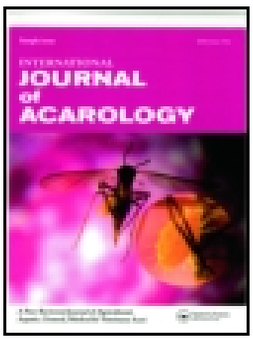

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SHORT COMMUNICATION

First report of phoresy by an oribatid mite (Acari: Oribatida) on a triatomine bug (Hemiptera: Reduviidae)

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ABSTRACT

A dozen specimens of the oribatid mite *Archegozetes magnus* (Trhypochthoniidae) were collected from the Chagas disease vector *Triatoma dimidiata* (Hemiptera: Reduviidae), in Teya, Yucatán, Mexico. This is the first report of phoresy by an oribatid mite on a hemipteran.

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KEYWORDS
Phoresy; oribatid mites; Reduviidae; *Archegozetes magnus*; *Triatoma dimidiata*

Oribatid mites are diverse and abundant in soil and leaf litter, mainly in environments with a high content of organic matter (Norton and Behan-Pelletier 2009) where they are generally saprophages and mycophages. They include no parasites and only a few species are actively phoretic on other animals. Norton (1980) reviewed the cases of phoresy in oribatid mites and found only phoresy on insects, including members of the orders Coleoptera (five families, Passalidae being the most frequent), Diptera (one family), and Dictyoptera (one family). Three families of oribatid mites were reported to be involved in this relationship: Mesoplophoridae, Oribatulidae, and Oppiidae. More recently, Townsend et al. (2008) reported a case of phoresy by the tropical oribatid mite *Archegozetes magnus* (**Sellnick, 1925**) (Trhypochthoniidae)[1] on an arachnid of the order Opiliones (*Cynortula* sp.) and Beaty et al. (2013) reported a case of phoresy by this same mite on a frog (*Engystomops pustulosus*).

On 26 October 2017, during a monitoring of triatomine insects (Hemiptera: Reduviidae) – the vectors of Chagas disease – in the Mayan locality of Teya, Yucatán, Mexico (21° 02'55"N, 89°04'25"W), a fourth nymphal instar (N4) *Triatoma dimidiata* **Latreille 1911** bug with various specimens of mites was collected. Mites found on triatomines are usually ectoparasites attached to the joints of the legs in the ventral region (Ryckman and Blankenship 1984; Marti et al. 2017), but these all were located on the dorsum of the bug (Figure 1(a)), and we interpreted our observation as a case of phoresy. The *T. dimidiata* specimen was in apparent good condition, without cuticular lesions, and did not seem affected by the presence of the mites. It was presented to us by an inhabitant who had kept the bug in a small plastic bag, in the context of routine entomological monitoring of triatomines based on community participation (Dumonteil et al. 2009; Waleckx et al. 2015a, 2015b). Six *T. dimidiata* specimens were presented by this inhabitant (four females, one male, and one N4), but only the N4 was carrying mites.

We transferred the *T. dimidiata* nymph to a small plastic container and the mites stayed on the bug.

The following day, most of the mites were found dead or alive at the bottom of the container. Four mites were still on the bug, and these came off easily when touched, contrary ectoparasitic mites, which are generally firmly attached (GM pers. obs.). The four mites were cleared with lactic acid and observed under a light microscope (Olympus CX31). They were identified as *A. magnus*, following the keys of Balogh & Balogh (1992a, 1992b) to the genus level, and following Sellnick (1925), Aoki (1965) and Badejo et al. (2002) to identify the species with certainty. The four specimens were all females (Figure 1(b)), of which three contained eggs: 3, 10, and 13 eggs, respectively.

This is the first report of phoresy by an oribatid mite on a hemipteran and, more generally, of any member of Trhypochthoniidae on any insect. It extends the range of known carriers of *A. magnus*, collected now from arachnids, insects, and amphibians, and highlights its non-specificity. Like other phoretic records for this mite, ours is a single, isolated observation. Our research team has worked intensively in the Yucatan peninsula for about 15 years and has collected thousands of *T. dimidiata* specimens (e.g. 770 between March and October 2017 were obtained from the inhabitants of Teya), but this is the first time mites are noticed on any specimen.

Note

1. Mites were identified to species level post-publication, in Beaty et al. 2013.

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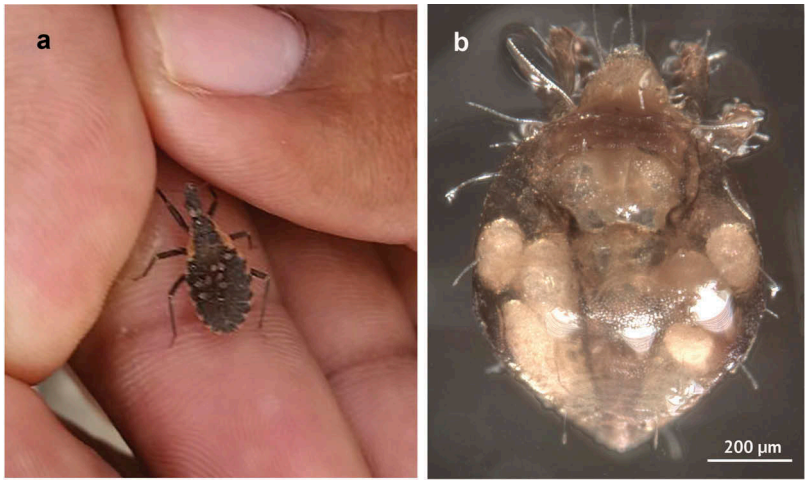

Figure 1. A. Specimen of *Triatoma dimidiata* with a dozen mites on its dorsum. B. Specimen of *Archegozetes magnus*, female.

Disclosure statement

No potential conflict of interest was reported by the authors.

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