Courtship display of the Long-Trained Nightjar *Macropsalis creaga*

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Received 2 May 1990

The reproductive behaviour of most neotropical nightjars has been rarely described (Sick 1985). The Long-Trained Nightjar *Macropsalis creaga*, one of the least known members of the group, is no exception; very little information has been published on its behaviour and ecology (Sick 1985). The species is endemic to the rainforests of southeastern Brazil and Misiones, Argentina (Meyer de Schauensee 1966) and is considered as threatened due to widespread habitat destruction over its restricted range (Sick 1985, Collar & Andrew 1988).

We have observed this species at Fazenda Intervales, a 38,000 ha state reserve in southern São Paulo, Brazil (c. 24°11′S, 48°32′W). The area is mostly covered by primary Atlantic forest with a few patches of second growth and cultivation. Climate is very humid with rain and fog on most days; during the winter there are frosts and, once there has been snow. The altitudinal range is 60–1100 m a.s.l., with most of the area at 600–800 m. Our observations were made in an area at 650 m.

On 26 November 1988 at dusk (19·02 hrs) we watched a male *Macropsalis creaga* (identified by its long tail) landing on a dirt road surrounded by forest. A male individual (probably the same) had been seen at the same spot every night on which there had been observation since late September. The bird arrived flying over the trees to land on the road. From time to time the nightjar flew up to the trees, up to 100 m way, apparently catching insects from the leaves while flying. Its flight was butterfly-like, its spread tail being very conspicuous. After each flight the bird landed on the same spot on the road.

At 19·08 hrs a female nightjar (recognized by its 'normal'tail) flew out of the forest and started hovering in front of the landed male c. 80 cm above the ground. The male immediately raised its tail from the usual horizontal position to a right angle, forming a conspicuous white 'V' in the dim light, and displayed its light throatmark (Fig. 1a). After a few moments the female flew away, being followed by the male. At 19.10 the male landed again on its spot, alone. Two minutes later the female approached again, landing in front of the male, which again raised its tail and displayed the throat mark for a few seconds. It then jumped up in the air and began hovering around the female (Fig. 1b). The spread tail again formed a conspicuous 'V'. After 3 turns around the female, the male mounted her for 6 seconds, flapping its wings all the time (Fig. 1c). Thereafter both birds flew away out of sight. At 19.15 the male landed again on its spot, recommencing its hunting behaviour. Minutes later it flew away, not to return. Darkness was complete at 20·00 hrs.

The presumed hunting behaviour described, in accord with *M. creaga* being a leaf-gleaner (we also observed this species catching, in flight, insects attracted by lights), could at the same time serve as a visual signal,

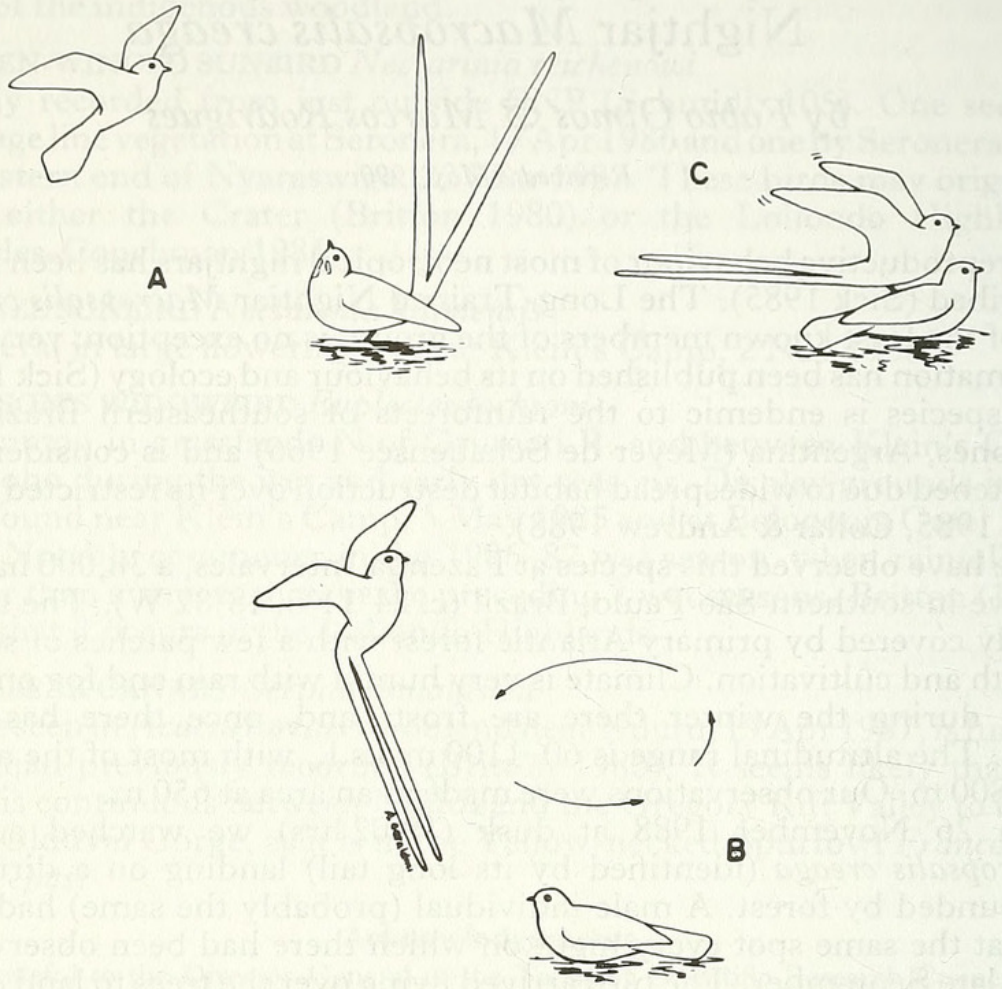

Figure 1. Courtship display of the Long-Trained Nightjar *Macropsalis creaga*: (a) ♀ approaches landed ♂, hovering in front of him for a few moments, while the ♂ displays his tail and throatmark, and then flying away followed by the ♂; (b) after the ♂'s return the ♀ lands in front of him, which induced the male to fly around her displaying his tail; (c) ♂ mounts the ♀.

since the buoyant white tail of the male was clearly visible against the forest canopy. It may thus resemble the aerial display reported for another long-tailed species, *Uropsalis lyra* (Hilty & Brown 1986). The fact that the same individual probably was found in the same spot for 2 consecutive months suggests an 'exhibition area' as in *Uropsalis*.

It is noteworthy that all the described courtship and most previous observations of this male nightjar have been limited to the crepuscular period. This may indicate a short hunting time, but it seems more likely that our observations covered a period in which hunting was linked to reproductive behaviour; shortly before complete darkness there is a greater capacity for recognizing the display signals of the white tail and throat mark.

The conditions of our observations precluded the recording of any vocalizations but it is probable that these occur as in other Caprimulgidae. Tape-recordings of vocalizations of *M. creaga* associated with other

behaviour made by J. M. E. Vielliard and W. R. Silva are available in Hardy *et al.* (1989).

Comparative reproductive behaviour of the neotropical long-tailed nightjars (*Hydropsalis, Uropsalis* and *Macropsalis*) would be worth studying as this group's behaviour and ecology are mostly unknown, and would make favourable material from an evolutionary standpoint.

Acknowledgements

Our research was funded by FMB/Funcamp, CNPq and CAPES. The Fundação Florestal do Estado de São Paulo provided logistical support. We are indebted to K. S. Brown, Jr., J. M. E. Vielliard and W. R. Silva for reading the manuscript and making useful suggestions.

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Imperial eagles

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Received 6 May 1990

Gonzalez *et al.* (1989, *Bull. Brit. Orn. Cl.* 109: 86–93) contend that the Eastern Imperial Eagle *Aquila heliaca* and the Spanish Imperial Eagle *A. adalberti* had contiguous breeding ranges in the 19th century. However, the evidence they adduce, albeit assiduously compiled and carefully collated, does not satisfactorily substantiate this hypothesis, and their premise that lack of known or reported hybrids is evidence for the specific distinction of the 2 forms, is not therefore valid.

Their map (p.90) indicates that, in the 19th century, at least 200 km separated the proven breeding range of *adalberti* in Iberia and Morocco from the postulated breeding areas of *heliaca* in France, Spain and Algeria, and by a much wider gap from the nearest recognised range of *heliaca* in Austro-Hungary and Greece.

A mere 2 clutches taken in southern France and northeastern Spain have been traced and these prove nothing save that, like many other avian species, Imperial Eagles may occasionally breed far beyond the normal