

Report from the field – DPLUS139 “Improving Falklands marine management effectiveness for marine higher predators.”

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First published 22nd March 2022

Colonial breeding seabirds and seals link our marine and terrestrial environments. They are abundant marine predators near the top of the food chain, and are often referred to as sentinel species, because they provide clues to ecosystem health, and reflect the state of the wider marine environment. Tracking the movements of seabirds and seals enables us to understand how individuals, colonies and populations use our coastal waters, and helps us to disentangle and then address potential threats to population persistence. Tracking data collected from seabirds and seals ultimately improves evidence-based marine management and conservation initiatives, facilitates ecosystem-based management and increases the amount and quality of information available to researchers and decision makers.

Seabird and seal tracking data are particularly relevant in the Falkland Islands context, because the Falkland Islands are a globally important breeding site for colonial marine higher predators in terms of population size and conservation status. For example, the Falklands are home to approximately 75 % of the global population of black-browed albatross, 50 % of the South American fur seal population, and over 30 % of the global population of Southern Rockhopper and Gentoo penguins, with fluctuations in breeding numbers at the Falkland Islands impacting the global conservation status of these species. However, tracking data are spatially and temporally limited, or lacking, for many species. Filling tracking data gaps for the largest populations of seabirds and seals supports and informs current Falkland Islands Government (FIG) initiatives such as the proposed Falkland Islands Marine Managed Areas (MMA), helps to address elements of the Falkland Islands Biodiversity Framework 2016-2030, and aligns with the Falkland Islands Environment Strategy 2021-2040 (filling knowledge gaps and improved understanding, which aids effective decision making) (FIG 2021).

Our 2.5-year project supported by the Darwin Initiative and Paul Angell Family Foundation will address key data gaps by using state-of-the art GPS tags to track the largest colonies of seabird and seals. This summer, SAERI undertook fieldwork at two stunning offshore islands, Bird Island and Steeple Jason Island, West Falkland. Our research focused on Rockhopper penguins, Black-browed albatross and Thin-billed prions. We used small and streamlined tags, which were < 1 % of body mass (Fig 1).

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Species tracked	Tag used
Rockhopper penguins	<p data-bbox="456 331 659 359">NanoFix Geo (15 g)</p> 
Thin-billed prions	<p data-bbox="456 840 711 867">NanoFix Geo mini (<2 g)</p> 
Black-browed albatross	<p data-bbox="456 1264 797 1291">Mr. Lee & Pathtrack tags (<30 g)</p> 

Fig 1: Type, weight and image of seabird tags used during the 2021 summer field season.

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A total of 225 foraging trips were recorded from the 99 individual seabirds. Average foraging trip duration ranged from 7.9 ± 2.3 days for Thin-billed prions to 1 day for Rockhopper penguins at Bird Island. Rockhopper penguins from Bird Island foraged along the Burdwood Bank during incubation, but switched to short, typically < 1 day foraging trips during early chick rearing, and foraged within nearshore waters around West Falklands (Fig 2). In contrast, Rockhopper penguins from Steeple Jason Island travelled over twice the distance during chick-rearing (average foraging trip distance at Steeple Jason Island being 49 ± 35 km compared to 24 ± 44 km at Bird Island) (Fig 2).

Black-browed albatross tracked from Bird Island typically foraged to the south east of the Falkland Islands, and frequently visited Staten Island, during foraging trips that were on average 240 ± 191 km (Fig 3). Thin-billed prions foraged below the Antarctic convergence during the incubation period, with maximum foraging trip distances of 823 ± 162 km (Fig 3).

The next stage of field work will involve the very first tracking of Imperial Shags over winter!

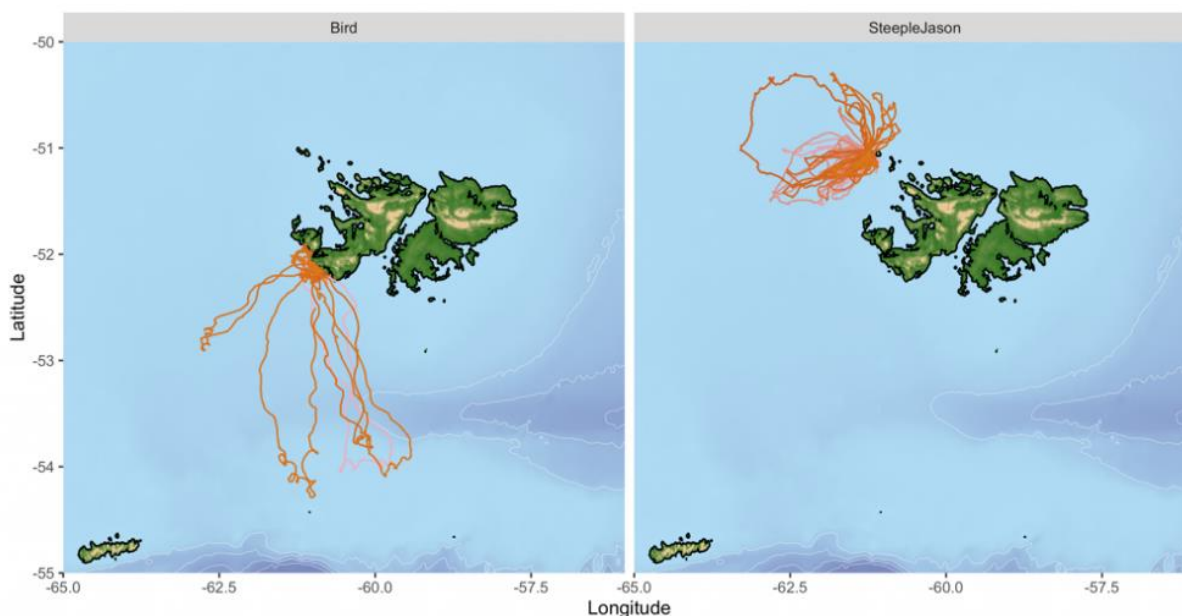


Fig 2: Foraging trips of Rockhopper penguins tracked from two globally important breeding colonies, Bird Island (left panel) and Steeple Jason Island (right panel). The long trips to the Burdwood Bank (left panel – Bird Island) are incubation foraging trips. Although poorly depicted in this figure, Rockhopper penguins from Steeple Jason Island actually travelled further during the chick rearing period than Bird Island Rockhopper penguins (49 ± 35 km compared to 24 ± 44 km, respectively).

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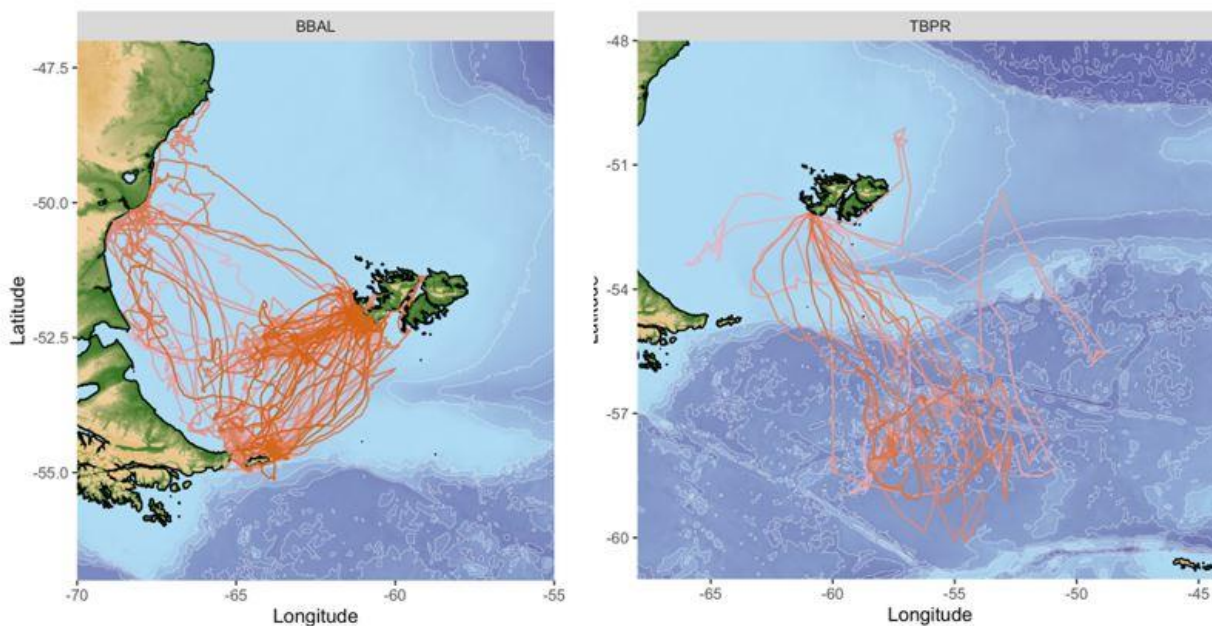


Fig 3: Foraging trips of black-browed albatross (BBAL) and Thin-billed prions (THPR) from Bird Island