# Re-establishment of a Kaka Population

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*New Zealand*

The Kaka *Nestor meridionalis* is a forest-dwelling parrot endemic to New Zealand. There are North Island and South Island Kaka sub-species. The North Island Kaka was once widespread throughout the North Island and outlying islands, but numbers have dwindled on the mainland to the extent that the only secure populations are on offshore islands.

The main reasons for the decline of Kaka on the mainland are habitat loss through deforestation, and introduced predators such as mustelids and opossums. Kaka were locally extinct from Mount Bruce reserve for nearly 50 years, until a bold new initiative to return them to the area. The reserve surrounds the Mount Bruce National Wildlife Centre, which is dedicated to the captive breeding of New Zealand's rare and endangered species for release into the wild. The initial goal of the project was "To determine whether or not the release of juvenile Kaka is an effective tool in the restoration of Kaka to mainland ecosystems." Three groups of juveniles from different origins were released in 1996 and 1997, and following the success of these another release was undertaken in 1999, comprising adult males.

The first release group consisted of five wild-origin (Kapiti Island, Wellington) and four hand-reared juvenile Kaka. The Kapiti Island birds were captured and transferred to Mount Bruce in May 1996, and put into two aviaries with the hand-reared juveniles. Five were held in a large aviary with two captive adult Kaka, and four were held in a small temporary aviary at the release site.

During a one-month quarantine period, cloacal swabs and fecal samples were collected from all nine Kaka, to screen for salmonella, yersinia, chlamydia and internal parasites including coccidia. All tests returned clear results. The birds were fitted with transmitters (weighing 6% of the bird's body weight and with a 27-month life span) and individual colour leg band combinations.

In order to encourage the birds natural feeding behavior, the aviaries were supplied with fresh natural forage including berries and rotting logs which contained invertebrates. An aluminum feedstation identical to three feedstations which were to be set up at the release site, designed for ease of cleaning, was set up in each aviary so that the Kaka would become familiar with feeding from them. A diet of nectar, fruit, vegetables, seeds and nuts was supplied at the feedstations daily. The feedstations each consisted of a circular body divided into four feeding compartments, surrounded by pipe for the birds to perch on. Each feed station at the release site was secured 2 meters off the ground at the top of a metal pole, and could be easily lowered for cleaning. Food was supplied daily at 3:00 P.M. to the wild birds from the release date onwards.

The first release of nine birds occurred in June 1996. The juveniles spent the night before release all together in the temporary aviary at the release site. The following morning the front mesh wall of the aviary was removed, freeing the birds. A morning release gave the birds time to investigate their surroundings before nightfall. Once the birds became accustomed to the daily 3:00 P.M. restocking of the feedstations, all but two wild-origin birds became regular feeders. Of the wild origin birds one was recaptured at the point of origin and a

*Adult Kaka showing colour leg band and the transmitter aerial is clearly visible.*

Photo by Rose Collen

second disappeared. A second release group, of five parent-reared captive-bred juveniles, was assembled and held at Mount Bruce in May 1997. These birds were prepared for release under the same protocols as the previous groups, with a quarantine, transmitter, band fitting, and feedstation set-up. They were held in the temporary aviary at the release/feedstation area for the three days prior to release, then released in June 1997 at the afternoon feed time. This meant that the 1997 release juveniles would see the resident wild birds using the feedstations. There was no difference in survival between the birds released in the morning and those released at the afternoon feed time.

*Kaka drinking nectar from a tube on the supplementary feed station.* Photo by Rose Collen

All release groups were monitored using telemetry equipment during the six-month periods following release. Researcher Raelene Berry wrote her Masters thesis on the bird's behavior and survival, and found very little difference between the three release groups. All survived the six-month post-release monitoring period, and all remained within the Mount Bruce reserve, within approximately 1km of the release site. Two of the three sample groups had the benefit of parent rearing to learn their natural foraging techniques, however the hand-reared juveniles showed equal natural foraging abilities. All birds spent most of their feeding time chewing into wood for invertebrates, and were observed feeding on sap, fruits and nectar. The survival and site fidelity result showed there was little difference between the captive-bred and wild-origin juveniles, apart from less inclination from the wild-origin birds to use the artificial feedstations.

The summer of 1998 saw the first breeding attempts by the released Kaka, at the ages of two and three years. This was a surprise, as it was thought that Kaka did not start breeding until they were four years of age. The first clue was when one female, three-year-old hand-reared "Mel" stopped feeding from the feedstations each afternoon, which was unusual for her. Her signal was tracked some way up the hill and she was located at a nest site with a male in attendance. The site was in a leaning hollow tree, not safe for the female as it provided easy access for predators. Staff attempted to predator-proof the tree by placing metal sheets around the base to prevent climbing predators, and setting baited fenn traps around the site. Within a week the bird was attacked on the nest and her eggs preyed on – she was injured but recovered and did not make another nesting attempt. Two other females soon disappeared, and to the dismay of staff were both found dead on the same day at nest sites. Bite marks and broken eggshells suggested that a ferret and a stoat were responsible. After this disappointing start to the unexpected breeding season, monitoring of the females was stepped up to ensure any further nests were found quickly with the aim of protecting them from predators.

Soon another hand-reared female, "Yakka" was found nesting in a rotten tree stump. The entrance hole was considered low enough to provide access to jumping predators, so the nest was closed over with wire mesh to prevent Yakka going back to this dangerous site. However this determined bird chewed the mesh away and went back in to finish laying her clutch of four eggs. Staff then decided to predator proof the nest as well as possible, by clearing the surrounding vegetation, attaching smooth metal sheets to the tree and placing 20 fenn traps around the site. Hand-reared Yakka was very tame and unafraid of people, but while nesting all the protective/aggressive instincts were there. After 25 days incubation, four chicks hatched, and at 55 days of age it was time to take them from the nest and fit transmitters and leg bands to them before they fledged at 65 days, so that their survival could be monitored once they left the nest. Due to aggression towards staff, Yakka was captured and held temporarily in a box. The chicks were then returned to the nest, Yakka allowed back to them, and all four fledged the following week.

Two of the two-year-old females bred as well. One chose a very good site – a tall tree in a semi-clearing. The surrounding vegetation was trimmed and the tree banded, no traps were necessary. Unfortunately her mate died due to a bill injury (suspected fighting), and lacking backup and feeding from the male she deserted her nest with three fertile eggs.

The other two-year-old, "Cleo" laid in an artificial nestbox in which starlings had already constructed a new nest – she laid and incubated in the cup of the starling nest! She was unpartnered (due to a shortage of available males) and the infertile eggs were removed. Her second nesting attempt was in a stump very low to the ground, so her eggs (also infertile) and the stump were removed. She went on the try a third clutch (amazing for a two year old and first time breeder), and by this time she had a mate. The chosen site was a tree by the edge of one of the service roads, making predator proofing easy. Cleo fledged two chicks from this nest, which were also banded and fitted with transmitters. The season started with three males and nine females. It ended with two males, five females and two juveniles (unfortunately one juvenile died accidentally and three were killed by predators at independence). Two females disappeared and radio transmitter contact was lost. At the end of the season, despite some disappointments, we felt that we had the necessary knowledge and skills to support successful breeding.

A third release, in September 1999, involved a fourth sample group. Inaccurate sexing of the Kapiti Island birds back in 1996, was due to their age. Current methods for assigning sex based on measurements are only accurate for adults, had lead to an unexpected skew towards females in the Mount Bruce population, and more adult males were needed to increase the number of pairs. Four males, aged from three to eleven years, were brought to Mount Bruce from other captive holders, and prepared for release as with the previous groups. They were all captive bred and having spent their entire lives in captivity were very tame and accustomed to people.

They were released at the feed-stations at the afternoon feed time and observed interacting with the resident wild Kaka almost straight away. Over the following weeks the four relied on the food supplied at the feedstations, but were observed foraging for natural foods more over time.

This release group proved just as successful as previous releases, with 100% survival and site fidelity. One bird even paired with a resident female over the 1999/2000 season, however no offspring were produced. Interestingly only a handful of birds on the North Island attempted to breed that season and none were known to have been success-

Photos by National Wildlife Centre

*Public viewing of Kakas at the supplementary feeding station.*

ful. It has also been interesting to observe the lack of mate fidelity from one season to the next and promiscuity amongst the birds even when paired in a season.

Following the success of the reintroduction project, the new goal is "To establish a viable, self-sustaining Kaka population at Mount Bruce." The first step is to support nesting pairs with intensive nest site management as with the first season, until the population reaches 10 pairs. Once 10 pairs are present, the focus of predator control will move to a system of predator trapping over the main 50 hectare breeding area.

The project has been significant nationally and now provides a method for the re-establishment of birds into areas where they are extinct. The soft-release method described is currently the only one known for mainland sites, and Kaka had never before been successfully translocated to establish a new population. Internationally this project also offers techniques, which may be able to be successfully applied to other psittacine species. Likewise, this is the first time that captive-bred parrots (including hand-raised birds) have successfully been re-established to an area from which they had become extinct. Apart from the conservation benefits for this species, which this project has produced, a number of other species such as kiwi, kokako, robins and more are likely to benefit from re-introductions after the future predator control.

The reintroduction of Kaka to the Mount Bruce reserve has provided excellent advocacy and education opportunities. The supplementary feeding not only supports the birds and enables easy monitoring, but is also a very good advocacy tool. Up to 50 visitors a day attend the daily Kaka feed, and Department of Conservation staff give a talk about the reintroduction project. This also offers the opportunity to tell members of the public about problems other species face in New Zealand and the efforts required for their restoration.

There are currently approximately 50 Kaka in captivity in New Zealand with only selected birds allowed to breed so that their offspring's genetic variability is maximized. Re-introductions such as this are likely to be replicated elsewhere in New Zealand and give good reason for future captive breeding to supply birds for release.

### Update

The re-establishment of New Zealand's North Island Kaka to the Mount Bruce National Wildlife

*Artificial nest and predator trap box for public viewing at the supplementary feed station.*

Centre has progressed since the above information. The population is now large enough to sustain itself, with only one further release planned.

The 2000/01 breeding season began with the release of three more captive, parent-reared juveniles into the reserve in September 2000, all of which are alive and well. This has been our busiest season yet, with four females nesting. We were very surprised that one of these four was one-year-old "DJ," released in September and paired up with a captive-reared male released the year before. Until now it was not known that the birds could breed at one year of age (the youngest previously recorded was two years old). She laid four fertile eggs in one of six artificial predator proof nestboxes provided for Kaka. Two chicks hatched and are now well on the way to fledging.

Another female, "Cleo," a prolific breeder who made three nesting attempts when she was just two years old, was supported by two males and nested in her old natural site, fledging one chick early in December. She immediately went on to second clutch in an artificial nestbox nearby and currently has three more chicks on the way, which are due to fledge in March.

The female, "Mel," survivor of a predator attack during our first breeding season, also nested in an artificial nestbox and has three chicks. She paired with one of the adult captive-reared males released in 1999. This is another first for Kaka, because he was hand-reared and long term in captivity until his release at the age of eight years, and he had never bred before.

Staff were very pleased with the high use of artificial nestboxes by Kaka, with three out of five nest sites in boxes. This saved staff a lot of time, as there was no need to set traps for mustelids at the sites with the daily chores of checking and rebaiting – time which could instead be spent monitoring single females for any other possible nesting activity. This is the first time such nestboxes have been successfully used by Kaka in the wild. Also fortunate was the tendency of the birds that preferred natural sites to re-use those from previous years. The two natural nest sites this season had been used before and had already been made predator proof.

The 2000/01 breeding season at Mount Bruce drew to a close with nine females, five males and nine fledglings. A release of three captive origin males and three juveniles is planned to increase the number of males and re-balance the sex ratio.

Next season the population will pass the 10 pair mark, and the focus of predator control will move to a system of predator control over the main 50 hectare breeding area. The population is now large enough that we will be monitoring selected pairs rather than every individual. This will determine the success of the new predator control regime, which will pave the way for a self-sustaining population.