

TRACKING CORMORANTS AT THE FALKLAND ISLANDS

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Marine activities at the Falkland Islands are likely to grow with recent offshore hydrocarbon exploration and the anticipated economic and population growth that may follow. While research into understanding overlaps of pelagic mega-fauna (cetaceans, pinnipeds and penguins) with commercial activities is being ramped up, there is still a need to understand how inshore marine activities may change over time and how best they can be developed alongside conservation interests.

The Falkland Islands, South Atlantic, are well known for their iconic seabird populations, in particular penguins and albatrosses, which receive much research interest. However, with 61 species breeding at the Islands, there is a wealth of seabird ecology yet to be fully explored. In the austral summer of 2013-14, Falklands Conservation undertook a small study on the foraging behaviour of the two resident cormorant species, funded by the Seabird Group and the Falkland Islands Government. The **Rock Cormorant** *Phalacrocorax magellanicus* and **Falkland Cormorant** *P. (atriceps) albiventer* (known locally as **Imperial** or King) breed in colonies scattered along the coast and are fairly common and widespread. This study was conducted at two islands where both species breed in close proximity. **Middle Island** is a small island (150 ha) owned by Falklands Conservation and located at the east of the Falklands within the enclosed and shallow-water environment of Choiseul Sound (**Fig.1**). The remote island of **Steeple Jason** is owned by the Wildlife Conservation Society (New York) and is located to the outer north-west of the archipelago in deeper oceanic waters (**Fig.1**). Steeple Jason is internationally important as it holds the world's largest breeding colony of Black-browed Albatross, supporting 214,000 pairs in 2010.

We conducted field work when adult breeding cormorants were attending nests during the late incubation and chick-rearing periods. Modified GPS (i-gotU) units and dive loggers (CEFAS Technology G5) were deployed by taping to the lower back or tail feathers (see photo). In total, 22 and 20 GPS devices were deployed at Middle Island and Steeple Jason, respectively, on Imperial Cormorants, and 16 and 12 devices on Rock Cormorants. A total of 27 dive loggers were deployed across both sites and species and 30 regurgitated meals were collected opportunistically. Despite working in gale-force conditions on some days (typical Falkland summer), we managed to retrieve all but four devices. These are the first tracking data collected from **Rock Cormorants** at the Falklands; the data showed that they exploited the near-shore environment, foraging in association with kelp beds and travelling short distances (<2 km) from the colony. Kelp beds provide high densities of marine invertebrates and fish species, and, from recovered regurgitates, we found they were taking predominantly juvenile fish (*Patagonotothen* spp). **Imperial Cormorants**, being slightly larger and



Imperial Cormorant with GPS device attending nest at Steeple Jason.

Photo credit: Andy Stanworth.

heavier birds than the Rock Cormorants, travelled further offshore, with males at Steeple Jason foraging the furthest (up to 41 km into the open ocean; **Fig.1**). At Middle Island, more than 90 % of travelling and foraging activity for both sexes was concentrated within the shallow waters of the enclosed Sound and only a few males ventured further offshore into the open water. Female Imperial Cormorants typically travelled and foraged in association with coastal features and land masses; at Steeple Jason, the furthest distances travelled were up to 30 km from the colony. Data collected by dive loggers showed typically shallow dives (<10 m) for Rock Cormorants, while the heavier Imperial Cormorants dived to 20–30 m.

The tracking data collected will now be fed into a Marine Spatial Planning project currently being carried out for the Falklands' waters by the South Atlantic Environmental Research Institute along with Birdlife International. The intention is to map and identify areas used by humans and wildlife and highlight any sensitive zones. The study showed that coastal zones, in particular kelp beds, are important foraging grounds for cormorants and those in close proximity to inshore or coastal activities will be more susceptible to disturbances. Surveys of breeding pairs were also conducted alongside tracking; in terms of future work, it will be beneficial to review the distribution and relative sizes of breeding colonies so that future activities and developments can be planned with minimal effects on Cormorant populations.

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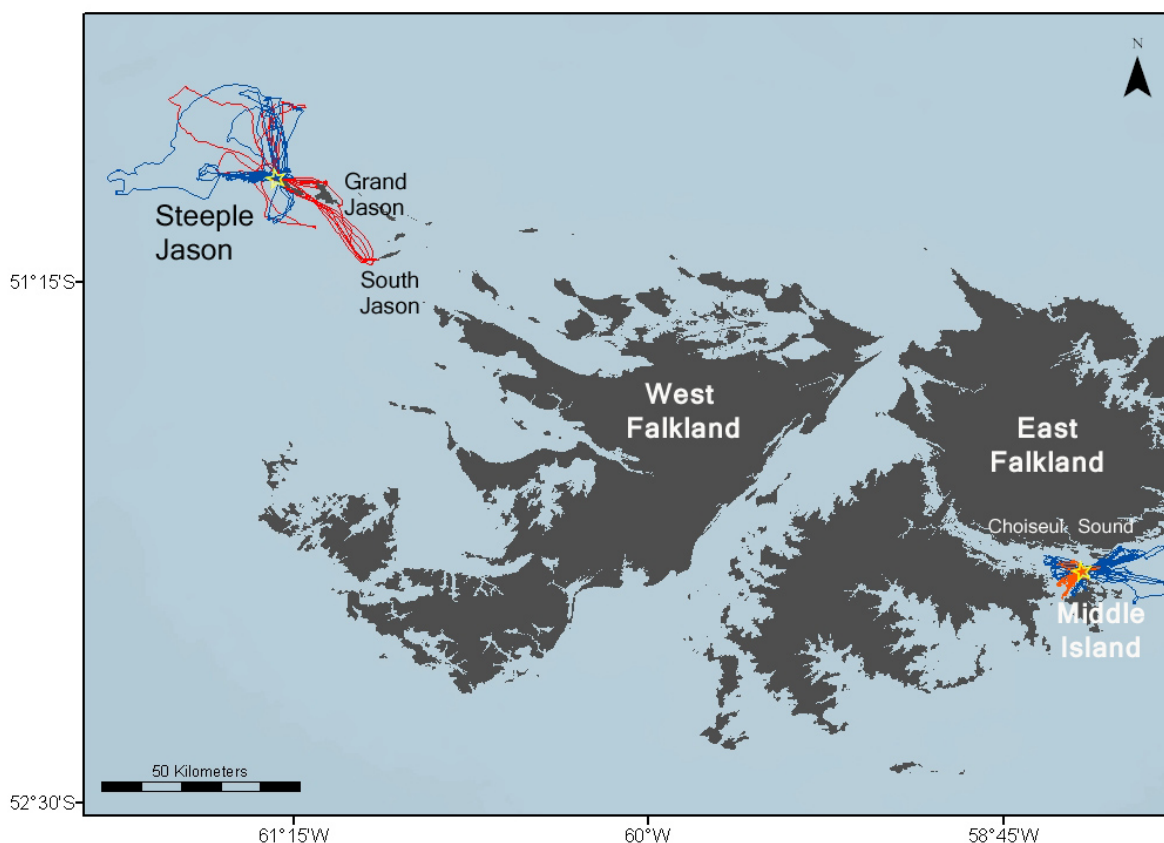


Figure 1: GPS tracks of female (red) and male (blue) Imperial Cormorants at Steeple Jason and Middle Island.