

***Excavarus rufus* (Uchida), new combination**

This species is closely related to *E. sinensis* Mason and differs most notably in the much larger and coarser punctures of the mesonotum. *E. rufus* has about 9 punctures in a direct line between the notauli about the centre of the mesonotum, whereas *E. sinensis* has about 16 there. In addition the second tergite of *E. rufus* is almost as long as wide (apical width is 1.2 times length) whereas that of *E. sinensis* is almost twice as wide at the apex as long. *E. rufus* is also somewhat smaller and more extensively yellow colored, in particular at the apex of the petiole and the mesopleuron and mesosternum.

***Excavarus apiarius* (Gravenhorst), new combination**

This species differs from all others in this genus in having a large, doubled occipital carina behind the cheeks and a small apical projection on the hind tibia. Its other characters have been well described by several authors (Kerrich, 1951; Schmiedeknecht, Thomson, etc.).

Summary

The generic classification of Exenterini is discussed and modified with particular reference to the Oriental species. Two new genera are described, *Kristotomus* (= *Aniscctenion* auct.) and *Kerrichia*. The following new species are described: *Kristotomus sapporonis*, *K. planiceps*, *K. kamikochi*, and *K. nagano* from Japan; *K. nathani* from India; *Kerrichia nipponica*, *Cteniscus kamikochi* and *Exenterus nagano* from Japan; and *Excavarus sinensis* from China.

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***Mecomma* Fieber in North America (Hemiptera: Miridae)**

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The present paper brings together the latest knowledge on the species of *Mecomma* known to occur in the Nearctic region. Study of the genitalia, external structures, and distribution, show that species vary considerably in structure and colour, and these variations have contributed in the past to the confusion in naming the species of *Mecomma*. Lack of specimens in collections has also hindered the study of this group and it is only within the last few years that large collections made in Canada and the United States have helped to solve some of the problems.

In the revision of the *Cyrtorhinus-Mecomma* complex by Carvalho and Southwood (1955), the authors list five species and one subspecies of *Mecomma* in North America. However, Carvalho and Southwood were handicapped in their study by lack of material, and thus were not aware that the colour and external characters which they used to delimit species are too variable to be trust-

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worthy. We have reduced the number of species to four and on further study of European specimens of *Mecomma*, this number may ultimately be reduced to two.

In this paper only new synonymy and new combinations proposed by the authors are listed; additional information may be obtained in Carvalho (1958). Variations in external and genital characters are discussed, and a key to the four species and their distribution in the Nearctic region is given.

Genus *Mecomma* Fieber, 1858

Type species of genus: *Mecomma ambulans* Fallen, 1807.

Mecomma is very closely related to *Cyrtorhinus* in general form, structure of the genitalia, and ecology. On further study the two may prove to be congeneric, in fact, the genitalic and external differences within *Mecomma* are greater than between the type species of *Mecomma* and *Cyrtorhinus*.

Species of *Mecomma* are widely distributed in temperate North America. They are found on grasses and sedges in damp and marshy areas, or along margins of shaded meadows, at low and high altitudes. Often the adults are collected on the underbrush in wooded areas.

The nymphs appear at the end of June or early July and the adults are common throughout July and August. The degree of melanism appears to be influenced by temperature, humidity, and age. Specimens from areas of lower humidity and higher temperature tend to be lighter in colour. Apparently, lower temperatures produce darker specimens. The same environmental factors seem to influence polymorphism. Thus, colour and lengths of antennal segments are highly variable and are unreliable in classifying the species. There may be strong sexual dimorphism, the males being macropterous, while the females may be brachypterous or macropterous. Macropterous females are very rare in collections. The specific differences in the genitalia observed by Carvalho and Southwood (1955) cannot be confirmed in this study. What differences exist appear to be no greater than those within the species as the basic pattern of each structure remained the same. Extreme differences in certain structures may be inferred if care is not taken to orient each specimen the same way during examination. The spiculum of the male deserves special mention. When the spiculum is on the horizontal plane with the main shaft curving to the right, the basal process points dorsad (Fig. 6, E); to produce the position that best displays the details, the spiculum should be rotated one quarter turn to the right (Fig. 6, C). The angle of the main shaft is also influenced by the medium used when making the dissection, e.g. KOH, glycerine, or water.

Key to species of *Mecomma*

Females

1. Second antennal segment clubbed *angustata* (Uhl.) 2
 Second antennal segment filiform or nearly so 2
2. Hemelytra black, second antenna filiform *bradora* Kelt. 3
 Hemelytra pale, if black second antenna incrassate 3
3. Hemelytra pale or black, second antenna incrassate *antennata* Van D. 4
 Hemelytra pale, second antenna filiform *gilvipes* (Stål)

Males

1. Calli of pronotum very prominent, forming a groove between them *angustata* (Uhl.) 2
 Calli of pronotum flattened 2
2. Rim of genital chamber interrupted by a groove on anterior aspect *antennata* Van D. 3
 Rim of genital chamber entire 3
3. First antennal segment pale *gilvipes* (Stål) 4
 First antennal segment brown or black 4

4. Length of second antennal segment approximately 1.7 times head width or less.....
 Length of second antennal segment more than 1.7 times head width 5
 5. Coxae mostly fuscous to black *gilvipes* (Stål)
 Coxae pale except at base *bradora* Kelt.

***Mecomma gilvipes* (Stål)**

Fig. 6

1858, *Leptomerocoris gilvipes* Stål, 19, 449: 18/.

1883, *Mecomma gilvipes*, Reuter, 3: 386.

1887, *Chlamydatus luctuosa* Provancher, 3: 137 (new syn.)

1955, *Mecomma luctuosa luctuosa*, Carvalho and Southwood, 11: 59 (new syn.)

1955, *Mecomma luctuosa pacifica* Carvalho and Southwood, 11: 61 (new syn.)

This species is widely distributed in North America and is the most common species of the genus in collections.

The type of *Chlamydatus luctuosus* Prov., at the Quebec Provincial Museum, Quebec City, was examined and found to agree well with specimens from the east to west coasts, and Alaska, as well as with paratypes of *Mecomma luctuosa pacifica* Carv. and South. Knight (1923) recognized specimens from eastern North America as *gilvipes*. The genitalia vary slightly throughout the range of the species, especially in the spiculum (Fig. 6, F-K.).

Male: The colour and size of the antennae vary considerably. The first and basal half of second antennal segments vary in colour from pale to reddish brown in specimens from California and Oregon, black in Alaska and Yukon, and pale to black in British Columbia and eastward to the Atlantic Coast.

In length the second antennal segment varies from 1.17-1.68 mm.

Female: The first and basal half of second antennal segments are generally pale throughout the range of the species, and this colour is more consistent than that of the male. The darker forms are found in corresponding areas mentioned for the male. The hemelytra are generally pale.

Specimens studied: ALASKA: Anchorage, Big Delta, Cold Bay, Ft. Beauclerc, Ft. Richardson, Haines Cut-off, Katmai, Karluk, Kenai Pen., Ketchikan, King Salmon, Kupreanof Is., Matanuska, Naknek, Palmer, Popoff Is., Seldovia, Seward, Shaw Creek, Valdez, Willow, and Wrangell. ALBERTA: Edmonton. BRITISH COLUMBIA: Chilcotin, Fernie, Goldstream, Greenwood, Queen Charlotte, Quesnel, Saanich, Salt Spring Is., Sidney, Sooke, Terrace, Victoria, Wells. CALIFORNIA: Beatrice, Smith River. MAINE: Mt. Katahdin. MANITOBA: Shilo, Souris, Turtle Mt., and Virden. MICHIGAN: Isle Royale, Sault Ste. Marie. NEWFOUNDLAND: Goose Bay. NEW HAMPSHIRE: Mt. Washington. NEW YORK: Catskills, Saball, Wanakena. NORTH WEST TERRITORIES: Norman Wells. NOVA SCOTIA: Lockeport, Mt. Uniacke, Parrsboro, Springfield. ONTARIO: Garvel River, Parry Sound. OREGON: Bandon, Corvallis. QUEBEC: Cascades, Hudson Heights, Lac à la Tortue, Montmorency Falls, Montreal, Otter Lake, Parke Reserve, Thunder River, Thurso, Trinity Bay. SOUTH CAROLINA: Seneca. WASHINGTON: Buckley.

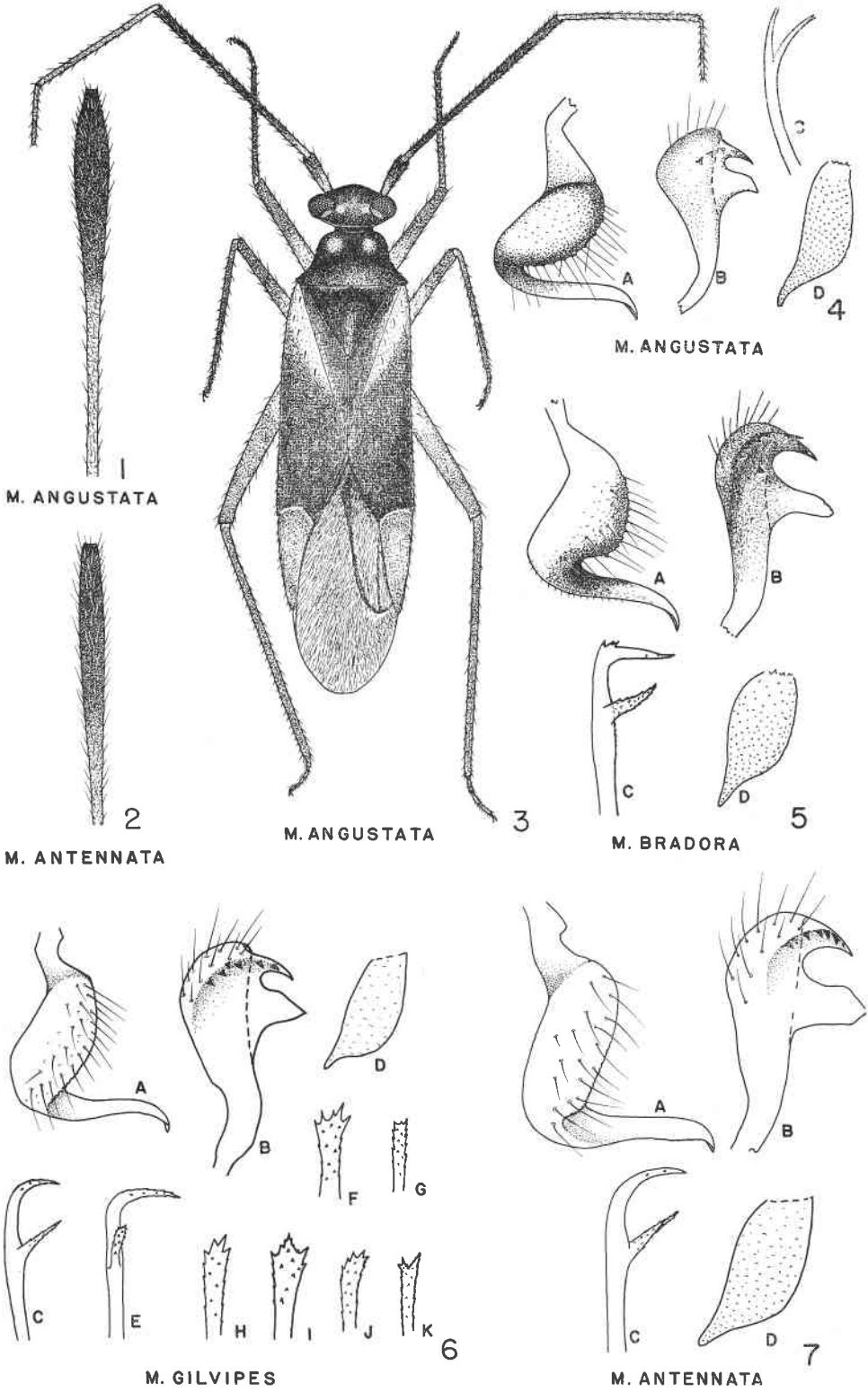
***Mecomma antennata* Van Duzee**

Figs. 2, 7

1917, *Mecomma antennata* Van Duzee, 7: 275.

This species is very similar to *gilvipes* in general appearance and genital structures except for the female second antennal segment which is markedly in-

Figs. 1-7. *Mecomma* spp. 1, 2, second antennal segment of female; 3, adult male; 4-7, genitalia of *Mecomma* spp. A, left clasper; B, right clasper; C, E, spiculum; D, K structure of bursa copulatrix; E-K, variations in the fork of the spiculum.



crassate, and closely resembles the antenna of *ambulans* Fall. It is also interesting that the hemelytra of the females from the type locality are pale as in *gilvipes*, except for one specimen with entirely black hemelytra. This would seem to suggest that perhaps only one Holarctic species is represented in our fauna and that variations in pigmentation, size of antennae, and small genitalic differences are the influence of environment. Moreover, the genitalia of the male are similar to *gilvipes*. More material is needed from California to determine the extent of these differences.

Male: The colour of the antennae, head and pronotum varies from light reddish-brown to black. The anterior margin of the genital chamber appeared to be interrupted by a short groove. This character was not observed in the other species, but its value as a distinguishing character cannot be determined at this time until more male specimens are examined.

In length the second antennal segment varies from 1.47-1.66 mm.

Female: The antennae are unicolorous reddish-brown to black, the second segment incrassate. The hemelytra are generally pale, but occasionally may be black.

Specimens studied: California: Muir Woods, Marin Co.; and "San Frisco" Co.

***Mecomma bradora* Kelton**

Fig. 5

1932, *Mecomma ambulans*, Walley, 64: 152.

1960, *Mecomma bradora* Kelton, 92: 572.

Females of this species most closely resemble *ambulans* by virtue of the black hemelytra, but they differ, however, in the slender second antennal segment, and appear to be closer to *gilvipes*. The spiculum of the male resembles that of *ambulans*, while the right clasper is intermediate between the two. The status of this species will remain in doubt until more is known of the influence of climate and habitat on the species. Perhaps the melanism of the females is influenced by the low Arctic conditions that prevail at, e.g., Bradore Bay, Que. We have no other specimens of this or any other species from localities with similar climatic conditions.

Male: In external appearance the species resembles *gilvipes*. The second antennal segment is short, being 1.15-1.31 mm. long.

Female: The antennae are black except for the third in which the basal one-quarter is pale. The second segment is linear, unlike that of *ambulans*.

Specimens studied: QUEBEC: Bradore Bay.

***Mecomma angustata* (Uhler), new combination**

Figs. 1, 3, 4

1895, *Globiceps angustata* Uhler, 31: 42.

1922, *Globiceps dispar*, Knight, 53: 282.

1955, *Mecomma mimetica* Carvalho and Southwood, 11: 57 (new syn.)

This species was originally described from a male specimen from Colorado. Portion of the description follows: "black, highly polished, delicate, slender..... eye large and prominent.....face nearly vertical.....antenna long, slender, dull black.....pronotum sub-campanulate, highly polished.....callosities very large, tumid.....clavus dusky, corium whitish-yellow at base, dusky on the remaining two-thirds....." Knight (1922) noted that this description fitted specimens of *G. dispar* (Boh.), a Palearctic species, except for the groove between the callosities "which is partly occupied by a blunt carina that runs back to posterior lobe.....". In viewing specimens under certain angles of light, the median line

appears to be elevated in both sexes, and this is probably what Uhler was describing. Since Carvalho and Southwood had only females when they described *mimetica*, a synonym, and since the two sexes are highly dimorphic, this relationship was overlooked. During the present study large series of "*mimetica*" were examined. Recently the senior writer was able to locate the type of *Globiceps angustata* Uhler in the Uhler collection at the United States National Museum, Washington. The specimen now bears the type label No. 65775.

Male: This species differs markedly from the other *Mecomma* in the rounded head and the tumid calli on the pronotum. The second antennal segment is linear. Only macropterous forms are known.

Female: The strongly clavate second antennal segment is very characteristic. Brachypterous and macropterous forms are known.

Specimens studied: ALASKA: Anchorage, Chitina, Shaw Creek. ALBERTA: Canmore, Drumheller, Edmonton, Elkwater. BRITISH COLUMBIA: Atlin, Cariboo, Gray, Hedley, Hope Mts., Kamloops, Merritt, Nicola, Osoyoos, Quesnel, Salt Spring Is., Soda Creek. COLORADO: Glen Haven, Little Beaver, Pingree Park. MANITOBA: Brandon, Victoria Beach. NEW HAMPSHIRE: Glen House. NORTHWEST TERRITORIES: Norman Wells. ONTARIO: Parry Sound. QUEBEC: Laniel, Mt. Albert. WASHINGTON: Pullman. WYOMING: Laramie. YUKON: Dawson, Whitehorse.

Summary

New synonymy is proposed for certain species of *Mecomma* in the Nearctic region. The following are considered synonyms of *gilvipes* Stål: *luctuosa* Prov., and *luctuosa pacifica* Carv. and South. Nearctic species of *gilvipes* Stål, *antennata* Van D., and *bradora* Kelt. may prove on further study to be the polymorphic forms of *ambulans* Fall. *Globiceps angustata* Uhl. is transferred to *Mecomma* and becomes a senior synonym of *mimetica* Carv. and South. This species may also prove to be a synonym of *dispar* Boh. A key to species, their distribution, and genitalic structures is given.

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New Anthocoridae from North America, with Notes on the Status of some Genera and Species (Heteroptera)

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The present paper brings together the latest knowledge on the species of *Lyctocoris* Hahn, *Tetraphleps* Fieber, and *Elatophilus* Reuter, in the Nearctic region. New synonymy and new combinations are listed, and distinguishing characters of the genera are presented. Five new species are described to make available the names for a forthcoming paper on Anthocoridae in the Pacific Northwest (Anderson, in press).

There is an obvious need for a revision of the North American Anthocoridae to establish generic limits, and to place the existing species into their proper groups. With the exception of descriptions of new species by Parshley (1920), Van Duzee (1921), Drake (1922), Drake and Harris (1926), and Blatchley (1928), no extensive work has been done on the group in recent years. The only comprehensive works on the Anthocoridae dealing with North American species are those of Reuter (1884), Champion (1900), Parshley (1923), and Blatchley (1926).

SUBFAMILY LYCTOCORINAE REUTER

Genus *Lyctocoris* Hahn, 1835

The species of this genus are distinguished by the antennal segments three and four which are smaller in diameter than segment two, and beset with prominent bristles; the shape of the osteolar canal (Fig. 1); the explanate antero-lateral margins of the pronotum; the very small collar; and the reddish brown colour. Four species are recorded from North America: *campestris* (F.), *doris* Van D., *elongatus* (Reut.), and *stalii* (Reut.).

The three new species described below form a species complex in which the male genitalia are similar to one another but differ considerably from those of the *campestris-stalii* group. No males of *elongatus* were available for study. In all species examined the right clasper was well-developed. The rostrum of *campestris* is much shorter than that of *stalii*, while that of the latter is within the range of those of the new species; that of *elongatus* is the longest. Externally the new species are very difficult to separate from one another; however, they can be identified by the genitalia of the males and the sixth abdominal segment of the females. The species are found almost exclusively on *Pinus*.

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