

## On the hind tibial spurs in the genus *Mordellistena* (Coleoptera: Mordellidae)

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### クロヒメハナノミ属における後脛節端棘について (鞘翅目：ハナノミ科)

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抄録：クロヒメハナノミ (*Mordellistena*)属は後脛節端棘の本数によって2つの亜属、すなわち、*Mordellistena* 亜属 (2本) と *Pseudomordellina* 亜属 (1本) に分割されている。しかし、両亜属にまたがる同胞種群が2例見つかった。本稿では欧州産2種および日本産11種について形態等の比較を行い、後脛節端棘の数のみによる亜属の分割の問題点を指摘した。

**Abstract:** The genus *Mordellistena* includes two subgenera: *Mordellistena* with two spurs on hind tibia and *Pseudomordellina* with only one spur. However, two pairs of sibling species covering the two subgenera are found. Morphological studies are made for 13 Palearctic species, and the subgeneric division based only on this character is questioned.

**Key Words:** Mordellidae; *Mordellistena*; *Pseudomordellina*; subgenera; hind tibial spurs; taxonomy.

The genus *Mordellistena* Costa, 1854 contains the largest number of species in the family Mordellidae, but there remain many problems on its taxonomy: Generic concept has been in some confusion, range of species included in the genus differs between researchers or regions, many species lack full description with regards of male genitalia. I have made taxonomic studies on *Mordellistena* in rather a strict sense and have come to question the subgeneric division.

The genus has been divided into two subgenera by difference in the number of the terminal spurs on hind tibia: *Mordellistena* with two spurs and *Pseudomordellina* with only one spur (Fig. 1). However, species of the subgenus *Pseudomordellina* have sometimes been treated in the same category as the group of *M. parvula*, which is a part of the subgenus *Mordellistena* (Hatayama, 1985 for Japanese species; Allen, 1986 for British species). This is undoubtedly due to their resemblance in appearance.

In this paper, I will report on two pairs of sibling species which possess one or two spurs at the apices of hind tibiae, that is, they cover the two subgenera according to the current concept. This seems to mean that the subgeneric division of *Mordellistena* based only on the spur character is nothing but artificial. Morphological studies are made for eleven Japanese and two European species, and the subgeneric division is discussed.

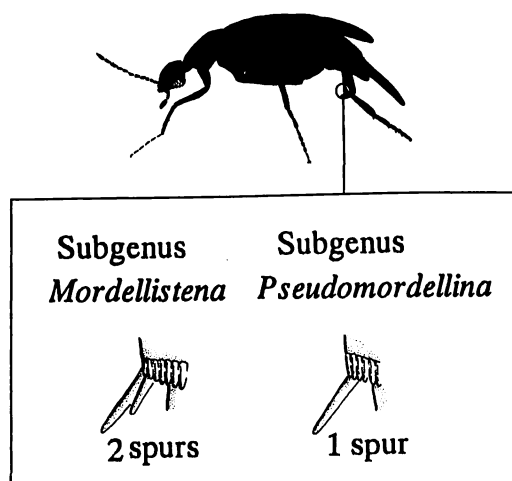


Fig. 1. Subgeneric division of the genus *Mordellistena*.

### Material and Methods

Sampling of the specimens treated in this paper was chiefly made by myself in Hokkaido, Japan, and the other material was offered by other entomologists, some of them bearing records of host plants or determination labels. All the specimens are deposited in the Osaka Museum of Natural History.

Identifications at species level were made for only male specimens and females were treated at the level of the species-groups, since there are characteristic differences in male genitalia between related species and since specific diagnoses in females are still insufficiently made.

Observations of genital organs (paramera and eighth abdominal sternum) were sometimes made by a light microscope after they were slide-mounted, but otherwise specimens were observed in dried condition by using a stereoscopic microscope.

### Species examined

In spite of the ambiguity of generic concept of *Mordellistena*, the two Palearctic species, *M. pumila* (Gyllenhal, 1810) and *M. parvula* (Gyllenhal, 1827), are rather close to the type species *M. confinis* Costa, 1854 from Europe, and have been referred to the genus *Mordellistena* by all previous researchers since the generic description by Costa (1854). Therefore, the following species, which are clearly allied to these three, must belong to the genus *Mordellistena* in the current taxonomic system, and discussions using these species would be valid.

In this paper, I provisionally followed previous researchers as to the systematic positions within the genus (see under Conclusion).

#### Subgenus *Mordellistena* Costa, 1854

##### Group of *Mordellistena pumila*

#### 1. *Mordellistena (Mordellistena) pumila* (Gyllenhal, 1810) (Fig. 2-A, B)

*Material examined*. 2♂♂. [Slovakia] Sturovo, vii.1969, Kr. Pospíšil leg., det. J. Horák,

1992; Kovacovké kapca, V. Malý leg., det. J. Horák, 1992.

**2. *Mordellistena (Mordellistena) comes* Marseul, 1876** (Fig. 2-C, D)

*Material examined.* 10♂♂. [Hokkaido] Moshiri, Horokanai, Sorachi Prov., 21.vii.1991, S. Shiyake leg.; Mt. Shokambetsu, Sorachi Prov., 2.vii.1992, S. Shiyake leg.; Misumai, Sapporo, Ishikari Prov., 21.vi.1990, K. Sayama leg.; the same locality and collector, 2.vii.1990; Yunosawa, Sapporo, Ishikari Prov., 29.vi.1991, Y. Sakamaki leg.; Suttsu, Shiribeshi Prov., 16.vi.1991, A. Iwasaki leg.

*Host plants.* Stem gall maker on *Cannabis sativa* (Matsumura, 1915; Shinji, 1944); stem borer on *Lilium* sp. (Hayashi, 1975). See *Host plants* under Species comparison.

*Remarks.* This nominal species varies much in body size, ridges on hind leg and male genitalia, so that it may in reality be a melange of several species including ones described from Mongolia by Ermisch (1964, 65b, 68 and 70), but it is practically very difficult to distinguish them.

Three nominal species of this species-group have been recognized from Japan (Hatayama, 1985).

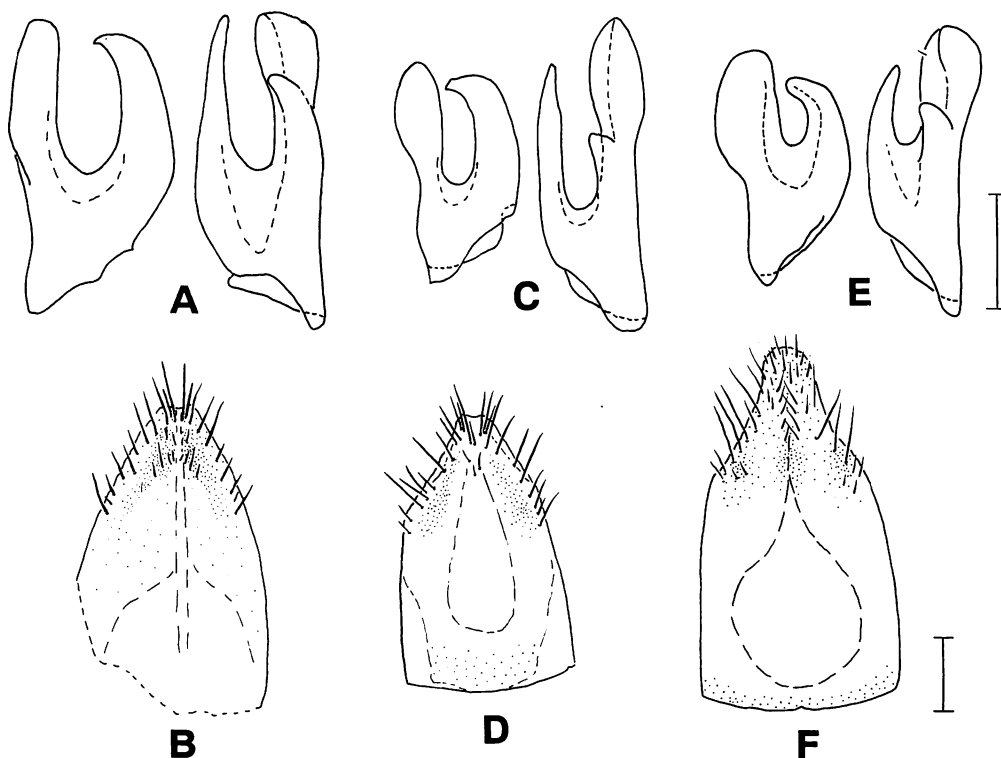


Fig. 2. Paramera of male genitalia (A, C and E) and eighth abdominal sterna (B, D and F). A and B, *Mordellistena pumila*; C and D, *M. comes*, E and F, *M. tokejii*. Scales: 0.25mm.

**Group of *Mordellistena confinis***

**3. *Mordellistena (Mordellistena) tokejii* Nomura, 1951 (Fig. 2-E, F)**

*Material examined.* 8♂♂. [Hokkaido] Teshio-nakagawa, Kamikawa Prov., 23.vii.1991, on flowers of *Hydrangea paniculata*, S. Shiyake leg.

*Remarks.* Three nominal species of this species-group have been recognized from Japan (Hatayama, 1985).

**Group of *Mordellistena parvula***

**4. *Mordellistena (Mordellistena) parvula* (Gyllenhal, 1827) (Fig. 3-A, 4-A)**

*Material examined.* 1♂ & 1♀. [Slovakia] Turňa Bodvov, 6.vi.1983, J. Horák leg., det. J. Horák, 1992; Somotar, 12.vi.1985, J. Strejcek leg., det. J. Horák, 1992.

*Host plant.* *Artemisia vulgaris*? (Allen, 1986).

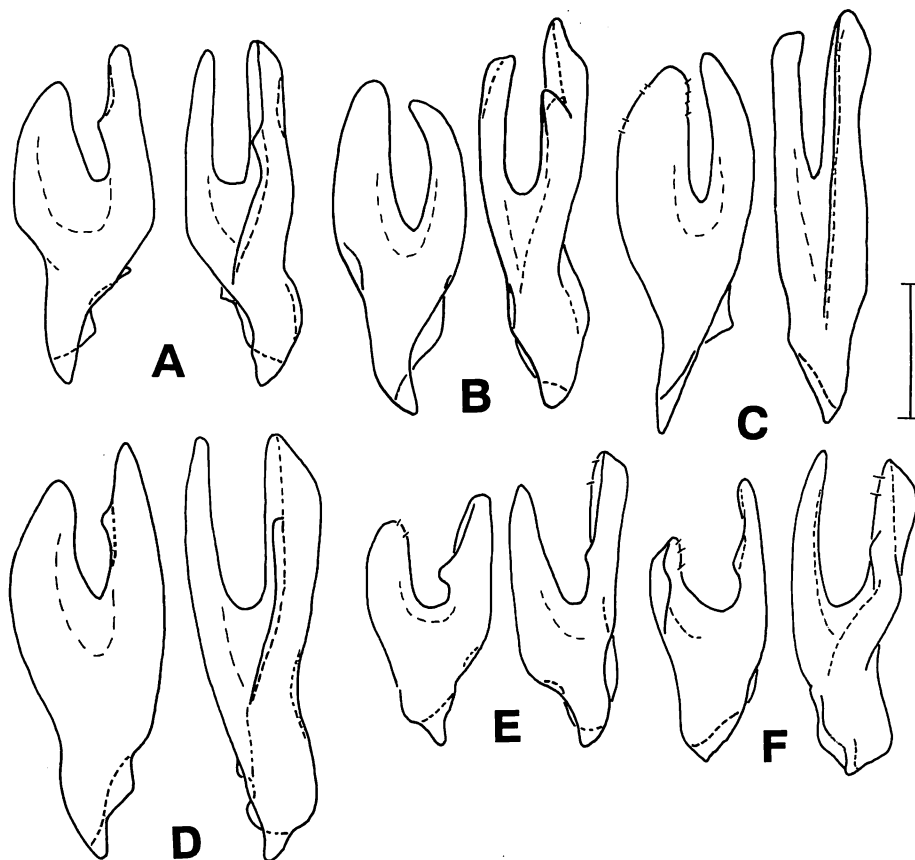


Fig. 3. Paramera of male genitalia in the group of *Mordellistena parvula*. A, *M. parvula*; B, *M. brevilineata*; C, *M. fuscoturalis*; D, *M. sp. 1*; E, *M. sp. 2*; F, *M. tamana*. Scale: 0.25mm.

**5. *Mordellistena (Mordellistena) brevilineata* Nomura, 1961** (Fig. 3-B, 4-B)

*Material examined.* 14 ♂♂. [Hokkaido] Misumai, Sapporo, Ishikari Prov., 18.vi.1990, M. Ôhara leg.; Toyotaki, Sapporo, Ishikari Prov., 27.vi.1990, M. Ôhara leg. [Honshu] Shomaru, Saitama Pref., 4.vi.1990, A. Iwasaki leg.; Chûzu, Shiga Pref., 10.vi.1990, S. Shiyake leg.; Gobô, Wakayama Pref., 29.v.1991, S. Shiyake leg.; Mt. Daisen, Tottori Pref., 8.vi.1991, S. Shiyake leg.; Miyoshi, Hiroshima Pref., 11.vi.1991, S. Shiyake leg.

*Host plant.* Stem gall maker on *Artemisia* sp. (Hayashi, 1975). See *Host plants* under Species comparison.

*Remarks.* Identifications to species level were made on the basis of figures of male genitalia given by Nomura (1961).

Adults can be collected by sweeping on *Artemisia*, but I myself have never observed them emerging from its stems nor from galls.

**6. *Mordellistena (Mordellistena) fuscoturalis* Nomura, 1961** (Fig. 3-C, 4-C)

*Material examined.* 8♂♂. [Hokkaido] Kushiro, Kushiro Prov., 28.vii.1991, N. Kuhara leg.; Misumai, Sapporo, Ishikari Prov., 18.vi.1990, M. Ôhara leg. [Honshu] Chûzu, Shiga Pref., 10.vi.1990, S. Shiyake leg.; Gobô, Wakayama Pref., 29.v.1991, S. Shiyake leg.

*Host plant.* Unknown (probably *Artemisia* sp., because the adults can be collected by sweeping on it).

*Remarks.* Identifications to species level were made on the basis of figures of male genitalia given by Nomura (1961).

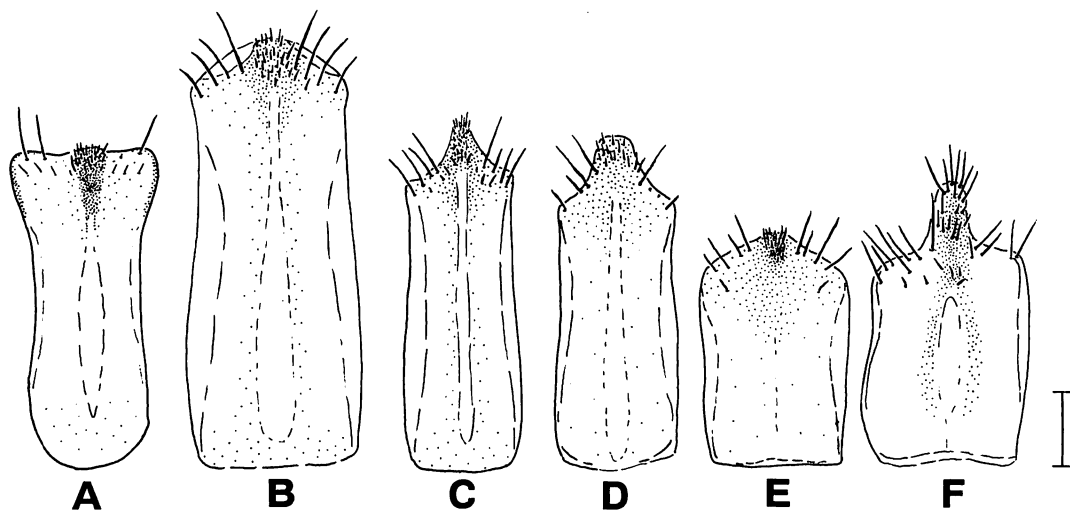


Fig. 4. Eighth abdominal sternite in the group of *Mordellistena parvula*. A, *M. parvula*; B, *M. brevilineata*; C, *M. fuscoturalis*; D, *M. sp. 1*; E, *M. sp. 2*; F, *M. tamana*. Scale: 0.25mm.

**7. *Mordellistena (Mordellistena) sp. 1*** (Fig. 3-D, 4-D)

*Material examined.* 12♂♂. [Hokkaido] Kiyosato, Abashiri Prov., 5.vii.1990, M. Ôhara leg.; Mt. Shokambetsu (alt. 400m), Sorachi Prov., 2.vii.1992, S. Shiyake leg.; Horonobe, Kamikawa Prov., 28.vii.1990, S. Shiyake leg.; Mt. Yûbari (alt. 450m), Kamikawa Prov., 5-6.vii.1991, S. Shiyake leg.; the same locality, 5.vii.1991, Y. Sakamaki leg.; Nopporo, Ebetsu, Ishikari Prov., 18.vii.1987, M. Ôhara leg.; Hokkaido Univ., Sapporo, Ishikari Prov., 12.vi.1992, Y. Sakamaki leg.; Toyotaki, Sapporo, Ishikari Prov., em. 13.v.1990, ex *Artemisia* sp., S. Shiyake leg.; the same locality and collector, 5.viii.1990; Mt. Obira, Shimamaki, Shiribeshi Prov., 8.vii.1988, M. Ôhara *et al.* leg.

*Host plant.* Stem borer on *Artemisia* sp.

**8. *Mordellistena (Mordellistena) tamana (Tokeji, 1953)*** (Fig. 3-F, 4-F)

*Material examined.* 4♂♂. [Hokkaido] Memuro, Tokachi Prov., A. Iwasaki leg., em. 18.iv.1993, ex *Angelica* sp.

*Host plant.* Stem borer on *Angelica* sp. (also in Hayashi, 1974).

*Remarks.* This species is a unique *Mordellistena* in possessing four anterior tarsi with penultimate segment sinuated apically, and was originally referred to *Falsomordellistena* probably based on it.

This species has been previously known to occur only from Honshu, but now it became known from Hokkaido.

**9. *Mordellistena (Mordellistena) sp. 2*** (Fig. 3-E, 4-E)

*Material examined.* 4♂♂. [Hokkaido] Horonobe, Kamikawa Prov., 28.vii.1990, S. Shiyake leg.; Misumai, Sapporo, Ishikari Prov., 11.vii.1991, S. Shiyake leg.; Hokkaido Univ., Sapporo, Ishikari Prov., 25.vii.1991, S. Shiyake leg.

*Host plant.* Unknown (probably *Artemisia* sp., because the adults can be collected by sweeping on it).

**10. *Mordellistena (Mordellistena) sp. 3*** (Fig. 5-A, B)

*Material examined.* 3♂♂. [Hokkaido] Hokkaido Univ., Sapporo, Ishikari Prov., 2.vii.1991, S. Shiyake leg.; the same locality and collector, 11-12.vii.1991.

*Host plant.* Stem borer on *Artemisia* sp. (Shiyake, 1992).

*Remarks.* This species is very similar to *M.* sp. 4 except for presence of the outer spur on the hind tibia. See *Mating* under Species comparison.

**11. *Mordellistena (Mordellistena) fuscoapicalis* Nomura, 1961** (Fig. 5-C, D)

*Material examined.* 2♂♂. [Honshu] Mt. Takao, Tokyo, 31.v.1967, H. Takizawa leg.; Ashû, Kyoto Pref., 16.vii.1992, S. Shiyake leg.

*Host plant.* Unknown (probably *Artemisia* sp., because the adults can be collected by sweeping on it).

*Remarks.* This species is very similar to *M.* sp. 5 except for presence of the outer spur

on the hind tibia, and is much the same as *M. ghanii* Franciscolo, 1974 from Pakistan judging from its description with figures of the male genitalia and eighth abdominal sternum. Furthermore, they probably agree in host plants. If they are really the same species, the prior name *M. fuscoapicalis* is valid.

**Subgenus *Pseudomordellina* Ermisch, 1952**

**12. *Mordellistena (Pseudomordellina)* sp. 4 (Fig. 5-E, F)**

*Material examined.* 9♂♂. [Hokkaido] Hokkaido Univ., Sapporo, Ishikari Prov., 12.vii.1991, S. Shiyake leg.; Misumai, Sapporo, Ishikari Prov., 11.vii.1991, S. Shiyake leg.; Toyotaki, Sapporo, Ishikari Prov., 28.vii.1991, S. Shiyake leg.

*Host plant.* Unknown (probably *Artemisia* sp., because the adults can be collected by sweeping on it).

*Remarks.* This species is very similar to *M.* sp. 3 except for absence of the outer spur on the hind tibia. See *Mating* under Species comparison.

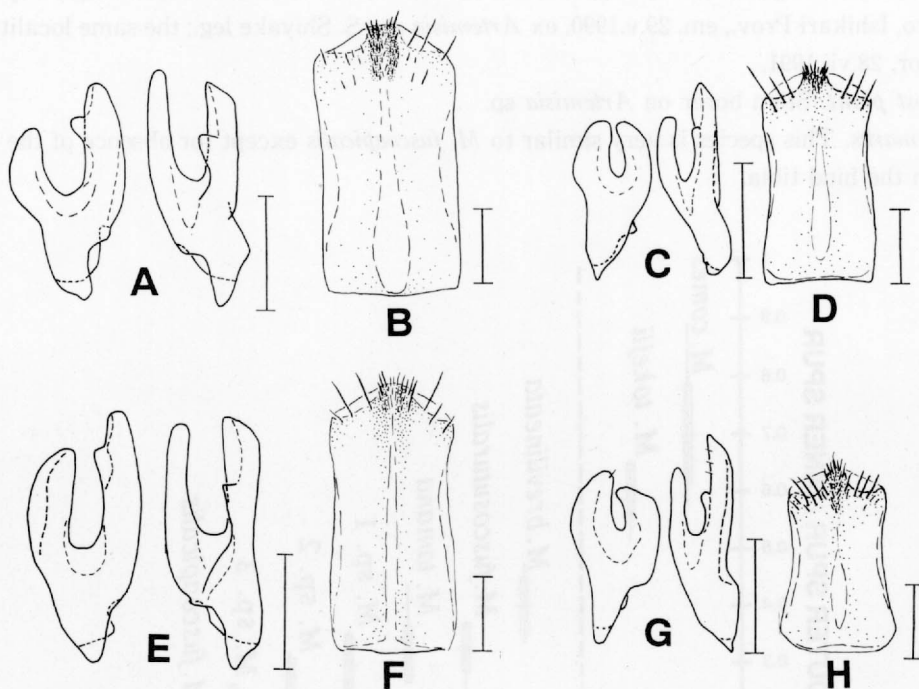


Fig. 5. Paramera of male genitalia (A, C, E and G) and eighth abdominal sterna (B, D, F and H). A and B, *Mordellistena (M.)* sp. 3; C and D, *M. (M.) fuscoapicalis*; E and F, *M. (Pseudomordellina)* sp. 4; G and H, *M. (P.)* sp. 5. Scales: 0.25mm.

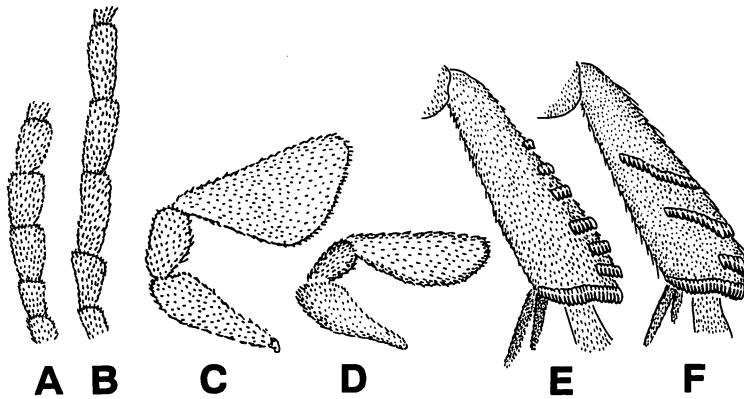


Fig. 6. Antennae (A, normal form; B, male of *M. tokejii*); maxillary palpi (C, *M. pumila* type; D, *M. parvula* type); hind tibiae (E, *M. pumila* type; F, *M. parvula* type).

**13. *Mordellistena (Pseudomordellina) sp. 5* (Fig. 5-G, H)**

*Material examined.* 9♂♂. [Hokkaido] Hokkaido Univ., Sapporo, Ishikari Prov., 12.vii.1991, S. Shiyake leg.; Misumai, Sapporo, Ishikari Prov., 11.vii.1991, S. Shiyake leg.; Toyotaki, Sapporo, Ishikari Prov., em. 29.v.1990, ex *Artemisia* sp., S. Shiyake leg.; the same locality and collector, 28.vii.1991.

*Host plant.* Stem borer on *Artemisia* sp.

*Remarks.* This species is very similar to *M. fuscoapicalis* except for absence of the outer spur on the hind tibia.

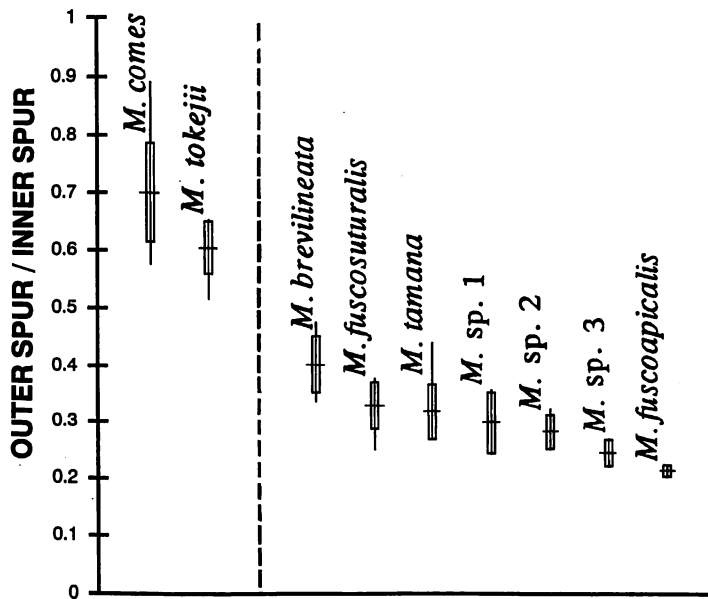


Fig. 7. Analysis of hind tibial spurs.



Table 1. The outer spur of hind tibia in the genus *Mordellina*.

Species	♂	♀
<i>M. brunneotincta</i> (Marseul, 1876)	absent	absent
<i>M. hirayamai</i> (Kôno, 1933)	1/5	1/4
<i>M. hidakai</i> (Nomura, 1963)	—	absent
<i>M. aritai</i> (Nomura, 1964)	—	absent
<i>M. signatella</i> (Marseul, 1876)	absent	1/4
<i>M. palleola</i> Nomura, 1966	absent	absent
<i>M. shimoyamai</i> (Chôjô, 1957)	absent	absent
<i>M. atrofusca</i> (Nomura, 1951)	absent	absent

Fraction: relative length to inner spur. —: unknown. (According to Hatayama, 1985)

### Species comparison

#### Coloration

The group of *M. pumila* is entirely black in both sexes. On the other hand, the males of the *parvula* group and *Pseudomordellina* are always more or less yellowish brown in the following parts: mouth organs, four basal segments of antenna and sternum of eighth abdominal segment in male. These parts are either darker or almost blackish in the females. Coloration of hind tibial spurs and degrees of sclerotization in the male genitalic organs seem different among the species.

In *M. tokejii*, yellowish coloration is present on much the same parts as in the *parvula* group and *Pseudomordellina*.

#### Antenna (Fig. 6-A, B)

*Mordellistena tokejii* and its allied species are unique within the genus in showing remarkable sexual dimorphism on their antennae: segments are filiform in males (Fig. 6-A), while they are normally long and serrate in females like those in other congeners (Fig. 6-B).

#### Terminal segment of maxillary palpus (Fig. 6-C, D)

*Mordellistena pumila*, *M. comes* and *M. tokejii* with short ridges on the hind tibia resemble each other in triangularly shaped terminal palpal segment with rather long apical margin (Fig. 6-C). Those in the *parvula* group and the subgenus *Pseudomordellina* are securiform with the apical margin shorter than the inner margin (Fig. 6-D). According to Franciscolo (1967), however, correspondence between this character and the hind tibial ridges cannot be recognized in the African species.

#### Hind tibial spurs (Fig. 7)

The outer spurs are rather long as compared with the inner one in *M. comes* and *M. tokejii*, while they are short in the *parvula* group, sometimes rather small and thin. They are naturally lacking in the subgenus *Pseudomordellina*.

It may appear plausible that the absence of the outer spur on hind tibia is due to breaking off, but in all the cases, when the left one is absent, the right one is also absent. This

contradicts the above view.

Lack of the hind tibial spur is also observed in another genus, *Mordellina*, which is rather closely allied to the species dealt with in this paper (Table 1). In *Mordellina signatella* (Marseul, 1876), the two states are observed even as sexual dimorphism. This fact may support the view that degeneration of the hind tibial spur takes place rather easily.

#### *Ridges on hind tibia* (Fig. 6-E, F)

This character is the most practical for determination of species-groups: they are rather short (Fig. 6-E) in the *pumila* and *confinis* groups, while species of the *parvula* group possess two long and oblique ones beside the apical ridge (often with a rudimentary ridge on basal area of the longest one, Fig. 6-F). Discrimination based on this character seems very useful not only for the *Mordellistena* species from Japan but probably for the ones from all over the Palearctic Region, since this character is adopted in the keys to the species of Palearctic *Mordellistena* (Ermisch, 1956, 69 and 77). However, species in an intermediate condition have been known in other genera, so that the division depending only on this character may become considered artificial after further investigations: for example, *Mordellina* (*Pseudomordellistena*) *yezoensis* (Chûjo, 1957) and *Falsomordellistena konoï* (Pic, 1936) (= *Mordellistena horni* Kôno, 1934).

So far as I know, all the Japanese species of the subgenus *Pseudomordellina* possess ridges as are found in the *parvula* group.

#### *Paramera of male genitalia* (Fig. 2, 3 and 5)

With regard to the species described from the Palearctic Regions, the paramera are rather symmetrical and definite in the species of the *pumila* and *confinis* groups (Ermisch, 1964, 65, 68, 69 and 70, and Horák 1982 and 83): the left one with rather explicit basal process, and the right one with ventral branch curved upwards and lacking in process. In the *parvula* group and *Pseudomordellina*, however, they are less symmetrical and rather variable among species: the left one with basal process more or less distinct, though sometimes absent, and the right one sometimes with a process on the ventral branch.

Although the most reliable diagnostic character for specific identification is usually found in the male genitalia, the two pairs of sibling species are so similar to each other in genitalic characters that they cannot be distinguished except by condition of the hind tibial spurs (Fig. 5-A, C, E and G).

#### *Eighth abdominal sternum* (Fig. 2, 4 and 5)

In the *pumila* and *confinis* groups, the eighth abdominal sternum is longer than wide with the median lobe broadly triangular and more or less pubescent. On the other hand, in the *parvula* group it is sometimes much longer than wide with the median lobe small, short triangular and densely pubescent, and sometimes with lateral wings. Though the *parvula* group seems rather diversified, the sibling species are much the same also in this character.

*Host plants* (Table 2)

Records of host plants are very poor for the Mordellidae. So far as concerned with *Mordellistena* whose host plants are known, association between the beetles and the host plants cannot be recognized. A few species are reported to emerge from two kinds of plants which are not close to each other. This would mean that some mordellid larvae are polyphagous, or otherwise that identifications were not correct.

Some previous researchers have observed mordellids emerging from stem galls. Some species are therefore known as gall inducers on *Artemisia* or *Cannabis*. However some North American species are reported from fly's stem galls on *Solidago*<sup>1)</sup> either simply as inquilines (Harrington, 1895; Ping, 1915) or as predators on gall makers (Brodie, 1892; Abrahamson *et al.*, 1989). It is, therefore, possible that the reports as to inducement of galls by mordellid larvae are attributable to insufficient observation, though Hayashi (1986) states that mordellid galls are distinguishable from flies' ones.

Table 2. Host plants of *Mordellistena*.

Species	Host plant	Source	District
Subgenus <i>Mordellistena</i>			
* <i>M. comes</i> Marseul, 1876 <sup>2)</sup>	<i>Cannabis</i>	Matsumura, 1915; Shinji, 1944	Japan
Ditto	<i>Lilium</i>	Hayashi, 1975	Japan
** <i>M. unicolor</i> Leconte, 1862	<i>Solidago</i>	Ping, 1915	U. S. A.
*** Ditto	Ditto	Abrahamson <i>et al.</i> , 1989	U. S. A.
<i>M. parvula</i> (Gyllenhal, 1827)	<i>Artemisia?</i>	Allen, 1986	U. K
* <i>M. brevilineata</i> Nomura, 1961	<i>Artemisia</i>	Hayashi, 1974	Japan
<i>M. sp. 1</i>	<i>Artemisia</i>	Present paper	Japan
<i>M. fujiyamai</i> Nomura, 1951	<i>Peucedanum</i>	Hayashi, 1975	Japan
<i>M. tamana</i> (Tokeji, 1953)	<i>Angelica</i>	Hayashi, 1974; Present paper	Japan
<i>M. sp. 3</i>	<i>Artemisia</i>	Shiyake, 1992	Japan
* <i>M. insignata</i> Ermisch, 1965a <sup>2)</sup>	<i>Artemisia</i>	Hukuda, 1974	Japan
<i>M. ghanii</i> Franciscolo, 1974	<i>Cannabis</i>	Franciscolo, 1974	Pakistan
Ditto	<i>Artemisia</i>	Ditto	Ditto
** <i>M. nigricans</i> (Melsheimer, 1846)	<i>Solidago</i>	Harrington, 1895	Canada
*** Ditto	Ditto	Brodie, 1892	Canada
Subgenus <i>Pseudomordellina</i>			
<i>M. sp. 5</i>	<i>Artemisia</i>	Present paper	Japan

\*Inducers of stem galls.

\*\*Inquilines in stem galls of flies.

\*\*\*Predators on fly larvae in their stem galls.

<sup>1)</sup> Though *Solidago* was imported from North America, naturalized in Japan, and is rather dominant in plains, *Mordellistena* has never been observed emerging from it.

<sup>2)</sup> Synonymic lists are shown below.

*Mordellistena comes* Marseul, 1876.

*Mordellistena comes* Marseul, 1876; Hayashi, 1975.

*Mordellistena cannabisi* Matsumura, 1915 (according to Kōno, 1928).

*Mordellistena pumila*: Shinji, 1944.

*Mordellistena insignata* Ermisch, 1965a.

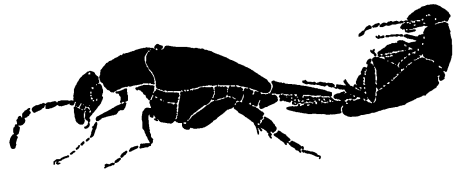
*Mordellistena parvula*: Hukuda, 1953; Hukuda, 1959.

*Mordellistena inornata* Nomura, 1961 (nec Smith, 1882).

*Mordellistena insignata* Ermisch, 1965a; Hukuda, 1974.

*Mating* (Fig. 8)

Ecological observation for the two sibling species, *M. sp. 3* and *M. sp. 4*, was made to clarify reproductive isolation between them. Material was collected and observed in the following method: Species resembling *M. parvula* were collected by sweeping on *Artemisia*, and then they were released in a few packages with stems of the host plant. As soon as a pair of beetles exhibited the mating position as shown in Fig. 8, they were removed from the package by an inhaler. The male was identified to the species level by observation of its genitalia and the accordance with female as to presence or absence of the outer hind tibial spur was examined (Table 3).

Fig. 8. Mating of *Mordellistena*.

Though the sample size is rather small, the result seems to show that specific difference is reflected in the presence or absence of the outer tibial spur.

**Conclusion**

As shown in Table 4, diagnostic features of the *parvula* group agree with those of the subgenus *Pseudomordellina* except for the hind tibial spurs. Moreover, two species belonging to the former are very similar to two of the latter, respectively, even in the male genital organ. Besides, the outer spur seems to become readily degenerate in the course of evolution. I am therefore convinced that the *parvula* group of *Mordellistena* and the subgenus *Pseudomordellina* in the sense of this paper are homogeneous and that they should not be separated into different subgenera.

I am much inclined to regard the *parvula* group as being different from the *pumila* and *confinis* groups (*Mordellistena* s. str.) at the subgeneric or generic level. However, the genus includes very numerous species and is still insufficiently studied: in some regions, all the species of the tribe Mordellistenini are referred to the genus. For official proposition of new

Table 3. The number of pairs accomplished the mating position as shown in Fig. 8.

Combination			Number of pairs
1 spur	(♂) - 1 spur	(♀)	9
1 spur	(♂) - 2 spurs	(♀)	1
2 spurs	(♂) - 1 spur	(♀)	0
2 spurs	(♂) - 2 spurs	(♀)	3

Table 4. Comparison among the four taxa.

Characters	Taxa	Subgen. <i>Mordellistena</i>			Subgen. <i>Pseudomordellina</i>
		Gr. <i>M. pumila</i>	Gr. <i>M. confinis</i>	Gr. <i>M. parvula</i>	
Coloration		entirely black	black with some parts yellowish brown		
Antenna		normally long (A)	filiform in male (B)	normaly long (A)	
Maxillary palpus (terminal segment)		triangular (C)		securiform (D)	
Outer spur on hind tibia		long		short	absent
Ridges on hind tibia		short (E)		long and oblique (F)	

taxonomic system, the genus, its subgenera and species-groups need to be redefined more strictly after detailed examination of a large number of species from all over the world.

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- (Those with asterisks\* were not seen.)