

CORRECTIONS TO THE ARTICLE "REVISION OF THE GENUS *AULACOPHORA* CHEVROLAT (COLEOPTERA: CHRYSOMELIDAE: GALERUCINAE) IN SUNDALAND"

Grace F. Barroga¹

ABSTRACT

Corrections to the article "Revision of the genus *Aulacophora* Chevrolat (Coleoptera: Chrysomelidae: Galerucinae) in Sundaland" are given. There are 47 valid species. Three additional recorded species are unrecognizable and therefore treated as nomina dubia: *Aulacophora analis* (Weber), *A. dimidiata* (Guerin-Meneville) and *A. ioptera* (Wiedemann). A revised checklist and a revised key to the species are provided.

Key words: *Aulacophora*, Sundaland, checklist, key

INTRODUCTION

There are about 186 species of *Aulacophora* Chevrolat, primarily in the Old World tropics. More than half the described species are in south-east Asia and *Aulacophora* is one of the largest galerucine genera on the Sunda shelf (Sundaland), with 47 species recognised here (Anand & Cox 1986; Wilcox 1972; Kimoto 1990; Mohamedsaid & Holloway 1999; Mohamedsaid 1994a, 1994b; Medvedev 2001). Sundaland refers to the lands on the Sunda shelf, namely the Malayan Peninsula south of the Isthmus of Kra (or south of the 7th-10th degree of northern latitude), Sumatra, Java, Borneo, Palawan, Bali and smaller islands in between and around these larger islands (Johnson 1964). Recently, Barroga & Mohamedsaid (2002) published a revision of the genus *Aulacophora* Chevrolat in Sundaland. This paper was published directly from the senior author's Ph.D. thesis, and the senior author was unable to make the necessary corrections before publication, hence this follow-up article.

Two errors involved species names. *Aulacophora ritsemae* Duvivier was used mistakenly for its senior synonym, *A. tibialis* Chapuis. The name of the new species *A. sarawakensis* Barroga & Mohamedsaid was misspelled *sarawakiensis* (a *lapsus calami*).

REVISED CHECKLIST OF *AULACOPHORA* SPECIES FROM SUNDALAND

1. *Aulacophora ancora* (Redtenbacher)
2. *Aulacophora antennata* Baly
3. *Aulacophora apicicornis* Baly
4. *Aulacophora apicipes* Jacoby
5. *Aulacophora atripennis* (Fabricius)

¹ Department of Entomology, College of Agriculture, University of the Philippines Los Baños, College 4031, Laguna, Philippines.

6. *Aulacophora baliensis* Barroga
7. *Aulacophora batesi* Jacoby
8. *Aulacophora bicolor* (Weber)
9. *Aulacophora bipartita* Baly
10. *Aulacophora bipunctata* (Olivier)
11. *Aulacophora boisduvali* Baly
12. *Aulacophora borneensis* Barroga & Mohamedsaid
13. *Aulacophora coffeae* (Hornstedt)
14. *Aulacophora concava* Barroga & Mohamedsaid
15. *Aulacophora cornuta* Baly
16. *Aulacophora costatipennis* Baly
17. *Aulacophora cruenta* (Fabricius)
18. *Aulacophora danumensis* Mohamedsaid
19. *Aulacophora doesonensis* Duvivier
20. *Aulacophora diversa* Baly
21. *Aulacophora dulitensis* Barroga & Mohamedsaid
22. *Aulacophora flaviventris* Baly
23. *Aulacophora flavomarginata* Duvivier
24. *Aulacophora frontalis* Baly
25. *Aulacophora indica* (Gmelin)
26. *Aulacophora irpa* Mohamedsaid
27. *Aulacophora jacobyi* (Weise)
28. *Aulacophora kinabaluensis* Mohamedsaid
29. *Aulacophora laevifrons* Baly
30. *Aulacophora lewisii* Baly
31. *Aulacophora luteicornis* (Fabricius)
32. *Aulacophora marginata* Chapuis
33. *Aulacophora martia* (Weise)
34. *Aulacophora melanocephala* Jacoby
35. *Aulacophora mouhoti* Baly
36. *Aulacophora nusantara* Barroga
37. *Aulacophora orientalis* (Hornstedt)
38. *Aulacophora pahangi* Mohamedsaid
39. *Aulacophora palliata* (Schaller)
40. *Aulacophora postica* Chapuis
41. *Aulacophora quadraria* (Olivier)
42. *Aulacophora quinqueplagiata* Duvivier
43. *Aulacophora rosea* (Fabricius)
44. *Aulacophora sarawakensis* Barroga & Mohamedsaid
45. *Aulacophora tibialis* Chapuis
46. *Aulacophora tricolora* (Weise)
47. *Aulacophora weisei* Barroga & Mohamedsaid . . .

Nomina dubia:

1. *Aulacophora analis* (Weber)
2. *Aulacophora dimidiata* (Guerin-Meneville)
3. *Aulacophora ioptera* (Wiedemann)

REVISED KEY TO AULACOPHORA SPECIES FROM SUNDALAND

- 1 Elytra with distinct longitudinal costae2
 Elytra smooth, or rarely with few, faint costae in apical half4
- 2 (1) Elytra black, shiny; female ventrite 5 emarginate; spermatheca without appendix*costatipennis* Baly
 Elytra with apical half black, basal half yellowish-brown, with or without black bands, dull; female ventrite 5 entire; spermatheca with appendix.....3
- 3 (2) Elytra explanate, with basal half completely yellowish-brown (or only small areas surrounding scutellum black); median lobe of male ventrite 5 quadrate; apex of penis slightly curved (lateral view) *batesi* Jacoby
 Elytra hardly explanate, with a black, inverted Y-band from scutellum to just behind humerus on each side; median lobe of male ventrite 5 transverse; apex of penis strongly curved (lateral view)..... *ancora* (Redtenbacher)
- 4 (1) Mid and hind tibiae with apical spurs 5
 Mid and hind tibiae without apical spurs 38
- 5 (4) Elytra entirely yellowish-brown 6
 Elytra bicolored or entirely black 10
- 6 (5) Female pygidium produced, or keeled and pointed with sides bent ventrad ... 7
 Female pygidium simple, entire at apical margin 8
- 7 (6) Female ventrite 5 bilobed (male humerus with erect hairs; median lobe of male ventrite 5 elongate rectangular, deeply concave)..... *indica* (Gmelin)
 Female ventrite 5 trilobed (male unknown)..... *mouhoti* Baly
- 8 (6) Area below each male antenna with a distinct prominence/horn-like structure; male antennal segment 1 swollen, triangular (3-sided), sharp-edged anteriorly *cornuta* Baly
 Area below each male antenna without such prominence/horn-like structure; male antennal segment 1 of normal shape, filiform 9
- 9 (8) Vertex and clypeus yellowish-brown, rarely with labrum or portions of labrum blackish (this is a rare color form, usually the elytra have black markings)..... *bicolor* (Weber) (in part)
 Vertex (usually), clypeus and labrum black *coffae* (Hornstedt)
- 10 (5) Male antennal segments of normal pubescence (combination of short and long, oblique and recumbent hairs) 11
 Male antennal segments with erect hairs throughout length of most segments *bicolor* (Weber) (in part)
- 11 (10) In male, antennal segments 3, 4 and 5 modified or rather stout, or segment 5 shortened and transverse 12
 In male, without such modifications of antennal segments 3, 4 and 5...24

- 12 (11) In male, vertical area of head with ridges 13
 In male, vertical area of head without ridges 21
- 13 (12) In male, ridges in vertical area of head perpendicular to frontal tubercles ... 14
 In male, ridges in vertical area of head in different positions, not perpendicular to frontal tubercles 15
- 14 (13) Protibiae without apical spurs; antennal segment 3 of male 2.3 x as long as wide (maximum width); median lobe of male ventrite 5 strongly sulcate *frontalis* Baly
 Protibiae with apical spurs; antennal segment 3 of male 0.4 x as long as wide (maximum width); median lobe of male ventrite 5 flat *jacobyi* (Weise)
- 15 (13) In male, ridges in vertical area of head transverse, parallel with frontal tubercles *palliata* (Schaller)
 In male, ridges in vertical area of head oblique 16
- 16 (15) Elytra completely black; in male, ridges in vertical area of head narrow 17
 Elytra yellow, with black markings; in male, ridges in vertical area of head lunar in form 20
- 17 (16) Male antennal segment 4 subspherical, somewhat dorso-ventrally compressed; middle lobe of male ventrite 5 flat *orientalis* (Hornstedt)
 Male antennal segment 4 not subspherical, rather tooth-like, with outer, apical side sharp-edged or produced and pointed; middle lobe of male ventrite 5 slightly sulcate..... 18
- 18 (17) Male antennal segment 3 more or less as long as wide *martia* (Weise)
 Male antennal segment 3 distinctly longer than wide 19
- 19 (18) Male antennal segment 3 robust, 1.45 x as long as wide, with outer, apical side somewhat produced and pointed; side of penis along median orifice diagonal (lateral view) *tricolora* (Weise)
 Male antennal segment 3 not so robust, 1.5 x as long as wide, with apical margin truncate, not pointed; side of penis along median orifice sinuate (lateral view)..... *weisei* Barroga & Mohamedsaid
- 20 (16) In male, antennal segment 3 robust, bigger in size than segment 4, segment 5 wider (maximum width) than long; penis with a bulge along outer side just before acutely rounded apex (lateral view)... *baliensis* Barroga
 In male, antennal segment 3 not so robust, smaller in size than segment 4, segment 5 longer than wide (maximum width) or dimensions subequal; penis without such a bulge along outer side just before sharply pointed apex (lateral view) *bipartita* Baly
- 21 (12) Elytra without any distinct transverse furrow or subbasal depression 22
 Elytra with distinct transverse furrow or subbasal depression 23

- 22 (21) Male antennal segments 3, 4 and 5 not conspicuously modified, but rather stout *lewisii* Baly
 Male antennal segments 3, 4 and 5 conspicuously modified
*flavomarginata* Duvivier
- 23 (21) Transverse sulcus of pronotum not reaching sides; elytra completely black, meso- and metasternum, coxae and femora yellowish-brown, tibiae and tarsi blackish *laevifrons* Baly
 Transverse sulcus of pronotum reaching sides; elytra largely black, lateral sides and short apical margin yellow, meso- and metasternum and all legs black *marginata* Chapuis
- 24 (11) Protibiae without apical spurs 25
 Protibiae with apical spurs 26
- 25 (24) Transverse sulcus of pronotum not reaching sides; elytra completely black; male ventrites 5 subequal to ventrites 3 and 4 combined *pahangi* Mohamedsaid
 Transverse sulcus of pronotum reaching sides; each elytron yellow, with basal, posterior and apical (very small) black patches; male ventrite 5 shorter than ventrites 3 and 4 combined..... *quinqueplagiata* Duvivier
- 26 (24) Median lobe of male ventrite 5 elongate rectangular 27
 Median lobe of male ventrite 5 quadrate 30
- 27 (26) Elytra yellowish-brown, with a basal and posterior black patches or spots..... 28
 Elytra black, or basal part yellowish-brown and apical part black 29
- 28 (27) Middle lobe of male ventrite 5 more or less flat, not strongly hollowed; female ventrite 5 entire..... *quadraria* (Olivier)
 Middle lobe of male ventrite 5 strongly hollowed or deeply concave; female ventrite 5 bilobed*bipunctata* (Olivier)
- 29 (27) Elytra completely black, with distinct subbasal depression; transverse sulcus of pronotum reaching sides; female ventrite 5 strongly emarginate*atripennis* (Fabricius)
 Elytra yellowish-brown, with apical half or apical fourth black, without subbasal depression; transverse sulcus of pronotum not reaching sides; female ventrite 5 somewhat sinuate or slightly excavated *postica* Chapuis
- 30 (26) Elytral epipleuron broad at base (opposite mesocoxal insertions), with width at base 2.8-3.33 x width at middle portion31
 Elytral epipleuron narrow at base (opposite mesocoxal insertions), with width at base 1.50-1.75 x width at middle portion34

- 31 (30) Elytra completely black; pygidium slightly emarginate at apical margin32
 Elytra partly reddish-brown, partly black; pygidium entire at apical margin33
- 32 (31) Thorax yellowish-brown, with scutellum blackish only at tip; legs yellowish-brown, only tibiae and tarsi blackish; endophallus with a pair of groups of spines on either side of 'sperm pump' or 'syringe'.....*boisduvali* Baly
 Thorax and legs black; aside from a pair of groups of spines on either side of 'sperm pump' or 'syringe,' endophallus with a pair of smaller groups of spines shortly above 'syringe'..... *flaviventris* Baly
- 33 (31) Pronotum with lateral sides curved, transverse sulcus straight and located at middle of disc; relatively small species, 5.40-7.92 mm long; apical portion of penis bent outwards at 45° (lateral view) *cruenta* (Fabricius)
 Pronotum with lateral sides sinuate, transverse sulcus sinuate and located after middle of disc; relatively big species, 8.16-12.36 mm long; apical portion of penis directed downwards (lateral view) *rosea* (Fabricius)
- 34 (30) Elytra dull; pronotum widest at middle*apicipes* Jacoby
 Elytra shiny; pronotum widest at apical third 35
- 35 (34) Interocular sulcus not reaching side of each eye; maxillary palpus with penultimate segment strongly enlarged, cup-shaped; head black, rarely anterior portion yellow *melanocephala* Jacoby
 Interocular sulcus reaching side of each eye; maxillary palpus with penultimate segment enlarged, but not cup-shaped; head yellowish-brown, sometimes labrum blackish 36
- 36 (35) Elytra completely black; pronotum with transverse sulcus bracket-shaped *nusantara* Barroga
 Elytra largely black, with lateral and apical margins yellow or yellowish-brown; sometimes yellow color extending to suture or extending to apical three-fourths of elytra; pronotum with transverse sulcus straight, curving on sides 37
- 37 (36) Anterior corners of pronotum angulate; frontal tubercles shiny *tibialis* Chapuis
 Anterior corners of pronotum rounded; frontal tubercles dull *doesonensis* Duvivier
- 38 (4) Male antennal segments ridged along outer edge 39
 Male antennal segments of normal shape, not ridged along outer edge 42

- 39 (38) Maxillary palpus with penultimate segment strongly enlarged, cup-shaped; male antennal segments 3-11 ridged along outer edge, segment 3 entire along outer edge *irpa* Mohamedsaid
 Maxillary palpus with penultimate segment enlarged, but not cup-shaped; male antennal segments 3-7 ridged along outer edge, segment 3 emarginate at middle of outer edge 40
- 40 (39) Elytra black; sclerites of endophallus pointing towards dorsal side of penis *diversa* Baly
 Elytra brown or yellowish-brown; sclerites of endophallus pointing towards ventral side of penis 41
- 41 (40) Pronotum with anterior margin straight, transverse sulcus straight, curving on sides, of uniform depth; male ventrite 5 shorter than ventrites 3 and 4 combined; penis bent outwards (lateral view) *dulitensis* Barroga & Mohamedsaid
 Pronotum with anterior margin curved posteriorly, transverse sulcus curved posteriorly, shallow in middle; male ventrite 5 subequal to ventrites 3 and 4 combined; penis more or less straight (lateral view) *sarawakensis* Barroga & Mohamedsaid
- 42 (38) Male antennae filiform *concava* Barroga & Mohamedsaid
 Male antennal segment 11 incrassate 43
- 43 (42) Maxillary palpus with penultimate segment enlarged, cup-shaped 44
 Maxillary palpus with penultimate segment enlarged, but not cup-shaped 46
- 44 (43) Male antennal segment 11 ending in two points; median lobe of male ventrite 5 transverse 45
 Male antennal segment 11 ending in one point; median lobe of male ventrite 5 elongate rectangular *danumensis* Mohamedsaid
- 45 (44) Elytra finely punctate, diameter of each puncture as wide as space between punctures; ventrite 5 shorter than ventrites 3 and 4 combined; spermatheca with tooth at base of receptacle *luteicornis* (Fabricius)
 Elytra moderately punctate, diameter of each puncture wider than space between punctures; ventrite 5 subequal in length to ventrites 3 and 4 combined; spermatheca without tooth at base of receptacle *borneensis* Barroga & Mohamedsaid
- 46 (43) Elytra brown or yellowish-brown; female pygidium emarginate at apical margin *kinabaluensis* Mohamedsaid
 Elytra black; female pygidium entire at apical margin 47

- 47 (46) In male, ultimate segment of antennae obliquely emarginate, with circular gland and pointed apex; apical area of penis strongly curving outwards (45°) (lateral view) *antennata* Baly
 In male, ultimate segment of antenna compressed and dilated, ovate, apex entire and acute (from original description); apical area of penis slightly curving outwards (lateral view)..... *apicornis* Baly

CORRECTIONS ON THE DESCRIPTIONS AND OTHER INFORMATION GIVEN IN BARROGA & MOHAMEDSAID (2002)

1. The species identified as *Aulacophora analis* (Weber) is most probably *A. hilaris* (Boisduval).
2. *Aulacophora quadraria* (Olivier) is likely to be a junior synonym of *A. analis* (Weber). However, the type specimen of the latter cannot be located.
3. *Aulacophora cruenta* and *A. indica* were just swept or beaten off from *Pinanga modesta* (p. 85) and *ratan* (p. 109), respectively. These plants were wrongly recorded as host plants.
4. The tibial spines in the descriptions refer to tibial spurs.
5. The last abdominal sternite refers to ventrite 5.
6. On p. 159, last line, Mohamedsaid (1994c) should be Mohamedsaid (1994b).

The figure numbers given in the article were also directly taken from the Ph.D. thesis of the senior author, hence, the illustrations and the figure numbers do not tally. The following are the correct figure numbers for each *Aulacophora* species:

- Aulacophora analis*: 156
Aulacophora ancora: 6, 46, 56, 113, 157
Aulacophora antennata: 22, 47, 99, 114, 158
Aulacophora apicornis: 115
Aulacophora apicipes: 116, 159
Aulacophora atripennis: 100
Aulacophora baliensis: 7, 23, 48, 57, 117, 160
Aulacophora batesi: 24, 58, 118, 161
Aulacophora bicolor: 59, 60, 61-70, 119, 162
Aulacophora bipartita: 8, 25, 49, 71, 120, 163
Aulacophora bipunctata: 72, 88, 101, 121, 164
Aulacophora boisduvali: 122, 165
Aulacophora borneensis: 9, 26, 50, 73, 89, 102, 123, 166
Aulacophora coffeae: 10, 27, 124, 167
Aulacophora concava: 11, 28, 51, 74, 90, 103, 125, 168
Aulacophora cornuta: 12, 91, 104, 126, 169
Aulacophora costatipennis: 75, 105, 127, 170
Aulacophora cruenta: 76, 128, 171
Aulacophora danumensis: 29, 92, 129, 172
Aulacophora diversa: 30, 106, 130, 173
Aulacophora doesonensis: 77
Aulacophora dulitensis: 13, 31, 78, 93, 131
Aulacophora flaviventris: 132, 174

- Aulacophora flavomarginata*: 32, 94, 133, 175
Aulacophora frontalis: 14, 33, 134, 176
Aulacophora indica: 34, 53, 79, 95, 107, 135, 177
Aulacophora irpa: 35, 136, 178
Aulacophora jacobyi: 15, 36, 137, 179
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Aulacophora martia: 16, 40, 142, 185
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Aulacophora palliata: 18, 42, 147
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Aulacophora quadraria: 82, 149, 192
Aulacophora quinqueplagiata: 83, 96, 150, 193
Aulacophora rosea: 84, 152, 195
Aulacophora sarawakensis: 19, 43, 54, 86, 97, 111, 153, 196
Aulacophora tibialis: 85, 151, 194
Aulacophora tricolora: 20, 44, 154, 197
Aulacophora weisei: 21, 45, 55, 87, 98, 112, 155, 198

The following are references that should have also been included in the said article:

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