

**MYRMOTHERULA ANTWRENS (AVES, FORMICARIIDAE)  
AS ARMY ANT FOLLOWERS**

EDWIN O. WILLIS

## ABSTRACT

*Antwrens of the genus Myrmotherula (Formicariidae) are common members of mixed flocks in the understory of neotropical forest, but rarely follow army ants more than a few minutes as a flock passes. Antwrens that glean in open foliage (axillaris, longipennis) and ones that forage on dead foliage (fulviventris and relatives) apparently have to canvass large areas too rapidly to stay with slow-moving ants. Antwrens that glean low foliage of vertical seedlings (guttata, hauxwelli, gularis) can stay near ants only in such patches, despite close resemblance to sallying and hence less microhabitat-limited Hylophylax antbirds, some of which follow ants regularly.*

Antwrens of the genus *Myrmotherula* occasionally join birds that follow army ant swarms for flushed arthropods in neotropical forests (Johnson, 1954; Oniki, 1971; Oniki & Willis, 1972). Generally they are "indirect" followers, joining birds near ants rather than capturing prey over ants. Here, in the eighteenth report of a series on occasional ant followers, I report on observations of these antwrens over ants, including observations of certain species that resemble regular ant-following antbirds of the genus *Hylophylax*.

## RESULTS

1. *Myrmotherula axillaris* (White-flanked Antwren) visited 51 ant raids on Barro Colorado Island, Panama, and 20 raids in other regions (1 at Bohio Peninsula near Barro Colorado; 4 at Remedios, Antioquia; 1 at Paraiso 1100 m, Caquetá, and 1 at Mitú, Vaupés, Colombia; 2 at Simla, Trinidad; 1 at Nappi Creek, Guyana (Oniki & Willis, 1972); 1 at Carauari, 1 at Maloquinha, 1 at Miritituba, 2 at Manaus, 3 at Belém, and 2 at Fazenda Três Pancadas, Ituberá, Brazil). All raids were of *Eciton burchelli* except for 11 *Labidus praedator* raids on Barro Colorado. There, 2 birds were at 30 raids, 3 birds at 4, and 4 birds at 4. Two birds were at 8 of the raids elsewhere (1 Bohio, 2 Remedios, 1 Paraiso and Mitú, 1 Simla, 1 Maloquinha, 2 Ituberá). Most visits were of less than 5 minutes or were occasional passages of less than 5

minutes each over periods of up to 3 hours. Haverschmidt (1968) records *M. axillaris* following ants in Surinam.

These antwrens wandered in mixed-species flocks around the ant-following groups in most cases, hopping along leafy branches in the open understory as recorded away from ants (Wiley, 1971). Birds close to ants on Barro Colorado stayed low (27-33-18-13-7-5 records from 0-6 m up, by 1-m intervals) on slender (7-1-1 records for 0-3 cm diameter, by 1-cm intervals) branches at angles up to 90° (2-2-1-1-3 records by 20° intervals from 0°, or horizontal, to 100°). They repeatedly flashed their wings out, showing white flanks, and sallied short distances for flushed tiny prey (5 cases) or pecked them off twigs (2 cases) or leaves (4 cases). One hovered to catch a spider from its web. They are especially likely to wander near ants when the ants move through a fallen tree or into low palmetto. At times an *axillaris* peers at moving ants, but other than a tendency to descend low there is little evidence that ants modify the foraging behavior of the species. Johnson (1954) recorded them "joining in the feasting activities" of birds over ants, but his statement should probably be understood in its general sense rather than as indicating a change in foraging behavior. In cases where the *axillaris* were alone, they probably joined ant-following birds as a substitute for a mixed flock; but evidently the ant-following situation was unsuitable, for even solitary *axillaris* soon drifted on. I suspect that *axillaris* need to canvass large volumes of semi-open understory foliage per hour, and that the ants move too slowly. Only one *Hylophylax naevioides* supplanted an *axillaris* on Barro Colorado, but large antbirds would certainly chase them off if they persisted near ants in the zone of increased arthropod availability.

Although most groups of *axillaris* over ants were pairs or families, some disputes were noted. Fluttering chases, showing pale flank and shoulder patches, are accompanied in Panama by *weet* "chips", often ending in descending slow "songs" like those given at daybreak (Willis & Eisenmann, 1979). Young out of the nest were fed in Panama as late as 25 Sep (1965), and gave *chuh-uh-uh* "grunts" that sometimes ended in "peeping" notes. One female fluttered her wings and spread her flank patches in a distraction display on the ground when a mist-netted young female yelled in the hand. Young males molt to adult plumage (the brown remiges persist for some time) while still weak-voiced, and family groups (Willis, 1972) persist until the next breeding season (starting early March in Panama; Willis & Eisenmann, 1979).

The voice of *axillaris* of nominate and Amazonian races (at least west to Putuimi, Ecuador) differs from that of Colombian (east to Paraiso and perhaps Tres Esquinas) and Panamanian birds of the *melaena* group, notably in giving a single *klute* note (alternating at times with *weet* calls) rather than the descending *cheap woo* or *cheap cheap woo* call of *melaena*. The song of birds of the *melaena* group is also slow compared to the fast descending twitter of birds of the *axillaris*

group. The alarm rattle near the nest seems similar in both *axillaris* and *melaena*. Birds of the *axillaris* and *melaena* groups presumably meet east of the Andes, and may be separate species or morphs of a single species. Amazonian *axillaris* generally work low and fairly dense foliage, since *M. longipennis* and *M. menetriesii* take over the open-understorey zone 3-15 m up that is used by *melaena* away from ants in Panama. *M. axillaris* tend to be uncommon or restricted to forest edges and second growth in the Amazon, but are common forest-interior species in Panama and western Colombia.

2. *Myrmotherula longipennis* (Long-winged Antwren) briefly visited a bird group following a *burchelli* raid at Palhão, Pará, Brazil, 26 Jan 1966. It worked scattered foliage down to 3 m in the forest understorey, and soon drifted off with a mixed-species flock. Normally it follows mixed flocks, fluttering and gleaning actively in green foliage 3-10 m up. It usually forages slightly lower than the very similar Gray Antwren (*M. menetriesii*) and slightly higher than *M. axillaris*. The alarm note is a nasal descending *beer bin*, the first or final note sometimes repeated 2-3 times, which resembles the alarm note of *M. axillaris* of the *melaena* group. The Band-tailed Antwren (*M. urosticta*) of southeastern Brazil has the same *beer bin* call, and is perhaps a well-marked subspecies of *longipennis*. The song of *longipennis* (at Andoas, Peru) is a rising series of 7 *chuweez* notes, and pairs seem territorial. Territoriality, foraging rather high and rapidly through open foliage, and competing antbirds near the ground probably all contribute to making this and similar species (*menetriesii*, *behni*, etc). very infrequent followers of nomadic and slow-moving ground ants.

3. *Myrmotherula fulviventris* (Checker-throated Antwren) was at 38 raids on Barro Colorado (12 of *Labidus praedator*) and 4 at Remedios. Two birds were at the Remedios raids and at 9 raids on Barro Colorado (including 3 of *praedator*). Most visits were brief or repeated ones as a mixed flock passed or circled the ant raid. Occasionally the Barro Colorado *fulviventris* descended (26-12-4-5-1-1-1 records from 0-7 m up) and looked at the ants, often from vertical perches (3-0-2-0-5 records from 0° to 100° by 20° intervals) and slender ones (5-4-1 from 0-3 cm diameter). Bicolored Antbirds (*Gymnopithys bicolor*) supplanted them 3 times, a Spotted Antbird (*H. naevioides*) once, but two other *fulviventris* sallied to the ground for prey among ants, while another sallied to catch flying prey less than 1 m up over ants. Normally, as in mixed flocks away from ants, they check dead leaves above the ground rather than follow the ants. Even single birds give faint *chet* "chirps" as they wander.

4. *Myrmotherula leucophthalma* (White-eyed Antwren) briefly followed *burchelli* at Paraiso 1100 m (2 raids) and at Palhão when bird flocks passed by. All checked dead leaves above the ground and paid little attention to the ants. This, one of the species replacing *fulviventris* as dead-leaf foragers in forest flocks east of the Andes, differs from it in giving a fast *pse-e-e-e-e-e* alarm trill like the sister species *gutturalis* (north of the eastern Amazon), *erythrura* (eastward from

800 m, Andes) and *haematonata* (lowlands east of the Andes). At Andoas, Peru, where *erythrura* and *haematonota* occur together, *erythrura* centers along floodplains and tends to forage 5-15 m up, while *haematonota* works low dead foliage 1-5 m up mostly in hill forests; the short-tailed but similarly colored *M. ornata* works dead leaves and vines 1-5 m up along floodplains, adding to difficulties in identifying birds of this group. A loud *seesk* alarm like the common call of *fulviventris* (Willis & Eisenmann, 1979) has been noted infrequently in *erythrura* (Tres Esquinas, Colombia), *gutturialis* (Reserva Ducke), and *leucophthalma* (Maloquinha). Territorial *M. erythrura* (Andoas) argue with repeated *whiesp* calls, facing with spread tails and backs and remiges as they pivot back and forth like *fulviventris*. *M. leucophthalma* (Benjamin Constant) adds throat-spreading as well, hence is evenmore like *fulviventris*. *M. erythrura* (Yaapi and Putuimi, Ecuador) and *M. leucophthalma* (Palhão) give descending *seee, seee, seee, seee* "songs" like those of *fulviventris*. A male *gutturialis* at Reserva Ducke fed a female and then tried to hop on her back. At Maloquinha, netted *leucophthalma* weighed 8.3, 8.4, and 9.9 g (male, young male molting to adult plumage, and female of the same group).

5. *Myrmotherula guttata* (Rufous-bellied Antwren), followed 1 *burchelli* raid at Nappi Creek (Oniki & Willis, 1972) and 2 at Reserva Ducke (3 birds; Wechsler observations). Haverschmidt (1968) records it following ants in Surinam. It was very rare in the open upland forest at Reserva Ducke, for (like the following species) it favors zones of fairly dense understory seedlings at the edges of swamps. These birds flutter short distances from one seedling to another, hopping vertically up some; they glean from vertical ground-level "twigs" rather than along the horizontal above-ground twigs used by most antwrens. Male and female often wander a few m apart, "chirping" *chit* faintly at intervals. They sometimes are with wandering mixed flocks. In alarm, *guttata* flicks its short tail up to the line of the body and "chirrs" *tree-e-e-e-e* just like birds of the genus *Hylophylax*, to which it and the following two species seem related. In territorial disputes, *guttata* spread their white back patches and dart back and forth giving buzzy *ridge ridge ridge* and similar series of "chips" or series of *peewit peewit peewit peewit* "bugling" noises. "Songs" are accelerating sibilant *weej, weej, weej, weij-wee-wee-we-wee-weep-(jip)!* chatters, with or without a sneeze at the end. In some songs, the *weej* notes were successively louder as well as faster. Around ants, *guttata* wander for up to 2 h, searching widely rather than waiting intently.

6. *Myrmotherula huxwelli* (Plain-throated Antwren), which replaces the preceding species west of the Negro and south of the Amazon, followed 70 ant raids (including 1 of *Eciton rapax* and 1 of *Labidus praedator*) at Belém and 14 *burchelli* raids elsewhere (1 with 2 birds, Putuimi, Ecuador; 1 at Andoas, Peru; 1 with 1 bird, 1 with 2, and 2 with 3 at Carauari, Brazil; 1 with 1 and 5 with 2 at Coatá; 1 at Nova Olinda do Norte; and 1 with 2 at Palhão). At Belém, 2 birds were at 19 raids,

3 at 2, and 4 at 1. There, it wanders on vertical (0-1-1-0-12 records from 0° or horizontal to 100°, by 20° intervals) slender (11-1 records from 0-2 cm diameter, by 1-cm intervals) seedlings or vines up buttresses near the ground (50-11-1 records from 0-3 m up, by 1-m intervals; by 0.1-m intervals from 0-1.0 m, there were 0-12-16-10-6-0-3-1-1-1 records) when around ant swarms. Gleaning prey, sometimes with long legs stretched to their utmost, and often with preliminary flutters of the wings, accounted for 9 tries for prey (4 debris, 2 trunks, 2 ground, 1 foliage). Two birds sallied short distances to the air and a leaf. They check buttresses, debris, low leaves, hitching up crosswise like little piculets at times, and give faint *chit* "chirps" at intervals. In alarm, they flick short tails like *guttata* but give series of 2-10 short buzzy *chig* "chips" (like the alarm call of the Common Yellowthroat, *Geothlypis trichas*). They give *chi-i-i* "chirrs" infrequently. In the hand, near me, or in disputes some birds give faint *wrieecch* "snarls", like those of *Hylophylax naevioides* (Willis, 1972).

Chipping notes and downscale bugling series in territorial disputes are like those of *guttata*. Some white-backed disputing *hauxwelli* hold the closed tails vertically upward, like wrens. Songs, accelerating series of up to 30 buzzy *twee* notes, rise somewhat in pitch and sometimes amplitude. When a male feeds the female, he may give a faint series of *twee* notes alternating with crips as a «serpentine-song»; there are sometimes rapid faint *chirrr* "growls" during feedings. Feedings were noted at Coatá 8 and 11 Apr 1966. 18-19 Mar 1966 at Carauari, a "loudpeeping" brown-primaried young male and dull-plumaged young female followed an adult male near ants. Young out of the nest were seen at Belém Apr-Aug (Oniki & Willis, MS).

The species seldom is displaced by other ant-following species, but does not follow ants well. A few pairs with or without young followed for up to 5 or 6 hours at Caracuari and Coatá, where ants stayed near wet swamp-edge swales, but most other raids either moved into open swamps or into open terra firme forest and attracted *hauxwelli* only irregularly when passing through seedling-cluttered «igapó» swamp edges. It follows mixed flocks poorly, too, in part because the flocks cross stretches of open undergrowth rather often.

7. *Myrmotherula gularis* (Star-throated Antwren) followed a *Labidus praedator* raid for 1 h at Boracéia, São Paulo, Brazil, 5 Sep 1977. The male fed the female with a series of "chirping" *peup* notes, as they wandered near the ground in dense growth around a treefall. The species normally wanders near the ground in wet ravines, seeps, or other zones with considerable low foliage on slender stems, being the replacement for the preceding two species in wet southeastern forests. Like them, it is a *Hylophylax* like species that flicks its short tail upward. In alarm, it gives a triple-noted *chi-chi-chit* "chipping" or a set of 1-5 nasal *view* or *yih* "chirring" notes.

8. Other species: *Myrmotherula schisticolor* is recorded with ants by Gochfeld & Tudor (1978). A species of highlands, where ants are uncommon, it is not likely to follow very often.

## DISCUSSION

Antwrens of the genus *Myrmotherula* usually glean on dead foliage, green foliage, or green seedlings ("vertical foliage"). The short-tailed, *Hylophylax*-like antwrens (*guttata*, *hauxwvelli*, *gularis*) that check low seedlings are more likely to stay near ants than are other species, which move too rapidly in canvassing the rather sparse foliage of the forest understory to stay near slow-moving ants. The species form interspecific flocks (Johnson, 1954; Wiley, 1971), yet stay near ants rather little even when ant-following birds are forming active flocks. Some *Myrmotherula* of interspecific flocks, although common in areas where I worked, were rarely (*longipennis*) or never (*menetriesii*) seen to follow ants in any fashion other than to follow a bird flock as it circled nearby. These antwrens are rarely supplanted by ant-following birds, but indirect competition (more efficient capture of prey flushed by the ants) may also discourage them from taking advantage of insects over ants. The *Hylophylax*-like *Myrmotherula* probably follow ants little because the ants seldom stay in zones of dense seedlings long. *Hylophylax* antbirds, convergent or related to these antwrens, sally to the ground as well as peck prey from the ground and thus obtain foods over ants in both dense and open understory zones. Some *Hylophylax* have become regular ant followers (Willis, 1972).

## REFERENCES

- Gochfeld, M. & G. Tudor, 1978. Ant-following birds in South American subtropical forests. *Wilson Bull.* 90: 139-141.
- Haverschmidt, F., 1968. *Birds of Surinam*. Oliver and Boyd, London.
- Johnson, R. A., 1954. The behavior of birds attending army ant raids on Barro Colorado Island, Panama Canal Zone. *Proc. Linn. Soc. N. Y.* 65: 41-70.
- Oniki, Y., 1971. Wandering interspecific flocks in relation to ant-following birds at Belém, Brazil. *Condor* 73: 372-374.
- Oniki, Y. & E. O. Willis, 1972. Studies of ant-following birds north of the eastern Amazon. *Acta Amazonica* 2: 127-151.
- Wiley, R. H., 1971. Cooperative relationships in mixed flocks of antwrens (Formicariidae). *Auk* 88: 881-892.
- Willis, E. O., 1972. The behavior of Spotted Antbirds. *Am. Orn. Union Monogr.* 10: 1-162.
- Willis, E. O. & E. Eisenmann, 1979. A revised list of birds of Barro Colorado Island, Panama. *Smiths. Contr. Zool.* 291: 1-31.