

POP2014/02: Black petrel (*Procellaria parkinsoni*) population project

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Presentation of results from black petrel 2014/15 breeding season
to the Department of Conservation CSP Technical Working Group

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OBJECTIVES:

- To estimate the population trend, fecundity and age-class survival of black petrels at Great Barrier Island (Aotea Island) and Little Barrier Island (Te Hauturu-o-Toi)



AIMS:

GREAT BARRIER ISLAND:

- Continued monitoring of study burrows on Hirakimata
- Deployment of GPS and TDR devices on breeding adults
- Deployment of automatic acoustic devices across the island
- Survey of other areas on GBI

LITTLE BARRIER ISLAND:

- Deployment of automatic acoustic devices across the island
- Identification and monitoring of Mike Imber burrows
- Trial ground survey methods for population estimate (island survey)



ISSUES:

- DOC Permit delays (on-going) meant:
 - Limited time available for work on LBI (due to other bookings at accommodation)
 - Deployment of acoustic devices on LBI was under a different permit
 - Could not handle or band black petrels on LBI until March
 - Could not deploy acoustic devices on GBI
- Technical issues with devices meant:
 - Could not deployment GPS or TDR devices this season (however new advances has meant we can deploy these for longer periods allowing incubation information to be gathered next season)



STAGE OF PROJECT:

- All field work completed (as of 28 April)
- Status reports delivered following two field visits to the islands
 - December 2014 [egg-laying]
 - March 2015 [chick rearing]
- Draft final report due to be delivered (15 August 2015)
 - Bell, E.A. *et al.* XXXX. Population parameters of the black petrels (*Procellaria parkinsoni*) on Great Barrier Island (Aotea Island) and Little Barrier Island (Te Hauturu-o-Toi), 2014/15.
- **Presentation of preliminary results**



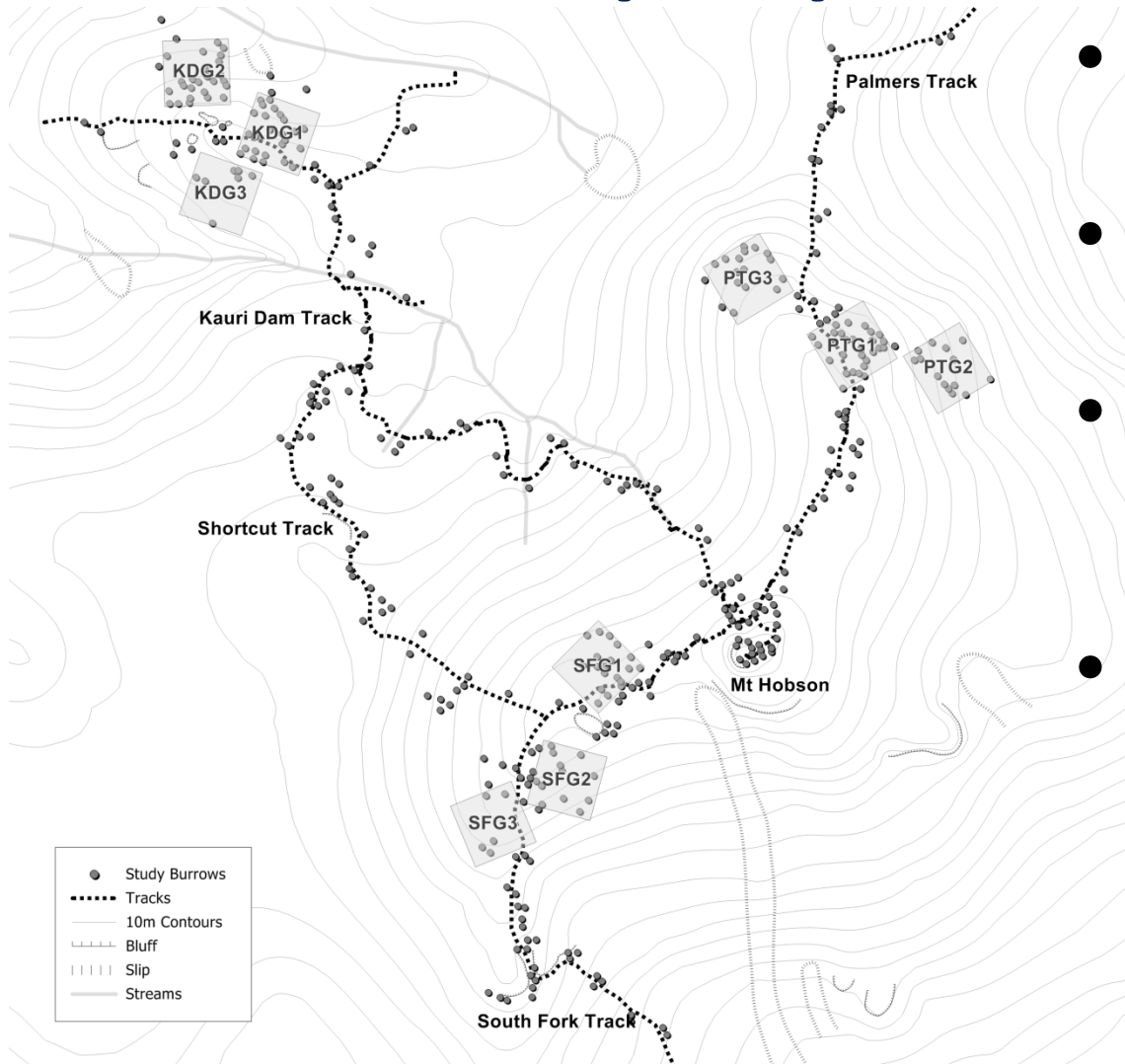
METHODS (GBI):

Population Monitoring:

- ✓ Mark-recapture of adults at the colony
- ✓ Monitor study burrows
- ✓ Estimate population (and determine trends) at Hirakimata colony
- ✓ Determine breeding success (and causes of failures)
- ✓ Survey of other areas on GBI (using seabird detector dogs)



STUDY SITE (GBI):

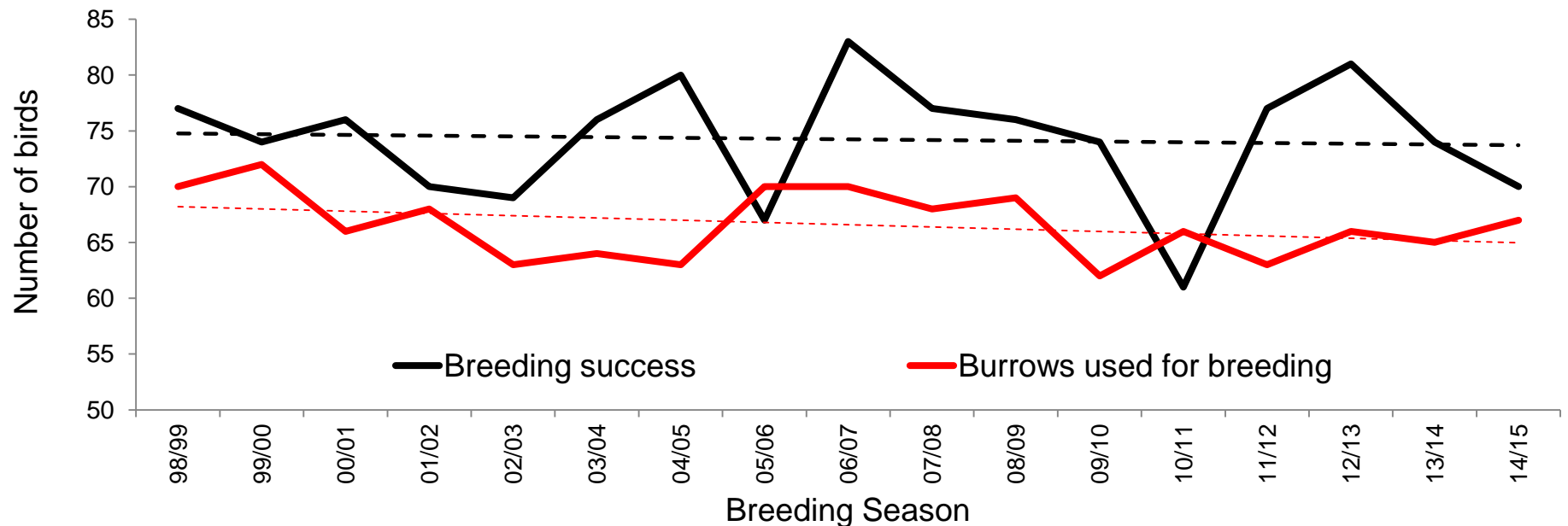


- Covers 35 hectares around the summit
- **432** numbered burrows
- **422** study burrows (including **157** in nine census grids)
- Burrows are accessed through entrance or study hatch

RESULTS (GBI):

POPULATION PARAMETERS (STUDY BURROWS)

- Number of study burrows used for breeding per year varies from 62-72% (mean **66.6%**; **2014/15 = 67.1%**)
- Breeding success (chicks fledged from eggs laid) varies from 61-83% per year (mean = **74.2%**; **2014/15 = 70.3%**)



RESULTS (GBI):

POPULATION PARAMETERS (STUDY BURROWS)

- 3047 adults banded (2419 between 1995-2015)
- 3012 banded as chicks (between 1996-2015)
- 229 “chicks” (including 195 banded between 1996-2011) recaptured at the colony
 - Earliest age at first return is 2 years [mean 5.5 ± 0.3]
 - Earliest age at first breeding is 4 years [mean 7.3 ± 0.2]
 - Earliest age at first successful breeding is 4 years [mean 7.4 ± 0.2]



RESULTS (GBI): SURVEY ACROSS GBI

Cooper's Castle (9 burrows)

Windy Canyon (9 burrows)

Kaiaraara (35 burrows)

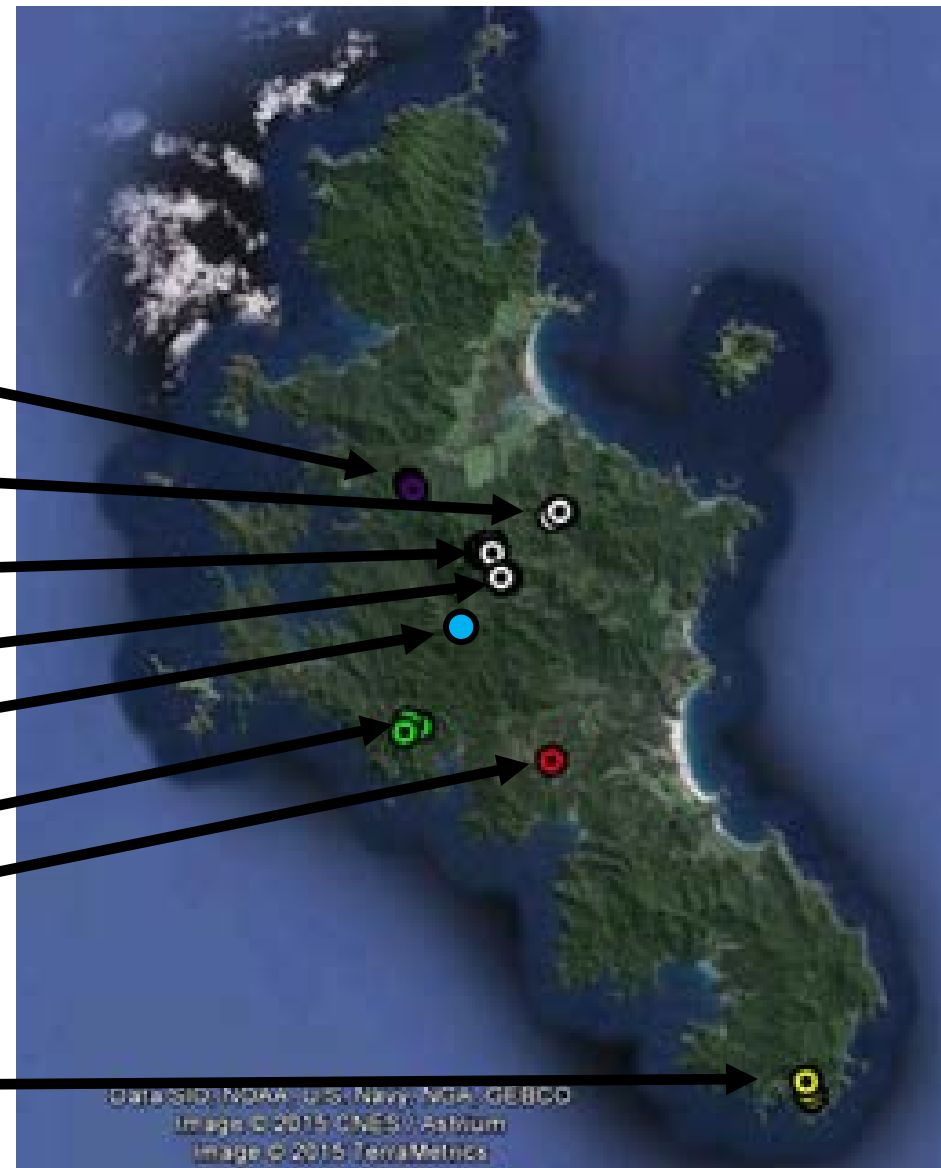
Mt Heale (38 burrows)

Maungapiko (8 burrows)

Whangaparapara Hill (6 burrows)

Te Ahumata (2 burrows)

Ruahine (7 burrows)



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Image © 2015 TerraMetrics

59 breeding, 27 non-breeding & 28 empty

ADVOCACY & EDUCATION (GBI):

- Fishers visits (February and April 2015)
- Jacinda Ardern (Labour Politician) visit (April 2015)
- Southern Seabirds Solutions Trust trustees visit (Feb 2015)
- Okiwi and Mulberry Grove School visits (February 2015)
- Media coverage on TV3 and Maori TV news and NZ Herald (links available)
- DOC video commissioned (for education use)



METHODS (LBI): Acoustic Monitoring:



METHODS (LBI):

Population Monitoring:

- ✓ Locating historic Mike Imber study burrows (1-100)
- ✓ Monitoring of breeding activity in the historic Mike Imber study burrows
- ✓ Banding surviving chicks in study burrows



RESULTS (LBI):

Population Monitoring:

- ✓ Found 90 out of 97 numbered MI burrows
- ✓ Added another 26 study burrows
- ✓ Banded 56 chicks
- ✓ Occupancy (breeders) in MI burrows = 29.8% (compared to 1997 which was 40%)
- ✓ 11.3% of MI burrows taken over by Cook's petrels



METHODS (LBI): Population Estimate:

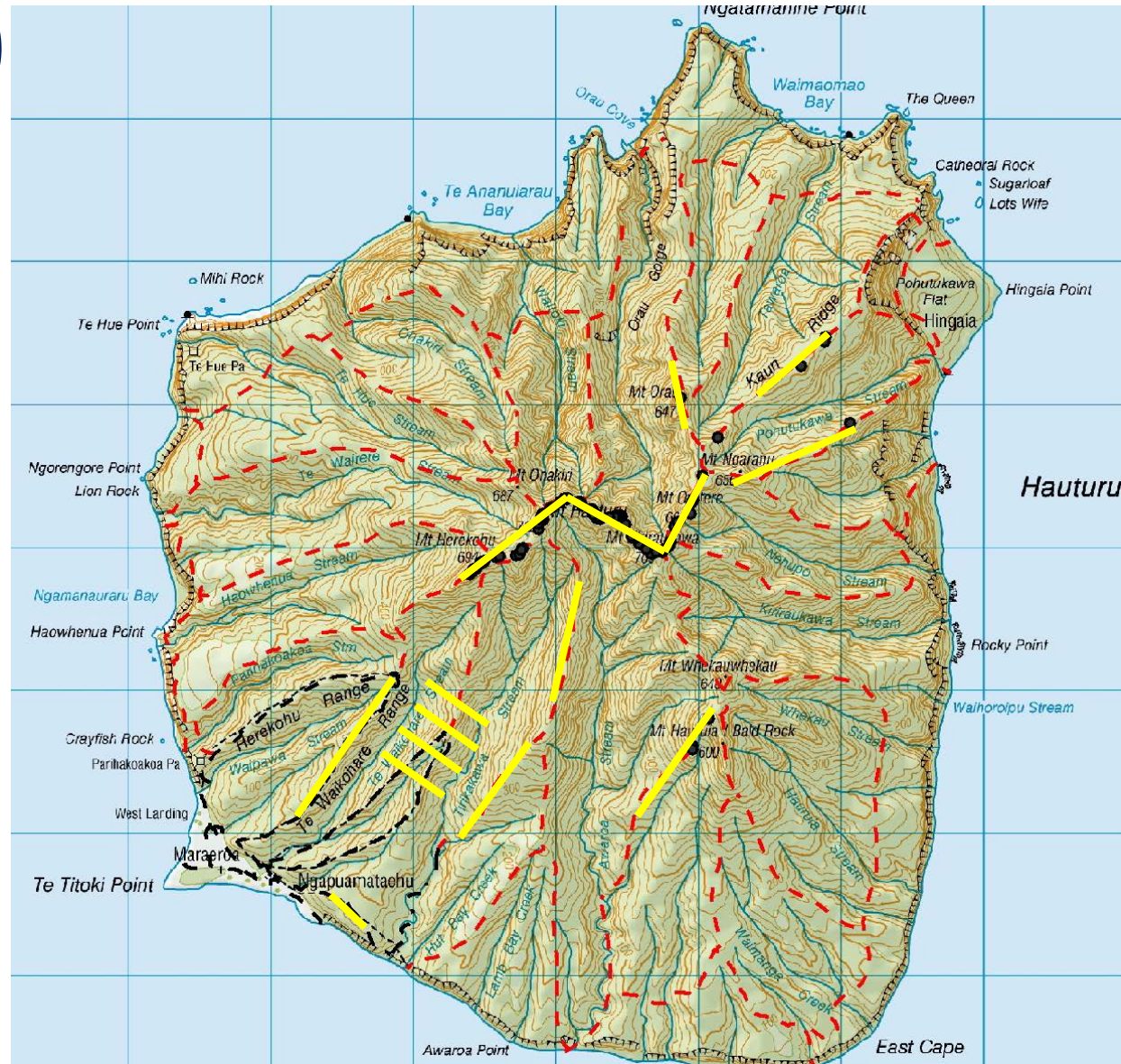
- ✓ Trialling ground survey methods
 - ✓ Random transects, dog surveys and census grids



RESULTS (LBI)

Surveys:

- ✓ Black petrels on main ridges and high points
- ✓ Found above 500 m
- ✓ Very few burrows below that altitude or in valleys
- ✓ Difficult terrain
- ✓ Difficult to access burrows



RESULTS (LBI):

Population Estimate:

Ranked best methods:

1. Combination of seabird dogs and ridge transects
 - Dogs detected petrels present in burrows in wide range along and off ridges
 - Backed up by people locating empty or non-breeding burrows
2. Ridge transects (people only)
 - Used current track systems for ease of access
 - Needed wider search area than used on GBI
3. Random transects (difficult in terrain)
4. Census grids (very difficult in terrain and vegetation)

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- **Annual reports are published by DOC and are available from www.doc.govt.nz**





Any questions?