

A REVIEW OF THE GENUS *AROCATUS* FROM PALAEARCTIC AND ORIENTAL REGIONS (HEMIPTERA: HETEROPTERA: LYGAEIDAE)

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ABSTRACT. — The species of *Arocatus* Spinola, 1837 from Palaearctic and Oriental Regions are reviewed. The following taxonomic changes are proposed: one new combination: *Arocatus nicobarensis* (Mayr, 1865), new combination (transferred from *Caenocoris* Fieber, 1860); three new synonymies: *Arocatus nanus* (Breddin, 1900) = *A. aurantium* Zou & Zheng, 1981, new synonymy; *A. sericans* (Stål, 1859) = *A. continctus* Distant, 1906, new synonymy = *Caenocoris dimidiatus* Breddin, 1907, new synonymy. *Arocatus pseudosericans*, new species, is described from China and Japan. *Arocatus melanocephalus* (Fabricius, 1798) is reported from China, *A. nanus* (Breddin, 1900) from Cambodia, India, Laos and Thailand, and *A. sericans* (Stål, 1859) from Vietnam and Ethiopia for the first time. A diagnosis of the genus, a key to all the species, habitus photos and male genitalia illustrations of selected species are presented.

KEY WORDS. — Hemiptera, Heteroptera, Lygaeidae, *Arocatus*, Palaearctic Region, Oriental Region

INTRODUCTION

The genus *Arocatus* Spinola, 1837 belongs to the subfamily Lygaeinae of the family Lygaeidae. Prior to this study, 18 species have been considered valid (Slater, 1964a; Slater & O'Donnell, 1995; Péricart, 2001). The genus occurs in the Old World, with the majority of the species being distributed in the Palaearctic, Oriental and Australian Regions; there are seven species occurring in the Australian Region (Slater, 1978, 1985; Cassis & Gross, 2002) and only three species in the Ethiopian Region (Slater, 1964a, 1964b, 1972; Slater & O'Donnell, 1995).

In the present paper, the *Arocatus* species from the Palaearctic and Oriental Regions are surveyed. One new combination and three new synonymies are proposed, and *A. pseudosericans*, new species, is described from China and Japan. As a result, 18 valid species are currently included in the genus, 10 of them occurring in the Palaearctic and Oriental Regions. A key to all the described species of the genus is given.

MATERIAL AND METHODS

Abbreviations for depositories:

BMNH, Natural History Museum, London, United Kingdom; DEIC, Deutsches Entomologisches Institut, Eberswalde, Germany; EKCK, Előd Kondorosy collection, Keszthely, Hungary; HNHM, Hungarian Natural History Museum, Budapest, Hungary; ISNB, Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium; IZAS, Institute of Zoology, Academy of Science, Beijing, China; MCZR, Museo Civico di Zoologia, Roma, Italy; MGAB, Muzeul de Istoria Naturala "Grigore Antipa", Bucharest, Romania; MMBC, Moravian Museum, Brno, Czech Republic; NHMW, Naturhistorisches Museum Wien, Vienna, Austria; NHRS, Naturhistoriska Riksmuseet, Stockholm, Sweden; NKUM, Institute of Entomology, Nankai University, Tianjin, China; NMPC, National Museum, Prague, Czech Republic; SHEM, Shanghai Entomological Museum, Shanghai, China; ZMAS, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia; ZMUC, Zoological Museum, University of Copenhagen, Copenhagen, Denmark.

Photographs were taken using a Nikon SMZ1000 microscope equipped with a computer-controlled SPOT RT digital camera and related software. Dissecting methods and terminology of the paramere and phallus follow Ashlock (1957). The new records of countries and provinces of China are marked with an asterisk (*) in the section on distribution of each species. Measurements were taken with an ocular micrometer, and are given in millimetres (mm). The distribution data are based partly on material examined by us, partly on literature data. In the section on type material examined of some species, lines were separated with “/”, labels with “/!”, “hw”: handwriting, otherwise printed.

TAXONOMY

Arocatus Spinola, 1837

Arocatus Spinola, 1837: 257. Type species: *Lygaeus melanocephalus* Fabricius, 1798, by monotypy.

Tetralaccus Fieber, 1860: 44 (syn. Stål, 1872: 42). Type species: *Lygaeus roeselii* Schilling, 1829, by monotypy.

Microcaenocoris Breddin, 1900: 171 (syn. Deckert, 1991: 365). Type species: *Microcaenocoris nanus* Breddin, 1900, by monotypy.

References. — Distant, 1904: 15 (diagnosis, fauna of British India); Stichel, 1957: 81 (fauna of Europe); Stichel, 1959: 314 (catalogue, Europe); Slater, 1964a: 18 (catalogue); Kumar, 1968: 254 (morphology); Putshkov, 1969: 71 (redescription, fauna of Ukraine); Hamid & Meher, 1973: 36 (keyed, redescription); Zheng & Zou, 1981: 17 (fauna of China); Slater, 1985: 309 (diagnosis, redescription, keyed); Slater & O'Donnell, 1995: 3 (catalogue); Péricart, 1999a: 162 (redescription, European fauna); Péricart, 2001: 37 (catalogue, Palaearctic); Ishikawa et al., 2012: 376 (redescription, fauna of Japan).

Diagnosis. — Moderately elongate, nearly parallel-sided. Body usually covered with semidecumbent, moderately long or longer erect hairs, seldom Palaearctic species without erect hairs. Head at least slightly swollen posteriorly to eye; eyes separated from anterior margin of pronotum; ocellus closer to eye than interocular distance; antennal segment IV not or slightly longer than segment II. Pronotum subtrapezoid; punctured except callus and extreme base; impressed and constricted behind callus; sometimes with median carina behind callus; callus moderately swollen, slightly oblique, almost reaching lateral margin at anterior angle of pronotum. Scutellum with T-shaped carina, lateral fovea deeply, coarsely punctured. Fore femur unarmed. Ostiolar peritreme of metathoracic scent gland well developed, protruding, yellow or reddish. Posterior margin of metapleuron straight.

Differential diagnosis. — The eyes are not adjacent with the anterior pronotal angles, and the head is slightly swollen posteriorly to eyes in both *Arocatus* and the genera of the *Achrobrachys* Horváth, 1914, *Thunbergia* Horváth, 1914 and *Caenocoris* Fieber, 1860. *Arocatus* differs from *Achrobrachys* by the antennal segment II being about as 0.8–1.3 times long as segment IV, and the elongate, nearly parallel-sided body; antennal segment II is about as half long as segment IV and the body is broad and subovate in the latter genus. *Thunbergia*

can be separated from *Arocatus* by the presence of a short, subapical spine on the fore femur of both sexes, and the distinct collar of the anterior pronotal margin (Slater, 1978), and the antennal segment II is about as 0.55–0.7 times long as segment IV. The limits between *Arocatus* and *Caenocoris* are not distinct. Although the main character, the antennal segment II being “not much” or “much” shorter than IV, was repeated again and again in the literature, it may not be reliable. Slater (1978) thought *Caenocoris* could be separated from *Arocatus* by the presence of a short subapical spine on the fore femora of both sexes, and Stål (1872) stated that the former lacks a distinct carina on pronotum.

Emphanis China, 1925 is also similar to *Arocatus* in general habitus, but we think it can be distinguished from the latter genus by the body being mainly bronze-coloured, covered with dense golden appressed hairs (erect hairs lacking), the pronotum being rugose, the punctures on the posterior lobe of pronotum being large and linked together, and the much broader abdomen of both sexes.

Arocatus longiceps Stål, 1872

(Figs. 1A; 2A–C)

Arocatus longiceps Stål, 1872: 42. Holotype (male): Greece; NHRS. *Arocatus grassii* Picco, 1920: 101 (syn. Stichel, 1959: 314). Syntype(s): Italy, Lazio; MCZR?

For detailed synonymy including infrasubspecific taxa, see Péricart (2001: 38).

References. — Stichel, 1957: 82 (keyed, redescription, host plant, distribution, intraspecific variability); Stichel, 1959: 314 (listed); Slater, 1964a: 20 (catalogue); Putshkov, 1969: 76 (redescription, larva, distribution, biology); Çağatay, 1995: 169 (male genitalia); Kondorosy, 1997: 249 (Hungary record); Péricart, 1999a: 170 (redescription, habitus, larva, biology, distribution); Stehlík & Hradil, 2000: 99 (intraspecific variability, Czech Republic record); Péricart, 2001: 38 (catalogue); Kment & Bryja, 2001: 238 (Slovakia record, host plants, distribution); Protić, 2001: 22 (Slovenia, Serbia and Macedonia records); Bianchi & Štepanovičová, 2003: 75 (distribution); Hoffmann, 2003: 27 (Switzerland record); Austin, 2006 (as *A. roeselii*, Great Britain: Guernsey record); Aukema et al., 2007 (as *A. roeselii*, Belgium record); Nau & Straw, 2007: 8 (as *A. roeselii*, Great Britain record); Rieger, 2008: 29 (host plant); Ribes & Pagola-Carte, 2008: 353 (Spain record); Barndt, 2008: 187 (Germany: Berlin record); Aukema & Hermes, 2009: 71 (Netherlands record); Göricke, 2008: 23 (Portugal record); Linnavuori, 2011: 30 (Iran record, host plant, distribution); Gil et al., 2011: 26 (Poland record); Aukema et al., 2013: 354 (catalogue).

Diagnosis. — Pale species, ground colour varying from yellowish to orange or red. Antennae, and legs invariably concolorous with the ground colour. Vertex black, middle of head red to black, fore part of head red. Anterior half of pronotum red, hind part often red or with black punctures or with black spots or mostly black. Scutellum black with T-shaped red carina. Clavus red, corium often with indistinct dark areas except along margins; connexivum red. Body ventrally red except middle of thoracic sterna, sometimes abdominal sterna with a row of small black spots.

Type material examined. — Holotype, male: Graecia. // A. Dohrn (hw) // (red) Typus // Naturhistoriska / Riksmuseet / Stockholm / Loan no. 242/90 (NHRS).

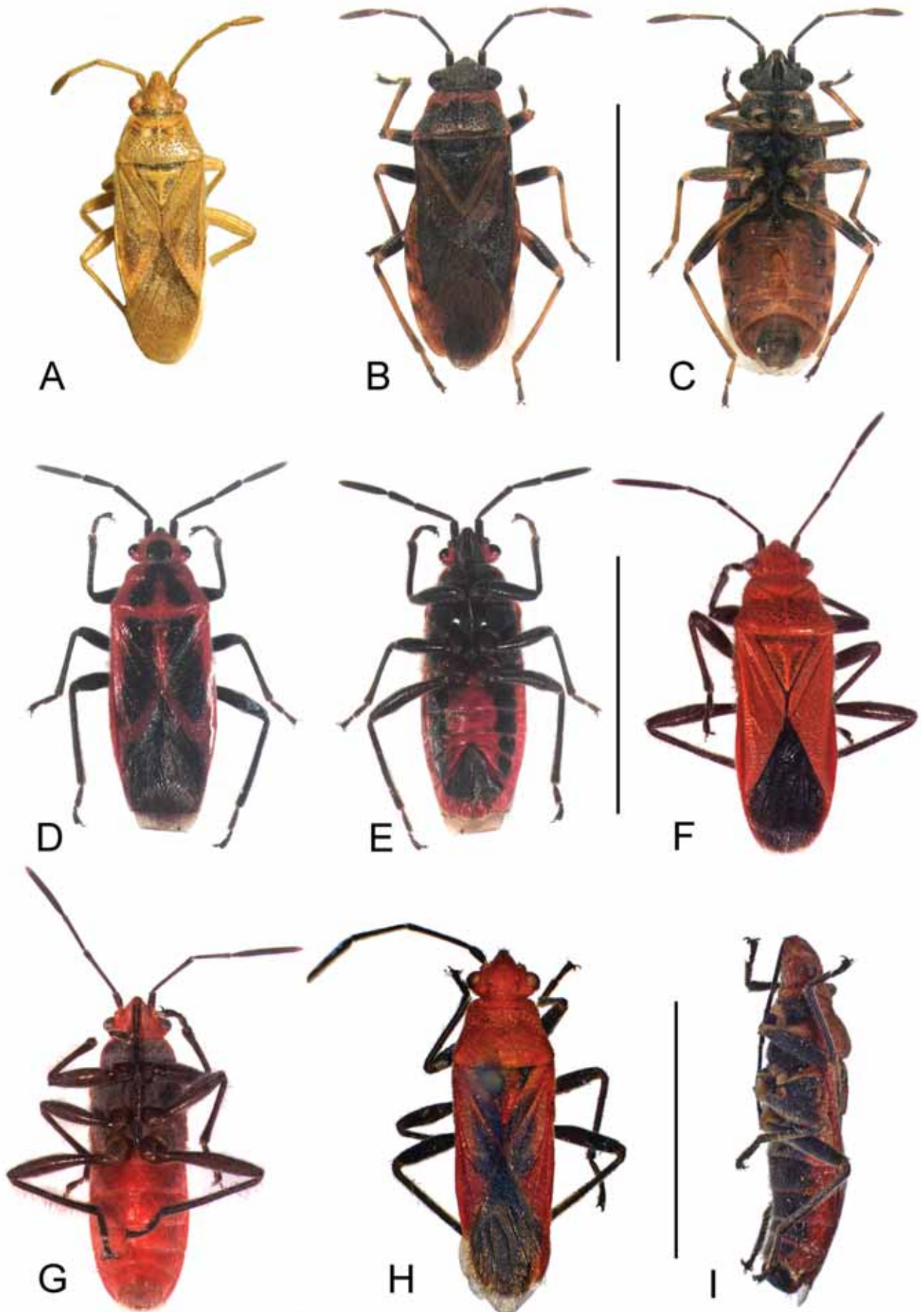


Fig. 1. *Arocatus* spp., dorsal, ventral or lateral view. A, *A. longiceps*; B, C, *A. melanocephalus*; D, E, *A. melanostoma*; F, G, *A. nanus*; H, I, *A. nicobarensis*, one of the syntypes. Scale bars = 5.0 mm.

Additional material examined. — **BULGARIA:** 1 male, Blagoevgrad, 42°1'N 23°6'E, coll. Y. H. Wang, 25 Jun.2012, alt. 480 m (NKUM); **GREECE:** 3 males, 2 females, Attica, coll. Reitter (HNHM); 1 female, Cyclades, coll. Krüper (HNHM); 1 male, 1 female, Ins. Poros (HNHM); **HUNGARY:** 1 male, Hőgyész, coll. E. Kondorosy, 9 Sep.1990 (EKCK); 3 males, 2 females, Keszthely, coll. E. Kondorosy, 15 Nov.1992 (EKCK); **TURKEY:** 1 male, Brussa [= Bursa], coll. Merkl (HNHM).

Host plants. — Recorded on *Acer*, *Carpinus*, *Castanea*, *Tilia*, *Alnus* and *Platanus* trees (Protić, 2001; Nau & Straw, 2007; Rieger, 2008; Linnavuori, 2011). But we think the only sure food plant is *Platanus*.

Distribution. — **Asia:** Armenia, Azerbaijan, Cyprus, Iran, Israel, Turkey; **Europe:** Albania, Austria, Belgium, Bulgaria, Czech Republic, France, Germany, Great Britain, Greece, Hungary, Italy, Macedonia, Netherlands, Poland, Portugal, Russia (South European Territory), Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine (Kment & Bryja, 2001; Péricart, 2001; Protić, 2001; Hoffmann, 2003; Aukema et al., 2007, 2013; Nau & Straw, 2007; Göricke, 2008; Ribes & Pagola-Carte, 2008; Aukema & Hermes, 2009; Gil et al., 2011).

Discussion. — In the last years, the limits of *A. longiceps* and *A. roeselii* became uncertain, because the specimens found in Western Europe on *Platanus* showing the characters of *A. roeselii* together with typical *longiceps* specimens and some transitional exemplars (Carayon, 1989; Barclay, 2007; Hoffmann, 2008). Hoffmann (2012) tried to find at least genetic difference between the both species but it was unsuccessful. Therefore the validity of *A. longiceps* is questionable. However, when check the genitalia of them, we find the pygophore opening is parallel in anterior part in *A. longiceps*, whereas anteriorly widened in *A. roeselii* (Fig. 2A, D). In addition, parameres are also different, e.g., base of blade nearly straight while in *A. roeselii* it is strongly convex (Fig. 2B–C, E–F). The decision needs further investigations.

***Arocatus melanocephalus* (Fabricius, 1798)**
(Figs. 1B, C, 3A, B, L, M, 5A–D, 6A–B)

Lygaeus melanocephalus Fabricius, 1798: 540. Lectotype (Péricart, 1999b: 82) (female): France; ZMUC.

Lygaeus pruinosus Eversmann, 1837: 36. Nomen nudum.
For detailed synonymy including infrasubspecific taxa, see Péricart (2001: 38).

References. — Stichel, 1957: 84 (keyed, redescription, figures, habitat, distribution, interspecific variability); Stichel, 1959: 314 (listed); Slater, 1964a: 22 (catalogue); Putshkov, 1969: 73 (redescription, habitus, egg, larva, distribution, habitat, biology); Çağatay, 1995: 170 (male genitalia); Péricart, 1999a: 164 (redescription, habitus, egg, larva, biology, distribution); Péricart, 2001: 38 (catalogue); Protić, 2001: 22 (Slovenia, Bosnia & Herzegovina, Serbia and Montenegro records); Štepanovičová, 2003: 30 (Slovakia record); Bianchi & Štepanovičová, 2003: 75 (distribution); Reggiani et al., 2005: 119 (mass occurrence, morphology, bio-ecology); Maistrello et al., 2006: 594 (biology); Linnavuori, 2007: 57 (Iran record); Ferracini & Alma, 2008: 193 (biology); Fent & Aktaş, 2008: 13 (host plant); Pedroni et al., 2008:

173 (morphology, metathoracic scent gland); Barndt, 2008: 187 (mass occurrence); Dutto & Carapezza, 2011: 65 (mass occurrence); Hoffmann & Terme, 2012: 27 (mass occurrence); Aukema et al., 2013: 354 (catalogue).

Diagnosis. — Generally body colour dark red, with very short, decumbent hairs. The following parts black: head; antenna (sometimes segment III and IV partly red); labium; narrow anterior margin of pronotum; large M-shaped spot on posterior lobe of pronotum; scutellum; inner margin of clavus; costal margin and apical half of corium; femora except basal half and apex; base of tibiae; tarsal segments III; majority of thoracic sterna and round sublateral spots on abdominal sterna. Connexivum mostly darker anteriorly. Hemelytral membrane hyaline, pale.

Complementary description. — Posterior margin of pygophore and cuplike sclerite not fused, in the middle of each of them with a process (Fig. 3A, B). From lateral view, the blade and shank of paramere forming a right angle (Figs. 3L, M, 5A–D). Phallosome moderately pigmented; gonoporal process twisted about three times; a sclerotized helicoids process present (Fig. 6A–B).

Material examined. — **CHINA: Xinjiang:** cca. 300 males, 300 females, Yining city, 43°56'N 81°19'E, coll. C. Q. Gao, Y. H. Wang & Q. Xie, 26–28 Jul.2011, alt. 570 m (NKUM); 1 female, Sailimu lake, 44°29'N 81°9'E, Huocheng county, coll. Q. Xie, 22–24 Jul.2011, alt. 2100 m (NKUM); 1 female, Urumchi, 43°24'N 87°9'E, coll. Q. Xie, 16 Aug.2011, alt. 2000 m (NKUM); 3 males, 3 females, Yemenle township, Tacheng, coll. Y. L. Ke, 24 Jul.2002 (NKUM); **AUSTRIA:** 4 males, 4 females, Wien, Prater, 27 Mar.[18]84 (HNHM); **FRANCE:** 1 female, Broût-Vernet, 10 Jan.[19]08, coll. H. du Buysson (HNHM); 1 male, Montpellier, 11 Dec.1891 (HNHM); **GEORGIA:** 1 female, Caucas, Meskiseh, coll. Leder/ Reitter (HNHM); **GREECE:** 1 male, 1 female, Corfu, coll. J. Sahlberg (HNHM); **HUNGARY:** 1 female, Budapest, coll. Szigligeti, 1893 (HNHM); 1 female, Com. Baranya, Máriagyúd, coll. L. Ábrahám, 4 Jun.1999 (EKCK); 1 female, Com Fejér, Csór, coll. E. Kondorosy, 13 May 2002, on *Tilia* (EKCK); 1 male, 1 female, Simontornya, on *Ulmus glabra*, coll. F. Pillich, 11 Aug.1930 (HNHM); **ITALY:** 1 male, Firenze, 20 Oct.[18]86 (HNHM); **SERBIA:** 1 male, Magyarkanizsa (= Kanjiža), coll. Kuthy, 1908 (HNHM).

Host plants and bionomics. — Recorded on *Ulmus* spp., *Platanus orientalis* (Protić, 2001), in bark crevices of Pappeln and the empty puparium of Schmetterlingen (Fent & Aktaş, 2008).

Massive number of this species was found in bark crevices and on leaves of elm trees (*Ulmus* sp., Ulmaceae) in a park of Yining city, Xinjiang, China. Meanwhile, many specimens intrude inside the buildings near the park. In addition, the sudden outbreaks and intrusions of this species inside urban building have been reported in Italy since 1999 and Germany since 2010 during summertime (Reggiani et al., 2005; Maistrello et al., 2006; Dutto & Carapezza, 2011; Hoffmann & Terme, 2012). There are recent biological and even morphological literatures on the species in connection with the mass occurrences (Reggiani et al., 2005; Maistrello et al., 2006; Ferracini & Alma, 2008; Pedroni et al., 2008).

Distribution. — **Asia:** *China (*Xinjiang), Armenia, Azerbaijan, Georgia, Iran, Turkey; **Europe:** Andorra, Austria, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Moldavia,

Montenegro, Poland, Portugal, Romania, Russia (Central European Territory, South European Territory), Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine (Péricart, 2001; Protić, 2001; Štepanovičová, 2003; Linnavuori, 2007; Aukema et al., 2013). It is reported for the first time from China.

***Arocatus melanostoma* Scott, 1874**
(Figs. 1D, E; 3C, D, N–P)

Arocatus melanostoma Scott, 1874: 426. Lectotype (Péricart, 1999b: 82) (male): Japan; BMNH.

Arocatus maculifrons Jakovlev, 1881: 208 (syn. Horváth, 1889: 326). Holotype (male): Russia (Far East), Vladivostok; ZMAS.

References. — Lindberg, 1934: 23 (China: Gansu record); Esaki, 1952: 221 (redescription, distribution); Stichel, 1959: 314 (listed); Slater, 1964a: 24 (catalogue); Zheng & Zou, 1981: 18 (keyed, redescription); Liu & Zheng, 1992: 266 (figure, redescription); Liu, 1996: 38 (China: Jilin record); Dong et al., 1997: 238 (redescription, distribution); Cui et al., 1999: 57 (China: Henan record); Bu et al., 2001: 270 (listed, distribution); Hua, 2000: 187 (listed); Péricart, 2001: 38 (catalogue); Li et al., 2007: 30 (China: Shanxi record);

Zhang et al., 2008: 801 (China: Anhui record); Xie et al., 2009: 341 (keyed, redescription); Ye, 2009: 55 (China: Zhejiang record); Vinokurov et al., 2010: 182 (catalogue); Ishikawa et al., 2012: 376, pl. 84 (distribution, photos of larva); Aukema et al., 2013: 354 (catalogue).

Diagnosis. — Dorsum of body with semidecumbent and moderately long erect white hairs. Head red, with separated black spots on vertex and clypeus; middle part of ventral surface of head black. Pronotum red with an inverted V-shaped black vitta, with slightly elevated median keel behind calli. Scutellum black with red median longitudinal keel. Clavus black except extreme base. Corium black, with costal and apical margins broadly red, apex of the latter narrowly black. Eyes, antennae and legs black. Hemelytral membrane translucent, dark brown. Posterior margin of pygophore and cuplike sclerite fused together (Fig. 3C, D). Paramere as shown in Fig. 3N–P.

Type material examined. — Lectotype, male: Japan, coll. Scott, 88-11 (BMNH).

Additional material examined. — CHINA: Hebei: 1 male, 3 females, Chiyabao, Xiaowutaishan, coll. W. J. Bu & W. B. Zhu, 2 Aug. 2000, alt. 1300 m (NKUM); 1 female, Xinglong, coll. W. J. Bu, 23 Jun. 1995, alt. 500 m (NKUM); 1 male, Wulingshan, Xinglong,

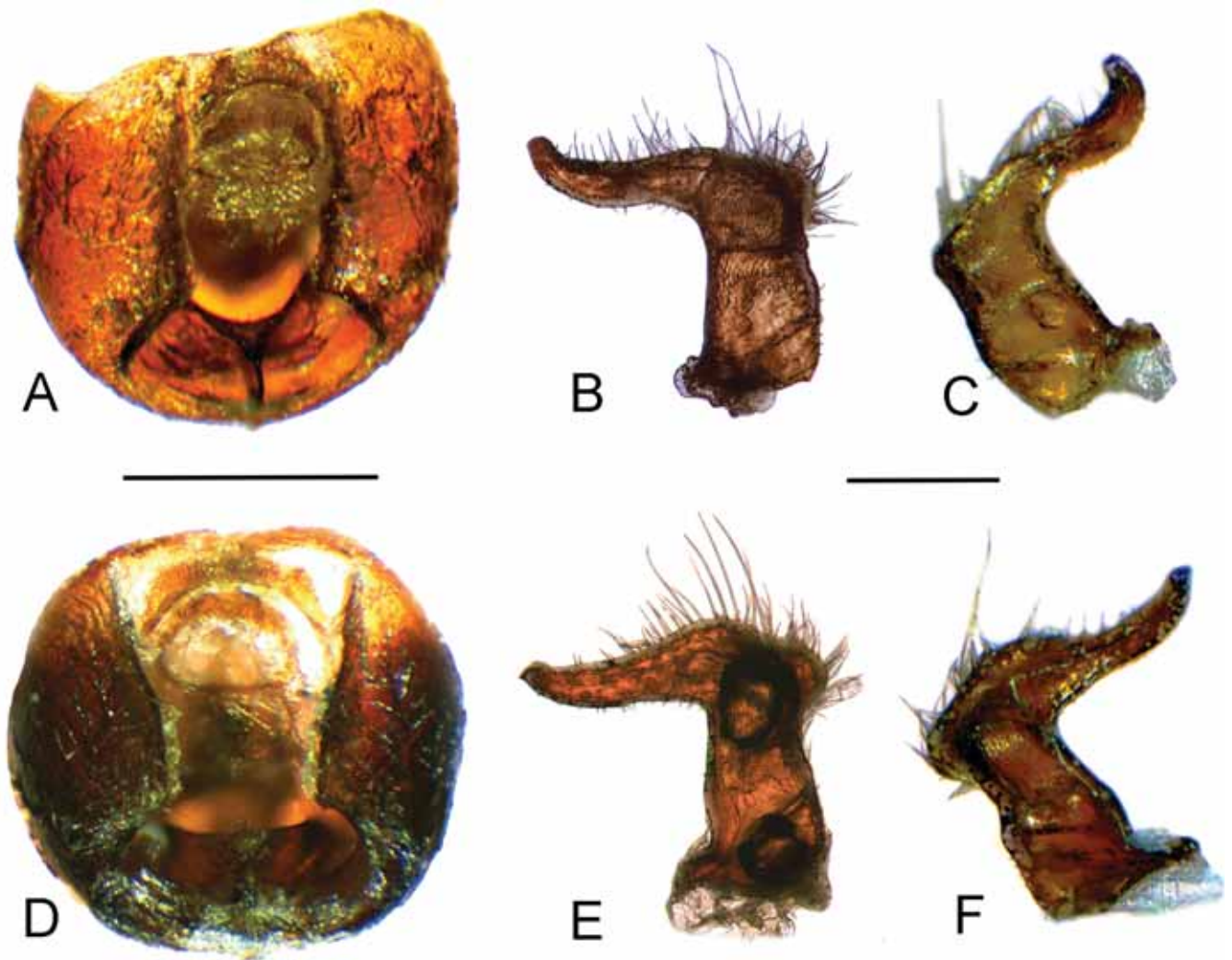


Fig. 2. A–C, *A. longiceps*. A, pygophore in posterodorsal view; B, right paramere in ventral view; C, right paramere in dorsal view. D–F, *A. roeselii*. D, pygophore in posterodorsal view; E, right paramere in ventral view; F, right paramere in dorsal view. Scale bars = 0.5 mm (A, D), 0.2 mm (B, C, E, F).

coll. N. Lu, 22 Jun.1995, alt. 1850 m (NKUM); **Tianjin**: 1 female, Baxianzhuozi, Jixian county, coll. G. Q. Liu, 9 Sep.2001 (NKUM); **Heilongjiang**: 1 male, Maoershan, 4 Jul.1988 (NKUM); 2 females, Xiaojinshan, 21 Jun.1961 (NKUM); 1 female, Yichun, coll. H. F. Zhu, 27 May 1950 (IZAS); **Liaoning**: 1 male, Dongling, Shenyang, coll. M. C. Wei, 24 May 1989 (NKUM); **Shaanxi**: 1 female, Badu, Longxian county, coll. B. X. Jin, 19 May 1987 (NKUM); **Anhui**: 1 male, Yunwusi, Huangshan, coll. S. Z. Wang, 15 May 1978 (NKUM); 1 female, Tiantangzhai township, Jinzhai county, Liu'an city, coll. X. M. Li, 3 Aug.2004, alt. 479 m (NKUM); **Jiangxi**: 2 males, Guling, Lushan, coll. S. L. Liu, 11–14 Sep.1965 (NKUM); **Zhejiang**: 1 female, Laodian, Tianmushan, coll. S. L. Liu, 13 Aug.1965 (NKUM); **Hubei**: 2 males, Shennongjia, coll. L. Y. Zheng

& H. G. Zou, 29 Jun.1977 (NKUM); 1 male, 1 female, Shanyuan, Hefeng, coll. L. Y. Zheng, 18 Jul.1999, alt. 1260 m, on *Dioscorea* sp. (NKUM); **Jilin**: 1 female, coll. M. Volkoff, 28 Jul.1939 (IZAS); **Fujian**: 1 male, Chong'an, coll. C. L. Ma, 17 May 1960, alt. 740–900 m (IZAS); 1 female, "Kuatun" [= Guadun], "Fukien" [= Fujian], 27.40°N 117.40°E, coll. J. Klapperich, 16 Jun.1938, alt. 2300 m (NMPC); 1 female, "Kuatun" [= Guadun], "Fukien" [= Fujian], 10 May [19]46 (Tschungsen) (NMPC).

Host plants. — *Dioscorea* sp. (new discovery in our study).

Distribution. — **Asia:** China (Anhui, Beijing, *Fujian, Gansu, Guangdong, Hainan, Hebei, Heilongjiang, Henan, Hubei,

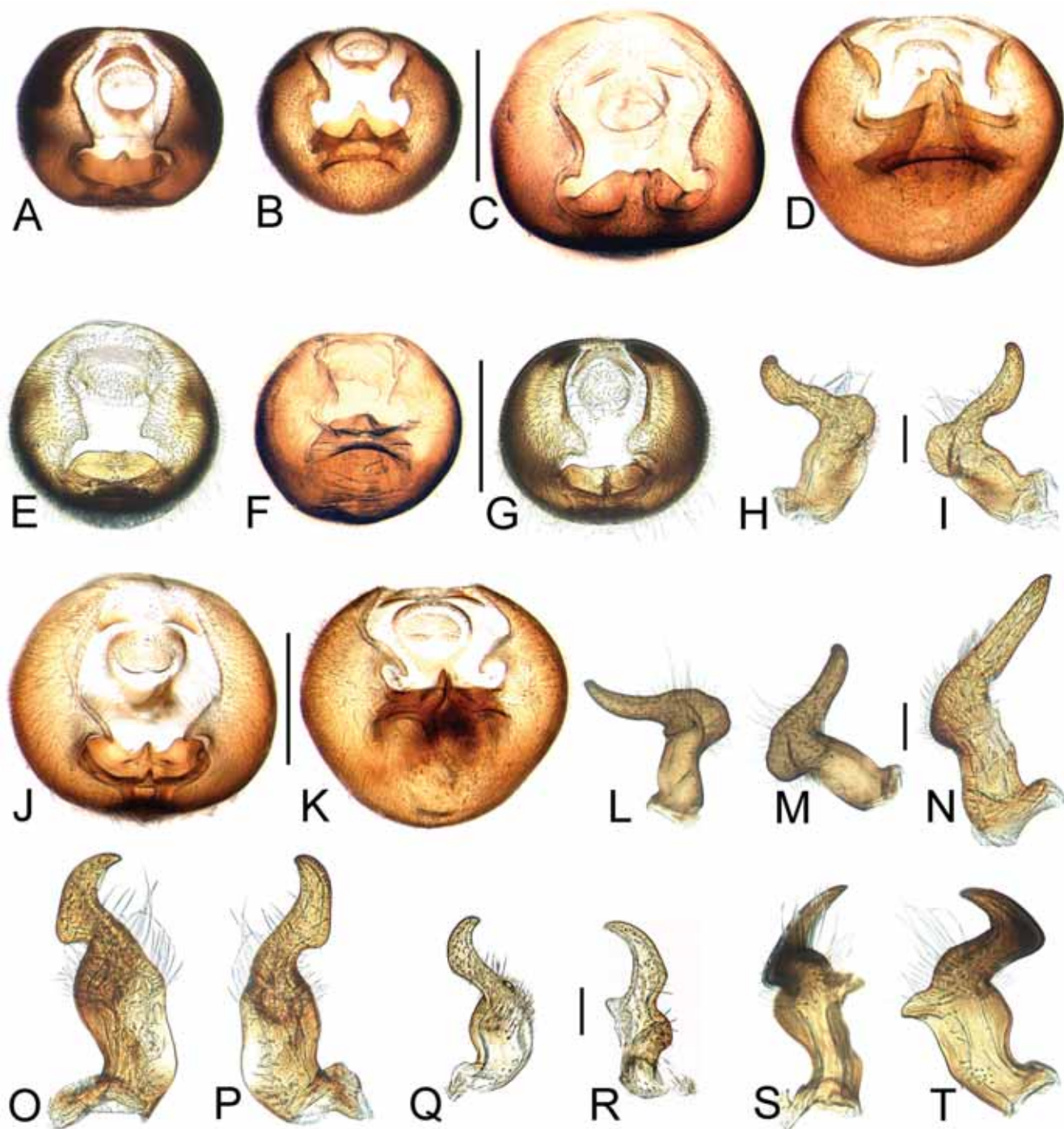


Fig. 3. A–G, J, K, Pygophores in posterodorsal or posterior view. A, B, *A. melanocephalus*; C, D, *A. melanostoma*; E, F, *A. pseudosericans*, new species; G, *A. rufipes*; J, K, *A. sericans*. H, I, L–T: Left parameres in different aspects. H, I, *A. rufipes*; L, M, *A. melanocephalus*; N–P, *A. melanostoma*; Q, R, *A. pseudosericans*, new species; S, T, *A. sericans*. Scale bars = 0.5 mm (A–G, J, K), 0.1 mm (H, I, L–T).

Hunan, Jiangxi, Jilin, *Liaoning, Shanxi, Shaanxi, *Tianjin, Zhejiang), Japan, Korea, Russia (Far East, Siberia).

***Arocatus nanus* (Breddin, 1900)**

(Fig. 1F, G)

Microcaenocoris nanus Breddin, 1900: 171. Lectotype (Gaedike, 1971: 118) (male): Indonesia: Sumbawa; DEIC.

Arocatus aurantium Zou & Zheng, 1981 in Zheng & Zou (1981: 17). Holotype (female), China, Yunnan, Xishuangbanna, Ganlanba; IZAS. **New synonymy.**

References. — Slater, 1964a: 149 (catalogue); Deckert, 1991: 367 (*nanus*, redescription, figure); Slater & O'Donnell, 1995: 3 (*nanus*, *aurantium*, catalogue); Hua, 2000: 187 (*aurantium*, listed); Péricart, 2001: 38 (*aurantium*, catalogue).

Diagnosis. — Body dorsally uniformly red, only eyes, antennae, legs and labium black, with semidecumbent and long erect white hairs. Posterior lobe of pronotum coarsely punctured, with distinct transverse impression and median keel elevated at middle of pronotum. Hemelytral membrane translucent, dark brown basally, gradually becoming paler apically. Pro- and mesosternum partially black. Genital segment black or red.

Type material examined. — Holotype of *A. aurantium*, female, China, Yunnan, Xishuangbanna [37°12'N 100°6'E], Ganlanba, 16 Mar. 1957 (IZAS); Paratype of *A. aurantium*, female, *ibid.* (NKUM).

Additional material examined. — **CHINA: Yunnan:** 1 male, Menghai, Xishuangbanna, coll. S. Y. Wang, 18 May 1958, alt. 1200–1600 m (IZAS); **Hainan:** 1 female, Nada, coll. K. R. Huang, 30 Apr. 1954 (IZAS); 1 male, Yinggeling, Baisha, coll. G. Zheng, 20 Aug. 2010, alt. 678 m (NKUM); 1 female, *ibid.*, except 22 Aug. 2010, alt. 797 m (NKUM); **CAMBODIA:** 1 male, Angkor Thom, day catch, coll. J. Constant, P. Grootaert & K. Smets, 23 May 2003 (ISNB); **INDIA: Tamil Nadu:** 1 male, 15 km SE Kotagiri, 11°22'N 76°56'E, Kunchappanai, Tamil Nadu, coll. L. Dembicky & P. Pacholátko, 17–22 May 1997 (NHMW); 1 female, S. India, Coimbatore, coll. P. S. Nathan, hw: Jul. 1947 (NMPC); **LAOS** (South): 2 males, Route (#23) Pakse – Paksong, Ban Itou, Bolaven Plateau, Champassak, 15°10'N 106°05'E, coll. E. Jendek & O. Sausa, 10–18 Apr. 1999, alt. 800 m (NHMW); 1 male, Louang Namtha, 21°09'N 101°19'E, Namtha → Muang Sing, coll. Vit Kubán, 5–31 May 1997, alt. 900–1200 m // Vit Kubán expedition “Laos 1997” (MMBC); **THAILAND:** 2 females, Chiang Mai, San Pakia village, 19.19°N 98.50°E, coll. Vit Kubán; 1–15 May 1998, alt. 1400 m // Vit Kubán expedition “Thailand 1998” (MMBC).

Host plants and bionomics. — Unknown.

Distribution. — **Asia:** China (*Hainan, Yunnan), *Cambodia, *India (Tamil Nadu), *Laos, Indonesia (Sumbawa), *Thailand. It is reported for the first time from Cambodia, India, Laos and Thailand.

Remarks. — Deckert (1991) synonymised *Microcaenocoris* with *Arocatus*, and gave a detailed redescription of *A. nanus*. The types of *A. aurantium* Zou & Zheng, 1981 were re-examined and it was concluded that this species is a junior synonym of *A. nanus*.

There are specimens deposited in HNHM and NHMW with minor colouration differences on tylus and sternum, however, with strikingly distinct male genitalia. They very likely belong to the genus *Caenocoris*.

***Arocatus nicobarensis* (Mayr, 1865), new combination**

(Fig. 1H, I)

Caenocoris nicobarensis Mayr, 1865: 436. Syntypes: India, Nicobar Islands; NHMW.

References. — Slater, 1964a: 43 (catalogue); Slater, 1978: 854 (transferred to *Thunbergia*); Slater & O'Donnell, 1995: 28 (catalogue).

Diagnosis. — Body dorsally red, only base of scutellum laterally and membrane (except broad translucent apical margin) black, hemelytra with central obscure dark spot (concerning posterior half of clavus and inner part of corium not reaching behind vein M), eyes sometimes also dark; antennae, legs and labium black, thoracic and abdominal sterna mostly black, lateral part red, supracoxal lobes and trochanters with apical part of coxae pale yellow. Body and appendages with dense short semidecumbent white pubescence, long erect hairs present only on tibiae and femora. Posterior lobe of pronotum finely punctured, with distinct transverse impression. Labium reaching abdominal segment III, segment I reaching prosternum.

Type material examined. — Syntypes, all with handwriting: Novara Exp. Sambelong Nicobaren // *nicobarensis* det. Mayr (without type or paralectotype label!).

Host plants and bionomics. — Unknown.

Distribution. — **Asia:** India (Nicobar Islands).

Remarks. — Slater (1978) transferred this species from *Caenocoris* to *Thunbergia* based only on its original description. When checking the types, we found the specimens lacking femoral spine, and antennal segment II being only slightly shorter than IV, so they are clearly not a *Thunbergia* and belong to the genus *Arocatus* as presently understood.

***Arocatus pilosulus* Distant, 1879**

(Fig. 4A–C)

Arocatus pilosulus Distant, 1879: 123. Syntypes: Pakistan, Murree; BMNH.

References. — Distant, 1904: 15 (redescription, figures, distribution); Slater, 1964a: 25 (catalogue); Hamid & Meher, 1976: 217 (Pakistan record, listed).

Diagnosis. — Body except the elevated long pale hairs (which are dorsally longer than diameter of tibiae, on tibiae some of them are about two times longer than diameter of tibiae) with very dense decumbent short silky pilosity. Calli and indistinct spot on posterior lobe of pronotum black. Antennae and legs black. Pleura with glabrous black spots. Pronotum distinctly punctured, with middle keel on posterior lobe.

Variability. — The syntypes (Fig. 4A, B) and other investigated specimens do not agree with the original description, because their pronota are not obscurely punctured. The following characters are apparently subject of intraspecific variability: the NHMW specimens have darkened hemelytra; the Meghalaya specimen has the anterior spot of pronotum triangular posteriorly and a testaceous abdomen except on middle; the Tamil Nadu specimens (Fig. 4C) have red middle keel on scutellum and piceous abdomen except connexivum, some of them have a partly obscure and paler spot on head.

Type material examined. — Syntypes, Murree, coll. Distant, 1911-383 (BMNH).

Additional material examined. — **INDIA: Tamil Nadu:** 3 males, 5 females, 15 km SE Kotagiri, 11°22'N 76°56'E, Kunchappanai, coll. L. Dembicky & P. Pacholátko, 17–22 May 1997 (NHMW); 1 male, 1 female, Trichinopoly [= Tiruchirappalli], coll. J. Dubreuil (HNHM); **Meghalaya:** 1 male, 9 km NW of Jowat, 25°30'N 92°10'E, coll. L. Dembicky & P. Pacholátko, 12 May 1999, alt. 1400 m (NHMW).

Host plants and bionomics. — Unknown.

Distribution. — **Asia:** India (Meghalaya, Tamil Nadu), Pakistan (Punjab).

***Arocatus pseudosericans*, new species**
(Figs. 3E, F, Q, R, 4D–F, 5E–H, 6C–E)

Arocatus sericans (non Stål, 1859): Esaki, 1952: 221; Zheng & Zou, 1981: 18; and subsequent authors. **Misidentification.**

References. — Bu et al., 2001: 270 (*sericans*, listed, distribution); Hua, 2000: 187 (*sericans*, listed).

Description. — Colour. The following parts dark brown to black: a large median spot on vertex; distal portion of clypeus; eyes; a pair of broad longitudinal vittae running from anterior margin to posterior margin of pronotum; scutellum except median longitudinal ridge; hemelytra except basal and costal margin of corium; prosternum except anterior margin; meso- and metasterna; middle of propleuron; mesopleuron except supracoxal lobes; metapleuron except lateral and posterior margins, supracoxal lobes and scent gland; transverse fasciae along posterior margins of abdominal sternites III–VII; genital segments, antennal segments, rostrum and legs. Hemelytral membrane translucent, dark brown basally, gradually becoming paler apically. Supracoxal lobes light orange. The remaining parts red.

Structure. Body parallel-sided. Head slightly declivent, moderately swollen behind eye; posterior margin of ocellus situated posteriorly of posterior margin of eye; bucculae moderately produced, slightly convex, gently tapering posteriorly. Antennal segment I surpassing clypeus by about 1/4 of its length. Rostral segment I not reaching anterior margin of prosternum, segment II reaching anterior margin of procoxa, segment III slightly surpassing procoxa, and segment IV reaching about middle of mesocoxa. Pronotum coarsely punctured; with distinct transverse impression; median keel elevated at middle. Scutellum about four times as long as claval commissure; subacute apically. Thoracic

pleura shallowly punctate. Posterior margin of pygophore and cuplike sclerite not fused, in the middle of which without distinct process (Fig. 3E, F). Paramere as in Figs. 3Q, R, 5E–H. Phallosome moderately pigmented; conjunctiva without lobes; vesica elongate, apically coiled; gonoporal process twisted about four times; without obvious helicoid process (Fig. 6C); ejaculatory reservoir as in Fig. 6D, E.

Measurements. — Length of head 0.64–0.93 (male), 0.88–0.90 (female); width 1.30–1.45 (male), 1.48–1.50 (female); interocular distance 0.88–1.00 (male), 1.00 (female). Length of antennal segments I 0.22–0.35, II 0.85–1.07, III 0.82–0.98, IV 1.10–1.25 (male); I 0.38, II 0.98–1.00, III 0.93–0.95, IV 1.25–1.26 (female). Length of pronotum 1.08–1.45 (male), 1.45–1.47 (female); width of anterior margin 1.00–1.21 (male), 1.28 (female); width of posterior margin 1.63–1.97 (male), 2.20–2.23 (female). Length of scutellum 1.00–1.25 (male), 1.38–1.40 (female); width 0.82–1.03 (male), 1.18–1.19 (female). Distance between apex of clavus and apex of corium measured along midline 1.50–1.75 (male), 1.75–1.77 (female); distance between apex of corium and apex of membrane measured along midline 1.25–1.52 (male), 1.65–1.67 (female). Total body length 5.90–7.00 (male), 7.70–7.80 (female). Five males and two females were measured.

Differential diagnosis. — The new species together with *A. sericans* and *A. melanostoma* are strongly similar in having dense and long pilosity, red head with a median black spot, and paired longitudinal black vittae on pronotum and corium. They supposedly form a monophyletic subgroup within *Arocatus*, and therefore we propose the name “*A. sericans* species-group” for them. The diagnostic characters between members of this species-group are presented in Table 1.

Etymology. — The specific epithet *pseudosericans* is derived from the name of *A. sericans* with adding the Greek prefix *pseudo-* ‘false’, in allusion to the close resemblance and past confusion between the new species and *A. sericans*.

Type material. — Holotype: **CHINA: Shaanxi:** male, Chengguan, Foping county, coll. X. M. Li, 25 Jul.2006 (NKUM).

Paratypes: **CHINA: Guizhou:** 1 male, Changming township, Guiding county, coll. C. R. Li & C. F. Zhou, 8 Sep.2000, alt. 1050 m (NKUM); **Fujian:** 1 male, Gucen, Fuzhou, coll. L. C. Wang, 6 May 1965 (NKUM); 1 male, “Kuatun” [= Guadun], “Fukien” [= Fujian], 12 Apr.[19]46 (Tschungsen) (NMPC); **Guangxi:** 1 female, Jiuniutang, Maoershan, coll. H. J. Xue, 20 Apr.2002, alt. 1100 m (NKUM); **Zhejiang:** 1 male, Sanmuping, Tianmushan, coll. W. J. Bu, 20 Aug.1999, alt. 800 m (NKUM); 1 female, Tianmushan, coll. O. Piel, 23 May 1937 (SHEM); **Sichuan:** 1 female, Qingyin'ge, Emeishan, coll. F. X. Zhu, 17 May 1957, alt. 800–1000 m (IZAS); **JAPAN: Kyushu:** 1 male, Kumamoto, coll. G. Lewis, 25 Apr.[18]81, B.M. 1926 – 369 (BMNH); **Honshu:** 1 male, Yokohama, coll. Distant, 25 Apr.[18]81, B.M. 1911 – 383 (BMNH); 1 female, Lewis, coll. Distant, 25 Apr.[18]81, B.M. 1911 – 383 (BMNH).

Table 1. Diagnostic characters of the species of the *A. sericans* species-group.

Character	<i>A. sericans</i>	<i>A. pseudosericans</i> , new species	<i>A. melanostoma</i>
black spot on head	continuous spot from vertex to apex of clypeus, not extending to antenniferous tubercle	separated spots on clypeus and vertex, clypeal spot irregular, not extending to antenniferous tubercle	separated spots on clypeus and vertex, clypeal spot more regular, extending to antenniferous tubercle
ventral surface of head	red	red	black at middle
labium	surpassing base of metacoxa	at most reaching middle of mesocoxa	surpassing base of mesocoxa
segment I of labium	usually surpassing anterior margin of prosternum	not reaching anterior margin of prosternum	not reaching anterior margin of prosternum
segment IV of labium	distinctly shorter than segment III	subequal or slightly longer than segment III	distinctly shorter than segment III
longitudinal black vittae on pronotum	broad, vittae on anterior pronotal lobe link or almost link together	broad, nearly parallel	narrow, inverted V-shaped
median keel on pronotum	absent	elevated at middle	elevated at middle, sometimes indistinct
pronotum length: width ratio	male: 0.62 female: 0.59	male: 0.65 female: 0.69	male: 0.58 female: 0.55
hemelytra	red at its extreme base	basal and costal part very narrowly red	costal and apical margins broadly red, apex of the latter narrowly black
abdomen	red only laterally	with more red streaks	red, with a broad black streak along the sides

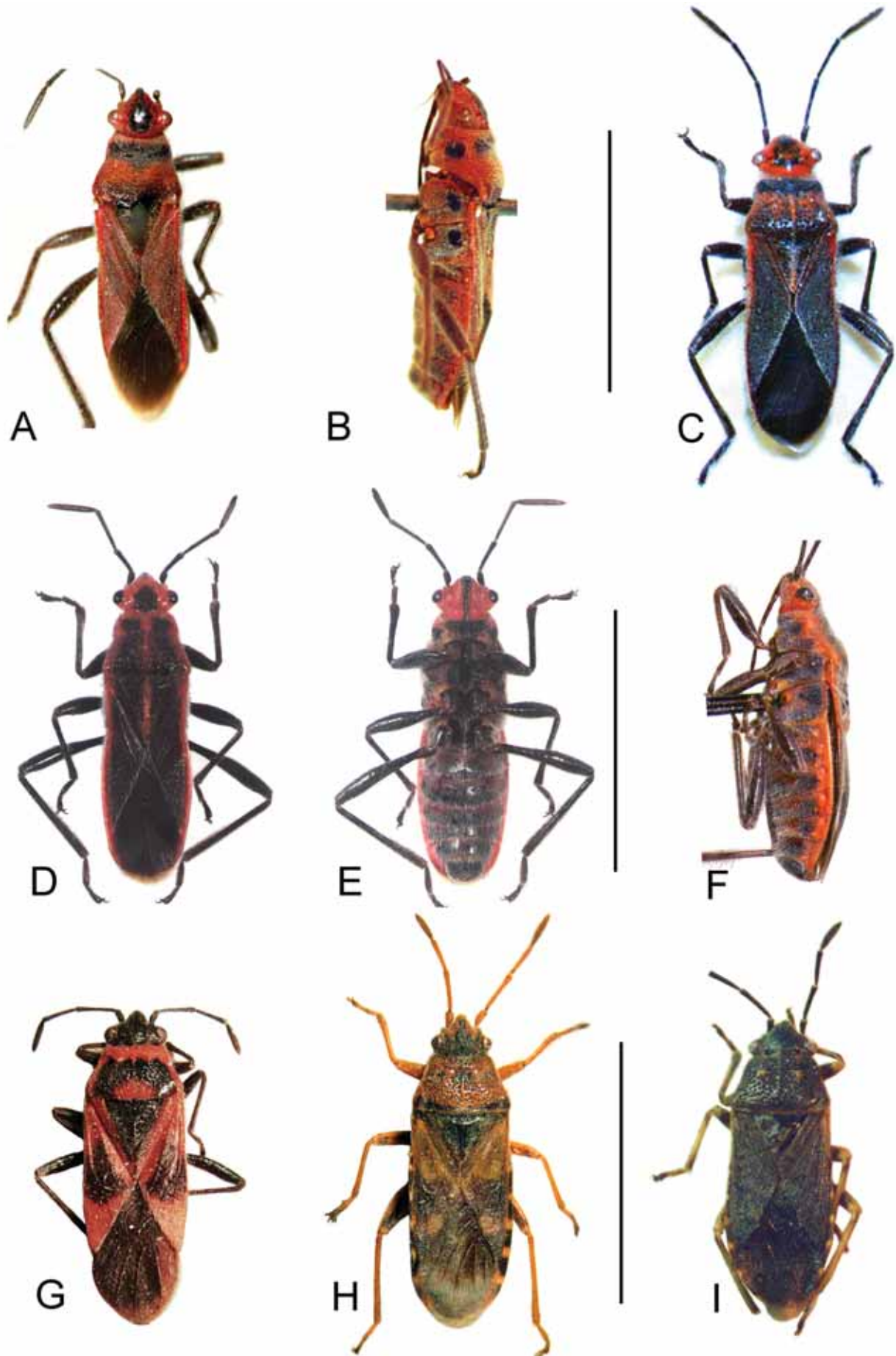


Fig. 4. *Arocatus* spp., dorsal, ventral or lateral view. A, B, *A. pilosulus*, one of the syntypes; C, *A. pilosulus*; D, E, *A. pseudosericans*, new species, holotype; F, *A. pseudosericans*, new species; G, *A. roeselii*; H, *A. rufipes*; I, *A. suboeneus*. Scale bars = 5.0 mm.

Host plants and bionomics. — Unknown.

Distribution. — **Asia:** China (Fujian, Guangxi, Guizhou, Shaanxi, Sichuan, Zhejiang), Japan (Honshu, Kyushu).

***Arocatus roeselii* (Schilling, 1829)**
(Figs. 4G; 2D–F)

Lygaeus roeselii Schilling, 1829: 60. Syntype(s): Poland; lost. For detailed synonymy including infrasubspecific taxa, see Péricart (2001: 38).

References. — Stichel, 1957: 82 (keyed, redescription, figures, host plant, distribution, interspecific variability); Stichel, 1959: 314 (listed); Slater, 1964a: 25 (catalogue); Putshkov, 1969: 75 (redescription, habitus, larva, distribution, habitat, biology); Misja, 1973: 146 (Albania record); Péricart, 1999a: 167 (redescription, intraspecific variability, larva, biology, distribution); Friess, 2000: 68 (host plant); Péricart, 2001: 38 (catalogue); Protić, 2001: 23 (Slovenia, Croatia, Bosnia & Herzegovina, Serbia and Macedonia records); Bianchi & Štepanovičová, 2003: 75 (distribution); Aukema et al., 2013: 354 (catalogue).

Diagnosis. — Dorsum of body with very short, decumbent hairs. Body red with head, antennae, scutellum and legs black. Posterior lobe of pronotum with large black M-shaped spot. Corium with black median spot, apical half red. Majority of thoracic sterna, round sublateral spots on abdominal sterna black. Connexivum red. Hemelytral membrane translucent, dark brown.

Material examined. — **AUSTRIA:** 1 male, Wien, 17 Dec. [18]83 (HNHM); **CROATIA:** 1 male, Plavisevica, on *Alnus*, coll. Ujhelyi, 1909 (HNHM); 1 male, Zagreb, 21 Feb. 1900, coll. Langhoffer (HNHM); **HUNGARY:** 2 males, 1 female, Kecskemét, coll. G. Horváth, 1 Sep. 1923 (HNHM); 1 female, Budapest, Városliget, coll. Csiki, 10 Mar. 1894 (HNHM); 1 female, Magyaróvár, coll. Révy, 20 Nov. 1938 (HNHM); 1 male, Pinnye, coll. Streda, Mar. 1921 (HNHM); **ITALY/SLOVENIA:** 1 female, Görz [= Gorizia], coll. Hensch (HNHM); **RUSSIA: Daghestan:** 1 male, Caucasus, Derbent (HNHM).

Host plants. — Reported on *Alnus incana*, *Alnus glutinosa* and plane trees (*Platanus* sp.) (Friess, 2000; Nau & Straw, 2007; Rieger, 2008).

Distribution. — **Asia:** Azerbaijan, Kazakhstan, Georgia, Syria, Turkey; **Africa:** Algeria, Tunisia; **Europe:** Albania, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Hungary, Italy, Liechtenstein, Luxembourg, Macedonia, Netherlands, Poland, Portugal, Romania, Russia (Central European Territory, North European Territory, South European Territory), Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine (Misja, 1973; Péricart, 2001; Protić, 2001; Aukema et al., 2013).

Comment. — For discussion concerning species trenning of *longiceps* and *roeselii* see discussion under *A. longiceps*.

***Arocatus rufipes* Stål, 1872**
(Figs. 3G–I, 4H)

Arocatus rufipes Stål, 1872: 42. Holotype (female): Russia, “Viäkta” [= Kyakhta] (not Viätka in Péricart, 2001: 39); NHRS. *Arocatus fasciatus* Jakovlev, 1889: 328 (syn. Kiritshenko & Kerzhner, 1980: 73). Lectotype (Péricart, 1998: 124) (male): Russia, Troitskossavsk; ZMAS.

References. — Stichel, 1959: 314 (listed); Slater, 1964a: 28 (catalogue); Zheng & Zou, 1981: 17 (*fasciatus*, keyed, redescription); Slater & O’Donnell, 1995: 3 (catalogue); Nonnaizab, 1999: 70 (*fasciatus*, listed); Hua, 2000: 187 (listed); Péricart, 2001: 38 (catalogue); Nonnaizab & Li, 2005: 84 (listed, distribution); Xie et al., 2009: 341 (keyed, redescription); Vinokurov et al., 2010: 182 (catalogue); Jia et al., 2011: 391 (*fasciatus*, Ningxia record); Ishikawa et al., 2012: 377, plate 84 (redescription, distribution, photo).

Diagnosis. — Body colour varies from yellowish brown to reddish brown. Dorsum with very short, decumbent hairs. Antennae and legs invariably mostly red. Pronotum often of red ground colour with black coarse punctures. Corium with distinct black transverse streak and apical spot. Connexivum bicoloured. Pygophore and paramere as shown in Fig. 3G, H, I.

Type material examined. — Holotype, female: Viäkta (hw) // A. Dohrn (hw) // (red) Typus (NHRS).

Additional material examined. — **CHINA: Beijing:** 1 male, Xishan, coll. S. H. Ying & S. H. Li, 22 Jun. 1957 (NKUM); **Shaanxi:** 1 female, Jiyukou, Qinling, coll. Y. Zhou, 27 May 1952 (NKUM); **Tianjin:** 3 males, 5 females, Baxianzhuozi, Jixian county, coll. H. G. Zou & W. J. Bu, 18 Jul. 1985 (NKUM); **JAPAN: Hokkaido:** 1 female, Ins. Jesso [= Hokkaido], Sapporo, coll. Matsumura (HNHM); **MONGOLIA (Central):** 5 males, 3 females, Mongol Els n. res., 47°24’N 103°39’E, dunes, coll. J. Halada, 31 Jul. 2005, alt. 1320 m (NMPC).

Host plants. — *Ulmus pumila* var. *pendula* (new discovery in our study).

Distribution. — **Asia:** China (Inner Mongolia, Beijing, *Tianjin, Hebei, Ningxia, Shaanxi), Japan, Mongolia, Russia (East Siberia, Far East).

***Arocatus sericans* (Stål, 1859)**
(Figs. 3J, K, S, T, 5I–L, 7)

Lygaeus sericans Stål, 1859: 240. Holotype (female): China, Hong Kong; NHRS.

Arocatus continctus Distant, 1906: 410. Lectotype (Slater, 1978: 856) (female) (Fig. 7C, D): Sri Lanka, Eppawela; BMNH.

New synonymy.

Caenocoris dimidiatus Breddin, 1907: 45. Lectotype (Gaedike, 1971: 116) (male) (Fig. 7E, F): Ceylon, Negombo; DEIC.

New synonymy.

Graptostethus parvus Distant, 1918: 422 (syn. A. Slater, 1985: 316, with *A. continctus*). Syntype(s): Australia, Queensland, Townsville; BMNH.

References. — Distant, 1904: 15 (redescription, distribution); Stichel, 1959: 314 (listed); Slater, 1964a: 20 (*continctus*, catalogue), 29 (*sericans*, catalogue), 41 (*dimidiatus*, catalogue); Slater, 1964b:

57 (*continctus*, keyed); Scudder, 1968: 156 (long-distance dispersal); Zheng & Zou, 1981: 19 (*continctus*, keyed, redescription); Slater & O'Donnell, 1995: 3 (*continctus*, catalogue); Hua, 2000: 187 (*continctus*, listed); Péricart, 2001: 38 (*sericans*, *continctus*, catalogue), 39 (*dimidiatus*, catalogue).

Diagnosis. — Dorsum of body with semidecumbent and moderately long erect white hairs. Head red, with black spot from vertex to apex of clypeus; ventral surface of head red. Pronotum with broad longitudinal black vittae, without slightly elevated median keel at middle behind calli. Scutellum black with red median vitta. Hemelytra black, only red at its extreme base. Antennae and legs black. Posterior margin of pygophore and cuplike sclerite not fused,

in the middle of each of them with a process (Fig. 3J, K). Paramere as shown in Figs. 3S, T, 5I–L.

Type material examined. — Holotype of *A. sericans*, female: China. // Kinb. // (red) Typus (NHRS). Lectotype of *Arocatus continctus*, female, Sri Lanka, Eppawela/ N.C.P. 9-05, coll. Distant, 1888 (BMNH); Lectotype of *Caenocoris dimidiatus*, male, Negombo, Ceylon, coll. Horn (DEIC).

Additional material examined. — CHINA: Hainan: 3 males, 3 females, Yaxian, 1935 (NKUM); 1 male, 1 female, Nada, coll. Y. Zhou, Apr.1963 (NKUM); 2 males, Datianpolu natural reserve, Dongfang, coll. G. P. Zhu & Y. R. Mu, 28 Apr.2009, alt. 100 m,

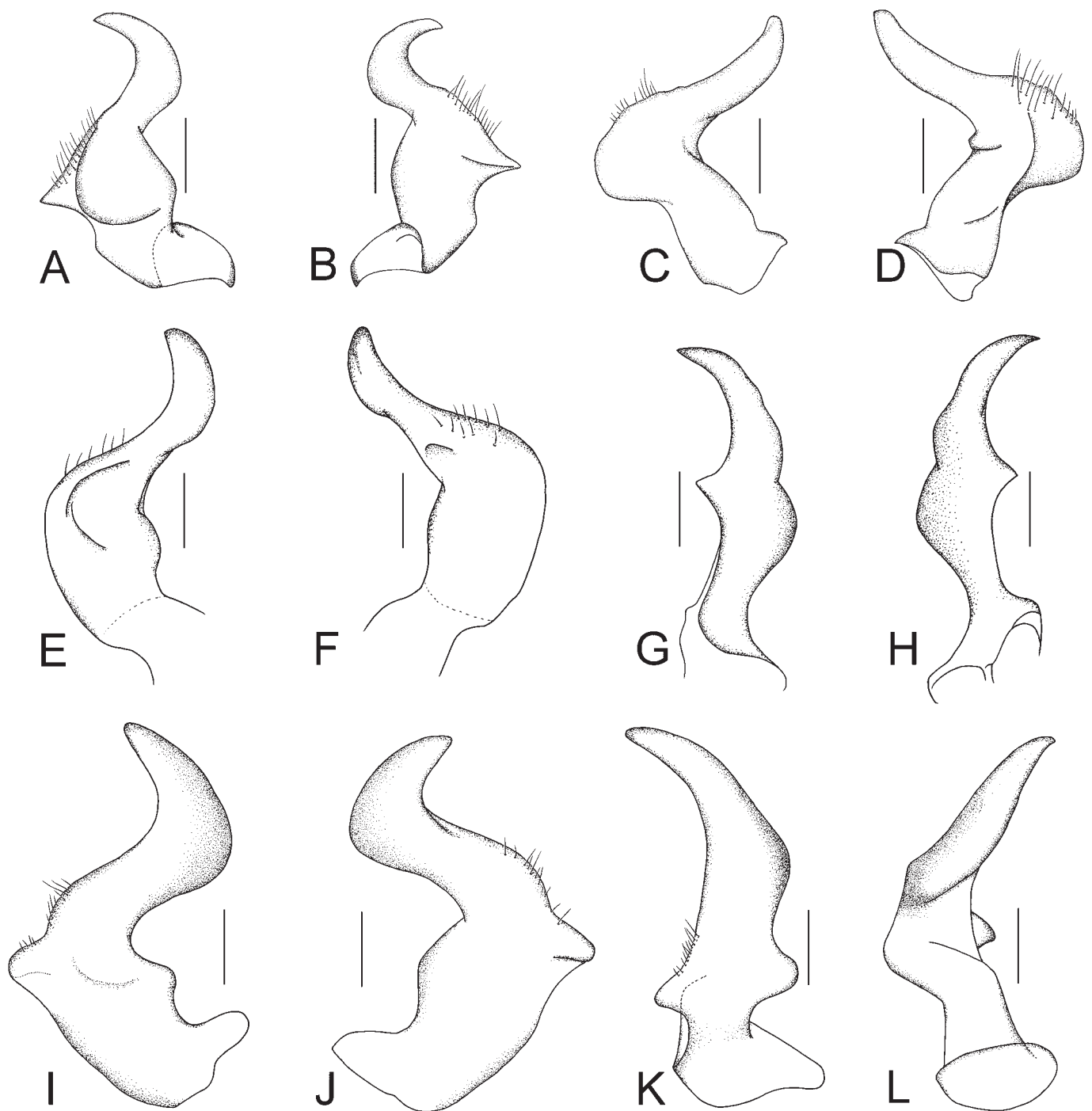


Fig. 5. Right parameres in four different aspects. A–D, *A. melanocephalus*; E–H, *A. pseudosericans*, new species; I–L, *A. sericans*. Scale bars = 0.1 mm.

at light (NKUM); 1 male, 1 female, Tongguling National Natural reserve, Wenchang, coll. X. Zhang & Z. H. Fan, 18 Jul.2008 (NKUM); **Guangxi**: 1 male, 1 female, Longrui, Ningming, coll. L. Wei, 9 May 1984, alt. 130 m (NKUM); **INDIA: Tamil Nadu**: 1 male, 6 km S Kotagiri, Elk Falls, 11°25'N 76°52'E, coll. L. Dembicky & P. Pacholátko, 12–16 May 1997, alt. 1650 m (NHMW); 2 males, Madura [= Madurai], coll. J. Dubreuil (NHMW); 3 females, Madura [= Madurai], coll. J. Dubreuil (HNHM); many species, Coimbatore, coll. P. S. Nathan, May 1947 (NMPC). **Territory of Puducherry**: many specimens, Karikal, Kurumbagaram, coll. P. S. Nathan, May 1950 (NMPC); 1 female, Pondichéry, coll. Signoret / *continctus* det. Distant (NHMW); **SRI LANKA**: 7 males, 2 females, coll. Brown, 1899, (1 male, 1 female) *continctus* det. Distant (NHMW); **VIETNAM (North)**: 2 males, 52 km SW of Lang Son, 21.35N 106.30E, coll. P. Pacholátko & L. Dembicky, 27 Apr. – 6 May 1996, 370 m (NHMW); **ETHIOPIA**: 1 female, “Abyssinia” [= Ethiopia], Kovács, Bubassa, Jun.[1]911(HNHM).

Host plants. — *Gomphocarpus* spp. and *Nerium oleander* (Slater, 1985).

Distribution. — **Asia**: China (Hainan, Hongkong, *Guangxi, Taiwan), India (Tamil Nadu, Territory of Puducherry), Japan? Korea? Sri Lanka, *Vietnam; **Africa**: *Ethiopia, Guinea?

(Mt. Nimba), Nigeria; Australia. This species is reported for the first time from Vietnam and Ethiopia.

Remarks. — The holotype of *A. sericans* was examined by us, in addition, the photographs of the holotype of *A. sericans* are available at the website of Swedish Museum of Natural History (http://www2.nrm.se/en/het_nrm/s/arcatus_sericans.html). Lectotype and specimens identified as *A. continctus* by W. L. Distant examined by us are undoubtedly conspecific with it, therefore we propose synonymy of the two species. The lectotype of *Caenocoris dimidiatus* Breddin, 1907, described from Ceylon [= Sri Lanka], Negombo, collected by Horn, was also studied. The specimen is conspecific with *A. sericans*, therefore *C. dimidiatus* is synonym of *A. sericans* too.

Due to the past confusion between the *A. pseudosericans*, new species and *A. sericans*, the distribution of *A. sericans* in Japan and Korea is doubtful at present. The mount Nimba is situated in the border between Guinea, Ivory Coast and Liberia. It is unsure, where it is collected on the Mt. Nimba, so the distribution of this species in Guinea is also uncertain.

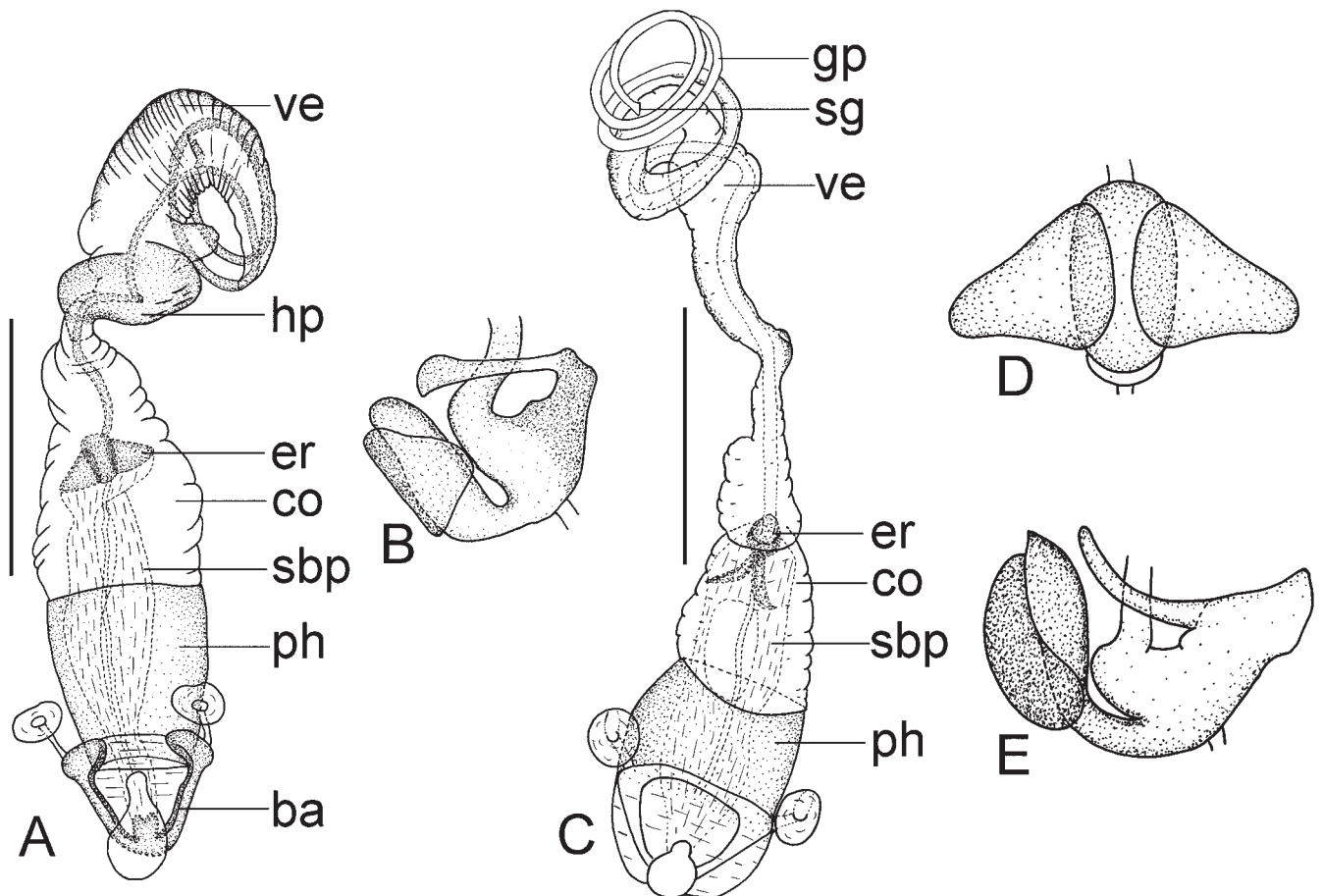


Fig. 6. A–B, *A. melanocephalus*. A, phallus, dorsal view; B, enlarged ejaculatory reservoir, lateral view; C–E, *A. pseudosericans*, new species. C, phallus, dorsal view; D, enlarged ejaculatory reservoir, dorsal view; E, enlarged ejaculatory reservoir, lateral view. Lettering: ba: basal apparatus; co: conjunctiva; er: ejaculatory reservoir; gp: gonoporal process; hp: helicoid process; ph: phallosome; sbp: support bridge prolongation; sg: secondary gonopore; ve: vesica. Scale bars = 0.5 mm.

***Arocatus suboeneus* Montandon, 1893**

(Fig. 4I)

Arocatus suboeneus Montandon, 1893: 404. Syntype(s):
“Mozambique, Rikatla”; MGAB?

References. — Slater, 1964a: 30 (catalogue); Péricart, 2001: 38
(catalogue, Palaearctic).

Diagnosis. — Body less than 6.5 mm, dorsally black to dark brown, without red colour (sometimes with yellow colouration). Dorsum of body with rather short decumbent hairs. Head short (antennal segment I reaching apex of head). Labium reaching hind coxae.

Material examined. — YEMEN: 1 male, Jebel Jihaf, Wadi Lejj, coll. H. Scott & E. B. Britton, 28 Sep. 1937, ca. 2133 m, beaten from wild *Clematis* (BMNH); KENYA: 1 female, Jembeni Hills, coll.

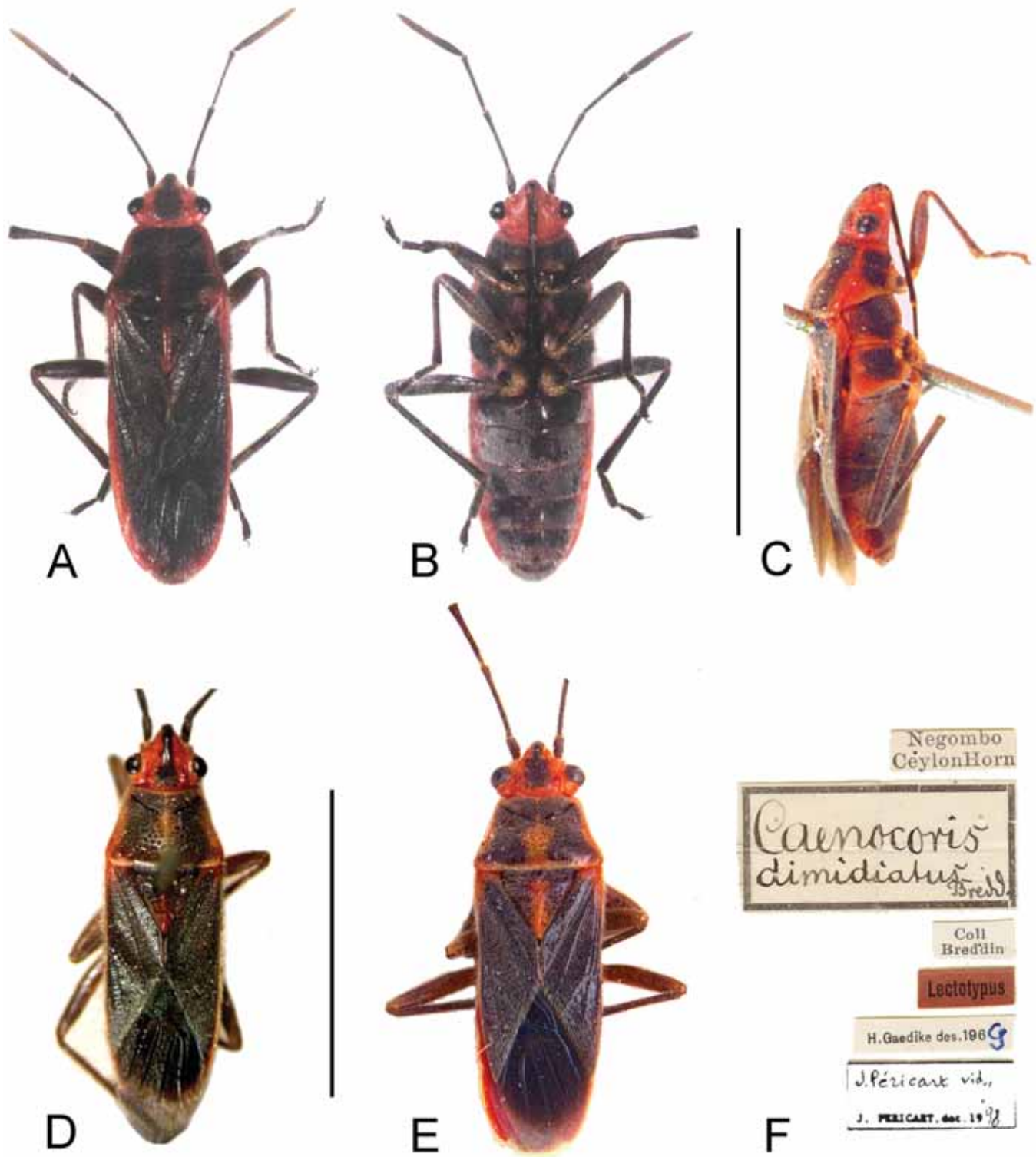


Fig. 7. A–B, *A. sericans*. A, dorsal view; B, ventral view; C–D, *A. continctus*, lectotype. C, lateral view; D, dorsal view; E–F, *Caenocoris dimidiatus*, lectotype. E, dorsal view; F, labels. Scale bars = 5.0 mm.

Van Someren, May 1947 (BMNH); **MALAWI**: 1 male, Kandeu, coll. R. C. H. Sweeney, Jun.1958 (BMNH); **SOUTH AFRICA**: 1 female, Port Elisabeth, coll. Brauns (NHMW); **ZAMBIA**: 1 male, 240 km SE Mansa, 25 km SE Madutu, 29 Nov.2004, coll. Snizek & Tichy (NHMW).

Host plants. — Collected on *Clematis* based on label data, but its host plant status needs confirmation.

Distribution. — **Asia**: Yemen; **tropical Africa** (need to be clarified, see Remarks below).

Remarks. — The type of *A. suboeneus* is perhaps in Muzeul de Istoria Naturala “Grigore Antipa”, Bucharest, Romania. The identity of the species is doubtful, and needs clarification based on the type material. In the collections of BMNH and NHMW specimens identified as *A. suboeneus*, in fact represent more (at least three) closely related species collected from Africa. The description of them needs further study. The figure of this species is based on a BMNH specimen.

KEY TO AROCATUS SPECIES

1. Body dorsally black to dark brown, without red colour (sometimes with yellow colouration). Ethiopian Region2
 - Body red (or yellowish red) and black coloured. Palearctic, Oriental, Australian Regions and sometimes also Ethiopian Region.....3
2. Head long (antennal segment I far surpassing apex of head); labium surpassing middle of abdomen; body with long hairs.*A. longicephalus* J. A. Slater, 1972
 - Head short (antennal segment I reaching apex of head); labium reaching hind coxae; body with rather short hairs.*A. suboeneus* Montandon, 1893
3. At least tibiae in most part red (sometimes fully black); femora and antennal segments often also partially or totally red; posterior half of pronotum with large black M-shaped spot or red, with black punctures. Dorsum with very short, decumbent hairs. Palearctic species.....4
 - Legs and antennae fully black; pronotum differently coloured. Dorsum mostly with longer, erect hairs. Eastern Palearctic, Oriental, Ethiopian species.....7
4. Corium with distinct black transverse streak and apical spot; antennae, head, and legs invariably red; pronotum with black coarse punctures also on red parts, membrane pale.*A. rufipes* Stål, 1872
 - Corium with different pattern; antennae mostly black; punctures mostly of the same colour as ground colour of pronotum; membrane brownish or black.....5
5. Corium laterally and apical half black. Head shorter than interocular distance; rostrum reaching only mid coxae.....*A. melanocephalus* (Fabricius, 1798)
 - Corium with black median spot or without black colour, apical half red. Head at least as long as interocular distance; rostrum reaching or exceeding hind coxae.....6
6. Corium with black median spot, apical half red; legs and antennae mostly black; posterior half of pronotum with large black M-shaped spot; connexivum bicolored. Pygophore opening anteriorly widened. Brightly coloured species, usually living on *Alnus*.*A. roeselii* (Schilling, 1829)
 - Corium often with indistinct dark areas, but never with such pattern; connexivum red. Pygophore opening parallel in anterior part. Pale species, usually living on *Platanus*.*A. longiceps* Stål, 1872
7. Head red except apex of clypeus; anterior lobe of pronotum red, posterior lobe dark. Pilosity very short. Body larger than 10 mm. Australian Region.....*A. fastosus* A. Slater, 1985
 - Head more extensively dark or clypeus also red; pronotum differently coloured. Pilosity longer. Body shorter than 10 mm.....8
8. Body dorsally mostly red, at least head and pronotum fully red9
 - Body dorsally darker, at least head and pronotum partly dark.10
9. Scutellum and hemelytra without dark spots (except membrane). Body, antennae and legs with long hairs (many of them longer than eyes width).Oriental Region.....*A. nanus* (Breddin, 1900)
 - Base of scutellum laterally black, an obscure central spot covering posterior half of clavus and inner half of corium dark. Pubescence short, hairs shorter than half width of eyes (except a few hairs on legs). Nicobar Islands.....*A. nicobarensis* (Mayr, 1865)
10. Head fully black. Australian Region.....11
 - Head at least partially red. Palearctic, Oriental and sometimes also Australian Region.13
11. Pronotum red only anteriorly of calli; thoracic sternum partly black. Australian Region.*A. montanus* A. Slater, 1985
 - At least anterior lobe of pronotum red; thoracic sternum red..12
12. Posterior lobe of pronotum black; apical margin of corium broadly red. Body length 7.5–10 mm. Australian Region.....*A. rusticus* Stål, 1867
 - Pronotum with indistinct dark pattern; corium fully brown. Body length about 7 mm. New Caledonia.....*A. rubromarginatus* (Distant, 1920)
13. Dorsum brown, only head red except medially. Australian Region.....*A. aenescens* Stål, 1874
 - Never with such colour pattern, pronotum red and black.14
14. Anterior lobe of pronotum red, posterior part black, posterior margin broadly pale brown. Australian Region.*A. chiasmus* A. Slater, 1985
 - Anterior lobe of pronotum not fully red, pronotum without brown colour.....15
15. Calli and indistinct spot on posterior lobe of pronotum black; pleura with glabrous black spots. Body and legs with long, erect pilosity. India and Pakistan.*A. pilosulus* Distant, 1879
 - Pronotum with black longitudinal streaks along midline; pleura without glabrous black spots. Body with shorter pubescence..16
16. Head with black median vitta; pronotum without slightly elevated median keel at middle behind calli; hemelytra red only at its extreme base. Oriental and Ethiopian Regions. ..*A. sericans* (Stål, 1859)
 - Vertex with round black spot; pronotum with slightly elevated median keel at middle behind calli; hemelytra usually more extensively red.....17
17. All margins of corium broadly red, except a small black spot along apical 1/3 of apical margin; pronotum with an inverted V-shaped black vitta; ventral surface of head black in the middle. China, Japan, Korea and Russia (Far East, Siberia).....*A. melanostoma* Scott, 1874
 - Only basal and lateral parts of hemelytra narrowly red; pronotum with a pair of parallel black vittae; ventral surface of head red. China, Japan.*A. pseudosericans*, new species

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