

# Foraging techniques of Swallow-tailed Cotinga (*Phibalura flavirostris*) on fruits of *Struthanthus marginatus* (Loranthaceae) in Monte Verde, Camanducaia, state of Minas Gerais, Brazil

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**ABSTRACT:** We record a new observation of a group of 22 individuals of *Phibalura flavirostris* (Cotingidae) from field observations and photographs, in the district of Monte Verde, municipality of Camanducaia, in the southern state of Minas Gerais, Brazil. We also report the same individuals foraging on fruits of the Loranthaceae *Struthanthus marginatus* using the techniques “perch-gleaning” and “sally-strike”. The later technique was not previously recorded for this species.

**KEY-WORDS:** altitudinal migrant, Cotingidae, mistletoe, perch-gleaning, sally-strike.

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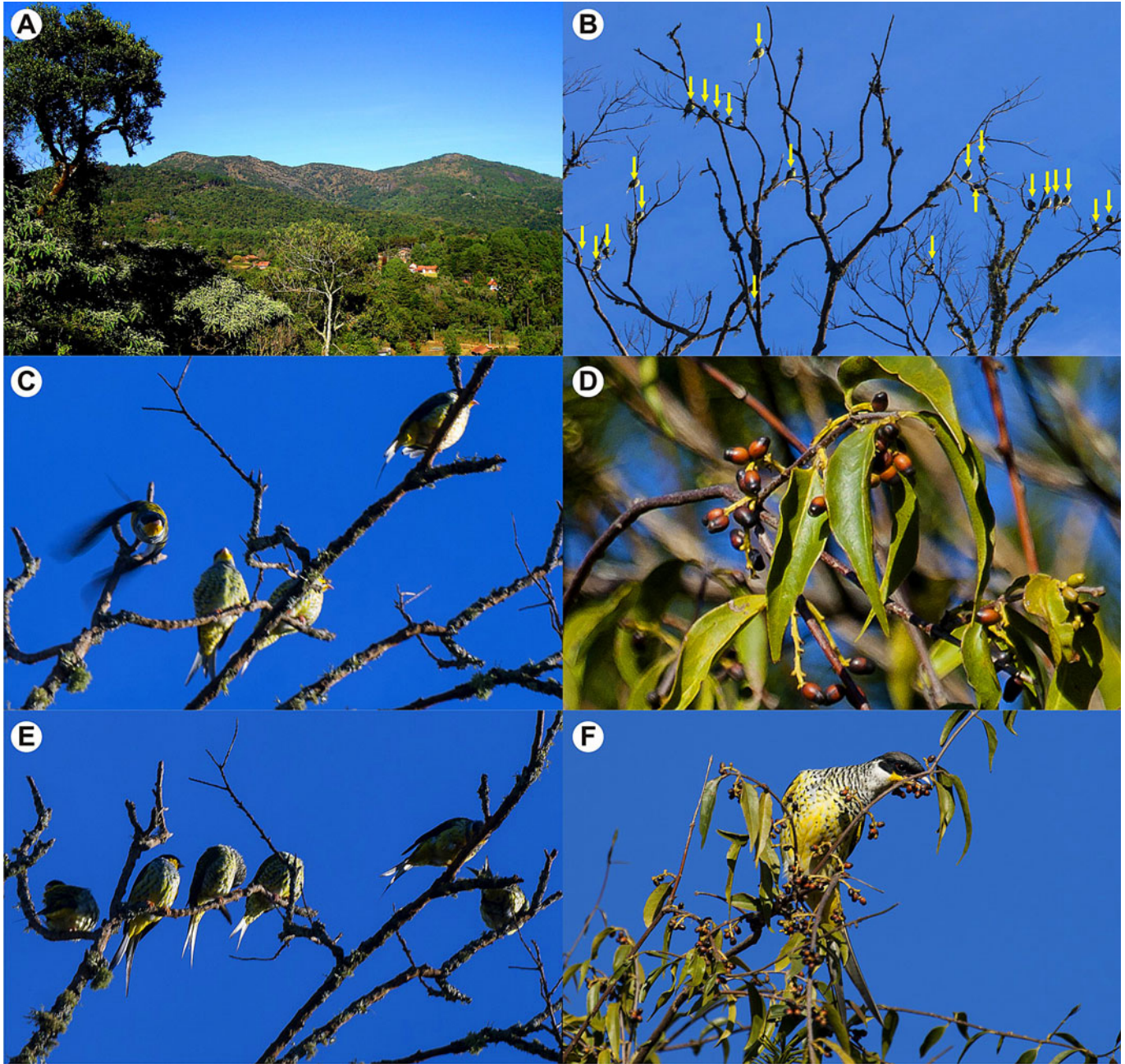
The Swallow-tailed Cotinga (*Phibalura flavirostris*) is an endemic bird from South America and currently considered “Near Threatened” (IUCN 2016). In Brazil, the Swallow-tailed Cotinga (*Phibalura f. flavirostris*) apparently prefers forest borders and partially or lightly wooded areas (Snow 2004). This species feeds mainly on fruits and insects (Snow 2004), consuming fruits of various species of Loranthaceae in Brazil (Snow 2004). This species is an altitudinal migrant, except in the breeding season, during which it forages in groups of 15–20 individuals due to a high abundance of food (Sick 1997). However, little is known about the gregarious habits and foraging behavior of the Swallow-tailed Cotinga in Brazil (Moura 2014), and there are no recent reports of aggregation or partial migration (Sick 1997). Herein, we report a group of Swallow-tailed Cotinga foraging in a species of Loranthaceae not previously recorded as a food source.

We observed 22 individuals foraging together on Mistletoe (*Struthanthus marginatus* (Desr.) Blume) (Loranthaceae) at Monte Verde district, municipality of Camanducaia, Minas Gerais state (22°51'52.88"S; 46°1'22.79"W; 1,600 m.a.s.l.) on 28 April 2013, from 08:45 to 09:15 a.m. Birds were observed with 8 x 42 binoculars and photographed using a DSLR camera

with a 100–400 mm lens. The study area is urban and composed of lodges and summer homes (Figure 1A). The predominant vegetation is high montane forest (França & Stehmann 2004). Climate is temperate, the average annual temperature is 14.7°C and the annual rainfall average is 1,723 mm/year (Climatempo 2016).

The 22 adult birds were perching on top of a dead tree with a height of about 30 m (Figure 1B). Birds later flew off this tree (Figure 1C) to lower trees colonized by mistletoe, an aerial hemiparasitic plant (Mathiasen *et al.* 2008). These plants were at a height of about 15 m and filled with ripe fruits (Figure 1D). The majority of birds, about 17, were catching fruits in flight using the “sally-strike” technique and then returned to the dead tree to complete consumption of the fruits (Figure 1E). Some individuals also flew from the dead tree directly to the branch with mistletoe, perched briefly (about 20 s), picked the fruit from the branch using the technique “perch-gleaning” (Figure 1F) and then swallowed the fruit. In this period of observation we also observed individuals of White-crested Tyrannulet (*Serpophaga subcristata*) and Yellow-bellied Elaenia (*Elaenia flavogaster*) feeding on the fruits of the same Loranthaceae.

The observation of this species is a new record for the district of Monte Verde, Minas Gerais state, Brazil.



**FIGURE 1.** A) Study area in Camanducaia, south of the state of Minas Gerais; B) 22 individuals of Swallow-tailed Cotinga (arrows) resting on a dead tree used as a starting point for feeding flights; C) A male flying to the tree with Mistletoes; D) Branch with ripe fruits of mistletoe; E) A group of six individuals of Swallow-tailed Cotinga, one cleaning the beak (right) after swallowing the fruit and others sunning; F) A male Swallow-tailed Cotinga picking the fruit of mistletoe using the “perch gleaning” technique. Photo: Viviane Pigatto de Almeida.

These Swallow-tailed Cotingas are usually observed in pairs or small groups of three to five individuals (Nunes-de-Almeida pers. obs.). The group observed in late April, during the dry season, indicates that this behavior could be associated with the abundance or availability of mistletoe, which sets fruit in autumn/winter (Greta Dettke pers. comm.). This tree could be an important source of nutrients, especially during this season (Faustino & Machado 2006, Sick 1997).

In their molecular phylogenetic work, Ohlson *et al.* (2013) found that systematic interrelationships among Pipridae, Cotingidae and Tyrannoidea are very close and difficult to tease apart, despite increasing amounts

of data. Morphological aspects of these birds are strongly correlated with the ways they feed and select their fruits (Estrada & Fleming 2012). Birds use different foraging techniques depending on habitat type and food (Avalos 2009). The “sally-strike,” the main foraging technique used to pick fruit observed in this group of Swallow-tailed Cotinga has not been previously recorded. Fitzpatrick (1980) observed the same technique in flycatchers (Tyrannidae). This record is different from that described in the Bolivian Swallow-tailed Cotinga (*P. f. boliviana*) which generally uses “reach” and “glean” techniques to pick fruit (Avalos 2009). Like Quetzal (*Pharomachrus mocinno*) when in sally, the Swallow-tailed Cotinga

usually takes only one fruit per flight (Nunes-de-Almeida pers. obs.) (Santana & Milligan 1984). Moreover, flying for fruits is a high-energy expenditure (Avalos 2009, Estrada & Fleming 2012). Thus, the costs of sallying for a single fruit must be compensated by the energy gained from the food item (Santana & Milligan 1984).

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