

 <p data-bbox="231 533 470 571">Agreement on the Conservation of Albatrosses and Petrels</p>	<p data-bbox="539 241 1401 324">Eighth Meeting of the Population and Conservation Status Working Group</p> <p data-bbox="981 347 1401 385"><i>Lima, Peru, 9 August 2024</i></p> <p data-bbox="529 459 1369 555">An update on the Mouse-Free Marion (MFM) Project</p> <p data-bbox="571 577 1327 616"><i>Anton Wolfaardt (Mouse-Free Marion Project)</i></p> <p data-bbox="662 638 1241 676"><i>Azwianewi Makhado (South Africa)</i></p>
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1. THE MOUSE-FREE MARION PROJECT: BACKGROUND

Marion Island is the larger of the two Prince Edward Islands, a sub-Antarctic island group in the southwest Indian Ocean. House Mice (*Mus musculus*), unintentionally introduced by sealers in the early 19th century, continue to severely impact the island's ecology. Through predation, mice have significantly reduced invertebrate densities and biomass on Marion Island (McClelland et al., 2018). This not only threatens various invertebrate populations but also disrupts key ecological processes, such as energy flow and nutrient cycling, due to the depletion of primary consumers and detritivores (Smith et al., 2002).

The Prince Edward Islands are critical breeding sites for seabirds, including species listed under the Agreement on the Conservation of Albatrosses and Petrels (ACAP), such as the Wandering (*Diomedea exulans*), Grey-headed (*Thalassarche chrysostoma*), and Sooty (*Phoebastria fusca*) Albatrosses, among other wildlife. In 1995, the island group was designated as a Special Nature Reserve, the highest level of protection under South African law. The South African Department of Forestry, Fisheries and the Environment (DFFE), responsible for managing the Special Nature Reserve, is tasked with eradicating mice from Marion Island. This goal is being pursued through the Mouse-Free Marion (MFM) Project in partnership with BirdLife South Africa.

Over the past 30 years, a trend towards a warmer and drier climate has led to an earlier and extended breeding season for mice, leading to a substantial increase in their densities on the island each summer (McClelland et al., 2018). Coupled with a continuous decline in invertebrate biomass, this has driven mice to seek alternative food sources, including the eggs, chicks, and increasingly the adults of many of the island's globally important seabirds, which are also listed under ACAP (e.g., Connan et al. 2024; Dilley et al., 2016, 2017, 2018; Jones et al., 2018).

At the Seventh Meeting of ACAP's Population and Conservation Status Working Group (PaCSWG7), South Africa presented an overview of the MFM Project (Wolfaardt and Makhado 2023), which aims to eradicate invasive House Mice from Marion Island. The MFM Project is a collaboration between the South African Department of Forestry, Fisheries and the Environment (DFFE) and BirdLife South Africa. A separate and special purpose entity, the MFM NPC, was established by BirdLife South Africa to help facilitate the implementation of the project. The MFM Project has received support from donors and institutions both in South Africa and internationally (including from ACAP and its Parties at AC14), building on the

expertise acquired from the many rodent eradication projects that have been undertaken on islands around the world. The purpose of this document is to provide a brief update on the planning and status of the MFM Project.

2. THE MOUSE-FREE MARION PROJECT: UPDATE

At PaCSWG7 Thomas et al. (2023) presented information regarding the failed mouse eradication attempt at Gough Island. Regrettably, in August 2023, a second unsuccessful eradication effort was reported from Midway Atoll in the Hawaiian archipelago. The teams involved with these projects have initiated efforts to investigate the possible factors that may have contributed to the failures of these mouse eradication efforts. Although the recent failures on Gough Island and Midway Atoll are exceptions, with the majority of rodent eradications being successful, it is crucial to remain vigilant. Continually learning from both successful efforts and the minority of operations that have failed ensures that we can improve the likelihood of success for future eradication endeavours. The MFM Project is well-placed to adapt our methods to incorporate any relevant lessons from these unsuccessful outcomes, because we are currently still planning our operation.

In November 2023, the MFM Project team initiated and co-organised an international Mouse Eradication Workshop, meeting with global island eradication specialists in New Zealand. Meeting participants discussed a number of hypotheses that may have contributed to recent eradication failures, and how future projects aiming to eradicate mice on Marion Island and elsewhere might incorporate lessons learned from the workshop discussions (Springer et al. in prep). Following the Mouse Eradication Workshop, MFM Project staff attended a December 2023 meeting of the New Zealand Department of Conservation's Island Eradication Advisory Group (IEAG), at which the technical planning for the MFM Project was discussed in more detail.

As a result of these two initiatives, several recommendations have been made that the MFM Project is now planning and implementing. These include conducting additional trials to investigate the performance of bait with different attributes. Moreover, the project is examining mouse distribution and densities across various island habitats in greater detail. A larger-scale bait acceptability trial, more extensive than any previously undertaken on Marion Island, is also being planned. This trial aims to enhance our understanding of key factors related to the planned baiting strategy, using the same method intended for the actual operation.

Planning for an island mouse eradication intervention is an iterative process involving continuous learning and re-evaluation. Currently, a review of the initial MFM Project Feasibility Study, conducted in 2015, is underway. This review aims to incorporate recent advancements in eradication methodology, updates in planning progress, and new information that has emerged since the MFM Project planning began in 2021. Given the high-risk and complex nature of the project on the large and remote Marion Island, this review is both necessary and timely to enhance the probability of success.

Indeed, the outcomes of these various processes will inform the next steps for the MFM Project team as we continue to pursue the development and implementation of a successful eradication of House Mice from Marion Island.

The conservation imperative for the mouse eradication initiative on Marion Island remains critical, with mounting evidence of the adverse impacts of mice, particularly on ACAP-listed species. While ample evidence exists of mice preying on seabird chicks, researchers reported

the first deaths of adult Wandering Albatrosses due to mouse attacks in April 2023 (Connan et al. 2024). This apparent step-change in mouse behaviour is of great concern, given the demographic implications of reduced adult survival. The deaths of breeding adults of this long-lived species underscore the critical need to eradicate introduced mice from Marion Island.

3. REFERENCES

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