

# Black Robin

*Petroica traversi*

Kakaruai

## No longer the world's rarest bird



Black robin, Rangitira Island. Mike Thorsen

### Quickfacts

Once only 5 birds remained, all on tiny Tapuaenuku (Little Mangere) Island.

Would now be extinct if not for one of the most intensive conservation programmes in the world.

Currently numbers 250-300 birds on two islands.

### As luck would have it

The Black Robin is famous world-wide for two reasons: being once the rarest bird in the world, and the intensive conservation efforts that rescued it from certain extinction. The conservation story of the black robin is of problems encountered and then overcome, often by employing new innovative conservation techniques. The black robin conservation efforts have been well documented in many books and articles (see References).

The black robin was “discovered’ by scientists during an expedition to Mangere Island, one of the Chatham Islands, 800km east of New Zealand, in 1871 when Henry H. Travers noted a “small bird, entirely black in plumage, and having much the habits of *Petroica albifrons* (South Island robin)”. Shortly after this discovery, cats arrived on Mangere Island and ate all the black robins there.

Black robins once occurred on all of the Chatham Islands, but once pests, such as cats and rats, which escaped from European ships and supplies, it quickly disappeared from all the islands inhabited by



people, and the black robins that were eaten by cats on Mangere Island were thought to be the last black robins.

Luckily, this was not the case. Following a perilous climb in 1938 up the 200m high steep coastal cliffs to the summit of Little Mangere Island/Tapuaenuku, a tiny population of less than 100 black robins was discovered inhabiting a tiny (9ha) forest by the scientist Charles Fleming while studying the birdlife and geology of the Chatham Islands. Here he also discovered the last home of Forbes' parakeet (*Cyanoramphus forbesi*).

Because of the rarity of the black robins, Fleming suggested that some should be moved to nearby Rangatira/South East Island. This was never done, and the perilously small population of black robins attracted no conservation attention (conservation of endangered animals was still in its infancy at this time).

Life for the black robins on Little Mangere Island changed in 1960's when muttonbirders took advantage of the helicopters that were working in the crayfish boom and cut a landing space in the tiny forest to easily gather shearwater chicks to eat. This hole in the forest exposed the remaining trees to deadly salt spray and caused the native pohuehue vine *Muehlenbeckia australis* to flourish, scramble up nearby trees and form a sheet of vines which caught the Chatham's legendary winds and resulting in more of the forest being blown over. A team from the NZ Wildlife Service landed (ironically also using a helicopter) on Little Mangere in 1968 and discovered the damage. They estimated (wrongly, as it turned out) the number of robins to be similar to that in 1938. Luckily pohuehue vine also provides some habitat for black robins, but regeneration of the forest was being hindered by the burrowing of thousands of sooty shearwaters which nest on the island killing nearly all the tree seedlings.

It was obvious that with only 100 black robins (they thought) that a conservation project was needed. But what did they need to do? The first action the team took was a research study in the early 1970's on how to increase the numbers and range of black robins without endangering this last population. This study was undertaken by Dr Douglas Flack, who "practiced" translocating South Island robins (with only partial success) while also studying the black robins of Little Mangere. Dr Flack's work uncovered some worrying information: the real number of black robins was only 17 birds (in 1972), and nearly half the birds had died in one year!

The black robin was now the rarest bird in the world.

Efforts were made to restore the black robin's habitat on Little Mangere by caging areas with wire mesh to prevent shearwater burrowing and planting tree saplings, but it was soon apparent that forest regeneration would take time, and with a population that numbered between 9 to 17 birds (depending on the breeding season), that time was not available. Fortunately, nearby Rangatira Island and Mangere Island had been recently



purchased as reserves for Chatham Island birds, and it was decided that moving some of the black robins from Little Mangere to Mangere Island was worth the risk that the moved birds could die. However, the forest on Mangere Island had been severely damaged in the past by sheep farming, and there was now only sufficient habitat for six black robins on the island. A planting programme was begun to remedy this lack of habitat, and an initial transfer of three black robins was scheduled for 1976. During the expedition to capture the three birds for this transfer, it was discovered the population on Little Mangere was now just seven birds, and only two of these were female! This caused the transfer team to decide amongst themselves to transfer both of the females and their partners, plus a solitary male (two more than the three birds they had permission for!). A few months later the last two males were moved from Little Mangere - the first time an entire species had been moved.

A recurring theme during work on Little Mangere is the fearsome climb up (and down) the high coastal cliffs to the summit patch of bush. The team who moved the robins had to do this climb with the added pressure of not just carrying their precious cargo in specially-designed boxes, but while being filmed for a documentary!

One of the transferred robins was never seen again after a large slip in the winter of 1977 squashed nearly a quarter of their habitat on Mangere Island, and due to several misadventures there were only 5 black robins in 1980. With only five birds left, and only two females, it was obvious that ways needed to be found to increase the population and this led to a remarkable and world-leading programme of manipulating black robin nests, eggs and chicks over many years.

The discovery after a storm destroyed one of the first black robin nests that black robins would lay a replacement clutch of eggs if their original clutch was lost meant that the team could remove the first eggs laid and the black robins would then lay another clutch of eggs. But where to put the eggs they removed? It was decided that Chatham Island warblers *Gerygone albofrontata* could be foster parents by substituting their warbler eggs with black robin eggs (a technique called "cross-fostering"). The black robin pair would then re-nest (this was speeded up by destroying the old nest). Unfortunately it was found that the smaller warblers would not feed the larger robin chick with sufficient food (possibly because a black robin chick gets larger meals and therefore does not beg for food as frequently as warbler chicks) and the robin chick would starve. The team quickly came up with a strategy of returning the fostered robin chick to an already nesting robin (not necessarily it's parents), but doing this required extraordinary attention to detail on key nesting dates, such as date of eggs being laid, hatching dates and expected dates when chicks would fledge. This required a huge amount of work, and could only be a temporary solution. What was required was a better foster parent, and it was decided to try the Chatham Island tomtit *Petroica macrocephala chathamensis* as foster parents, but all the tomtits had been removed from Mangere Island in 1976 – because they would have competed with the robins for food and territory, and the nearest tomtits were now on Rangatira Island. This meant a

cross-fostering programme began between a species on one island with another species on another island separated by nearly 30km of notoriously rough sea. Moving eggs between islands required the development of a portable incubator, to keep the eggs warm and to prevent their being damaged. This cross-fostering programme, with help from the warblers as temporary incubators, saw the team attempt to make the black robin pairs re-nest twice (lay three clutches of eggs), the first two would be reared by tomtits and the black robin parents would rear the last clutch.

As a result of all this effort the black robin population had more than doubled to 12 birds by in 1981, but this raised concerns there was insufficient habitat on Mangere Island for more than 20 birds and at this rate Mangere Island would be 'full' in a year. It was decided to establish a second population on Rangatira Island, which would also act as insurance if there was a catastrophe on Mangere Island. Both eggs and young robin chicks were moved to Rangatira and raised there by tomtits. In 1983, the female Old Blue (the early robins were named using the colour of the plastic ring on their leg), who had produced all the black robin chicks to date, was moved to Rangatira, so that Old Green, the only female black robin not directly related to Old Blue would have the best chance of producing offspring and preserving what genetic diversity remained. Unfortunately, none of her progeny survived to breed, and her genes were lost.

In the summer of 1983/84, the black robin chicks reared by tomtits are now of breeding age, but some have become "imprinted" on their tomtit parents, and therefore prefer tomtits as mates, and any interbreeding would result in hybrid progeny. The only option was to capture the imprinted robins and return them to Mangere Island, where there were no tomtits, and taking black robin-raised young birds to Rangatira Island. The use of tomtit cross-fostering was minimised, and preference given to robin chicks being reared for the last part of their chickhood by robin parents, even if that meant a smaller number of chicks produced each breeding season.

Between 1981 and 1992 the clutches of black robins were manipulated in many ways – they had their eggs substituted with false, plastic, eggs; the number of eggs was increased or decreased, or young eggs substituted for older eggs (or vice versa); chicks were regularly moved between nests and sometimes the robin parents would return after searching for food to find that the chick they had left was now double the size, or shrunk to about half what it had been, or they had more (or fewer chicks) than before as workers swapped chicks with other nests! Luckily black robins are not good at counting and are remarkably accepting of changes to their nests. However, the team always had contingency plans for if things went wrong, and these regularly had to be employed following unexpected desertions of nests or bad weather causing chicks to starve.

Black robin nests were also "perfected" to get around various problems: they were moved into boxes to protect them from weather, a drawer allowed easy access to the nest contents; a mesh screen was added to discourage their being claimed as nest sites by exotic starlings *Sturnus vulgaris*; and insecticide was added to the nest lining to treat mites and ticks. The birds were trained to feed on mealworms and other invertebrates provided by workers, which helped the parents feed young birds, but also made catching robins much easier. Other techniques had been trialled, including force-feeding and artificially resuscitating near-dead black robins using "mouth to beak" breathing.



Avian pox disease (a virus introduced into New Zealand in exotic birds and as a poultry vaccine) has been a continual issue and causes lumps and lesions on a black robin's legs. Luckily the strain infecting black robins is not as lethal as the strain infecting birds in other places, such as Hawaii.

A continual backdrop during all the intensive management of black robins was the almost "days of our lives" and sometimes almost surreal partnerships and behaviours or the birds themselves. Having grown through a "bottleneck" of five individuals, or which only two (the female Old Blue and the male Old Yellow) produced descendants contributing genes to the existing population, has resulted in an extremely inbred population. This inbreeding is exacerbated because, even prior to the 5 bird bottleneck, it is likely that there may only ever have been 7 or 8 effective breeding pairs for all the time the birds inhabited Little Mangere Island. Despite this inbreeding, 90% of black robin eggs are fertile, 80% of these hatch and 70% of the chicks survive to one year old. However, the inbreeding has reduced the survival of young birds (and probably also reduces breeding output). It has also led to the proliferation of unusual behaviours such as laying eggs on the nest's rim rather than in the bowl, and it may make them vulnerable should they be exposed to a new disease.

All this hard work and dedication in such a remote area was paying off and by the 1984/85 season the black robin population had increased to 38 birds, and on 24 November 1988 the black robin population reached the magical 100 bird mark. All this work required a lot of time and effort by team members, and in the 1988/89 season some of the black robins were deliberately not actively managed to compare their breeding success with those robins that continued to be actively managed as in the previous seasons. This found that the "close-order management" as employed on black robins was increasing productivity by 50%, but this increase took a lot of work. In the 1989/90 season the amount of close-order management was decreased. After the 1998/99 breeding season it was estimated that there were 254 black robins, 182 on Rangatira Island, and 72 on Mangere Island, and the population has remained more or less at these number since then (in 2011 there were 234 black robins on Rangatira Island and 47 on Mangere Island) with the exact number depending on that year's weather which influences the number and success of breeding attempts and mortality of young and old birds over the winter. Worryingly, the number of adult birds on Mangere Island has decreased in recent years, possibly because of limited dispersal of birds into the new habitats that are being planted, and occupation of prime space being occupied by older birds.

An attempt to return the black robin to a predator-free enclosure on the inhabited Pitt Island between 2001 and 2007 failed, probably because swarms of mice had removed much of their food within the fenced area, and birds were caught by wild cats on the times when they flew over the protective fence.

Both Rangatira and Mangere Islands are Nature Reserves, and entry is by permit only. Opportunities occasionally arise to participate in the Department of Conservation's black robin project.

One aspect of the black robin story that needs to be emphasised is the role played by luck. There were many occasions, when if the outcome had been different, the species would probably not have survived. These occasions are best summarised by Don

Merton's tribute to "Old Blue" (in the 1992 NZ Journal of Ecology, volume 16, pages 65-68):

- That she ever hatched and reached adulthood on Little Mangere, at a time when the habitat was fast diminishing and degrading, and few chicks survived; only one other bird from that era survived to breed.
- That Doug Flack and team discovered the plight of the last few robins in time.
- That in spite of rough seas and huge cliffs, and the few (inevitable!) bureaucratic hurdles we were successful in transferring all seven survivors (including the last two females) to big Mangere in 1976-77.
- That all, including "Old Blue", survived the transfer and surf landings.
- That "Old Blue" changed mates in 1978 and paired with what proved to be the only successful breeding male surviving at that time - "Old Yellow". (With the exception of one and two year old birds, pair-bonds are generally maintained for life.)
- That she survived a massive avalanche in 1977 which demolished about a third of the Mangere bush: two of the seven robins weren't so lucky!
- That she lived so incredibly long and was productive to the end; an average robin life-span is 5-6 years - "Old Blue" began her productive life at about 9 years!
- That we happened to visit the island in 1979 when "Old Yellow" was severely crippled by his leg-band, and were able to remove the band; "Old Yellow" was one of only two males alive then - and proved to be the only viable one!
- That as a child I had fostered goldfinch nestlings to my grandmother's canary and, 35 years on, was able to incorporate this childhood prank in devising a rescue strategy to dramatically boost production in a species that, unaided, lacked the ability to recover quickly due to its naturally low productivity ("K-selected").
- That "Old Blue" and "Old Yellow" allowed us to take their eggs and that cross-fostering (untried in any endangered passerine recovery programme involving free-living birds) proved a practical and effective means of boosting productivity.
- That we were able to devise a means of circumventing imprinting problems.
- That genetic problems associated with prolonged, close inbreeding did not arise. (The species had presumably already survived an intense bottle-neck during its 90 year ordeal at perilously low numbers on Little Mangere.)
- Finally, in her last days "Old Blue" (with our help) evaded a high level proposal to take and preserve her as a stuffed specimen!
- "Old Blue" was a delight to work with and seemed to enter into the spirit of the rescue operation. She lived at least 13 years (died late 1983 or early 1984), considerably longer than any robin since then and more than twice the lifespan for most robins. (We thought each year must surely be her last.) Further she and her mate "Old Yellow" were the only effective breeders from 1979 to 1981, and she raised 11 chicks once she got going. All the black robins alive today are descended from "Old Blue" and "Old Yellow". They unquestionably saved their species from extinction.

Old Blue captured the attention of a generation, and is the only bird whose death was officially announced in a government's parliament. There is a plaque commemorating her contribution to saving her species in the Chatham Island airport.

And finally in Don Merton's own words: "Do not wait until you have all the facts before you act – you will never have all you would like. Action is what brings change, and saves endangered animals, not words".

## What next?

The black robin's conservation story is far from over. Conservation efforts now focus on protecting the islands from invasion by pest species using biosecurity measures and enhancing the slow-growing habitat on Mangere Island (over 120,000 plants have been planted in the last 30 years). The next story of the chapter is likely to be the return of the black robin to some of its old haunts, but that chapter is for the Chatham Islanders to write.

## More information

Website: NZ Birds Online – black robin. [Link](#)

Website: Department of Conservation – black robin. [Link](#)

Website: Chatham Island black robin. [Link](#)

Video: Meet the Locals – black robin. [Link](#)

Video: The black robin – a Chatham Island story. Natural history NZ Ltd, 1989. [Link](#)

Scientific paper: Human-assisted spread of a maladaptive behaviour in a critically endangered bird. By Melanie Massaro, Raazesh Sainudiin, Don Merton, James V. Briskie, Anthony M. Poole, Marie L. Hale. PLOS One, Vol. 8, Issue 12, 2013. [PDF](#)

Scientific paper: Severe inbreeding depression and no evidence of purging in an extremely inbred wild species – the Chatham Island black robin. By Euan S. Kennedy, Catherine E. Grueber, Richard P. Duncan and Ian G. Jamieson. Evolution, Vol 68, pages 987-995, 2013.

Book: The Chatham Island: heritage and conservation. Canterbury University Press, Christchurch, 1996.

Book: The black robin: saving the world's most endangered bird. By David Butler & Don Merton. Oxford University Press, Auckland, 1992.

Book: Black Robin country. By David Cemmick & Dick Veitch. Hodder & Stroughton, Auckland, 1985.



## Photos



Little Mangere Island (back right of centre) from Mangere Island. DOC



Campsite on Little Mangere Island. DOC



Landing robin transfer team on Little Mangere Island. DOC



Film crew climbing Little Mangere Island's cliffs, 1972. DOC



Don Merton releasing black robin. DOC



Black robin nesting box. DOC





Early black robin transfer container using empty tin. DOC



'Robin Bush' on Mangere Island in the 1970's. DOC



Transferring black robins from Rangatira Island to Pitt Island by boat, 2001. DOC



Pitt Islanders welcome the returning black robins to their island, 2001. DOC



The predator fence around Caravan Bush, Pitt Island. DOC



Swapping robin eggs in nest box. DOC

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