

the Kakarikis

By Graeme Phipps
The Macleay Museum,
The University of Sydney, 2006 Australia
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WHAT IS A KAKARIKI

New Zealand parakeets of the genus *Cyanoramphus* are better known by their Maori name of kakarikis, which means "small parrot." A special plea is made for the conservation of the endangered Norfolk Island kakariki.

There are six species in the genus *Cyanoramphus* which was named in 1854 by Prince Bonaparte, based on characteristics of the black-fronted parakeet of Tahiti *Cyanoramphus zealandicus* (Latham). The word *Cyanoramphus* means "blue-beaked" which refers to the bluish-grey in the bills of all species. Forshaw (1978) gives the following details of the genus: "The species are small to medium sized, stocky parrots with long, graduated tails. The tarsi (legs) are rather long, and there is a notch in the upper mandible. Males are larger than females, but there are no plumage differences . . ." The main sexing feature I use is the relative size of the bill, which is always much larger in males.

NOTES ON KAKARIKIS

Two species of kakariki are already extinct: the black-fronted parakeet *C. zealandicus* which inhabit Tahiti in the Society Islands, and a species from Raiatea called the Society parakeet. *C. ulietanus* (Gmelin) which is known from two specimens collected in 1771 on Captain Cook's second voyage. Clearly habitat destruction by Polynesians had already caused massive extinctions of birds, and these kakarikis may have been just two more casualties in this process. Four species still exist.

UNICOLOR OR ANTIPODES GREEN PARAKEET

Cyanoramphus unicolor lea

This species is the largest kakariki with males at 31 cm. being as long as an eastern rosella *Platycercus eximius* (Shaw) but with noticeably long legs which relate to their terrestrial lifestyle. Antipodes Island has no trees. One specimen was received by the Duke of Bedford who commented in 1931 that "I discovered certain interesting peculiarities due, no doubt, to her entirely terrestrial existence in her native haunts. Unlike any other psittacine bird I have kept, she cannot climb wire netting with beak or feet—she can only fly up and cling to it without moving. She is also incapable of perching on twigs. Thick perches she can manage, and uses freely, but with rather clumsy action of a domestic pigeon whom Nature intended to negotiate rock ledges only. She is a very lively bird, in fact, the most active and restless parakeet I have ever kept . . ." However, at Mount Bruce the species was seen to climb wire netting and perch on twigs, thus the Duke's bird may have been unusual.

A.G. Caley reported in Low (1980) that unicolors appear to take three years to mature. Although hens would lay when one year old, they would not incubate and usually broke their eggs. Red-fronted kakarikis were used as foster parents for the eggs of first females. I recorded (Phipps 1977) some details of unicolors seen at Mount Bruce. They were housed in 7m x 3m x 3m concrete floored aviaries which were roofed with plastic sheeting. Rocks were placed at one end, and perches were at both ends of the enclosure. Diet was sunflower

seeds, apple, carrot, greens, poultry pellets; and in breeding season canned dog food was made available. This parakeet is found, with a race of red-fronted kakariki called Reischek's parrot, on sub-antarctic Antipodes Island where both are considered common.

ORANGE-FRONTED KAKARIKI *Cyanoramphus malherbi* Souance

This very rare parakeet is confined to the South Island, New Zealand although there are doubtful records from the North Island, Stewart, and Auckland Islands. The only account of this species breeding in captivity comes from Prestwich's "Account of the Psittacidae raised in France" in which De Laurier is reported to have bred a pair in 1883. From time to time "orange-fronted" are advertised for sale. These birds are definitely hybrids between the red-fronted and yellow-fronted kakarikis, and are not true *C. malherbi* at all.

Controversy exists over Holyoak's (1974) suggestion that the orange-fronted kakariki is a colour morph of the yellow-fronted kakariki, and not a true species at all. However, Sir Charles Fleming noted an historical record of five birds collected together at Owen Junction, near southwest Nelson N.Z. by A.C. O'Connor in 1928. Furthermore, a small population was discovered in forested mountainous country in Lake Sumner Forest Park early in 1981, and two were captured by the Wildlife Service for breeding in captivity. Unfortunately, both died.

Reliable records of the orange-fronted kakariki are all from the same general area, and not from other parts of the range of the yellow-fronted kakariki; and this plumage variant has never occurred in the many yellow-fronted kakarikis in captivity, so I doubt that it is a colour morph.

YELLOW-FRONTED KAKARIKIS *Cyanoramphus auriceps* (Kuhl)

The nominate race of this kakariki is distributed in New Zealand and outlying Islands where it is said to be fairly common in forests. The distinguishing features of this species are that it has a red frontal band extending to, but not past the eyes, and has a yellow or golden crown. Females at 23 cm. are smaller than red-fronted kakarikis, but males at 26 cm. overlap in measurements. By comparison of the colour plates, it will be seen that both the yellow-fronted and red-fronted kakarikis have red frontal areas, that is, the area of the frons or

Photo courtesy of Sir Charles Fleming



Antipodes green parakeet at Mount Bruce Native Bird Reserve, Masterton, New Zealand.

Photo courtesy of the New Zealand Wildlife Service, R.B. Morris.



Chatham Island red-crowned parakeet taken on Little Mangare Island, New Zealand.

R.B. Morris.



Forbes' parakeet feeding on seed-heads of Carex on Little Mangare Island.

forehead which is just above the beak. Strictly speaking, the New Zealand names of yellow-crowned and red-crowned kakariki should therefore be followed.

The colour plates feature a photograph of the only race of the yellow-fronted kakariki, Forbes' parakeet *C. auriceps forbesi* Rothschild. The bird has more yellow underparts than the yellow-fronted, and the red frontal band does not extend to the eyes, but what is not obvious from the photograph is the emerald green sides of the face, and the larger size. We do not have this parrot in Australian aviculture.

Forbes' parakeets are now confined to six hectares in forest on Little Mangare Island in the Chatham group where they are considered highly endangered. The Chatham Island red-fronted parakeet began hybridising with Forbes' parakeets and Flack (1976) reported that a pair of hybrids had displaced a breeding pair of Forbes' on Little Mangare. Other hybrids were fertile and began breeding among themselves, and Taylor (1975) has recorded details of the hybrid plumage. It was decided to eliminate all hybrids from Mangare and Little Mangare Islands, and when this was done, sixteen pure Forbes' parakeets remained; six of which were taken to Mount Bruce where the species has now been bred.

Colour varieties of yellow-fronted kakarikis include individuals where the green is replaced by canary yellow.

RED-FRONTED KAKARIKIS
Cyanoramphus novaezelandiae
(Saprrman)

The red-fronted kakariki species contains eight races which are distributed throughout the south-west Pacific from New Caledonia in the north to Macquarie Island in the South. Despite this huge distribution, the red-fronteds are remarkably similar, differing mainly in size and depth of colour, which may mean that the species radiated from New Zealand in relatively recent times. The nominate race is found on North and South Islands of New Zealand, Stewart Island, and on the Auckland Islands. Males are 28 cm. in length; females 26 cm.

This is presumably the race which is found in Australian aviaries, but repeated crossing with the yellow-fronted kakariki makes it difficult to assign origin to any other race. Hybrid features are seen especially in yellow or orange feathers in the red crown of the bird, especially on the margin of the hindcrown, a feature which may be more



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pronounced in some birds than in others. It is an error to assume that birds derived from New Zealand aviaries are necessarily pure, because I noticed a large number of hybrids in aviaries in New Zealand and imagine that it may always have been thus. For example, Prestwich (1954) in *Records of Parrots Bred in Captivity* records M.E. Fitzgerald of Tauranga Harbour as saying of his red fronteds "The parent birds referred to are believed to have been aviary-bred for several generations. They come from stock in which there was some blood of the yellow-fronted species, *C. auriceps*, but in colour and size they strongly favour the red-fronted variety." The same author records that the hybrids are fertile. Our red-fronted stock have paler red areas than museum skins, which may be diet related more than genetic. Most Australian red-fronteds tend to be smaller than museum specimens, but again this may be diet related. The red goes past the eye in all red-fronteds, a condition not found in the yellow-fronted or orange-fronted kakariki.

The red-fronted kakariki is not as common in the wild as yellow-fronted kakariki in New Zealand. Specimens with yellow body feathers are common, and Porter (1930) comments that lutinism and cyanism is common in all members of the genus, and mentions a sky blue specimen in the Dunedin Museum. For those aviculturists interested in colour mutations, there seems ample possibilities for developing many beautiful yellow and blue forms.

Chatham Islands red-fronted kakariki *C.n. chathamensis* Oliver is confined to the Chatham Islands and has been mentioned earlier with Forbes' parakeet. In a lecture to the Royal Zoological Society of N.S.W. on "Birds of the Chatham Islands" by T. Lindsay (1975), this parrot was stated to be common on the Chathams, with their numbers estimated to be up to a thousand.

The kakariki from the Kermadec Islands is *C.n. cyanurus* Salvadori; "cyanurus" meaning "blue tail" which is a characteristic of the race, as is the darker green body feathers. It is puzzling to see yellowing in the crown in a population which not only has a tendency to drift away from yellowing in the plumage, but could never have hybridised with a yellow-fronted kakariki as they do not occur on the Kermadecs, so possibly slight yellowing in the hind-crown may be due to ageing. This is supported by Sindel (pers. comm.) who stated that his best male red-fronted kakariki which previously had no yellow in the red areas, developed some yellow-

ing in the hindcrown this year. Buller recorded from this locality a specimen with greenish yellow abdomen and a ring of the same colour around the frontal crimson patch. This race is in no danger of extinction.

C.n. hochstetteri (Reischek) of Antipodes Island, which is called Reischek's parrot by New Zealanders, is a large kakariki with distinctly more yellowish plumage, and red areas more orange-red. Reischek's and unicolors have hybridised at Mount Bruce, but do not do so in the wild. It is surprising that Antipodes Island supports two parrot species in the same genus because only tussock grassland occurs on the island, thus there are not many opportunities for dividing resources.

On Macquarie Island there was a kakariki, *C.n. erythrotis* (Wagler) which has been extinct since about 1890. Some authors have considered it doubtfully distinct from Reischek's kakariki, but I consider it inconceivable that Antipodes Island and Macquarie Island birds, separated by over 1600 kilometers of ocean could be members of the same population. One of the Macquarie skins in the British Museum has a few yellowish tips to some of the green features of the crown, bordering the red patch.

The Lord Howe Island form *C.n. subflavescens* Salvadori, was shot out by 1870. It had yellowish green on the cheeks and underparts with less extensive red on the head. These are illustrated in the colour reproduction of the lithograph drawn by J.G. Keulemans from the only two specimens in existence which are now in the British Museum (Natural History).

C.n. cookii (G.R. Gray) is a larger and darker green race of the red-crowned parrot which inhabits Norfolk Island. I recorded in 1976 that the smaller member of a pair under observation had yellowish feathers on the rear of the crown. (Leitz Trinovid 8 x 30 binoculars were used). In 1893, A.J. North described this race as "being larger and having a more robust bill; the crimson colour on the forehead and vertex more extended, and the spot on the ear-coverts but slightly indicated by obscure crimson . . . instead of the streak across the eyes terminating on the ear-coverts in deep crimson as in *C.n. novaezealandiae*." Re-examination of museum specimens in Wellington, Sydney and Vienna, and examination by me of thirty-one skins in the American Museum of Natural History, New York confirms North's points. This critically endangered bird is a well-defined race.



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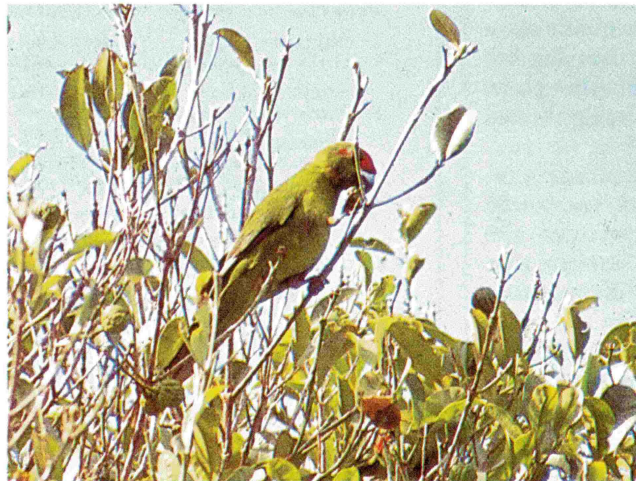


Photo by G.R. Phipps

Norfolk Island Kakariki feeding on Bloodwood fruits and seeds, Mount Pitt Reserve, Norfolk Island.

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The last race is the New Caledonian red-fronted *C.n. saissetti* Verreaux and DesMurs. It is listed in the Red Data Book as being rare, and by Delacour (1966) as being rare, but Orenstein (1972) reports them as "being reasonably common in undisturbed areas."

In summary, two species of kakariki and two races of the red-fronted kakariki are already extinct. The unicolor and Reischek's parrots are common, but vulnerable, as may be the Kermadec red-front. The orange-fronted is the rarest species with very few twentieth century records; and Forbes' parakeet and the Norfolk Island red-front are highly endangered. Aviculture surely has an important role to play in the continued survival of these birds.

AVICULTURAL NOTES

Some European literature suggests that kakarikis do not live very long in captivity. "A delightful inmate of an aviary and a free breeder . . . unfortunately does not live very long in captivity as a rule," (Rutgers and Norris, 1982), but Sindel (1972) reported pairs breeding at twelve years, and conjectured that they would live to 15 years. Low (1980) reports John Yealland as commenting that they had "a combination surely unique in captive birds—that they will generally breed with the utmost readiness, will die with the same facility and, one may remark, they do not in the least mind which one they do." Seth-Smith (1903) considered that "the New Zealand parakeet is, when acclimatised, a comparatively hardy and easily kept species, and one that will breed freely in captivity if suitably accommodated . . ." However, they are a common bird in Europe, and Dr. J. Steinbacher (pers. comm.) has mentioned that in West Germany there are many breeders of the Red-fronted kakariki, and thinks that there must be more in the hands of bird lovers (in W. Germany) than in nature. They are also very popular birds in North America.

The conditions of suitable accommodation are established by considering the ecology of the bird in the wild. Australian experiences are that aviary populations fluctuate greatly, and at the time of writing, yellow-fronted kakarikis are becoming harder to obtain. The reason may be dietary deficiency. Examination of the literature shows that diets of kakarikis in the wild are varied and have high protein content. The following table shows the range of foods eaten by Antipodes green parrots and

Reischek's kakarikis; and Chatham Island red-fronted kakarikis and Forbes' yellow-fronted parakeet respectively. Note the vast percentage of leaves and shoots consumed by *C. unicolor*, seeds by Reischek's, leaves and shoots by Chatham Island kakarikis and flowers and invertebrates, mainly caterpillars and scale insects, by Forbes' kakariki. Inspection of the figures and table suggest that some kakarikis can be thought of as psittacine softbills! To save space, details of kakariki diets in the wild are listed in the following table:

FOODS EATEN BY KAKARIKIS IN THE WILD

Source of Information	Bird species	Food items eaten
Taylor(1975)	Unicolor	berries, seeds, penguin corpses
Taylor(1975)	Ch. Isl.Redfr.	nectar
Oliver(1955)	Ch. Isl.Redfr.	fruits of piripir (Acaena) and pig face, fat & maggots found on sheepskins, seed potatoes which were picked out of the gound, Olearia flowers, etc.
Layard (1882)	New Cal. Redfr.	pawpaw pulp and seeds.
Oliver (1955) & Merton (1970)	Kermdec Redfr.	shoots and shrubs, sedge <i>Coprosma</i> berries, goat carcasses, grass seeds, grit.
Oliver (1955)	Macq. Isl. Redfr.	crustaceans and other small animals amongst heaps of cast-up seaweed.
Oliver (1955)	Reischek's Redfr.	<i>Coprosma</i> berries, grass leaves, moss, fungus, broken eggshells, heads of <i>Lycopodium</i> .
Oliver (1955)	N.Z. Redfr.	fruits and buds, leaves, seeds, small grubs, and insects, currants, plums, strawberries, pears, apples, sow thistle, cocksfoot, <i>Acacia</i> seeds, cyprus & pine cones, acorns, wheat, seeds of noxious weeds, flax and rushes.
Oliver (1955)	Yell. Front	grass seeds, beech & silver pine cones, berries & soft fruits, pigface, aphids: "tender tips & embryo blossoms" of <i>Coprosma</i> .
Phipps (1977)	Yell. Front.	flax flowers and nectar
Harrison (1970)	Orange Front.	seeds, berries, small grubs

The following diet was fed by A. Slaminski, a Sydney aviculturist who kept only red-fronted kakarikis. Slaminski (pers. comm.) supplied a seed mixture of three parts sunflower, three parts canary and one part white millet. The

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birds would take beaksful of sunflower seeds and dump them into the water dish, then eat them from the water dish one at a time. Niger seed was favourite, but sour crop problems disappeared after niger seed was eliminated from the diet and was thought to be a cause of the problem. Arrowroot biscuit, *Cotoneaster* and *Pyracantha* berries were eaten. If supplied with apple, the kakarikis would first eat the seeds. Greens such as sprouted seeds, seeding grasses and chickory were eaten in great quantity, especially when young were being reared. Fresh sweet corn was popular, and the kakarikis also ate cooked whole corn. Dog food, such as dog rings, were supplied but only the salt was eaten from them. Rock salt was supplied and elemental sulphur was made available, since kakarikis have been reported as eating it.

Slaminski found that his kakarikis bathed frequently, requiring daily changes of fresh water. In 1975, I observed frequent bathing by yellow-fronted kakarikis in small pools on inner Chetwode Island, Marborough Sounds, New Zealand.

Slaminski noted that kakarikis scratched in the aviary soil after the fashion of fowls, and would eat earthworms. They were susceptible both to fungal diseases contracted by eating old seeds uncovered by scratching, and to avian worms which require regular dosing with *Nilverm* or *Panacaur*. He experienced a high death rate in young hens due mainly to eggbinding. It is my opinion that under standard aviary diets, hens do not have time to achieve a large enough size, and do not have enough reserves of elements in their bodies to breed without problems. Kakariki hens are often reported as breeding at only four months of age, and cocks of only three months of age have fertilized hens. The solutions would be either to segregate the birds and keep young hens in cages which have no nestbox supplied, or to capitalize on their naturally high capacity to produce young in great numbers by feeding diets which are high in proteins. The previous table showing the wide variety of highly proteinaceous foods eaten by kakarikis in the wild could be a useful guide in designing aviary diets. I am currently investigating the effects of high protein diets on a group of red-fronted kakarikis, but it is too early to present any results.

Sindel (1972) wrote in kakariki aviculture in *Avidate*. He fed plain canary seed and white millet, but sunflower was supplied only when young were being reared; boiled corn; apple; milk arrow-

root biscuits; spinach and a wide variety of greens, such as, winter grass, summer grass, chickweed and dockweed. A lot of grit and cuttlebone was consumed. Sindel commented (as have other authors) that kakarikis may walk up and down aviary wire without using the beak, and that they scratch on the ground after the fashion of fowls, adding that they are an inquisitive bird and will reach through the aviary wire, for example, attempting to reach greenfood growing outside the aviary. This habit results in a high proportion of leg lacerations and fractures.

Falla, Gibson and Turbott (1979) record the following details about breeding in the red-fronted kakariki. "In hollow tree, eggs on powdered wood; on islands commonly in rock crevices. Breeding October-March; eggs 5-9 white. Laying interval 24-48 hours; incubation starting with second egg; incubation period 18-20 days; performed entirely by the female (M.E. Fitzgerald) (in captivity). Chicks grey down; fledging 5-6 weeks; male assists in feeding chicks (food mainly transferred to female, but male feeds chicks if female absent)." The notes for the yellow-fronteds were the same except that the breeding season was recorded as August-April.

Low (1980) records 19 days as the incubation period; Sindel (1972) records 21 days, as does Caley (pers. comm.) at Mount Bruce for the nominate race of the red-fronted kakariki. The larger race, Reischek's parrot took 24 days, and the ever larger *C. unicolor* took 26 days. Kakarikis will breed very rapidly, and one clutch may leave the nest to be reared by the cock while the hen incubates the next round of eggs. Close attention should be paid to the cocks at this time because they may become aggressive towards young and are known to kill their sons.

Sindel housed kakarikis in 3m x 1m x 2m high aviaries which were fibro clad. It was found that high temperatures are fatal to these island birds, as kakarikis have thick underfeathers, a condition especially dangerous in nestlings. Temperatures of greater than 35° Celsius (95°F) are dangerous, and it is best to discourage breeding on the hottest summer months by the removal of the nestboxes. At the 1981 American Federation of Aviculture Convention in San Diego, I gave a lecture on the Kakarikis. During question time, a member of the audience mentioned that he had lost adult kakarikis in heatwave conditions. Perhaps we can conclude that these birds should be kept in cooler areas

of the United States. In Australia, kakarikis are much more common in the cooler areas than in aviaries in States such as Queensland. When nestboxes are supplied, they should be large (300mm x 225mm x 225mm high) and in a climate such as that of Sydney, Australia, be well ventilated with a peatmoss nestbase. The nest should be fixed at a 25° angle and as the clutch matures, the nest is lowered to level. If the box becomes too hot, the nestlings may be placed in a group and the parents will continue to feed them. Sindel concluded his notes with a plea not to consider kakarikis "too easy" on the basis of good breeding results because if their special avicultural requirements were not met, a high death rate will be experienced.

In 1977, J. Clark, a member of the Avicultural Society of N.S.W., bred a hybrid between a male red-fronted kakariki and a female naretha blue-bonnet *Psephotus haematogaster narethae* (H.L. White). The blue-bonnet was only six months old at the time and the cock kakariki fed the blue-bonnet as well as his own hen, which was raising young.

CONSERVATION OF THE NORFOLK ISLAND KAKARIKI

My interest in *Cyanoramphus* parrots began in 1972 which resulted in trips to islands where kakarikis occur. The record of survival of kakarikis in the Australian political area is very bad since the Macquarie Island form and the Lord Howe Island kakariki are both extinct, and the Norfolk Island kakariki is highly endangered. I resolved to investigate this last mentioned bird and, in 1975, went to New Zealand to observe red-fronted in the wild to gain insight into their ecology. I also went to Mount Bruce Native Bird Reserve to observe captive breeding techniques and to various New Zealand museums to examine skins. I have been fortunate in studying every species and race of the genus in various world museums. In the Southland Museum, Invercargill, a small box labelled *Platycercus rayneri*. Norfolk Island Male 14.10.01 was located. This was the first Norfolk Island parrot I had seen; the correct name of which is *Cyanoramphus novaeseelandiae cookii*, and the specimen is now in the National Museum.

In 1976 I went to Lord Howe Island, Norfolk Island and again to New Zealand. The Lord Howe Island kakariki had been shot out and Etheridge (1889) reported "the parakeet is said to have existed in very large numbers, doing considerable damage to the crops, and have

gradually disappeared about ten years ago."

On Norfolk Island I located a pair of kakarikis feeding on the seeds of bloodwood *Baloghia lucida*, and one bird in forest on Mount Pitt Reserve. Outside this reserve kakarikis were not encountered, but within the reserve the birds were heard calling almost every day and there were signs of their feeding on 'maple' *Elaeodendron curtispiculum* seeds as evidenced by the debris littering the ground beneath fruiting trees. Kakarikis also eat the seeds of *Araucaria*, the magnificent Norfolk Island pine.

The main problem confronting this endangered bird, apart from habitat change, would be competition with the introduced crimson rosella *Platycercus elegans* (Gmelin), a common bird of eastern Australia, and an abundant bird on the island. I observed crimson rosellas feeding upon introduced *Lantana* *Lantana camara* fruits and on wild tobacco *Solanum mauritianum* in Mount Pitt Reserve. Forshaw has recorded that these kakarikis eat wild tobacco fruits and also the fruits of other introduced plants, thus there is evidence for competition for food resources. Yet perhaps the most evidence for competition is for nesting sites.

All of this points to the need for immediate investigation into the Norfolk Island kakariki population, but in the meantime I consider that crimson rosellas should not be given the benefit of the doubt of their numbers should be drastically reduced. Should their eradication be of no benefit to the kakariki they could always be reintroduced from Australia but there is no population from which to replace the Norfolk Island kakariki should it die out.

Smith (1969) suggested that kakarikis in captivity were very susceptible to ornithosis (psittacosis) which is found in almost all Australian parrots, and it is possible the crimson rosella may have taken this disease to Norfolk Island, and that strains of it may have contributed to the decline of the kakariki.

The good results of breeding kakarikis in both private and government installations points to the contribution that captive breeding on Norfolk Island may have as part of an overall strategy for the preservation of the parrot. The Norfolk Island kakariki has been kept in captivity, as reported by Porter (1939) who kept thirteen birds (ten cocks and three hens), but the hens died before he was able to breed from them. There is no doubt that Porter's birds were the Norfolk Island kakariki because he commented on their large size. They were, he said "about the

size of a Pennant's Parakeet." This would have to be an exaggeration since the crimson rosella (Pennant's parakeet) is 36 cm. in length, and Forshaw lists the New Zealand race of the red-fronted as being 27 cm. Both Reischek's kakariki and the Norfolk Island kakariki at 30 cm. are larger races than the New Zealand one, but this is still a long way short of the length of a crimson rosella.

Porter received a letter from Norfolk Island which stated: "Re the green Parakeet you mention, it is not at present very plentiful on this island, it is only found in the thick bush around Mount Pitt. It is very destructive on nearly every kind of fruit. It nests during October in hollow trees, especially in the stems of dead tree ferns, never on the ground." The correspondent called the kakariki the "green parakeet" which is the name used on Norfolk Island for the bird, the crimson rosella being called the "red parrot." Some people have reported hybrids between the two species on Norfolk Island, but while not ruling out the possibility of such a cross (note the *Cyanoramphus x Psephotus* mentioned earlier), a more likely explanation is that the immature crimson rosella has both red and green feathers, and "hybrid" sightings might refer to these birds. Porter thought that there was not much hope for the survival of the kakariki because of alteration of habitat on Norfolk Island.

This parrot was not always rare, in 1788 John Hunter recorded "The parrots are numerous and the ugliest bird of the kind I ever heard of; this, added to the harshness of their note make them a very disagreeable bird. The parrots are entirely green, except a red tuft on their head." Not everyone, it seems, appreciates kakarikis as being beautiful birds.

From this abundance, the Norfolk Island kakariki has declined to perilously low numbers (only seventeen birds were counted in 1978) and I think that its problems should be addressed at once. ●

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Complete reference list available by writing the AFA home office.