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## THE FEMALE OF *GRAPHODERUS MANITOBENSIS* WITH NOTES ON IDENTIFICATION OF FEMALE *GRAPHODERUS* (COLEOPTERA: DYTISCIDAE)<sup>1</sup>

Bryn H. Tracy and William L. Hilsenhoff<sup>2</sup>

### ABSTRACT

Ten male and 11 female *Graphoderus manitobensis* were collected in April and May, 1980 and 1981 from a pond 16 km west of Madison, WI. Females can be distinguished from female *G. fasciicollis* (Harris) by their much narrower metasternal wings and more pronounced corrugated sculpturing on the pronotum. The sculpturing and markings on the pronotum, width of the metasternal wings, and projections at the base of the ovipositer are used to identify females of *G. manitobensis* and three closely related species.

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Wallis (1933) described *Graphoderus manitobensis* from a single male collected 21 June 1911 at Winnipeg, Manitoba, but the female remained unknown and no additional males were ever collected (Wallis 1973). However, in 1980 and 1981, 10 males and 11 females were collected between 3 April and 24 May from McKenna Pond, a shallow, 0.8 ha, semi-permanent, heavily-vegetated pond owned by the University of Wisconsin and located 16 km west of Madison, WI. Female *G. manitobensis* were identified after comparison with the 10 males and 47 *G. fasciicollis* (Harris) in the University of Wisconsin Insect Collection. Frequently in the literature *G. fasciicollis* is erroneously called *G. fasciatocollis*. This paper describes the female of *G. manitobensis* and provides a means for separating it from *G. fasciicollis* and other species of *Graphoderus* Aube. All *G. manitobensis* from this study are deposited in the University of Wisconsin Insect Collection.

### DESCRIPTION OF FEMALE *GRAPHODERUS MANITOBENSIS*

Except for the modified pro- and mesotarsi and their claws, which are secondary male sexual characteristics, the description by Wallis (1933) for the male of *G. manitobensis* applies to females. But females differ from males in other respects. They have more pronounced corrugated macrosculpturing on the pronotum, which is longitudinal toward the lateral margin and oblique toward the middle. The basolateral elytral punctures are more pronounced, and in some the punctures coalesce into abbreviated, irregular, black grooves. Lastly, along the dorsal anterolateral margins of the basal segment of the ovipositer are two small, sclerotized, apically rounded to bluntly pointed projections. The posterior black fascia on the pronotum of both sexes, although reaching the posterior margin, is attenuated laterally, and does not quite reach the lateral margin as described by Wallis.

### NOTES ON IDENTIFICATION OF *GRAPHODERUS*

The most recent key to North American *Graphoderus* Aube is by Wallis (1939). *Graphoderus liberus* (Say) is easily recognized by its distinctive coloration, but the other

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four species are marked similarly. Males are easily identified with Wallis's key by differences in the number of pallettes on the pro- and mesotarsi, and differences in the genitalia can also be used (Wallis, unpub. manuscript). Identification of females is based on pronotal markings, and is sometimes difficult, with *G. manitobensis* females keying to *G. fascicollis*. The following additions to couplet 4 in Wallis's key will separate females of these two species:

- 4. Width of metasternal wing 0.5–0.6 mm; ratio of metasternal wing width to metacoxal plate length greater than 0.13 ..... *G. fascicollis* (Harris)
- Width of metasternal wing 0.3–0.4 mm; ratio of metasternal wing width to metacoxal plate length less than 0.13 ..... *G. manitobensis* Wallis.

The width of the metasternal wing is the narrowest width between the mesocoxae and metacoxal plate. The length of the metacoxal plate is measured along the same line (Larson 1975). Additional characters in Table 1 can be used to verify identifications of female *Graphoderus*.

Table 1. Separation of female *Graphoderus*.

	<i>perplexus</i> Sharp	<i>occidentalis</i> Horn	<i>fascicollis</i> (Harris)	<i>manitobensis</i> Wallis
Corrugated macrosculpturing on pronotum	distinct	obsolete	distinct	pronounced
Width of metasternal wing (mm)	0.35–0.40	0.50–0.60	0.50–0.60	0.30–0.40
Separation of posterior black fascia from base of pronotum	narrow testaceous <sup>a</sup>	none	very narrow rufous laterally	none
Separation of anterior black fascia from apex of pronotum	broad testaceous	none	broad rufopiceous <sup>b</sup>	none <sup>c</sup>
Dorsal projections at antero-lateral margins of basal segment of ovipositer	pointed	reduced	truncate to notched	bluntly pointed

<sup>a</sup>Occasionally extremely narrow or absent at center.

<sup>b</sup>Present in all Wisconsin specimens, but in some *G. fascicollis* the black fascia extends to the margin (Wallis 1939).

<sup>c</sup>Anterior bead may be rufopiceous.

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