

The Ouvéa parakeet – state of knowledge and conservation status

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New Caledonia, a French territory in the south-west Pacific has a very high number of endemic taxa. The endemic fauna include a monotypic genus of parakeets – Eunymphicus. One subspecies, Eunymphicus cornutus uvaensis, which is endemic to the island of Ouvéa in the Loyalty Islands, is seriously threatened by degradation of its natural habitat, natural predators and capture for sale to collectors. There are now only 200–500 individuals left in the wild. The parakeet is the emblem of Ouvéa and local people, together with research scientists, have formed a society with the aims of studying the parakeet in its natural environment, making the general public aware of its conservation requirements, combating smuggling, increasing its population by breeding it in captivity and, if possible, introducing it on to a neighbouring island.

Introduction

The Ouvéa parakeet *Eunymphicus cornutus uvaensis* and the horned parakeet *E. c. cornutus* are the only two members of an endemic New Caledonian genus. The genus is related to *Platycercus* of Australia and *Cyanoramphus* of New Zealand by its form and colouring, which is mostly green with a red forehead and crown and a blue edge to the wing. The crest, formed of two (*E. c. cornutus*) or six (*E. c. uvaensis*) non-erectile feathers, is a generic character (Forshaw, 1973; Vriends, 1979; Prin and Prin 1990).

A comparison of morphological and biogeographical features suggests that *Eunymphicus* is also very close to the genus *Prosopeia* from Fiji (Rinke, 1989). The dispersion among Pacific islands of the ancestors of the genera *Platycercus*, *Cyanoramphus* and *Eunymphicus* from an Australian centre of diversity would have taken place in the middle of the Miocene (Christidis *et al.*, 1991).

E. c. uvaensis is endemic to the island of Ouvéa in the Loyalty Islands, 80 km to the north-east of the New Caledonian mainland (Figure 1). Ouvéa (132 sq km) is a raised atoll with a lagoon open to the sea for a distance of 30 km on one side. Its elongated form is made

up of two parts linked by a narrow strip of land. This island, with 27 Melanesian inhabitants per sq km, has a population density three times that of the rest of the Loyalty Islands (CTRDP, 1987; Mathieu-Daudé, 1989).

The parakeet's distribution is restricted to Ouvéa. It appears to have never colonized neighbouring islands despite their proximity (45 km). However, within Ouvéa the original distribution covered all the main island and the isle of Mouly. It would probably have disappeared from Mouly, an islet less than 100 m away, more than 50 years ago as the coconut plantations increased in extent (Hannecart, 1988).

General state of knowledge

Estimation of the population density

No accurate census of the wild population of the parakeet has been undertaken. Warner, in 1947, estimated that there were 1000 individuals. A census covering one-third of the Great Forest, carried out by High Chief Bazit during the 1977 nesting season, found 60 occupied nests, i.e. about 180 for the whole forest, which would indicate a total population of 500–800

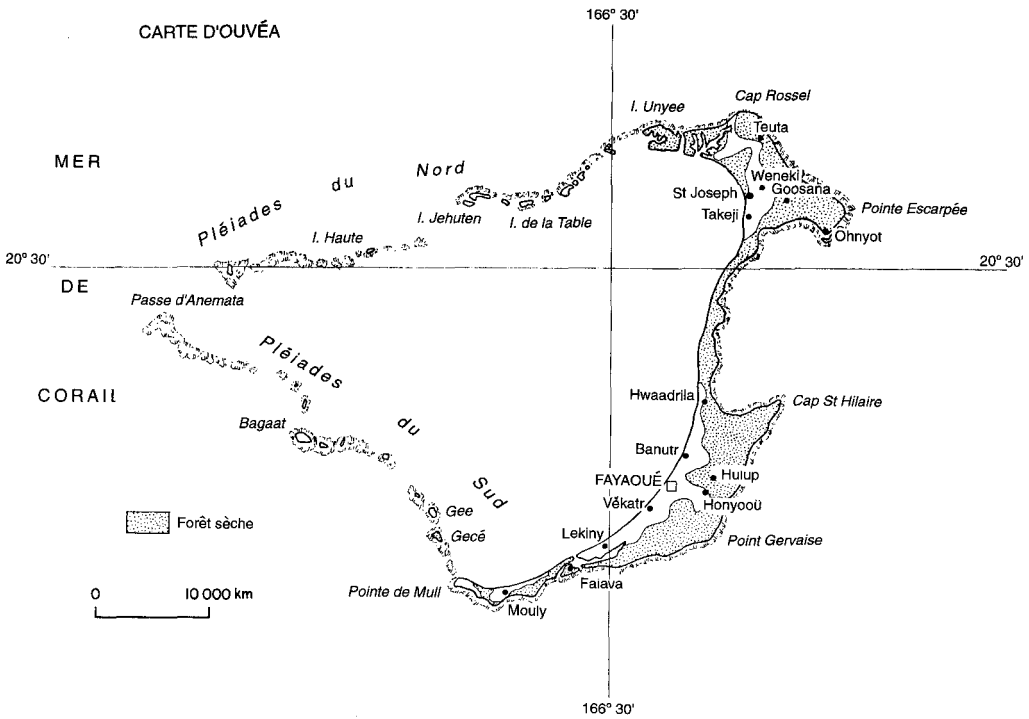


Figure 1. Map of Ouvéa.

individuals (J. Begaud, pers. comm.). King (1981), however, reported that only 200–500 remained. The IUCN–SSC’s Parrot Action Plan (Lambert *et al.*, 1992) estimated that there were fewer than 200 wild parakeets on Ouvéa. Hahn (1993) estimated the population at 70–90

and declining. The most recent census, in December 1993, found that over 200 parakeets remained (Robinet, unpubl. data).

According to our estimates there appear to be 100–200 parakeets in captivity, mostly in New Caledonia.

Scientific name	Local name (faga-ouvéa)	Preference*
<i>Intsia bijuga</i>	Kaï nonu	+++
<i>Mimusops elengi</i>	Xagegeing	+++
<i>Syzygium pseudopinnatum</i>	Haïtch	+++
<i>Dysoxylum rufescens</i>	Tchalôp	+++
<i>Ficus</i> spp.	Paki	++
<i>Corynocarpus dissimilis</i>	Wau	++
<i>Aglaea eleagnoides</i>	Sidju	++
<i>Olea paniculata</i>	Qeinhit	+
<i>Fagraea schlechteri</i>	Sika	+
<i>Garcinia pedicelata</i>	Hnyhnykai	+

* +, rare; ++, occasional; +++, frequent.

NB. This table is the result of interviewing six hunters of Ouvéa who are recognized as having a good knowledge of the forest.

Table 1. Principal native tree species used for nesting by parakeets (after Robinet, 1992)

The habitat and its use

The parakeet is confined mainly to less than 2000 ha in the forest of the northern part of the island. This primary forest, about 10 km long by, on average, 1 km wide, comprises trees 10–15 m high (Veillon, 1977). The rendzina soil is thin, lying on top of a raised coral reef (Mathieu-Daudé, 1989). Average rainfall is 1200 mm per year with a maximum in March and a minimum in September. Average temperatures are between 19.5°C in July and 26°C in January (ORSTOM, 1981).

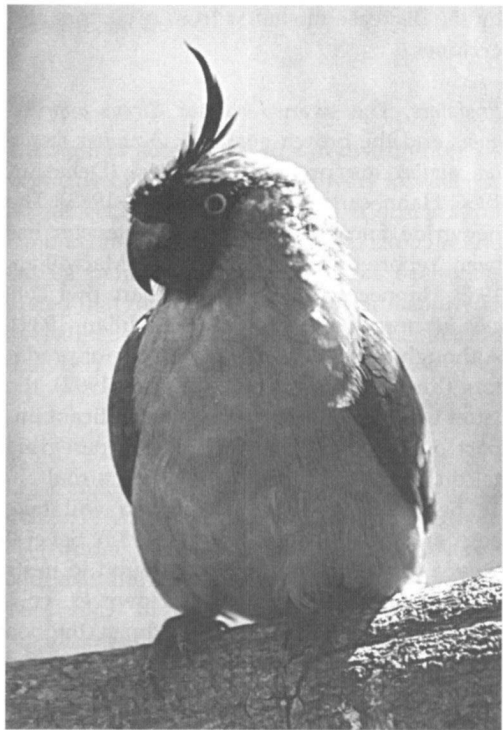
The parakeet is a shy diurnal species, active from dawn. It moves about singly or in groups of a few individuals, searching for food on top of the tree canopy (Prin and Prin, 1990).

Sexual maturity is reached at the age of 2 years for females and 3 years for males. Pairs are permanent. The nesting period lasts from November to January according to Hannecart and Letocart (1980–1983) or from September to March, according to our observations. Only one clutch of two to four eggs is laid each year, in the base of a hollow tree. Incubation takes about 20 days and the male generally guards and feeds the hen. After hatching, the chicks stay in the nest 4–6 weeks and are able to fly when they are about 1 month old.

Tree species most favoured for nesting are those which are sufficiently large (having a trunk of at least 25 cm diameter), and in which the heart has a tendency to rot, often creating cavities several metres deep (Veillon, 1977; Robinet, 1992) (Table 1).

The parakeet eats various seeds of native species but its favourite food is the flesh and seeds of pawpaw *Carica papaya*, which is abundant in cultivation (Hannecart, 1988). Chill peppers *Capsicum* spp., adventive tomatoes *Solanum lycopersicum*, copra *Cocos nucifera*, passion-fruit *Passiflora laurifolia*, guava *Psidium guajava* and the bark of the beach hibiscus *Hibiscus tiliaceus* are also eaten (Table 2).

In captivity, in addition to the food cited above, the parakeet will take parrot mixes based on millet and sunflower seeds, bread soaked in milk, and soya bean sprouts (Prin and Prin, 1990).



The Ouvéa parakeet (*O. Robinet*).

Threats to the species's survival

Degradation of the habitat. The forest on Ouvéa has suffered a large reduction in area during the last decades, having been replaced with coconut plantations and subsistence crops. A comparison of IGN 1/50,000 maps based on aerial photographs of 1954 with photographs taken 30 years later show that the Great Forest has been reduced by a large proportion. In addition to the overall reduction in area, the forest has also been fragmented through clearance for agriculture.

This decrease in habitat has certainly had the same effects on the parakeet as those observed among other Psittacidae nesting in hollow trees (Lambert *et al.*, 1992; Lindsey, 1992). Breeding is affected by the decrease in nesting sites and the increasing accessibility of nests to predators and to humans. The quantity and quality of available food declines (even though it is partially compensated for by cultivated fruits). The survival rate is also lowered

by the decrease in shelter from predators and cyclones.

Predators. The swamp harrier *Circus approximans* and the brown goshawk *Accipiter fasciatus vigilax* are present on Ouvéa (Delacour, 1966; Hannecart and Létocart, 1980–1983). The peregrine falcon *Falco peregrinus nesiotus* has been reported from the island (MacMillan, 1939; Hannecart, 1988), and the barn owl *Tyto alba lifuensis* is also present (MacMillan, 1939). Although these birds are known parrot predators (Rinke, 1988; Seitre and Seitre, 1992), the latter two are unlikely to have a significant impact on the parakeets because the peregrine falcon is rare and the barn owl is nocturnal.

The Pacific boa *Candoia bibronii* will take eggs and nestlings (Hannecart, 1988). Several Ouvéa residents reported boas found in nests during the breeding period. However, contrary to Macmillan's (1939) findings, the boa is rare on Ouvéa, and so its influence on the parrot population would appear to be limited.

Introduced mammals may have a bigger impact on the parakeet population than these native predators. Feral cats *Felis catus* are present, although not common, and are known to eat nestlings. The presence of the black rat *Rattus rattus* – an established predator of

parrot broods – is yet to be confirmed (MacMillan, 1939; Atkinson, 1985; Seitre and Seitre, 1992).

Finally, an ant of American origin, *Wasmannia auropunctata*, which has recently been introduced to Ouvéa and still has a limited distribution could disturb broods.

Overall, and with the presence of black rats unproven, predators do not appear to be a major threat for the Ouvéa parakeet.

Interspecific competition. The parakeet is in competition for food with other fruit-eating and granivorous birds such as the Pacific pigeon *Ducula pacifica*, the red-bellied fruit dove *Ptilinopus greyi*, the white-throated pigeon *Columba vitiensis*, the grey-backed white-eye *Zosterops lateralis nigrescens* and the Loyalty Islands glossy starling *Aplonis striatus atronitens*, as well as various species of fruit bats *Pteropus* spp. (MacMillan, 1939; Warner, 1947; Bruce, 1985).

The rainbow lorikeet *Trichoglossus hematodus* has been observed as an occasional visitor to the Loyalty Islands (Berlioz, 1945; Delacour, 1966). Ten years ago a permanent colony, derived from caged birds set free by a private individual, was established on Ouvéa. The population is increasing, giving rise to fears of

Table 2. Native plant species with edible seeds present on Ouvéa (after Veillon, 1977)

Family	Species	Local name	Abundance*
Sapotaceae	<i>Manilkara dissecta</i>	Gneti	++
	<i>Misusops elengii</i>	Xagégéing	+++
	<i>Planchonnella liggensis</i>		+
Sapindaceae	<i>Cupaniopsis</i> sp.	Ouenitch	++
	<i>Harpullia neo-caledonica</i>	Dju	+++
Moraceae	<i>Ficus obliqua</i>	Assa	+++
	<i>Ficus prolixa</i>	Wasö	+++
	<i>Ficus</i> sp. (cauliflore)	Lehacic	++
Santalaceae	<i>Santalum austro caledonicum</i>	Santal	+
Elaeocarpaceae	<i>Elaeocarpus persicaefolius</i>	Tropoiä	+
	<i>Elaeocarpus rotundifolius</i>	Tropoiä	+
Papilionaceae	<i>Abrus precatorius</i>		+++
Limogaceae	<i>Adenanthera pavonina</i>		++
Rubiaceae	<i>Plectronia odorata</i>	Wakanoë	+++
	<i>Gardenia urvillei</i>		+++
Guttiferaeae	<i>Garcinia pedicellata</i>		+++

* +, rare; ++, occasional; +++, frequent.

competition with the parakeet for food. However, observations in a mainland reserve (le Parc de la Rivière Bleue) showed that the horned parakeet cohabits with the lorikeet and with the red-crowned parakeet (Y. Létocart, pers. comm.)

The barn owl, the kingfisher *Halcyon chloris* and the Loyalty Islands glossy starling all nest in hollow trees, but there is little competition with the parakeets because their requirements are different (Rinke, 1988).

Capture. It appears that the capture of parakeet nestlings is a very old tradition and the birds are easy to tame. Traditionally, this did not lead to a total loss for the species because the parakeets were kept on Ouvéa as pets, some of them returning to the wild at maturity. The situation changed when collectors of rare birds became interested in the parakeet. Sarasin drew attention to the imminent peril to the parakeets because of their capture in quantity for sale as caged birds (Sarasin, 1913).

At present, according to a non-exhaustive inquiry carried out by the authors, it appears that between September 1992 and February 1993, more than 50 young parakeets were taken from their nests and that the majority were illegally exported from the island. With a selling price of about \$US200, which is about one-third of the minimum monthly wage, the sale of the birds is an important supplementary income for islanders. Young parakeets, which are carried by air or sea to Nouméa, are resold there or exported, mainly to Europe.

Diseases. There is no information concerning the pathology of *Eunymphicus*. Among the diseases that affect parakeets, avian pox and avian malaria have been recognized as the direct causes of endemic bird extinctions in Hawaii (Hay, 1986; André, 1990; Jenkins *et al.*, 1989). While the former is present in the Territory and affects domestic fowl, avian malaria has never been diagnosed in New Caledonia.

Lastly, reports from the Parc Forestier (Botanic Gardens) in Nouméa contain accounts of the deaths of captive *Ouvea parakeets* from enteritis.

Conservation

Status

Taking into account its area of distribution, its very low numbers and the threats to which it is subject, IUCN–The World Conservation Union considers the conservation status of the Ouvéa parakeet as critical; it has been estimated that there is a 50 per cent probability of its extinction before the end of the decade (Lambert *et al.*, 1992).

Historical conservation measures

Legal aspects. Decision no. 387 of the Congrès du Territoire de Nouvelle-Calédonie (Territorial parliament) 26 April 1972, classes endemic animals in three lists: A, B, and C. The last, in which both subspecies of *Eunymphicus* appear, contains all species that are particularly threatened. Their hunting, capture and possession are prohibited; however, sanctions are light (fines of about \$US200–400) and have practically never been applied.

Thus, considering its critical status, the enforcement of legislation concerning the protection of the Ouvéa parakeet appears, to be insufficient.

Translocations. There have been two known attempts at introducing the parakeets on to the neighbouring island of Lifou, which has very similar vegetation to Ouvéa (Delacour, 1966; Hannecart, 1988). The first was made about 1925 and concerned 100 birds, which are said to have returned immediately to Ouvéa. Its authenticity is the subject of controversy. The second attempt dates from 1963 and was carried out by the New Caledonian Forestry Service. Fifteen parakeets were captured at the beginning of September and released, after transit in Nouméa, by an employee of the Agricultural Service on Lifou, in a zone that had been chosen because of the presence of dense forest with cleared areas nearby containing fruit trees. It appears that there was no follow-up study made until 1981, when a Forestry Service investigation conducted with

the customary authorities found no evidence of parakeets on Lifou.

Reproduction in captivity. Several aviculturists have tried to breed the Ouvéa parakeet in captivity, some of whom have succeeded. On the other hand, the Parc Forestier did not succeed in obtaining young from captive adults, even though it has had excellent results with the horned parakeet. In 1977 the Parc started a breeding programme on New Caledonia, with 24 parakeets captured on Ouvéa. Several reasons were evoked for the failure of this programme, including predation by the endemic New Caledonian (blue) goshawk *Accipiter haplochrous*, coccidian enteritis and theft.

Current protection measures

International measures. The parakeet is listed in Appendix II of CITES, which restricts international commerce of this taxon without altogether prohibiting it. Its listing in Appendix I has been requested in order to reinforce trade controls. Lambert *et al.* (1992) recommend: (i) a study to determine the status of the parakeet; (ii) the development of a conservation plan in co-operation with local people and institutions; (iii) reproduction in captivity; and (iv) introduction to the neighbouring island of Lifou.

Local measures. The Association for the Conservation of the Ouvéa Parakeet was founded in December 1992. It includes customary chiefs from Ouvéa, local political leaders, scientists and amateurs, and aims to protect the parakeet through: a study of its biology and ecology in its natural environment to evaluate the main threats; the protection of its habitat; captive-breeding; and preventing smuggling.

As a result of the Association's actions, inspection at domestic and international airports in the Territory have been reinforced, and traditional customary authorities have banned the capture of Ouvéa parakeets. At the same time a campaign has been undertaken in schools to increase public awareness of the necessity of sparing nestlings.

Recommendations

In situ conservation

Research. An eco-ethological study of the parakeet in its natural environment is necessary because so little is known about it. It must include: a census of the wild population; the identification of its area of distribution; and a study of biology and population dynamics and interspecific relationships.

Environmental education. The people of Ouvéa's appreciation of the necessity of protecting their natural heritage, with the parakeet at the forefront, is shown by the participation of the Ouvéa High Chiefs in the Conservation Association. However, it will be hard to stop the traditional collection of nestlings during the dry season when new fields are cleared for yams (finding nests and birds is only easy at this period). Putting a stop to smuggling cannot be done without a strategy that compensates local people for the financial loss from the sale of parakeets.

Recovery efforts. The participation of local people in the guarding of nests appears to be the most efficient immediate measure for the protection of species where pairs always nest in the same place (Lindsey, 1992). The owner of the land would become the 'Godfather' of the nests that are found there in return for financial compensation. As well as protecting particular broods, this system would result in an increase in the number of nesting sites by repairing damaged natural nests and providing nest boxes, destruction of introduced predators, the ringing of nestlings and the collection of a great deal of data (Snyder, 1977; Temple, 1977).

Ex situ conservation

The control of smuggling is most efficient if it is done at its source, in Ouvéa (see above) and in New Caledonia. As far as the latter is concerned, as well as reinforcement of airport inspections, larger fines are needed because at present these are too small to be a deterrent.

As far as international commerce is concerned, the listing of the Ouvéa parakeet in Appendix I of CITES has been requested by the Territory of New Caledonia even if this will make it more difficult to build up a captive population that is large enough to make breeding viable and thus assure the species's survival.

Breeding in captivity appears to be feasible. While more than 100 breeders possess *E. c. cornutus* in France and Germany, some of which breed regularly (R. Wirth pers. comm.; Prin and Prin, 1990), the subspecies *E. c. uveaensis* remains rare in captivity; fewer than 50 individuals are held in Europe.

In New Caledonia the number of captive birds is estimated at 50–100, but only three breeders are known to have successfully raised them. According to one breeder, the difficulty lies in the formation of pairs, aggravated by the fact that the birds are difficult to sex and by the small number of individuals belonging to each breeder.

It is urgent that the regrouping of the captive population in New Caledonia proceeds, moving them to a suitable place adapted for breeding. A nucleus of 20–30 birds is considered necessary to preserve maximum genetic diversity (Lambert *et al.*, 1992).

The introduction of the parakeet to a neighbouring island could offer the best chance for the bird's survival. The island of Lifou would seem to be most appropriate in terms of suitable size (1150 sq km), low human population density (eight inhabitants per sq km) and having undisturbed native forest on more than 40 per cent of its land area.

An ecological study must be carried out beforehand, taking into account various parameters such as the quantity and quality of available resources (food, shelter, nesting sites, etc.), the presence of predators, competitors, diseases, and the level of disturbance of the natural environment (present and expected).

Considering the pressure on habitat and the political and economic uncertainty in Ouvéa, the only viable solution in the long term for alleviating the threats to the parakeet is, at the same time as monitoring its management *in*

situ (i.e. protecting the forest from logging, nest-site supplementation and predator control), to create metapopulations by a large-scale breeding programme (Temple, 1977) to reduce the pressure due to the capture of wild birds, and the translocation to less threatened suitable sites (Griffith *et al.*, 1989; Lambert *et al.*, 1992).

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