

## Behavioural notes on Brown-backed Parrotlet *Touit melanotus* in Ubatuba, São Paulo, Brazil

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O apuim-de-costas-pretas *Touit melanotus* é uma espécie ameaçada de extinção e endêmica da Mata Atlântica do sudeste do Brasil. Apresentamos aqui os dados referentes às observações feitas de uma população da espécie no município de Ubatuba, litoral norte do Estado de São Paulo, durante janeiro e fevereiro de 2011. Reportamos os resultados de 96 horas de observação em campo descrevendo detalhes de sua morfologia e sua história natural, a saber: métodos e fonte de alimentação, locomoção pelos galhos, comportamento durante descanso, interação entre indivíduos e com outras espécies de aves. Discorremos sobre os tipos de vocalização emitidas e seu contexto.

Brown-backed Parrotlet *Touit melanotus* is a globally threatened psittacid endemic to the Brazilian Atlantic Forest, where it has been reported from the lowlands and foothills between sea level and 500 m, occasionally reaching 1,400 m, for example in Itatiaia National Park, Rio de Janeiro<sup>2</sup>. It has also been reported from the northern slopes of the Serra da Mantiqueira at 1,000 m (F. Olmos *in litt.* 2011) and from higher elevation forests of the Serra do Mar in southern Bahia and São Paulo, which two states form the northern and southern limits of the species' range<sup>7</sup>.

The species has been reported sporadically at Ubatuba, in the northern littoral of São Paulo state, for some years<sup>4</sup> (H. F. Alvarenga pers. comm.). In October 2006, D. Matoszko (pers. comm.) photographed one that flew into his office and landed on his computer ([www.wikiaves.com.br/31863&p=1&t=s&s=10462](http://www.wikiaves.com.br/31863&p=1&t=s&s=10462)), which he believes was the first photograph to be taken of the bird in the wild. The species was occasionally heard or seen in flight at Itamambuca and Praia Vermelha, and, on 24 February 2009, J. Minns found a flock of approximately 40 perched in a *Teminalia catappa* (Combretaceae) tree in the Praia Vermelha condominium. He alerted us immediately and these birds were seen and photographed by local birders and visitors from São Paulo over the following few days. More recently G. Messiana, an employee at the same condominium noticed the birds and alerted C. Rizzo at the municipal environment office, who photographed them and posted a photograph on WikiAves ([www.wikiaves.com/275805](http://www.wikiaves.com/275805)), whereupon information spread rapidly among the Brazilian birding community, as witnessed by the number of photographs posted online ([www.wikiaves.com.br/midias.php?t=s&s=10462](http://www.wikiaves.com.br/midias.php?t=s&s=10462)).

Because Brown-backed Parrotlet has been extremely difficult to study in the field, virtually nothing is known concerning its behaviour<sup>1–3,5</sup>. However, the birds at Ubatuba were faithful to a small number of sites within a confined area, facilitating behavioural studies of this little-known

species. Here we present our findings, the first insights into the species' ecology.

### Methods and Study area

All observations were made using binoculars and a telescope. Photographs were taken using a Canon 50D camera with a fixed-length 300 mm f/4 lens. Videotapes were made using a JVC digital video camera, and mini DV tapes. We undertook 96 observer hours in the field over 16 visits (26 hours during 14–23 January, and 70 hours on 2–11 February 2011), and analysed >3,000 photographs and >1 hour of video footage. Observation periods varied, with the earliest starting at 07h00, the latest being at 18h00. Weather was largely hot (25–30°C) and sunny, on four occasions becoming cloudy, three times with light rain and thunder. Three principal study areas within the Praia Vermelha condominium (23°51'01.16"S 45°16'79.13"W) were identified. Firstly, a clump of *Teminalia catappa* trees (Site A) within an area of public access, where the birds rested, preened etc., secondly some *Clusia criuva* (Clusiaceae) trees (Site B), in an area of restricted access, where the birds fed, and thirdly, Site C, another area open to the public, where the birds fed and rested. The parrotlets were observed and notes on behaviour and feeding were made, and photographs and video footage taken whenever possible. The resting area was high in the canopy of some *T. catappa* trees 10–15 m above ground, and photographs were difficult to obtain, but the *C. criuva* were much shorter in stature, up to c.5 m, greatly facilitating observation and photography. Whenever possible, we observed the birds as long as they remained at the site.

### Results

*Field identification and bare-parts coloration.*—Brown-backed Parrotlet is predominantly green with a charcoal grey mantle, back and central rump, a small yellowish chin spot, and the underparts become paler over the belly with a bluish tinge to the flanks. The central rectrices



Figure 1. Brown-backed Parrotlet *Touit melanonotus*, Ubatuba, São Paulo, Brazil, 23 January 2011 (Elis Simpson)



Figure 2. *Clusia criuva* fruits at various stages of development, Ubatuba, São Paulo, 2 February 2011 (Elis Simpson)



Figure 3. Feeding action of Brown-backed Parrotlet *Touit melanonotus* using its tongue, Ubatuba, São Paulo, 2 February 2011 (Elis Simpson)



Figure 4. Brown-backed Parrotlet *Touit melanonotus* drinking from bromeliad, Ubatuba, São Paulo, Brazil, 23 January 2011 (Elis Simpson)



Figure 5 (left). Adult (above) Brown-backed Parrotlet *Touit melanonotus* feeding juvenile, Ubatuba, São Paulo, Brazil, 23 January 2011; fruit pulp can be seen on the bird's back (Elis Simpson)

Figure 6 (above). Brown-backed Parrotlets *Touit melanonotus* use their feet and bills when moving through the branches, Ubatuba, São Paulo, Brazil, 23 January 2011 (Elis Simpson)



Figure 7. Adult Brown-backed Parrotlet *Touit melanonotus*, with dark cere and vivid orbital ring (left) and juvenile showing pale cere and much duller orbital ring, Ubatuba, São Paulo, Brazil, 23 January 2011 (Elis Simpson)



Figure 8. Brown-backed Parrotlet *Touit melanonotus*, 'non-plucker' feeding, Ubatuba, São Paulo, Brazil, 2 February 2011 (Elis Simpson)

are green with a dark spot at the tip of the outer webs, whilst the outer feathers are red basally with a broad black subterminal band and small green spot at the tips. The bill is yellowish with a dark tip to the maxilla and a dark grey cere. There is a distinctive peach-coloured orbital ring, and the legs and feet are grey (Fig. 1). The orbital ring is not depicted in several previous illustrations of the species in major works on psittacids<sup>1,3,5</sup>. However, some individuals had paler eye-rings, which our observations suggested were younger birds. Individuals with paler eye-rings also had a paler, flesh-coloured cere, rather than the dark grey cere of adults (Fig. 7).

**General observations.**—Group size varied from six to 21 individuals, and mean group size over the entire period was 12.75. However, mean group size increased during the period, in January averaging 10.8 and in February 16.33; on one occasion 20 birds were perched when another ten flew over without landing. Once a group of c.70 birds was seen in flight. We estimate the population visiting the

condominium to be c.100–150 birds. The birds form smaller groups to rest or feed. They are generally noisy in flight and have distinctive calls, although the birds sometimes arrived silently or were already *in situ* when our observations commenced. While resting, the species is generally silent, meaning that careful observation of the canopy is essential to locate them as they can be very hard to detect. Brown-backed Parrotlets appear to be most visible at the condominium in summer (December–March) when they feed on the fruiting *C. criuva* trees that are common there. Observations by residents and others indicate that the species is present October–March in small numbers, but a security guard at the condominium familiar with the birds reported that he sees and hears the species overflying the area year-round. Breeding presumably occurs locally, given our observations of young birds (see above). However, the species appears to roost in the forest high on the Serra do Mar, arriving at the condominium during the day, and it probably breeds only at higher elevations. Flocks have been observed flying over the Corcovado and Folha Seca neighbourhoods (J. Oliveira pers. comm.), and Praia Dura (J. Minns pers. comm.), in the morning and evening, arriving from and returning to the Pico do Corcovado, the highest point in the region. It is probable that the birds at Praia Vermelha involved several family parties with young amalgamating post breeding to feed in larger flocks, perhaps for protection. They would easily be overlooked if spread throughout an area due to their discreet behaviour, except in flight, at least in groups of 20+, although pairs or singles might prove less obvious even when flying over.

**Feeding behaviour.**—Parrotlets were observed feeding on 13 occasions. The only observed food item (100% of records) was the fruit of *Clusia criuva*; however, two birds were seen stripping flower buds from a *Teminalia catappa*, along the stalk but not severing the stalk from the tree. It was unclear if they consumed the buds. *C. criuva* is a small tree common in the coastal lowlands of the Atlantic Forest biome from Rio Grande do Sul to São Paulo. Its fruit is a small, round, brown pod c.1 cm in diameter, individually attached to a stalk and sticky to touch. Fig. 2 depicts three stages of development of the fruit. In the centre a mature fruit that has already opened, to the right two immature fruits of the size parrotlets prefer, and two small, undeveloped fruits to the left. Mature fruit opens in a star shape to reveal seeds with red aril taken by tanagers and other birds. Parrotlets were only observed taking unripe fruit. Two feeding methods were observed: most individuals pluck the fruit, then consume it while perched, but a few birds eat the fruit while still attached to the stalk. Birds seem to be either 'pluckers' or 'non-pluckers'; none was seen to employ both methods.

'Pluckers' snip off the fruit with a small part of the stalk, which they use to transport the fruit to a more secure perch, the fruit being in the outermost branches. One bird was seen to drop two fruits whilst trying to secure the stalk with its bill; others, however, appeared to be 100% successful. The bird then attempts to secure the fruit by 'balancing' it, applying downward pressure, and taking advantage of its sticky nature, on a heavier branch. The feet are never used to secure the fruit during this process. L. F. Silveira (pers. comm.) reported that once the fruit is in place the bird appears to inspect it from different angles, as if judging if it is sufficiently secure. He noted that it took c.3 minutes for an individual to consume a whole fruit.

On 6 February we observed several birds feeding. One was timed upon entering a *C. criuwa* tree. After 44 seconds the bird commenced eating the first fruit. During 35.5 minutes the bird consumed 11 fruits, whereupon it left with the flock. Some fruits were dropped before they could be completely consumed, but those that were took between two minutes 35 seconds to three minutes 57 seconds to eat, the mean being three minutes 41 seconds. Time taken between fruits depended on the bird's position in relation to the nearest ripe fruit, varying from two to 35 seconds. Feeding was continuous; the search for the next fruit starting immediately the last was finished or dropped.

The bill is used to pry open the fruit, which is always laid sideways, the tongue being inserted into the fissure created as if the bird is 'lapping up' the seeds and pulp inside (Fig. 3). This action leaves a considerable amount of pulp on the bill (Fig. 3), which is removed using neighbouring branches, and birds were even observed with pulp on the mantle, belly, head (Fig. 5) and wings. L. F. Silveira (pers. comm.) remarked this provides a useful indication that the species has been feeding in a given tree when not present; we identified several trees in which the birds had been feeding as a result.

'Non-pluckers' fed in various positions (Fig. 8), sometimes hanging upside-down to reach fruit on an adjacent branch; other times adopting a 'normal' position, but always selecting fruit immediately adjacent to its perch. From photographs, it appears that 'non-pluckers' are juveniles (see above) that have not learned to feed like adults. Time taken to eat an entire fruit attached to the tree was considerably longer than that of plucked fruit (mean four minutes 17 seconds). However, timing such sessions was difficult because, on many occasions, another individual would 'steal' the fruit half-eaten, removing it to another branch. Once, a second bird joined the first and commenced to eat the same fruit that was still attached to the stem. No aggression was observed between any of the individuals in these scenarios.

A group of adults was observed feeding begging juveniles. An adult would eat several fruits, clean its bill on a branch, and then visit one of several small bromeliads where it appeared to drink water (Fig. 4), perhaps to lubricate the fruit. The adult would then perch beside a juvenile and regurgitate directly to its bill (Fig. 5). During one recorded bout an adult regurgitated pulp five times.

*Resting behaviour.*—Brown-backed Parrotlets spend much time resting during the day. They remain mostly silent, spending their time preening and allopreening in the topmost branches inside the canopy of *T. catappa* trees beside a road. One of the popular names of *C. criuwa* is *mangue-bravo*, due to the supposed slight narcotic or soporific effect that eating the fruit creates (H. F. Alvarenga pers. comm.). On several occasions feeding birds were seen to pause for several seconds and close their eyes as though about to sleep, then start feeding again. This might also explain the protracted rest period of up to two hours following a feeding session. During these rest periods much preening is undertaken, due to the messy nature of the feeding process (see above).

Parrotlets gave a typical psittacid-like rasping, murmuring call when two birds interacted (see call B below). They seemed to remain in pairs but grouped together. However, L. F. Silveira (pers. comm.) thought that they showed less pair fidelity at rest than typical of other psittacids, perhaps because the groups comprised several family parties and 'unattached' juveniles. Some birds (possibly juveniles) were more active and occasionally joined pairs to preen; no aggression was displayed to these 'interlopers'. Occasionally, an 'interloper' would attempt to attract attention from an allopreening pair, with little success. The bird would then hang below the branch, between the pair, and surreptitiously move on top of the branch, forcing the pair apart. Such behaviour was witnessed on multiple occasions, but it is unknown if more than one individual was involved. It is possible that the 'interlopers' were offspring of the pairs concerned.

Whilst preparing to descend to feed, several birds were observed being very active, moving quickly between branches, and occasionally biting (apparently 'playfully') the legs of neighbouring individuals.

*Locomotion.*—Movement between branches is usually slow and deliberate, the birds using their bills to support themselves, typical of psittacids in general. They rarely fly between perches in the same tree, preferring to climb, making them less easy to detect, especially as they are often silent (Fig. 6).

*Vocalisations.*—The best-known call (call A) is a resonant, loud, short, ringing *tiriri* mostly given in flight, although also sometimes when

perched (apparently in agitation) ([www.xeno-canto.org/31239](http://www.xeno-canto.org/31239); J. Minns). A low murmuring chatter, recalling a Budgerigar *Melopsittacus undulatus* (call B), is given between birds when resting, preening and, especially, allopreening ([www.xeno-canto.org/85445](http://www.xeno-canto.org/85445); J. Minns). A third call is a rasping squawk (call C) made in aggression or stress. A begging call is made by juveniles when adults are feeding; this is a persistent rasping note repeated as the bird bobs its head up and down, with the call uttered when the head is at its lowest position ([www.xeno-canto.org/85446](http://www.xeno-canto.org/85446); J. Minns). When bursting from the tree suddenly, the birds call constantly (call A).

*Inter-specific interactions.*—A group of five vocalising Plain Parakeets *Brotogeris tirica* that arrived in the *T. catappa* where a group of parrotlets were perched caused the latter to become agitated and start calling (call A), until the parakeets left. The parrotlets quickly became quiet again.

At the *C. criuva* tree a condominium employee reported that the parrotlets had been mobbed by a Great Kiskadee *Pitangus sulphuratus*, which had pecked a parrotlet's back. We subsequently witnessed the same behavior, presumably the same kiskadee chasing an adult from the *C. criuva* to a *Tibouchina grannulosa* (Melastomataceae) tree nearby, attacking the parrotlet again, which then returned to the *C. criuva*. The kiskadee did not follow. The parrotlet made a harsh rasping (call C) throughout.

*Other observations.*—Following a short rain shower, one bird was observed drinking water drops from the leaves of a *T. catappa*, while a different bird 'bathed' in the droplets on another leaf, passing the water onto its feathers by rubbing against the leaves, then preening quickly for c.20 seconds.

*Anecdotal information.*—A security guard at the condominium reported that, in 2010, the birds usually departed the area in a large flock at c.17h00, initially circling to gain height and then flying off south. He observed the birds from a trail in the forest above the condominium. This suggests that the birds roost elsewhere, visiting the site only by day. More information was gained from an employee who has lived at the site for six years. 2009 was the first year that the birds were noticed, as a result of them appearing in numbers, and coinciding with the first observations by birdwatchers. He reported that in 2010 his domestic cat *Felis catus* apparently killed one of the parrotlets, although he only observed the cat carrying the bird. If the cat did catch it, this indicates that the species must occasionally descend close to ground level. However, we subsequently learned that four individuals died as a result of hitting a window in the condominium, which could

easily explain how the cat came to catch one of these birds.

**Note.**—The Praia Vermelha condominium is at the higher end of the property market and its residents are concerned about security. If visiting the area, birders should contact the administrative staff to signal their presence, always stay on the roads and never enter any property. By following these simple guidelines, the condominium's administration and residents should continue to remain welcoming towards birders.

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