POP-12 Assessment of causes of low burrow occupancy rates in Westland petrels

Procellaria westlandica

Very, early days

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Project Objectives:

1. *Examine burrow occupancy rates in Westland petrels and monitor nests, to determine factors around why so many apparently suitable nests, are not used.*

2. *Tracking adults and juveniles to determine year-round distributions and migration behaviour of fledglings.*

OBJECTIVE 1: Examine burrow occupancy rates…

1. Trail cameras and mark-recapture to determine activity at nest sites and whether birds occupy one or more nests, without breeding.

- Research area approx. 20m^2
  - Contains 40 burrows
  - 10 trail cameras monitoring 26 burrow entrances
    - Sourcing more cameras.

OBJECTIVE 1: Examine burrow occupancy rates…

Surface capture of all birds within the research area and 100m^2 outside, during the courtship period.

- ID markings trialed for camera
  - Twink markings did not last 24 hours, normally last well for ~6 weeks during incubation period.
    - B/W colour band combinations
    - Tape tag markers

OBJECTIVE 1: Examine burrow occupancy rates…

Surface mark re-capture

Total of 47 birds caught within and 106 birds caught outside the area.

New birds

Week 1 – Research = 28, Outside = 30

Week 2 – Research = 14, Outside = 30

Week 3 – Research = 5, Outside = 46

OBJECTIVE 1: Examine burrow occupancy rates…

Other points:

Accessible burrows inspected (10/40) during the incubation period, found only 2 birds marked/found during courtship.

- An additional 9 birds were marked.
- Appears to be a high traffic area.
  - Considering moving site.
- Large number of ID marking combinations needed.
- Will require a lot of hours/nights to mark a reasonable % of birds using any area.

OBJECTIVE 1: Examine burrow occupancy rates…

2. Sexing of birds will be done using DNA techniques from feather samples.

- 241 birds sampled.
- As expected females generally have smaller bill measurements, BUT large variation and overlap between both sexes.
- Currently no reliable sexing method, other than DNA.

OBJECTIVE 1: Examine burrow occupancy rates…

2. Sexing information

Courtship period only,
2 nights / 10-12 hours per week.

Week 1 – Male = 42, Female = 11
Week 2 – Male = 30, Female = 11
Week 3 – Male = 34, Female = 10
Week 4 – not sampled (weather limitation)

OBJECTIVE 1: Examine burrow occupancy rates…

2. Sexing information

2021 Identified non-breeding birds at 17 burrows this season (all DOC sites).

Male-Female “pair” = 8

Female-Female = 1

Single Male = 9

Single Female = 1

2020 Male-Female “pair” = 6, Single Male = 5

OBJECTIVE 1: Examine burrow occupancy rates…

3. Accurate estimates will be gained of breeding occupancy rates (eggs laid per nest) in the chosen study areas.

Occupancy = 70% (from repeated inspection), varies between 30-60% on any given day.

Breeding pair = 20%

Non-breeding pair = 10%

Single male = 40%

Unoccupied = 30%

Area chosen has low breeding occupancy; sample size only 40.

Breeding occupancy at the three DOC monitoring subsites is 46-68% this season.

OBJECTIVE 2: Tracking adults and juveniles…

1. *A sample of breeding and non-breeding adults will be tagged with GLS tags to collect data on foraging range throughout the year, to compare with studies done in the early 2000's.*
   - **Will begin in next available weather window.**

2. A sample of GPS tracking tags will also be applied to fledglings in late 2021.

Very, very early days

Unusually persistent and consistent autumn rain.