New data on the fauna of tiger beetles of Sulawesi (Coleoptera: Cicindelidae)

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With 24 figures

Abstract: New data about the distribution of some tiger beetle species from Sulawesi (Indonesia) are given. *Thopeutica (Pseudotherates) afonini, Thopeutica (Pseudotherates) djufriana* and *Wallacedela kurbatovi* are described as new.

Key words: Cicindelidae, Sulawesi, new species, new records.

Since the revision by Fabio Cassola (Cassola 1991) and further additions to the tiger beetle fauna of Sulawesi (Sawada & Wiesner 1994; Cassola 1996, 1997; Werner & Wiesner 1997) data from several new localities have been received. Some of these are extending the species distribution area. Three new species were found as well. All these facts are subject of the present paper.

The studied material is kept in the following museum's collections: ZISP - Zoological Institute of Russian Academy of Science (St. Petersburg, Russia), MPU - Zoology & Ecology Department of Moscow State Pedagogical University (Moscow, Russia), as well as in some private collections: SKh - Sergei Khvylya, SK - Sergei Kurbatov, ET & VS - Eugeny Tarasov and Victor Sinyaev, and ST - Sergei Tschurkin (all from Moscow).

I am very grateful to Dr. Boris M. Kataev (ZISP) as well as to all abovementioned persons, who very kindly made materials available for study. I also wish to express my thanks to Dr. Fabio Cassola (Rim, Italy) for his attention and important advice on this paper. This study received financial support of the Russian Federal Program "Biodiversity" and the Russian Foundation of Fundamental Researches (No 96-15-98079).

Tricondyla cyanea brunnea Dokhtouroff 1883

Material: Sulawesi Selatan: 1 ♀, Bantimurung, 9. V. 1997 leg. S. Khvylya (SKh).

Note: Up to date this species was known only from S. Sulawesi according to one female record without concrete locality (Cassola 1991).

Therates fulvicollis Thomson 1860

Material: Sulawesi Tengah: 1 ♂, Lore-Lindu Nat. Park, Kulawi, ~800 m, 7. - 8. 2. 1995 leg. Tarasov & Sinyaev (ET & VS).

Note: Previously known from one locality in Sulawesi Utara as well as in Sulawesi Selatan only (Wiesner 1988, Cassola 1991).

Therates bipunctatus Wiesner 1988

Material: Sulawesi Tenggara: 1 ♂, Kolaka, 20. V. 1997 leg. S. Kurbatov (SK).

Note: This species was known previously from Sulawesi Tengah and Sulawesi Selatan only (Wiesner 1988, Cassola 1991). From Sulawesi Tenggara it was recorded for the first time by Cassola in 1996.

Therates punctatoviridis W. Horn 1933

Material: Sulawesi Selatan: 1 ♂, Bantimurung, I.-II. 1995 (ST).

Note: From Sulawesi Selatan this species was known from a single locality only (Horn 1933). Perhaps, there is some mislabelling. If not, this record would extend the range of the species.

Therates flavilabris (Fabricius 1801)

Material: Sulawesi Selatan: 4 ♂ 1 ♀, Bantimurung, 9.-11. V. 1997 leg. S. Kurbatov (SK).

Note: Up to date this rare species was known from one locality in Sulawesi Selatan only (Wiesner 1988, Cassola 1991).

Thopeutica (s. str.) ***vantoli*** Cassola 1991

Material: Sulawesi Selatan: 5 ♂ 3 ♀, Bantimurung, I.-II. 1995 (ST).

Note: This species was known from Sulawesi Tengah only (Cassola 1991). There were some doubts about the reliability of a single male's record in Sulawesi Selatan: Palopo (Cassola 1996).

Thopeutica (Pseudotherates) guttula guttula (Fabricius 1801)

Material: Sulawesi Tenggara: 1 ♂, Kasiputh, 20. V. 1997 leg. S. Khvylya (SKh).

Note: At present only four specimens of the nominate subspecies from Kolaka region were known (Cassola 1991, 1996). The new locality is the southernmost one.

Thopeutica (Pseudotherates) afonini n. sp.

Figs. 1-9

Holotype: ♂, Indonesia, C. Sulawesi, Lore Lindu Natn. Park, Kulawi, ~600-900 m, 7.-8. 2. 1995 leg. Tarasov & Sinyaev (ET & VS).

Paratypes: 4 ♂ 2 ♀, with same label as the holotype (ET & VS).

Etymology: The new species is named in honour of the Russian entomology-lover Eugeny I. Afonin who was member of numerous expeditions to South-East Asia. He died on the 19. XI. 1997.

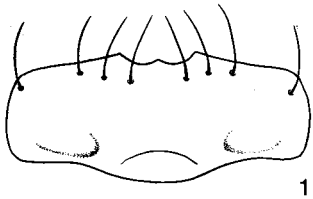
Diagnosis: Head metallic violet on genae, clypeus and frons, with distinct greenish-blue reflections around eyes as well as on vertex and occiput, blackish

behind. Labrum testaceous with light green-metallic lustre, with three small apical teeth and six to eight submarginal setae, basal dimple well developed. Mandibles, labial and maxillar palps, scape and second antennomere as well as femora and tibiae testaceous, 3-4 antennomeres brown with more light rufous apex. Pronotum slightly longitudinal, rounded by sides, globose, metallic violet with greenish and cupreous reflections. Legs testaceous except light brown tarsus. Elytra slender, longitudinal, deep black in the centre, distinct rufous-testaceous on base and apex. Elytral markings present by large, always complete yellow humeral lunula, large yellow rounded apical spot and two very small central dots placed diagonally on the elytral disc, in addition the external one always smaller than the internal. Underside dark metallic with blue-violet reflections, only abdominal sternites rufous-testaceous. Aedoeagus slightly extended at the middle, with short longitudinal, blunt rounded apex. Internal sac with flagellum which completes four full circles.

Description: Length without labrum 9.5-10.3 mm. - Head metallic black with distinct violet reflection on clypeus, frons, genae and along upper edges of supraorbital area. The frontal part of genae, vertex and supraorbital area with intensive greenish-blue or golden-green lustre, occiput black. Frons, vertex and occiput glabrous except two pairs of supraorbital setae. Genae with indistinct, shallow, smoothing longitudinal furrows, supraorbital area with more deeper ones. Labrum testaceous with light green-metallic lustre, transversal, 2.0-2.2 times wider than long, with three small apical teeth and six to eight submarginal setae, basal dimple well developed, narrow glottis, basal rise distinct, oval (Figs. 1-2). Mandibles testaceous with light darkened apical part of teeth. Labial and maxillar palps as well as maxilla fully testaceous, only apical parts of the last palpomeres more darkened. Antennae relatively long, projected over apical third of elytral length, scape and second antennomere fully pale, the former with single apical seta, 3-4 antennomeres testaceous with distinct darkened basal two-thirds, 5-11 ones dark brown, finely and regularly pubescent.

Pronotum slightly longitudinal, 1.05-1.13 times longer than wide, rounded at sides, with distinct deep dimple in apical part of the middle line (Fig. 3). Its top globose, metallic violet with greenish-blue upper and lower borders and golden-green or cupreous-green tinge in discal area. Proepisternum violet, glabrous except two to three white setae in front of the coxa. Prothorax glabrous, violet with deep greenish-blue reflections at sides. Mesothorax with the same colour as the prothorax, mesepisternum black, female's coupling sulcus present by the slightly curved groove with the small, shallow, rounded pit near the middle (Fig. 5), mesepimerum dark brown to black with distinctly violet lustre. Metathorax fully black with intensive green-blue reflections, metepisternum and metepimerum black with violet lustre, sometimes its suture distinct rufous. There are some sparse white setae in back angles of metathorax as well as on back side of metepisternum. Coxae, trochanters, femora and tibiae rufescense, the former with distinct metallic green lustre, tarsus light brown.

Figs. 1-9. *Thopeutica (Pseudotherates) afonini* n. sp. - 1) Labrum, ♂; 2) labrum, ♀; 3) pronotum, ♂; 4) aedoeagus (left view); 5) coupling sulcus, ♀ (left view); 6-9) left elytra (6-8 ♂. 9 ♀). - Scale bars (in mm): I = 6-9, II = 3-4, III = 5, IV = 1-2.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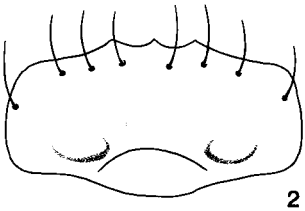
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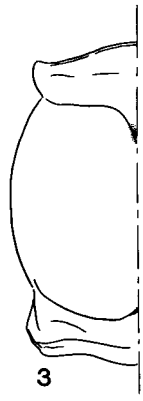
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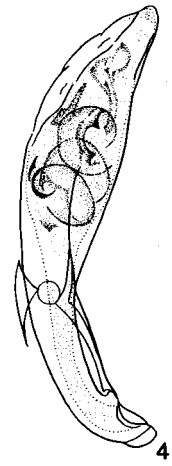
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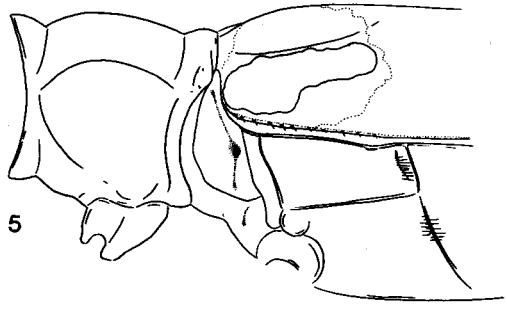
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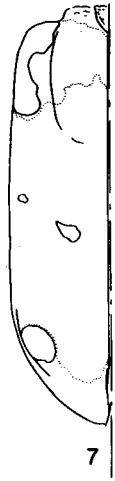
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Elytra slender, longitudinal, practically paralleliform, 1.83-2.03 times longer than wide. The centre of elytral disc deep black with violet reflections, humeral and apical areas rufous-testaceous, rarely the narrow black line projected along the suture towards scutellum. The elytral light pattern present by large, always complete yellow humeral lunula, big yellow rounded apical spot and two very small central dots placed diagonally on the elytral disc, in addition the external one always smaller than the internal. Apical margins microserrulate, narrowly rounded in males and slightly cutted in females, sutural teeth small but distinct (Figs. 6-9). Epipleura rufous.

Abdominal sternites fully rufous-testaceous, glabrous except pair of long setae on the frontal edges of sternites.

Aedoeagus stocky, slightly extended at the middle, with short longitudinal, blunt rounded apex. Internal sac with well developed flagellum which completes four full circles (Fig. 4).

Comparison notes: From *Th. hiro* Cassola 1991 well differentiated by the rufous-testaceous humeral area, more protruding pronotum, very small central dots and aedoeagus form.

Thopeutica (Pseudotherates) djufriana n. sp.

Figs. 10-16

Holotype: ♂, Indonesia, C. Sulawesi, Lore Lindu Nat. Park, Kulawi, ~600-900 m, 7.- 8. 2. 1995 leg. Tarasov & Sinyaev (ET & VS).

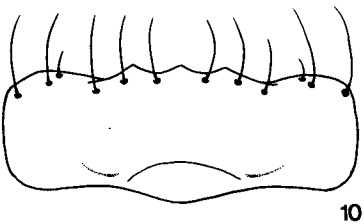
Paratypes: 3 ♂, with same label as the holotype (ET & VS); 1 ♀, Bantimurung, I.-II. 1995 (MPU).

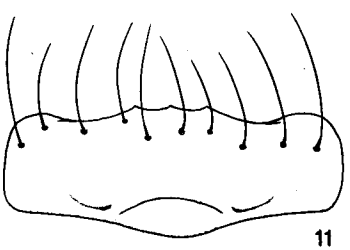
Etymology: The new species is named in honour of Djufri H. Beddu Rewa, who was the guide of Eugeny Tarasov and Victor Sinyaev in Sulawesi in 1995.

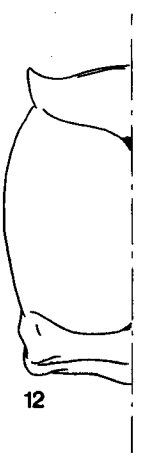
Diagnosis: Head metallic violet on genae, clypeus and frons, with golden-green reflections on vertex, occiput and in supraorbital area. Labrum testaceous, transversal, with distinct projected middle part where three small apical teeth are placed, and eight to ten submarginal setae, basal dimple poorly developed. Mandibles, labial and maxillar palps, maxilla, submentum and the four first antennomeres rufous-testaceous. Pronotum slightly longitudinal, rounded at sides, metallic black with greenish-blue upper and lower edges. The legs fully yellow or pale, coxae with light metallic green lustre. Elytra slender, longitudinal, black with violet tinge in centre, distinctly rufous-testaceous at base and apex. Elytral markings present by a large yellow humeral spot with distinct trace of a subhumeral dot, a large subtriangular yellow apical spot and a small oval submarginal white dot near lateral edge. Labrum, mandibles, labial and maxillar palps, maxilla, submentum and the four first antennomeres pale, the internal surface of latter as well as apical part of mandibular teeth and palps light brown, 2-4 antennomeres glabrous. Underside dark metallic, only abdominal sternites rufous. Aedoeagus with short, blunt rounded apex. Internal sac with well developed flagellum which completes three full circles.

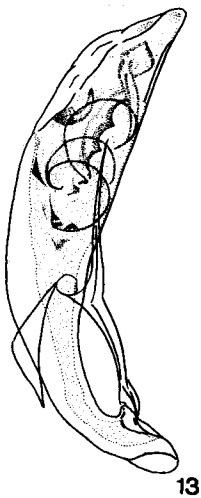
Description: Length without labrum 9.5 - 10.0 mm. - Head metallic black with violet reflection on clypeus, frons and genae, the frontal edge of the latter with intensive greenish-blue lustre, vertex and supraorbital area golden-green with light

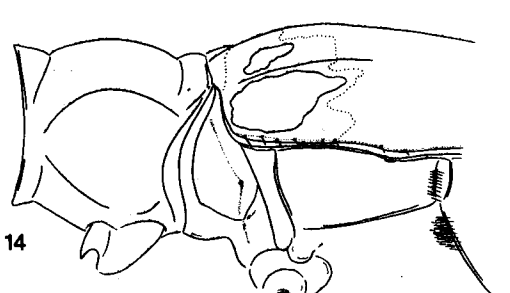
cupreous tinge, occiput black. Frons, vertex and occiput glabrous except two pairs of supraorbital setae. Clypeus with small, prolonged central rise. Genae with shallow, smoothing longitudinal furrows while supraorbital area as well as area behind the eyes with deep, sharp longitudinal ones. Labrum testaceous, transversal, 2.2-

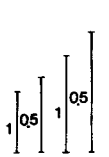


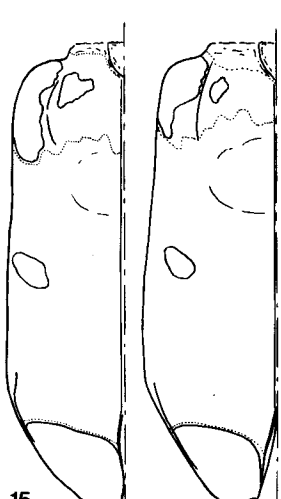












Figs. 10-16. *Thopeutica (Pseudotherates) djufriana* n. sp. - 10) Labrum, ♂; 11) labrum, ♀; 12) pronotum, ♂; 13) aedoeagus (left view); 14) coupling sulcus, ♀ (left view); 15) left elytron, ♂; 16) left elytron, ♀. - Scale bars (in mm): I = 15-16, II = 12-13, III = 14, IV = 10-11.

2.4 times wider than long, with distinct projected middle part where three small apical teeth are placed, with eight to ten submarginal setae, basal dimple poorly developed, short and shallow, basal rise narrow, transversal (Figs. 10-11). Mandibles, labial and maxillar palps, maxilla, submentum and the four first antennomeres rufous-testaceous, the internal surface of latter as well as apical part of mandibular teeth and palps light brown. Scape with the single seta, antennomeres 2-4 glabrous, 5-11 ones dark brown, finely and regularly pubescent.

Pronotum slightly longitudinal, 1.11-1.18 times longer than wide, rounded at sides, with shallow, wide dimple in apical part of the middle line (Fig. 12). Its top glabrous, metallic black with greenish-blue upper and lower edges. Proepisternum violet, glabrous, pro- and mesothorax glabrous, greenish-blue, mesepisternum and mesepimerum black-violet with light blue tinge, female's coupling sulcus present by the distinct curved but very shallow groove with indistinct, small shallow pit in basal third (Fig. 14). Metathorax violet-black, light brown on the upper edge, metepisternum and metepimerum black with distinct violet lustre, sometimes slightly rufous along sutures. There are sparse white setae on back side of metathorax and metepisternum. The legs fully yellow or pale, coxae with light metallic green lustre.

Elytra slender, longitudinal, paralleliform, 1.88-2,03 times longer than wide. The centre of elytral disc deep black with violet tinge, humeral and apical areas rufous-testaceous. The elytral light pattern present by a large yellow humeral spot with distinct trace of a subhumeral dot, a large subtriangular yellow apical spot and a small oval submarginal white dot near lateral edge. Apical margins microserrulate, narrowly rounded in both sexes, sutural teeth small (Figs. 15-16). Epipleura rufous.

Abdominal sternites fully rufous-testaceous, glabrous except pair of long setae on the frontal sternite edges.

Aedoeagus relatively slender, with short, bluntly rounded apex. Internal sac with well developed flagellum which completes three full circles (Fig. 13).

Comparison notes: From *Th. apiceflava* Cassola 1991 well differentiated by rufous-testaceous humeral area, black-violet elytra, dark-metallic metepisternum, oval submarginal white dot as well as the aedoeagus form.

Wallacedela eximia (Van der Linden 1829)

Material: Ambon: 2 ♂, Amboina (ZISP); Moluccas: 1 ♂, Moluq. (ZISP).

Note: Type species of the genus *Wallacedela* Cassola 1991, which is distributed in Sulawesi Utar only (Cassola 1991). Therefore, Cassola (1996) noted the record of two specimens of this species from Ambon (South Moluccas), but he considers that it was a mislabelling. However, in the Coleoptera collection of the Zoological Institute (St. Petersburg, Russia) two males with a label „Amboina" and one male with a label „Moluq." were found as well. Perhaps it may be a mislabelling too, but, on the other hand, the distribution area of the genus *Wallacedela* may be more expanded.

Figs. 17-24. *Wallacedela kurbatovi* n. sp. - 17) Labrum, ♂; 18) labrum, ♀; 19) pronotum, ♂; 20) aedoeagus (left view); 21) aedoeagus (right view); 22) coupling sulcus, ♀ (left view); 23) left elytron, ♂; 24) left elytron, ♀. - Scale bars (in mm): I = 23-24, II = 19, III = 20-21, IV = 22, V = 17-18.

Wallacedela kurbatovi n. sp.

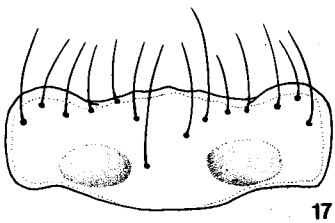
Figs. 17-24

Holotype: ♂, S. Sulawesi, env. Kolaka, 20. V. 1997 leg. S. Kurbatov (ZISP).

Paratype: 1 ♀, with the same label as the holotype (SK).

Etymology: The new species is named for the Russian entomologist Sergei Kurbatov, who caught the type series of this species.

Diagnosis: Head metallic black with distinct greenish reflections, frons and genae with light violet lustre. Labrum testaceous, transversal, with three small smooth-



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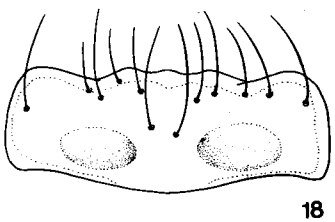

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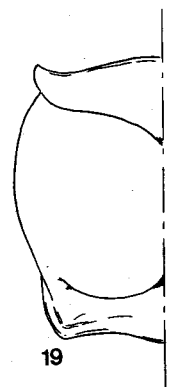

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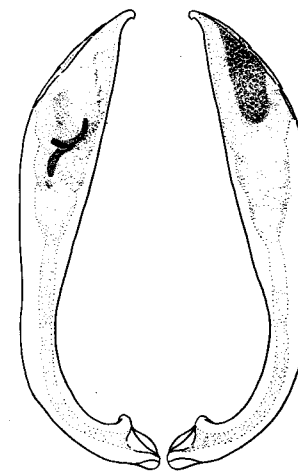

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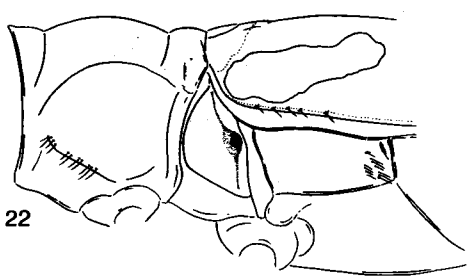

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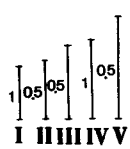

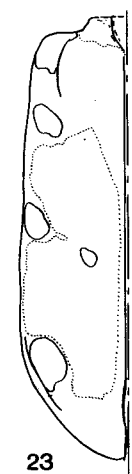

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ing apical teeth and 12-14 submarginal setae. Mandibles, labial and maxillar palps, maxillae, scape and 2-4 antennomeres testaceous. Pronotum nearly subquadrate, with rounded sides, metallic black with light greenish-blue reflections. Legs fully testaceous, only tarsomeres more darkened. Elytra slender, longitudinal, centre deep black, the subhumeral, subsutural, subapical and lateral areas rufous-testaceous. Elytral pattern present by complete, isolated yellow humeral lunula in female, which splits up into two separate spots in the male; by two yellow middle rounded dots, the inner one always smaller than the outer and by a large yellow circular subapical spot. Abdominal sternites fully rufous. Aedoeagus slender, with smooth curved apex and small, but distinct apical hook. Inner sac without flagellum, with two large sclerites and projected multipointed apical dark area.

Description: Length without labrum 11.1-11.3 mm. - Head metallic black with distinct greenish reflections on sides and frontal edge of clypeus, in the front part of genae, above the insertion of the antennae and around hind supraorbital setae, on frons and genae with light violet lustre. Frons, vertex and occiput glabrous, except two paires of supraorbital setae. Genae and supraorbital area with thin longitudinal furrows, area behind the eyes slightly wrinkled. Labrum testaceous, transversal, 2.5-2.7 times wider than long, with three small smoothing apical teeth and 12-14 submarginal setae (Figs. 17-18). Mandibles testaceous, with distinct darkened apical part of teeth. Labial and maxillar palps as well as maxilla and submentum fully testaceous. Antennae relatively short, not projected over apical third of elytral length, scape and 2-4 antennomeres testaceous, the former with a single apical seta, antennomeres 5-11 light brown, finely and regularly pubescent.

Pronotum nearly subquadrate, 1.05-1.07 times longer than wide, with rounded sides (Fig. 19). Its top smooth, metallic black with light greenish-blue reflections on the upper and lower margins and with deep ultraviolet lustre in the anterior and posterior transversal grooves. Proepisternum violet-black with sparse row of white setae in front of the coxa. Prothorax glabrous, violet-black with light greenish reflections. Mesothorax metallic black with greenish-blue reflections, mesepisternum black, female coupling sulcus present by the large rounded deep pit in apical third (Fig. 22), mesepimerum mostly black with intensive greenish lustre. Metathorax fully metallic green, only apical part of hind coxa and apex of the hind metathorax rufescent, metepisternum and metepimerum deep black with intensive ultraviolet reflections. There are narrow rows of white setae along back sides of the metathorax and metepisternum. Coxa testaceous-rufescense with distinct metallic green lustre and some white soft setae in the front parts of pro- and mesocoxa as well as along the back margin of metacoxa. Trochanters and legs fully testaceous, only tarsomeres more darkened.

Elytra slender, longitudinal, slightly extended in the apical third, 1.86-1.87 times longer than wide. The centre of elytral disc deep black, the subhumeral, subsutural, subapical and lateral areas rufous-testaceous. In male subhumeral testaceous area projected on the basal third of elytral disc while in females it occupies its basal half. The elytral pattern present by complete, isolated yellow humeral lunula in female, which splits up into two separate spots in male; by two yellow middle rounded dots, the inner one always smaller than the outer and by large yellow circular subapical spot. Apical margins with microserrulation, rounded in the male and distinct cutting in the female, the sutural teeth small, but distinct (Figs. 23-24). Epipleura testaceous-rufescent.

Abdominal sternites fully rufous-testaceous, glabrous except third to fourth ones, besides two long setae with sparse white setae at sides.

Aedoeagus slender, longitudinal, 3.17 times shorter than elytra, with the smooth curved apex and small, but distinct apical hook. Inner sac without flagellum, with two large sclerites in the left view (Fig. 20) and projected multipointed apical dark area in the right view (Fig. 21).

Comparison notes: A small *Wallacedela* species of the *eximia*-group, more similar to *W. fulvescens* W. Horn 1892, but well differentiated by distinct rounded sides of pronotum, the large area of rufous-testaceous coloration on elytral disc, the small central subsutural dot, the female's coupling sulcus which presents a rounded deep pit in the apical third of the mesepisternum and the aedoeagus form as well as its inner sac. At the present time the new species is the second one within the *eximia*-species group from Sulawesi Tenggara. However, the single known species of this species-group from the Sulawesi region lives on the nearest Buton islands only (Cassola 1991, 1996).

Wallacedela brendelli Cassola 1991

Material: Sulawesi Selatan: 1 ♂, Puncak, Palopo ~300 m, 28.-29. I. 1995 leg. Tarasov & Sinyaev (ET & VS).

Note: Up to date the species was known from Sulawesi Tengah only (Cassola 1991, 1996).

Wallacedela gloriosa (Schaum 1861)

Material: Sulawesi Utara: 1 ♂, "274. C. gloriosa. Minahassa. Staud. 1889" (ZISP).

Note: This beautiful species is known from Sulawesi Utara only (Kibby 1985, Cassola 1991).

Wallacedela glorioparadoxa (W. Horn 1914)

Material: Sulawesi Selatan: 2 ♂, Bantimurung, I.-II. 1995 (MPU).

Note: Up to the present time this species was known from Sulawesi Tengah only (Kibby 1985, Cassola 1991). The single record for Sulawesi Selatan was in Batas (Cassola 1996). If no mislabelling is involved, the new record would extend the species' distribution area.

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