

Threatened *Formicivora* antwrens of Rio de Janeiro state, Brazil

Joe A. Tobias and Rob S. R. Williams

Introduction

Covering a little over 44,000 km², the state of Rio de Janeiro, in south-eastern Brazil, is home to more than 14 million people and around 30 species of threatened bird^{2,12}. Most of these birds are endemic to the Atlantic Forest zone, which is currently being cleared at an alarming rate. However, two of the state's rarest species, **Restinga Antwren** *Formicivora littoralis* and **Black-hooded Antwren** *F. erythronotos*, are not Atlantic Forest specialities. Their ranges, as known, lie entirely within the state boundaries (see map below). This article provides some details of the ecology of these little-known species, and discusses their precarious future.

Background

The first specimen of *F. littoralis* was collected in 1951¹, but it was not until 1990 that the form was described⁴, initially as a subspecies of Serra Antwren *Formicivora serrana*, itself a near-threatened taxon². It has been suggested that *F. littoralis* is worthy of specific status⁴, a treatment which has gained widespread acceptance^{1,9}.

F. erythronotos went unobserved for over a century after the collection of several specimens

in Rio de Janeiro state. Hartlaub, who described the species, claimed their provenance to be Nova Friburgo in the foothills of the Serra dos Orgãos⁵ and this location has been quoted subsequently⁷. However, searches in this part of the Atlantic Forest were fruitless, and the species was considered probably extinct¹⁰ until its rediscovery in 1987, at sea-level in the south-west of the state⁸. It is now thought to occupy a tiny range around this new site¹ and the authenticity of earlier localities has been questioned⁸.

Behavioural notes presented here are based upon five days searching for and observing *F. erythronotos* (13 August 1993, 4-5 September 1993, and a brief visit in October 1995) and *F. littoralis* (8 and 14 August 1993)¹¹.

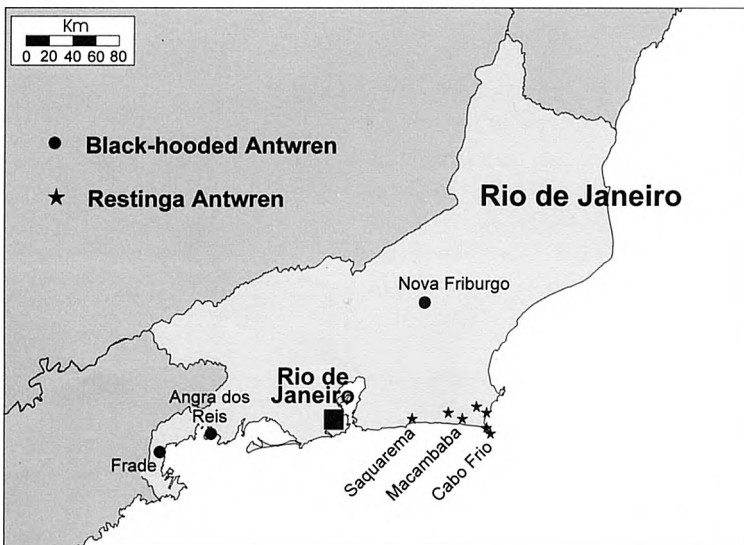
Restinga Antwren *Formicivora littoralis* Habitat and range

This species inhabits scrubby coastal vegetation (restinga) along c.80 km of coastline east of Rio de Janeiro city, principally between Saquarema and Cabo Frio. Restinga habitat comprises vegetated clumps separated by c.5-15 m expanses of open sand, each clump covering c.30-80 m². The clumps consist of dense bushes (0.5-3 m tall)

with spongy leaves, and a thick ground-cover of bromeliads, fern-like plants and cacti at the edges.

One tract of apparently good habitat for the species occurs east of Praia Seca, towards Maçambaba village, on the long spit of land known as Maçambaba beach. A sandy road crosses a large expanse of pristine restinga at sea-level, and *F. littoralis* is easily found along its length.

Surprisingly, most of the species found in this area are common, widespread taxa (e.g. Roadside Hawk *Buteo magnirostris*, Tropical Kingbird *Tyrannus melan-*



Distribution of Rio de Janeiro's threatened *Formicivora* antwrens



Restinga vegetation at Maçambaba beach (J. A. Tobias)

cholicus, Great Kiskadee *Pitangus sulphuratus*, Southern Beardless Tyrannulet *Camptostoma obsoletum*, Bananaquit *Coereba flaveola*, Tropical Parula *Parula pitiayumi*, Rufous-collared Sparrow *Zonotrichia capensis*, etc.). Hangnest Tody-tyrant *Hemitriccus nidipendulus*, a near-threatened species², is common there, as well as at much higher elevations in the hills of Minas Gerais where the nominate race of *F. serrana* occurs¹¹. The threatened Black-backed Tanager *Tangara peruviana* winters in small numbers in the more wooded areas of restinga. One such site is a highly disturbed, stunted area of forest (c.10 ha) beside the sandy Maçambaba beach road, c.8 km west of Arraial do Cabo¹¹.

Behaviour

Several male *F. littoralis* were heard calling on both visits to Maçambaba beach. The main vocalisation is a series of identical, low-pitch *toop* notes lasting up to several seconds. These notes are evenly spaced and audible over a considerable distance. Several males often call simultaneously whilst females frequently emit coarse, double *churr-churr* notes. These calls are similar to the vocalisations of *F. serrana* (Fig. 1). Notes tend to be delivered more rapidly by *F. littoralis* though this is variable. Each series is sometimes broken by brief pauses as if a single note is missing (e.g. after one second in Fig. 1b). In our samples of the songs of these two species, such pauses occur much more frequently in songs of *F. littoralis*. In spite of this apparent dissimilarity, both species respond immediately to playback of the other's song⁴. Nevertheless, marked differences in habitat and morphology are considered sufficient to treat *F. littoralis* as an incipient species at least, forming the isolated endpoint of a short cline of traits in *F. serrana*⁴. The coastal form possesses the least white, especially on the head and tail.

Pairs forage in close proximity to one another, calling frequently. Long periods are spent in each clump of vegetation, with birds generally remaining 0-1.5 m from the ground in thorny shrubs, picking insects from the sparse foliage and occasionally hopping on the ground around carpets of small plants. The birds favour the lowest vegetation surrounding the main bushes in each clump, being frequently found together in this microhabitat where they are quite conspicuous and confiding. Behaviour appears similar to that of *F. serrana* (observed at Parque Natural Caraça, Minas Gerais) in every respect.

Threats

The problems faced by the restinga habitat derive from its accessibility and ease of clearance. These factors, coupled with the increasing demand for land on which to create salt pans, or to develop villas and camp-sites, lead to an ever-diminishing area of habitat for *F. littoralis* and consequent doubt over the species's long-term survival.

Conservation

F. littoralis is one of the most abundant birds in an avifaunally depauperate ecosystem. Pairs clearly occupy relatively small areas and occur at high densities. This offers some hope for conservationists, as it reduces the total area of



Restinga Antwren *Formicivora littoralis* (L. P. Gonzaga)

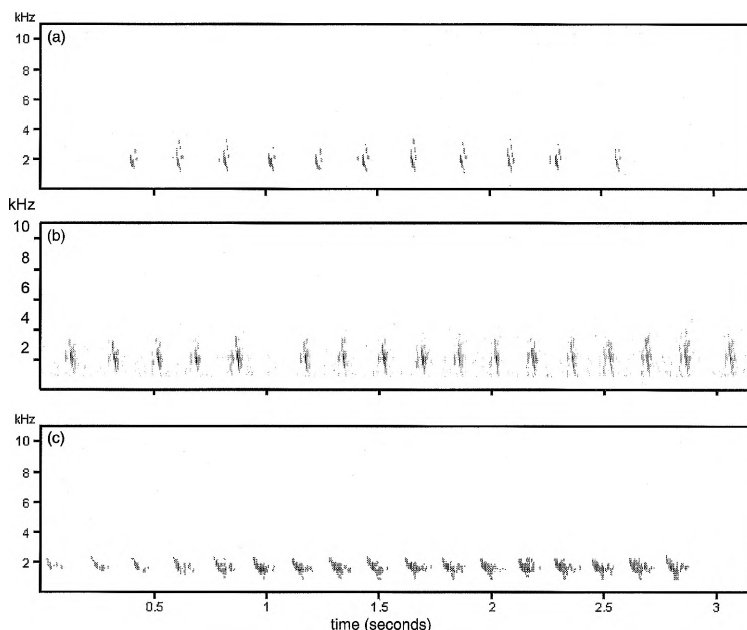


Figure 1. Songs of *Formicivora serrana*, *F. littoralis* and *F. erythronotos*.

Recordings were analysed and sonograms created using Avisoft-Sonograph Pro Ver 2.5. [This software will be reviewed in *Cotinga* 6: Eds.]

- a) *F. serrana*, Parque Natural Caraça, Minas Gerais, September 1993 (R. S. R. Williams).
 b) *F. littoralis*, Maçambaba beach, Rio de Janeiro, September 1993 (R. S. R. Williams).
 c) *F. erythronotos*, Angra dos Reis, Rio de Janeiro, October 1995 (J. A. Tobias).

protected land required to assure the bird's survival.

Existing protected areas are Jacarepiá and Maçambaba State Reserves, and the Maçambaba Environmental Protection Area⁶. Nevertheless, these areas suffer from a lack of effective protection¹, with hunting and clearance of vegetation occurring within their designated boundaries. Action is needed, both within these areas and at new sites, if viable populations of species reliant on this coastal habitat are to be maintained.

Black-hooded Antwren *Formicivora erythronotos*

Habitat and range

This attractive antbird inhabits the understorey of swampy coastal woodland and adjacent dry scrub around the Baía de Ribeira, in south-west Rio de Janeiro. Parts of this bay retain a mangrove fringe behind which a sparsely wooded hinterland survives on the narrow coastal plain between the sea and the steep gradients of the forested Serra do Mar. The species's original habitat requirements remain unclear¹³.

Although recent records of the species have come from around Frade (also called

Cunhambebe) on the western shore of the bay¹, it cannot be common at this south-western limit of its range. The town, although originally small and compact, has been developed around the periphery so that currently alongside agricultural areas are seaside villas, marinas, exclusive hotels, golf courses and riding ranches, all covering land that historically was evidently forested. Thus natural vegetation around Frade has all but disappeared¹¹. From viewpoints south of the town it is possible to see the 30 km to Angra dos Reis, itself is a thriving holiday destination, and the site of the species's rediscovery in 1987. This 30 km encompasses the entire known range of *F. erythronotos*¹¹.

Habitat at the rediscovery site^{8,11} consists of tall *Eucalyptus* trees (c.25-30 m high) over humid secondary forest (canopy height: c.6-12 m), which in turn shades a very lush understorey. The latter grows out of standing water in many areas, at least seasonally. A few hundred metres inland a very different habitat prevails: degraded, scrubby woodland dominated by *Acacia*-like trees (canopy height: c.4-7 m) and dense thorny undergrowth (c.2 m high). At the edge of this shrub layer the ground is often cov-

ered with low plants thriving on the damp soil. Buildings and ornamental trees are scattered through the area.

Behaviour

F. erythronotos was observed in 1993 in the dry scrub described above. The birds remained in shrubbery c.0.1-2 m above the ground, and well away from any bird flocks. The species's affinity to *Formicivora* rather than *Myrmotherula* is immediately obvious although it was long attributed to the latter^{7,8}. The male utters a steady series of quiet, low-pitch *toop* notes similar to, but softer than, the relevant calls of *F. serrana* and *F. littoralis*. That it has been heard to give up to 40 notes in four seconds⁹ is somewhat surprising as, during our visit and those of others, songs were of a more relaxed pace (c.6 notes per second) and shorter duration (see Fig. 1c).

Females of several other species of *Formicivora* give a churring double syllable, apparently in response to the male's song¹¹. In the case of *F. erythronotos*, both individuals of the pair maintained contact with a slightly nasal double note, *tchair-tchair*, delivered from hidden perches, the emphasis sounding equal on both syllables (cf.⁸).

The male was observed preening near the edge of a bush without changing perch for c.15 minutes. By the end of this period the female had been silent for some time and could not be located. On resumption of the contact call she almost immediately replied from some distance and within 60 seconds the two birds were alongside once more. Both individuals picked small insects from under the leaves of low herbage and leaf stems near the ground. The female also foraged among small twigs c.1 m up, apparently searching for insects where the twigs were most

dense. *F. erythronotos* does not usually join mixed flocks^{9,11}.

Threats

Development of the vulnerable coastal belt poses the greatest threat to *F. erythronotos*. Unless the species is discovered inland, its total population must be minute. Several suitable sites within its known range were visited but the species, which is often relatively vocal and conspicuous^{8,11}, was difficult to locate (without the use of tape). Only two pairs were found.

A main highway bisects the coastal plain, providing easy access to all areas. Trees were being felled on either side of this road for firewood and construction. The disturbance caused by people living in and around the woods was quite high and, although the site of rediscovery will presumably survive relatively intact for a few years, it cannot be expected to ultimately resist clearance without active protection.

Indiscriminate dissemination of the species's whereabouts is deemed likely to create additional threats¹³. Apart from the risk of specimen collection and overuse of playback, the disturbance caused by visitors searching for the species may complicate relations with landowners¹³. Observers planning to look for *F. erythronotos* should be aware of these potential problems.

The rapid growth of tourism and the resident human population along this coast will probably lead to the virtual disappearance of remaining suitable habitat to the west. It would seem imperative that the immediate area be declared a reserve for the conservation of *F. erythronotos* and other threatened fauna and flora (see next section).

On a positive note, its apparent tolerance of degraded habitats provides some hope that the species will survive in scrub and forest remnants. Many *Formicivora* antwrens are frequently found in scrub⁹ and perhaps *F. erythronotos* is well-adapted to such vegetation. More details of its requirements and range are urgently needed to develop appropriate conservation measures.

Conservation

No action has been taken to protect the critically endangered *F. erythronotos*. Moreover, detailed research into the species's ecology and requirements has not been undertaken¹³, nor is it currently planned (L. P. Gonzaga pers. comm.).

Suitable habitat covers a very small part of its known range and is likely to be lost rapidly through the activities of agriculturalists and land



Black-hooded Antwren *Formicivora erythronotos* (J. A. Tobias)

developers. Other species of conservation interest recorded in woodland near Angra dos Reis are Black-and-white Hawk-eagle *Spizastur melanoleucus* (near-threatened), Salvadori's Antwren *Myrmotherula minor* (threatened), Unicoloured Antwren *M. unicolor* (threatened), Buff-throated Purplethroat *Iodopleura pipra* (threatened), Russet-winged Spadebill *Platyrinchus leucoryphus* (threatened), Hangnest Tody-tyrant *Hemitriccus nidipendulus* (near-threatened), Black-legged Dacnis *Dacnis nigripes* (threatened), and Black-backed Tanager *Tangara peruviana* (threatened)^{2,8,11,12}. The last two species visit the area during the austral winter. It is vital that efforts are made to conserve this site.

Conclusions

Rio de Janeiro's two endemic *Formicivora* antwrens occupy restricted ranges in areas destined for development and are thus faced with a serious threat of extinction unless effective steps are taken. This applies most urgently to *F. erythronotos*, for which a reserve should ideally be established at the rediscovery locality, and protection of both forest and bird actively enforced. Finally, further research into the ecology and distribution of both species deserves support.

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Joe Tobias

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

Rob Williams

School of Biological Sciences, University of East Anglia, Norwich, NR4 7TJ, U.K.

Copies of Tobias, Catsis & Williams (1993) are available from Joe Tobias at the above address (60 pages, details of 35 threatened and 47 near-threatened species, site lists; price \$10/£6 incl. post and packaging; any profits to the Neotropical Bird Club Conservation Fund).