: jhiscock@doc.govt.nz

(1) Recent and current research, monitoring and management efforts:
2013 census

(2) Research, monitoring and management planned and/or under consideration:
Monitoring population for trend every 5 years

Location: The Snares

Researcher name: Kyle Morrison, David Thompson, Paul Sagar, Leigh Torres

Research organisation: NIWA, Massey University (KM), Oregon State U. (LT)

Email: k.w.morrison@massey.ac.nz

(1) Recent and current research, monitoring and management efforts:
2013 SCP over-winter tracking

(2) Research, monitoring and management planned and/or under consideration:

Erect-crested penguin

Location: Antipodes

Researcher name: Jo Hiscock

Research organisation: DOC

Email: jhiscock@doc.govt.nz

Other species worked on at same site: eastern rockhopper penguin

(1) Recent and current research, monitoring and management efforts:
2011 survey. Island suffered slips in Jan 2014, estimated 20% colony areas have been affected

(2) Research, monitoring and management planned and/or under consideration:
Monitoring population for trend every 5 years.
Survey in 2014 to confirm effect of slips

Location(s): Antipodes

Researcher name: Kyle Morrison, David Thompson, Paul Sagar, Leigh Torres
Research organisation: NIWA, Massey University (KM), Oregon State U. (LT)
Email: k.w.morrison@massey.ac.nz

(1) Recent and current research, monitoring and management efforts:

(2) Research, monitoring and management planned and/or under consideration:
Over-winter tracking (funding required)

Eastern rockhopper penguin

Location: Antipodes

Other species worked on at same site: erect-crested penguin

Researcher name: Jo Hiscock
Research organisation: DOC
Email: jhiscock@doc.govt.nz

(1) Recent and current research, monitoring and management efforts:

2011 survey. Island suffered slips in Jan 2014, estimated 20% colony areas have been affected

(2) Research, monitoring and management planned and/or under consideration:

Monitoring population for trend every 5 years. Survey in 2014 to confirm effect of slips

Location: Campbell Island

Researcher name: Kyle Morrison, David Thompson, Paul Sagar, Leigh Torres
Research organisation: NIWA, Massey University (KM), Oregon State U. (LT)
Email: k.w.morrison@massey.ac.nz

(1) Recent and current research, monitoring and management efforts:

2010-2012:

Campbell population estimate, stable isotope diet study, provisioning rates and chick growth, egg-size dimorphism, impacts of predation, over-winter tracking

Ongoing:

Eastern rockhopper and Southern rockhopper global population genetics (led by David Oehler, New York)

(2) Research, monitoring and management planned and/or under consideration: