

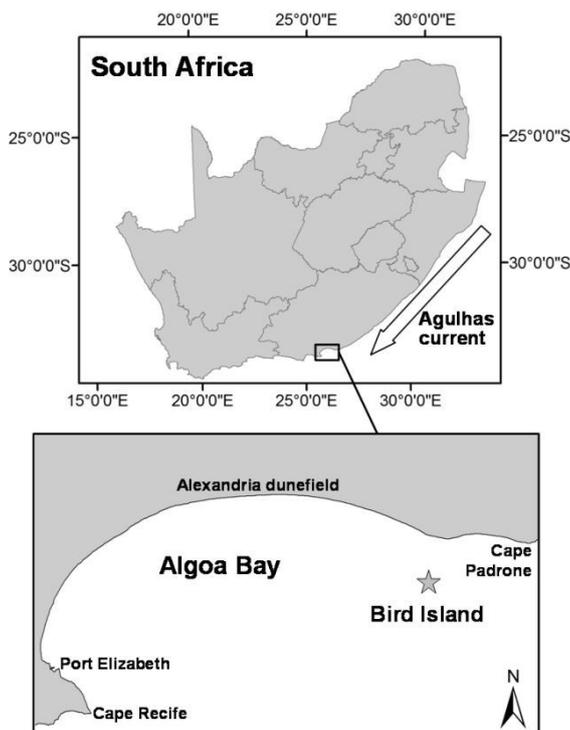
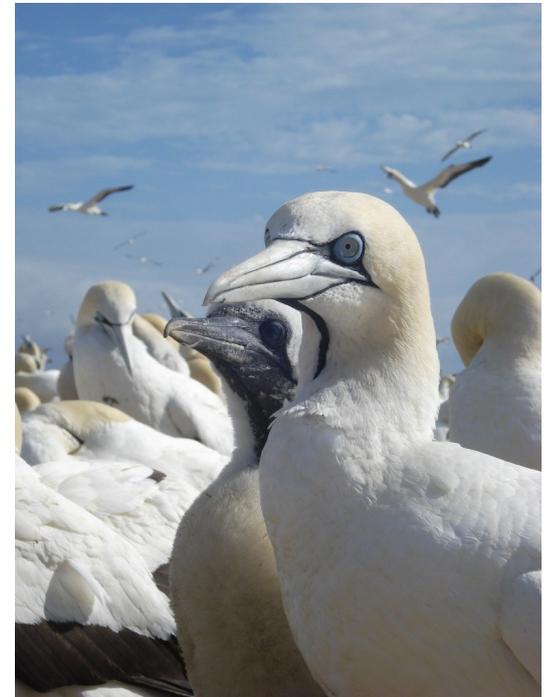
## Cape Gannets, *Morus capensis*, South Africa Automated long-term monitoring for time-activity budgets

### BACKGROUND

Climate-driven and anthropogenic pressures are increasing on fish stocks, which is linked to Seabird demographics, diet and particularly foraging behaviour. Seabirds, such as Cape Gannets, can respond to variations in prey availability by adjusting their time-activity budgets.

In this study, a long-term method for monitoring time-activity budgets using leg-ring-mounted VHF tags and datalogging receivers is tested.

Cape Gannets breed colonially, are long-lived and highly site faithful (breeding/nesting), so are an ideal species for trialling this monitoring method.



### EQUIPMENT USED

- **DataSika-C5** Coded Datalogging VHF Receiver, powered via Solar Panels on an outbuilding on the island, ~40m from the Gannet Colony
- **Yagi antenna**, fixed on a 7m mast, directed towards the Gannet colony.
- **80 x NTQB-6-2** (4.5g, 30cm flexible antenna) **Coded VHF Transmitters** were programmed with a 39 - 40s pulse interval were fitted to leg rings across two seasons.
- All transmitters were on the same frequency, but transmitted a unique ID 'code', allowing simultaneous, continuous monitoring of all birds.

# Cape Gannets, *Morus capensis*, South Africa

## Automated long-term monitoring for time-activity budgets cont.

### INSIGHTS

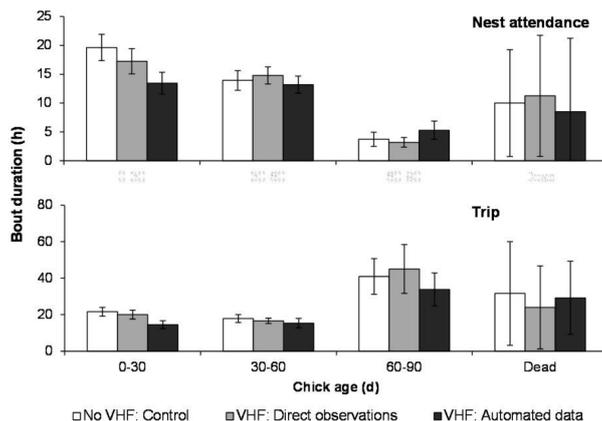
1. No apparent negative effects on the birds from the VHF transmitters (no apparent differences in body condition, behaviour etc. from control group).
2. Nest attendance and foraging trip data obtained by automated logging was not statistically different from direct observations.
3. Automated datalogging provided data at a finer scale than conventional nest monitoring.
4. Coded transmitters have allowed for a large sample size to be monitored continuously.
5. High-quality time-activity budget data was obtained over a long study period (two field seasons).
6. Automated data collection greatly reduces sampling effort, when compared to direct nest monitoring.

### IN CONCLUSION

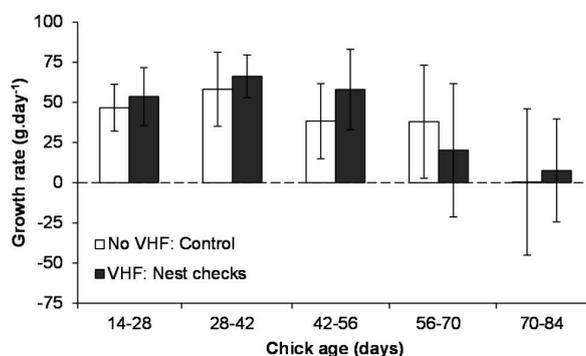
**Time-activity budgets are driven by prey availability; automated long-term data collection on foraging trip duration for seabirds could be used to assess the state of fish prey resources.**

*This case study is a summary of the publication: Rishworth, G. M., Tremblay, Y., Green, D. B., Pistorius, P. A. (2014), An automated approach towards measuring time-activity budgets in colonial seabirds. Methods in Ecology and Evolution. doi: 10.1111/2041-210X.12213.*

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Nest attendance (top graph) and trip (bottom graph) durations from direct nest observation and automated data collected from Cape Gannets in relation to chick age. Comparisons include directly observed data from control birds and those equipped with VHF transmitters, as well as automated VHF data from equipped birds.



Growth rate of Cape Gannet chicks from directly observed control nests where the parents were equipped with VHF transmitters. For each treatment nest type,  $n = 10$ .



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