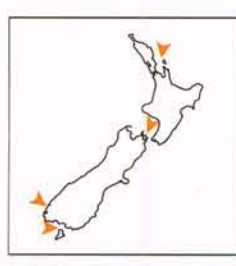


A large cosmopolitan family of often very colourful birds, but the NZ species are relatively drab, mainly green. All have a short bill with a horn covering (cere) enclosing the nostrils. The upper mandible is strongly curved, fitting neatly over the lower mandible. Their legs are short, and their feet have two toes pointing forward and two back.

KAKAPO *Strigops habroptilus*

63 cm; ♂ 2.5 kg, ♀ 2 kg. Large flightless nocturnal parrot. Moss green above, greenish yellow below; feathers mottled with fine brown and yellow bars. Owl-like facial disc. Male has broader head and larger bill. Feeds on ground or by clambering into shrubs. Male call a loud repetitive booming for hours, from cleared track-and-bowl system on ridge of prominent hill. **Habitat:** Formerly in forests of three main islands; introduced and now confined to Chalky, Codfish and Pearl Is, unless a few persist in Fiordland. **Breeding:** Usually every 3-5 years, Dec-Jul. [Sp 260]

Rare endemic



SULPHUR-CRESTED COCKATOO



COCKATOOS and PARROTS

Cacatuidae and Psittacidae

About 330 species worldwide; 10 breed in New Zealand. Five are endemic to New Zealand, 1 is native and 4 have been introduced.

Parrots are well known for their colourful plumage and are widely held in captivity.

All have a large head and eyes, a short neck, and a short, deep bill. Mainly herbivorous, although some also eat invertebrates. The upper mandible of the bill is strongly curved, sharply pointed, and hinged at the base so that the parrot can crack nuts or other

unyielding food. Parrots can use their bill as an extra limb, showing great agility at climbing. They have a large fleshy cere, surrounding the nostrils. Two toes are pointed forwards and two back, giving a strong grip. Parrots can hold food while shredding it and pass it to their mouth. Most parrots are gregarious, and many have loud, harsh voices. They mostly lay white eggs in holes in trees or in crevices in rocks.

Reading: Forshaw, J.M. & Cooper, W.T. 1978. *Parrots of the World*. Melbourne: Lansdowne.

260. KAKAPO *Strigops habroptilus*

Plate 60

Other name: Owl-parrot

Size: 63 cm; males 2.5 kg, females 2.0 kg

Distribution: New Zealand only. Subfossil and midden records show that Kakapo were throughout North, South and Stewart Islands before and during early Maori times. In the early 1800s, they were still in the central North Island and the forested parts of the South Island. Their range contracted rapidly when stoats were introduced in the 1880s, and by 1900 they remained common only in parts of the southern and western South Island. By the mid-1970s, only 18 males were known in remote parts of Fiordland, and they probably died out in the early 1990s.

In 1977, however, a population of about 100 birds was found living south and east of the Tin Range in southern Stewart Island. This population was also in serious decline because of predation by feral cats – there are no stoats or other mustelids on Stewart Island. The

long periods on most nights while she forages. Their productivity is naturally low and is dependent on an abundant supply of fruits being available, and much is removed by competing introduced herbivores such as possums, deer, goats and chamois, and introduced omnivores such as rats, pigs and introduced birds.

Recent conservation attempts have concentrated on clearing predators from suitable islands, and shifting Kakapo to these islands once predators have been eradicated. The fate of individual birds and all breeding attempts are closely monitored. Supplementary food (mainly fruit, nuts and formulated artificial pellets) is supplied in some years on these islands to try to stimulate breeding more frequently than once every 3-5 years in nature. Unlike some parrots, wild-raised adults have not been kept successfully in captivity.

Breeding: Successful breeding requires an abundant supply of high-quality food throughout the 8-month breeding cycle. This 'mating' to happen every 3-5 years, e.g. in Fiordland the seeds that have high protein value are of tussock grasses and beech trees, and on Stewart Island the key fruits are rimu and pink pine. With supplementary food, however, Kakapo may breed more often than every 3-5 years, e.g. two supplementary-fed females on Little Barrier laid eggs in consecutive years.

Kakapo are unique among New Zealand birds, parrots and flightless birds in having a lek, or arena mating system. In good fruiting years, males establish a miniature display territory that has no connection with feeding or nesting sites. The display area is a 'track and bowl' system consisting of a series of bowls, each a shallow depression about 50 cm across, connected by tracks 30-60 cm wide, mostly clustered within an 'arena' on a prominent vantage point, a ridge or hilltop with low-growing and sparse vegetation, where calls can be projected a long distance. Males remove encroaching vegetation from their track-and-bowl system. They give three major types of call during the booming season (December-March): non-directional, low-pitched 'booming', which is highly resonant and can carry several kilometres on a suitable

remaining 61 Kakapo were moved to several cat- and mustelid-free islands, but by 2005 they were mostly on Codfish Island (Whenua Hou).

Population: In 2005, the total was 83 birds. **Conservation:** Protected critically endangered endemic. Kakapo evolved without mammalian predators, and although their nocturnal habits and camouflaged plumage were presumably effective against the avian predators of ancient New Zealand, they are particularly susceptible to mammalian predators, being large, flightless, relatively slow-moving, placid, and strong-scented. To make matters worse, they often roost and nest on the ground, and in a breeding year males congregate on traditional display grounds and boom loudly for 6-8 hours every night for 3-5 months. They also have a long breeding period (100+ days), during which the female leaves the eggs and chicks unattended for

night; highly directional, high-pitched 'chinging', which may reveal to an approaching female the exact position of the male; and harsh 'skrarking', which is apparently related to territorial defence and aggression between neighbouring males. When booming, males inflate their thoracic air sacs hugely, and by holding their head low, the sacs act as a resonating chamber. They utter 20-50 booms at about 2-second intervals, then pause for 30-120 seconds between sequences. Booming continues throughout the night for 6-8 hours each night for 3-5 months. Females travel several kilometres to briefly visit the displaying males to mate. The dominant males mate with several females, and males take no part tending or defending the nest.

Nests on Stewart Island were in the decayed centre of fallen tree trunks, in the hollow centre of a standing stump, and under tussock clumps. They lay 2-3-4 white eggs (51 x 38 mm) at intervals of 3-5 days. The female alone incubates for c. 30 days, starting when the first egg is laid and so hatching may be staggered over many days. During the first 2 weeks of incubation, the female rarely leaves the nest, but later she leaves to feed for several hours. The chicks are usually brooded for the first 3-4 weeks all day, but for only part of the night, then she broods for less of the night, and finally, when the chicks are about 8 weeks old, she visits only once or twice a night and roosts elsewhere by day. The fledging period is 10-12 weeks, and the chicks associate with the female for a further 4 months. The young may first breed when 6-8 years old. Kakapo are long-lived, the oldest known bird in the wild is at least 35 years old, but some probably live to 100 years old.

Behaviour: Solitary, unlike other parrots. Kakapo are the heaviest parrot and are flightless. The keel on the sternum is rudimentary, but the broad wings are used to maintain balance when climbing and running, and they slow the bird's steep fall from low trees. **Feeding:** Herbivorous. Kakapo eat a wide variety of fruits, seeds, leaves, stems and roots. The stout bill is used for grubbing and grinding; the inside of the upper mandible has a series of ridges that work with the

tongue and the lower mandible to grind fibrous foods, acting as a kind of juice extractor. Tussock and other grass seed is removed by using the foot to pass stems through the bill from the base to the end. Foliage is browsed while attached to the plant, the fibrous material being ejected as tightly compressed, kidney-shaped 'chews', often still attached to the plant.

Reading: Butler, D. 1989. *Quest for the Kakapo*. Auckland: Heinemann Reed. Cemmick, D. & Veitch, D. 1987. *Kakapo Country*. Auckland: Hodder & Stoughton. Lloyd, B.D. & Powlesland, R.G. 1994. *Biol Cons* 69: 75-85. Merton, D. *et al.* 1984. *Ibis* 126: 277-283. Powlesland, R.G. *et al.* 1992. *Ibis* 134: 361-373. Powlesland, R.G. *et al.* 1995. *NZ J Zool* 22: 239-248. Williams, G.R. 1956. *Notornis* 7: 29-56.