

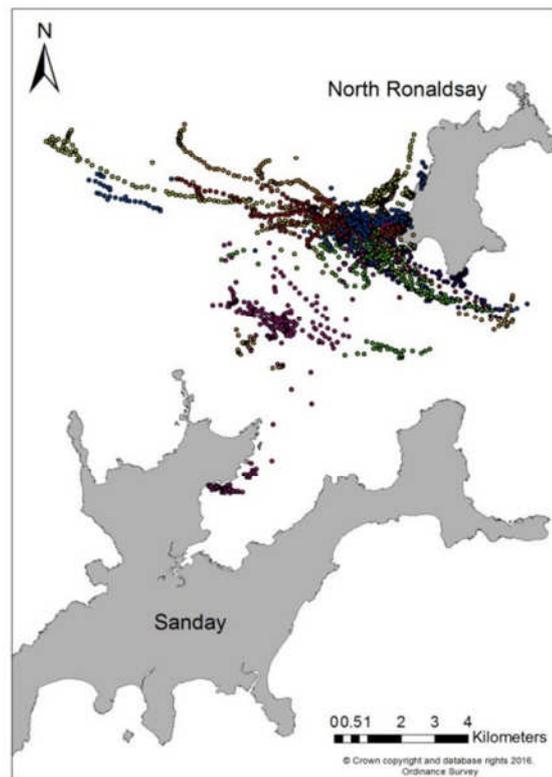
## Report for grant SG334: Ecology of Black Guillemots in Relation to Marine Protected Areas and Marine Renewable Energy Developments.

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A MASTS small grant enabled the study of black guillemot *Cephus grylle* foraging ecology on the Island of North Ronaldsay, Orkney. The grant facilitated travel and accommodation required to work on North Ronaldsay over June and July 2016. Working with Dr Elizabeth Masden, fieldwork was conducted on the Stroma, Caithness, in addition to North Ronaldsay. To investigate movement and foraging behaviour of breeding black guillemot adults, GPS loggers were deployed on both incubating and chick rearing adults, recording fine scale foraging tracks. In addition, a mixture of remote sensing cameras and direct observations were used to monitor diet. The initial results retrieved from 17 GPS tags recorded an average maximum foraging range of 10.17 km and a maximum distance of 26.77km, was recorded from an incubating individual repeatedly travelling from Stroma to Scapa Flow, Orkney. Tracks display repeated foraging site use, and are the farthest recorded foraging distances of breeding black guillemots. To study environmental variables potentially influencing the foraging behaviour of adults, future analyses will focus on the relationship between GPS tracks and tidal currents, habitat, and prey species. Nest success was monitored in 33 nests on Stroma, and 51 on North Ronaldsay. Chick weights were recorded from 12 nests on each island respectively. Camera traps and direct observations identified prey items delivered to chicks, as well as the feeding frequency. The traps also picked up predator presence, kleptoparasitism, and even fledging chicks. These data indicate habitat preferences of foraging adult black guillemots, helping assess the potential for interaction with tidal renewable developments, and the effectiveness of Marine Protected Areas.

The field season proved successful with a range of data being collected and exciting initial results. A special thanks is given to MASTS small grants scheme, Emily Kearl and the staff and volunteers of the North Ronaldsay Bird Observatory for their invaluable help.



**Figure 1. North Ronaldsay foraging black guillemot GPS points**