

SHORT NOTE

Behavioural observations of the blue lorikeet (*Vini peruviana*) on Rangiroa atoll, Tuamotu Archipelago, French Polynesia

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The blue lorikeet (*Vini peruviana*) is a small parrot found on only fewer than 20 South Pacific islands and atolls (Collar 1997; Juniper & Parr 1998; BirdLife International 2000). Because of its restricted range and continued decline as a result of rat and cat predation, it is considered to be vulnerable (BirdLife International 2000). Although some behavioural observations of this species have been published (Wilson 1993; references in Collar 1997; Juniper & Parr 1998; BirdLife International 2000), there is still a paucity of data on the behaviour of this parrot. Therefore, we report behavioural observations of the blue lorikeet made during a 3-week expedition to the Rangiroa Atoll in September 1998.

Rangiroa Atoll (15° 10' 00" S, 147° 35' 00" W) is part of the Tuamotu Archipelago, French Polynesia. The atoll is one of the largest in the world, measuring about 70 km east-west and 32 km north-south. It consists of a ring of corals and coral sand usually between 100-300 m wide. Individual islands are usually only a few metres high (up to 5 m) and support a meagre vegetation of mostly coconut palms (*Cocos nucifera*), a few other tree species, and low *Scaevola* bushes and other scrub. Mangroves can be found near water. Water depths between adjacent islands usually do not exceed 2 m.

About 800 people live on the atoll, in 3 villages. The local people know the blue lorikeet as "Vini". Observations of the bird were made during a 2-week visit to the "Blue Lagoon", which lies in the westernmost part of the atoll, and is surrounded by about 10 small islands. These islands support 1 population of Blue Lorikeets, whereas the only other population on Rangiroa is reportedly located

in the south-east. Observations were made during all daylight hours over 13 days.

Groups of lorikeets spent the night in the midst of leaves of the coconut palms that make up c. 75% of the total vegetation. Lorikeets became active during sunrise (0600 h), but their calls could already be heard before and during dawn. They usually preened intensively before they flew off in small groups to forage on the flowers of coconut palms. Usually, several birds sat silently on a flower, using their brush-like tongues to collect the pollen, which appears to be their main food source on these islands. If flowers had not opened yet, birds sometimes bit open the flowers to get to the pollen, and also fed on the stamens and emerging juices. Once a tree's flowers had been exhausted, the birds flew off to the next tree, uttering sharp cries. Lorikeets were only observed to feed on coconut flowers, but may have used other food sources at other times, as they have been reported to feed on the nectar and pollen from various species, young leaf shoots, soft fruits, and some invertebrates (Wilson 1993; Juniper & Parr 1998).

About 0800 h, the birds became very active and noisy, flying around the islands calling loudly. Often many lorikeets clung to 1 palm leaf, swinging back and forth. They sometimes visited colonies of black noddy (*Anous minutus*). However, most of the day, the lorikeets spent sitting or moving inside the canopy of palm trees. The paucity of other tree species may explain the lorikeets' preference for palms, but Wilson (1993) also observed that lorikeets on Aitutaki Island kept almost exclusively to wooded areas, and apparently preferred coconuts.

The blue lorikeets rarely sat completely still, mostly actively looking about, preening, or climbing on the flowers, stems and leaves of the palms. They often climbed down the long palm

leaves almost to the end, or flew onto the leaves, grabbing them and swinging back and forth. Partly, this behaviour appeared playful, but often the lorikeets investigated the leaves closely, as if to search for invertebrates. This behaviour was also observed by Juniper & Parr (1998).

During the heat of the day (1100-1400 h), birds usually rested in the shadow of the palm leaves, either sleeping or preening. They uttered twittering calls during this period. Shortly after midday, 1 adult was observed several times to "sing" for up to 20 min. The "song" consisted mostly out of a 3-syllable whistle "tee-tee-tee" on the same note, sometimes followed by a 2-syllable whistle "tee-tee" with the 2nd note descending. Ascending trills and harsh rasping cries were also produced during these songs. Contact calls during foraging were quite different, being much more feeble and soft contact "tee" whistles.

After 1400 h, groups of birds resumed foraging, and flew from palm to palm. During this period, 5 instances were observed when small groups (3-6 individuals) flew to neighbouring islands, uttering shrill metallic cries. Birds on neighbouring islands responded to the arriving birds with many cries and much activity, but no aggression was observed. The visiting birds usually returned after 5-10 min. From 1700 h until dusk, birds actively foraged again. During sunset, groups of birds also flew around the islands, calling constantly (see also Taylor 1984). When dark set in at c. 1800 h, the lorikeets retreated to the spaces between the stems of the palm leaves and rested for the following 12 h.

According to the local people, nests usually contain 2 eggs. No nests were found during the study, but 1 juvenile was observed. The juvenile could be distinguished from adults by its brown beak and feet and the almost complete lack of white on throat and breast, with only a few white marks on the otherwise greyish throat. Although the juvenile already fed itself, it was guided and cared for (e.g., allopreened) by several adults of the group so that it was impossible to determine which were its parents. Once adults showed the juvenile how to investigate the underside of palm leaves, and the juvenile followed their example.

Assuming 25 days for the incubation period (Alderton 1991) and 6-8 weeks for the nesting period (Juniper & Parr 1998), eggs must have been laid in June. As this species breeds only once a year in captivity (Low 1998), and as colder, rainier, winter weather and storms probably prohibit breeding during that time of the year, we suspect that the lorikeets breed only once a year on these islands.

During the frequent light rain showers, lorikeets usually preened intensively and bathed in the palm leaves, even after the rain had ended. However, during heavier rains, birds retreated into

the dense layer of palm leaves. Sometimes, groups of lorikeets followed the human observer, apparently out of curiosity. They came as close as 6 m, meanwhile ruffling their feathers and uttering excited hissing and rattling calls that were unlike calls heard at other times.

Although lorikeets depended entirely on palm trees for shelter, nest sites, and food, they never behaved aggressively towards conspecifics or other bird species using the palm trees.

Our population estimates are likely to be inaccurate, because the frequent movement of birds between islands made counts difficult. However, on one of the smaller islands (c. 100 m × 100 m), 8 individuals were observed. On larger islands (c. 100 m × 200-300 m), 30-50 individuals were observed. The estimated total population around the Blue Lagoon was 100-150 individuals. However, island size was not the only determinant of population size. Two out of 10 islands were disturbed several times a year by local people clearing most of the undergrowth to improve access to the coconut palms. Harvesting of coconuts involved climbing the trees and cutting the coconuts and dry leaves with a machete. These islands were visited by lorikeets only for short feeding trips. Although it was unclear why lorikeets avoided these islands, we suspect that the lorikeet population depends on some islands being left undisturbed by coconut harvesting. Although rats (species unknown) were observed on almost all islands of the atoll, we have no data on their effect on bird populations. Seitre & Seitre (1992) and Gill (1996) commented, however, on the threat posed by alien species. The local people apparently did not catch the lorikeets to keep or sell as cage birds. However, they sometimes find abandoned juveniles after severe storms, and one of these had been hand-raised by a local family.

Although the main focus of this expedition was to observe the behaviour of the blue lorikeets, brief observations were also made on a few other bird species. The white tern (*Gygis alba*) was still incubating eggs in September, although many nestlings and fledglings were already present. One nest was found about every 50 m; each nest contained only 1 egg. Nests were 1-4 m high, with the eggs in a fork or some other suitable indented place in a tree, with no plant material to support it. The brown Noddy (*Anous stolidus*) was the only species that nested in the same place as the lorikeets, in the spaces between the stems of the palm leaves. Almost every large palm tree contained a single nestling, which amounted to c. 50 nests on a smaller island. One nestling had fallen out of its nest and was brooded on the ground by a parent. The black noddy (*Anous minutus*) nested in dense colonies of up to 20-30 pairs on each island. The nests, containing only 1 nestling, were

5-15 m high in forks and other suitable places in trees (not palms) and constructed out of dry plant material. Several hundred pairs of red-footed booby (*Sula sula*) nested on a neighbouring island. A reed warbler (*Acrocephalus* sp.) was also frequently observed. One nest was found containing 1 nestling, with its primaries and secondaries still in feather shafts. The nest was in a mangrove tree close to water, and c. 1.5-2 m high inside a fork just below the large leaves. The nest was relatively large (250 mm high × 150 mm wide), built on top of several older nests and made out of dry grass and palm fibres. The nestling was fed by both parents, usually once or twice an hour. The nestling was killed by an unknown predator just before fledging. This species sometimes visited colonies of *Anous minutus*. Surprisingly, the entire *A. minutus* colony was very agitated during these visits and acted aggressively towards the *Acrocephalus*, whereas visits of *Vini peruviana* did not elicit such a response. Although it seems unlikely, perhaps the *Acrocephalus* is an egg predator.

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