

The entertaining and enigmatic Chowchilla; a summary of our limited knowledge

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Abstract

The Australian endemic Chowchilla (*Orthonyx spaldingii*), a medium-sized terrestrial passerine confined to rainforests of the Wet Tropics Region of far north Queensland, remains biologically little known. An interpretation of the significance of its dorsal plumage, common to both sexes, and the sexually dimorphic ventral plumage is given. The terminally spine-shafted tail feathers of logrunners present an example of convergent evolution with tail morphology and function in non-passerine woodpeckers (family Picidae), and these are illustrated. Knowledge of the unusual nesting biology of Chowchillas is briefly summarised. Recent observations at a nest found a longer incubation period than previously known. Limited observation of social interaction between flock members including a female and her juvenile offspring suggest the possibility of an unusual, indirect, form of cooperative breeding but too little is known to confirm this. It is hoped that this contribution will stimulate further pertinent field study.

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The three congeneric logrunner species constitute the family Orthonychidae, which is presently taxonomically placed, by the International Ornithological Union, between the large babbler family Pomatostomidae and the small family Cnemophilidae comprising the three satinbirds (previously birds of paradise, Paradisaeidae) of New Guinea: logrunners were long thought immediately close to whipbirds but they are now placed several families removed from them (Gill *et al.* 2021). The Chowchilla (*Orthonyx spaldingii*) is restricted to rainforests of the Australian Wet Tropics, where it predominantly occupies the uplands, typically between 450 to 1500 metres above sea level, rather than the lowlands where small numbers do occur in wet forest (and require study). It has two subspecies, the southern one occurring from the Paluma Range in the south to the Macalister-Herberton ranges and Windsor-Carbine Tablelands and Mossman area in the north where it apparently intergrades with the northern

subspecies of larger individuals found to Mts Amos and Finnigan in the north (Higgins & Peter 2002).

We really like the name Chowchilla, although by it replacing the long-used 'logrunner' as part of its previous common name the useful information that its closest relatives are the other logrunners, now the Australian Logrunner (*O. temminckii*) and very similar Papuan Logrunner (*O. novaeguineae*) (Frith & Frith 1987; Fig. 1), is lost. The reduction of birds' common names to as few words as possible is fine but not, we feel, if it results in loss of useful information in a well-established name. Obviously, it would not be helpful to change the names of all Australian birds to Aboriginal ones, no matter how appropriate and pleasant they might individually be.

The Chowchilla is, like the other logrunners, a terrestrial bird that flies almost exclusively only to evade pressing predators and to reach tree perches to roost, as a flock or group, for the night. The territory size of several Chowchilla groups ranged from one to four hectares (Jansen 1993).



Figure 1. Adult female Papuan Logrunner at her nest, Tari Gap, Southern Highlands, Papua New Guinea. All photographs are by CB Frith.

Individuals form highly sociable pairs or, more typically, flocks of three to eight birds. One has to rise early to hear them giving their first calls of the morning chorus from their arboreal roost perches. The song from which the common name is derived is extremely loud and proclaims territory to adjacent flocks, Chowchillas being highly territorial. The loud song varies geographically and over time (McGuire 1996), with some dialects being quite distinctive (e.g., those at Paluma compared to the Atherton Tableland, but also much closer ones). In maintaining flock cohesion, foraging members give a rather delightful low, throaty, growling *grrrr grrrr, grrrr*.

In truly wild places Chowchillas are not necessarily easy to see well, as they will typically quickly move away from potential predators. In some places regularly frequented by people they do become habituated to pedestrians – the Lake Barrine and Eacham walking tracks being good examples of where to see them closely and well. They are industrious in their foraging, digging vigorously into leaf litter and often creating numerous little circular cleared dishes by flinging litter aside with an interesting lift and sideways kick of a leg. The cleared circles of exposed soil are raked by a foot

to expose prey. We have seen individuals with one large and/or several smaller ticks feeding with their proboscis buried beside or beneath the outer edge of the birds' eye(s) and possibly impeding their vision to some extent, Chowchillas obviously being adapted to such parasitism by some level of immunity.

These most interesting birds exhibit some remarkable physical adaptations to a terrestrial life. They are cryptically plumaged when viewed from above, as they would be seen by arboreal predators. The chin, throat, upper breast, and central underparts of adult males are pure white, while in females the chin, throat and upper breast are rich rufous (Fig. 2). While the white ventral plumage provides a conspicuous signal to the location of fellow flock members on the dull forest floor, such a conspicuous large white badge would be detrimental to females attending the nest. Thus, the ventral plumage of adult females would appear to be a compromise – the white flock signal being retained on their lower underparts but the upper part that may be exposed while incubating and brooding, is rufous. The more vulnerable juveniles lack both the white and rufous of adults, being cryptically plumaged throughout.



Figure 2. Adult female Chowchilla, Paluma, Queensland, Australia.

The legs and feet of Chowchillas are large, stout, and strong relative to their body size (Fig. 3) and they are used in an unusual way, to grasp or sweep a foot-full of litter clear to one side by one leg being thrown out and away from the body to the side as the bird supports itself on the other leg. While foraging, birds may be seen to move and push aside surprisingly large pieces of wood and other debris. The tail is remarkable in that the terminal part of the strong, stout, flattened, feather shafts are bare (Fig. 4) – indeed earlier names of the species included Spalding's Spinetail and Spine-tailed Log-runner. Foraging birds use the tail to prop their body weight upon when moving heavier leaf litter and wood pieces. The Chowchilla tail is thus a surprising, and extreme, example of convergent evolution with the stiff-tailed woodpeckers that use their spiny-tipped tail to prop upon when perched on trees to forage (Fig. 5). The Chowchilla's tail modification is extreme because in few woodpeckers are the feather barbs on the terminal part of the tail feathers shafts absent to any great extent. This degree of modification in the

Chowchilla, and the logrunners, is presumably because their tail is constantly, and frequently vigorously, in contact with abrasive, often wet, leaf litter that would otherwise wear and tear feather barbs.

When we arrived at Paluma, some 85 kilometres north of Townsville and about 1000 metres above sea level, in 1978, the nest and single egg clutch of the Chowchilla was known but nothing else was recorded of its nesting biology. Aside from its physical adaptations to a terrestrial way of life, the Chowchilla has evolved an unusual nesting biology compared to most other song birds sharing its habitat. Its large roughly rugby to soccer ball shaped nest is built on the forest floor, typically between two tree base buttresses, or up to three metres above ground atop a broken off tree stump or, more frequently, a large epiphytic plant (Fig. 6), or within a lawyer vine tangle; but also on a creek bank or log. Fifteen Paluma nests built atop bird's nest ferns (*Asplenium nidus*) averaged 1.8 metres above ground; sixteen of 44 nests we examined there were built on the ground (Frith *et al.* 1997).



Figure 3. Nestling Chowchilla close to fledging, Paluma, Queensland, Australia.



Figure 4. Tail of an adult Chowchilla, Paluma, Queensland, Australia.



Figure 5. Adult female Black-cheeked Woodpecker *Melanerpes pucherani*, West Ecuador, using her tail to support herself on a tree trunk.

Stout short sticks are first placed to form a U-shaped foundation and the bulbous nest with hooded side entrance then built upon this. Nests are probably built by the female alone (two unsexed birds were once flushed from a near-complete nest four or five days prior to the egg being laid – but perhaps the male was merely inspecting it). A nest takes two weeks to several months to build. It was not rare, however, for us to find a stick foundation, or more, in one season only for it to be left to be completed the following season.

Five nests at Paluma averaged 201 mm in height, 279 in depth (i.e. front to back), 248 in width, entrance hole height 77, entrance hole width 100, nest chamber depth 175 and entrance platform (i.e. area of sticks with moss atop them outside the entrance hole) 104 mm in length.

The Chowchilla nest consists of three basic elements: a substantial foundation of stout to fine sticks and twigs beneath and around the sides, behind and in front of the nest but not directly



Figure 6. A Chowchilla nest *in situ* atop a bird's nest fern, Paluma, Queensland, Australia.

beneath its central base. Inside the stick foundation is a discrete ovate-globular structure externally of varied material including dry wood-chips, bits of plant fibre, woody vine stems, and sometimes *Calamus* palm cane. Within this is a compact globular structure of inter-twined epi-phytic fern fronds (frequently of Basket Ferns *Drynaria* spp.), frond skeleton stems and fibres, and the egg cup is lined with fine supple, springy, blackish rootlets, dry epiphytic fern frond skeletons and mostly wiry, hair-like, horse-hair fungi. Green moss is placed above and about the entrance area (Fig. 7).

The nest we recently examined near Malanda (four days after the nestling left it), was atop a Bird's-nest Fern (*Asplenium nidus*) with its base 122 cm above ground. It involved 326 sticks, up to 36 cm long and 8 mm thick, mostly of single lengths but some dozen of them with two or more branches. Also incorporated about the nest exterior were some 25 to 30 pieces of dry, pale, lightweight, wood pulp up to 14 x 18 x 13 cm, and numerous small to medium sized dry leaves and much fine leaf litter debris between the sticks and the nest



Figure 7. A Chowchilla nest with all foundation sticks removed and cut open, through the centre of the top of the mossy entrance hood (extreme top left and right) and then over the top and down the back, and parted to show the interior and profile of the walls. The complete circular nest egg cup, of black tendrils, is to the lower right. The egg cup has been flattened for photography but to imagine it naturally in situ its bottom edge would have to be lifted, toward the viewer, through 90 degrees until horizontal.

proper. Also included was a 36 cm long double-shafted Southern Cassowary (*Casuarius casuarius*) feather (Fig. 7). Two live earthworms and several amphipods were among the lower nest material. Green moss covered the top of the nest and constituted the overhanging hood above the entrance hole.

The clutch consists of but a single, large white egg (as in the highland Papuan Logrunner, while the Australian Logrunner lays one to three, typically two, in a clutch; Frith *et al.* 1997). When laid, the Chowchilla eggs at Paluma averaged 13.5 g or about 10% of the mean female body weight of 133.4 g. While Paluma Chowchillas nested during most months of the year, most (84%) eggs were incubated during July to December, producing fledglings in September to February prior to or during early wet season rains when leaf litter prey is most abundant (Frith & Frith 1990). Of 24 eggs we studied at Paluma, fifteen hatched successfully, five being predated and four not subsequently checked. Thus, hatching success was 75% at those

twenty nests at which the fate of the egg was known. The incubation period was 25 days at three Paluma nests and one near Malanda studied by Amy Jansen (Jansen 1993; Frith *et al.* 1997). At a nest we recently studied near Malanda the incubation period was, however, 28 days (hatching on 19 August 2021) and a fledging, on 13 September, 25 days after hatching. The fledging period at Paluma was 22 to 27 days, averaging 24 days, and nestling fledging success was 67% (Frith *et al.* 1997). These are long incubation and fledging periods for a song bird even allowing for the fact that this is a medium-sized one in which only the female incubates and directly feeds the nestling, and is to date known to be provisioned only by the male mate. They are longer than the female-only parental care (i.e. females are unassisted in provisioning offspring) of 18–19 days incubation and 14 days fledging in the sympatric Victoria's Riflebird (Frith & Beehler 1998) and 21–23 days incubation and 17–20 days fledging period in sympatric Golden and Satin Bowerbirds (*Amblyornis*

newtonianus and *Ptilonorhynchus violaceus* respectively) (Frith & Frith 2004). These figures are despite the fact that the Chowchilla nest is domed, thick, and well insulated (Fig. 7) compared to the open cup nests of the riflebird and bowerbirds. Only a female Chowchilla has ever been seen to incubate and feed the nestling at the nest. Food brought to a nestling includes a great diversity of leaf litter dwelling invertebrates and the occasional skink, frog and a few small white (? lizard) eggs.

Group territorial bird species in other tropical habitats typically breed cooperatively, while only a few have been found doing so within tropical rainforest. That said, a single observation of two adult male Australian Logrunners feeding a fledged immature (Dow 1980) and a limited number of observations of more than one adult male Chowchilla doing so have been made. On 30 October 2002, at Paluma, CBF watched five Chowchillas foraging together and saw two different adult males, one metre apart, feed an adult female within three to five metres of her nest who then immediately took their foods and fed them to her advanced, fledged, juvenile offspring. Thus, there is the possibility that the Chowchilla may practice an unusually limited form of indirect cooperative breeding. Those fortunate enough to make prolonged observations of flocks of this intriguing bird should look for and record all interactions between flock members, particularly those involving feeding. Such studies are required to learn what goes on among flock members additional to a nesting female, her mate, and their single offspring. Such observation is difficult, but we need to know if flock members other than the female's mate feed her and/or her fledgling as she provisions her nestling or fledgling. In this context, it will also be critically important to learn of the genetic relationships among members of flocks of the delightful and enigmatic Chowchilla.

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