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## Corrections for Identification of Mature Larvae of *Rhantus calidus* (Fabricius) and *Hoperius planatus* Fall (Coleoptera: Dytiscidae) in Georgia

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**CORRECTIONS FOR IDENTIFICATION OF MATURE LARVAE  
OF *RHANTUS CALIDUS* (FABRICIUS) AND *HOPERIUS  
PLANATUS* FALL (COLEOPTERA: DYTISCIDAE) IN GEORGIA.**

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**ABSTRACT**

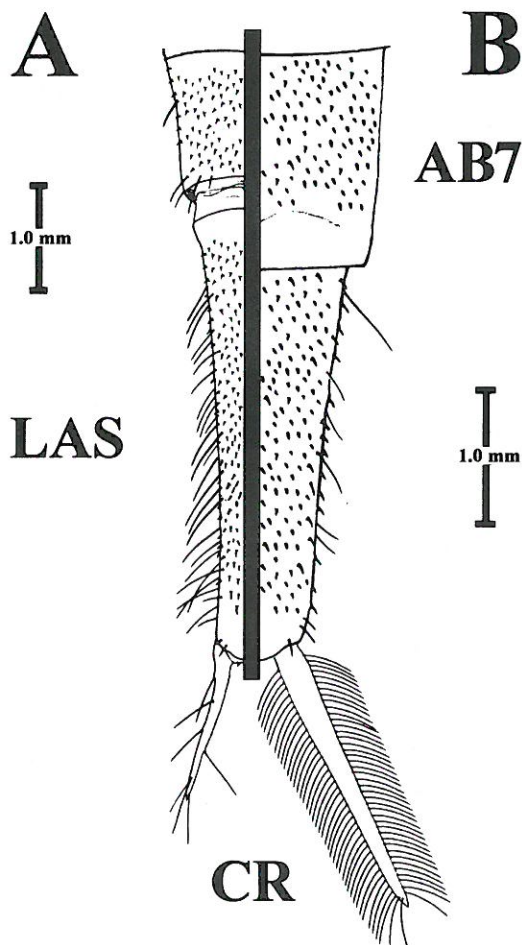
Characters for identification of mature larvae of *Rhantus calidus* and *Hoperius planatus* in Georgia are evaluated and critiqued. Mature larvae of *R. calidus* have only eight cercal sensilla (setae) while those of *Hoperius* have numerous medial and lateral sensilla. This is presented as an obvious and reliable character set for identification of *R. calidus* and *H. planatus* in Georgia.

**Key words:** Georgia, *Rhantus*, *Hoperius*, larva, key.

Turnbow and Smith (1) have *Rhantus calidus* (Fabricius) and the monotypic southeastern *Hoperius planatus* Fall as components of the Georgia dytiscid fauna with *R. calidus* as the only *Rhantus* species of record. Descriptive information is available for the robust and superficially similar third instars of *R. calidus* (2) and *H. planatus* (3). However, because of the inclusion of erroneous and unnecessarily difficult morphological information in Barman's (4) key to mature dytiscid larvae of Georgia, larvae of both species are likely to be identified as *H. planatus*.

Mature larvae of Nearctic *Rhantus* have been described as having cerci (urogomphi) that are as long as or longer than the last (eighth) abdominal segment (5,6). Cerci of *Hoperius planatus* are only about half the length of the last abdominal segment (3). These purported differences in cercal length were employed as a primary character set (4) for identification of *Rhantus*

*calidus* and *H. planatus* in Georgia. Larva of *R. calidus* collected in central Georgia, however, have cerci that are less than half the length of the last abdominal segment (Fig. 1A), confirming an earlier and over-looked description of South American material (2). In addition, most described mature larvae of *Rhantus* (*s. lat.*) also have numerous spine-like sensilla (setae) on the cerci (7), but *R. calidus* has only eight sensilla with seven of these prominent (Fig. 1A). In contrast, cerci of *H. planatus* have numerous hair-like sensilla (setae) along the lateral and medial margins (Fig. 1B).



**Figure 1.** Dorsal views of the cerci, cercal sensilla (setae), and seventh and eighth abdominal segments of *Rhantus calidus* (Fabricius) (A) and *Hoperius planatus* Fall (B). Abbreviations used are: CR, cerci; AB7, seventh abdominal segment; and LAS, last (eighth) abdominal segment. Sensilla (setae) on abdominal segments are representative only.

Spangler (3) noted the absence of small basoventral spinulae on tarsal claws of *Hoperius planatus* that are thought to be present on *Rhantus* species and recommended that the presence (*Rhantus*, *s. lat.*) or absence (*Hoperius*) of these spinulae be used to identify larvae of *Rhantus* and *Hoperius*. To facilitate identification, Spangler's study includes a modification of Leech and Chandler's (8) key to incorporate this information and permit identification of the two taxa. White and Brigham (9) include Spangler's proposed dichotomy as the only character for distinguishing *Rhantus* and *Hoperius* in their key. Larson et al. (6) does not include *H. planatus* in their larval keys to Nearctic Dytiscidae, but they do refer readers to Spangler's (3) descriptive study. Barman (4) retained the presence or absence of basoventral spinulae as a secondary character for identification *Rhantus* and *Hoperius* in Georgia.

An examination of mature larvae of both species confirmed the presence of basoventral spinulae on the tarsal claws of *Rhantus calidus* and their absence on *Hoperius planatus*. However, the morphometric analysis was difficult, requiring greater magnifications than those afforded by the typical dissecting microscopes most often employed in identification of aquatic insect larvae. Consequently, the small spinulae on *R. calidus* may be overlooked and larvae of *R. calidus* incorrectly identified as *H. planatus*. Complete reliance on this relatively covert character for identification of the taxa is unnecessary because differences in the number of sensilla (setae) on the cerci (urogomphi) are readily discernible.

Larvae of *Rhantus calidus* and *Hoperius planatus* will key to couplet 18 in Barman's (4) key to mature dytiscid larvae of Georgia. By modifying couplet 19 of that key to include differences in the number and distribution of cercal sensilla (setae), it should be possible to identify mature larvae of *H. planatus* and *R. calidus* in Georgia.

#### **Key (4) Modifications for Separations of *Rhantus calidus* and *Hoperius planatus***

- |   |  |
|---|--|
| 18a. Fourth (last) segment of antenna about two-thirds or more<br>the length of the third ..... | 19                                       |
| 18b. Fourth segment of antenna one-half or less the length<br>of the third .....                | 20                                       |
| 19a. Cerci with seven prominent<br>sensilla (Fig. 1A) .....                                     | <i>Rhantus calidus</i> (Fabricius, 1792) |
| 19b. Cerci with numerous<br>sensilla (Fig. 1B) .....  | <i>Hoperius planatus</i> Fall, 1927      |

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