Flesh-footed Shearwater population estimation and foraging ecology

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Outline

- Flesh-footed shearwater introduction
- Rationale for study
- Objectives
- Study methods
- Preliminary results
- Plans for 2012-2013

Flesh-water Shearwater (FFSW)

Georges Olioso

- Medium-sized tubenose
- Breeds in NZ & Australia
- Capable of diving up to 4m
- One of the most common sub-tropical seabirds (est. pop. 650,000 individuals)
- Listed as Least Threatened (IUCN) and At Risk Declining (DOC)

Tubenose Demography

- Slow breeders, 1 chick per yr
- Breed at a late age (>5 yrs)
- Long lived (>40 yrs)

Consequently even small decreases in adult survival can have large negative effects on population health

Rational for FFSW Study


Colin Miskelly

- Populations are declining
- Foraging ranges likely strongly overlap with poorly observed longline & gillnet fisheries
- One of the most commonly killed species during the Rena oil spill
- Forage near the Fukushima Nuclear plant- potential exposure to contamination

Objectives

1) To assess the feasibility of gaining improved estimates of key population parameters
   - Compare current and historical data
   - Describe population trends

2) To investigate the at-sea distribution
   - Potential strong overlap with fisheries
   - Determine trophic levels

Locations for Intense Study

	# of potential burrows (95% CI)	# of occupied burrows (95% CI)
Lady Alice / Mauimua (Hen &Chicken Islands Group)	2763 (2079 - 3447)	921 (237 - 1605)
Ohinau (Mercury Islands Group)	3883 (2775 - 5011)	2071 (943 - 3200)
Titi (Cook Strait)	2814 (2201 - 3427)	337 (0 - 950)

Baker *et al*. 2010

Methods

To assess the feasibility of gaining improved estimates of key population parameters

- Run a Mark-Recapture Analysis
- Conduct transect surveys on the 3 islands
  - Map breeding colonies
  - Assess occupancy using burrowscope inspection

Methods

Alison Burnett & Simon Hayward

To investigate the at-sea distribution

- Deploy GLS or GPS loggers on breeding birds from the 3 islands (GLS collects data over several months, GPS >10 days)

- Conduct stable isotope analyses on feathers to assess trophic level

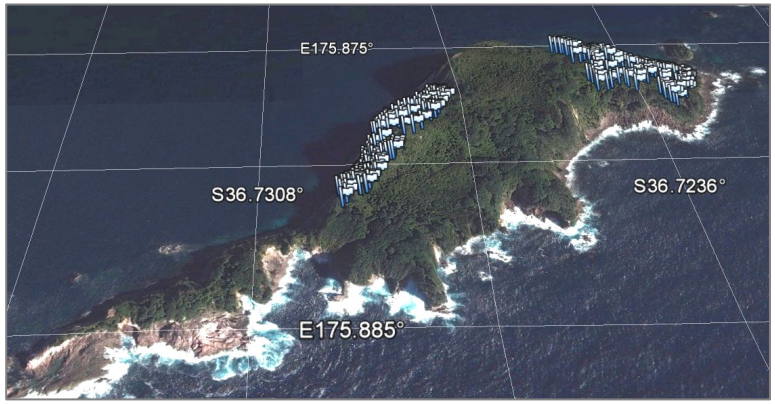
Preliminary Results- Lady Alice / Mauimua

March 28- April 6, 2012

- 7 colonies mapped,
  39 transects completed,
  395 burrows examined
- FFSW occupancy rate of colonies: 0-21%
  - Colonies dominated by Grey-faced Petrels tended to have no FFSW
- 11% of burrows examined were occupied by FFSW
  - 1% of which contained abandoned eggs
- Potential for competition with GFP for nest sites

Preliminary Results- Ohinau

April 11-14, 2012



- 3 colonies mapped,
  26 transects completed,
  300 burrows examined
- FFSW occupancy rate of colonies: 21-25%
- 23% of burrows examined were occupied by FFSW
  - 5% of which contained abandoned eggs

Preliminary Results- Titi

January 9-17, 2012

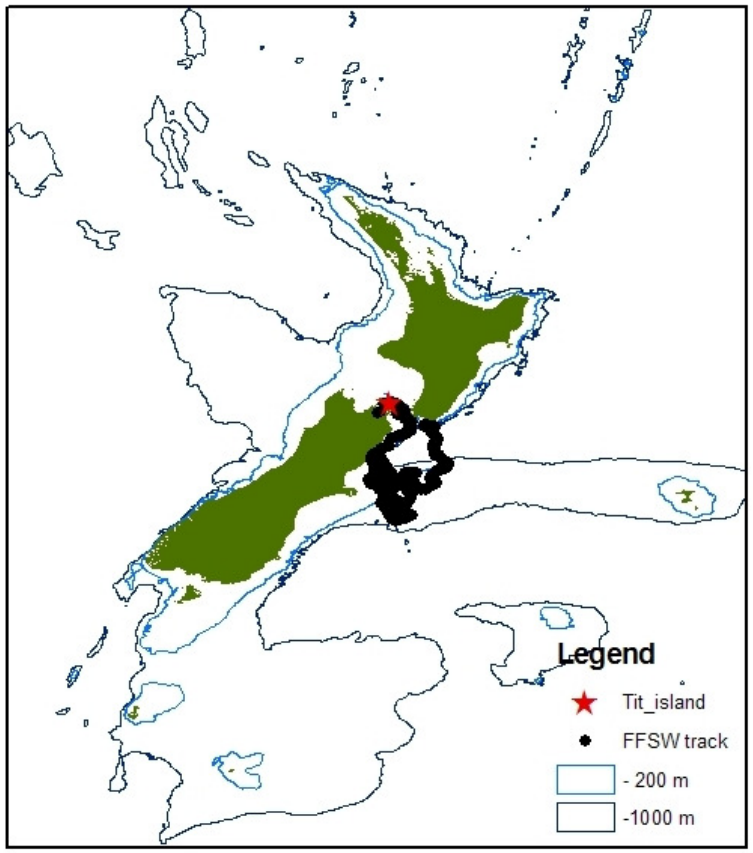
- 10 colonies mapped,
  62 transects completed,
  500 burrows examined

- FFSW occupancy rate of colonies: 0-29%
  - Colonies dominated by Sooty Shearwaters tended to have very few FFSW
- 6% of burrows examined were occupied by FFSW
  - 5% of which contained abandoned eggs
- More colonies were found than by Baker *et al*. 2010

Preliminary Results

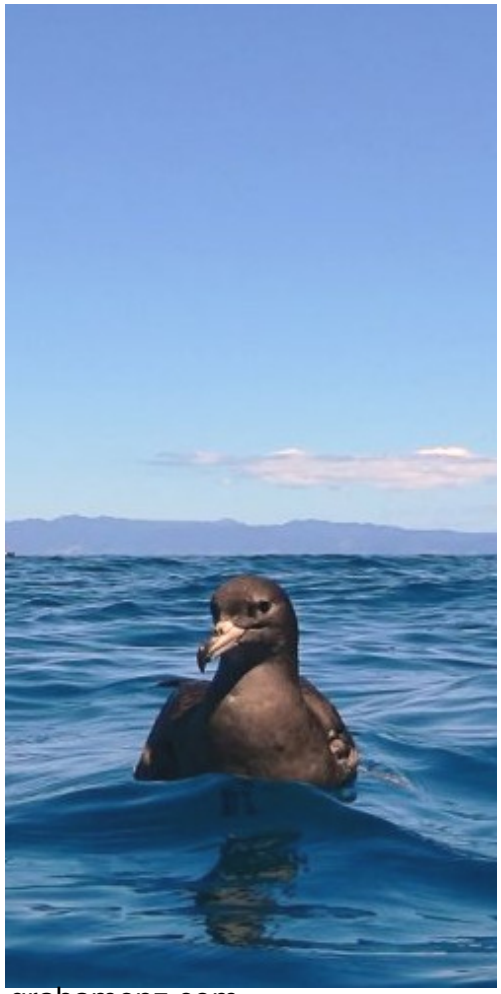
	colonies mapped	transects completed	burrows examined	% burrows occupied by FFSW	% of FFSW burrows with abandoned eggs	% burrows occupied by other species
Lady Alice / Mauimua (28/03-6/04)	7	39	395	11	1	6
Ohinau (11-14/04)	3	26	300	23	5	1
Titi (9-17/01)	10	62	500	6	5	10

Preliminary Results- Logger Deployment



- Lady Alice- 19 GLS*, c. 30 study burrows
- Ohinau- 4 GLS*, 50 study borrows
- Titi- 6 GPS, 20 study burrows (+8 on Sooty Shearwaters)
  - Due to long incubation bouts of tagged birds only 1 logger contained usable data

* to be retrieved during 2012-13 season



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Mark-Recapture Analyses

Data compiled:

- Lady Alice Island 10 years (Andrea Booth)
- Betthel's Beach 23 years (Graeme Taylor)

Analysis has been completed.

Plans for 2012-2013

- Revisit and survey islands
  - Lady Alice (4-17 Dec)
  - Ohinau (17-24 Dec, 1-14 March)
  - Titi (7-21 Jan)

B. Baker

- Retrieve GLS loggers deployed in April
- Re-survey main colonies for density/occupancy information
- Deploy 30 GPS loggers at each site
- Sample more feathers and blood
- Conduct stable isotope analysis

Thank you