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Scientific note

Milking of planthoppers (*Belbina* sp.) by the Malagasy gecko *Blaesodactylus antongilensis*

(Squamata: Gekkonidae and Hemiptera: Fulgoridae)

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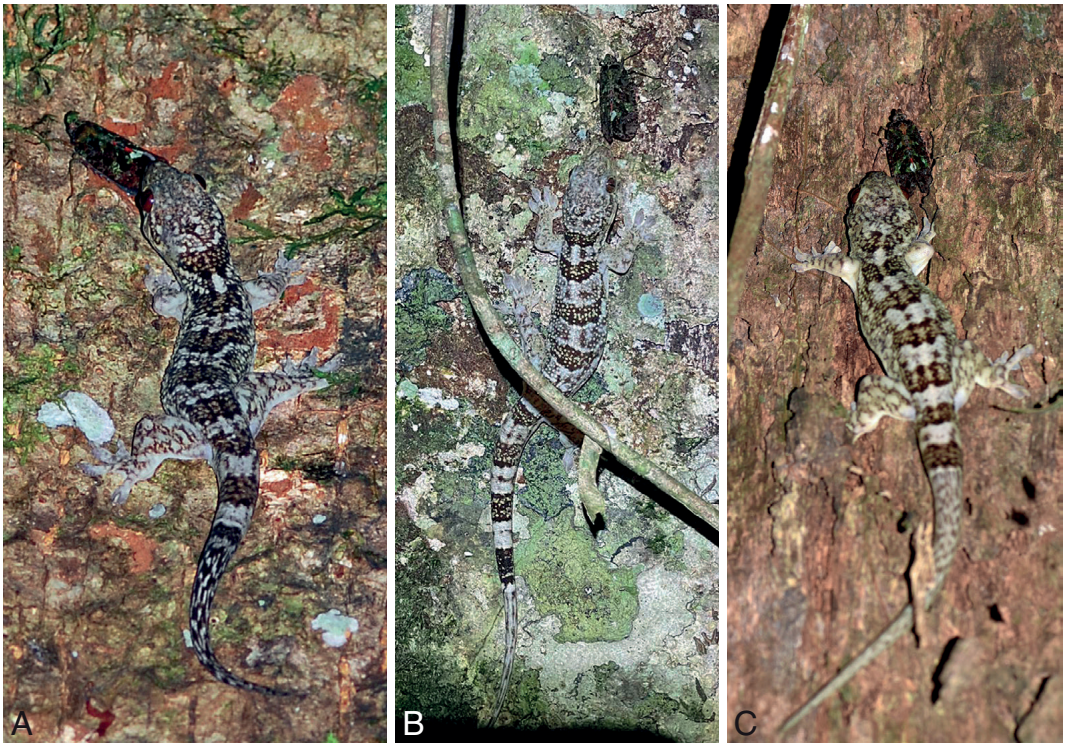

Fig. 1. *Blaesodactylus antongilensis* milking honeydew from planthoppers (*Belbina* sp.) at **A.** Ambodivoahangy; **B.** Marojejy National Park; **C.** Masoala National Park.

Several Malagasy geckos of the genera *Blaesodactylus*, *Lygodactylus*, *Phelsuma* (Fölling & Böhme 2000, Fölling et al. 2001), and *Geckolepis* (Jono 2015) have been reported to feed on honeydew produced by planthoppers. Fölling et al. (2001) described the milking behaviour based on observations in the deciduous dry forest at Kirindy, western Madagascar, including *Blaesodactylus ganzhorni* (as *Homopholis sakalava*; see Vences et al. 2025), in detail.

During fieldwork in the rainforests of northeastern Madagascar, we made the following nocturnal observations on three occasions without collecting

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any voucher specimens: (1) On 31 March 2010 at 10:00 p. m., near a place north of Maroantsetra called Ambodivoahangy (ca. 15.28944° S, 49.61917° E, 280 m a. s. l.), an adult *Blaesodactylus antongiliensis* perched at approximately 3–4 m height on a tree trunk in disturbed primary forest. We observed the individual for about ten minutes while it was repeatedly stimulating the abdomen of a medium-sized planthopper by touching it with its snout tip (Fig. 1a), followed by licking the insect and subsequently its upper jaws. When the planthopper moved a few centimeters forward, the gecko followed slowly repeating stimulation and licking. When the gecko sat next to the cicada, the planthopper rhythmically opened and closed its wing covers, which had a green-brown camouflage pattern, revealing a striking red color underneath. During our observation time, the gecko made no attempt to prey on the planthopper. (2) On 26 March 2025 at 8:36 p. m. in the Marojejy National Park (14.43443° S, 49.76177° E, 715 m a. s. l.) an adult *B. antongilensis* was observed perching on a large tree trunk at ca. 1.8 m height, with its head directed towards the abdomen of a planthopper (Fig. 1b). When approaching the gecko it escaped and no milking behaviour could be observed; also the planthopper escaped while trying to catch it. (3) On 1 November 2024 at 8:30 p. m. at Ambatoledama, Masoala National Park (15.287997° S, 50.012814° E, 400 m a. s. l.) a third adult *B. antongilensis* was photographed on a large tree, with its head directed towards the abdomen of a planthopper, but no additional observations were made (Fig. 1c).

The planthoppers in all three observations had very similar appearance and might thus belong to the same species, suggesting a close relationship between this gecko and planthopper species (Fig. 1). This hypothesis is further supported by photos published on iNaturalist, made on 9 November 2024 at 6:49 p. m. at Makira Natural Park (https://www.inaturalist.org/observations/254337892) showing a *B. antongilensis* possibly with the same planthopper species on a branch. Our observations are generally in agreement with those reported by Fölling et al. (2001), indicating that honeydew-milking of planthoppers is apparently a common and regular behaviour in the genus *Blaesodactylus*.

We tentatively identified the planthopper species as *Belbina* cf. *recurva* (family Fulgoridae) based on the genus revision of Constant (2014), although a reliable identification without voucher specimens remains uncertain. In contrast to the cryptically coloured forewings, the hidden hindwings of this species are bright red with black spots (Constant 2014). Our observations of the rhythmic lifting of the forewings suggest that this aposematic coloration could be used as a signal to the milking geckos and/or potential predators. The planthopper genus *Belbina* contains 12 out of the 17 species of the family Fulguridae recorded from Madagascar (Constant 2014). Although *Belbina* species often have a wide distribution range, they are not regularly collected, probably due to their cryptic coloration when sitting on tree trunks, and their biology including the feeding habits, larval stages and eggs remain unknown for all species (Constant 2014). However, Bourgoin et al. (2023) recently reviewed trophobiotic relationships of planthoppers providing food to other species and presented a photograph of a *Belbina recurva* apparently being milked by an unidentified blattodean species at Andasibe, in eastern Madagascar, suggesting that the secretions of *Belbina* planthoppers are used by different organisms.

Fölling et al. (2001) identified their milked planthoppers as members of the family Flatidae and Jono (2015) as members of the Ricaniidae, whereas our observations refer to a species of the Fulgoridae, suggesting that planthopper milking by geckos evolved multiple times independently in Madagascar.

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References

Bourgoin, T., Gjonov, I., Lapeva-Gjonova, A., Roger, S., Constant, J., Kunz, G. & Wilson, M. R. 2023. When cockroaches replace ants in trophobiosis: A new major life-trait pattern of Hemiptera planthoppers behaviour disclosed when synthesizing photographic data. Diversity 15: 356.

Constant, J. 2014. Revision of the Malagasy lanternfly genus *Belbina* Stål, 1863, with two new species (Hemiptera: Fulgoromorpha: Fulgoridae). European Journal of Taxonomy 102: 1–37.

Fölling, M. & Böhme, W. 2000. Geckos milk honeydew produced by cicadas in Madagascar. Bonner Zoologische Monographien 46: 292–293.

Fölling, M., Knogge, C. & Böhme, W. 2001. Geckos are milking honeydew-producing planthoppers in Madagascar. Journal of Natural History 35: 279–284.

Jono, T. 2015. Feeding behavior on tree sap and planthopper-derived honeydew by a Fish-scale Gecko (*Geckolepis* sp.) in a dry forest of Madagascar. Current Herpetology 34: 85–88.

Vences, M., Miralles, M., Ineich, I., Rakotoarison, A., Glasenapp, C., Scherz, M. D., Köhler, J., Glaw, F. & Raselimanana, A. P. 2025. An updated survey of molecular diversity in Madagascar's velvet geckos, genus *Blaesodactylus*, with description of a new species from the island's arid West. Zootaxa 5620: 230–254.

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