

Ornithological Observations



An electronic journal published by BirdLife South Africa and the Animal Demography Unit at the University of Cape Town



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Editor: Arnold van der Westhuizen

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Recommended citation format:

McClelland GTW, Cooper J, Chown SL 2013. Evidence of breeding by Diving Petrels and Storm Petrels at Marion Island of the eradication of feral cats. *Ornithological Observations* Vol 4: 90-93

URL: <http://oo.adu.org.za/content.php?id=89>

Published online: 12 June 2013

- ISSN 2219-0341 -



EVIDENCE OF BREEDING BY DIVING PETRELS AND STORM PETRELS AT MARION ISLAND AFTER THE ERADICATION OF FERAL CATS

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The South African Prince Edward Islands, comprising Marion Island (S46° 54', E37° 45') and the 21-km distant Prince Edward Island (S46° 38', E37° 57'), are among the most important sanctuaries for avifauna in the Southern Ocean. Twenty-nine species of bird have been recorded or are suspected to breed within the archipelago (Ryan and Bester 2008). Whereas the avifaunal community on near-pristine Prince Edward Island is considered to be essentially unaltered – it has never supported introduced predators – (De Villiers and Cooper 2008), Marion Island is likely still recovering from significant declines in its burrowing petrel populations as a consequence of four decades of predation by feral cats *Felis catus*.

Originally introduced to the Marion Island meteorological station in 1948 to control invasive House Mice *Mus musculus*, cats were first observed to have become feral and to feed on burrowing petrels in 1951/52 by RW Rand, the first biologist to make detailed observations of the island's birds (Rand 1954, Cooper 2008). They soon became well established around the entire island, having a deleterious effect on the island's bird populations. By 1977 cats were estimated to be taking approximately 455 000 burrowing petrels a

year (Van Aarde 1980). It was not until 1991 that the last cat was killed after an eradication effort spanning 14 years (Bester *et al.* 2000, 2002). Improved breeding success was subsequently reported for some of the larger burrowing petrels (Cooper and Fourie 1991, Cooper *et al.* 1995) but much less is known about the fortunes of the smaller burrowing species.

Rand (1954) described Common Diving Petrels *Pelecanoides urinatrix* (first reported breeding on Marion Island in 1948; Crawford 1952) as "...widely distributed over the coastal plain where they burrow under tussock and moss near the cliff edge" in 1951/52. However, active burrows could not be located during the 1965/66 summer despite "extensive" searches in the same sites by Van Zinderen Bakker Jr (1971) or subsequently in 1979/80 by Schramm (1986), suggesting that they had been eradicated as a breeding species by feral cats at an early stage. South Georgia Diving Petrels *P. georgicus*, which prefer to breed at higher altitudes on Marion Island where they were "commonly found" (Rand 1954), were still being recorded ("Many nests...found" and "eleven...nests opened one day...containing birds incubating eggs") in 1965/66 by Van Zinderen Bakker Jr (1971). Although the habitat preferred by this species (described as cinder slopes) was not well surveyed during a 1979/80 burrowing petrel survey of the eastern portion of the island, "very few burrows were found" (Schramm 1986), suggesting that this species was also succumbing to predation by cats. These few nests (estimated as only 44 burrows in 21 ha) were the last known record of a diving petrel breeding on Marion Island for the next 32 years.

On 10 March 2011 GTWM found an active diving petrel burrow at S46° 51.736', E37° 42.839' near the cinder cone Tumor at an elevation of 552 m. The burrow entrance was located under an *Azorella selago* cushion among unvegetated scoria and contained a



Fig 1- Diving petrel chick on Marion Island, 10 March 2011.

partially downy chick weighing 70 g. Although photographed (Fig .1), the chick was not definitively identified to species, although the altitude and substratum suggests it was a South Georgia Diving Petrel.

On 16 March 2009 two juvenile Black-bellied Storm-Petrels *Fregetta tropica*, a species yet to be confirmed as breeding on Marion (Cooper and Brown 1990), were captured on the same night by GTWM near Fur Seal Peninsula on the western side of the island. Conditions were extremely foggy at the time and the birds collided with GTWM as a result of being drawn in by a head torch. Both birds came from the direction of the interior and had traces of down on their abdomens. It is most likely that they had very recently fledged from the island and that the species breeds there, although it is conceivable they could have come from Prince Edward Island, where breeding has been confirmed (Berruti *et al.* 1981, Imber 1983). Black-bellied Storm-Petrels with "bare vascularized brood patches and enlarged gonads" have been caught on Marion Island in the past (Williams and Burger 1978) and adults have been caught occasionally by spot-lighting at night in the vicinity of the meteorological station in recent years (Oceans & Coasts, Department of Environmental Affairs unpubl. records).

The Grey-backed Storm-Petrel *Garrodia nereis* has never been definitely reported breeding on Marion Island, although it has been on Prince Edward Island (Van Zinderen Bakker Jr 1971, Cooper and Brooke 1984). The species has also been caught ashore on Marion with vascularized brood patches and enlarged gonads (Williams and Burger 1978, see also Klages *et al.* 1995).

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Acknowledgements

We thank the South African National Antarctic Programme, Department of Environmental Affairs for logistic support and the South African National Research Foundation for financial support via grant SNA2007044200003 to SLC. We thank RJM Crawford of the Department of Environmental Affairs for providing unpublished bird records. PG Ryan provided valuable comments that improved the manuscript.

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