

# The Chatham Island Black Robin

(How the world's most endangered bird  
was saved from extinction)

by Don Merton  
New Zealand Department of Conservation

**Editor's Note:** By 1980 only five Chatham Island Black Robins — including just one effective breeding pair remained. The story of the daring bid to rescue the bird from extinction is as dramatic a conservation tale as any in the world. Here, Don Merton, the chief architect of the plan and project leader, gives a full account and brings readers up to date with the Black Robin's progress.

The Chatham Island Black Robin *Petroica traversi* is endemic to that land apart — the windswept cluster of islands 850 km east of the South Island of New Zealand known as the Chathams group. Once widespread on the islands, the robin, together with many

other native birds, disappeared from the larger islands following European colonization early last century.

Forests and scrubland were cleared, and rats and cats introduced. Seven bird species were exterminated. Miraculously however, a remnant Black Robin population of about 20 to 30 birds persisted for the subsequent 90 years in five to seven hectares of scrub forest on top of a 200 metre sheer-sided rock stack — Little Mangere Island.

Little Mangere is rarely visited, so extremely difficult is it to climb. However, in 1938 the late Sir Charles Fleming, Alan Wutherspoon and Graeme Turbott scaled the cliffs and rediscovered the Black Robin there.

In the 1970s, the woody vegetation atop Little Mangere degenerated rapidly. The robin population plummeted from 18 birds in 1973 to seven (two pairs and three males) in 1976, when the New Zealand Wildlife Service relocated the survivors on nearby 130 ha Mangere Island. Prior to this, 120,000 trees had been planted on Mangere to provide additional habitat for the robins and other native wildlife.

During the final three years on Little Mangere, only one robin chick had survived to breeding age. Although chick survival improved following the transfer (five chicks in four years), the skewed age-structure of the population meant that recruitment of young was offset by natural mortality of old birds. Unaided, no rapid recovery was possible and the species teetered on the brink of extinction; an urgent remedy was required.

In common with some other New Zealand endemics, Black Robins tend to be long lived and to have a low reproductive rate: the normal clutch size is just two eggs and a successful nesting cycle takes more than three months. Thus, the species lacks the

**WHAT EVERY BIRD OWNER HAS BEEN WAITING FOR:**

## Sex Made Easy<sup>®</sup> and GeneMatch<sup>™</sup> Registry

Zoogen, the leading company in psittacine and avian biotechnology, can determine your bird's sex and confirm its identity using a single drop of blood.

**Sex Made Easy<sup>®</sup>** - The safe, accurate and convenient sex identification test.

- Samples can be taken at any time in a bird's life
- No anesthetic is necessary
- Minimal stress to your bird

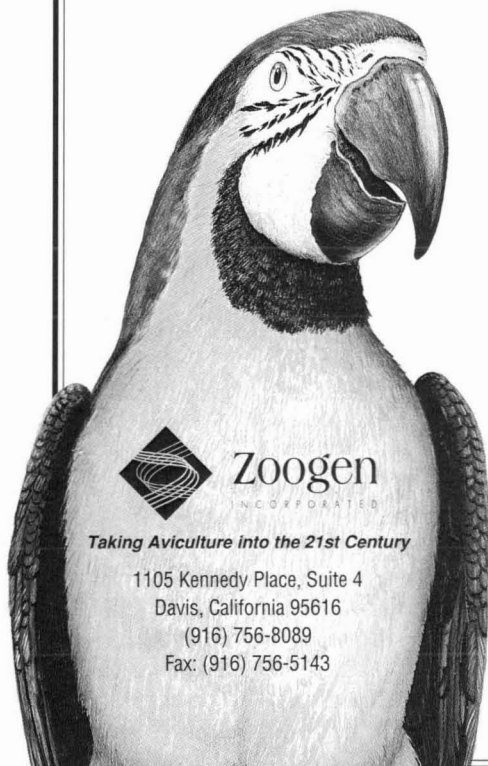
**GeneMatch<sup>™</sup> Registry** - Peace of mind and convenience for the concerned bird owner. A bird's DNA is banked for immediate or future DNA fingerprint analysis. This service provides:

- Accurate identification - if a lost or stolen bird is recovered
- Paternity - proves that bird is domestically bred
- History of ownership - documentation if required
- Emergency alerting service - alerts nearby petshops, veterinarians, animal shelters of lost or stolen birds
- "Matchmaker Network" - coordinates buying and selling of birds for pets or breeding, if requested

**NEW!**

**Easy Sample Collection** - Takes 10 minutes • Birds of all ages • No Refrigeration • Send by U.S. mail

Consult your Veterinarian or call Zoogen, Inc. at (916) 756-8089



ability to recover quickly when its population is reduced. However, because Black Robins are capable of renesting, their potential productivity is greater. For this reason, in 1979 when the species had declined to just five birds, I proposed cross-fostering as a means of capitalizing upon this potential—to boost productivity and so quickly restore the population to a viable level.

Five birds, including *only one effective breeding pair* (Old Blue and her mate Old Yellow) existed in September 1980. However, an intense management programme developed since then resulted in a spectacular recovery to about 130 birds by early 1991. This recovery can be attributed largely, if not entirely, to innovative management which included manipulating the behavior of both Black Robins and Chatham Island Tits *Petroica macrocephala chathamensis* living in the wild.

This involved:

- Manipulating robin nesting cycles, and fostering eggs and young to other species, so increasing production two-three fold. And, through the use of nest-boxes, nest security was improved so that accidental losses during incubation and nestling periods were virtually eliminated.

- Establishing the major robin population on South East Island. This move has vastly increased the area of habitat available to the Black Robin, so that for the first time this century the species has sufficient space to increase and expand. (Little Mangere, where the species was confined for almost a century, and Mangere to which the depleted population of seven birds was transferred in 1976, each had about five ha of habitat whereas South East Island has more than 100 ha). Survival, particularly of juveniles and unattached birds, has improved markedly since their release in 1983 on South East Island.

The result is that there is now a younger, more productive and successful breeding population.

### How It was Done

But to return to 1980....

We had to first quickly determine the feasibility of this daring proposal in a species whose numbers were so incredibly low. We were also mindful of the immense logistic problems associated with living and working on

a small, remote island for around four months each year.

Summarized below are some immediate objectives we had to resolve in order to pioneer the cross-fostering program which was to continue each spring and summer from 1980 to 1988:

- obtain basic biological information for the Black Robin and three potential foster species;

- determine the limits of tolerance within which the robin and three potential foster species would permit us to operate;

- gauge reaction to manipulation of nest contents in donor and host species;

- gauge reaction of host and donor species to alien and artificial eggs, and clutches of different size and color to their own;

- gauge reaction of host and donor species to reduced and increased clutch size;

- gauge reaction of host and donor species to increased and reduced incubation periods;

- gauge reaction of host and donor species to nestlings of alien species, to nestlings of differing age, and of their introduction to nests at different times of the breeding cycle;

- determine the time that embryos at various stages of development might safely remain out of incubation in the cool Chatham Islands climate;

- determine what constitutes normal incubation, brooding and nestling feeding routines in host and donor species;

- discover incubation, nestling and fledging periods of host and donor species; and

- closely observe breeding robins and up to 40 pairs of potential foster parents in order to find their nests early in the nesting cycle, log their progress, and prepare some to receive robin eggs.

We also had to develop ways of safely handling tiny, fragile eggs and nestlings in and out of (enclosed) Chatham Island Warbler *Gerygone albofrontata* nests and (open) robin and Chatham Island Tomtit nests. Warblers, robins, and tomtits proved to be unusually tolerant at all stages of the nesting cycle. European Dunsnocks (*Prunella modularis*), however, were prone to desertion and so were unsuitable. Robin, warbler and tit could be induced to incubate for almost twice their normal incubation

periods and would accept eggs and nestlings of other small passerines. Poorly sited or insecure nests of all three species could be secured with string, or, in the case of robin and tit nests, transferred into the safety of a nest-box. It was even possible to move nests a metre or two in stages to more sheltered or accessible positions. A poorly constructed or damaged nest could even be replaced with a fresh nest.

Although warblers were able to hatch and care for robin eggs and nestlings, they proved incapable of raising robin nestlings beyond ten days of age. It was thus a major breakthrough to discover in 1981 that tits were capable of hatching and fostering robin chicks through to independence.

Tits, however, did not occur on Mangere Island so eggs for fostering had to be shipped 15 km by sea to South East Island. A portable incubator and brooder were developed to help transfer eggs and nestlings between the two islands. No helicopter is based in the Chatham Islands so for transport we were entirely dependent upon the few local fishermen—without their help the program could not have taken place. At 44 degrees south the Chatham Islands are within a zone of constant strong winds—the infamous “roaring 40s”—so that any boat trip entailed days of planning to coordinate weather conditions, availability of a fishing boat and stage of development of eggs or nestlings. Transfers took two to five hours to accomplish. During the course of the cross-fostering program, approximately 40 robin eggs, 10 nestlings and 25 independent birds were transferred between the two islands—without loss.

### Results

In 1983, permission was granted to establish a robin population on 219 ha South East Island where extensive areas of scrub and forest exist. Two pairs of robins were transferred to South East Island in 1983 and this event proved to be a turning point in the species' recovery, for the major population is now found there. Furthermore, the need to transport eggs and birds between islands diminished.

Throughout the course of the program, techniques and procedures have been constantly reviewed and refined, so that those used in the final

years were very effective. Following is a summary of the management strategy used in the final years of the program.

About 30 pairs of tits breeding on South East Island were managed each spring so as to ensure a continuity of secure foster nests was available throughout the robin breeding season. More advanced pairs were induced to renest, and those nests selected for fostering transferred into nest-boxes. Here they were more easily manipulated, and were safe from interference from other birds and adverse weather—in a species whose numbers were so critically low, survival of every egg and chick was vital.

Plastic mesh with holes just large enough for tits to pass through was placed over the entrances of the nest-boxes so as to exclude White-faced Storm Petrels (*Pelagodroma marina maoriana*), Broad-billed Prions (*Pachyptila vittata*) and European Starlings (*Sturnus vulgaris*) which breed on the island in immense numbers and which otherwise enter and destroy some nests. Management of each clutch was carefully planned before it was in fact laid.

We closely watched breeding robins. Any that did not build their nest in nest-boxes were transferred into boxes during laying. First and often second clutches were removed and fostered to tits for incubation, but third clutches were normally left with their natural parents. Where practicable, the commencement of incubation in two or more “close” clutches was synchronized so as to ensure the option existed to unite and return broods of similar age to robin nests prior to fledging. As will be seen later, this synchronization in hatching times of clutches was a key element in avoiding the effects of mal-imprinting.

Tit foster-parents were observed so that any behavioral problems were identified early. For instance, for the first two to three days following hatching, male tits and robins feed their young while females brood almost continuously. Inexperienced males must learn to respond to the female's cue to cease feeding her and start feeding the nestlings, and often the newly-hatched young perish in the process. Thus, it was necessary to have an alternative nest on hand to which such young could, if necessary, be transferred at short notice. Such

inexperienced males were subsequently “taught” to feed young nestlings through our placing week-old tit nestlings in their nests for a few days. To facilitate this, a continuity of “borrow-nests” was necessary.

Although the eggs and young were well protected from the outside (from attacks by starlings, for example), nestlings in particular remained vulnerable to attack from within (from nest mites or fleas), and losses occasionally occurred. To overcome this problem we fumigated, and dusted nests with pyrethrum powder.

When about 15 days old, nestlings were sexed and individually color banded, and those in tit nests were returned to robin nests where they were often united with a brood of similar age. Although broods of four to five young do not occur naturally, robins are able to raise this number if supplementary food is provided. The fostered young were returned to robin nests prior to, or at fledging, so as to avoid imprinting problems which occurred when young were raised entirely by tits. Mal-imprinting has proved an obstacle in some cross-fostering programs so our develop-

ment of a means of overcoming it is of some significance and may have application elsewhere.

Briefly then, the main elements of the program were:

- to increase robin egg production by inducing breeding pairs to renest;
- to foster the additional robin eggs to Chatham Is. tits for incubation and raising to near-fledging age; and
- to synchronize the time of hatching in fostered clutches so as to facilitate their return (as composite broods) to the few robin nests prior to fledging in order to avoid mal-imprinting.

This was apparently the first time that cross-fostering had been used in the management of an endangered passerine (perching bird) living in the wild. As a consequence of the program, cross-fostering, and the manipulation of breeding behavior, are already being used with success in the management of some other endangered species in New Zealand and elsewhere.

The Black Robin program has been relatively inexpensive yet highly successful. Since 1980, a team of between two to four people have stayed in the field for approximately

4th



with

**\*\* Tony Silva \*\* Sally Blanchard \*\* Rick Jordan \*\* Kathleen Haring \*\*  
\*\* Jan Roger van Oosten \*\* John Doole \*\* -other speakers and attractions-**

**OCTOBER 30-31, 1993**

Toronto Airport Hilton Hotel, Toronto, Ontario CANADA  
(Rooms \$80. single or double)

**REGISTRATION:**

Full: \$135. includes 3 meals; add \$20. for reg'n at the door

Basic: \$75. for 2 days (meals not included); add \$20. for reg'n at the door

\$40. for 1 day (meals not included); add \$10. for reg'n at the door

Meals: Saturday - lunch \$25. dinner \$35  
Sunday - lunch \$25

**PROCEEDINGS:** 1993 1992 1991 1990  
at door \$15. \$10. \$10. \$5.  
\*by mail \$20. \$15. \$15. \$10.

\* discount \$5. for 2 or more

**EXHIBITOR INQUIRIES INVITED**

**INFORMATION/PAYMENT:** (cheque or visa)

Canadian Parrot Symposium  
108 Meadowvale Road, West Hill, Ontario CANADA M1C 1S1  
tel: Jacquie 416-282-5997

Hosted by The Canadian Parrot Symposium  
Directors: Silvio Mattacchione and Jacquie Blackburn

four months each spring and summer. The program has created unprecedented interest from both within New Zealand and overseas. Its success can be attributed to the patience, perseverance, attention to detail and very high level of commitment by the small, dedicated team—together with the obvious cooperation of the robins and tits, and, of course, more than a fair measure of good luck!

Perhaps the most remarkable feature of the Black Robin story, however, is the incredible endurance and resilience of the birds themselves—despite intense inbreeding over a very long period. For such a tiny population to survive, entirely isolated, for almost a century on the windswept summit of a rock stack in mid-ocean is no mean feat of endurance. I believe that no more than 30 birds could have existed at any time on Little Mangere and the population was at a critically low level—only one or two effective breeding pairs—during the late 1970s and early 1980s. All surviving robins are descended from a single pair, “Old Blue” and “Old Yellow”. Nonetheless, there is no indication of “inbreeding depression” or “random drift”—genetic conditions which may jeopardize the survival of small, isolated animal populations. The new generation of robins show no indication of genetic degeneration. They are highly productive, and fertility (about 90 percent), hatchability (83 to 88 percent) and recruitment to the breeding population (75 percent of young reaching independence) are surprisingly high for what must be one of the most intensely inbred wild animal populations anywhere. Adult mortality is low (21.6 percent average over the nine years of intense management).

Without doubt, the most important character in the Black Robin drama was “Old Blue”, a female so named for the color of her leg band. Old Blue started life on Little Mangere Island in about 1970, and lived for at least 13 years—more than twice the life span of almost any other robin (females average three to four years). In 1976, Old Blue was one of two surviving females and together with the last five males was transferred to nearby Mangere Island. *Old Blue's productive life began at the incredible age of about nine years when she mated with “Old Yellow”, at which time she was the only productive female!* Old Blue and

her mate then bred each year until her death in late 1983 or early 1984—and *unquestionably saved their species from extinction. All surviving Black Robins are descended from this pair.*

*The Black Robin is the only avian species living in the wild in which the identity and lineage of every individual is known and can be traced to a common ancestor.*

### The Future

Following the 1988/89 breeding season, 99 robins existed and since the population was believed to be sufficiently strong to continue its recovery unaided, we ceased manipulative management. Nevertheless, during the 1989/90 breeding season, the population increased to 119 birds, an increase of approximately 20 percent over the previous year! This was the proof everyone had been waiting for—that the robins could continue their historic recovery without our help. There are now (Feb. 1992) more than 130 individuals on the two islands.

Although interventionary management has ceased, it is desirable to re-establish the species on a major island in the Chathams. However, because the robin is incapable of co-existing with cats or rats, the species can never be reinstated on the main Chatham Island where feral cats and two species of rats are established and eradication is not feasible. On the other hand, Pitt Island (6,270 ha), the second largest island in the group, is rat-free, and plans are already in train to eradicate its feral cat population. In a cooperative program with the residents of Pitt Island, the New Zealand Department of Conservation intends to start this ambitious project in early 1992, for such is probably the only means by which the long-term survival of the Black Robin and many other Chatham Island species might be assured.

*The Black Robin's rescue has demonstrated that intense, interventionary management of an endangered species living in the wild is practicable, and that even in the most extreme circumstance (one remaining viable pair) recovery is possible.*

### Acknowledgements

The Black Robin could not have been saved without the extraordinary dedication and commitment of New Zealand Wildlife Service—and more

recently New Zealand Department of Conservation teams, which often included volunteers. Over the nine years of the intense management program, many departmental staff and volunteers were involved. Furthermore, success could not have been achieved without the goodwill and cooperation of the Chatham Islands community—in particular the Pitt Islanders who provided generous hospitality and support, including vital transport between the islands. Finally, without the matriarch, “Old Blue's”, remarkable and timely contribution, together with the unwitting cooperation of the tits of South East Island—the unsung heroes of the program—there would be no Black Robins today. *The Black Robin's rescue has been a classic team effort involving both man and bird.*

### About the Author

Don Merton is Kakapo (parrot) Recovery Group Leader, and Operations Coordinator in the Threatened Species Unit of the New Zealand Wildlife Service. Highlights of his career include:

- establishment of a second population of the endangered Noisy Scrub-bird in the south of Western Australia;
- helping to save the critically-endangered Echo Parakeet in Mauritius (believed in 1984 to be the world's rarest parrot);
- removing the threat of imminent extinction posed by rabbits to the many unique plants and reptiles of Round Island, Mauritius—Round Island was said to support more threatened plants and animals than any comparable area on earth!
- and he was instrumental in having the tropical rainforest breeding grounds of Abbott's Booby (the largest and most endangered gannet), and other endemic birds of Christmas Island (Indian Ocean) saved from destruction through phosphate mining and permanently preserved, when in 1977-79 he was seconded to the Australian government as Christmas Island's first conservator.

However, Don is perhaps better known as a pioneer in the management of New Zealand's sadly-swollen list of endangered species, and for his key role in helping to save some of New Zealand's most endangered birds—the two races of saddleback, the Kakapo and the Black Robin. ●