Translocation of North Island saddleback *Philesturnus rufusater* from Tiritiri Matangi Island to Motuihe Island, New Zealand

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SUMMARY

In August 2005, 20 North Island saddleback *Philesturnus rufusater* were translocated from Tiritiri Matangi Island to Motuihe Island in the Hauraki Gulf, New Zealand. Post release survival over the first year was high (70%). A minimum of 11 juveniles successfully fledged in the 2005/2006 breeding season bringing the population to a minimum of 25 birds one year after release. Assuming long term success this translocation brings the total number of island populations of North Island saddleback to 13 and contributes to the ongoing ecological restoration of Motuihe Island.

BACKGROUND

The North Island saddleback *Philesturnus rufusater* is an endemic New Zealand wattlebird. They are omnivorous, long lived, poor flying forest dwellers that roost and nest in cavities. By the mid 1900s habitat loss and pervasive predation by introduced mammals had reduced North Island saddleback to a single population of approximately 500 birds on 484 ha Hen Island (Heather & Robertson 1996).

There were three failed attempts to translocate North Island saddleback between 1925 and 1950. The first successful translocation, in 1964 to Whatupuke Island, was facilitated by a greater understanding of the roles of predators at release sites and improved techniques for capturing, holding and transporting sufficient numbers of birds to establish new populations (Lovegrove 1996). Saddleback have become New Zealand's most successfully translocated passerine species and subsequent translocations have increased the total number of North Island saddleback populations to 15; 13 on islands free of introduced predators and two mainland populations at sites with predator proof fences and ongoing trapping and poisoning management regimes to regulate predator numbers (Lovegrove 1996; Hooson & Jamieson 2003; Parker 2008).

The conservation status of the North Island saddleback is now secure. However, established island saddleback populations have proved extremely productive, and while adult survival is high, juvenile survival is low due to density dependent factors (Armstrong *et al.* 2005). This creates opportunities to 'harvest' birds for translocation to new sites, an opportunity further facilitated by the tremendous growth in ecological restoration projects within New Zealand. This case study describes a recent translocation of North Island saddleback to Motuihe Island, using birds from a well-established translocated population on Tiritiri Matangi.

ACTION

Motuihe Island: The Motuihe Island Restoration Project is a community led initiative in partnership with the New Zealand Department of Conservation. The project began with an aerial poison operation to eradicate Norway rats *Rattus norvegicus* and house mice *Mus musculus* in 1997 from the 179 ha island. A subsequent aerial poison operation in 2002 was followed up with a combination of shooting, using trained dogs *Canis familiaris*, trapping and poisoning to successfully eradicate introduced European rabbits *Oryctolagus cuniculus* and feral cats *Felis catus*. Intensive re-vegetation was

initiated in 2003 to supplement existing native vegetation remnants (which currently cover only about 20 ha) and there have been approximately 165,000 native trees planted up to 2008. There is also ongoing control of exotic plant pests. Saddleback were the first bird species to be translocated to the island, but red crowned kakariki *Cyanoramphus novaezelandiae* have also been recently introduced (May 2008) and there are plans to translocate several other New Zealand endemic bird, reptile and invertebrate species.

Tiritiri Matangi Island: The ecological restoration of 220 ha Tiritiri Matangi was initiated in the 1970s. It has involved the planting of 280,000 trees by conservation volunteers and the translocation of 11 bird and three reptile species. In 1984, 24 North Island saddlebacks were introduced - it is presumed that saddlebacks were once on Tiritiri Matangi but it is not definitively known. Population growth was rapid and current estimates suggest there are 600-1,000 saddlebacks on the island. The Tiritiri Matangi population had been previously used as a source population for saddleback translocations to Moturoa Island (26 birds, 1997), Mokoia Island (36 birds, 1992) and Karori Wildlife Sanctuary (40 birds, 2002) (Hooson & Jamieson 2003). Given this large population size and no detrimental impacts of removing birds in this series of earlier translocations, Tiritiri Matangi was again chosen to supply birds for the translocation to Motuihe.

Capture: Three catching teams each of 3-4 people, operated during the catching phase 8-10 August 2005. On locating a saddleback territory, a team would erect a 6 or 10 metre mist net. A lure playback system was used consisting of two speakers one on each side and at a distance of approximately 2 m, from the net, connected to a 2-way switch and tape recorder with a selection of saddleback songs. Loud calls were used to attract a saddleback to the vicinity of the net, after which the volume was reduced to small snippets of barely audible calls through the speaker closest to the bird. As the bird approached the net the call volume and frequency were further reduced to tempt the target bird to search for the supposed intruder. When the target bird was close to the net and in a good position to be caught the sound was switched to the opposite speaker enticing the bird to cross the net and be captured. The reaction of birds to lure calls varied between individuals, ranging from a rapid response to no response at all, and some switching between call types was sometimes required to capture the bird. In addition, the position of the net would also sometimes influence outcome with a move of as little as 5-6 m resulting in capture. If a bird was not captured within 20-30 minutes it was usually more productive to move the net to a completely new territory.

Captured birds were placed in black cotton bags and then taken to a central processing location. Each bird was banded with a single metal leg band and a unique combination of 1-2 colour plastic bands. The birds were weighed and their tarsus measured to assign sex. Tail and wing measurements were also taken. A small (100 micro litre) blood sample was taken from the brachial wing vein for research investigating the corticosterone response of saddlebacks on different islands. Twenty five captured birds were then housed together for 1-3 days in an aviary approximately 8 m long, 5 m wide and 3.5 m high. The aviary was heavily lined with natural vegetation and leaf litter to provide foraging and roosting opportunities. There were also approximately 30 artificial roost boxes in the aviary and water was supplied in two large (40 cm diameter) dishes. The birds were provided with live mealworms, *Tenebrio molitor*, live wax moth, *Galleria mellonella*, larvae, soaked sultanas, halved oranges and apples, honey water, nectar mix and 'saddleback cake' (Lovegrove & Veitch 1994). The live invertebrates were preferred but small amounts of other food types were eaten.

Translocation: Birds were captured in the aviary with hand nets, reweighed and then placed in groups of five in double ended wooden transfer boxes for transport to Motuihe Island. They were provided with live invertebrates and fruit for the short (approximately 2 hour) boat trip to the island. Water, nectar and honey water mixes were removed prior to transport as the birds can tip or stand in them causing wetting or fouling of their plumage.

Release: On arrival at Motuihe the birds were carried in the wooden transfer boxes to a clear area for a ceremony conducted by the Motuihe Restoration Trust. Here the birds were welcomed by the Trust, representatives from Ngati Manuhiri and Kawerau a Maki (local *Iwi* or Maori tribes), New Zealand Department of Conservation staff, corporate sponsors and approximately 200 members of the public. They were then taken to the edge of the largest forest patch and released while the crowd looked on. Approximately 150 nesting and

110 roosting boxes were placed throughout bush areas for saddleback prior to release.

Post release monitoring: Thirteen 5-8 hour monitoring trips were conducted between August 2005 and August 2006. Search effort was concentrated on the main bush areas on the island. However, all other potential habitat, including cliff and newly planted areas were checked. Birds were located by listening for calls, systematically searching bush patches and playing pre-recorded saddleback calls to elicit a response from resident saddleback. When a bird was sighted, its location, colour band combination, the presence of other saddleback, and behaviour (pair bonding, courtship, feeding young) was recorded. In addition, both nest and roost boxes were checked for signs of use.

CONSEQUENCES

Capture and translocation: Twenty five saddlebacks were captured of which 20, comprising a mixed group of adults (15) and juveniles (5), with 11 male birds and 9 females, were released on Motuihe. The five surplus birds were released at their point of capture on Tiritiri Matangi. No birds died during the capture and holding period. Birds gained an average of 1.36 g (range: -7 – 13 g) in weight in captivity; however, this figure is skewed by the very high weight increases of two individuals (13 and 10 g). If these are excluded from the data set the average weight gain was 0.48 g. There was an oversight in communication between those translocating the birds and the organisers of the release ceremony. This resulted in a minor disruption to the ceremony when the boxes holding the birds were moved to a shaded spot during speeches.

Survival: Fourteen of the 20 birds survived to at least one year after translocation. Two birds were never seen following initial release and four disappeared 6-11 months after being translocated. It is unlikely that any birds escaped detection during post release monitoring as the area of suitable habitat is small (about 20 ha) and saddleback are quite noisy and conspicuous.

Breeding: A minimum of 11 juvenile birds from the 2005/2006 breeding season were detected during post release monitoring. This number is likely to be an underestimate as nestlings were not banded. Two nest boxes were successfully used by one pair. All other nests were undetected and it is likely they were built in the abundant natural cavities (i.e. within trees, rock crevices, under epiphytes, amongst roots) on Motuihe. Roost boxes were not heavily used and, again, it is likely that birds were utilising natural cavities.

Conclusions: The survival of translocated saddlebacks on Motuihe (70.0%) in the 12 months following release has been higher than that observed on Cuvier (41.4%), Stanley (45.8%) and Little Barrier (44.0%) Islands and is exceeded only by that observed on Tiritiri Matangi (79.2%) (Lovegrove 1985). In addition, the island has sufficient natural cavities, invertebrate and fruit resources to support successful breeding. Therefore, as long as the pest-free status of Motuihe is maintained it is likely that the population will continue to grow, particularly as recently translocated populations often show increased fecundity and higher juvenile survival due to extended breeding seasons, larger clutches, early breeding and low population density (Craig 1994; Armstrong *et al*. 2005). The forested area of Motuihe (approximately 20 ha) could support up to 40 pairs of saddleback, thereby allowing significant population expansion. In addition, as the planted areas mature they will also provide important habitat, particularly for young dispersing birds.

A particularly important aspect of this translocation is that it was instigated by a community group, thereby providing valuable advocacy opportunities as well as contributing to ecological restoration, management and scientific goals. Translocations such as this one provide valuable incentive for community based ecological restoration groups to continue and extend their work (Parker 2008).

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