

Restoring Paradise *Predator free Lord Howe Island*

While the rest of the world ponders over the recent news that a million species globally are facing extinction from human activities (see end story *), Lord Howe Island is getting ready to celebrate the success of 40 years protecting its unique species by removing the last introduced feral mammal pests.

Wherever humans have settled islands, they have brought their domestic animals along, and Lord Howe Island is no exception. Early sailors put pigs and goats onto the island for food; the settlers brought farm animals and domestic animals - horses, cats, dogs. The worst feral mammal to arrive was the Black rat, *Rattus rattus*, that arrived onto the island in 1918 with an incident involving the cargo ship Makambo. Rats quickly multiplied and wreaked havoc on the wildlife – within ten years of arriving the rats had eaten five land birds into extinction; later, two plant species and a number of invertebrates had disappeared due to rodent predation.

In the early 1970's, a landmark Environmental Survey Report identified introduced mammals – pigs, cats, dogs, goats and rodents as the major threat to the island's biodiversity. In particular there was urgent concern about the possible extinction of the endemic flightless bird, the Woodhen. Once thriving all over the Island, this bird was at that time confined to about 20 individuals surviving on the lofty summits of the 875-metre-high mountains in the cool, damp mist forest. National Parks ornithologist Dr Ben Miller and Island ranger Paul Beaumont confirmed that the wild pigs introduced in the 1800's for food, were digging up the nest and eating eggs and chicks of the Woodhen; wild and domestic cats were eating Woodhens and some dogs were also killing them.

So, in 1980 the conservation story began for Lord Howe Island – the restoration of the island, beginning with the rescue of the Woodhen, which involved removing the feral animal pests. The island men shot 180 wild pigs in the mountains, rangers trapped about eighty feral cats, and dogs were tightly controlled. In 1982 a ban on domestic acts was introduced, with a grandfather clause that allowed anyone with a pet cat to keep it until it died its natural life, if it was desexed.

As part of the rescue program, funding of \$250,000 was raised by the newly formed National Parks Foundation and a captive breeding program was carried out on the Island. Three pairs of Woodhens were whisked off the summit of Mount Gower by helicopter, to a breeding facility built for the purpose. New Zealander Glen Fraser looked after the Woodhen pairs, and helped them raise 93 Woodhens that were released around the Island. With the environment now predator-free the Woodhens quickly began breeding with the others left in the wild, and after five years the population of Woodhens was about 300. At the time this was the most successful captive bird breeding program in the world.

But removing the feral pests had many other benefits; with a dramatic increase in birdlife. Black noddy and Little shearwater seabirds that had been pushed off the island earlier by cats had come back to breed by 1990; Sooty tern seabirds began breeding in thousands on the beaches where they hadn't been seen for over 100 years, Providence petrel seabirds have been increasing their range each year to re-colonise former breeding areas across the island

In 1999 a team of New Zealand hunters were employed to remove wild goats that had also been put on the Island by early sailors. Over a three-month period, the team, with local hunters, removed 384 goats. The recovery in plant life has been remarkable since these browsing goats have been removed.

In 2002 the LHI Board turned to investigating the feasibility of removing rodents from the Island. At the time techniques had been developed to carry this out on islands around the world, led by concerns in New Zealand that the only way to save their endemic land birds was to remove feral pests from offshore islands and place

the birds there. Over the next seven years a draft plan was prepared to carry out a rodent eradication on Lord Howe Island, using the experience and science from what had been achieved around the world since 1980 when the process was pioneered. Funding for the Lord Howe Island project was received from State and Federal governments in 2012, and over the next seven years the plan was fine-tuned and community consultation carried out.

Finally in 2019 the culmination of all of this work and planning came to fruition, not just the 17 years planning for Lord Howe Island, but the science and experience from 40 years of eradications around the world. Over 600 islands around the world have had feral animals removed for conservation purposes.

In April 2019, fifteen of the world's experts in rodent eradication assembled at Lord Howe Island, and with locals and other Australian workers, began the final stage of the long, island restoration project - carrying out the removal of rodents.

Bait stations went out across the settlement in April, with a ground crew of about 50, placing the stations every 10 metres on the ground. (equating to about 19,800 bait stations). These were placed very accurately using differential gps units to an accuracy of about 10 cm. Then smaller bait stations for mice were installed inside all building on the island.

The next task was to catch 230 Woodhens and 120 Currawongs and protect those birds that may take a bait during the operation. National Parks and LHI Board staff carried out the catching, and they collected birds from across the Island, including the summit of Mounts Lidgbird and Gower. The helicopters were used to ferry the catchers into these remote spots and then ferry the Woodhens down to the airfield for transport to the facilities being run by Taronga Zoo staff. The first point for birds as they were handed over to Zoo staff was the Island research station where Taronga Zoo chief vet and nurse gave every bird a thorough health check. Then the birds were placed in the cages specially designed by Zoo staff for holding these two bird species. Currawongs were placed in their pairs in individual cages. The Woodhens were placed in large enclosures with 20 birds to an enclosure. This had been determined with Wekas in New Zealand as an ideal way to hold rails in captivity for long periods, as they lose their territorial aggression in this situation. The Taronga Zoo nutritionist had worked on a special diet for each species.

With the birds safely in care, the next step was to place baits in the bait stations. This was carried out in late May, and for some of the paddock areas adjacent to the mountain and forest areas, staff hand broadcast baits, walking lines on the ten-metre grid too. For some cattle owners who wanted to retain cattle on the Island, wooden rooves were placed over each bait station in those paddocks. When the baits had been put out in these lowland areas the time was to then wait for the window of weather to fly and distribute baits in the areas away from the settlement by helicopter. This was tricky, as the weather windows were quite tight – it needed wind less than 15 knots, no low cloud, and with a forecast for the following three days to allow less than 5 mm of rain so the bait pellets would remain attractive to a rodent. Added to the weather, another compounding factor was the presence of Providence petrels around the southern mountains. These birds fly out to sea before dawn, but begin to return to their mountain top homes around midday. Spotters were in the mountains to observe Providence petrel numbers returning and alert the operations manager if significant numbers were present that may pose a hazard to the helicopters. But the windows for the flights came, and two bait drops were carried out; one in June and again in July. There was great relief with the accomplishment of this, as weather in winter can be windy and wet.

But it wasn't over with these helicopter flights – the ground baiting had to continue, with weekly checks of bait stations ongoing until the end of October. At a number of baits stations there were indicators put out to attract rodents and record activity (wax blocks with peanut butter). When any signs of rodents, or reports of them by residents, were observed then the LHI Board dog handlers came around with the dogs trained to detect

rodents. Slowly the number of sightings and signs has decreased, and no live rodents have been detected since September 23 2019.

The captive Currawongs were released at the end of November, and the Woodhens in early January 2020. From the cessation of baiting on the island detector dogs and monitoring devices have been used to check for presence of rodents. No signs of rats or mice have been confirmed for nine months.

Already the benefits of the program are becoming evident. Many residents are reporting how many more land birds they have around their houses - particularly the White eyes and Emerald doves. There appears to be more abundant insects seen - the cicadas were noisier and continued longer into March this year; many people report seeing a lot more of the endemic green stag beetles and more butterflies. And of course, this increase in insects means more food for the land birds.

Across the island there is an abundance of seedlings of many plant species springing up, where previously the rodents would eat the seed and the seedlings were absent. This is particularly evident on the summit of Mount Gower where the two endemic palm species now have an abundance of seed to fall and germinate. There has already been a proliferation of many endemic snails and slugs on the summit forest. The expected increase in all flora and fauna is going to be spectacular and further enhance Lord Howe Island as hotspot for biodiversity and example of best island conservation practice.

The success of this project on Lord Howe Island with a large resident population is a world first, and this will inspire other island nations to undertake such a project. The methods, the safety requirements, the health documentation have all been carried out and documented as a blueprint for other islands.

This has been a project of world significance for island conservation and Lord Howe Island will receive ongoing attention for the benefits that will continue to unfold. The success of the Restoration of lord Howe Island will enhance its World Heritage values, and its reputation as a world leader for ecotourism, benefitting the local community through economic benefits and the pride in what has been achieved.

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"We are witnessing the loss of biodiversity at rates never before seen in human history. Nearly a million species face extinction if we do not fundamentally change our relationship with the natural world, according to the world's largest assessment of biodiversity. In a process involving 500 biodiversity experts from over 50 countries, 134 governments negotiated the final form of the Global Assessment of the Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services (IPBES). Human activity severely threatens biodiversity and ecosystem functions worldwide. About 1 million species are facing extinction. If nothing changes many of these could be gone within just decades."