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Australia, New Zealand, and the South-west Pacific

Overview

Stephen Garnett

The parrot fauna of Australia, New Zealand, and the islands of the south-west Pacific east from New Guinea is the most diverse in the world. Over half the world's parrot genera occur in a region that extends from sub-Antarctic Antipodes Island to the equatorial forests of New Guinea, over most arid regions of Australia and out to some of the most isolated islands of the Pacific. Most species occur in Australia and New Guinea and are not currently considered threatened: only eight out of 53 species in Australia and two out of 46 in New Guinea are listed in this Action Plan. In the island nations of the Pacific, however, the proportion of threatened species is much higher and in both historic and prehistoric times many have already become extinct. Even those species that are still relatively secure will be threatened in the future unless effective conservation policies are implemented. Table 2 provides a list of the threatened parrot species of Australia, New Zealand, and the south-west Pacific.

Threats

Habitat alteration

Habitat alteration is the main threat to all parrots in continental Australia. Since the arrival of Europeans 200 years ago there has been extensive clearance of habitat and, even where natural habitat remains, there has been disruption of fire regimes that were established during 60,000 or more years of Aboriginal occupation. For some species, such as Baudin's *Calyptorhynchus baudinii* and Carnaby's *C. latirostris* cockatoos of south-west Australia, the changes have resulted in a decline in the abundance of nest sites (Saunders *et al.* 1982, Smith 1991). This will also gradually affect the populations of other parrot species (Mawson and Long 1994). Some, such as Major Mitchell's cockatoo *Cacatua leadbeateri* (Rowley and Chapman 1991), are already scarce, others that are currently super-abundant, such as long-billed corellas *C. tenuirostris* (Emison *et al.* 1994a) and galahs *C. roseicapilla* (Rowley 1990) will also be affected in the long-term. The ancient trees that bear hollows large enough for nesting cockatoos have either been cut down or are dying of old age, and in surviving

habitat remnants, grazing by sheep and introduced rabbits is preventing recruitment of new cohorts to take their place.

For Carnaby's cockatoo (Saunders 1991), as well as the superb *Polytelis swainsonii* (Webster 1988) and swift parrots *Lathamus discolor* (Brown 1989) of the much-diminished grassy woodlands of south-east Australia, it is the decline of feeding habitat that is a problem. In a land of depauperate soils, most pockets of fertility were long ago cleared for crops leaving only the land deemed too poor for agriculture for the parrots. The change has been to the advantage of some species. Galahs have been increasing their distribution for a century (Rowley 1990). Others took longer to adapt. Long-billed corellas almost disappeared when their principal food was all but eliminated by rabbits. Now that the corellas have learnt to eat an exotic weed, its distribution is exploding (Emison *et al.* 1994a). Similarly the turquoise parrot *Neophema pulchella*, once thought extinct, is now thriving on seed of an introduced South African daisy (Quin and Baker-Gabb 1993) and is returning to much of its former range.

A smaller proportion of the tropics and arid zone has been cleared but most of it has been grazed for over a century by domestic stock, such as cattle and sheep, feral herbivores, including rabbits, horses, goats and camels, and native herbivores such as kangaroos (that have prospered as a result of the increased availability of surface water). There have also been dramatic changes in fire regimes as pastoral burning practices have replaced those practised by Australian Aboriginals. Both grazing and fire may have contributed to the largely unexplained scarcity of the night *Pezoporus occidentalis* (see Box 1) and princess parrots *Polytelis alexandrae* of Australia's dry interior, and are playing a major role in the decline of the golden-shouldered parrot *Psephotus chrysopterygius* (Garnett and Crowley 1995: see Box 2). At the south-east end of the country, fire is also important for maintaining the diversity of grass and heathlands that are required by the orange-bellied parrot *Neophema chrysogaster* (Brown and Wilson 1984b: see Box 3) and ground parrot *Pezoporus wallicus* (Meredith *et al.* 1980).

Habitat loss and predation

Habitat loss is also a major problem for parrots of the tropical forests of the south-west Pacific islands. Though few of these species are as yet listed as threatened, so fast are

the forests being logged that listing may not long precede extinction. For New Zealand and the more isolated islands of the south-west Pacific, however, predation is an even more urgent problem. For all five of New Zealand's threatened parrots (see Box 4 for discussion on taxonomic status of two *Cyanoramphus* taxa) the principal problem is actual or potential predation by introduced mammals; brush-tail possums *Trichosurus vulpecula* and rats *Rattus exulans*, *R. norvegicus*, and *R. rattus* take eggs or young while cats *Felis catus* take adult kakapo *Strigops habroptilus*. Rats are also the most likely cause of extinction elsewhere in the Pacific, both before and after Europeans arrived.

Hunting

The parrot declines in the Pacific have also been exacerbated by hunting by people for food, feathers, and the pet trade. Hunting for food is primarily a problem for parrots in New Guinea and has reduced the populations of palm cockatoos *Probosciger aterrimus* near settlements. Pesquet's parrot *Psittrichas fulgidus*, on the other hand, is hunted more for its red and black plumage than for food and demand is likely to follow the exponential increase in the human population of the New Guinea highlands where the feathers are used to purchase brides. Compared with most parts of the world, the pet trade is a relatively minor problem in Australia and New Zealand where there are strict export controls. Though the trade is more vigorous elsewhere, particularly in the Solomon Islands (R. Heinsohn pers. comm.), it is so far a proven threat only to the highly threatened subspecies of the horned parakeet *Eunymphicus cornutus uvaensis* on Ouvea (Robinet *et al.* 1995).

Conservation solutions

Australia and New Zealand have well-organised and relatively well-funded conservation programmes for most threatened species. This is not to say their problems are solved – the rescue of the few elderly kakapo (see Box 5) or the mobile and erratic swift parrot will require research and innovative conservation management of the highest order. In New Zealand much of the conservation management is intensive. The kakapo in particular is the subject of detailed research by a substantial team of conservation managers (G. Elliott pers. comm.) but conservation of the kaka *Nestor meridionalis* also involves the protection of individual nests and possum poisoning. In most cases the work is undertaken on land dedicated to conservation. This differs from Australia, where most of the habitats of threatened parrots occur on private land, and many conservation programmes involve negotiation with private landholders to manage their holdings in ways that are sympathetic to the parrots. This does not involve the landholders making

a profit from the sale of parrots harvested from their land (as is sometimes advocated), but rather subsidising land management techniques that favour parrots.

In Australia and New Zealand the political will and relatively ample resources exist to tackle the problems of parrot conservation. Conservation of parrots elsewhere in the region will require outside funding. A recovery plan is being implemented on Ouvea for the Critically Endangered subspecies of horned parakeet, and work on Pesquet's parrot and the palm cockatoo is starting in Papua New Guinea. But, there is a critical need to initiate research and conservation management of the *Vini* (see Box 6) and two of the Pacific *Charmosyna* lorikeets (see Box 7). As in Australia, the best approach is likely to be working with local landowners to manage their land in a way that will allow economic development to proceed without destroying the parrots or their habitat. This is the approach being taken in Papua New Guinea, where "Integrated Conservation and Development" projects are being adopted on a trial basis in two areas with assistance from various American conservation funding bodies. The dedication of conservation reserves is likely to be a less viable option, partly because most land has traditional owners for whom buying and selling their birthright is a foreign concept, and partly because there are rarely adequate resources to manage reserves after they are acquired. This co-operative approach at a local level must be combined with negotiations at a governmental level to counter the major problem of the loss of tropical forests in the region, whilst recognising the importance of logging revenue to regional development. Finally, the effects of trapping, particularly in places such as the Solomons and New Guinea, need to be assessed and managed before the populations plummet, as have those of the yellow-crested cockatoo and red-and-blue lory in neighbouring Indonesia (P. Jepson pers. comm.).

Priority projects in Australia, New Zealand and the south-west Pacific

- **Rediscovery and proposal of a recovery plan for the night parrot in central Australia.** (Box 1)
- **Recovery plan for the golden-shouldered parrot in Queensland, Australia.** (Box 2)
- **Recovery Plan for the orange-bellied parrot *Neophema chrysogaster* in south-eastern Australia (1998–2002).** (Box 3)
- **Clarification of the taxonomic status of the highly threatened orange-fronted and Forbes' parakeets from New Zealand.** (Box 4)
- **Recovery plan for the kakapo in New Zealand.** (Box 5)
- **An overall conservation strategy for the *Vini* lorikeets of the South Pacific islands.** (Box 6)
- **Status assessment of the New Caledonian lorikeet.** (Box 7)

Box 1. Rediscovery and proposal of a recovery plan for the night parrot in central Australia.

John Blyth

Aim: To find at least one population of the enigmatic night parrot and make recommendations for its long-term conservation.

Justification: Only six reliable records were made of the night parrot *Pezoporus* (formerly *Geopsittacus*) *occidentalis* across the whole of its historical range in inland Australia between 1935 and 1984 (Blakers *et al.* 1984). This range must have extended across some 2,000,000 square kilometres mainly in Western Australia, Northern Territory, and South Australia, but also into western New South Wales, south-west Queensland, and north-west Victoria. There have been no confirmed reports of live birds since that time, despite several co-ordinated and intensive searches (see Blyth *et al.* 1998), although there are several unconfirmed reports (especially near Cloncurry in western Queensland and outside its supposed historical range). A single corpse has been found, however (Boles *et al.* 1994). In particular, two large-scale searches were made during 1996 in response to local reports: one in suitable habitat to the south of its known distribution and one in the deserts of Western Australia, but neither found night parrots. Several smaller scale searches were also made, but also without success. It has recently been suggested that the species is nocturnal as well as nomadic which, if true, may explain why it is so difficult to find.

Project description: Designing a conservation programme for this species is complicated by the significant problems encountered in finding even one population. All mainland states and the Northern Territory have contact numbers for information and any survey planned for this species would clearly benefit from discussion with the appropriate person. Support should be offered to ongoing initiatives, such as the public information campaign run by the Northern Territory Threatened Species Network.

Any efforts in Western Australia should be undertaken within the framework of the state Department of Conservation and Land Management's Interim Recovery Plan. The Interim Recovery Plan is designed to search the most promising areas and offer co-ordination and support to other interested parties in the state. Amongst the most likely areas for immediate searches is a re-survey of the Western Australia western desert region. Several historical records were made from this area as well as one promising but unconfirmed recent report, and it may be that searches made whilst major hummock grasses are seeding provide the best opportunity of finding this species. Surveys by other agencies would clearly profit from liaison with the Department of Conservation and Land Management for advice on survey design as any new insights into the species' ecology may have considerable implications for future searches.

Contact: John Blyth.

Box 2. Recovery plan for the golden-shouldered parrot in Queensland, Australia.

Stephen Garnett

Aim: To achieve down-listing to Vulnerable within 15 years by stopping the decline in the area of occupancy, expanding its range into areas formerly occupied, and increasing confirmed numbers to more than 2,500 pairs at the start of the breeding season.

Justification: The golden-shouldered parrot *Psephotus chrysopterygius* occurred throughout the Cape York Peninsula in northern Queensland, Australia where it inhabits tropical savanna. It is now restricted to a small fraction of this area and may not exceed 1,600 breeding pairs. Two breeding populations are known, in the central Cape York Peninsula south of Musgrave, and in south-west Chillagoe. Parts of the species' range have not been surveyed adequately as access is difficult or impossible for much of the year. It is believed that the main factor causing this range contraction is a change in the burning regime whereby there are now considerably fewer hot fires. This has resulted in woody suckers failing to be burnt to ground level and there are now more trees in the wet season feeding and breeding areas. This is thought to have led to an increase in predation as predators have become more successful.

Project description: Extensive habitat management should be undertaken and the species' response assessed. Detailed information on this relationship would then be used to form the basis of a management plan. Experimental procedures would include the manipulation of the fire regime in selected sites; assessment of the response to supplementary feeding during the wet season; and reduction of tree density around nest sites to reduce the frequency of predation. Each of these experimental actions, if successful, would allow the golden-shouldered parrot to expand into new areas and halt the decline in numbers at known sites.

In addition, monitoring of populations should continue on an annual basis on Artemis Cattle Station to determine the effectiveness of management and at five-year intervals at specified remote parts of the southern and northern populations to measure overall population trends. The lead organisation is the Queensland Department of Environment with input from the Queensland Natural Resources, Environment Australia, and non-governmental ornithological societies.

Contact: Lesie Felderhof.

Box 3. Recovery Plan for the orange-bellied parrot *Neophema chrysogaster* in south-eastern Australia (1998–2002).

Mark Holdsworth and Peter Menkhorst

Aim: The long-term objective of this recovery effort is to down-list the species to Lower Risk, conservation dependent (LR, cd) within 30 years. The objective of this plan is to improve the conservation status of the species so that it no longer meets the IUCN criteria for Critically Endangered and can be down listed to Endangered within 5 years by increasing the size of the wild population to exceed 250 mature individuals.

Justification: The orange-bellied parrot *Neophema chrysogaster* was formerly abundant throughout its range in Australia, where it occurred from the York Peninsula in South Australia to Bruny Island in southern Tasmania, and from Geelong in Victoria to Sydney in New South Wales. Since the 1920s, however, its range and abundance have continually decreased such that the breeding range is now a narrow coastal strip of south-west Tasmania and its winter range has shrunk to the east of the Murray River in South Australia and west of Jack Smith Lake in South Gippsland, Victoria. It is extinct in New South Wales. In winter the species is found in a variety of open habitats, such as salt marshes, dunes, and shrublands, within 10km of the coast. The reduction in extent and quality of this habitat is thought to be the main cause of decline over the last century (e.g., Menkhorst *et al.* 1990, Casperson 1995). Numbers are now estimated at fewer than 200 mature individuals in the wild, mostly in one breeding population. Recovery plans were first initiated in 1984 (Brown and Wilson 1984a), and the decline in numbers seems to have halted subsequently. However, the species remains threatened by the loss of winter habitat (especially the destruction of the salt marsh feeding areas), predation by foxes and cats, competition from other species that eat seed, disease, loss of genetic variation, and catastrophes (such as storms during migration). The actions proposed here are designed to increase both numbers and the sizes of the areas occupied.

Project description: A co-ordinated programme that involves government agencies, non-governmental organisations, threatened species and land management groups, and the general public is vital to restore the population of the orange-bellied parrot. As such, a Recovery Coordinator should assist the existing Recovery Team in implementing and overseeing the following actions:

- i) Restoring, creating, and supplementing migratory and winter feeding habitat in locations traditionally used by the species in Tasmania, Victoria, and South Australia. In addition, the breeding population will continue to be intensively managed to ensure breeding potential is maximised and to assist with population monitoring.
- ii) Reducing the risks of predation by eliminating introduced predators and identifying factors that limit food availability so that grazing animals, such as sheep and rabbits, can be managed accordingly.
- iii) Finding sites where “missing” birds over-winter. More birds have been counted in summers than in winters, indicating that there are currently unknown winter locations. There is, therefore, a need to find these sites, and potential sites both within and outside the known wintering range should be searched.
- iv) Continuation of the captive breeding and release of healthy birds in both winter and summer. Allied to this is the development of a Psittacine Circoviral Disease vaccination to improve the fitness of birds.
- v) Maintenance and expansion of public awareness concerning the plight of the species through continued community education initiatives and a co-ordinated media strategy. The success of this component is important in maintaining the orange-bellied parrot as an issue in development-planning near to key wintering sites.

Contacts: Mark Holdsworth and Peter Menkhorst.

Box 4. Clarification of the taxonomic status of the highly threatened orange-fronted and Forbes' parakeets from New Zealand.

Charles Daugherty and Kerry-Jayne Wilson

Aim: To clarify the taxonomic status of the orange-fronted and Forbes' parakeets in New Zealand.

Justification: The orange-fronted parakeet was considered a distinct species *Cyanoramphus malherbi* until 1985 when it was proposed that it be treated as a colour morph of the yellow-crowned parakeet *C. auriceps* (Taylor 1985). Recently, however, protein (allozyme) electrophoresis study has led to the suggestion that it be restored to specific status (Triggs and Daugherty 1996, but see Taylor 1998). The data were not felt to be conclusive and larger samples and more sensitive genetic analyses are required before a firm conclusion can be drawn. If this form is in fact a species, then it is endangered as it is now known only from the Arthur's Pass/Lake Sumner area in northern South Island. It was previously recorded from localities throughout New Zealand (Triggs and Daugherty 1996), although records from North Island are thought dubious (K-J. Wilson *in litt.* 1997).

Forbes' parakeet *Cyanoramphus (auriceps) forbesi* has been considered a subspecies of the yellow-crowned parakeet *C. auriceps*. Recently it was proposed that it be elevated to specific status (Triggs and Daugherty 1996). In the early 1970s, fewer than 30 individuals survived on Mangere and Little Mangere Islands and hybridisation with the red-crowned parakeet *C. novaezelandiae*, reported in 1970 (Taylor 1975), has affected an unknown proportion of the population. Consequently, there are two issues here. The first is determining which taxonomic status is most appropriate for this species and the second is assessing the degree of genetic introgression of red-crowned parakeet genes into the Forbes' parakeet gene pool (Triggs and Daugherty 1996). Unravelling these two issues is likely to be difficult. If it is a species, then it is one of the most threatened parrot species in the world.

Project description: Comparisons of the base pair sequences in the rapidly evolving parts of the mitochondrial deoxyribonucleic acid (DNA) provide an objective way of comparing degrees of genetic difference between populations within the same species, by reference to another recognised species that is closely related (i.e., the control or outgroup). Given uncertainty over the taxonomic status of several *Cyanoramphus* populations (such as in the Auckland Islands), it is desirable to investigate the genetic variation in the genus so that appropriate units for conservation can be determined. Ideally, blood or other fresh tissue samples from many individuals in each group are required to provide a sufficient sample from their populations for these DNA tests. To achieve this in these cases, it will probably also be necessary to amplify minute and degraded DNA samples from moulted feather shafts collected in the wild, and museum skins. The use of material from Forbes' parakeets collected before hybridisation began (and hence "pure") is crucial to determining the level of hybridisation with the red-crowned parakeet.

Contacts: Charles Daugherty, and Kerry-Jayne Wilson.

Box 5. Recovery plan for the kakapo in New Zealand.

Graeme Elliott

Aims: To establish at least one viable, self-sustaining, unmanaged population of kakapo as a functional component of the ecosystem in a protected habitat, and to establish two or more other populations which may require ongoing management.

Justification: In pre-human times, kakapo *Strigops habroptilus* were found throughout the three main islands of New Zealand. Following Polynesian and European settlement, their range was much reduced by forest clearance and predation by introduced cats, dogs, rats, and mustelids. Since the 1970s, kakapo have been known only from Fiordland in the South Island, where they became extinct in approximately 1987, and Stewart Island. In 1977, a previously unknown population of about 200 kakapo was discovered on Stewart Island, but following very high rates of predation by feral cats these birds were transferred to three relatively predator-free islands during the 1980s and 1990s. In 1997, there were 54 known kakapo on three islands, and possibly a few surviving birds on Stewart Island. Two of the relatively predator free islands support populations of the Polynesian rat which have substantially reduced kakapo productivity by preying on recently hatched chicks. In addition, kakapo reproductive rates are very low because they breed as infrequently as once in five years in response to the availability of fruits produced by masting tree species, and because many kakapo are now very old and their fertility is probably declining.

Project Description: Conservation management of kakapo is occurring in three parts:

1. Minimising mortality.
2. Maximising the hatching and survival of chicks and eggs.
3. Investigating ways of increasing breeding frequency.

There are no predators capable of killing adult kakapo on any of the islands on which kakapo are held. The islands have stringent quarantine procedures to prevent accidental introduction of predators. Any further kakapo discovered on Stewart Island will be moved to one of the relatively predator-free kakapo islands.

Nesting attempts of kakapo are closely monitored to prevent predation of eggs and chicks and to prevent starvation when natural food supplies fail. All known female kakapo carry radio-transmitters, and all nests are located within twelve days of laying. Once found, nests are surrounded with rat traps and poison stations, and are monitored 24 hours a day by close-circuit television. Any rats approaching the nests are scared away. At times of high rat risk when the eggs and chicks are unattended, nests are guarded by people standing near the nest, and eggs and chicks are prevented from chilling with electric heat pads. Chick health and condition are closely monitored. Attempts are planned to eliminate Polynesian rats from Little Barrier and Codfish Islands.

Three lines of investigation are being followed to try to increase breeding frequency. Trials are being undertaken to see if hormone therapy can be used to induce old, apparently infertile, birds to breed. Trials are also to be undertaken to see if hormone therapy can be used to induce normally fertile female kakapo to breed more often than they would naturally. Research on environmental triggers to breeding is being undertaken to see if kakapo can be induced to breed more frequently by mimicking natural triggers. A limited increase in breeding frequency occurred on one island when kakapo were provided with supplementary food.

Contact: Graeme Elliott.

Box 6. An overall conservation strategy for the *Vini* lorikeets of the South Pacific islands.

Kerry-Jayne Wilson

Aim: To ensure the long-term survival of all extant species of the genus *Vini* by: i) collating and assessing all information on the threats and status of the lorikeets of this threatened genus and; ii) proposing a co-ordinated approach to the conservation of all island populations.

Justification: There are five lorikeet species in the genus *Vini* which inhabit small islands in the South Pacific from Fiji in the west to the Line Islands in the north-east and Henderson Island in the south-east. Some of these populations are the result of introductions to islands which may be outside, but close to, the natural range (e.g., *V. kuhlii*: Watling 1995, McCormack and Künzle 1996 and *V. ultramarina*: Kuehler *et al.* 1997). Four of these species are considered to be threatened with extinction and as all are found on small islands, nowhere are populations large. The genus as a whole has been subjected to habitat alteration and almost complete replacement in some instances, as well as the attentions of European rats *Rattus rattus*. Whilst the lorikeets seem able to tolerate habitat change, as they are found in a variety of human habitations, such as gardens, villages, and plantations, nest predation by rats seems to have caused local extinction on many islands. Of the rat species present, it appears that *Rattus rattus* is the main problem as Kuhl's lorikeet *V. kuhlii* survives in the presence of *Rattus norvegicus* and *Rattus exulans*, the Henderson Island lorikeet *V. stepheni* is not thought to have suffered since the introduction of *Rattus exulans* (Trevelyan 1995) and *V. peruviana* also survives in the presence of *Rattus exulans* on Aitutaki in the Cook Islands (Wilson 1993 and K-J. Wilson *in litt.* 1997). Consequently, whilst the genus is at risk of extinction from rat introductions to small islands, it is also possible to devise a practical strategy that would safeguard all species. In essence, a little foresight could easily save the whole genus.

Project description: The first stage in this exercise should be the collation of all information, published and unpublished on both the lorikeets and the state of the natural history of the islands on which they live or have lived in the past. Specifically, the distribution of habitats and the extent of its alteration, presence of food plants, and the presence of rats and any competitors on each island should be documented, along with any knowledge of human hunting. For example, there is evidence to suggest that Kuhl's lorikeet became extinct in the Cook Islands because its red feathers were used in cloaks by islanders (McCormack and Künzle 1996). This information collation should include an attempt to chart the progress of rats, especially *Rattus rattus* throughout the southern Pacific and the effect that they have had on the lorikeets and other native wildlife. In addition, information should be sought on the practicality (logistics, cost, and environmental impact) of various rat eradication programmes (e.g. aerial application or the Landcare New Zealand land-based eradication approach) that have already been implemented elsewhere.

Based on this assessment, management recommendations might consider three courses of action. First, islands (perhaps especially those within the lorikeets' natural range) where rats do not occur that have been identified should be considered as high priorities for the prevention of rat colonisation. Second, islands where rats do occur and are threatening lorikeet populations should be considered for rat eradication. Finally, translocation to rat-free islands might be considered: first indications are that this course of action appears to have been successful with ultramarine lorikeets in the Marquesas (Lieberman *et al.* 1997).

Contact: K-J. Wilson.

Box 7. Status assessment of the New Caledonian lorikeet.

Aim: To determine whether the New Caledonian lorikeet *Charmosyna diadema* still exists, and if it does, to devise a strategy for its conservation.

Justification: The only definite records of this species are the two female specimens that were collected in 1859 and from which the species was described, and an observation in 1913 (Forshaw 1989). Other than this the only information is that locals reported it to the west of Mount Panié in 1976 (Stokes 1980).

Project description: Searches for the lorikeet should concentrate around Mt. Panié and any other areas that experienced local bushmen suggest. The cloud forest of Mt. Humboldt and the Massif of Kouakoué might also still contain the species (Bregulla 1993). It should also be determined whether the type locality still holds suitable habitat.

Contact: BIRDS Australia Parrot Association.

Species accounts

Table 2. A list of parrot species of Australia, New Zealand and the south-west Pacific that are considered threatened using IUCN Red List criteria. Also included are threatened taxa for which there is evidence that they may be distinct species, and species removed from the Red List. Species are listed in alphabetical order by their scientific name, together with their distribution and threat status. The criteria under which each species qualifies are given in the appropriate species account. Where two English names are given, the first is that widely used in Australia and the second, in parentheses, is the name used in *Birds to Watch 2* (Collar *et al.* 1994). *Denotes changes from *Birds to Watch 2* (and, therefore, the 1996 IUCN Red List of Threatened Animals), which have been agreed to by BirdLife International who maintain the IUCN list of threatened birds.

English name	Scientific name	Distribution	Threat category
Baudin's cockatoo (White-tailed black-cockatoo)	<i>Calyptorhynchus baudinii</i>	South-west Western Australia	Vulnerable
Carnaby's cockatoo (Slender-billed black-cockatoo)	<i>Calyptorhynchus latirostris</i>	South-west Western Australia	Vulnerable
Red-throated lorikeet	<i>Charmosyna amabilis</i>	Fiji	Vulnerable
New Caledonian lorikeet	<i>Charmosyna diadema</i>	New Caledonia (France)	Endangered
Antipodes parakeet	<i>Cyanoramphus unicolor</i>	Antipodes, New Zealand	Vulnerable
Horned parakeet	<i>Eunymphicus cornutus</i>	New Caledonia (France)	Vulnerable
Swift parrot	<i>Lathamus discolor</i>	Eastern Tasmania and south-east mainland Australia	Vulnerable
Orange-bellied parrot*	<i>Neophema chrysogaster</i>	South-western Tasmania, and coastal Victoria and eastern South Australia	Critically Endangered
New Zealand kaka	<i>Nestor meridionalis</i>	New Zealand	Vulnerable
Night parrot	<i>Pezoporus (=Geopsittacus) occidentalis</i> ¹	Thought to be central Australia	Critically Endangered
Princess parrot (Alexandra's parrot)	<i>Polytelis alexandrae</i>	Western Australia, Northern Territory, and north-western South Australia	Vulnerable
Superb parrot	<i>Polytelis swainsonii</i>	New South Wales and northern Victoria	Vulnerable
Golden-shouldered parrot	<i>Psephotus chrysopterygius</i>	Cape York Peninsula, Queensland	Endangered
Kakapo*	<i>Strigops habroptilus</i>	Codfish, Little Barrier, Mana, Maud, and Stewart Islands, New Zealand	Critically Endangered
Kuhl's lorikeet	<i>Vini kuhlii</i>	French Polynesia and Kiribati	Endangered
Blue lorikeet	<i>Vini peruviana</i>	French Polynesia and Cook Islands (NZ)	Vulnerable
Henderson lorikeet	<i>Vini stepheni</i>	Henderson Island (UK)	Vulnerable
Ultramarine lorikeet	<i>Vini ultramarina</i>	Marquesas Islands, French Polynesia	Endangered
Possible species			
Forbes' parakeet	<i>Cyanoramphus (auriceps) forbesi</i>	Mangere and Little Manger Islands in Chatham Islands New Zealand	Critically Endangered
Orange-fronted parakeet	<i>Cyanoramphus (auriceps) 'malherbi'</i>	Arthur's Pass and the Lake Sumner/ Lewis Pass area, South Island, New Zealand	Critically Endangered
Red List removals			
Glossy black-cockatoo*	<i>Calyptorhynchus lathami</i>	Queensland, New South Wales and Victoria, Australia	Lower Risk
Norfolk Island parakeet*	<i>Cyanoramphus (novaezelandiae) cookii</i>	Norfolk Island (to Australia)	Considered a subspecies
Scarlet-chested parakeet*	<i>Neophema splendida</i>	Southern inland Australia	Lower Risk
1. A widely accepted taxonomic revision places the night parrot in a different genus and we follow this revision: the generic name under which it appeared in Collar <i>et al.</i> (1994) is given in parentheses.			

Baudin's cockatoo *Calyptorhynchus baudinii*

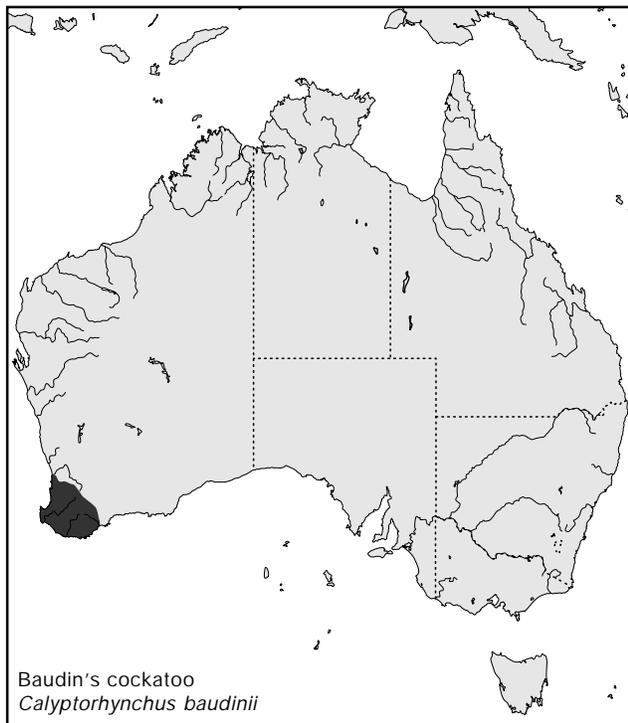
(White-tailed black-cockatoo in Collar *et al.* 1994. Name changed here to conform to Australian usage.)

Contributor: Peter Mawson.

Conservation status: IUCN: Vulnerable (C2a).
CITES: Appendix II.

National protection status: On 30th April 1996 it was formally listed as "rare or likely to become extinct" in Western Australia and was given maximum protection under state legislation.

Distribution and status: Baudin's cockatoo is found within the temperate forests of south-west Western Australia. It requires hollows up to 60m above the ground in mature eucalyptus for breeding.



The population estimate of 5,000–25,000 individuals in 1977 (Garnett 1992) is considered very subjective and it is unlikely that the species has approached the upper limit in recent times with a current estimate of a maximum of 10,000 individuals (P. Mawson *in litt.* 1997). There is no indication whether the population is declining at present (Garnett 1992). Licences to shoot birds where they are causing damage to commercial pome fruit crops have been few in number since 1990 and since 1994/5 licences have only been issued to scare birds, not to kill them.

Threats: Current threats are not known: statements that illegal shooting and logging are having an adverse effect are speculative (Garnett 1992), although it is not clear if the strict prescriptions of coupe timber harvesting, which is practised through much of its range, are sufficient to meet the species' needs. It is also uncertain whether previous forest management has already had a significant adverse effect. Clarifying its status and threats is challenging as the species is difficult to census reliably, but breeding biology is the subject of a small amount of fieldwork.

Action: An understanding of the conservation status and needs of this species would benefit from better data on reproductive ecology, feeding, and nesting requirements within the eucalypt forest. Information on the distribution of birds in relation to topography and vegetation sub-communities would also provide a better understanding of the impact or potential impacts that various land-uses within the forest (e.g., logging, mining, agriculture, dam construction) would have on cockatoo numbers.

Carnaby's cockatoo *Calyptorhynchus latirostris*

(or short-billed black-cockatoo: slender-billed black-cockatoo in Collar *et al.* 1994. Name changed here to conform to Australian usage.)

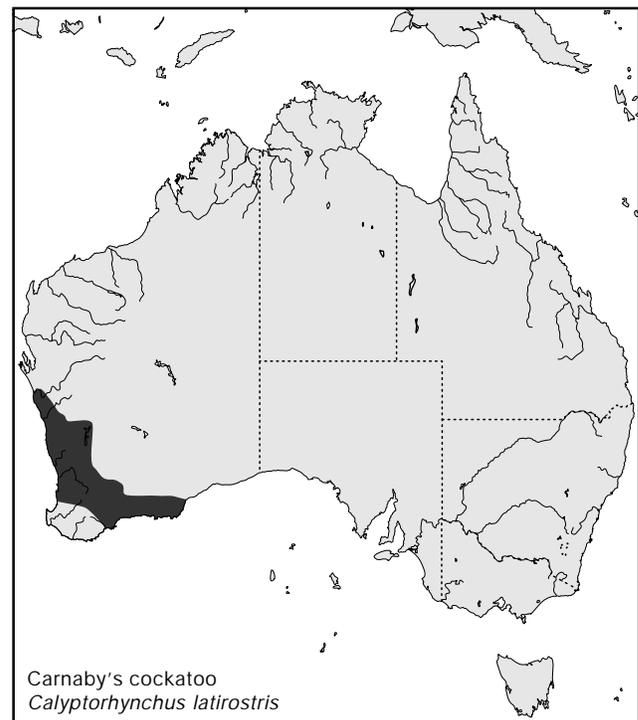
Contributor: Denis Saunders.

Conservation status: IUCN: Vulnerable (C2a).

CITES: Appendix II.

National protection status: On 30th April 1996 it was formally listed as "rare or likely to become extinct" in Western Australia and was given maximum protection under state legislation.

Distribution and status: Carnaby's cockatoo is found in woodland in south-west Western Australia, where it nests



in hollow eucalypts and feeds on seeds in heath, shrublands, and woodlands. In agricultural landscapes its food plants occur in patches. Birds are unable to locate these patches if there is not a link, in the form of native vegetation corridors, to guide them.

The total population was estimated at 9,000–35,000 individuals in 1977 and since then there has been a decline that is likely to continue for some decades. The bird has disappeared from more than a third of its breeding range during the last 30 years (Saunders 1990b).

Threats: The removal of native vegetation for agricultural development has been the biggest cause of the decline. The greatest threat to the cockatoo now is the rising water table resulting from over-clearance of deep-rooted native vegetation and its replacement with shallow-rooted agricultural crops. The increase in salinity has the potential to affect adversely 61,000km², including much of the cockatoo's remaining habitat (Saunders and Ingram 1995). Garnett (1992) and Collar *et al.* (1994) also cited clearance and fragmentation of habitat, insufficient regeneration to supply suitable nesting trees owing to introduced grazers, agriculture which favours the galah *Cacatua roseicapilla*, and nest-robbing for trade as threats. It is now thought that the availability of nest sites is not limiting recruitment (Saunders *et al.* 1982). However, future availability of nest sites will depend upon current habitat management. What is having an affect at present is the distance between nesting and feeding sites which, if too large, results in chicks starving to death or fledging under-weight with attendant reduced reproductive success in the first year (Saunders *et al.* 1982, Saunders 1986). With the introduction of DNA testing, nest robbing may have become a very small problem.

Action: A multi-department programme has been launched to try and reverse the trend in agricultural development, which has had the biggest impact on the species through salination and subsequent loss of habitat (30,000km² have been targeted). This programme aims to promote revegetation, and to try and lower water tables so that further salination can be prevented and the decline in native vegetation halted. If successful, this will benefit the cockatoo as well as a wide range of other native species (Saunders and Ingram 1995). However, the trees being used are farm forestry trees with no other known conservation benefits, and the restoration of native habitat requires a planting campaign using native heath, shrub, and woodland species. Whilst native remnant vegetation can now only be cleared on private land with government approval, much is becoming degraded and is in need of direct management. Without large-scale revegetation and management of the remaining native vegetation, Carnaby's cockatoo will continue to decline.

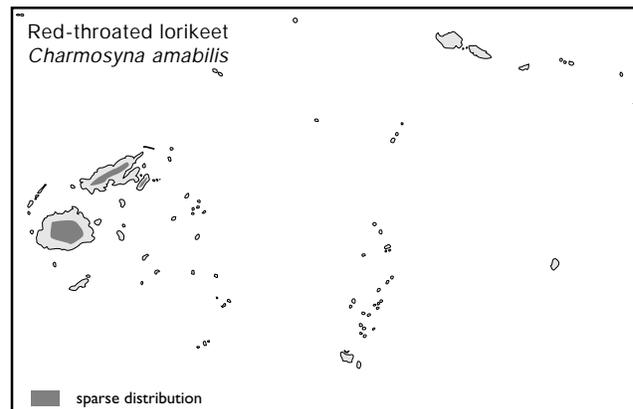
Red-throated lorikeet *Charmosyna amabilis*

Conservation status: IUCN: Vulnerable (C2a; D1).

CITES: Appendix II.

National protection status: Information unavailable.

Distribution and status: This species is endemic to the mature forests (usually above 500m) on the islands of Viti Levu, Vanua Levu, Taveuni and Ovalau, Fiji (Watling 1982, Clunie 1984). The red-throated lorikeet is rare, with no confirmed records this century except from Viti Levu where recent observations are all of small flocks (two to six individuals) (Collar *et al* 1994).



Threats: Current threats are unknown but predation by European rats *Rattus rattus* may pose a problem.

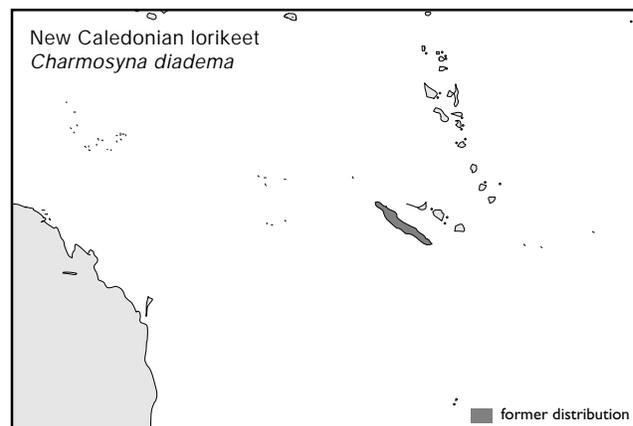
Action: Information is urgently required on the distribution (including habitat use), status, and threats to the species.

New Caledonian lorikeet *Charmosyna diadema*

Conservation status: IUCN: Endangered (D1).

CITES: Appendix II.

National protection status: Information unavailable.



Distribution and status: This species has been described from two specimens, both females, collected in 1859, and an observation in 1913 on New Caledonia (to France) (Forshaw 1989). It was treated as extinct by King (1978–1979) but in 1976 islanders reported that it might still exist, and two birds were reported by an experienced bushman in forest west of Mount Panié (Stokes 1980). It might survive in the cloud forest of Mount Panié, Mount Humboldt, and the Massif of Kouakoué (Bregulla 1993).

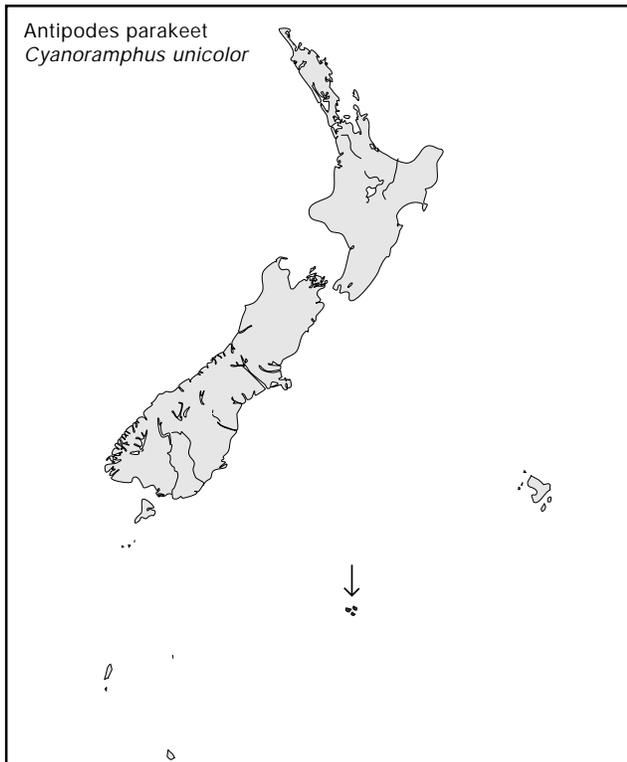
Threats: Not known.

Action: Information is urgently required on the distribution (including habitat use), status, and threats to this species. Searches for the lorikeet should concentrate around Mt. Panié and any other areas that experienced local bushmen suggest. The cloud forest of Mt. Humboldt and the Massif of Kouakoué might also still contain the species (Bregulla 1993). It should also be determined whether the type locality still holds suitable habitat. (See Box 7).

Antipodes parakeet
Cyanoramphus unicolor

Contributor: Terry Greene.

Conservation status: IUCN: Vulnerable (D2).
CITES: Appendix II.
National protection status: Information unavailable.



Distribution and status: This species is endemic to the uninhabited and protected islands of the Antipodes, New Zealand. In 1978 it was common on the main island (20km²) and Bollons Island (0.5km²) and occurred in smaller numbers on Leeward (0.1km²), Inner Windward (0.08km²) and Archway (0.06km²) islets, with an estimated total of 2,000–3,000 birds (Williams and Given 1981).

Threats: As it nests in burrows among tall dense tussocks or sedges (Taylor 1985), it is threatened by accidental introductions of mammalian predators which once seemed unlikely because of its isolated location, but is now a possibility owing to the increased numbers of visits and fishing in the Southern Ocean (Collar *et al* 1994, T. Greene *in litt.* 1997).

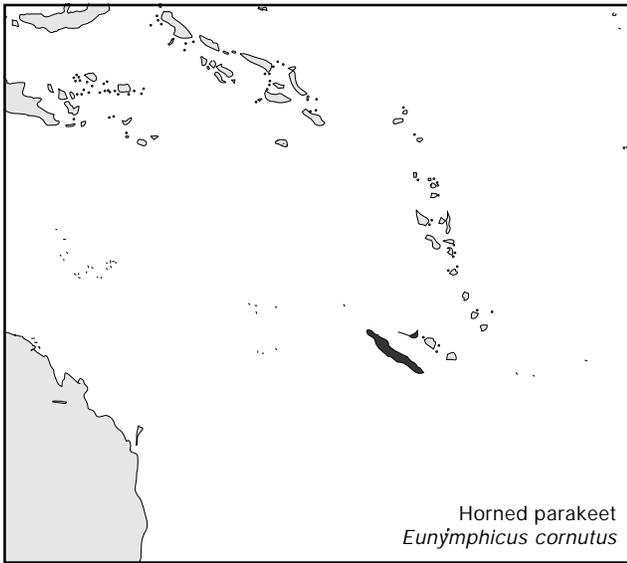
Action: Information is urgently required on distribution (including habitat use), status, and threats to the species, including the risk of predators being introduced.

Horned parakeet
Eunymphicus cornutus

Contributor: Olivier Robinet.

Conservation status: IUCN: Vulnerable (C1).
CITES: Appendix II.
National protection status: Information unavailable.





Distribution and status: The horned parakeet is endemic to the forests of New Caledonia (France), with two races, nominate *cornutus* on the mainland, and *uvaensis* confined on Ouvéa (where approximately 66km² of suitable habitat remains: Robinet *et al.* 1996) in the Loyalty Islands (Forshaw 1989).

The subspecies *cornutus* has declined in number since 1882, when it was reported evident in forested areas, to fairly common in more inaccessible areas above 470m in the 1940s, to relatively frequent in suitable habitat in the 1960s and 1970s (Bregulla 1993), with a population then estimated at 2,000–10,000 individuals (possibly stable) (Collar *et al.* 1994). Numbers of *uvaensis* were estimated at 70–90 birds and declining (Hahn 1993), but a survey in December 1993 counted 73 individuals leading to an estimate of 617 individuals (minimum 274, maximum 996; Robinet *et al.* 1996), in both the north (the stronghold) and the south, where the species was thought to have disappeared. Earlier attempts to release wild-caught stock on nearby Lifou Island (to establish a second population) have failed (Robinet *et al.* 1995), possibly because of the presence of ship and Norwegian rats (O. Robinet *in litt.* 1997: see Robinet and Salas 1996).

Threats: It has suffered from habitat destruction, predation by rats, and capture for the cagebird trade. There were 19 wild caught specimens recorded in international trade between 1991 and 1995, all between 1991 and 1993 (CITES Annual Report database). Robinet *et al.*, (1995) refer to illegal trade to Europe.

Action: A recovery plan has been prepared for *uvaensis* for the period 1997–2002 involving strong local participation in population and habitat monitoring (O. Robinet *in litt.* 1997). A proposal for its inclusion on Appendix I of CITES was rejected in 1997.

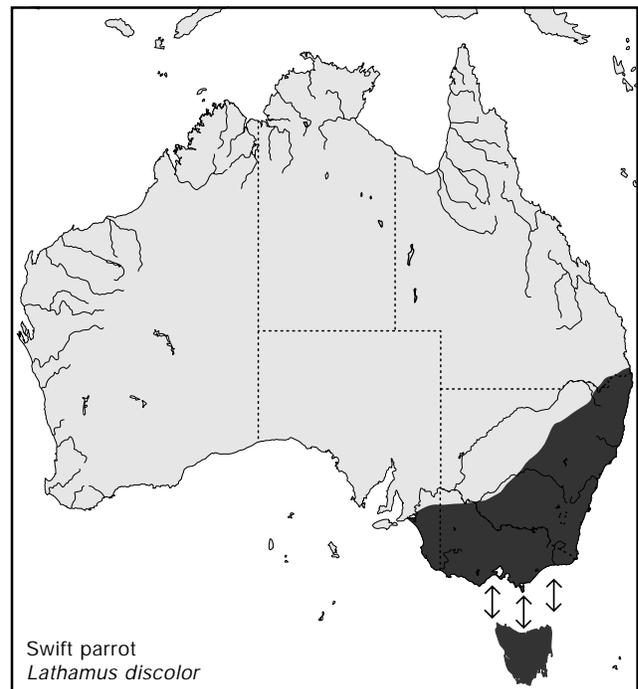
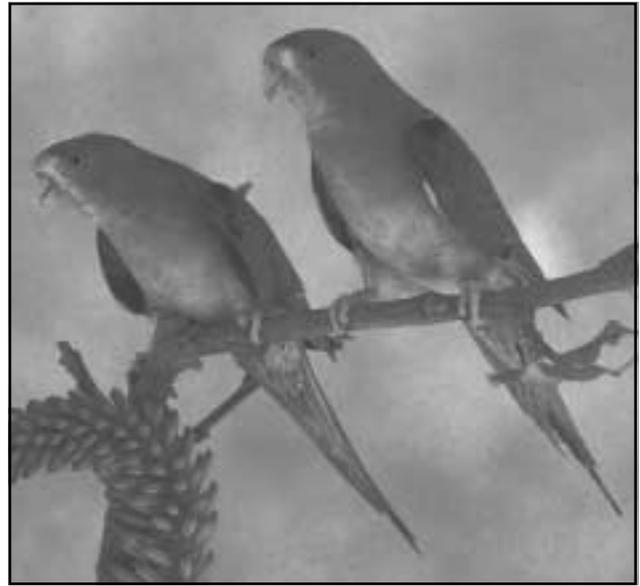
Swift parrot *Lathamus discolor*

Contributor: Peter Menkhorst.

Conservation status: IUCN: Vulnerable (B1 + 2c; C2b).
CITES: Appendix II.

National protection status: Information unavailable.

Distribution and status: The swift parrot breeds in northern and eastern Tasmania (where it inhabits eucalypt forests, especially those with blue gum *Eucalyptus globulus*, breeding in mature and senescent trees) and winters in



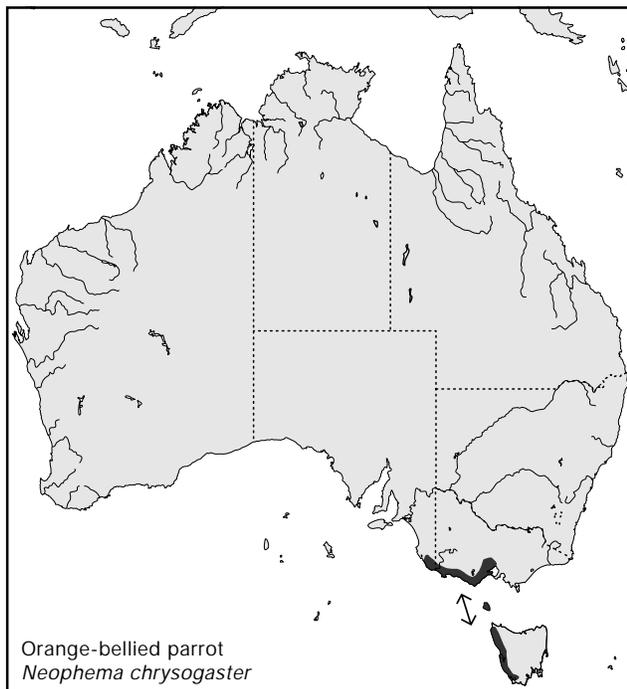
south-east mainland Australia (where it occurs in remnant forest patches within agricultural land and suburbs). A survey in 1988/1989 estimated a population of 1,320 breeding pairs with an end-of-breeding-season population probably in excess of 5,000 individuals (Garnett 1992).

Threats: In its winter range it specialises in insect and nectar exudates which are abundant in rich habitat patches, many of which have long been cleared because they occur in prime sheep and cattle farming areas. Consequently, most of the remaining habitat might be suboptimal (P. Menkhorst *in litt.* 1997). Furthermore, eucalypt forest has been extensively cleared for agriculture and timber throughout its range and some birds continue to be trapped for trade (Garnett 1992), although this is not thought to be a significant problem (P. Menkhorst *in litt.* 1997).

Action: Sympathetic management of remaining habitat should involve a more sensitive forest use strategy in Tasmanian breeding habitat, and a reassessment of timber harvesting practices in Victoria and New South Wales. Forests with highest densities of breeding birds should be protected. A community-based tree-planting programme should be encouraged to increase the coverage of blue gum in Tasmania, and of eucalypts that flower reliably in the wintering areas.

Orange-bellied parrot *Neophema chrysogaster*

Contributors: Mark Holdsworth and Peter Menkhorst.



Conservation status: IUCN: Critically Endangered (C2b). CITES: Appendix I.

National protection status: Wholly protected in all states. Listed as Endangered under Commonwealth *Threatened Species Protection Act 1992*.

The IUCN status of the orange-bellied parrot has been revised to Critically Endangered from Endangered (D1: Collar *et al.* 1994) on the basis of an inferred decline. Intensive population studies of the breeding population since 1991 show a stable population over the period, but, in 1994 and 1995 a decline (about 15%) was observed. Since then the population has recovered. In addition all cohorts are known to experience at least 50% mortality each year (sometimes as high as 70%). Consequently, whatever has caused historic declines and is still restricting population growth has the potential to cause a sustained decline at any time.

Distribution and status: The orange-bellied parrot breeds in tree hollows in the forested margins of the coastal plains and feeds on sedgeland in the World Heritage Area of south-west Tasmania, Australia. It migrates across the islands in the west of the Bass Strait to coastal Victoria and eastern South Australia (P. Menkhorst *in litt.* 1997), and along the southern coast of the Australian mainland in the winter, mostly to the shores of Port Phillip Bay in Victoria, where it feeds on saltmarshes and coastal dunes.

In the 19th century there were supposedly flocks of thousands, but in 1981 the population was estimated at 150 individuals with no evidence of a marked decrease in numbers in the wintering range in the period 1978–1990. The species now numbers 100 adults with about 80 young fledging in most years. Continual monitoring of both winter and summer populations does not show any significant change in numbers despite active population and habitat management (P. Menkhorst *in litt.* 1997, see also Male 1995).

Threats: Continuing threats include loss of favoured feeding habitat throughout the winter range and lack of safety in numbers for a small bird attractive to avian predators (Garnett 1992). The suggestion that competition from introduced herbivores is a threat (Collar *et al.* 1994) is entirely conjectural (P. Menkhorst *in litt.* 1997).

Action: The central issue is increasing over-winter survival. Under the *Orange-bellied Parrot Recovery Plan 1998–2002*, a co-ordinated programme that involves all sectors of the community, specific actions will be taken to ensure restoration of the orange-bellied parrot. The programme includes providing new winter feeding areas, reducing predation, finding all wintering populations, continuing the captive breeding and release of healthy birds in both winter and summer, and expanding public awareness initiatives. (See Box 3.)

New Zealand kaka
Nestor meridionalis

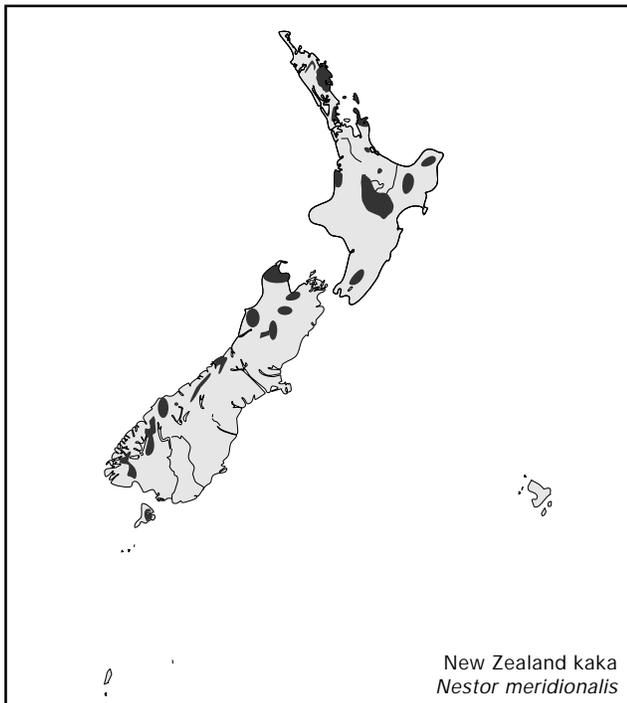
Contributors: Terry Greene and Kerry-Jayne Wilson.

Conservation status: IUCN: Vulnerable (C2a).

CITES: Appendix II.

National protection status: Information unavailable.

Distribution and status: The New Zealand kaka occurs on North Island (race *septentrionalis*) and South and Stewart islands (n nominate *meridionalis*) and on some offshore islands, New Zealand (Turbott 1990). Its distribution is



similar in extent to the larger remaining areas of low and mid-altitude native forest.

Numbers are high only on islands such as Stewart Little Barrier, where it remains common despite the presence of feral cats (K-J. Wilson *in litt.* 1997), Codfish, and Kapiti, where the only introduced mammals are rats (O'Donnell and Rasch 1991).

Threats: Its future on the mainland, and in particular on North Island, is threatened by introduced mammalian predators (e.g., stoats and rats), introduced possums that also compete for food, and by the destruction of much of its habitat. Introduced wasps which compete for “honey dew” (an important food source in beech *Nothofagus* forest) are a problem on the South Island, but not elsewhere (T. Greene *in litt.* 1997). Wilson *et al.* (1998) suggest that introduced predators, especially of female kaka, are the major cause of decline on the mainland, and they predict that stoats will cause the species to become extinct on mainland New Zealand without appropriate management. Where predators occur, the kakas' sex ratio is skewed toward males (T. Greene *in litt.* 1997).

Action: Wilson *et al.* (1998) conclude that kaka will only survive in beech and other forests if predators, especially stoats, can be effectively controlled. Such action must be seriously considered.

Night parrot
Pezoporus occidentalis

A recent widely accepted taxonomic revision (Christidis and Boles 1994) moved this species from the genus *Geopsittacus* under which name it appeared in Collar *et al.* (1994) and on CITES Appendix I.

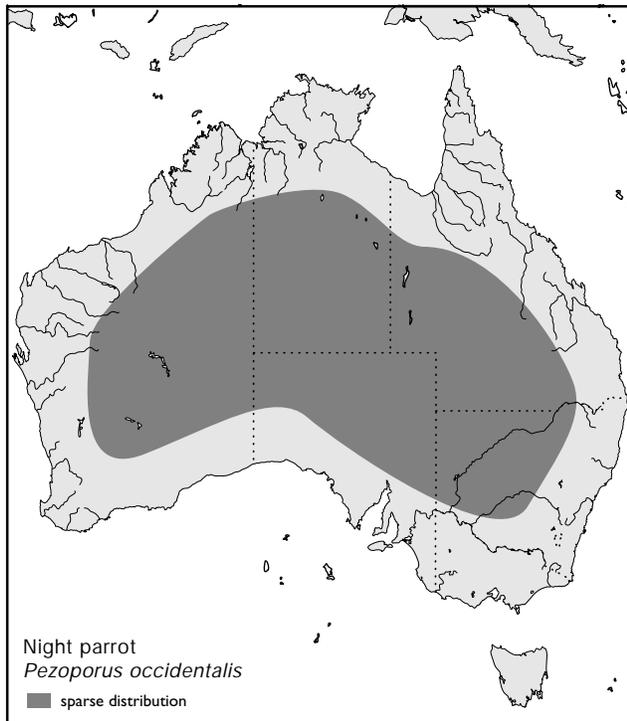
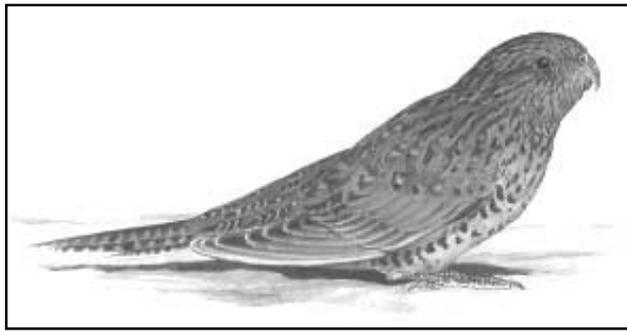
Contributors: John Blyth, Allan Burbidge, and Peter Menkhorst.

Conservation status: IUCN: Critically Endangered (C2a, D1).

CITES: Appendix I.

National protection status: Information unavailable.

Distribution and status: Thought to be nomadic, the night parrot has been recorded almost equally from gravel desert with areas of dense hummock grassland of spinifex (*Triodia* and *Plectrarchne* species) and from chenopodiaceous vegetation associated with salt lake systems (J. Blyth and A. Burbidge *in litt.* 1997). It has been suggested that it may use areas of heavily seeding spinifex after local rains and may move seasonally or as conditions require to salt lake systems to feed on the fruits and seeds (and possibly the succulent leaves) of various chenopod species. It has been recorded from all mainland states and



the Northern Territory, but it is now thought to be restricted to arid central Australia from central Western Australia through Northern Territory to south-west Queensland (J. Blyth and A. Burbidge *in litt.* 1997), with unconfirmed reports from Victoria as late as the 1950s (P. Menkhorst *in litt.* 1997).

It was presumably more abundant in the 1870s, when 16 specimens were collected in the Gawler Range and Lake Eyre region in South Australia, compared with a total of six reliable records between 1935 and 1984 in the whole of Australia (Blakers *et al.* 1984). During the last decade there have been 15 individual sight records although none have been authenticated (a corpse was found in 1990: Boles *et al.* 1994). Historical reports and several recent ones in an area of circa 200km² near Cloncurry suggest that it may indeed be nocturnal (Garnett *et al.* 1993).

Threats: Habitat degradation (as a result of altered fire regimes and grazing by domestic stock and feral animals), predation by cats and foxes, and reduction of available

water by introduced camels may all be causes of decline (Garnett 1992).

Action: Little action can be taken until areas where the species occurs are found. An Interim Recovery Plan (see Blyth *et al.* 1998) with an emphasis on locating and recovering one or more populations is being implemented in Western Australia, and reports of sightings by members of the public are being sought in Western Australia and across northern Australia (J. Blyth and A. Burbidge *in litt.* 1997). (See Box 1)

Princess parrot *Polytelis alexandrae*

(Alexandra's parrot in Collar *et al.* 1994. Name changed here to conform to Australian usage.)

Contributor: John Blyth.

Conservation status: IUCN: Vulnerable (B2c+3d; C2a).
CITES: Appendix II.
National protection status: Information unavailable.

Distribution and status: This species appears to prefer the sandy deserts characterised by large areas of hummock grassland associated with desert oak *Allocasuarina decaisneana* and various flowering shrubs such as *Grevillea wickhamii* in Western Australia, Northern Territory, and north-west South Australia, Australia.

Early records of colonial breeding and the low number of recent breeding records involving more than one pair (Blakers *et al.* 1984) have been claimed as evidence of a decline this century (Collar *et al.* 1994). Examination of recent and historical records suggests that it may be irruptive rather than nomadic and that a core population may be resident in the area surrounding Lake Tobin, in the eastern region of Western Australia's Great Sandy Desert (Carter 1993). It was treated as Data Deficient in Australia by Garnett (1992) and is still considered of indeterminate status (J. Blyth and A. Burbidge *in litt.* 1998).

Threats: Changes to its habitat may constitute threatening factors. These may have included altered fire regimes after Aboriginal people left the sandy deserts, and introduced herbivores other than domestic stock. It may never have been anything but a transient species in pastoral country (Carter 1993). Increased water availability on pastoral lands may have favoured more water-dependent parrot taxa to its detriment (but see above). Other threatening processes may have included predation by foxes and cats.

Action: Amateur and professional ornithologists should be encouraged to gather information concerning the distribution and biology of the princess parrot.

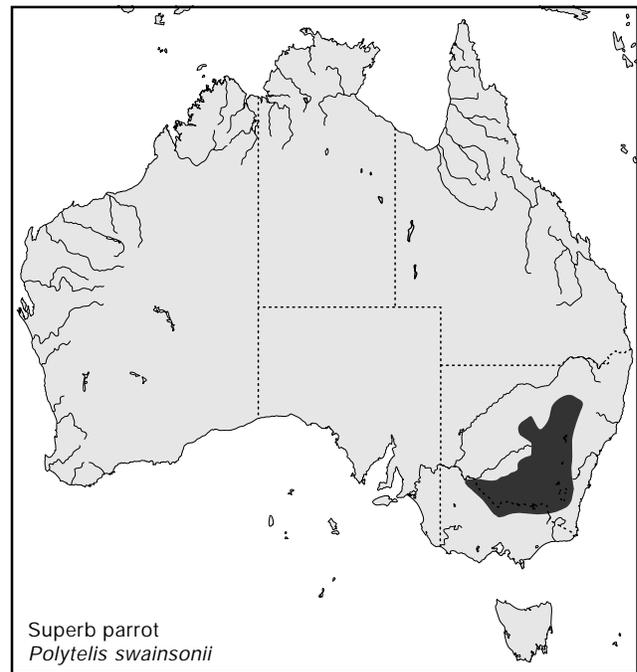
Determining the locations of princess parrot breeding areas, and establishing those habitat factors that are required for successful breeding are two examples of the many research projects that must be undertaken. Further examples include determining whether there is a sedentary population based around Lake Tobin on the Canning Stock Route, and if so, the extent of the area normally occupied, and the number of princess parrots it supports. Additional questions that require answering include: Are there any other areas that support resident populations of the species, and where and under what circumstances are princess parrots observed outside the two areas referred to above? What are the key habitat factors that make an area suitable for princess parrots and are any of these changing in a way that may constitute threats to the princess parrot?

Superb parrot *Polytelis swainsonii*

Contributor: Peter Menkhorst.

Conservation status: IUCN: Vulnerable (C2b).
CITES: Appendix II.
National protection status: Information unavailable.

Distribution and status: The superb parrot occurs in loose colonies in riparian woodlands of the Murray – Murrumbidgee Rivers in New South Wales and northern Victoria and also on the south-west slopes of New South Wales (P. Menkhorst *in litt.* 1997), Australia. It has a breeding population (apparently confined to the southern part of its range) of under 5,000 pairs.



Threats: Threats include a decline in the abundance of hollow trees providing nest sites because of senescence and harvesting for firewood (P. Menkhorst *in litt.* 1997), degradation or clearance of foraging habitat and flight paths to foraging sites, and (probably heavy) trapping (Garnett 1992). There were 96 wild-caught specimens recorded in international trade between 1991 and 1995. Of these, 54 individuals were in 1991 and 34 individuals were in 1993 (CITES Annual Report database).

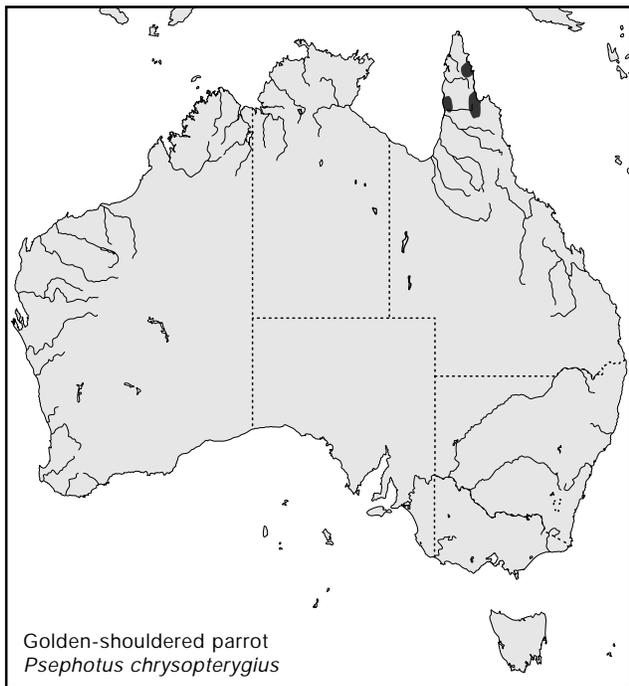
Action: Three areas of action are needed. First, ensure that timber harvesting prescriptions provide special protection to all known nest colony areas and individual nest trees, and ensure the provision of future nest trees. Second, enforce vegetation clearance controls in box woodlands throughout the Riverina and South-West Slopes Biogeographic Regions. Third, work closely with landholder groups to protect and rehabilitate key foraging sites and protect or create corridors of woodland between breeding and foraging areas.

Golden-shouldered parrot *Psephotus chrysopterygius*

Contributor: Stephen Garnett.

Conservation status: IUCN: Endangered (B1+2a, b, c, e).
CITES: Appendix I.
National protection status: Information unavailable.

Distribution and status: The golden-shouldered parrot was formerly widespread in southern and central Cape York



Peninsula, Queensland, Australia, but now occupies two areas of approximately 300km² and 150km², separated by 200km. It inhabits tropical eucalypt and “paperbark” savanna woodland and nests in termite mounds (Weaver 1982, Garnett and Crowley 1995). The population is less than 2,500 adults and is still declining (Garnett and Crowley 1995).

Threats: The major threat is a widespread change in the burning regime over the last century resulting in the invasion of woody weeds into grassy nesting habitat, and higher predation occurring where the habitat is overgrown

(Garnett and Crowley 1995). Trapping may formerly have been a problem (Wheeler 1975) but is now thought to be negligible. The fire management of its habitat has been altered to reverse the decline in numbers.

Action: Experimental habitat management would provide information on the species’ response so that a management plan could be formulated. Procedures to be tested are those designed to halt the decline in occupied areas and allow colonisation of new areas. Monitoring of selected sites should also be undertaken. (See Box 2)

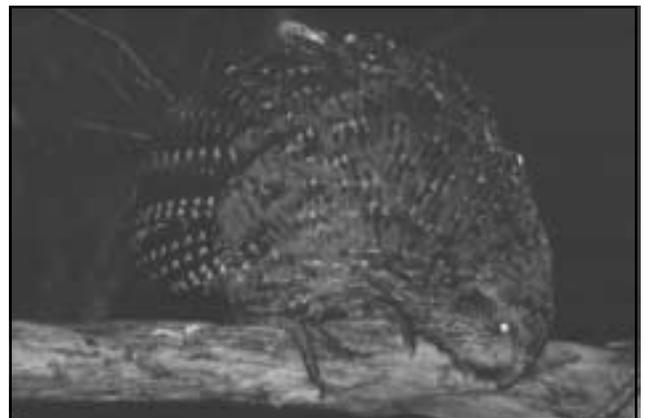
Kakapo
Strigops habroptilus

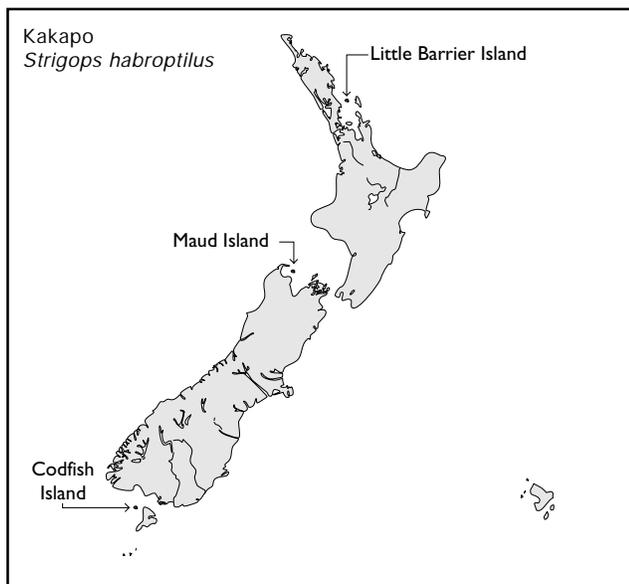
Contributor: Graeme Elliott.

Conservation status: IUCN: Critically Endangered (D1).
CITES: Appendix I.
National protection status: Information unavailable.

The IUCN status of this species has been changed from “Extinct in the Wild” for two reasons. First, the refined definition of “Extinct in the Wild” now excludes species that were the subject of benign introductions and now survive close to their natural range (but not within it), as was the case with the kakapo. Second, the species has now been found within its natural range: a female was found on Stewart Island in mid-June 1997, and further birds are thought to occur on the island (G. Elliott *in litt.* 1997). It is considered Critically Endangered because only nine of the 20 females in a known population of 54 birds are known to have produced fertile eggs. In this increasingly elderly population, the number of mature individuals is almost certainly below 50, if mature equates to potentially reproductively active.

Distribution and status: Formerly, the kakapo occurred at all altitudes throughout forest and scrubland of North, South, and Stewart Islands, New Zealand. Its range had





shrunk considerably before European settlement, although it remained abundant in the southern and western parts of South Island until about 1900 (Robertson 1985). Thereafter, the remaining populations in Fiordland and Stewart Island suffered further declines, and it became extinct on South Island by 1989 (Clout and Craig 1995).

Trial transfers of Kakapo to Maud Island were attempted between 1974 and 1981, and since 1982 all known kakapo have been translocated to the predator-free islands of Codfish, Maud, Little Barrier, and Mana (though the translocation to Mana failed and there are no longer any kakapo there). A kakapo was captured on Stewart Island in June 1997 and it is likely that a few birds remain there. Kakapo have a slow and often erratic reproductive rate with four and five year gaps between recent breeding attempts on Stewart and Codfish Islands. Breeding on Stewart and Codfish seems tied to prolific autumn mast fruiting of *Podocarpus*. Supplementary feeding has been partially successful in inducing breeding activity on Little Barrier Island, but has had no effect on Codfish or Maud Islands. Since 1991 six chicks have been successfully fledged, including two that were hand-raised. The total known population at June 1997 was 54 birds, including 20 females of which only 9 individuals are known to have produced fertile eggs (G. Elliott *in litt*, Clout and Craig 1995, Lloyd and Powlesland 1994, and Powlesland and Lloyd 1994).

Threats: This flightless, lekking, nocturnal parrot is especially vulnerable to predation by mammalian carnivores, particularly during breeding.

Action: Three strands are currently underway: attempting to minimise mortality, maximising reproductive output, and investigating ways of increasing breeding frequency. (See Box 5)

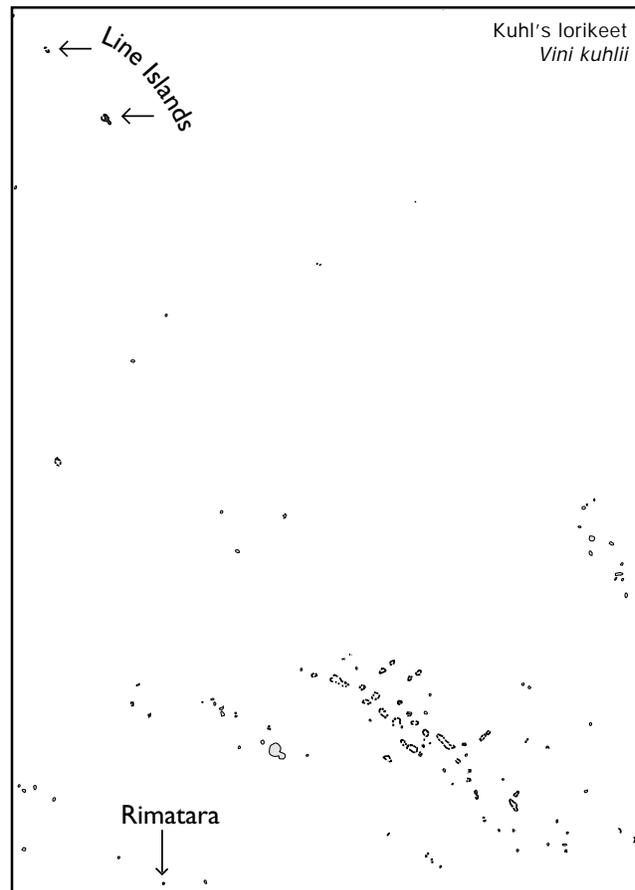
Kuhl's lorikeet *Vini kuhlii*

Conservation status: IUCN: Endangered (B1+2e; C2a; D2).
CITES: Appendix II.

National protection status: Information unavailable.

Distribution and status: The only surviving population of this species within its natural range is that on Rimatara (see Watling 1995, McCormack and Künzle 1996) and possibly Tubuai, although birds on this island may be escaped pets (Forshaw 1989) in the Tubuai (=Austral) Islands, French Polynesia. Populations on the islands of Teraina (=Washington), Tabuaeran (=Fanning), and Kiritimati (=Christmas Island), all in Kiribati, appear to have been introduced. Formerly it may also have occurred in the southern Cook Islands (Forshaw 1989, Holyoak and Thibault 1984).

On Rimatara (population estimated at about 900 birds) the favoured habitat is mixed horticultural woodlands, where preliminary trapping indicated an absence of European rats *Rattus rattus* (McCormack and Künzle 1996). On Teraina there are 1,000 individuals (minimum) and perhaps 50 individuals on a single island in the Tabuaeran atoll. Only two individuals survive on Kiritimati, the result of recent releases (Watling 1995).



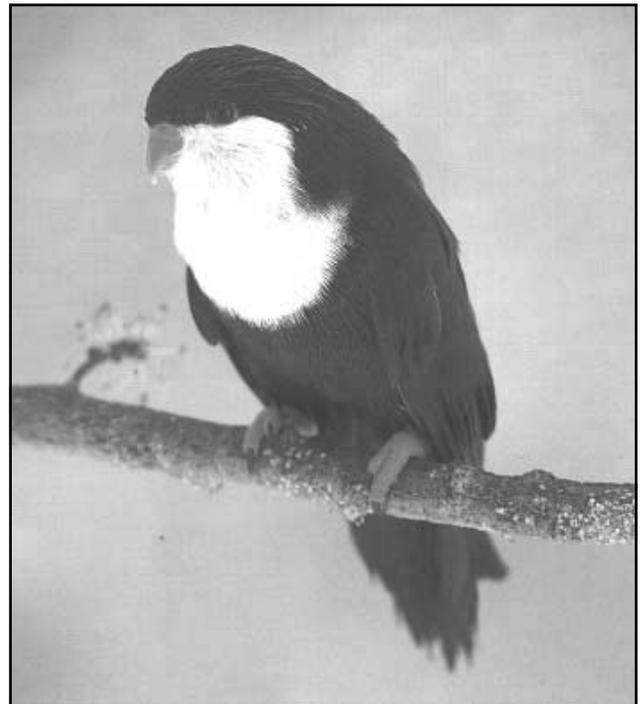
Threats: The species is effectively confined to coconut plantations on Taraina and Tabuaeran and is especially vulnerable to nest predation by rats and, in particular, to *Rattus rattus* present on Tabuaeran (Watling 1995). The population on Rimatara should be monitored, as it is possibly the only natural population. The Teraina population, which is probably the most secure (Watling 1995), should also be monitored.

Action: Information relating to the past and present distribution of the lorikeets, and habitats on relevant islands should be collated. This should then be related to the colonisation of rats, especially *Rattus rattus*, and human hunting. Once the impact of introduced rodents is clear, consideration should be given to preventing rat colonisation, and eradication, if practicable. (See Box 6)

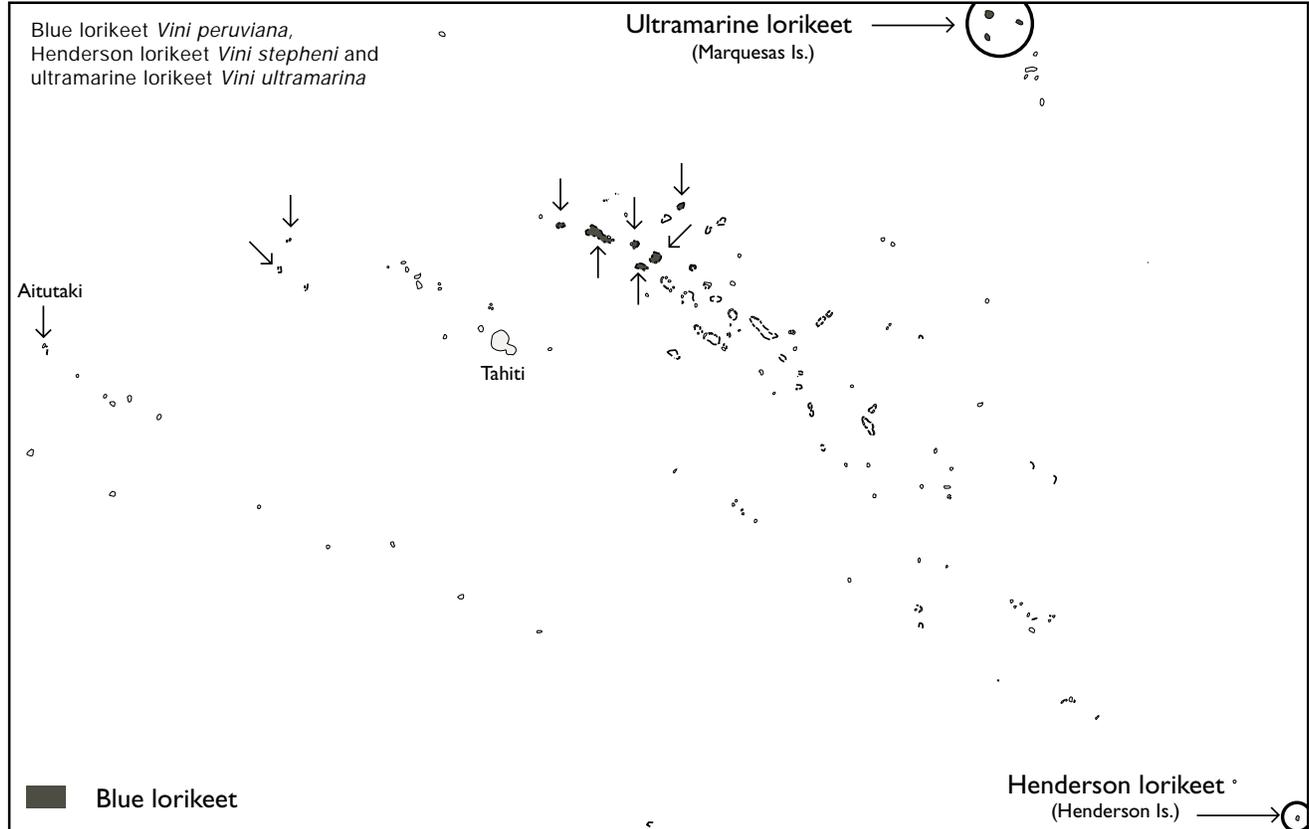
Blue lorikeet
Vini peruviana

Contributor: Kerry-Jayne Wilson.

Conservation status: IUCN: Vulnerable: (B1+2d; C2a.).
CITES: Appendix II.
National protection status: Information unavailable.



Distribution and status: The distribution of the blue lorikeet is widespread but unevenly distributed in lowland coconut plantations and gardens in south-east Polynesia, including the Society Islands (French Polynesia: formerly all, now



Motu One and Manuae only), the northern atolls of the Tuamotu archipelago (French Polynesia: Rangiroa, Arutua and Tikehau), and Aitutaki, Cook Islands (to New Zealand), where it was probably introduced. In total, the species has been recorded from 23 islands, but it is now extinct on many of these.

There are possibly up to 250 and 300–400 pairs respectively on Motu One and Manuae. Tikehau is thought to hold 30 pairs. Fewer than 500 pairs survive on Aitutaki, with no evidence of a decline in the last decade (Collar *et al.* 1994). This can be compared with a population estimate of 1,200 individuals for Aitutaki based on surveys in 1992 and 1994 by the Cook Island Heritage Project (G. McCormack in Gill 1996). Its status is unknown on two further atolls (Apataki and Kaukura, Tuamotu Archipelago), which have not been visited since 1923. There are several other suitable islands that have not been surveyed (Holyoak and Thibault 1984, Pratt *et al.* 1987, Thibault 1988, Seitre and Seitre 1992). A survey of Tiamanu Motu (in Apataki atoll) in 1989 revealed a minimum population of at least 300 individuals (see Collar *et al.* 1994) and in 1993, 36 birds were observed in two different locations on Rangiroa, with the possibility that several hundred birds live there.

Threats: Many extinctions are thought to be the result of predation by European rats, *Rattus rattus* and cats. Trapping on Aitutaki in May 1993 and March 1994 indicated the presence of *Rattus exulans* but the absence of *Rattus rattus* and *Rattus norvegicus* (Wilson 1993 and K-J. Wilson *in litt.* 1997). Although trade is illegal, birds are still captured and sold by local people (Collar *et al.* 1994). Observations on Aitutaki One indicated that gardens and plantations were the favoured habitats, suggesting that its survival is dependent solely on the absence of European rats *Rattus rattus* (Wilson 1993 and *in litt.* 1997). There were six wild caught specimens recorded in international trade between 1991 and 1995, all in 1991 (CITES Annual Report database).

Action: Information relating to the past and present distribution of the lorikeets, and habitats on relevant islands should be collated and then related to the colonisation of rats, especially *Rattus rattus*, and human hunting. Once the impact of introduced rodents is clear, consideration should be given to preventing rat colonisation and eradication, if practicable. (See Box 6)

Henderson lorikeet *Vini stepheni*

Conservation status: IUCN: Vulnerable (D2).
CITES: Appendix II.
National protection status: Information unavailable.

Distribution and status: The Henderson lorikeet inhabits forests on Henderson Island in the Pitcairn Islands (to UK), an uninhabited raised-reef island (37km²) in the south-central Pacific. It is a generalist feeder and feeds on nectar, pollen, arthropod larvae, and fruits among others (Trevelyan 1995). In 1987 the total population was estimated at between 720 and 1,820 individuals, whilst in 1992 the population was estimated at approximately 1,200 pairs (but assessment was difficult because of their mobility and patchy distribution: Graves 1992).

Threats: Henderson Island's vulnerability to human impact was exposed in 1982–1983 when a millionaire sought to make it his home (Bourne and David 1983, Fosberg *et al.* 1983, Serpell *et al.* 1983). No obvious problems arising from the introduction of *Rattus exulans* were noted in 1992 (Trevelyan 1995).

Action: Safeguarding this species appears to rely on ensuring the integrity of the uninhabited island. Confirmation that *Rattus exulans* does not pose any problems for the species is desirable. A better understanding of the species' distribution in each habitat would be useful. (See Box 6)

Ultramarine lorikeet *Vini ultramarina*

Conservation status: IUCN: Endangered (B1+2b, d; D2).
CITES: Appendix I (transferred from Appendix II in 1997).
National protection status: Information unavailable.



Distribution and status: In 1975, this species occurred in all habitats with trees on Ua Pou, Nuku Hiva, and Ua Huka, in the Marquesas Islands, French Polynesia (Holyoak 1975; Holyoak and Thibault 1984). Sub-fossil remains indicate it formerly had a wider distribution (Steadman 1989). The population on Ua Huka apparently descends from a single pair introduced in the 1940s (Kuehler *et al.* 1997).

On Ua Pou, the population (estimated to be 250–300 pairs in 1975) suffered an unexplained 60% decline in 15 years, so that in 1990 it was rare from sea level to 800m. No birds were found during a week-long search in November–December 1991, although locals claimed small numbers did exist (Collar *et al.* 1994). On Nuku Hiva, an estimated 70 birds were restricted to high valleys and ridges at 700–1,000m in the north-western end of the island in 1972–1975, and by 1990 it was possibly extinct. No birds were recorded during one week in November–December 1991, although a single individual was reported between Taiohae and Taipivi during May 1991. On Ua Huka, the introduced population stood at around 200–250 pairs in the early 1970s, was still strong in 1987, with birds abundant in 1990 up to 500m and numbering some 100–1,500 birds in 1991 (Holyoak and Thibault 1984, Thibault 1988, Seitre and Seitre 1991, Kuehler and Lieberman 1993, Kuehler *et al.* 1997). In 1992 and 1993 seven lorries were translocated each year to Fatu Hiva and 15 lorries were moved in 1994. Fourteen were observed prior to the third release (Kuehler and Lieberman 1993, Kuehler *et al.* 1997) and 51 birds were recorded during eight days in January 1997 including 10 birds in sub-adult plumage, indicating successful breeding (Lieberman *et al.* 1997).

Threats: European rats *Rattus rattus* are the most likely cause of its decline. European rats have been present on Nuku Hiva since the beginning of the century, on Ua Pou (probably) since 1980, and introduced to Amotu a few hundred metres from Ua Huka two years ago. It is not clear if they have become established on the main island also (Seitre and Seitre 1991). Six wild caught specimens were recorded in international trade between 1991 and 1995, all in 1993 (CITES Annual Report database). The species was included in CITES Appendix I in 1997.

Action: Information relating to the past and present distribution of the lorikeets, and habitats on relevant islands should be collated and then related to the colonisation of rats, especially *Rattus rattus*, and human hunting. Once the impact of introduced rodents is clear, consideration should be given to preventing rat colonisation and eradication, if practicable. The success of the translocation to Fatu Hiva should continue to be monitored and a survey is planned for the year 2000 with the support of the San Diego Zoological Society (A. Lieberman and C. Kuehler *in litt.* 1998). (See Box 6)

Accounts for threatened taxa that may be full species

Forbes' parakeet *Cyanoramphus forbesi*

Contributors: Charles Daugherty, Andrew Grant, Terry Greene, and Kerry-Jayne Wilson.

Conservation status: IUCN: To be considered.

CITES: Appendix I (as *C. auriceps forbesi*).

National protection status: Information unavailable.

Reason for taxonomic uncertainty: Although long considered a subspecies of *C. auriceps*, recent protein (allozyme) electrophoresis analysis has led to the suggestion that the Forbes' parakeet should be restored to specific status (Triggs and Daugherty 1996). Currently the data are not conclusive, but as the genetic distance between this taxon on Mangere Island and several *C. novaezelandiae* populations (from various islands adjacent to North Island, on the Chatham Islands and the Kermadec Islands) is closer than that between this taxon and populations of *C. auriceps* from both North and South Islands, *C. forbesi* is best treated as a distinct species (Triggs and Daugherty 1996). This tentative conclusion is cautiously accepted here, pending further clarification. Uncertainty over the degree of hybridisation with *C. n. chathamensis* must also cloud interpretation of the genetic analysis of the taxonomic status of this form.

Distribution and status: Forbes' parakeet occurs on Mangere and Little Mangere (formerly also Pitt) Islands, Chatham Islands, New Zealand, where it inhabits dense unbroken forest or scrub. Its numbers were drastically reduced earlier this century following deforestation of Mangere and the introduction of cats. No Forbes' parakeets were seen on Mangere in 1923–4 (Taylor 1975). Cats were eradicated in the 1950s and farming was stopped in 1968 when the island was made a Flora and Fauna Reserve (Taylor 1975). The species was restricted to the few hectares of forest that remained. In 1973 fewer than 30 individuals survived (Taylor 1975) on both Mangere and Little Mangere which should be considered as a single population because commuting has been observed (T. Greene *in litt.* 1997).

Since 1968 the open country Chatham Island red-crowned parakeets *C. n. chathamensis* have rapidly recolonised the island and hybridised with *C. forbesi* to such an extent (Taylor 1975) that the purity of the remaining birds is unknown (red-crowned parakeets were recorded on Mangere in 1992: A. Grant *per* T. Greene *in litt.* 1997). What appears to be Forbes' parakeet has been reported from the southern forested area of the main Chatham Island (Greene 1989). Red-crowned parakeets and hybrids

have been culled on Mangere since 1976 in an attempt to maintain the genetic integrity of *forbesi* (Nixon 1994). The 1997 population estimate of the whole population is 100–120 individuals, based on fieldwork on Mangere only (M. Bell *per* T. Greene *in litt.* 1997), although the degree of genetic introgression, if any, remains uncertain. The taxon may qualify as Critically Endangered (B2c,d,e, 3c,d).

Threats: As habitat management is restoring suitable areas for the parakeet, hybridisation remains the biggest single threat facing the species. There were 37 wild caught specimens of *C. auriceps* (no figures specifically for *forbesi*) recorded in international trade between 1991 and 1995, 25 birds in 1992 and 12 birds in 1993 (CITES Annual Report database).

Action: Clarification of the taxonomic status involves two issues: first, determining which taxonomic status is most appropriate for this species and, second, assessing the degree of introgression of red-crowned parakeet genes into the Forbes' parakeet gene pool (Triggs and Daugherty 1996). Unravelling these two issues is likely to be difficult. If it is a species, then it is one of the most threatened parrot species in the world. (See Box 4)

Orange-fronted parakeet *Cyanoramphus malherbi*

Contributors: Charles Daugherty, Terry Greene, John Kearvell and Kerry-Jayne Wilson.

Conservation status: IUCN: To be considered.
CITES: Appendix II.
National protection status: Information unavailable.

Reason for taxonomic uncertainty: This form was treated as a species until it was first proposed as a colour morph of *C. auriceps* in 1974 (Holyoak 1974, see also Taylor *et al.* 1986). But, a recent protein (allozyme) electrophoresis analysis has led to the suggestion that it should be restored to specific status (Triggs and Daugherty 1996, but see Taylor 1998). Currently the data are not conclusive, but as there does appear to be considerable genetic difference between the *Cyanoramphus* forms inhabiting Lake Sumner Park, where “*malherbi*” and *C. (a.) auriceps* co-occur (and allegedly interbreed), *malherbi* is thought to be best treated as a distinct species (Triggs and Daugherty 1996). Only one hybrid pair has been reported and the identification is suspect, casting doubt on supposed interbreeding (J. Kearvell *per* T. Greene *in litt.* 1997). This conclusion is provisionally accepted here, pending further clarification.

Distribution and status: This species was formerly thought to be scattered throughout most of New Zealand (Harrison

1970), although the two records from the North Island are thought dubious and records from Hen Island in the Hauraki Gulf are probably also erroneous (J. Kearvell *per* T. Greene *in litt.* 1997). The South Island is thought to have been the stronghold in the past, but *malherbi* is now confined to Arthur's Pass and the Lake Sumner/Lewis Pass area as a recent island-wide survey failed to locate additional populations (J. Kearvell *per* T. Greene *in litt.* 1997). It inhabits the fringes of *Nothofagus* forest and in one area is found breeding only at 600–900m in forest of *N. fusca* (Taylor 1985), but with a preference for areas bordering stands of *N. solandri*. In the past it has been reported from sea level to sub-alpine scrublands.

There have been only a few sightings since 1966 (Triggs and Daugherty 1996, see also Taylor 1985). Previous assessments of its status have ranged from more common than originally thought (Harrison 1970) to close to extinction (Mills and Williams 1980). The taxon may qualify as Critically Endangered (B2a,b,c,d,e, B3a,b,c,d).

Threats: Small population size and range are cause for concern. Hybridisation with yellow-crowned parakeets *C. auriceps* has been observed at Lake Sumner. Existing captive stocks also show signs of interbreeding with *C. auriceps* and should, therefore, not be considered for any conservation action in the future (Triggs and Daugherty 1996). There were 37 wild caught specimens of *C. auriceps* (no figures specifically for *forbesi*) recorded in international trade between 1991 and 1995, 25 individuals in 1992 and 12 individuals in 1993 (CITES Annual Report database).

Action: Clarification of the taxonomic status is underway at the Victoria University of Wellington, New Zealand (C. Daugherty *in litt.* 1997). (See Box 4)

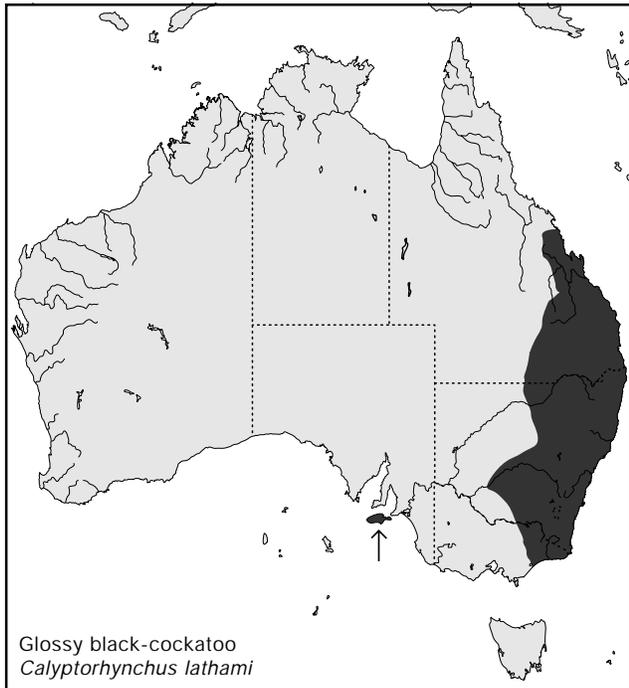
Accounts for species removed from the Red List

Glossy black-cockatoo *Calyptorhynchus lathamii*

Contributors: Stephen Garnett and Peter Menkhorst.

Conservation status: IUCN: Lower Risk (formerly Vulnerable: C2a).
CITES: Appendix II.
National protection status: Information unavailable.

Reason for removal from the list: Although the range of this species in South Australia and possibly Victoria halved in the 19th and early 20th centuries, this contraction does not appear to be continuing and is not expected to begin again (S. Garnett *in litt.* 1997). Clearance of feeding habitat for agriculture or residential development in parts of the east



coast of Australia (see Threats below) are not at a rate that would reduce the population by 20% over the next 10 years or three generations (S. Garnett *in litt.* 1997). The extent of occurrence exceeds 20,000km² and the area of occupancy is greater than 2,000km² (Blakers *et al.* 1984). The population is probably greater than 10,000 individuals in New South Wales alone. A population estimate greater than 10,000 is also obtained by extrapolating the densities recorded by Pepper (1997) in the fragments of habitat on Kangaroo Island (Pepper 1996) to the area of distribution (Blakers *et al.* 1984). The population is not expected to decline by 10% or more over the next ten years: the only

populations counted regularly appear to be stable or increasing (S. Garnett *in litt.* 1997).

Distribution and status: The glossy black cockatoo can be found in eucalypt woodland and forest with casuarinas, predominantly along the coast, in Queensland, New South Wales, and Victoria (n nominate *lathami*). It also occurs on Kangaroo Island (subspecies *halmaturinus*), Australia. A third subspecies, *erebus*, has been recognised, localised on outcropping ranges and adjacent lowlands in the Dawson-Mackenzie-Isaac basin in east-central coastal Queensland (Schodde *et al.* 1993).

Calyptorhynchus lathami is thinly and patchily distributed throughout its range of more than 20,000km². An estimate of about 100 individuals for subspecies *halmaturinus* (Collar *et al.* 1994) was based on an incomplete count. Complete counts in 1995 (180 individuals) and 1996 (188 individuals) suggest the population is stable or may even be increasing (S. Garnett *in litt.* 1997).

Threats: This species formerly suffered from habitat loss following European settlement (further loss of habitat may occur as a result of fire or grazing by rabbits), and, although some of the remaining habitat is now conserved in a large number of national parks, the effect of habitat loss on population levels may not yet be fully evident because of the presumed longevity of the species (Garnett 1992). Furthermore, development is taking place along the east coast and much of the range includes production forest in which the density of old trees with suitable nest sites is still declining and much of the remainder is threatened with urban development (P. Menkhurst *in litt.* 1997).

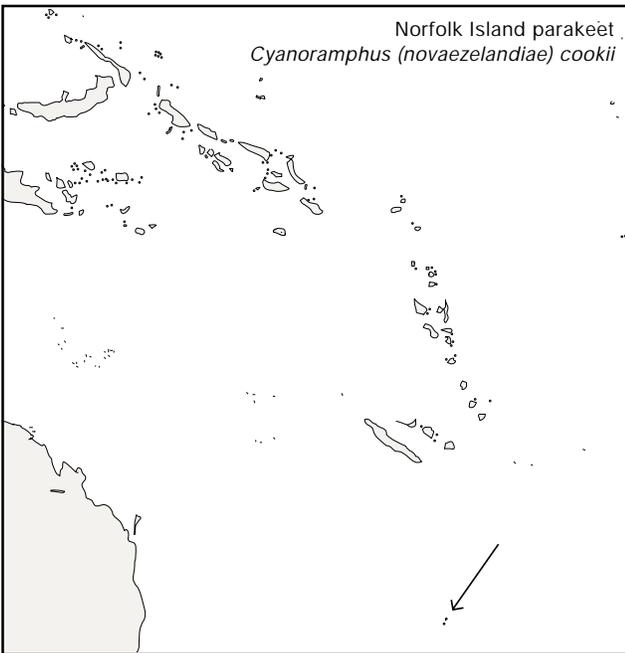
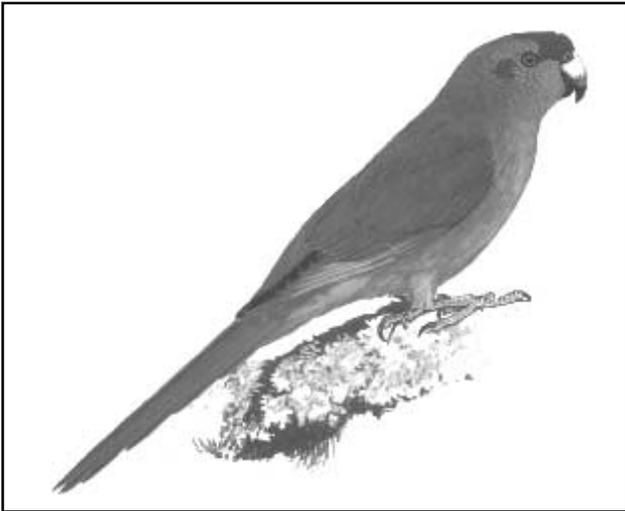
Norfolk Island parakeet *Cyanoramphus (novaezelandiae) cookii*

Contributors: Bruce Male and Paul Stevenson.

Conservation status: IUCN: Critically Endangered (D2).
CITES: Appendix I (as *C. novaezelandiae*).
National protection status: Information unavailable.

An increase in numbers (see below) raises the subspecies above the IUCN Red List threshold for Critically Endangered under the very small populations (less than 50) criterion (D1), although it still qualifies as critical under the very small range criterion (less than 100km²).

Reason for removal from the list: This parrot is generally considered to be a subspecies of the New Zealand kakariki *Cyanoramphus novaezelandiae* (e.g., Christidis and Boles 1994, Triggs and Daugherty 1996), rather than as a distinct species *Cyanoramphus cookii* as treated by Collar *et al.* (1994).



Distribution and status: Endemic to the 35km² Norfolk Island (Australia) where it lives in forest and visits nearby orchards. In 1983, the subspecies numbered approximately 20 individuals (Garnett 1992) and recovery actions were initiated which led to an increase in numbers of more than 60 in the wild and 20 in captivity in 1996. There are now approximately 100 individuals (P. Stevenson *in litt.* 1997).

Threats: This sub-species has suffered from hunting in the past (including hunting for scientific collection) and from habitat destruction, although the main modern threats are from predation by introduced rats *Rattus rattus*, competition for nest-sites from introduced crimson rosellas *Platycercus elegans* (Garnett 1992), and Psittacine Circovirus Disease. This disease was diagnosed in March

1995 and the majority of birds tested since then have demonstrated exposure to it (P. Stevenson *in litt.* 1997). Active management continues in the Norfolk Island National Park and Norfolk Island Botanical Garden and concentrates on rat and cat control, provision of nest hollows, and the establishment of a small captive breeding programme (P. Stevenson *in litt.* 1997).

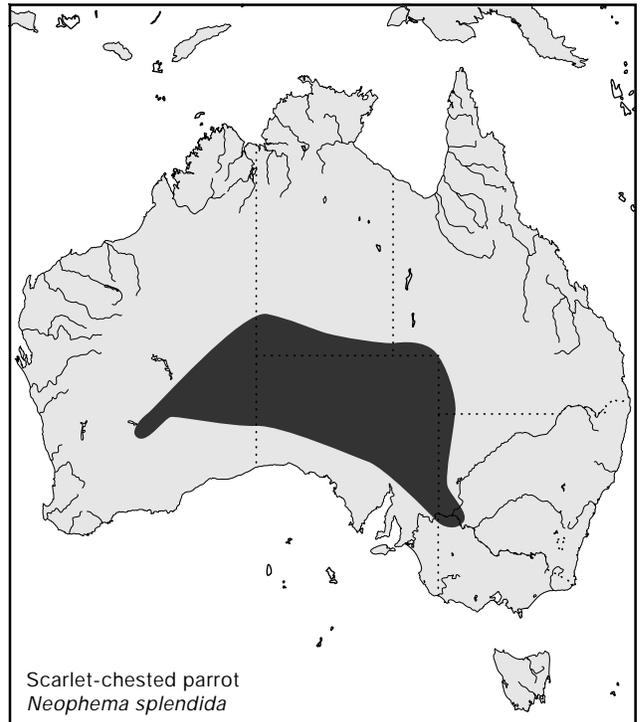
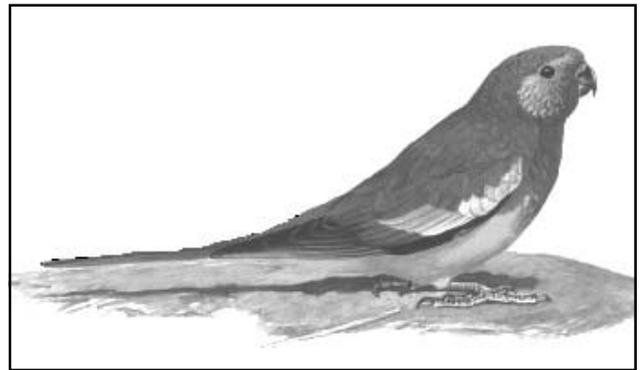
Scarlet-chested parrot
Neophema splendida

Contributor: Lynn Pedler.

Conservation status: IUCN: Lower Risk (formerly Vulnerable: B2c + 3d).

CITES: Appendix II.

National protection status: Information unavailable.



Reason for removal from the list: The extent of occurrence of this parrot exceeds 20,000km² (Blakers *et al.* 1984) and the area of occupancy exceeds 2,000km² (L. Pedler *in litt.* 1997). The population is probably greater than 10,000 individuals based on area of occupancy and group sizes recorded, but even if the population is smaller, there is no reason to suspect a decline (L. Pedler *in litt.* 1997). The population is not known to be fragmented and the subpopulations are capable of dispersing great distances.

Distribution and status: This species occurs in mallee and acacia shrublands of southern semi-arid inland Australia. Under suitable conditions it apparently breeds rapidly and becomes locally common (L. Pedler *in litt.* 1997), such as the flock of 240+ individuals recorded in the Great Victoria Desert (Andrew and Palliser 1993), apparently dispersing and declining until the next favourable season (Blakers *et al.* 1984; L. Pedler *in litt.* 1997). No population

decline has been recorded or is expected. It has only ever been recorded rarely from New South Wales and there is a recent record from Queensland (Maher 1995).

Threats: It has been suggested that altered fire regimes and increased availability of water in pastoral lands may be having an adverse effect (Garnett 1992: see Collar *et al.* 1994). However, most habitat is outside pastoral areas, and the area over which the species occurs is so large that even vast fires would be unlikely to have a detrimental effect (L. Pedler *in litt.* 1997). In essence, these threats are very unlikely to be operating at a scale that would put the species at risk of extinction. Trapping is now unlikely to be a major problem as the species is kept in large numbers and breeds readily (Garnett 1992). There were 294 wild caught specimens recorded in international trade between 1991 and 1995, decreasing annually from 120 in 1991 to eight in 1995 (CITES Annual Report database).