

HYBRID PARAKEETS ON THE MANGERE ISLANDS, CHATHAM GROUP

Taylor (1975, *Notornis* 22: 110-121) has described the parakeet populations of the two Mangere Islands and the circumstances surrounding the recent development of a large population of hybrid forms there. On Mangere Island hybrids became as, or more, common than the parent types, while on Little Mangere Island the rare Forbes' Parakeet (*Cyanoramphus auriceps forbesi*) maintained about 10 pairs on the forested top, with a few hybrids and Red-crowned Parakeets (*C. novaezelandiae chathamensis*) in some cliff vegetation. I have regularly visited Little Mangere Island since 1972 and have observed increasing numbers of both hybrids and Red-crowned Parakeets, and an expansion of the area occupied by them. In late January 1976 a pair of hybrids was found with four large nestlings in an area formerly occupied by a pair of Forbes' Parakeets. This note describes these birds and discusses the present situation.

The nest was on bare soil a metre down in the base of a hollow, dead akeake tree. Both parents and the four chicks were captured alive in the nest. The chicks ranged in weight from 63 to 75 grams and were covered in partly sheathed contour and flight feathers. The larger chicks were just beginning the rapid shedding of feather sheaths. I managed to keep two chicks alive and they soon became pets, growing well with developing colours showing on the head. After five days they were drowned in a boating accident. All birds are deposited in the National Museum, Wellington.

Both adults were colour types described by Taylor (p. 119 middle illustration) as inter-specific hybrids. The male had a red front, orange crown fading to gold at the rear edge and an orange patch behind the eye. The legs and feet were dark. The female differed in having more gold in the orange crown and eye patch, and her feet and legs were light brown and grey respectively. The thigh patches of both adults were reddish-orange with some of the feathers showing golden-yellow tips. Crown and eye patch colour in the chicks was also orange with yellow.

The capture of these birds confirms Taylor's suggestion that, in the strongly modified environment of the Mangere Islands, the hybrids breed among themselves. This pair occupied the area around the camp site on the main ridge on top of Little Mangere. The forest and scrub remnants there are in an advanced state of retrogression, forming small open patches between large areas of bare soil or *Senecio-Carex* meadow. A pair of Forbes' Parakeets reoccupied the area on the morning following the capture of the hybrid family.

Since my first visit in March 1972, I have observed increasing numbers of Red-crowned and hybrid parakeets on the north cliff and ridge of Little Mangere Island; and Red-crowned birds have also been recorded in the forest of the top plateau on three occasions — in

spring, summer and autumn. Recently, a group of up to six Red-crowned Parakeets were seen on the ridge near camp. Hybrids have been removed from cliff areas but others have taken their place, and a hybrid was seen courtship-feeding a Red-crowned bird. Forbes' Parakeets still occur in the cliff areas. The hybrid pair was the first actually seen to have clearly displaced Forbes' Parakeets.

It seems that the hybrids can displace Forbes in semi-open habitat by direct interaction. Hybrids may have ecological advantages in modified habitats; but if they are indeed behaviourally dominant, they present a greater threat to the remnant Forbes' population than was supposed.

The parakeet populations of Mangere Island have rapidly built up in the last decade according to Taylor and this process probably began to affect Little Mangere Island in the early 1970s. Except for about a hectare, all forest on this island has become divided into small patches and open areas with scattered dying and dead trees. The forest is steadily degrading and becoming more open as a result of the effect of natural factors such as excessive burrowing by Sooty Shearwaters (*Puffinus griseus*), lack of regeneration, and strong winds. The unmodified stronghold for Forbes' Parakeet as described by Taylor and the even rarer Black Robin (*Petroica traversi*) (Flack, in prep) hardly exists any longer. The hybrids can successfully breed in the degenerating forest.

Smith (1975, *Notornis* 22: 351-352) interprets Taylor's counts as showing a reduction in the hybrids on Mangere Island since 1970. He relates this to a three-year period of regeneration of natural vegetation and to differences in behaviour and, especially, size that favour intra-specific matings, thus eliminating hybrids. In fact, during that time, native forest showed little regeneration, but more than a hundred hectares of exotic grasslands that had been closely cropped by sheep until 1968 started to flower and seed annually. This greatly favoured the Red-crowned Parakeets which are better adapted than Forbes' to open environments, increasing their numbers and thus their proportion in the total population. At the same time, hybrids increased in total numbers rather than decreased, and more have appeared on Little Mangere since 1973 than in previous years. Hybrids were still abundant on both islands in 1976.

While it cannot be doubted that Smith's (1975) suggestion that physical characters and calls are important as part of the isolating mechanism between Forbes' and Red-crowned Parakeets, his suggestion that these are very similar species is not correct or useful. Taylor's field observations show that the two species are very different ecologically, and this is reflected in social organisation and use of space. The special conditions of the Mangere Islands allow large scale mixing in the breeding season (my observations indicate that both species have a long laying period in spring and summer) of species usually rather effectively segregated by unbroken forest and more open

environments. Size is very similar (Taylor 1976, *Notornis* 23: 198-200); behaviour clearly fails to prevent large scale hybridization, and hybrids are clearly successful in the present environments — contrary to Smith's arguments.

Although reafforestation of Mangere Island is being hastened by large scale planting, it will be many decades before forest becomes predominant. Forbes' Parakeets will continue to be at a disadvantage on Mangere Island for a long time; while on Little Mangere Island, we can expect Red-crowned and hybrid forms to further increase as the remaining forest opens up and birds disperse from Mangere.

Parakeets do notably well in captivity, and aviary-bred Red-crowned Parakeets have recently been re-established in the wild elsewhere in New Zealand by the Wildlife Service. It would be valuable to breed Forbes' Parakeets from Mangere stock for the future establishment of a wild population.

The question of management of wild parakeet populations on the Mangere Islands requires a decision on the relative value of the hybrids compared with their threat to the seriously endangered population of Forbes' Parakeets. The present situation could be allowed to take its own course for its scientific interest. On the other hand, in the interests of conservation of a very rare species, the hybrid and Red-crowned Parakeets could be regularly removed from the two islands until forest cover once again favoured the Forbes' Parakeet.

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J. A. DOUGLAS FLACK, *Wildlife Service, Department of Internal Affairs, P.B., Wellington*



AERIAL DISPLAYS BY LARGE PETRELS

Although many small to medium-sized procellariiforms perform aerial displays near their breeding places, usually at night, little similar activity has been reported of the larger, diurnally-active petrels. Best known are the loose dual flights of the two Sooty Albatrosses (*Phoebastria* spp.). The performances of Giant Petrels (*Macronectes* spp.) are quite different. The birds rise a few metres on stiff, slightly drooped wings and then descend in a short curve. Meanwhile their necks are stretched, heads raised and waved from side to side to the accompaniment of braying cries. The nape feathers are erected and tails fanned. The whole performance appears to be the aerial equivalent of the upright threat display (Warham, 1962, *Auk*: 79: 139-160).