

The nest, eggs, nestlings and fledglings of Fiery-throated Fruiteater *Pipreola chlorolepidota* in north-east Ecuador

Rudolphe A. Gelis, Harold F. Greeney, Murray Cooper and Caroline Dingle

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Estudiamos un nido de *P. chlorolepidota* en las laderas bajas noroccidentales del Ecuador. El diminutivo, inconspicuo, de forma platillo, musgoso nido contuvo dos huevos. Solo la hembra incubaba a los huevos. La hembra y el macho se alimentaron a los dos pichones aunque solo la hembra les empollaba. Hacia todas las fases de incubación y empollada los dos adultos mantuvieron contacto auditorio cuando estaban cerca al nido. Incluimos fotos de los dos adultos y los dos pichones.

The breeding biology of nearly half of the 71 cotingids is completely unknown⁶. Of the 11 species of fruiteaters (*Pipreola*) virtually nothing is known save for brief accounts of Orange-breasted Fruiteater *P. jucunda* and Green-and-black Fruiteater *P. reifferi*^{3,4}. Fiery-throated Fruiteater *P. chlorolepidota* inhabits humid foothill forests of the eastern Andes from southern Colombia to south-east Peru⁶ and is currently considered Near Threatened in Ecuador². We provide an account of the nest, eggs, chicks and nesting behaviour from a nest of *P. chlorolepidota* studied in north-east Ecuador.

Study site and methods

We found the nest under construction on 3 April 2005 within the 1,500-ha Mushullacta Community Forest Reserve (00°50'S 77°34'W; 1,175 m), at the south-west base of the Galeras Mountains, 8 km south-east of Guamani on the Loreto Road, Ecuador. Following the discovery we observed and videotaped the nest opportunistically using binoculars and a video recorder mounted on a tripod, for a combined total of 75 hours (one hour of nest building on 3 April, 45 hours of incubation 12–27 April, and 29 hours of nestling provisioning 28–18 May). We usually remained c.10 m from the nest to minimise disturbance to the birds. The nest, eggs, young nestlings and fledglings were photographed.

Nest, eggs, nestlings, and fledglings

The nest was 8 m above ground in an 18-m broadleaf tree (15 cm dbh) on a well-drained, gentle (20%) slope in primary forest with a broken, uneven canopy (25–35 m) and rather open understorey. A small stream was directly below the nest. The nearly flat, saucer-like nest was 4 m from the main trunk and constructed in the horizontal fork of three branches of a 30-mm thick, 5-m long branch that gently arched from the main trunk to become horizontal. Five moss-covered vines that looped and twisted within 2 m of it, plus foliage of the

supporting, moss-covered branches, obscured the nest from most angles. In addition, its small size (90 mm outside width × 30 mm outside height; 60 mm inside cup width × 10 mm inside cup depth) made the nest virtually undetectable. The outer, underside was of small, live green mosses and liverworts, and the shallow cup was lined with a mix of pale brown, darker brown and blackish roots and rootlets of the same bryophytes.

The two eggs (20.4 mm × 17.0 mm, 21.3 mm × 17.1 mm) were creamy white with dark brown spotting concentrated mostly at the broader end. The naked and blind, two- or three-day old chicks (4.5 g and 6.5 g, respectively) were orangish pink with white gapes and reddish mouth-lining. From above, the young at fledging were green-plumaged overall, like the adults (Fig. 3). Unlike the adults, the remiges were creamy white-tipped (not white-tipped) and the tertials were creamy tipped (not green) giving a spotted appearance. Other features distinguishing fledglings from adults were the fine, creamy streaking on the nape, postocular region and forehead, dull yellowish legs (not orange), lack of rectrices, and whitish-grey irides (not greyish white). The underparts were not seen.

Nest building

Near midday on 3 April we discovered the nest by watching a female build, bringing material three times at five-minute intervals. Once, a male, presumably her mate, flew in as she brought material to the nest. As the female landed the male quickly veered off, disappearing from view and helping obscure the final destination of the female.

Incubation and nestling care

Checks of the nest contents revealed that the first egg was laid after early morning on 6 April and the second egg must have been laid by midday on 11 April. The female alone incubated (Fig. 2), leaving the eggs unattended 30 times during the observation period. Mean off-bouts were 12 minutes

(range 1–89 minutes). If the two unusually long off-bouts (89 and 79 minutes) are excluded, however, the mean off-bout was just 6.7 minutes. Twice the female left the eggs unattended for 15 and 16 minutes, respectively, during heavy rain.

On eight occasions the incubating female uttered 3–4 high-pitched calls c.1 minute before departing the nest. Once, the male called eight times whilst the female called from the nest. Similarly, just before the female returned, twice we heard the same type of calls but were unable to locate the vocalising bird. The male arrived at or near the nest at least 11 times, either flying just above the female as she returned, before quickly veering away and vanishing (six times) or landing briefly (for up to 5 seconds) on the supporting branch of the nest before then flying off (four times). Once he performed the latter behaviour as the female left for an off-bout.

The first egg hatched at midday on 28 April and by midday on 29 April both had hatched. On hatch-days, the female consumed most of the eggshells and dropped the remnants over the side. Only once did we observe mate-feeding, on 28 April, when the male regurgitated fruit, on three occasions, to the female. On the same day the male brought food to the female which she regurgitated to a nestling. Nestlings were never left unattended and only the female brooded, which she did until the male arrived with food. The female then flew from sight, whilst the male attended the nestlings. The male paused briefly, regurgitated food and then watched the nestlings and surroundings for 2–5 minutes until the female returned. The male flew from sight upon her arrival. Adults generally regurgitated fruit pulp to nestlings but occasionally we discerned fruit in the bill. The male fed the nestlings ($n=30$) more than the female ($n=9$). Both sexes maintained a clean nest by consuming recently defecated seeds and undigested pulp from the nestlings. On a few occasions these ingested droppings were regurgitated by the adult and accepted as food by the nestlings. Once the nestlings fledged mid morning on 18 May, the nest was completely free of seeds or other signs of droppings. The evening prior to fledging, we noted the female brooding beyond nightfall.

Both adults were vocal near the nest during the nestling stage. Often the male called from a hidden location just before appearing and the female responded just before leaving the nest. The female once called vigorously away from the nest as the male tended the chicks. Once, the male called three times at the nest just after attending the nestlings. The adults were easily approached at the nest during both incubation and nestling stages, and the female remained very tight when incubating, only flushing twice and remaining on the nest until we were less than 10 cm away. She fluttered off and

appeared to free-fall like a leaf, twice landing on the ground and vibrating the wings vigorously whilst hopping to nearby vegetation. Similarly, whilst the male attended the young, we climbed to within 80 cm and photographed him as he froze motionless close to the nestlings. Twice the male fluttered to a nearby perch and boldly exposed the brightly coloured breast (Fig. 1).

At 08h50 on 18 May both nestlings fledged just after being fed by the male. This event was preceded by 3–4 calls by the nearby female. They flew fairly horizontal, one disappearing from our view almost instantly whilst the other flew c.12 m from the nest before vanishing from sight.

Discussion

The tiny, inconspicuous nest of Fiery-throated Fruiteater, placed 8 m above ground, is very different from the only other well-described fruiteater nest. Green-and-black Fruiteater *Pipreola riefferii* has a large, deep, mossy cup nest placed within 2 m of the ground⁵. The nest of Scarlet-breasted Fruiteater *P. frontalis*¹ precludes any direct comparisons with our nest since its measurements were merely estimated from 15 m below the nest. Thus far, all three known clutch sizes for *Pipreola*, including our study, have been two eggs^{3,4}. Based on our observations of an empty nest on 6 April and a female incubating two eggs on 11 April, the incubation period was between 17 and 22 days. As the larger *P. jucunda* female incubates for 16–17 days³ the incubation period for *P. chlorolepidota* is probably nearer 17 days. Eggs were left unattended 30 times in 45 hours of observation, even in heavy rain.

By photographing and weighing the recently hatched nestlings, we found that one nestling was c.2 g heavier, suggesting that incubation commences after the first egg is laid. Our observations of hatching of the first egg midday on 28 April and fledging mid morning on 18 May provide the first known nestling period for *Pipreola*—20 days.

The parental behaviour, often in concert, helped maintain the nest's inconspicuousness. During nest building and incubation stages, the male, by flying to the nest with the female and quickly veering away, appeared to function as a decoy or distraction. Male and female switches during the nestling stage may serve the same function. Skutch⁵ found Yellow-throated Euphonia *Euphonia hirundinacea* pairs to behave similarly during the incubation stage.

Including our study, only female fruiteaters are known to incubate, but both adults care for the nestlings³. The female brooded continuously, even during the night prior to fledging, whilst the male provisioned nearly 80% of meals. Vocal communication between adults near the nest was important. The high-pitched calls emitted during incubation



Figure 1. Male Fiery-throated Fruiteater *Pipreola chlorolepidota* perched near the nest exposing the brightly coloured breast feathers (Rudolphe A. Gelis)



Figure 2. Female Fiery-throated Fruiteater *Pipreola chlorolepidota* incubating (Murray Cooper)



Figure 3. Male Fiery-throated Fruiteater *Pipreola chlorolepidota* (on left) with two nestlings on fledging day (Rudolphe A. Gelis)

and nestling stages may function as cues for adults to switch at the nest.

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Rudolphe A. Gelis, Harold F. Greeney and Murray Cooper

Yanayacu Biological Station and Center for Creative Studies, Cosanga, Ecuador; c/o Avenida 18 de septiembre y Pasaje Manuel García 123, Quito, Ecuador.

Caroline Dingle

Department of Zoology, University of Cambridge, Downing Street, Cambridge CB2 3EJ, UK.