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Notes on *Chrysomelobia Labidomerae* (Acari: Heterostigmata: Podapolipidae), Parasites of *Labidomera Clivicollis* (Coleoptera: Chrysomelidae) in Michigan and Wisconsin

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Notes on *Chrysomelobia labidomerae* (Acari: Heterostigmata: Podapolipidae), Parasites of *Labidomera clivicollis* (Coleoptera: Chrysomelidae) in Michigan and Wisconsin

Robert W. Husband¹ and Andrew H. Williams²

**Abstract**

*Chrysomelobia labidomerae* Eickwort, ectoparasitic mite of chrysomelid beetles, is reported from 11 Wisconsin counties, from 16 of 82 adult *Labidomera clivicollis* (Kirby) beetles wild-caught in Wisconsin, and from 27 of 141 presum-ably wild-caught *L. clivicollis* beetles from 13 Michigan counties. Wisconsin beetles harboring *C. labidomerae* were found in dry to wet-mesic, open habitats. A distribution map and comments are presented.

Mites in the family Podapolipidae are all haemolymph feeding parasites of insects, including Blattodea, Coleoptera, Hemiptera, Hymenoptera and Orthoptera (Kurosa and Husband 2013). These mites parasitize the subelytral space, trachea, reproductive tract and any surface area which may be penetrated by stylets with or without the aid of digestive enzymes for dissolving sclerotized tissue (Husband et al. 2008). Regenfuss (1968) first described the genus *Chrysomelobia* and species *C. mahunkai* based on one adult female on the beetle now known as *Chrysolina graminis* (Linnaeus) (Daccordi 1982) collected in Hungary. It has since been collected on a second chrysomelid beetle, *Phytodecta* sp., in Germany by the first author.

*Chrysomelobia labidomerae* Eickwort was discovered under the elytra of *Labidomera clivicollis* (Kirby) and described as only the second mite in this genus and the first from the Nearctic by Eickwort (1975), in which paper the mite's distribution data of Connecticut, Illinois, Indiana, Iowa, Michigan (Cheboygan Co.), New York, Ohio, Texas and Wisconsin (Rock Co.) were presented. This beetle is more widely distributed in eastern North America and is an obligate feeder on milkweeds, Asclepiadaceae (Clark et al. 2004, Riley et al. 2003). *Chrysomelobia labidomerae* was later found parasitizing four other species of chrysomelid beetles in the closely related genus *Leptinotarsa* in Mexico, including *L. decemlineata* (Say) (Drummond et al. 1984), now a very widespread pest of potatoes (Clark et al. 2004). As yet, five species of chrysomelid beetles are reported to host *C. labidomerae* (Houck 1992). Abbot and Dill (2001) reported *C. labidomerae* from *L. clivicollis* beetles collected off *Asclepias incarnata* Linnaeus in southern Ontario, at Queens University Biological Station near Elgin, at a latitude similar to central Wisconsin and central Michigan. The first author has collected *C. labidomerae* from *L. clivicollis* beetles in southern Texas, at Lyford. The reported limits of this mite's distribution to the northwest are Cheboygan Co., Michigan, and Rock Co., Wisconsin, (Eickwort 1975) (see Fig. 1).

Baker and Eickwort (1975) report that these mites do not parasitize eggs or larvae of *L. clivicollis*, that dispersal is accomplished only by adult females.

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transferring between adult beetles, and that the incidence of these mites on 56 museum specimens of presumably wild-caught *L. clivicollis* from the vicinity of Ithaca, New York, was 14.3%. Abbot and Dill (2001) reported that, in mid-summer, over 90% of 118 wild-caught males and females in southern Ontario had these mites.

Serendipitous collection of mites in the course of broader research on this beetle in Wisconsin by the second author provided us with new information about the range of habitats in which this mite occurs, the plants on which the beetles harboring mites were collected and new distribution data. These last were supplemented with new county data from museum specimens of Michigan beetles inspected by the first author.

**Materials and Methods**

Over the course of ongoing research into the milkweed specific fauna of Wisconsin, the second author collected many eggs, larvae and adults of *L. clivicollis* to voucher various aspects of the beetle’s life history and distribution. Eggs and larvae were reared. When partly grown, these larvae were each isolated and provided with sterile soil into which they burrowed to pupate. Adult beetles, either caught in the wild or reared in the lab, were quickly put into vials of 80% ethanol. These were later checked for mites by the first author. Some

Figure 1. In the original description of *Chrysomelobia labidomerae* Eickwort (Podapolipidae), a mite parasitizing *Labidomera clivicollis* Kirby (Chrysomelidae), Eickwort (1975) listed Cheboygan Co., Michigan, and Rock Co., Wisconsin, as rough northwestern limits of the mite’s broad distribution across much of the eastern United States. These counties are cross-hatched. The shaded counties — Cheboygan, Dickinson, Ingham, Ionia, Kalamazoo, Lenawee, Livingston, Midland, Oakland, Oceana, Ottawa, Washtenaw and Wayne in Michigan, and Adams, Buffalo, Crawford, Grant, Kewaunee, LaCrosse, Manitowoc, Sheboygan, Vernon and Walworth in Wisconsin — represent new collection data. These data show counties in which these mites have been found, not their actual distribution.
specimens were retained by the first author, others were later deposited into the Insect Research Collection of the Entomology Department at University of Wisconsin — Madison. Prompted by this research into the distribution of the mite in Wisconsin, the first author studied pinned specimens of *L. clivicollis* housed in the University of Michigan Museum of Zoology to generate new distribution data for the mite in Michigan. Plant nomenclature follows Gleason and Cronquist (1991).

**Results**


None of 86 adult *Labidomera clivicollis* reared in isolation in the lab in Wisconsin hosted *C. labidomerae*. Of 82 wild-caught beetles from Wisconsin, 18 (22%) hosted these mites. Of 141 adult beetles collected in Michigan and presumably caught in the wild, specimens in the collection of the University of Michigan Museum of Zoology, 27 (19%) hosted these mites.

**Discussion**

These data shift the known distribution of this mite in Wisconsin from Rock Co. (Beloit, 07 July 1962, R. Beardon) (Eickwort 1975), Beloit being central and right at the southern border, up through and all across the southern half of the state, a total of 11 counties (Fig. 1). These data shift the mite’s known distribution in Michigan from Cheboygan Co. (21 June 1953, S. E. Neff) (Eickwort 1975), at the northern tip of the Lower Peninsula, to include at least part of the Upper Peninsula and to occur more generally around the southern half
of the Lower Peninsula, a total of 13 counties (Fig. 1). These data show where these mites have been found, not their actual distribution. *Labidomera clivicollis* occurs throughout Wisconsin, though it is much harder to find in northern Wisconsin than in southern Wisconsin.

These data include the first association of the mite with *L. clivicollis* collected from a spectrum of open habitats, from dry sandy prairie through dry south-facing roadside bank, open roadside, moist roadside to wet-mesic prairie, as well as beetles on four local food plants that are associated with this spectrum of habitats, typically growing in situations ranging from dry to moist: *Asclepias viridiflora*, *A. verticillata*, *A. syriaca* and *A. incarnata*.

That no mites were found on the 86 lab-reared adult beetles is not a surprising result. Baker and Eickwort (1975) stated that mites parasitize only adult beetles to which adult females disperse from other adult beetles. These 86 lab-reared adults never had contact with any other beetles from which mites might have been acquired. Our frequencies of occurrence of 22% on beetles wild-caught in Wisconsin and 19% on presumably wild-caught Michigan beetles are similar to the 14.3% reported on presumably wild-caught New York beetles (Baker and Eickwort 1975). In contrast, Abbot and Dill (2001) reported that, in midsummer, over 90% of 118 wild-caught males and females in southern Ontario had these mites.

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### Literature Cited


