Systematic Study of Megacrania Species of Malo, New Hebrides (Cheleutoptera: Phasmatidae)

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Source: Journal of Orthoptera Research, 19(2) : 381-385

Published By: Orthopterists' Society

URL: https://doi.org/10.1665/034.019.0229
Systematic study of Megacrania species of Malo, New Hebrides (Cheleutoptera: Phasmatidae)

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Abstract

The identity of the subspecies Megacrania batesi speiseri Carl, 1915 (Carl spelled batesii as bates in error) from Malo, New Hebrides is clarified. Carl's subspecies is elevated to the species Megacrania speiseri Carl, 1915 and morphological characters are redescribed with measurements. A key of the genus Megacrania is provided.

Key words

stick insects, taxonomy, Phasmatidae, Megacrania, asian pacific, species

Introduction

Carl (1915) described female specimens collected from Malo, New Hebrides as the subspecies Megacrania batesi speiseri. Hsiung (2007) doubted the identity of M. batesi speiseri but was unable to access any of Carl's type specimens for further study at that time. Hsiung (2007) went on to describe a specimen from Efate, New Hebrides as Megacrania obscurus and wondered whether Carl's subspecies might belong to M. obscurus.

Willemsen (1926) described three females and a nymph collected in New Hebrides, Espir.-Santo Isl. as a new species, Megacrania bakeri, originating from the same area as Carl's subspecies. He gave only a brief description with simple measurements of antennae, thorax, femur and subgenital plate and did not give critical information on the wings; the species has been only rarely mentioned since his publication.

Hsiung (2007) misrepresented “Fidji” island as the locality of Willemsen's M. bakeri and Carl's subspecies M. batesi speiseri when he cited Gunter's (1931) paper. Actually there was no record indicating Megacrania species to occur in Fidji. Gunter (1931) listed M. batesi speiseri occurring in New Hebriden. Shiraki (1932) followed Gunter’s reference and made a key to known world species of Megacrania which included five species; M. bakeri Willemsen was one of them. The author finally received a syntype specimen of Carl's Megacrania batesi speiseri from Naturhistorisches Museum Basel in 2008 and compared it with the type specimen of M. batesii from the Solomon Islands and Hsiung's (2007) species of M. obscurus from Efate, New Hebrides (see Tables 1 to 3); it was found that they were distinctly different species and it was concluded that Carl's type specimen was not a subspecies of M. batesii and should be accorded full species status as Megacrania speiseri Carl, 1915. Since Carl did not give a detailed description of this species, a complete description and measurements are given. The author also updates here the key to the species of Megacrania (Hsiung 2007).

A revised key to the species of Megacrania

1. Mesonotum granulose ........................................ 2
   — Mesonotum smooth ........................................ 12

2. Mesonotum sparsely granulose; cerci short, not reaching apex of operculum. Philippines ("Ceylon" probably erroneous) .......................................................... alpheus (Westwood)
   — Mesonotum densely granulose; cerci long, reaching or surpassing apex of operculum. .................................................. 3

3. Lateral margins of pronotum and mesonotum slightly spinose ........................................ 4
   — Lateral margins of pronotum and mesonotum conspicuously spiny ........................................ 10

4. Subgenital plate not surpassing extremities of cerci ............. 5
   — Subgenital plate surpassing extremities of cerci ............. 8

5. Subgenital plate just reaching extremities of cerci. Admiralty Is .................................................. vickeri Hsiung
   — Subgenital plate not reaching extremities of cerci ............. 6

6. Granules of mesonotum robust and sharp; hind wing reaching a little beyond hind margin of 3rd abdominal tergum. Taiwan ........................................ tsudai Shiraki
   — Granules of mesonotum slightly elongate not quite sharp; hind wing reaching a little beyond hind margin of 3rd abdominal tergum ........................................ 7

7. Mesonotum with >60 granules, the lateral margin slightly spiny; tegmina ovate, shorter than mesonotum; posterior margin of anal segment nearly rounded. Solomon Is, Australia, New Guinea ........................................ batesii Kirby
   — Mesonotum with 60 granules, the lateral margin not spiny; tegmina ovate, slightly longer than mesonotum; posterior margin of anal segment nearly square. Borneo ................................ rentzi Hsiung

8. Hind wing extending a little beyond posterior margin of 2nd abdominal tergum; mesonotum with 80 oval granules; posterior margin of anal segment nearly round, slightly concave medially. Malo, New Hebrides ........................................ speiseri Carl
   — Hind wing reaching or extending beyond posterior margin of 3rd abdominal tergum, mesonotum with more or less 80 granules. Posterior margin of anal segment nearly round, slightly or not concave medially .................. 9
Table 1. Morphological differences between Carl’s female syntype of Megacrania batesi speiseri (Malo) (now Megacrania speiseri) and the lectotype of M. batesii (Solomon IIs).

<table>
<thead>
<tr>
<th>Characters</th>
<th>M. batesi speiseri</th>
<th>M. batesii (Solomon IIs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mesonotum</td>
<td>With about 40 oval granules, its lateral margin with</td>
<td>With 67 nearly round and distinct granules, its lateral</td>
</tr>
<tr>
<td></td>
<td>weak needle-like spines</td>
<td>margin but little spiny, the first 3 spines of the</td>
</tr>
<tr>
<td>Wings</td>
<td>Elongate-ovate, as long as mesonotum; hind wing</td>
<td>lateral margin stronger than the rest</td>
</tr>
<tr>
<td></td>
<td>1.93 as long as tegmina</td>
<td>Elongate-ovate, shorter than mesonotum, hind wings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.89 as long as tegmina</td>
</tr>
<tr>
<td>Anal segment</td>
<td>Posterior margin of anal segment nearly round,</td>
<td>Posterior margin of anal segment smooth, not concave</td>
</tr>
<tr>
<td></td>
<td>slightly concave medially</td>
<td>medially</td>
</tr>
</tbody>
</table>

Table 2. Morphological differences between Carl’s female syntype of M. batesi speiseri (Malo, New Hebrides) and female type specimen of M. obscursus (Efate, New Hebrides).

<table>
<thead>
<tr>
<th>Characters</th>
<th>M. batesi speiseri</th>
<th>M. obscursus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mesonotum</td>
<td>2x length of pronotum, its surface with about</td>
<td>2.7x length of pronotum, its surface with 70 indistinct</td>
</tr>
<tr>
<td></td>
<td>40 distinct oval granules</td>
<td>granules evenly distributed over the anterior 0.65 of</td>
</tr>
<tr>
<td>Wings</td>
<td>Hind wing 1.93 as long as tegmina, extending a little</td>
<td>its length</td>
</tr>
<tr>
<td></td>
<td>beyond the posterior margin of 2nd abdominal tergum</td>
<td></td>
</tr>
<tr>
<td>Legs</td>
<td>Anterior femora about 1.98 as long as mesonotum</td>
<td>Anterior femora about 1.75x longer than mesonotum</td>
</tr>
<tr>
<td>Coloration</td>
<td>Brownish-testaceous</td>
<td>Generally pale green, mesonotum and abdomen light</td>
</tr>
<tr>
<td></td>
<td></td>
<td>brown</td>
</tr>
</tbody>
</table>

Table 3. Morphological differences between Carl’s female syntype of M. batesi speiseri from Malo and M. batesii species from Kala, New Guinea.

<table>
<thead>
<tr>
<th>Characters</th>
<th>M. batesi speiseri</th>
<th>M. batesii</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mesonotum</td>
<td>Surface with about 40 oval granules, its lateral</td>
<td>Surface with 80 rather strong granules, its lateral</td>
</tr>
<tr>
<td></td>
<td>margin with needle-like spine</td>
<td>margins moderately spiny</td>
</tr>
<tr>
<td>Hind wing</td>
<td>1.9 as long as mesonotum, extending a little beyond the</td>
<td>1.2x as long as mesonotum, reaching the posterior</td>
</tr>
<tr>
<td></td>
<td>posterior margin of 2nd abdominal tergum</td>
<td>margin of the 2nd abdominal tergum</td>
</tr>
<tr>
<td>Coloration</td>
<td>Brownish-testaceous</td>
<td>Head, pronotum, legs and wings pale green, rest of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>body reddish-brown</td>
</tr>
</tbody>
</table>

9. Hind wing nearly reaching posterior margin of 3rd abdominal tergum; mesonotum with 70 narrow small distinct granules; posterior margin of anal segment slightly cleft medially. Admiralty Is. artis Hsiung

10. Lateral margin of mesonotum spiny, the first few anterior teeth not expanded basally; anal segment not cleft medially. Indonesia, New Guinea, Pelew Id. wagneri Willemsen

11. Mesonotal surface with 60 granules, the lateral margin spiny, the first three anterior teeth closely connected; hind wing reaching only to center of 3rd abdominal tergum. Indonesia (Key Inseln, Obi Id, Boeoreo. brocki Hsiung

12. Body and hind wing long (130 mm, 36 mm); femora serrated ventrally, with distinct spines along the keels. Color: pale green. Fiji, Solomon Is, New Britain. phlebus (Westwood)

Megacrania batesi speiseri Carl, 1915

The systematic status of Carl’s M. batesi speiseri has been confused with Megacrania alpheus Westwood for a long period. Gunther (1931) followed Carl’s publication and listed M. batesi speiseri occurring in New Hebrides. Four years later, he believed that Megacrania batesi Kirby was a synonym of Megacrania alpheus (Gunther 1935). Willemse (1926) described a new species, Megacrania bakeri, from New Hebrides. Thirty years later, he listed both Megacrania batesi and Megacrania bakeri as synonyms of Megacrania alpheus (Willemse 1955). Bragg (2001) listed Carl’s M. batesi speiseri as a synonym of M. alpheus, when he studied the stick insects of Borneo. Otte and Brock (2005) doubted the validity of Bragg (2001), listing M. batesi batesi as a synonym of M. alpheus. Actually, M. alpheus is a very unique species whose holotype does not match any of the types of Megacrania. At the present, only one species is known to occur in Borneo, which is Megacrania rentzi Hsiung. Hsiung (1991, 2007) also noted that the locality of the type of M. alpheus might not be Ceylon, but rather a mislabelled Philippine specimen.

Fig. 2. *Megacrania speiseri* Carl 1915. Lectotype (female) A. Dorsal view of insect body. B. Lateral view of insect body. C. Granules of mesonotum. For color version, see Plate XVI.
Type.—Lectotype (designated from Carl’s syntype ♂, Malo. Deposited in Naturhistorisches Museum, Basel [Figs 1, 2]).

Description.—Head: oval, slightly prorect, a little longer than broad. Thorax: pronotal disc as long as broad, slightly narrowed at antero-lateral angles, dorsal surface uneven with strongly defined margins; mesonotum 2x length of pronotum, its surface with numerous (left 36-38, right about 41) oval granules; the granules of the posterior part are less strong than those of the anterior part; the lateral margins with weak needle-like spines. Wing: tegmina elongate-ovate, as long as mesonotum; hind wing 1.93x as long as tegmina and extending a little beyond posterior margin of second abdominal tergum. Leg: anterior femora about 1.98x as long as mesonotum, with ridge bearing five spines visible in ventral view; the mid femora with 2 on the left, 4 on the right, hind femora with 2 on the left and 2 on the right. Abdomen: elongate, segments IV wider than remaining ones; posterior margin of anal segment nearly round, slightly concave medially; cerci broad, triangular in shape; subgenital plate gradually narrowing apically and slightly extending beyond cerci, its ventral surface with a longitudinal ridge.

Coloration.—Brownish-testaceous.

Measurements.—(length in mm) ♂: body 105.0; pronotum 8.0; mesonotum 16.0; tegmen 16.0; hind wing 31.0; front femur 28.00; median femur 15.5; hind femur 18.0; front tibia 23.0; median tibia 13.5; hind tibia 15.0.

Type material.—Lectotype female (designated). Bears five labels: 1. a (hand written, on a small red square paper); 2. Malo ♂ Dr. Speiser, XI. 1911 (black hand writing); 3. Megacrania batesi kby ♂ var., Dr. Speiser XI. 1911 (hand written on a brown paper); 4. Ei eetu. F. Hennemann.

Distribution.—Known only from Malo, New Hebrides.

Acknowledgments

The author is indebted to Dr. R. Manuel for a critical review of the manuscript. Thanks are also due Miss Stéphanie Boucher for computer assistance. I am also grateful to the Naturhistorisches Museum, Basel for the loan of Carl’s syntype specimen and the British Natural History Museum, London for the holotype of Megacrania batesi.

References


