

## Taxonomic changes for fifteen species of North American Mordellidae (Coleoptera)

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**Abstract.** In an attempt to more consistently apply generic concepts, 13 species of Mordellidae are transferred to different genera. *Mordellistena bihamata* (Melsheimer) and *Mordellistena discolor* (Melsheimer) are transferred to *Falsomordellistena* Ermisch, 1941, while 11 species (*Mordellistena ancilla* LeConte, *Mordellistena floridensis* Smith, *Mordellistena guttulata* Helmuth, *Mordellistena impatiens* LeConte, *Mordellistena infima* LeConte, *Mordellistena lecontei* Ermisch, *Mordellistena minutalis* Liljeblad, *Mordellistena nigricans* Melsheimer, *Mordellistena parva* Liljeblad, *Mordellistena semiusta* LeConte, and *Mordellistena testacea* Blatchley) are transferred to *Mordellina* Schilsky, 1908. Two species, *Mordellistena rufa* Liljeblad and *Mordellina ustulata* (LeConte), are proposed as junior synonyms of *Mordellina ancilla* (LeConte).

### Introduction

Mordellidae is a speciose and widely distributed family. There are approximately 1500 species worldwide, comprising 113 genera in two subfamilies. The 201 species of North American Mordellidae are encompassed by 17 cosmopolitan genera within three tribes (Conaliini, Mordellini, and Mordellistenini) in the subfamily Mordellinae (Jackman and Lu 2002, Lisberg unpublished notes). Despite the relative abundance of Mordellidae, taxonomy and phylogeny within the family are poorly understood. Taxonomic keys to adult Mordellidae are considerably outdated (e.g., Liljeblad 1945), potentially useful character sets (e.g., Burne 1987) have yet to be critically analyzed and worked into taxonomic keys, characters defining many genera are not definitive (Jackman and Lu 2001, 2002), and larval taxonomy is nearly unknown (Odnosum 1992, Lisberg and Young 2003).

Generic placement for many species of Mordellidae is tenuous. The reassignment of 27 species into 11 genera not included in the only existing key to North American species (Liljeblad 1945) was discussed by Jackman (1991) and Jackman and Lu (2001, 2002). Characters defining these genera are largely based on Franciscolo (1957, 1965, 1967) for African species and many are difficult to apply to North American species. Adequate illustrated descriptions of mordellid larvae and pupae, which may aid our understanding of generic-level systematics, are rare. Only two North American species have complete, illustrated, formal larval descriptions: *Tomoxia biguttata* Gyllenhal (Perris 1876) and *Tomoxia lineella* LeConte (Lisberg and Young 2003). Ongoing research focusing on male genitalia (Lu *et al.*

1997) and ecological data including plant associations for adults and larvae (Frost 1913, Criddle 1922, Robertson 1928, Ford and Jackman 1996, Lu 1997, Williams 1999, Sumerford *et al.* 2000, Lisberg and Young 2003) may also contribute to generic-level systematics of Mordellidae. However, a world-wide revision is likely necessary for accurate placement of North American species. Until such a revision is coordinated, several additional changes to the taxonomic placement of North American species would enhance the consistency and efficacy of generic keys (Jackman and Lu 2002) as applied to North American species.

### Taxonomic Changes

#### Transfers to *Falsomordellistena* Ermisch, 1941

Species in the genus *Falsomordellistena* are characterized by deeply emarginate, bilobed, or apically dilated penultimate prothoracic and metathoracic tarsomeres (Fig. 1), triangular or securiform ultimate maxillary palpomeres (Figs. 2-3), and small, ovoid, entire compound eyes with fine facets. Jackman and Lu (2001, 2002) included two North American species, *Falsomordellistena pubescens* (Fabricius) and *Falsomordellistena hebraica* (LeConte), in this genus. I propose the two following additions:

*Falsomordellistena bihamata* (Melsheimer, 1846) **new combination**

*Falsomordellistena discolor* (Melsheimer, 1846) **new combination**

**Remarks.** These two species clearly show the deeply emarginate prothoracic and mesothoracic penulti-

mate tarsomeres and ovoid eyes characteristic of *Falsomordellistena*.

### Transfers to *Mordellina* Schilsky, 1908

Characters separating the genera *Mordellistena* Costa, 1854 and *Mordellina* involve the appearance of the compound eyes, which are described as smaller, entire, and finely faceted (facets 0.015 mm or smaller in diameter) in *Mordellistena* and larger, slightly emarginate around the antennae, and coarsely faceted (facets 0.022 mm or greater in diameter) in *Mordellina* (Jackman and Lu 2001, 2002). While some North American specimens clearly fall into one genus based on this character set, in many other cases these characteristics are not definitive and sometimes fall along a continuum within a species. It is possible that, in the African species largely used by Franciscolo to define these genera, these characters are more distinct. It is possible, too, that Nearctic *Mordellistena* and/or *Mordellina* show a similar range of eye characters through convergence or perhaps have not diverged as completely.

Jackman and Lu (2001, 2002) listed 131 North American species of *Mordellistena* and five North American species of *Mordellina*. I propose the transfer of 10 species, all currently placed in *Mordellistena*, to the genus *Mordellina* as follows:

*Mordellina floridensis* (Smith, 1882), **new combination**

*Mordellina guttulata* (Helmuth, 1864), **new combination**

*Mordellina impatiens* (LeConte, 1862), **new combination**

*Mordellina infima* (LeConte, 1862), **new combination**

*Mordellina lecontei* (Ermisch, 1953), **new combination**

*Mordellina minutalis* (Liljeblad, 1945), **new combination**

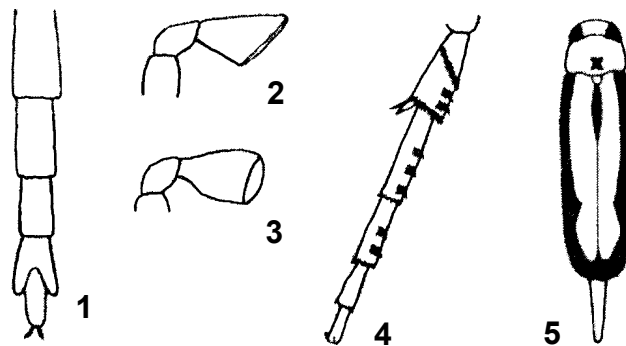
*Mordellina nigricans* (Melsheimer, 1846), **new combination**

*Mordellina parva* (Liljeblad, 1945), **new combination**

*Mordellina semiusta* (LeConte, 1862), **new combination**

*Mordellina testacea* (Blatchley, 1910), **new combination**

**Remarks.** These species fit the description of *Mordellina*, with a range of eye shape and facet size similar to those North American species already placed in *Mordellina*. Also, all have a distinctly long and ob-



**Figures 1-5.** 1) *Falsomordellistena hebraica* (LeConte), prothoracic tarsus, dorsal view; 2) *Falsomordellistena discolor* (Melsheimer), triangular ultimate maxillary palpomere; 3) *Falsomordellistena pubescens* (Fabricius), securiform ultimate maxillary palpomere; 4) *Mordellina guttulata* (Helmuth), metathoracic tibia and tarsus, lateral view; 5) *Mordellina ancilla* (LeConte), dorsal habitus.

lique proximal ridge on the metathoracic tibiae (Fig. 4) as do all but one North American *Mordellina*: *M. pustulata* (Melsheimer). This ridge, although slightly variable, occurs far more consistently than other characters presently used to distinguish members of *Mordellina*. Species with this distinctive ridge are also similar in size (length from head to tip of pygidium ranges from 2.75-4 mm, with the exception of *M. floridensis* which reaches 6 mm and *M. wickhami* which reaches 5.5 mm) and overall body shape (slender with long pygidium); they are likely closely related. Additional species currently placed in *Mordellistena* that have this ridge may require transfer to *Mordellina*, but I have not yet seen representative specimens and can not propose their transfer at this time.

### Other Taxonomic Changes to *Mordellina*

Liljeblad (1945) considered both *Mordellistena ancilla* LeConte, 1862 and *Mordellistena ustulata* LeConte, 1862 as mere variations of *Mordellistena andreae* LeConte, 1862. Jackman and Lu (2001) transferred *M. ustulata* to *Mordellina* and reinstated species rank, but proposed no changes for *M. andreae andreae* and *Mordellistena andreae ancilla*. However, *M. andreae ancilla* and *M. ustulata* differ only slightly in the width of the black marginal color of the elytra (Fig. 5). Specimens of this species I have examined from Wisconsin, clearly consistent with the definition of *Mordellina*, show a continuum of the black marginal elytral coloration, supporting the synonymy. *Mordellistena andreae* differs from *M. ancilla* by the presence of a long, black spot in the center of each elytron (Liljeblad 1945). Jackman and

Lu (2002) also noted that the penultimate segments of the anterior and middle tarsi are emarginate in *M. andreae*; not truncate as in *M. ancilla*. Having not examined *M. andreae*, no changes in status are recommended. However, the emarginate tarsomeres suggest the species is not well placed in either *Mordellina* or *Mordellistena*.

Liljeblad separated *Mordellistrena rufa* Liljeblad, 1917, from *M. ustulata* based solely on the additional transverse ridge associated with the first metathoracic tarsomere: *M. rufa* with four ridges, *M. ustulata* with three. He did suggest, however, (Liljeblad 1945: p. 142) that these might be the same species. The variability of leg ridges in *Mordellistrenini* and the similarity of Wisconsin specimens fitting both descriptions support this suggestion.

Based on the above observations and discussion, the synonymy of *M. ancilla* is summarized as follows:

*Mordellina ancilla* (LeConte, 1862), **resurrected name and new combination**

*Mordellistena ancilla* LeConte 1862: 50.

*Mordellistena varians* LeConte 1862: 50.

*Mordellistena ustulata* LeConte 1862: 50; **new synonym.**

*Mordellistena rufa* Liljeblad 1917: 11; **new synonym.**

*Mordellistena andreae ancilla* LeConte; Liljeblad 1945: 125.

*Mordellistena andreae ustulata* LeConte; Liljeblad 1945: 126.

*Mordellina ustulata* (LeConte); Jackman and Lu 2001: 32.

**Concluding Remarks.** Relative to the North American mordellid fauna, the taxonomic changes outlined above leave the number of species at 201, the number of *Falsomordellistena* becomes four, the number of *Mordellistena* is reduced to 117, and the number of *Mordellina* increases to 15.

#### Acknowledgments

I would like to thank Dan Young for advice and support, and John Jackman and Wenhua Lu for offering valuable input on the taxonomy of Mordellidae. Field work was supported in part by grants from the Zoological Society of Milwaukee and Prairie Biotic Research.

#### Literature Cited

Burne, J. C. 1987. A morphometric analysis of *Mordellistena* Costa in southwestern United States

(Coleoptera: Mordellidae). Pan-Pacific Entomologist 63: 224-235.

Criddle, N. 1922. Beetles injurious to sunflowers in Manitoba. Canadian Entomologist 14: 97-99.

Ford, E. J. and J. A. Jackman. 1996. New larval host plant associations of tumbling flower beetles (Coleoptera: Mordellidae) in North America. Coleopterists Bulletin 50: 361-368.

Franciscolo, M. 1957. A monograph of the South African genera and species of Mordellidae. Part 1. Morphology, subfamily Cteniinae and tribe Stenaliini. South African Animal Life (Results of the Lunds University Expedition in 1950-1951) 4: 207-291.

Franciscolo, M. 1965. A monograph of the South African genera and species of Mordellidae. Part 2. Tribe Mordellini. South African Animal Life (Results of the Lunds University Expedition in 1950-1951) 11: 244-458.

Franciscolo, M. 1967. A monograph of the South African genera and species of Mordellidae. Part 3. Tribe Mordellistenini. South African Animal Life (Results of the Lunds University Expedition in 1950-1951) 13: 67-203.

Frost, C. A. 1913. Notes on *Tomoxia bidentata* Say and *lineella* Lec. (Coleop.). Entomological News 24: 126-129.

Jackman, J. A. 1991. Notes on the nomenclature of Mordellidae of America north of Mexico. Coleopterists Bulletin 45: 323-330.

Jackman, J. A. and W. Lu. 2001. Nomenclatural changes for Mordellidae (Coleoptera) in North America. Insecta Mundi 15: 31-34.

Jackman, J. A. and W. Lu. 2002. 101. Mordellidae Latrielle 1802, p. 423-30. In: Arnett Jr., R. H., M. C. Thomas, P. E. Skelley and J. H. Frank (eds.) American Beetles. Volume 2. CRC Press LLC, Boca Raton, FL 861 p.

Liljeblad, E. 1945. Monograph of the family Mordellidae (Coleoptera) of North America, north of Mexico. Miscellaneous Publications, Museum of Zoology, University of Michigan, No. 62, 229 p.

Lisberg, A. and D. K. Young. 2003. Descriptions of larva and pupa of *Tomoxia lineella* LeConte with notes on larval habitat (Coleoptera: Mordellidae). Coleopterists Bulletin, 57: 17-22.

Lu, W. 1997. Notes on identification and ecology of tumbling flower beetles (Mordellidae) from Osa-baw Island, Georgia. Florida Entomologist 80: 95-98.

Lu, W., J. A. Jackman and P. W. Johnson. 1997. Male genitalia and phylogenetic relationships in North American Mordellidae (Coleoptera). An-

- nals of the Entomological Society of America 90: 742-767.
- Odnosum, V. K.** 1992. The larvae of mordellid beetles (Coleoptera, Mordellidae) of the USSR. Entomological Review 71: 118-132.
- Perris, E.** 1876. Larves de Coléoptères. Mordellides. Deyrolle, Paris, 364 p.
- Robertson, C.** 1928. Flowers and Insects: Lists of visitors of four hundred and fifty three flowers. Published by the author, Carlinville, IL, 222 p.
- Sumerford, D. V., W. G. Abrahamson and A. B. Weiss.** 2000. The effects of drought on the *Solidago altissima-Eurosta solidaginis* natural enemy complex: population dynamics, local extirpations, and measures of selection intensity on gall size. Oecologia 122: 240-248.
- Williams, A. H.** 1999. Fauna overwintering in or on stems of Wisconsin prairie forbs. Proceedings of the North American Prairie Conference 16: 156-161.