

Scientific note

Waste of *Atta* leaf-cutting ants provides nutriment for *Leptodactylus rhodonotus* tadpoles

(Hymenoptera, Formicidae; Amphibia, Leptodactylidae)

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The Neotropical leptodactylid frog *Leptodactylus rhodonotus* (Günther, 1869) is distributed along the lower eastern Andean slopes and the upper Amazon basin of Bolivia, Peru and Brazil (Frost 2023). Its tadpoles develop in puddles, roadside ditches and slow running water (Köhler 2000).

On 20 November 2019 at night, in rainforest at a point on the road from Pozuzo to Huancabamba (10°08'32"S, 75°33'03"W, 915 m a.s.l.), Departamento Pasco, Peru, we observed tadpoles of *Leptodactylus rhodonotus* (field numbers of voucher specimens FGZC 6357–6360; identified to species using the 16S rRNA gene for DNA barcoding), as well as leaf-cutting ants (*Atta* sp.) along a shallow roadside ditch. The ants transported waste from their nest to an outside waste heap (arguing for the species *Atta colombica* Guérin-Méneville, 1844, as other *Atta* species have their waste heap inside the nest; see Hart & Ratnieks 2002) that reached the edge of the water in the ditch. Most of the ants moved towards the edge and dropped waste crumbs purposefully directly into the flowing water, a behaviour apparently not being reported so far. In the water, the *L. rhodonotus* tadpoles were moving fast, apparently attracted by the ants' waste, approaching the edge of the waste heap and obviously feeding on the residue. We captured the scenery on video using a Nikon D7500 camera. A representative sequence was uploaded at zenodo.org (<https://zenodo.org/record/8377022>) and a still image from that video is shown in Fig. 1.

We felt that both the purposefully dropping of waste into the running water by leaf-cutting ants and the opportunistic feeding of *L. rhodonotus* larvae on that waste are worth being reported. Leaf-cutting ants' waste contains old fungus garden, culture medium and dead workers (Weber 1972), but may also contain pathogenic fungus which is potentially harmful to the ant colony (Currie et al. 1999). Therefore, removal of waste from the colony by running water might be advantageous, at the same time providing an apparently additional source of nutriment for aquatic anuran larvae.



Fig. 1. Still image from a video, showing the edge of the ants' waste heap at the roadside ditch, with a leaf-cutting ant shortly before dropping waste crumb into the water (yellow arrow) and a *Leptodactylus rhodonotus* tadpole feeding on ant waste (red arrow).

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