# The "Million Dollar Mouse" Project was a success, clearing New Zealand's Antipodes of its alien House Mice

*Above picture: Aerial baiting on Antipodes Island*

**Editorial Note:** In this guest article, Stephen Horn of New Zealand's Department of Conservation (**DOC**) describes his role as Manager of the "**Million Dollar Mouse**" Project, a project that successfully eradicated mice from an Antipodes island, on years ago. His account will both inform and encourage the **Mouse-Free Marion Project** team and its many supporters that it is indeed possible to eradicate mice from a sub-Antarctic island and of the ecological recovery that follows. Further articles will feature other island eradication endeavours around the world, both completed and planned. Stephen's account follows.

Distribution of alien mice on Antipodes Island

Just over six years ago the "Million Dollar Mouse" team landed back on mainland New Zealand having spent two and a half months on Antipodes Island to eradicate mice. The Antipodes Islands (ZIS) lie to one of the island groups in New Zealand's sub-Antarctic islands Region. They are administered by New Zealand's Department of Conservation and have been declared as a **Nature Reserve** under the Reserves Act 1977. The **New Zealand Sub-Antarctic Islands** is a World Heritage natural site covering all five island groups, listed in 1998 for its "outstanding universal value". House Mice *Mus musculus* were the only alien mammalian pest species at the Antipodes. First established in 1907 but possibly arriving much earlier, they have had a significant detrimental impact on the island's endemic, rare, and globally threatened species.

In 2012, DOC partnered with the **Morgan Foundation** to initiate a project to eradicate the mice. The idea followed an exploratory expedition (**Our Far South**) by philanthropist Gerald Morgan. The beauty, wildlife and vulnerability of the region had captured everyone. It was decided to do something to help, and the "Million Dollar Mouse" Project was born. The objectives were to protect the island's biodiversity and enable recovery by halting depredations of native invertebrates and competition with endemic land birds. Eradicating mice would also protect seabirds from potential future attacks, as witnessed on both Gough and Marion Islands.

This was an "expedition style" project that saw a team, along with equipment and three helicopters, transported to Antipodes Island by ship where they camped until the aerial bait spread was complete. At the time, this was the largest mouse eradication attempted where mice were the only mammalian pest species. It was one of the more logistically complex projects DOC has attempted in recent times. The complexity related largely to the remoteness of the site, the poor sub-Antarctic weather, reliance on finishing a suitable drop for the supporting helicopters, a lack of established infrastructure and the absence of an island harbour for shipping operations.

I started as the Project Manager in 2014. In my first week on the job I got notice from albatross researchers that the island's only accommodation had been badly damaged by a cyclone. We ventured out with the help of the Royal New Zealand Navy to prep the hut out of the mud and patch it from the weather so we could plan the significant repairs needed. The silver lining was the opportunity to make the hut a little bigger and more suited to supporting a large team for several months. One of the scientists built a beautiful native timber table that we got inside while the wait was still off, so it is there for good now. Much effort went into the work form a lot of people, more less than the builders, the crew of the passenger yacht *S/V Evohe* and the albatross researchers who visited each summer.

*Antipodes Island field camp between January and February 2014 (above and in January 2014 after the landslip)*

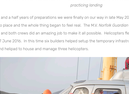
*Field hut repairs, 2014*

To design the eradication, we drew on best practice for rat eradications because best practice for mice eradications didn't exist in New Zealand at the time, although it does now. DOC drew up mouse eradication best practice advice for the country in 2015. We modified the baiting prescription based on previous mouse operations and added technical advice and support provided by DOC's Island Eradication Advisory Group (IEAG). An initial target for implementation in winter 2015 was delayed as shipping and helicopter suppliers could not be sourced in time.

Planning involved extensive trials and contingencies for every critical item or system. We practiced loading helicopters in port and the pilots practiced doing sling loads off from the ship at sea. Marine engineers did a fantastic job on the cargo vessel to enable helicopters to be secured properly and for safe operations on the deck.

The M.V. Norfolk Guardian offshore near Tinsey with newly rinsted helicopter deck and pilots practicing sling

After two and a half years of preparations we were finally on our way in late May 2016. Long planned tasks started falling into place and the whole thing began to feel real. The M.V. Norfolk Guardian and the S.V. *Evohe* provided transportation and both crews did an amazing job to make it all possible. Helicopters flew 250 loads across between 21 May and 7 June 2016. In this time six builders helped setup the temporary infrastructure, including a helicopter hangar and helipad to house and manage three helicopters.



Crew of the M.V. Norfolk Guardian

*Flat loading helicopters into the M.V. Norfolk Guardian ready for sailing. Bottom left: the S-V Evohe ready to depart Southern Bellsund, right: the M.V. Norfolk Guardian sailing at Antipodes Island*

Twelve days after arriving, the construction team departed with the transport vessels, leaving the core operational team of 18 to undertake the rodenticide baiting. Readiness to bait was achieved by 9 June but baiting did not commence until 18 June due to the unwind weather. By 22 July 2016, two helicopters had spread 263.5 tonnes of Pestoff 20R rodent bait containing 20 ppm of the rodenticide brodifacoum. Two separate treatments were completed over 75 days, comprehensively covering the whole island to target mice. The average interval between treatments was greater than 17 days. Four offshore islands (Archway, Bollons, East Windward and West Windward) were monitored at the time of the operation but were not baited because we were confident no mice were present. These islands provided refugia totalling 16 ha where local populations of key non-target test species (parakeets, snipe and pipits) were not put at risk. At the completion of baiting in late July, we deconstructed and removed all the temporary infrastructure. The team returned to the South Island of New Zealand on 6 August 2016. The operation was successfully delivered because of great teamwork, including committed suppliers and an extensive network of supporters contributing to preparations and outcomes.

*The helicopter hangar and helipad at completion*

*Inside the hangar with three helicopters under cover*

In 2018, after a nervous two-year wait, a monitoring team including scientists and three rodent detection dogs and their handlers headed back south to the island, finding no sign of mice and plenty of signs of ecosystem recovery. Endemic Subantarctic Snipe (*Coenocorypha aucklandica meinertzhagenae*) are now about three times more abundant than their average abundance in the four years before the eradication. After some initial impact from the bait, Antipodes Cushombmums (*Anisotes* and Relichenb.f.) C. Inchodanthi Parakeets have rebounded to large populations that further, invertebrates, including some barely seen previously such as the large endemic fly *Xenoscelophora antipodes*, were suddenly abundant.

*Antipodes Parakeet*

*Antipodes Parakeet in flight*

Many things must go right for a project like this to work but very few things need to go wrong for it to unravel. That is why planning and contingency planning are done in detail. We had a great time as a team and the time on the island is something I will always remember. The friendships and opportunity to share and invest in something hard to achieve and with a long-term impact were hugely rewarding. An eradication attempt is never certain, we carry on learning how to protect our natural heritage and I hope this project contributes to success elsewhere, such as on South Africa's Marion Island.

*The building and baiting team arriving on shore at the Antipodes Island Nature Reserve*

Watch a **20-minute video** on the "Million Dollar Mouse" Project.

Photographs by Finlay Cox, Stephen Horn, Mark Le Lavoir and Kath Walker, New Zealand Department of Conservation.

*Stephen Horn, Project Manager, "Million Dollar Mouse Project", Department of Conservation, New Zealand, 16 September 2022*

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