Seabird monitoring on Ascension

Eliza Leat and Kenickie Andrews

Outline

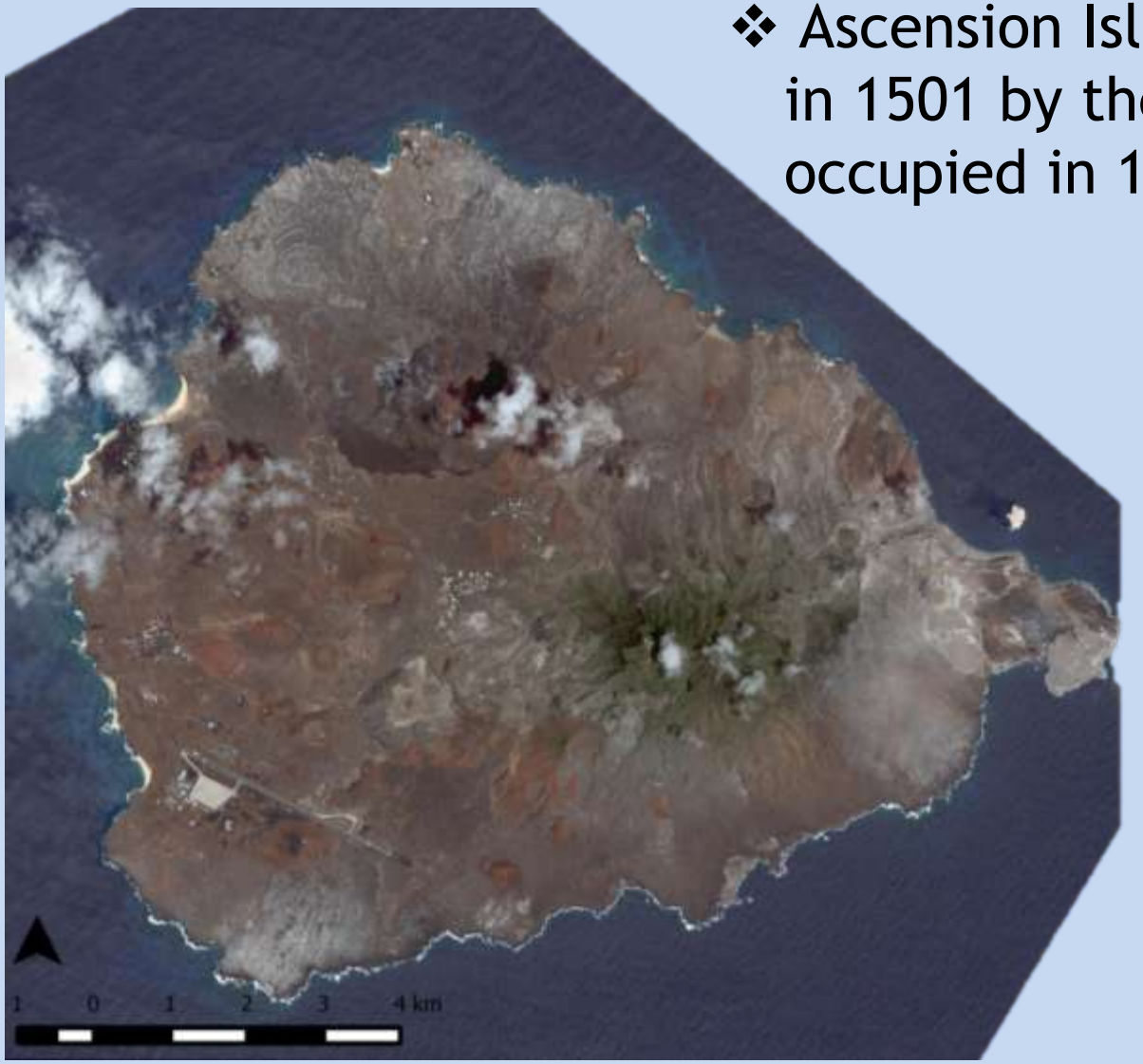
- Historical context
- Current seabird monitoring
- Future plans

Please feel free to ask questions!

Ascension Island's seabirds

1. Ascension Frigatebird, *Fregata aquila* (endemic)
2. Masked booby, *Sula dactylatra*
3. Brown booby, *Sula leucogaster*
4. Red footed booby, *Sula sula*
5. Brown noddy, *Anous stolidus*
6. Black noddy, *Anous minutus*
7. Fairy tern, *Gygis alba*
8. Sooty tern, *Onychoprion fuscatus*
9. Yellow billed tropicbird, *Phaethon lepturus*
10. Red billed tropicbird, *Phaethon aethereus*
11. Maderian storm petrel, *Oceanodroma castro*

Historical seabird populations



- Ascension Island was discovered in 1501 by the Portuguese and occupied in 1815 by the British.
- Seabird colonies were once numerous on the lava flows around the island.
- Guano patches from these large colonies remain and are referred to as “ghost colonies”.

Feral cats

- Humans unintentionally brought rats and mice to the island.
- People introduced cats to control the numbers of rodents in 1815.

- A feral cat population soon developed, feasting on seabirds as well as rodents.
- Of the 11 species of seabird found on Ascension only sooty terns continued to breed on the mainland in large numbers.

Feral cat eradication

- Started in 2001, Ascension declared feral cat free in 2006
- Very successful
- RSPB seabird restoration monitoring project charted the return of seabirds to breed on the mainland
- We are continuing to see the benefits of feral cat eradication today
- All pet cats must be neutered and wear a collar. Their details are kept on a pet cat register administrated by the Conservation department.

Current seabird monitoring

What to monitor?

- Productivity
  - Timing of breeding
  - Breeding attempts per individual
- Population size
- Breeding locations
- Diet
- Foraging locations

Code	Species name	Priority	Population	Productivity
MS	Madeiran storm-petrel	Low	No	No
RT	Red-billed tropicbird	Low	Ad hoc	No
YT	Yellow-billed tropicbird	Low	Ad hoc	No
MB	Masked booby	High	Yes	Yes
BB	Brown booby	Medium	Yes	Yes
RB	Red-footed booby	Medium	Ad hoc	No
FR	Ascension frigatebird	High	Yes	Yes
ST	Sooty tern	High	Yes	Yes
BN	Brown noddy	High	Yes	Yes
BL	Black noddy	Medium	No	No
FT	Fairy tern	Low	No	No

Ascension Frigatebird

Fregata aquila

Conservation Status: Vulnerable

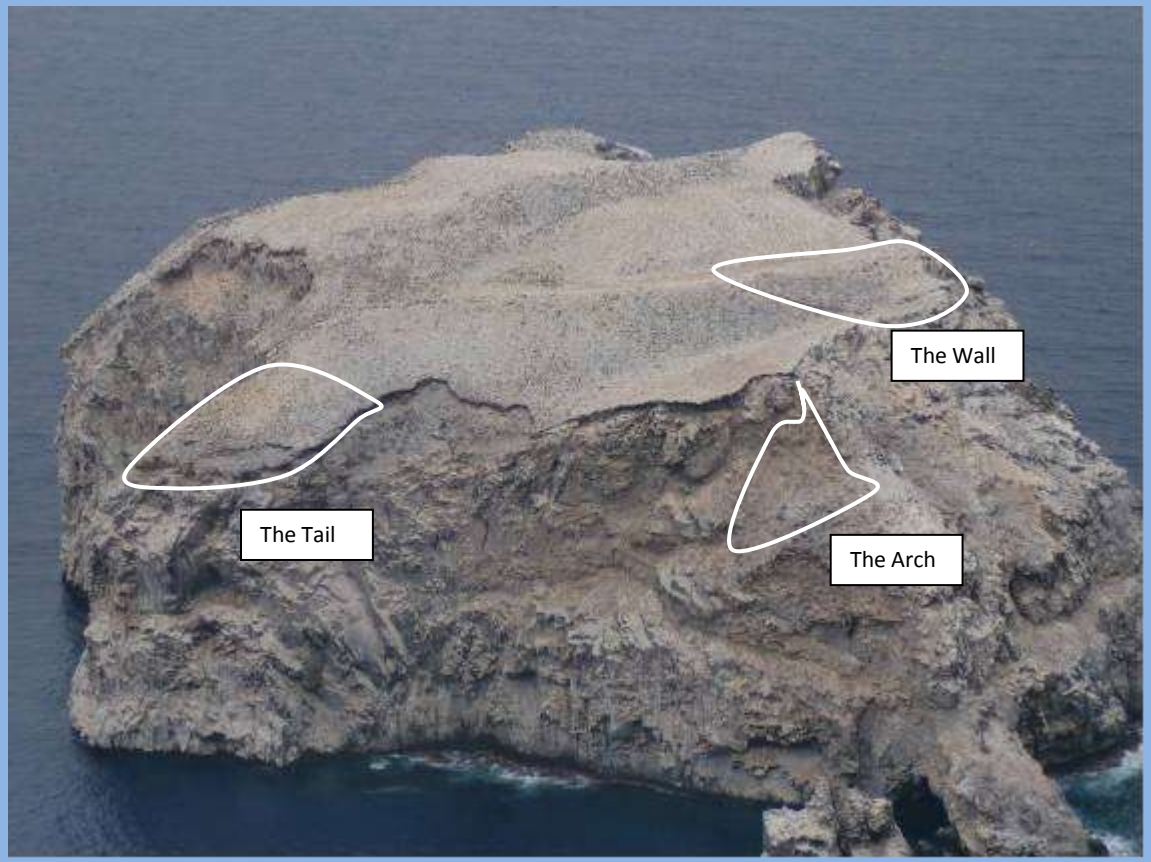
The Ascension Frigatebird is the only Endemic bird species to the island.

- The largest bird species on the island.
- Males are black with a greenish gloss and a red pouch.
- Females are duller black with blue eye rings.
- Juveniles have white heads and breast bands
- All prey are caught in flight
- Breeds throughout the year, peaking in October and November time

Ascension Frigatebird

Population monitoring

- Boatswain bird island (BBI) is the main breeding area
- Access to BBI is difficult so remote monitoring is preferable



- Monitoring used to focus on three monitoring plots

Ascension Frigatebird

Population monitoring

Ascension Frigatebird

Population monitoring

- Black frigatebirds stand out against the guano background.
- Ecognition creates a shapefile containing all the shapes it recognises as frigatebirds
- Quality control –
  - Add in missing frigatebirds
  - Split up shapes which contain more than one frigatebird
  - Identify any shapes that are shadows not birds

Ascension Frigatebird

Population monitoring

Biggest problem - blurred images. Solutions:

- New tripod
- Wind break
- Sitting with a towel over my head

Ascension Frigatebird

Foraging locations

IGOTU GPS loggers

- Location recorded ever 300 seconds – battery lasts for up to 4 foraging trips
- Loggers must be retrieved

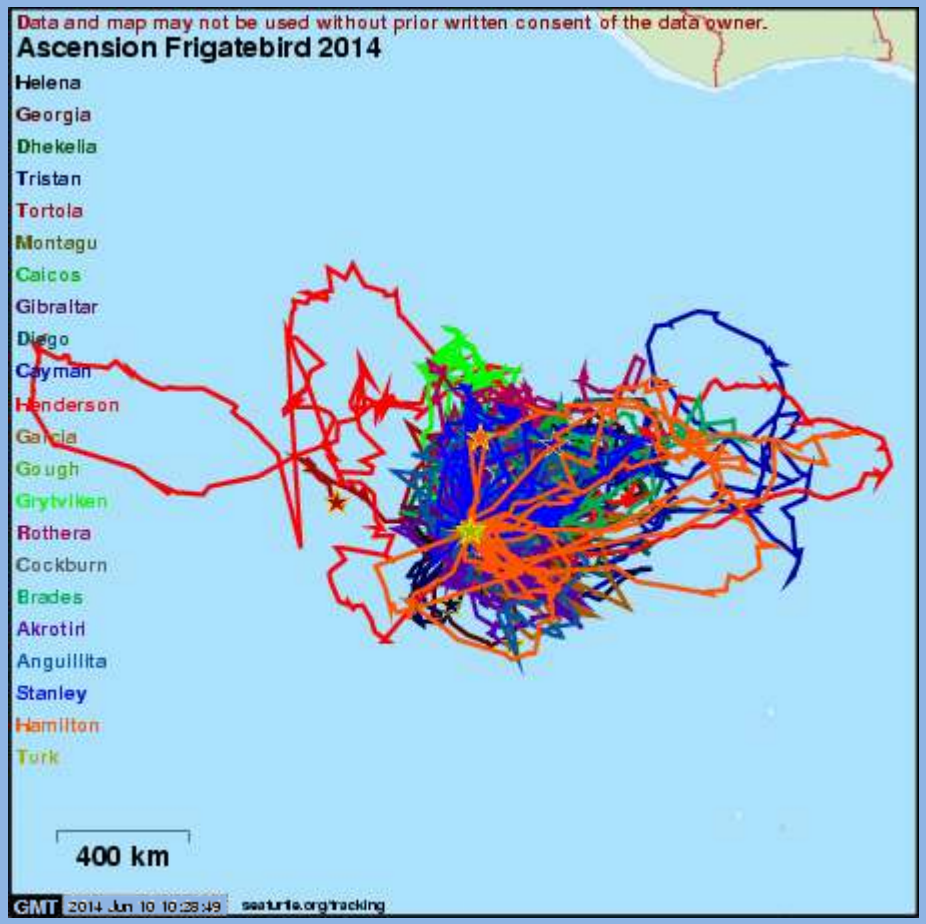
Sirtrack loggers (PTT)

- Trialled February 2013
- 2 females and 1 male on eggs
- 22 deployed in March 2014
- 4 hour on 4 hour off cycle

Future – trial Ecotone loggers (remote download via base station)

Ascension Frigatebird

Foraging locations: Sirtrack 2014



www.seaturtle.org

- 22 loggers placed on frigatebirds including 6 juveniles
- Birds visit the NE area slightly more but in general they go visit area all around the island
- This provides a challenge when considering how to protect their food resources – small MPAs are unlikely to benefit this species

Ascension Frigatebird

Foraging locations

- Distance travelled (since beginning of March) 18055km
- 262km from Ascension

Ascension Frigatebird

Productivity monitoring

What are we doing currently?

- Monitoring and searching for Frigatebirds that are returning to the mainland to breed.

This involves……

- Full recce of the Letterbox Peninsula
- Bi-weekly visits to nest sites
- Camera trap deployment

<u>12 nests 2013-2014</u>

5 Fledged/close to fledging

2 Chicks died

5 Failed at egg stage

'Gracie'

Ascension Frigatebird

Productivity monitoring

- Pictures from camera traps are sorted into files.
- Data from photographs is placed into an excel spreadsheet to be analysed.
- Nest visits are logged, including time, chick status and the presence of other frigatebirds around the nest is noted.
- Information helps to keep to keep track on chicks progress

Ascension Frigatebird

Fregata aquila

- Productivity
  - Timing of breeding
  - Breeding attempts per individual
- Population size
- Breeding locations
- Diet
- Foraging locations

Masked booby

Sula dactylatra

Conservation Status: Least concern

The Masked bobby is the largest of the three booby species to breed on the island.

- Sexes are similar, only identified by their calls to one another.
- Females honk while Males whistle
- One to two eggs are laid, usually only one chick survives
- Boobies are dive feeders, mainly feeding on flying fish
- Breeds throughout the year

Masked booby

Productivity monitoring

What are we doing currently?

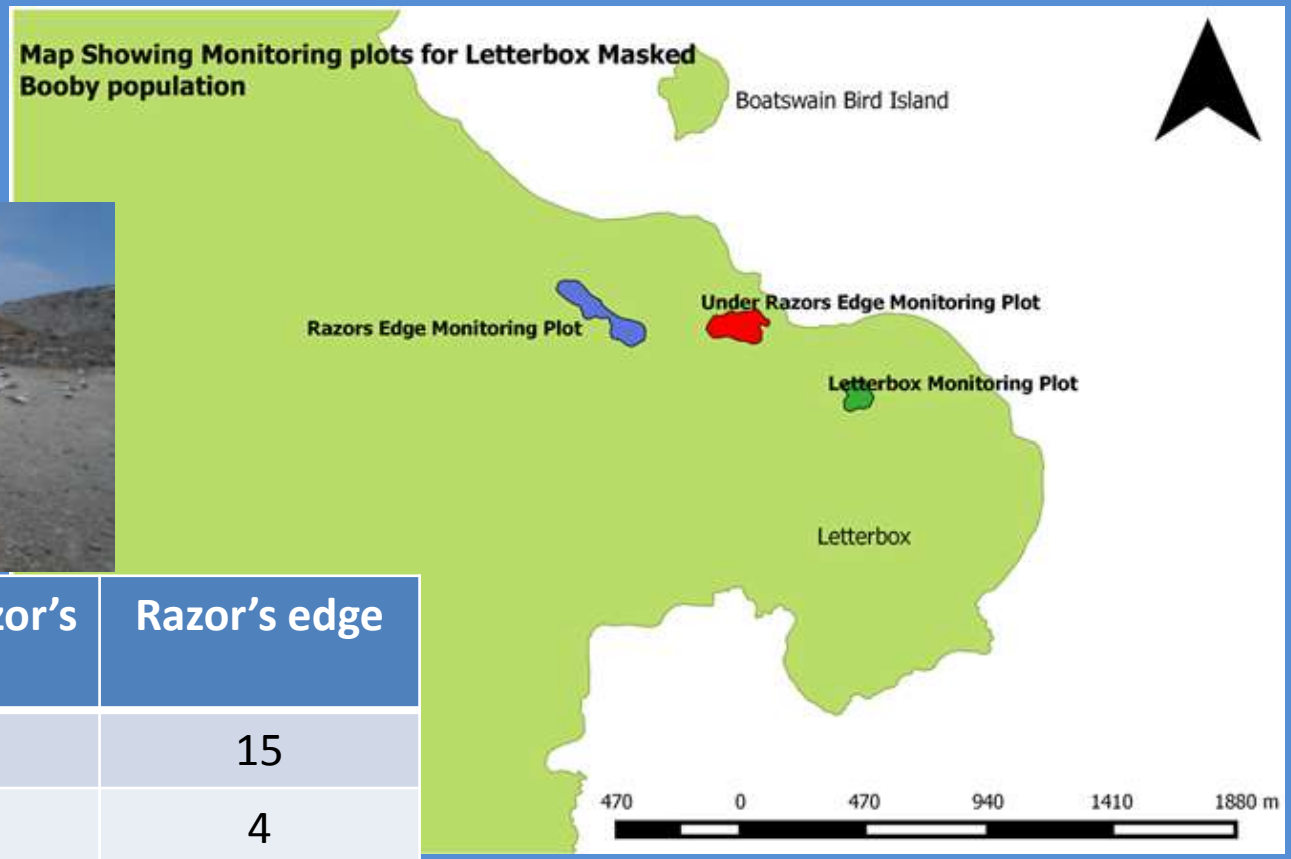
- Monitoring colonies of Masked boobies at three monitoring plots at Letterbox

This involves Bi-weekly visits to sites

- Find new nest and tag them
- Record nest contents and adults present
- Take a GPS location for each monitored nest
- Make a note of anything unusual in the wider colony, i.e. signs of high levels of predation

Masked booby

Monitoring plots



	Under Razor's edge	Razor's edge
Nests monitored	67	15
Failed at egg stage	12	4
Failed at chick stage	18	6
Fledged	37	5
% FLEDGED	55%	33%

Masked booby

Foraging locations

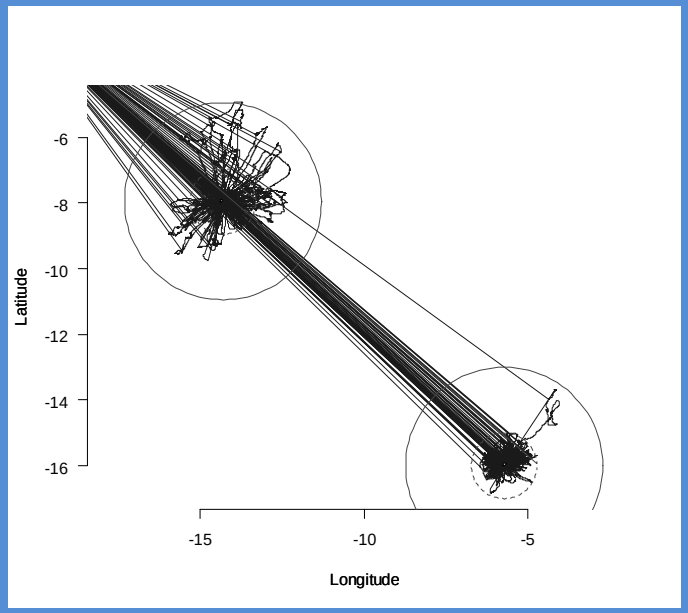


Fig. 1. Foraging trips of Masked Boobies *Sula dactylatra* recorded with GPS loggers on Ascension (top left) and St Helena (bottom right) in 2013 and 2014. Circles represent radii of 100 km (broken line) and 300 km (solid line) from the breeding colony. Note that the single very long foraging trip from St Helena may have occurred after nest failure, as the GPS logger was recovered 4 months after deployment. Steffen et al. in prep.

Masked booby

Future plans

- Population census – GPS every nest
- Follow nesting attempts of individual birds
- Set up a colour ring project to help follow individuals
- Track more females raising chicks

Masked booby

Sula dactylatra

- Productivity
  - Timing of breeding
  - Breeding attempts per individual
- Population size
- Breeding locations
- Diet - Adhoc
- Foraging locations

Brown booby

Sula leucogaster

Conservation status: Least concern

Productivity monitoring

- Monitoring sites at Northwest
- Nests monitored every 2 weeks
- Nests frequently washed out by big swell

Future plans:

- Monitor nests on the letterbox peninsula, in addition to NW, where they will not be washed out by the sea.

Brown booby

Tracking

- We plan to attach IGOTU GPS loggers to Brown boobies
- Challenges:
  - Finding suitable nests
  - Retrieving loggers

Brown booby

Sula leucogaster

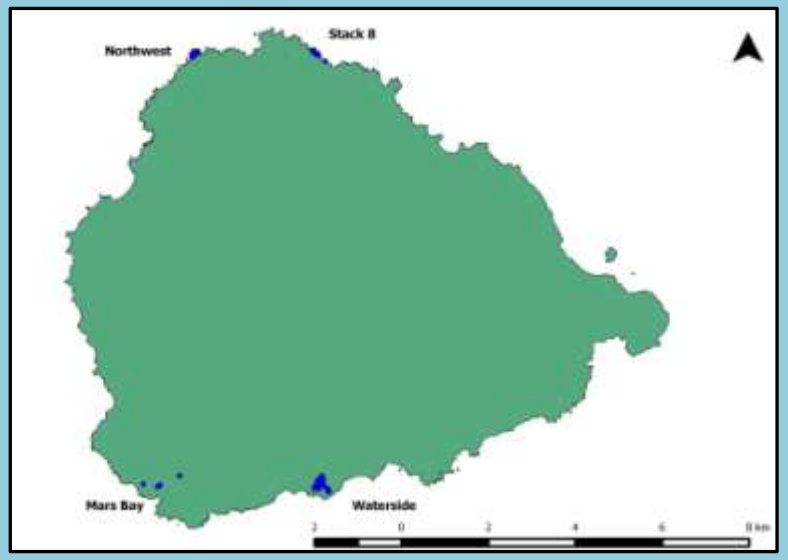
- Productivity
  - Timing of breeding
  - Breeding attempts per individual
- Population size
- Breeding locations
- Diet – Adhoc collection of regurgitates
- Foraging locations

Brown noddy

Anous stolidus

Conservation status: Least concern

- Four monitoring sites around the island
- Breed year round
- Chicks are difficult to keep track of



Brown noddy

Productivity

	NW Headland A	NW Headland B	NW Headland C	NW Headland D	Stack 8	Mars Bay
Nests monitored	**54**	**9**	**80**	**95**	**89**	**7**
Failed at egg stage	45	8	56	73	77	2
Failed at chick stage	4	1	7	8	10	2
Fledged	5	0	8	4	0	3
Lost	0	0	9	10	2	0
% FLEDGED	9%	0%	10%	4%	0%	43%

Future plans: Ringing/colour marking chicks

Brown noddy

Anous stolidus

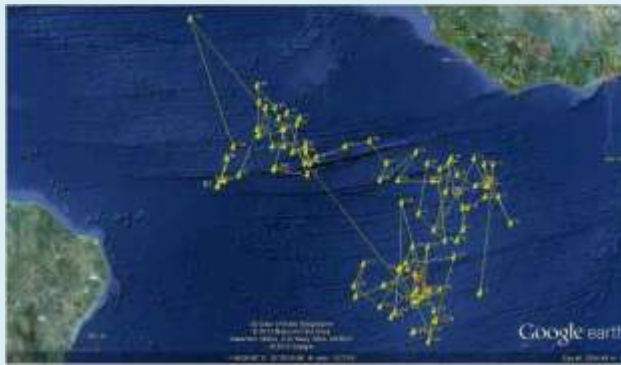
- Productivity
  - Timing of breeding
  - Breeding attempts per individual
- Population size
- Breeding locations
- Diet -Adhoc
- Foraging locations

Sooty terns

Onychoprion fuscatus

Conservation status: Least concern

- ~ 250,000 pairs nest on a 9.6 month cycle
- Army Ornithological Society (AOS) have studied this species since 1990
  - Mapping the Wideawake fairs
  - Density plots – used to create population estimates
  - Retrapping birds with rings
  - Ringing adults and chicks
  - Attaching and retrieving geolocators



Sooty terns

Population

Currently active

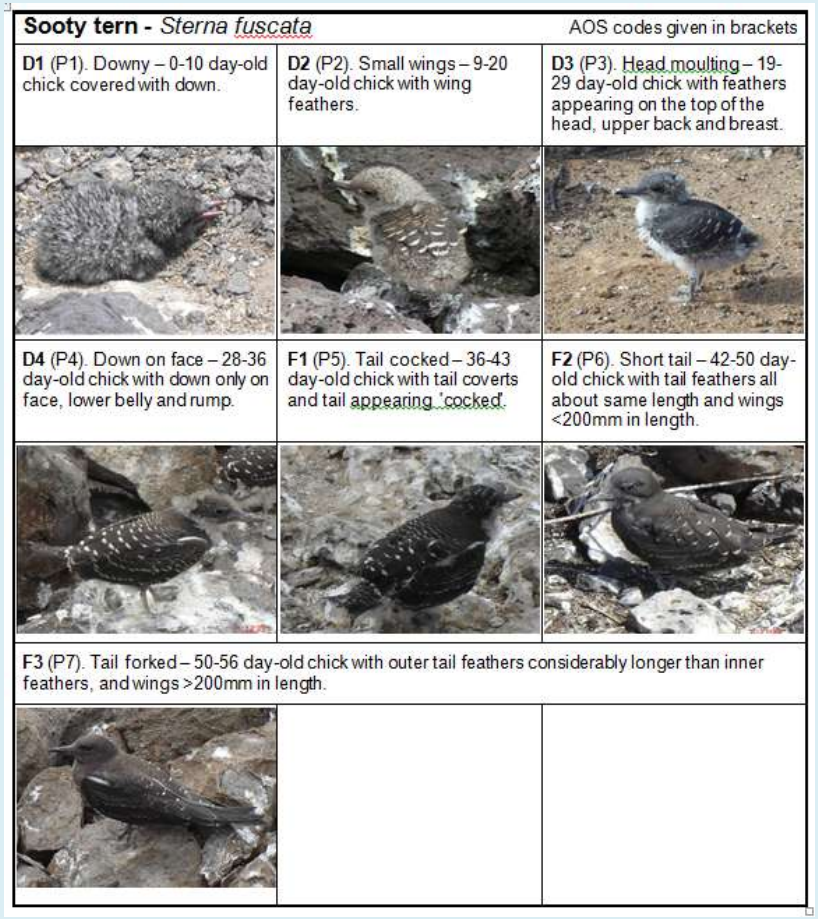
No longer active

- In the last year Sooty terns have continued to breed year round at Mars bay
- There is still a peak in breeding (this year the peak started in March)
- Birds nesting outside of this peak formed small colonies in the Shelly beach lava flow
- None of the colonies in the Shelly beach lava flow fledged chicks – probably due to rat predation

Sooty terns

Population

- 228688m^2 of colony mapped
- Estimated 300,000 nesting attempts
- Colonies visited on average once a week to check if the colony is still active and what nesting stages are present



Sooty tern - *Sterna fuscata*		AOS codes given in brackets
D1 (P1). Downy – 0-10 day-old chick covered with down.	**D2** (P2). Small wings – 9-20 day-old chick with wing feathers.	**D3** (P3). Head moulting – 19-29 day-old chick with feathers appearing on the top of the head, upper back and breast.
D4 (P4). Down on face – 28-36 day-old chick with down only on face, lower belly and rump.	**F1** (P5). Tail cocked – 36-43 day-old chick with tail coverts and tail appearing 'cocked'.	**F2** (P6). Short tail – 42-50 day-old chick with tail feathers all about same length and wings <200mm in length.
F3 (P7). Tail forked – 50-56 day-old chick with outer tail feathers considerably longer than inner feathers, and wings >200mm in length.		

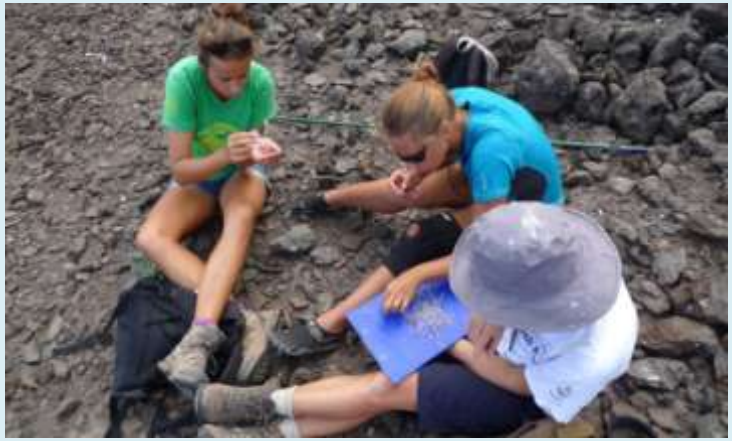
Sooty terns

Productivity

- Challenging!
- Chicks can run away from the nest almost as soon as they hatch
- Investigating tags and ringing
- Enclosures?

Sooty terns

Diet



- Adhoc collection of pellets and fish samples whilst checking colonies
- Taking advantage of the new marine team we hope to compile a list of species in the sooty tern diet

Sooty terns

Onychoprion fuscatus

- Productivity
  - Timing of breeding
  - Breeding attempts per individual
- Population size
- Breeding locations
- Diet -Adhoc
- Foraging locations

Yellow billed tropicbird

Phaethon lepturus

- Productivity data along the Northwest coast
- Ringing chicks is a possibility but re-trapping adults might need more planning

Yellow billed tropicbird

Phaethon lepturus

- Productivity
  - Timing of breeding
  - Breeding attempts per individual
- Population size
- Breeding locations
- Diet -Adhoc
- Foraging locations

Other species

Fairy tern, *Gygis alba*

Black noddy, *Anous minutus*

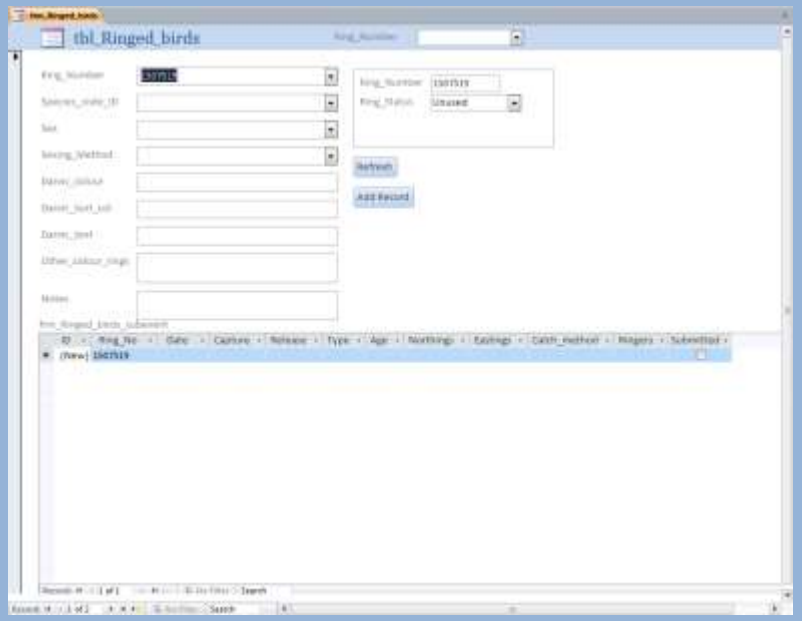
Red billed tropicbird, *Phaethon aethereus*

Red footed booby, *Sula sula*

Maderian storm petrel, *Oceanodroma castro*

Data and databases

- Data are lovely but to be valuable you need to be able to use them!
- Over the years seabird data have been collected but not always stored in an accessible way
- Not all data have been quality controlled when entered into databases so it needs cleaning up
- Before any new monitoring is started we need to get the databases set up and up to date
- Eventually we will hopefully be able to go through the old database and extract the valuable data



Acknowledgements

All of the Ascension island conservation team past and present, volunteers and visiting researchers.

UNIVERSITY OF EXETER

DARWIN INITIATIVE

rspb giving nature a home

RSPB CENTRE FOR CONSERVATION SCIENCE