

Phylogeny of the tribe Erotini (Coleoptera, Lycidae), with descriptions of new taxa

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Abstract

A cladistic analysis of Erotini (Lycidae) is carried out, resulting in revalidation of Dictyopterini **nom. rev.**, proposal of Aferotini **tr. n.** and Flagraxina **subtr. n.** The genera *Proteros* **gen. n.** and *Pyrotes* **gen. n.** and eight new species: *Proteros sempiternus* **sp. n.**, *Taphomimus nanensis* **sp. n.**, *Dictyoptera gansuensis* **sp. n.**, *Helcophorus murzini* **sp. n.**, *H. gobindanus* **sp. n.**, *Greenarus belokobylskii* **sp. n.**, *Eropterus glebulus* **sp. n.** and *Propyropterus* (s. str.) *plateroides* **sp. n.** are described. *Benibotarus sanguinipennis* Nakane, **syn. n.** is placed in synonymy with *Lateralis oculata* (Gorham). *Lycoprogentes* Pic is transferred from Calochrominae to Taphini (Erotinae) and *Microcoloberos* Pic is transferred from Erotinae to Platerodinae. *Erotides* Waterhouse **nom. rev.** and *Glabroplatyis* Pic **nom. rev.** are revalidated from synonymy with *Platycis* Thomson. *Punicealis miranda* (Barovskij) **nom. rev.** is revalidated from synonymy with *Lateralis oculata* (Gorham). *Platycis sculptilis* (Say) is transferred to *Erotides* (s. str.), while *Platycis cosnardi* (Chevrolat), *P. nasuta* (Kiesenwetter), *P. schneideri* (Kiesenwetter), *P. taiwana* Kono, *P. kanoi* Nakane and *P. matsudai* Bocák are transferred to *Erotides* (*Glabroplatycis*); *Benibotarus nigripennis* Nakane & Ohbayashi is transferred to *Greenarus* Kazantsev and *Pyropterus himalejicus* Bourgeois to *Lycoprogentes*. *Helcophorus* Fairmaire, **stat. n.**, *Taphomimus* Kazantsev, **stat. n.**, *Punicealis* Kazantsev, **stat. n.**, *Lateralis* Kazantsev, **stat. n.**, and *Greenarus* Kazantsev, **stat. n.** are raised to the genus level, while *Paralopheros* Kazantsev is suppressed to subgeneric level within *Propyropterus* Nakane. The subgenus *Tricostaeptera* Kazantsev is transferred from *Kolibaceum* to *Lateralis*. *Kleineria* **nom. n.** is proposed for *Kleinella* Kazantsev, 1992 preoccupied by *Kleinella* Adams, 1860 (Mollusca). A key to the genera and subgenera and a check-list of Erotini and Dictyopterini of the World are provided.

Key words: Coleoptera, Lycidae, Erotinae, new tribe, new subtribe, new genera, new species, taxonomy, phylogeny.

Introduction

After the status of Platerodini Kleine was raised to subfamilial level (Miller, 1997) the lycid subfamily Erotinae Leconte, where it used to belong, shrank to two tribes, Erotini and Taphini Bocák & Bocáková. Representatives of Erotinae are known to be distributed in all zoogeographic regions except the Neotropics, penetrating into the Papuan part of the Australian region as well. Several Neotropical species of *Eros* were described during a time when almost all not *Lycus*- or *Calopteron*-looking lycids were attributed to *Eros*, and almost certainly belong neither in this genus, nor in the Erotinae. The Taphini are known to be mostly Oriental and Papuan, penetrating into the Palaearctic region in its extreme southeast (Bocák & Bocáková, 1991), while the Erotini are found throughout the distribution area of the subfamily, i.e. in all zoogeographical regions except the Australian, being most abundant in the Holarctic.

The discovery of a new genus belonging to the Taphini from New South Wales, Australia, in the Darlington collection (MCZ) has, however, significantly expanded the distribution of the Erotinae onto the Australian continent proper. This new taxon is

distinguished from other Lycidae by the divided labrum, a feature not reported for adult Coleopterans, but known in the prekatatrepsis embryos (Cicero, 1994). A description of the new genus is given below, along with descriptions of several other, mostly oriental, new taxa. Additional taxonomic changes to the Erotini, based on the study of the lycid types housed at the NMNH and MNHN are also proposed, and a phylogenetic analysis of the tribe is presented.

Depositaries

ICM — Insect Centre, Severtzov Institute of Ecology and Evolution Problems, Moscow;

KMC — K.Matsuda's personal collection, Takarazuka;

MCZ — Museum of Comparative Zoology, Harvard University, Cambridge;

MNHN — Museum National d'Histoire Naturelle, Paris;

NNHM — National Natural History Museum, London;

ZIN — Zoological Institute, St. Petersburg;

SVK — author's collection.

Material and methods

Both sexes of type species of all genus-group Erotini taxa were examined with the following exceptions. For *Chinotaphes* Bocák & Bocáková the data were taken from the description of the male holotype (Bocák & Bocáková, 1999). The type species of *Lopheros* Leconte, *L. fraternus* (Randall), was available as male specimens only, so some of the characters, including all related to female structures, were taken from *L. rubens* (Gyllenhal). As females of the type species are known for neither *Taphomimus* Kazantsev nor *Aferos* Kazantsev, females of *T. diocisus* (Bocák & Bocáková) and an unassociated *Aferos* sp., respectively, were studied. For some genus-group taxa (*Kleineria* nom. n. and *Propyropterus* Nakane) females were either not known at all (*Kleineria*) or were not available for the study (*Propyropterus*); in this case question marks were entered in the data matrix. Characters of *Kolibaceum* Winkler, one of the two extinct genera belonging in Erotini, were to a great extent taken from the photographs provided with the description (Winkler, 1987), rather than from the description itself and relevant reconstructions that appeared to be sometimes inconsistent with the photographed structures (Kazantsev, 1995; 1997). The other extinct taxon, *Pseudaplatopterus* Kleine, actually offered few parameters to be considered; nevertheless, it was also included in the data matrix. No attempt was made to use larval or pupal characters, as our knowledge of the immature stages of Erotini is still very fragmentary. A Phylip Pars program, version 3.6 was used for the cladistic analysis.

The hind wing terminology follows Kukalova-Peck & Lawrence (1993) modified according to Kluge, 2000 and Fedorenko, 2002.

Phylogeny

The following available genus-group taxa have been initially classified or subsequently placed in the tribe Erotini: *Aferos* Kazantsev, *Aplatopterus* Reitter, *Benibotarus* Kono, *Bourgeoisella* Kazantsev, *Chinotaphes* Bocák & Bocáková, *Dictyoptera* Latreille, *Eropterus* Green, *Eros* Newman, *Erotides* Waterhouse, *Eudictyoptera* Barovskij, *Eulopheros* Kazantsev, *Falsoconderis* Pic, *Flagrax* Kazantsev, *Glabroplatycis* Pic, *Greenarus* Kazantsev, *Helcophorus* Fairmaire, *Hiekeolycus* Winkler, *Kleineria* **nom. n.** [pro *Kleinella* Kazantsev, preoccupied by *Kleinella* Adams (Mollusca)], *Kolibaceum* Winkler, *Konoplaticis* Nakane, *Lateralis* Kazantsev, *Lopheros* Leconte, *Microcoloberos* Pic, *Paralopheros* Kazantsev, *Phaneros* Kazantsev, *Pietrzeniukia* Winkler, *Platycis* Thomson, *Pseudaplatopterus* Kleine, *Propyropterus* Nakane, *Punicealis* Kazantsev, *Pyropterus* Mulsant, *Sibetarus* Bocák & Bocáková, *Slipinskia* Bocák & Bocáková, *Staepteron* Kazantsev, *Taphomimus* Kazantsev, *Tricostaeptera* Kazantsev, *Ukachaka* Kazantsev and *Xylobanoides* Kleine.

Some of these taxa (i.e. *Aplatopterus*, *Eudictyoptera*, *Falsoconderis*, *Hiekeolycus*, *Pietrzeniukia*, *Slipinskia* and *Xylobanoides*) were put in synonymy without causing much controversy. *Helcophorus*, which had also been synonymized (Bocák & Bocáková, 1991), was restored as a valid subgenus shortly afterwards (Kazantsev, 1993). Questions remain also about the validity of the synonymies of *Erotides* and *Glabroplatycis*.

The following taxa are hereby excluded from the Erotini list:

Microcoloberos Pic (not *Microcoleborus* as indicated in Kleine, 1933 and Bocák & Bocáková, 1990) that had been placed in Erotina by Bocák & Bocáková (1990) and appeared to have little in common with Erotini (Kazantsev, 1993), is now tentatively transferred to Platerodinae.

Aferos, along with its subgenus *Ukachaka*, previously attributed to Erotini (Kazantsev, 1992; 2000) are hereby transferred to Aferotini, new tribe, tentatively placed within the subfamily Erotinae, due to the asymmetric phallobase (Fig. 4) and sclerotized elytral epipleures preliminarily considered the apomorphy of the tribe. *Staepteron* is also excluded from Erotini, but, despite its affinities with *Aferos*, is not classified in Aferotini tr. n., as it does not have elytral epipleures. Until a male specimen of this taxon is examined it is left in Erotinae *incertae sedis*.

Therefore, there are 27 valid or questionable genus-group taxa of Erotini:

- | | |
|--|--------------------------------|
| 1. <i>Benibotarus</i> Kono | 6. <i>Eros</i> Newman |
| 2. <i>Bourgeoisella</i> Kazantsev | 7. <i>Erotides</i> Waterhouse |
| 3. <i>Chinotaphes</i> Bocák & Bocáková | 8. <i>Eulopheros</i> Kazantsev |
| 4. <i>Dictyoptera</i> Latreille | 9. <i>Flagrax</i> Kazantsev |
| 5. <i>Eropterus</i> Green | 10. <i>Glabroplatycis</i> Pic |

- | | |
|-----------------------------------|---------------------------------------|
| 11. <i>Greenarus</i> Kazantsev | 20. <i>Platycis</i> Thomson |
| 12. <i>Helcophorus</i> Fairmaire | 21. <i>Pseudaplatopterus</i> Kleine |
| 13. <i>Kleineria</i> nom. n. | 22. <i>Propyropterus</i> Nakane |
| 14. <i>Kolibaceum</i> Winkler | 23. <i>Punicealis</i> Kazantsev |
| 15. <i>Konoplatycis</i> Nakane | 24. <i>Pyropterus</i> Mulsant |
| 16. <i>Lateralis</i> Kazantsev | 25. <i>Sibetarus</i> Bocák & Bocáková |
| 17. <i>Lopheros</i> Leconte | 26. <i>Taphomimus</i> Kazantsev |
| 18. <i>Paralopheros</i> Kazantsev | 27. <i>Tricostaoptera</i> Kazantsev |
| 19. <i>Phaneros</i> Kazantsev | |

Realizing the drawbacks of a numerical cladistic analysis (Kluge, 2000), I applied Phylip Pars program, version 3.6, with *Aferos*, the most divergent genus of Erotinae, in which, more than in any other genus, the characters may be in their ancestral states, as the outgroup, and two Taphini taxa, *Taphes* and *Pyrotes*, included for verification purposes. The program assumes that the ancestral condition of characters is unknown, which seems to be exactly the case with the Erotini, as well as with most other Lycidae. Some characters, such as the length and structure of the metasternal suture and metendosternite, were dropped, as they were found to vary considerably at the infraspecific level: for example, the metendosternite of a wingless female of *Helcophorus miniatus* Fairmaire (Fig. 5a) consisting of a pair of widely separated transverse bars, comparable to the mesendosternite and to the larval condition (Crowson, 1981), resembles none of those of other lycids or cantharoids, while the metendosternite of a winged male (Fig. 5b) does not principally differ from that of *Dictyopectera aurora* (Herbst) (Fig. 7). Similarly, the metasternal suture of *H. miniatus* almost reaches the mesosternum in the male, but forks just anterior of the middle of the metasternum in the female (Fig. 6). The structure of the metacoxae in Lycidae often offers excellent differentiation characters, including the metatrochantal suture (this suture is not, to the best of my knowledge, reported outside Archostemata — i.e. Crowson, 1981) and the longitudinal excavation to receive retracted femora, which in Erotinae is typically present, being absent in *Taphes*, *Coloberos*, *Helcophorus*, *Punicealis* and *Lateralis*. However, the coxal structures are not sufficiently studied in the Lycidae, and, as such study would require KOH clearing, while not all of the treated taxa were available for that, they were not included in the analysis either.

- 1 Ultimate maxillary palpomere: 0, pointed apically; 1, flattened apically. Condition 0 was found only in *Chinotaphes*, *Taphes* and *Pyrotes*.
- 2 Ultimate labial palpomere: 0, pointed apically; 1, parallel-sided or tapering apically; 2, widening apically. Condition 0 was found only in *Chinotaphes*, *Taphes* and *Pyrotes*.
- 3 Antennomere 3: 0, similar in length and vestiture to antennomere 2; 1, similar in length and vestiture to antennomere 4.

- 4 Median longitudinal pronotal structure, taking form of: 0, short anterior rib; 1, complete rib; 2, cell-like areola.
- 5 Pronotal median cell: 0, absent; 1, open and/or clearly divided into anterior and posterior parts; 2, closed and complete.
- 6 Posterior median pronotal ridges: 0, smoothed; 1, taking form of carinae.
- 7 Carinae making sides of the pronotal median cell, posteriorly: 0, absent; 1, concave; 2, straight; 3, convex.
- 8 Scutellar ridge of the metascutum: 0, partly exposed, not completely covered by the mesoscutellum; 1, completely covered by the mesoscutellum.
- 9 Elytral costa 3, posteriorly, compared to 1 and/or 2: 0, elevated; 1, not elevated. Elytral costa 3 is the one that is always fully developed in all of the Erotini taxa, while the three others may be reduced.
- 10 Elytral costa 4: 0, fully developed; 1, reduced, leaving 3 rows of cells in the last interstice, at least basally. I assume this character to be in condition 1 in *Chinotaphes*, though the description does not mention it, because all of the four costae appear to be always present in Erotini, at least basally as three rows of cells.
- 11 Elytral costa 2: 0, fully developed; 1, weakened in anterior half; 2, totally reduced, except at base.
- 12 Elytral costa 1: 0, fully developed; 1, weakened or reduced posteriorly.
- 13 Secondary elytral reticulation: 0, present in all interstices, except where primary costae are reduced, as double rows of cells; 1, absent in some of the interstices, most often in first and/or last; 3, absent in all interstices, except at base.
- 14 Elytral reticulation: 0, conspicuous; 1, weak, formed by fine curved costae. Condition 1 was found only in *Taphes*, *Paralopheros* and *Propyropterus*.
- 15 Elytral pubescence: 0, uniform; 1, distributed along costae only.
- 16 Shape of elytral cells: 0, subquadrate; 1, transverse.
- 17 Evenness of elytral cells: 0, relatively uneven; 1, regular and even.
- 18 Last elytral interstice: 0, not visible from above; 1, visible from above, at least basally. Condition 0 was found only in *Bourgeoisella*.
- 19 Minute sclerotized elytral epipleures: 0, absent; 1, present. Condition 1 was found only in *Aferos*.
- 20 Hind wing with cell formed by Cu_1 and Cu_2 : 0, closed (Fig. 12); 1, open (Figs. 8–11, 13). Condition 0 was found only in *Platycis*.
- 21 Metatrochanters: 0, long, about third to half length of pertinent femora; 1, short, hardly or slightly longer than wide.
- 22 Metatrochanteral cavities in male: 0, absent; 1, present. Only in *Erotides* were the metatrochanters found to be foveate.
- 23 Femoral cavities in male: 0, absent; 1, present. State 1 was found in *Platycis*, *Erotides* and *Glabroplatycis*, but was absent in *Konoplatycis* and all other taxa.
- 24 Tarsomere 1: 0, without plantar pad; 1, with apical plantar pad; 2, with plantar pad

- occupying about half of the tarsomere. The only taxon characterized by condition 0 was found to be *Taphes*.
- 25 Shape of posterior margin of male penultimate sternite: 0, incised; 1, convex.
 - 26 Male ultimate abdominal segments: 0, protruding out of penultimate circle; 1, positioned inside abdomen, not protruding out of penultimate circle (Fig. 3). Condition 1 was found only in *Flagrax*.
 - 27 Spiculum gastrale in female ultimate sternite: 0, long, with lateral arms (Figs. 14, 15); 1, long, but without lateral arms (Figs. 16–18); 2, short or absent (Fig. 19). Condition 0 was found not only in all of *Platycis*, *Erotides*, *Glabroplatycis* and *Konoplatycis*, but in *Eros* and *Eroptertus* as well. Condition 2 was found only in *Lopheros* and *Eulopheros*.
 - 28 Phallobase: 0, more or less symmetrical; 1, asymmetrical (Fig. 4). Condition 1 was found only in *Aferos*.
 - 29 Phallobase: 0, not or feebly sclerotized ventrally, sometimes subequal in length to median lobe (Figs. 30, 33); 1, sclerotized ventrally, usually considerably shorter than median lobe (Figs. 36, 39, 42, 45, 48, 51, 54). Use just of length of the phallobase to distinguish between Erotini and Taphini (q.v. Bocák & Bocáková, 1990) appeared to be insufficient, once a *Dictyoptera* species with the long sclerotized ventrally phallobase (Fig. 39) was discovered.
 - 30 Phallobase: 0, abruptly constricted basally and conspicuously bent in lateral view (Figs. 50–53); 1, not constricted basally and minimally or not at all bent in lateral view (Figs. 48–50). The only taxon characterized by condition 0 is *Eropterus*.
 - 31 Parameres: 0, about as long as median lobe and sclerotized; 1, about as long as median lobe, but membranous in apical half; 2, about half as long as median lobe (Figs. 28–30); 3, reduced to basal processes (Figs. 54–55). It is noteworthy that *Helcophorus tricolor* has condition 1, while the rest of *Helcophorus* species have condition 0; condition 3 was found only in *Propyropterus*.
 - 32 Parameres: 0, enveloping the median lobe, at least dorsally and/or basally (Figs. 36–50); 1, not enveloping the median lobe (Figs. 28–30, 51–53). Condition 1 was found in *Flagrax* and some representatives of *Eropterus* (Figs. 51–53), though it is absent in the type species of the latter taxon.
 - 33 Coxites: 0, not fused with each other (Figs. 20–22); 1, fused with each other (Figs. 23–24, 32).
 - 34 Valvifers: 0, free (Figs. 20, 23, 24); 1, fused with each other distally (Fig. 21); 2, fused with coxites (Fig. 22).

| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | | | |
|--------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | |
| <i>Taphes</i> | 0 | 0 | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | |
| <i>Aferos</i> | 1 | 1 | 1 | 2 | 2 | 1 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | |
| <i>Benibotarus</i> | 1 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | |
| <i>Bourgeoisella</i> | 1 | 2 | 0 | 2 | 2 | 1 | 3 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | |
| <i>Chinotaphes</i> | 0 | 0 | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | ? | 0 | 0 | 1 | 0 | 1 | ? | 0 | 0 | ? | 0 | 0 | ? | 0 | 1 | 1 | 1 | 0 | ? | ? | |
| <i>Dictyoptera</i> | 1 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | |
| <i>Eropterus</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | |
| <i>Eros</i> | 1 | 1 | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | |
| <i>Erotides</i> | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | |
| <i>Eulopheros</i> | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 3 | 0 | 1 | 0 | |
| <i>Flagrax</i> | 1 | 2 | 1 | 2 | 2 | 1 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | |
| <i>Glabroplatycis</i> | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | |
| <i>Greenarus</i> | 1 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | |
| <i>Helcophorus</i> | 1 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | |
| <i>Kleineria</i> | 1 | 2 | 0 | 2 | 2 | 1 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | ? | 0 | 1 | 1 | 0 | 0 | ? | ? |
| <i>Kolibaceum</i> | 1 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | ? | 0 | 0 | 0 | ? | 0 | 0 | ? | 0 | ? | ? | ? | ? | ? | ? | |
| <i>Konoplatycis</i> | 1 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | ? | 0 | 1 | 1 | 0 | 0 | ? | ? |
| <i>Laterialis</i> | 1 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 2 | |
| <i>Lopheros</i> | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 2 | 0 | 0 | 1 | |
| <i>Paralopheros</i> | 1 | 2 | 0 | 2 | 2 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 1 | 1 | |
| <i>Phaneros</i> | 1 | 2 | 0 | 2 | 2 | 1 | 3 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | |
| <i>Platycis</i> | 1 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | |
| <i>Propyropterus</i> | 1 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | ? | 0 | 1 | 1 | 3 | 0 | ? | ? | |
| <i>Pseudaplatopterus</i> | 1 | ? | 0 | 0 | 0 | 0 | 0 | ? | 1 | 0 | 0 | 0 | 1 | 0 | ? | 0 | 0 | 1 | 0 | ? | 1 | 0 | 0 | ? | 0 | 0 | ? | ? | ? | ? | ? | ? | ? | ? | |
| <i>Punicealis</i> | 1 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | |
| <i>Pyropterus</i> | 1 | 2 | 0 | 2 | 2 | 1 | 3 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | |
| <i>Pyrotes</i> | 0 | 0 | 0 | 2 | 2 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | |
| <i>Sibetarus</i> | 1 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | |
| <i>Taphomimus</i> | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | |
| <i>Tricostaeptera</i> | 1 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | |

The analysis of the data matrix was performed with *Aferos* as the outgroup, no characters weighted and the jumble option employed (random number seed: 13, number of times to jumble: 44), resulted in one most parsimonious cladogram demonstrating presence of three tribe-level clades, one of them being Erotini, a second representing *Aferos* and a third *Flagrax* (Fig. 1a). These results were deemed unsatisfactory, as the analysis failed to notice relationships of, for example, the two genera of Taphini, *Taphes* and *Pyrotes*.

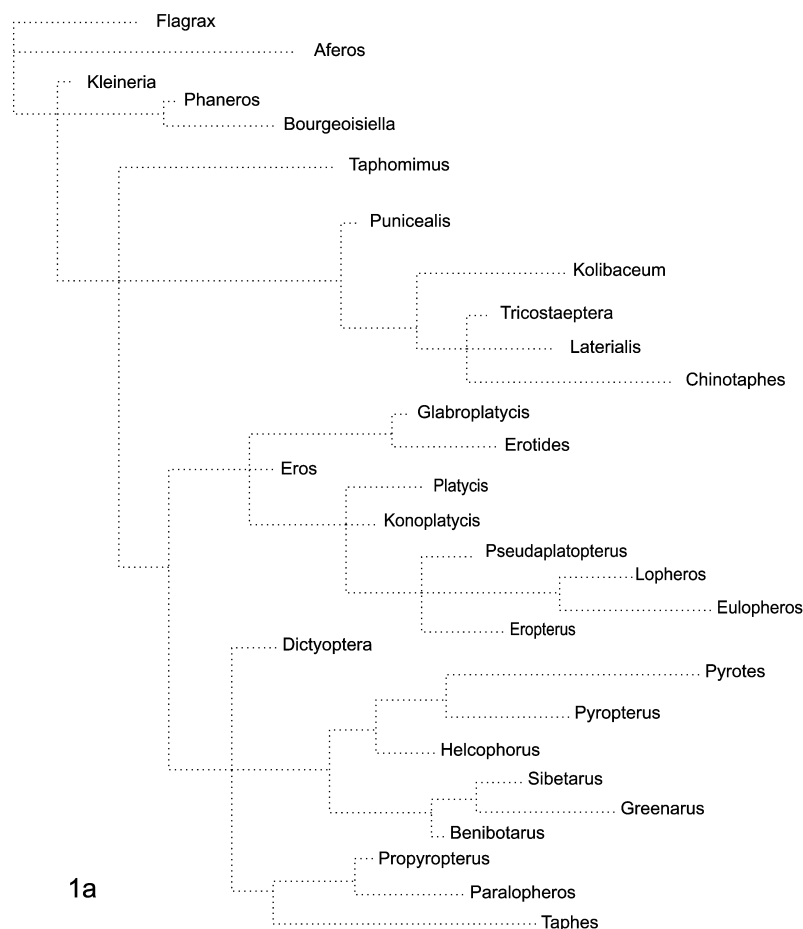


FIGURE 1a. Phylip Pars cladogram with no characters weighted.

The analysis was then repeated with random number seed 111, number of times to jumble 111 and weighted characters; weights of the 34 characters, rating from 1 to 4 (out of possible 9), were 321321111111111114111113334432322, where highest weight (4) was awarded to characters that distinguish established/assumed suprageneric taxa (19 and 28 related to Aferotini tr. n. and 29 related to Taphini). Characters hypothesized to be least subject to modification, with morphology of other lycid groups taken into consideration (the shape and position of the male ultimate abdominal segments, presence of lateral arms in the spiculum gastrale, shape of the ultimate joint of maxillary palps, median pronotal structures and structures of the female genital organs), were weighted as 2 or 3. Analysis of the structure of the male genitalia, after discovering *Proteros* gen. n., allows the presumption of greater taxonomic importance of such characters as length of the parameres and their location with respect to the median lobe: it is here hypothesized that relatively free parameres, reaching about half length of the median piece (Figs. 28–30) may appear

to be primitive in the group. These two characters (31 and 32) were also weighed 2 and 3, respectively. The search produced three rather similar most parsimonious cladograms, one of which is illustrated in Fig. 1b. The complex is split into three clades, i.e. Erotini, *Aferos* (Aferotini) and Dictyopterini nom. rev., with the two taxa of Taphini placed in a single clade within the Dictyopterini. This cladogram was taken as the basis for a phylogenetic reconstruction.

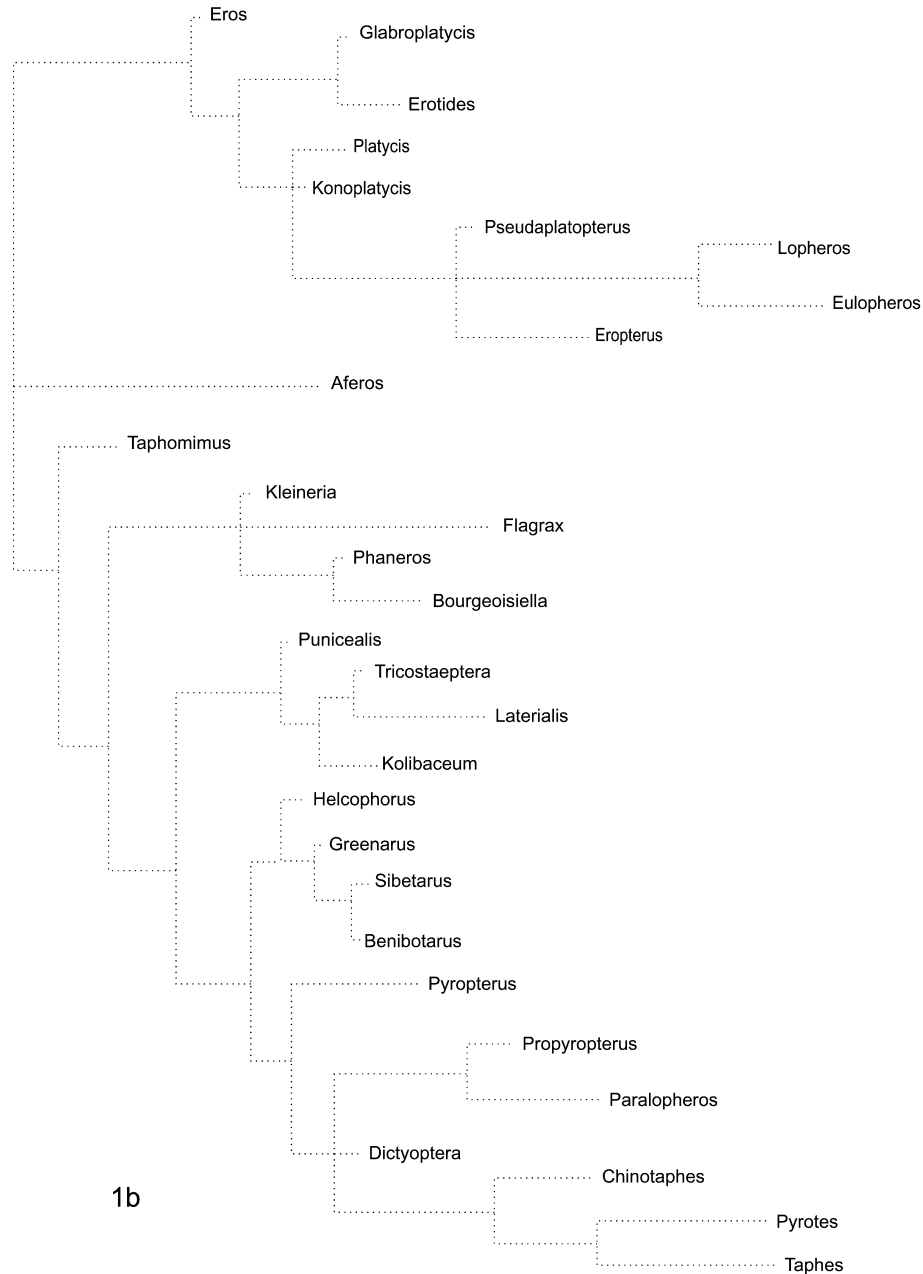


FIGURE 1b. Phylip Pars cladogram with characters weighted.

It is noteworthy that the program always placed *Taphomimus* as a clade close to the root of the tree. However, as no females of the type species of *Taphomimus* were studied, no name is proposed for this clade, and the taxon is only raised to the genus level and placed *incertae sedis* in Dictyopterini nom. rev., pending further study.

The new finds, *Dictyoptera gansuensis* sp. n. with an elongate, ventrally sclerotized phallobase (Fig. 39) and *Proteros sempiternus* gen. n., sp. n. with a short ventrally unsclerotized phallobase (Fig. 30), appear to have seriously compromised the monophyly of Taphini, as these characters had been the most sound ones to separate this tribe from Erotini. Nevertheless, the subfamily Erotinae is here considered to be divided into four tribes, Erotini, Dictyopterini, nom. rev., Aferotini tr. n. and Taphini, pending a more comprehensive analysis including the genera of Taphini. In the analysis with weighted characters *Chinotaphes* was placed in one clade with the two Taphini genera, *Taphes* and *Pyrotes* (Fig. 1b), and this probably indicates a closer relationship of the former with the "taphines".

Erotini is characterized by an absent or open median pronotal cell, which, if present, is clearly divided into anterior and posterior parts by a transverse rib, and a long spiculum gastrale with lateral arms (Figs. 14–15), both characters assumed to be its apomorphies. The loss of the spiculum gastrale in *Lopheros* and *Eulopheros* (Fig. 19) is considered to be secondary and, along with the complete median pronotal rib, perhaps should be regarded as synapomorphies. The apomorphies of the *Eropterus* lineage are assumed to be the reduced median pronotal rib and the constricted basally and abruptly bent phallobase (Figs. 51–53). As for *Pseudaplatopterus*, it is probable that it is synonymous with *Eropterus*, the only difference between the two genera being the absence of data on many parameters of the extinct taxon; however, at least a re-examination of the holotype of *Pseudaplatopterus ascheelei* Winkler is needed to make a more substantiated judgement.

The apomorphies of Aferotini tr. n. that support its monophyly are the asymmetrical phallobase (Fig. 4) and the sclerotized elytral epipleures.

The monophyly of Dictyopterini nom. rev. hereby removed from synonymy with Erotini is supported by such apomorphies as the absence of lateral arms of the spiculum gastrale and the complete median pronotal cell, combined with the absence of elytral epipleures and the symmetrical phallobase of the aedeagus.

Dictyopterini in its turn appears to be subdivided into two subtribes, Dictyopterina and Flagraxina subtr. n. The latter is separated by the shape of the penultimate sternite (Fig. 3), which is regarded to be apomorphic. Though *Kleineria* is not included in the *Phaneros-Bourgeoisella* lineage, it is considered to be a subgenus of *Phaneros*, at least until females of this taxon are discovered.

Thus, the phylogenetic tree of the subfamily Erotinae takes the following shape (Fig. 2).

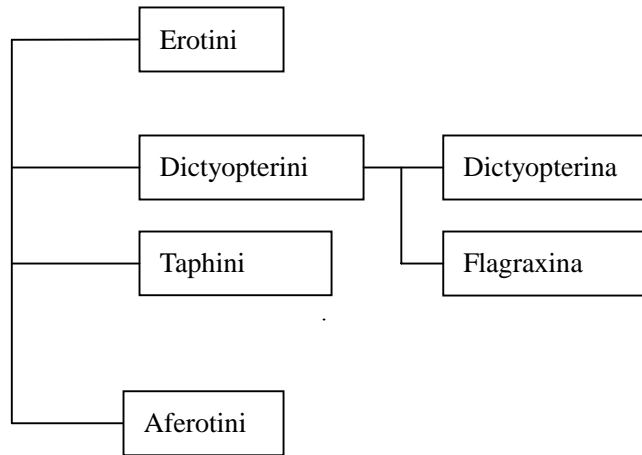


FIGURE 2. Phylogeny tree of the subfamily Erotinae.

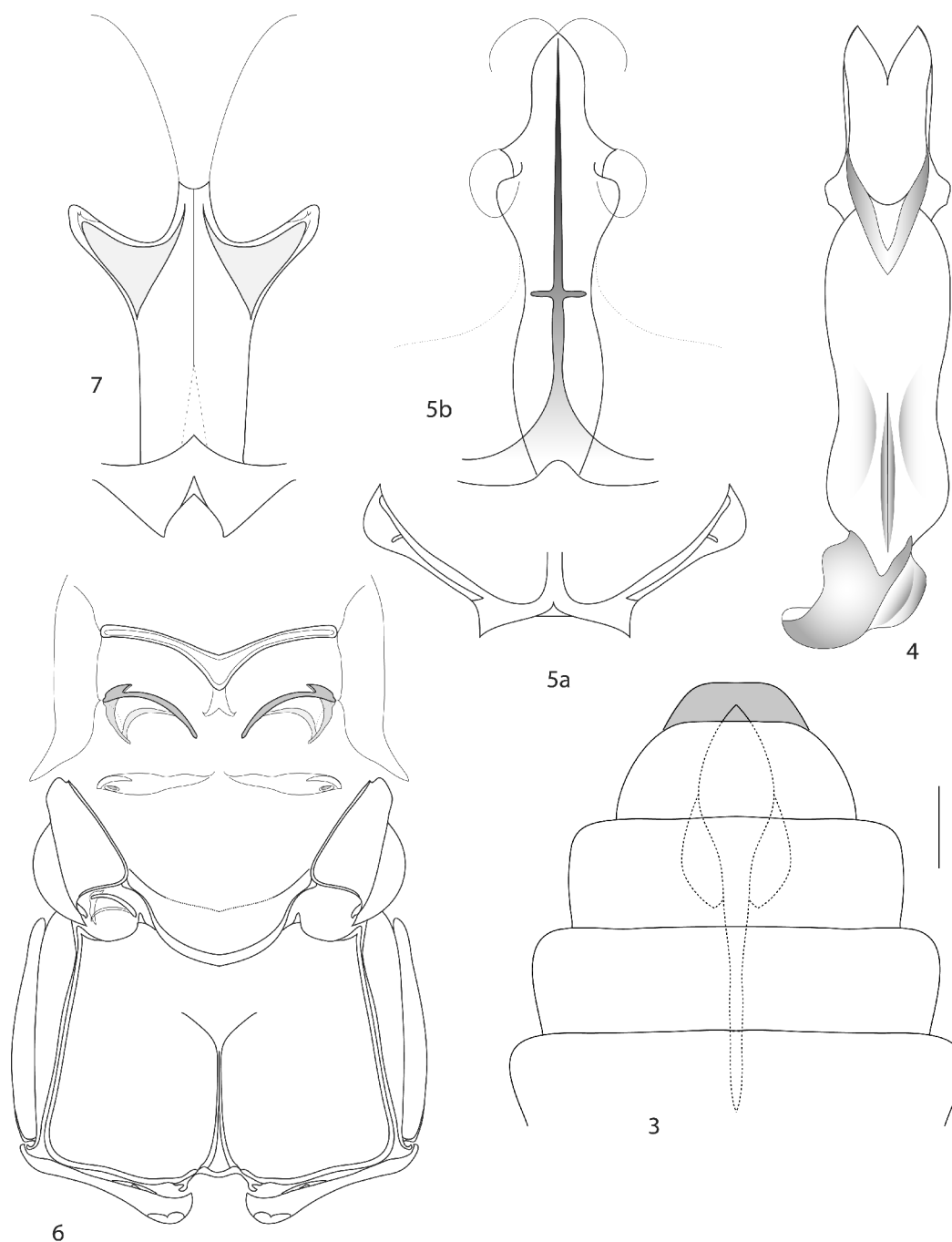
The cladistic analysis performed necessitates the following taxonomic changes:

Punicealis, placed in one clade with *Lateralis-Tricostaeptera* and *Kolibaceum* at the root of the clade, is raised to the generic level. Its monophyly is supported by a combination of long metatrochanters and uniform elytral pubescence, which are considered to be synapomorphic for the group, while the absence or reduction of the fourth elytral costa is assumed to be the synapomorphy of the remainder of the clade. *Lateralis* is also raised to the genus level, its synapomorphy (with *Tricostaeptera* regarded as its subgenus) being the evenness of the third elytral costa vs. stoutness of the latter in extinct *Kolibaceum*.

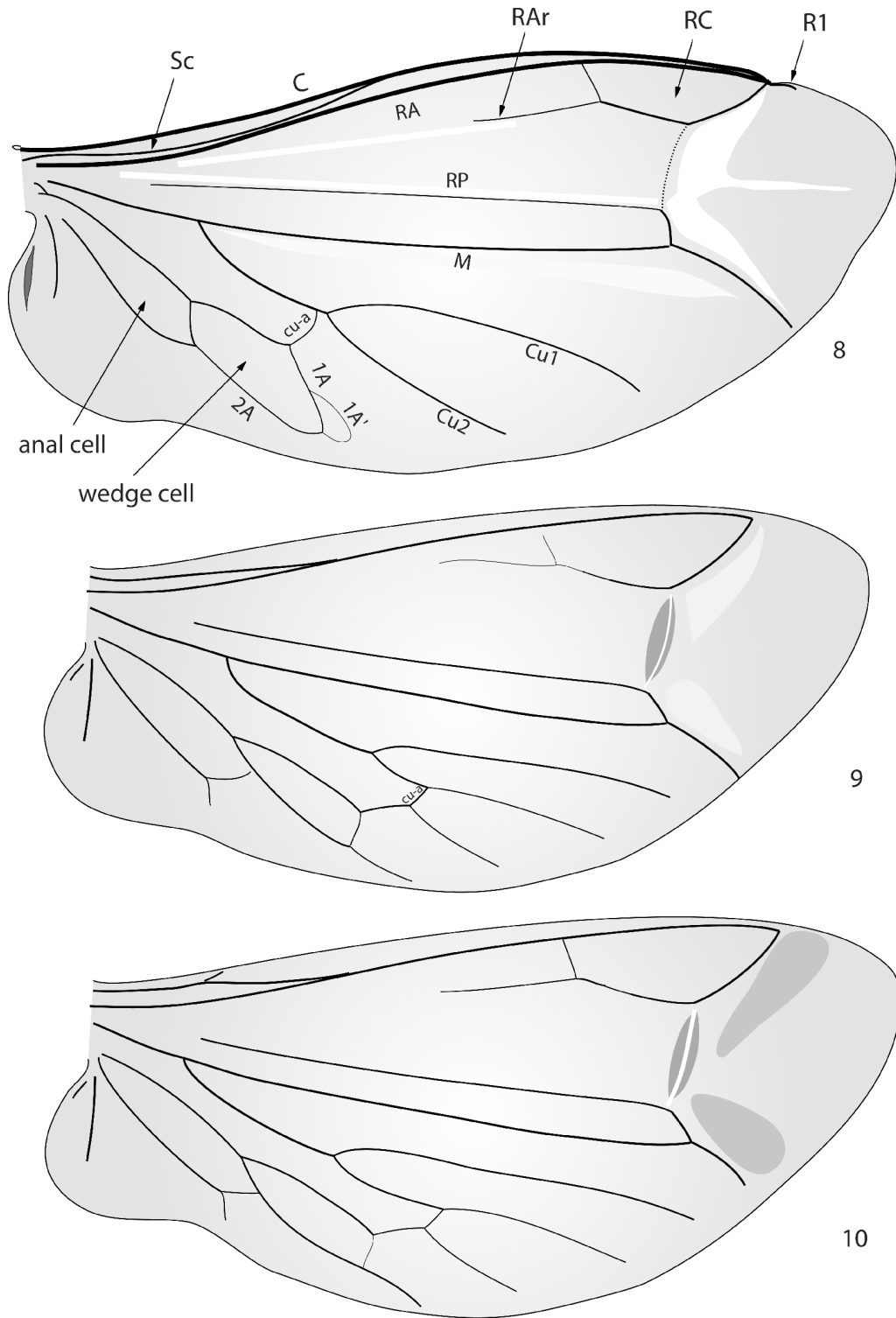
Helcophorus, placed in a clade with *Greenarus* and *Benibotarus-Sibetarus*, is also raised to the genus level. Its monophyly is supported by a combination of the stoutness of the third elytral costa against costae 1 and 2, absent secondary elytral reticulation, long metatrochanters and uniform elytral pubescence. The remainder of the clade is separated by the reduction of elytral costa 2 and more or less developed secondary elytral reticulation, which are considered its symplesiomorphies. *Greenarus* is raised to the generic level due to the ventrally incised apices of the parameres (Fig. 48) that are considered to be apomorphic, while the apical plantar pad of tarsomere 1 that also distinguishes the taxon from the *Benibotarus-Sibetarus* clade, is considered to be plesiomorphic.

Paralopheros is reduced to the subgenus level within *Propyropterus*, the nominative subgenus separable by the elongate, curved *Plateros*-like median lobe of the aedeagus (Figs. 54–55). *Glabroplatycis* is restored to the subgenus level from synonymy within the revalidated *Erotides*, and is separable from the latter by the simple hind trochanters. The monophyly of the *Erotides* lineage is supported by the conspicuous posterior ribs of the median pronotal areola.

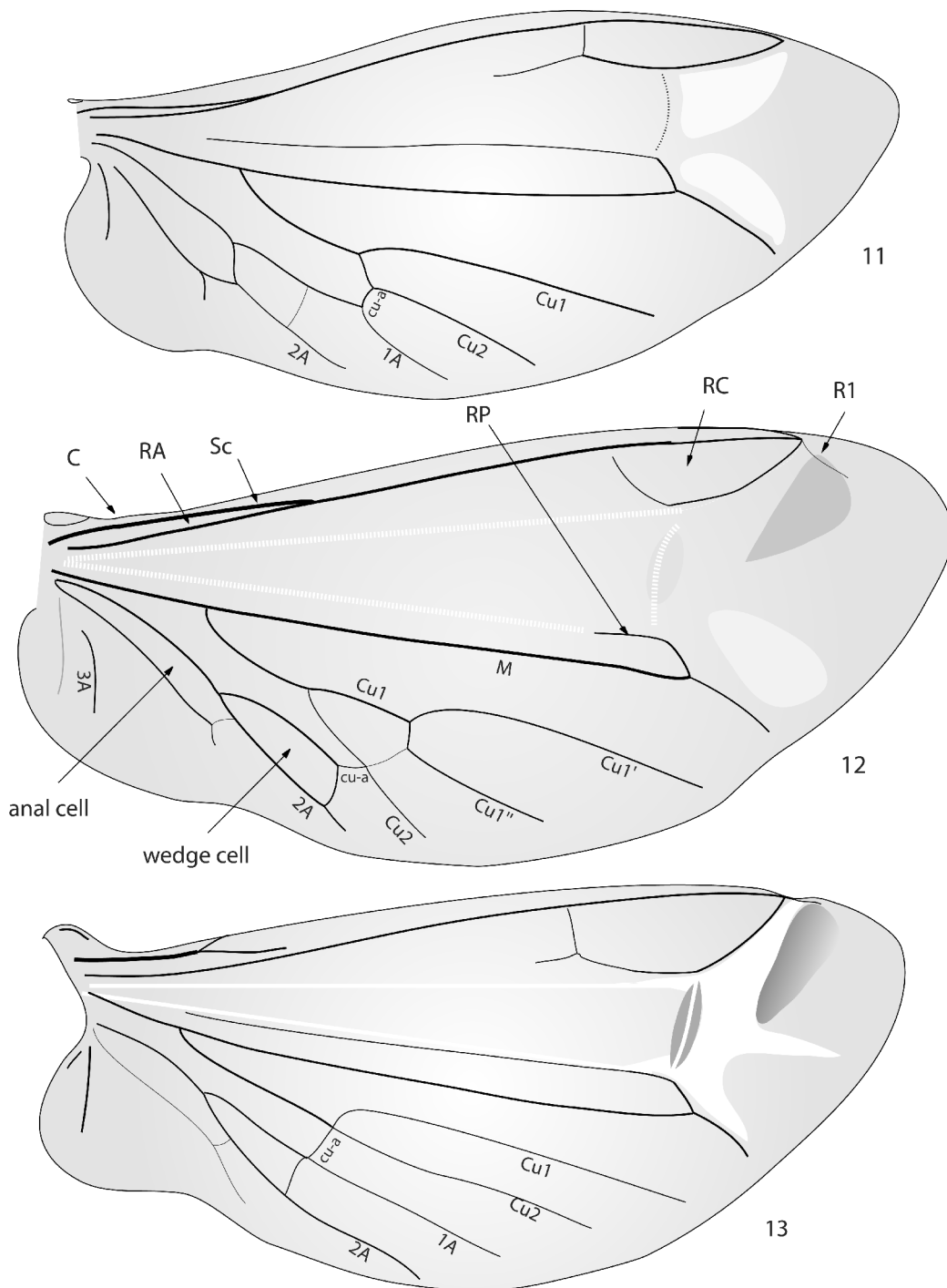
A check-list of Erotini and Dictyopterini of the world is presented below.



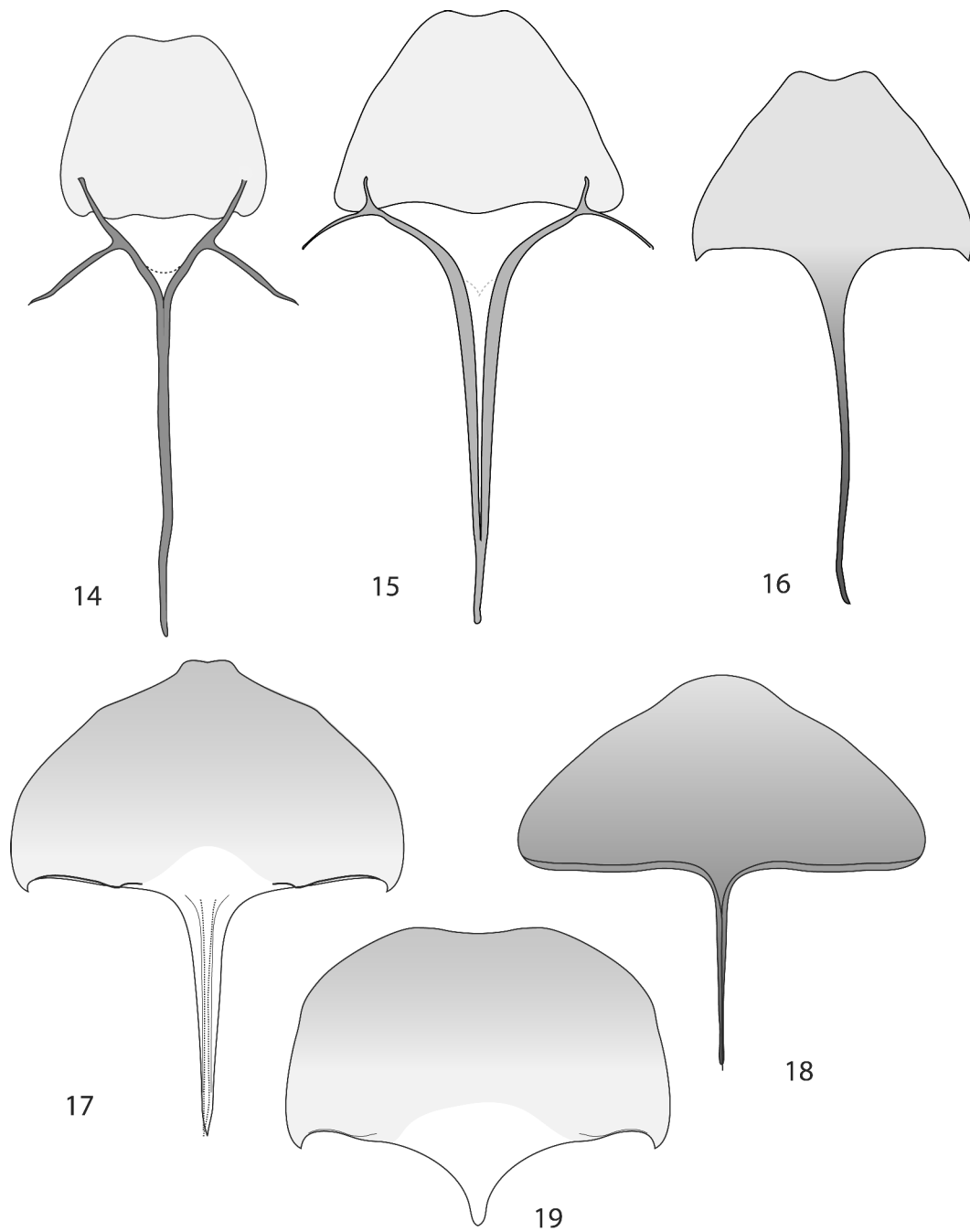
FIGURES 3–7. Details of Erotinae. 3 — *Flagrax auberti* (Bourgeois), male, apical abdominal segments, ventrally; 4 — *Aferos aethiops* (Kleine), aedeagus ventrally; 5 — *Helcophorus miniatus* Fairmaire, metendosternite, 5a — female, 5b — male; 6 — *H. miniatus*, female, thorax, ventrally; 7 — *Dictyopectera aurora* (Herbst), male, metendosternite. Scale: 0.5 mm.



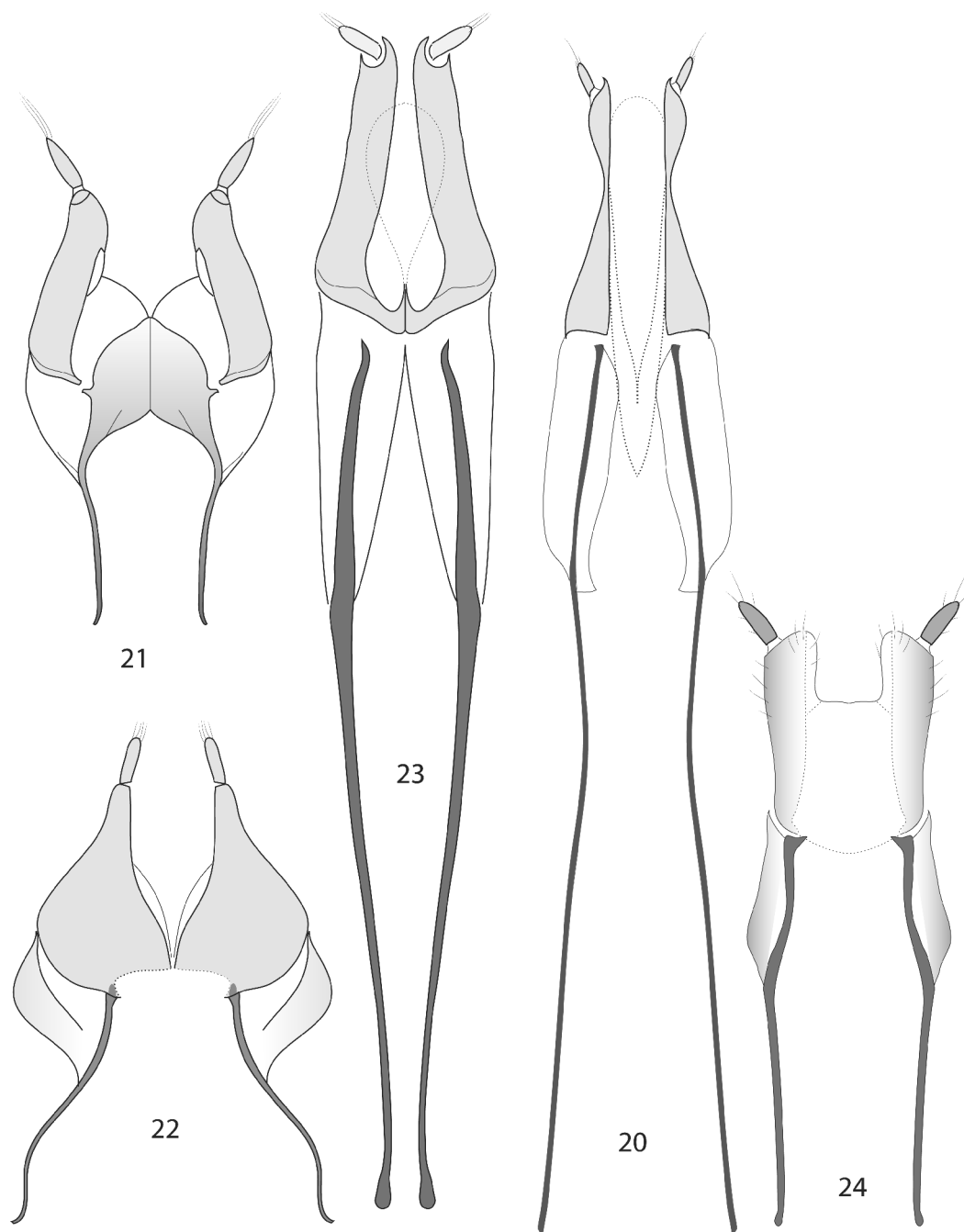
FIGURES 8–10. Hind wing. 8 — *Proteros sempiternus* gen. n., sp. n.; 9 — *Flagrax auberti* (Bourgeois); 10 — *Aferos* sp.



FIGURES 11–13. Hind wing. 11 — *Eros humeralis* (Fabricius); 12 — *Platycis minuta* (Fabricius); 13 — *Eropteris arculus* Green.



FIGURES 14–19. Ultimate female sternite. 14 — *Platycis minuta* (Fabricius); 15 — *Eros humeralis* (Fabricius); 16 — *Pyropterus nigroruber* (Degeer); 17 — *Dictyopectera aurora* (Herbst); 18 — *Pyrotes sculpturatus* (Waterhouse); 19 — *Lopheros (Eulopheros) harmandi* (Bourgeois).



FIGURES 20–24. Female genitalia. 20 — *Eros humeralis* (Fabricius); 21 — *Lopheros rubens* (Gyllenhal); 22 — *Phaneros xanthopterus* (Bourgeois); 23 — *Dictyoptera aurora* (Herbst); 24 — *Lopheros (Eulopheros) harmandi* (Bourgeois).

Description of New Taxa and Taxonomic Notes***Proteros* gen. n. (Figs. 25–30)**

Type species: *Proteros sempiternus* sp. n.

Description

Head transverse, slightly narrowed behind eyes. Plane of frons making right angle with vertex. Labrum divided into a pair of feebly sclerotized setose processes (Fig. 25). Eyes relatively small, spherical. Mandibles slender, evenly rounded, conspicuously bent inward, very narrow and glabrous distally and densely pubescent basally (Fig. 25). Maxillary palps slender, 4-segmented, with apical palpomere flattened, slightly narrowed and glabrous at apex. Labial palpi 3-segmented, slender, pointed and glabrous at apex. Antennal prominence conspicuous, antennal sockets approximate. Antennae 11-segmented, slightly flattened, antennomeres parallel-sided. Antennomere 3 thrice as long and twice as wide as antennomere 2, antennomeres 2 and 3 together about two thirds length of antennomere 4. Antennal surface tuberculate. Antennal pubescence decumbent. Pronotum distinctly narrower than elytra, transverse, convex anteriorly, widely margined, with moderately pronounced hind angles and conspicuous oval median cell and lateral carinae; median cell distinctly wider in anterior half. Prosteronum narrow, Y-shaped. Thoracic spiracles not protruding laterally beyond coxal limits. Scutellum relatively small, parallel-sided and deeply emarginate at apex. Elytra with four fine equally developed primary costae, interstices with single row of transverse cells, except basally, with traces of double rows in second, third and fifth interstice, and apically, with traces of double rows in third second, fourth and fifth interstices; elytral pubescence distributed along costae. Metathoracic wing with separate C and RA veins, Sc hardly touching RA and joining C at about its middle (Fig. 8). Mesocoxae separated; metacoxae with conspicuous trochantinal suture and inconspicuous longitudinal excavation to receive retracted femora. Trochanters only slightly longer than wide, connected to femora apically; tibiae subequal in length to femora, but narrower, tibiae with a pair of similar short, almost straight apical spurs; tarsomeres 3 and 4 slightly widened, tarsomere 1 with plantar pad occupying about apical half; all claws simple. Ultimate ventrite with spiculum gastrale (Fig. 26); penultimate tergite with long proximal processes (Fig. 27). Abdominal spiracles located dorsally at the very edge of sternites. Aedeagus with elongate laterally dentate median lobe of the aedeagus supplied with long perpendicular needle-like thorns and ventrally weakly sclerotized phallobase (Fig. 28–30).

Diagnosis and comments

Proteros gen. n. is related and is externally similar to *Pyrotes* gen. n., differing by the divided labrum, different type of the elytral pubescence, short trochanters and the elongate median piece of the aedeagus with dentate lateral edges (Figs. 28–30). The structure of the

aedeagus of *Proteros* somewhat resembles that of *Scarelus* Waterhouse (Ateliinae) (Kazantsev, 1992a), and is distinctly different from most other known erotines. A similar type of the male external genitalia in the Erotinae is reported only in the genus *Paralopheros* (Kazantsev, 1993), which, given that *Proteros* seems to possess certain primitive features, may mean that the male copulatory organs of *Paralopheros* are in the plesiomorphic condition.

Perhaps the most remarkable feature about *Proteros* gen. n. is its divided labrum, which has not been reported in any species of adult Coleoptera (Crowson, 1981), and probably is not known in any adult Hexapoda in general. At the same time studies on the prekatatrepsis embryo of *Calopteron* sp. (Cicero, 1994) indicate that at the embryonic stage the lycids do have the labrum divided into two separate lobes, which may mean that this character in *Proteros* is in the primitive condition. The mandibular structure of *Plat-erodrilus* larvae (Kazantsev, 2002), where one of the three separate parts of each "mandible" is quite possibly homologous with the labral lobes, gives another argument in support of this assumption.

Due to the structure of the phallobase, which is weakly sclerotized ventrally, *Proteros* gen. n. is tentatively placed in the Taphini, and this is the first record of a taphine and of an erotine in general from Australia other than Queensland. It is noteworthy that the first endemic genus of Erotinae from South East Australia appears to be one of the most archaic representatives of the subfamily.

Etymology

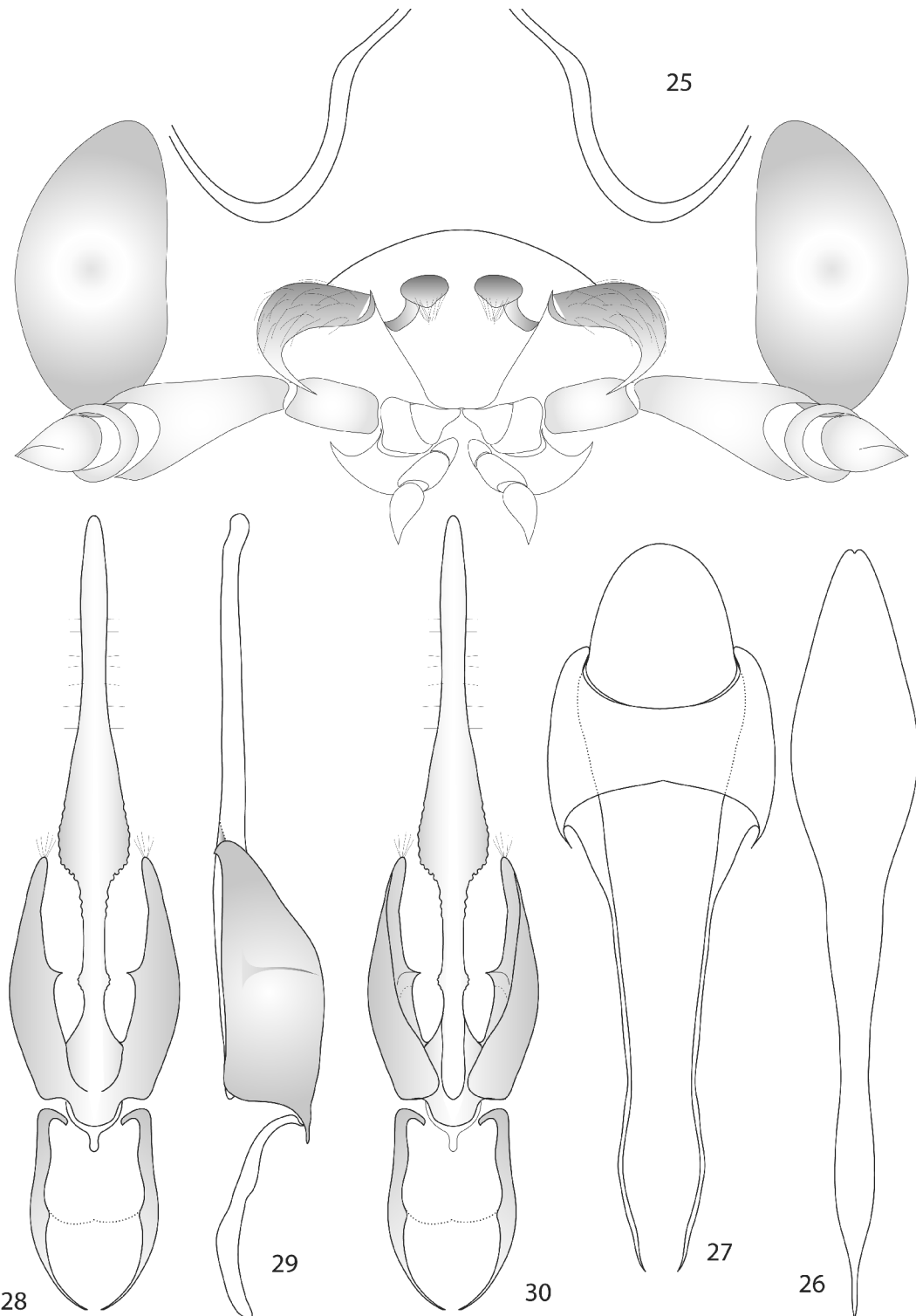
The name is derived from "proto" for "ancestor of" and the genus name *Eros* alluding to the fact that the new genus possibly has features characteristic of the ancestors of the contemporary erotines.

***Proteros sempiternus* sp. n. (Figs. 25–30)**

Description

Male. Dark brown. Elytra except suture area (1.5 interstices in basal tenth and 3.5 interstices in basal nine tenths) testaceous.

Head with fine longitudinal rib behind antennal prominence. Eyes small (interocular distance 4 times as long as the radius). Antennae extending to just beyond middle of elytra. Pronotum transverse, about 1.25 times wider than long, with conspicuous median areola, connected with side margins by prominent carinae; sides almost parallel, with hind angles acute and relatively short; surface tuberculate except in median areola. Scutellum elongate, parallel-sided, deeply emarginate at apex.



FIGURES 25–30. Details of *Proteros sempiternus* gen n., sp. n., male. 25 — head, anteriorly; 26 — ultimate sternite; 27 — ultimate tergites; 28 — aedeagus, dorsally; 29 — same, laterally; 30 — same, ventrally.

Elytra long, 3.2 times longer than wide at humeri, almost parallel-sided, with 4 primary equally developed costae; interstices with single (except at bases and apices of some interstices) rows of relatively regular transverse rectangular cells. Short decumbent pubescence distributed along longitudinal costae, with single seta in the middle of transverse costae.

Metatrochanters with rounded posterior angles.

Aedeagus — Figs. 28–30.

Length: 8.4 mm. Width (humeraly): 2.2 mm.

Female. Unknown.

Type material

Holotype male: Australia, NSW, The Dorrigo, 3000 ft, II.1982, Harvard Exp., Darlington (MCZ).

Diagnosis

P. sempiternus sp. n. differs from other erotines by the generic characters provided above, as well as its typical "Australian" coloration of testaceous elytra and black or dark brown suture area.

Etymology

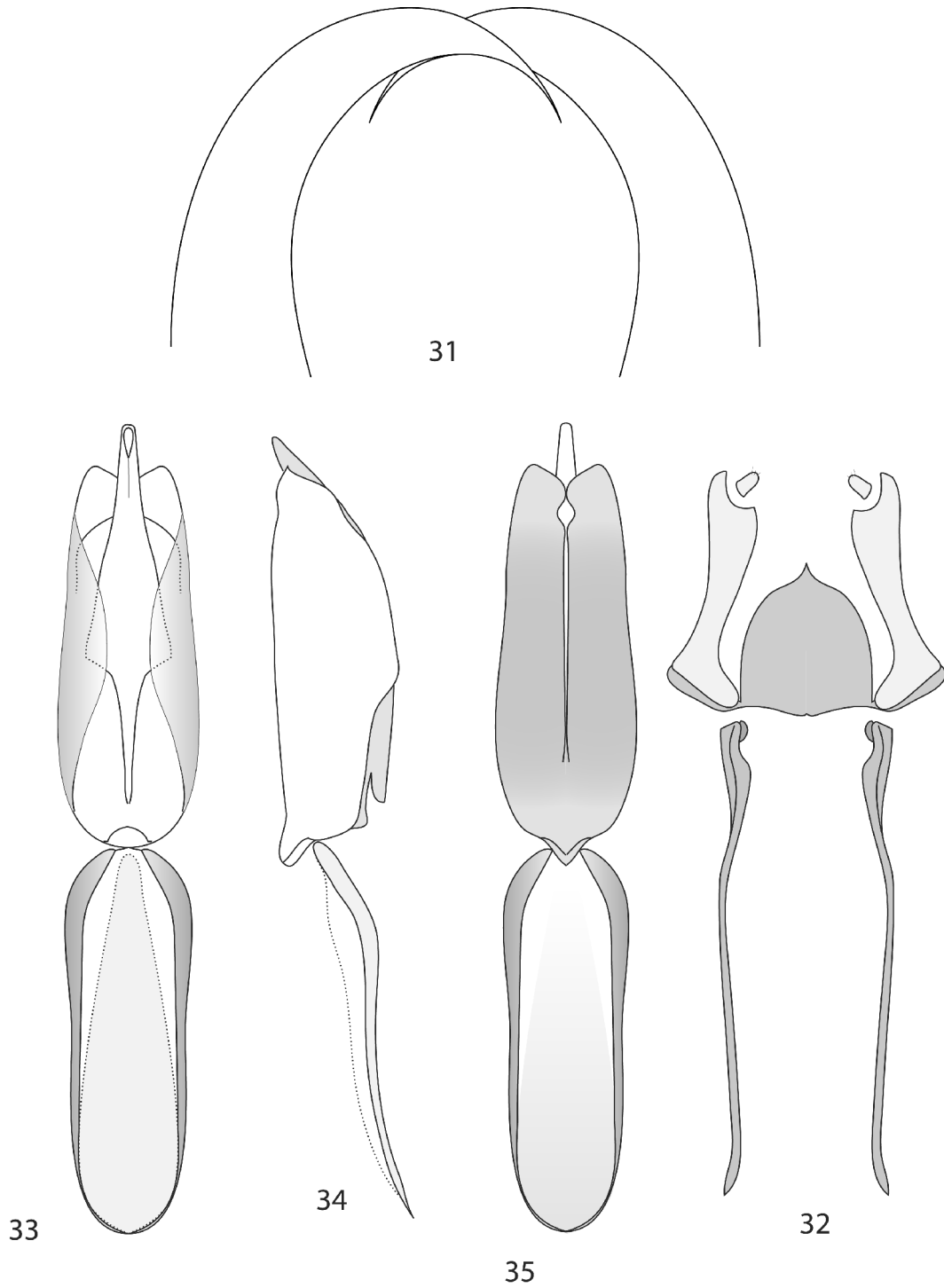
The name is derived from the Latin "*sempiternus*" for "everlasting" alluding to the hypothesized ancient origin of the species.

***Pyrotes* gen. n. (Figs. 31–35)**

Type species: *Pyropterus sculpturatus* Waterhouse, 1878

Description

Head transverse, slightly narrowed behind eyes. Plane of frons making right angle with vertex. Labrum transverse, feebly emarginated medially. Eyes relatively small, spherical. Mandibles evenly rounded, conspicuously bent inward when directed anteriorly, glabrous distally and pubescent basally (Fig. 31). Maxillary palps slender, 4-segmented, with apical palpomere pointed and glabrous at apex. Labial palpi 3-segmented, slender, pointed and glabrous at apex. Gular area very short. Antennal prominence relatively inconspicuous, antennal sockets approximate. Antennae 11-segmented, filiform. Antennomeres 2 and 3 subequal in length and width, transverse and together about two thirds length of antennomere 4. Antennal pubescence decumbent in female and in male antennomeres 1 to 3, and semi-erect in male antennomeres 4 to 11. Pronotum small, considerably narrower than elytra, transverse, triangular anteriorly, widely margined, with moderately pronounced hind angles and conspicuous small, curved, rhomboidal median cell and lateral carinae.



FIGURES 31–35. Details of *Pyrotes sculpturatus* (Waterhouse). 31 — female genitalia; 32 — same, mandibles; 33 — same, aedeagus, ventrally; 34 — same, laterally; 35 — same, dorsally.

Prosternum narrow, Y-shaped. Thoracic spiracles well sclerotized, but not protruding laterally beyond coxal limits. Scutellum relatively small, parallel-sided and emarginate at apex, showing anterior ridge of scutum on the notch. Elytra slightly widening posteriorly, with four robust equally developed primary costae, interstices with single row of transverse cells; elytral pubescence uniform. Metasternal suture complete. Metathoracic wings with wedge cell present. Mesocoxae separated; metacoxae with conspicuous trochantinal suture. Trochanters elongate, about 1.8 times longer than wide, connected to femora apically; tibiae subequal in length to femora, but slightly more flattened, tibiae with pair of similar short straight apical spurs; tarsomeres 3 and 4 slightly widened, tarsomere 1 with plantar pad occupying approximately apical half; all claws simple. Abdominal spiracles located dorsally at the very edge of ventrites. Spiculum gastrale narrow and moderately long, valvifers free, coxites fused basally with proctiger (Fig. 32). Aedeagus with elongate, ventrally unsclerotized phallobase (Fig. 33–35).

Studied material: holotype, female, “Type”, “Sarawak. 7.24”, “*Pyropterus sculpturatus* C.Waterh.” (Waterhouse’s manuscript label) (NNHM); male, “Borneo” (ICM).

Diagnosis and comments

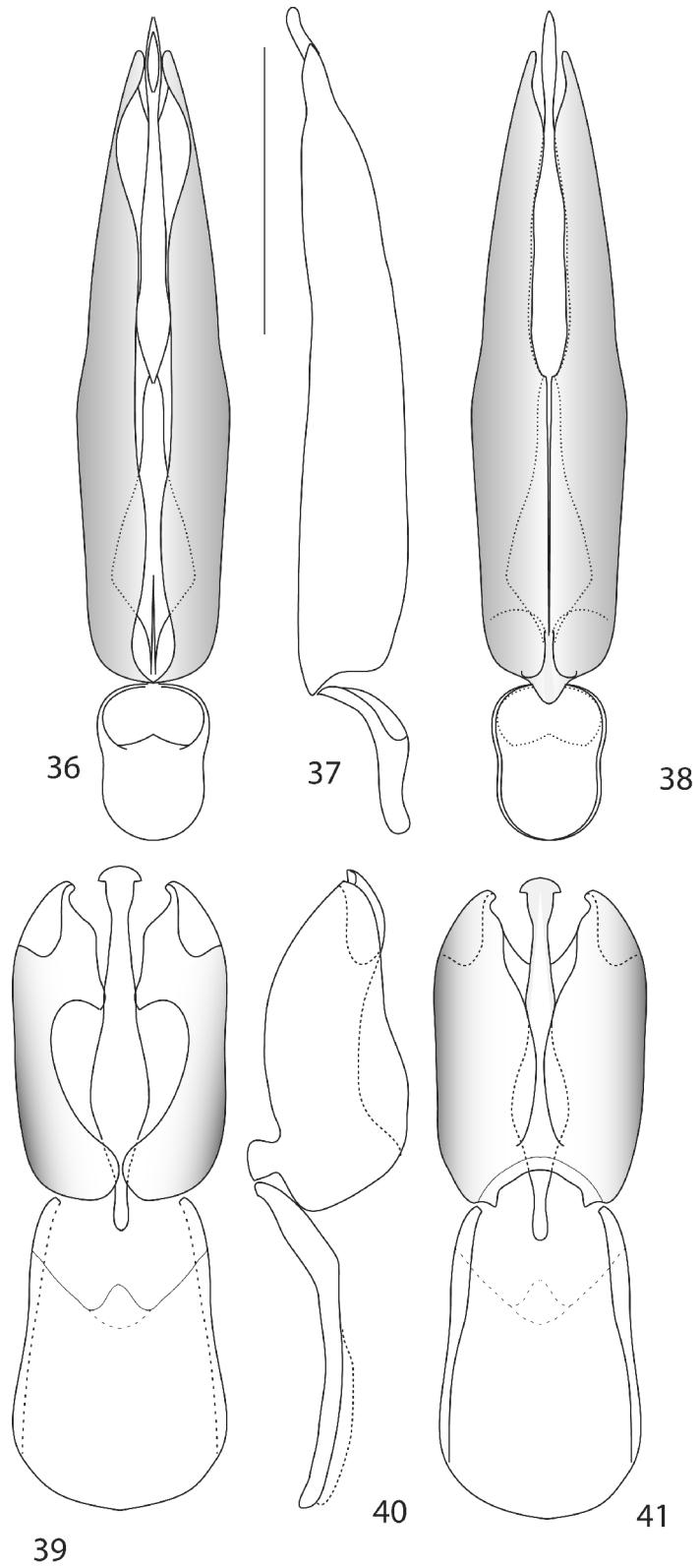
Pyrotes gen. n. somewhat resembles *Pyropterus* in general appearance, but can be easily separated by the evenly rounded mandibles (Fig. 31), pointed maxillary and labial palps, small and short pronotum with a rhomboidal areola (vs. a rounded one in *Pyropterus*), long phallobase that is ventrally unsclerotized (Fig. 33), coxites fused with proctiger (Fig. 32), etc. *Pyrotes* seems to have more affinities with *Coloberos* Bourgeois, which belongs in the tribe Taphini and therefore is tentatively placed in that same tribe. *Pyrotes* is distinguishable from *Coloberos* by the shape of the pronotal areola, more conspicuous antennomeres 2 and 3, and the presence of a plantar pad on tarsomere 1 (absent in *Coloberos*). The presence of basally fused coxites in *Pyrotes* is similar to *Dictyoptera* (Fig. 17), whereas most of the Taphini have coxites fused not only with each other, but also with the valvifers (Bocák & Bocáková, 1990: Fig. 182; 1991: Figs. 19–21).

***Taphomimus nanensis* sp. n. (Figs. 36–38)**

Description

Male. Black. Pronotum and elytra orange-red.

Head almost flat behind antennal prominence. Eyes relatively small (interocular distance 2.5 times as long as the radius). Labial palpi slender, with ultimate joint widened apically, longer than palpomeres 1 and 2 combined. Antennae slender, filiform, with antennomere 3 subequal in length and width to antennomere 2 and about 5 times shorter than antennomere 4; 3 antennomeres 1–3 with decumbent pubescence, antennomeres 4–11 with erect pubescence.



FIGURES 36–41. Aedeagi. 36 — *Taphomimus nanensis* sp. n., ventrally; 37 — laterally; 38 — dorsally; 39 — *Dictyopectera gansuensis* sp. n., ventrally; 40 — laterally; 41 — dorsally. Scale: 0.5 mm.

Pronotum transverse, 1.25 times wider than long, with conspicuous median areola, connected with sides by prominent carinae; posterior bulges prominent; lateral margins slightly widening anteriorly, with hind angles acute and relatively long. Scutellum elongate, parallel-sided, finely emarginate at apex.

Elytra long, 3 times longer than wide at humeri, only slightly widening posteriorly, with 4 equally developed primary costae; interstices with single row of relatively irregular, mostly transverse, rectangular cells and traces of double rows basally. Short pubescence distributed along costae, with pubescence denser on longitudinal ones.

Metatrochanters with blunt posterior angles.

Aedeagus with long, apically slightly bent median lobe (Figs. 36–38).

Length: 8.5 mm. Width (humeral): 2.4 mm.

Female. Unknown.

Type material

Holotype male: N Thailand, Nan Prov., Doi Phu Kha, 700 m, 19°13'N 101°07'E, 22–26.IV.1999, D.Hauck leg. (ICM).

Diagnosis

T. nanensis sp. n. differs from all other known species of *Taphomimus* by the greater size and the shape of its aedeagus (Figs. 36–38). The unique type, and only known specimen, is not intact, and is missing its maxillary palps and portions of its antennae.

Etymology

Named after the type locality.

***Dictyoptera gansuensis* sp. n. (Figs. 39–41)**

Description

Male. Black. Elytra and margins and carinae of pronotum dark red.

Head slightly excavate behind antennal prominence. Eyes relatively small (interocular distance about 3 times as long as the radius). Maxillary palpi slender, with ultimate palpomere parallel-sided, flattened at apex. Antennae filiform, extending to slightly beyond the middle of elytra, with antennomere 3 subequal in length to antennomere 2 and only slightly wider than it and 2.2 times shorter than antennomere 4; antennomeres 4 to 10 subequal in length; antennomeres 1–3 with decumbent pubescence, antennomeres 4–11 with short erect pubescence.

Pronotum transverse, 1.2 times wider than long, with conspicuous median areola, convex anteriorly and concave posteriorly, connected with side margins by prominent carinae; lateral margins narrowing anteriorly, with hind angles acute, but relatively short. Scutellum elongate, parallel-sided, emarginate at apex.

Elytra relatively long, 2.8 times longer than wide at humeri, slightly widening posteriorly, with 4 conspicuous primary costae; interstices with double rows of relatively irregular mostly square cells. Short and relatively sparse pubescence distributed along costae.

Metatrochanters with acute posterior angles.

Aedeagus robust, with long phallobase (Figs. 39–41).

Length: 9.8 mm. Width (humeraly): 2.8 mm.

Female. Unknown.

Type material

Holotype male: China, S Gansu, Tsagan (70 km W Wudu), 2300–2400 m, 16–17.VI.2001, S.Kazantsev (SVK).

Diagnosis

D. gansuensis sp. n. is hardly distinguishable from *D. aurora* externally, but is easily separated from it and all other congeneric species by the shape of its robust aedeagus with its long phallobase (Figs. 39–41) that resembles that of the genus *Taphes*.

Etymology

named after the type locality.

***Helcophorus murzini* sp. n. (Figs. 42–44)**

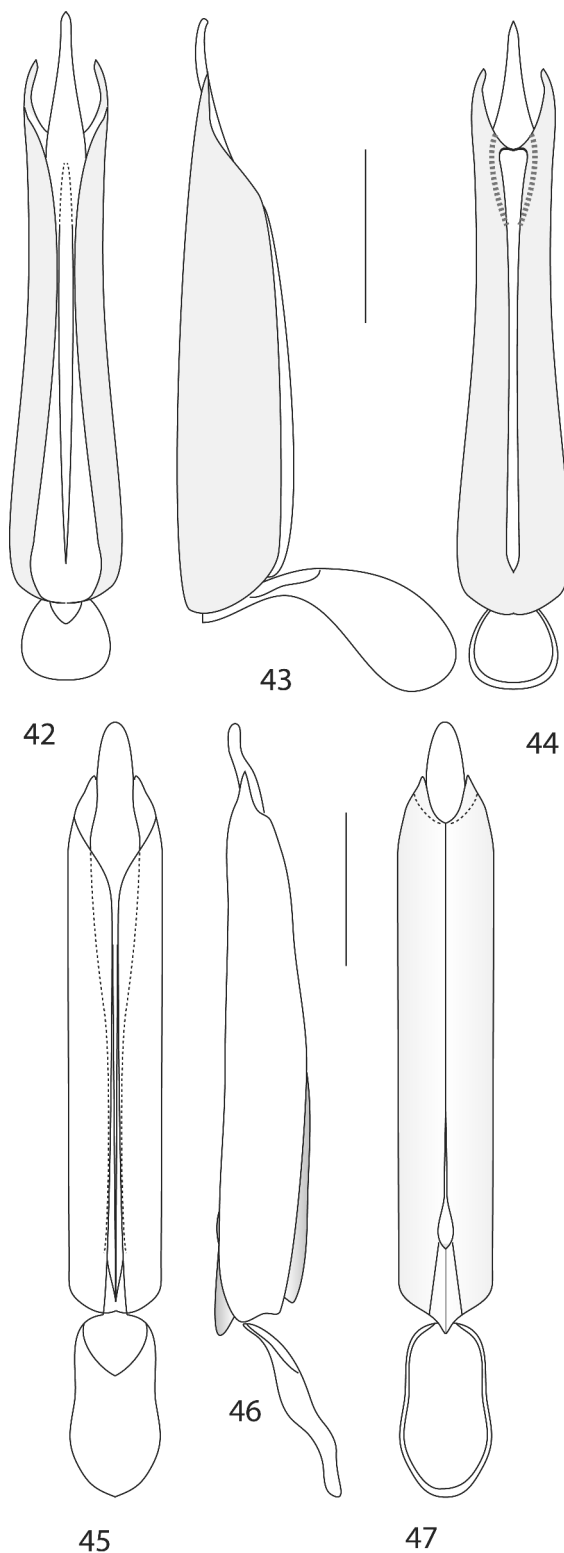
Description

Male. Orange. Meso- and metasternites, abdomen, tarsi, palps and antennomeres 4–11 brownish-black.

Head glabrous, flat behind antennal prominence. Eyes relatively small (interocular distance 3 times as long as the radius). Maxillary palpi slender, with ultimate palpomere parallel-sided, about twice as long as joint 3, flattened at apex. Antennae slender, filiform, extending to slightly beyond the middle of elytra, with antennomere 3 1.3 times longer than antennomere 2 and 2:1.3 times shorter than antennomere 4; antennomeres 4–10 subequal in length; antennomeres 1–3 with reddish decumbent, antennomeres 4–11 with black erect pubescence.

Pronotum transverse, about 1.2 times wider than long, with conspicuous median areola, connected with lateral margins by prominent carinae; lateral margins slightly narrowing anteriorly, with hind angles acute, but relatively short. Scutellum elongate, parallel-sided, emarginate at apex.

Elytra very long, more than 4 times longer than wide at humeri, slightly widening posteriorly, with 4 conspicuous primary costae; costa 3 considerably stouter than others; interstices with single row of relatively irregular mostly square cells and traces of double rows basally. Pubescence uniform, short and relatively dense.



FIGURES 42–47. Aedeagi. 42 — *Helcophorus murzini* sp. n., ventrally; 43 — laterally; 44 — dorsally; 45 — *H. gobindanus* sp. n., ventrally; 46 — laterally; 47 — dorsally. Scale: 0.5 mm.

Metatrochanters with blunt posterior angles.

Median lobe of aedeagus with straight base in lateral view (Figs. 42–44).

Length: 8.0–9.0 mm. Width (humeral): 1.9–2.0 mm.

Female. Unknown.

Type material

Holotype male: China, N Yunnan, env. Zhongdian, Shudagang, 3700 m, 22–24.V.2000, S.Murzin leg.; Paratypes, paratypes, 2 males, same label (ICM).

Diagnosis

H. murzini sp. n. is placed near *H. delicatus* Kazantsev, distinguishable by its coloration, the longer elytra with weaker reticulation, and the shape of the aedeagus (Figs. 42–44).

Etymology

Named after its collector, Dr. S.Murzin (Moscow).

***Helcophorus gobindanus* sp. n. (Figs. 45–47)**

Description

Male. Orange. Antennomeres 4 to 11 dark brown; abdominal ventrites dark brown, gradually becoming reddish brown apically.

Head flat behind antennal prominence. Eyes small (interocular distance 3 times as long as the radius). Labial palps slender, with ultimate palpomere widened and flattened apically, about the length of palpomeres 2 and 3 combined. Antennae filiform, extending to slightly beyond the middle of elytra; antennomere 3 equal in length, but wider than antennomere 2 and both combined about as long as antennomere 4; antennomeres 4–10 subequal in length; antennomeres 1–3 with reddish decumbent pubescence, following antennomeres with short erect pubescence.

Pronotum transverse, 1.25 times wider than long, with conspicuous median areola, connected with lateral margins by prominent carinae; lateral margins parallel-sided, with acute, laterally protruding hind angles. Scutellum elongate, slightly widening and emarginate at apex.

Elytra long, 3.6 times longer than wide at humeri, slightly widening posteriorly, with 4 conspicuous primary costae; costa 3 considerably stouter than others; interstices with single row of mostly transverse rectangular cells and feeble traces of double rows basally. Pubescence uniform, short and decumbent.

Metatrochanters with acute posterior angles.

Aedeagus narrow, with inconspicuous apical notch of parameres dorsally (Figs. 45–47).

Length: 10.2 mm. Width (humeraly): 2.5 mm.
Female. Unknown.

Type material

Holotype male: N India: UP, Gobind, Dham, 3100–3300 m, 19–22.V.1998, S.Murzin leg. (ICM).

Diagnosis

H. gobindanus sp. n. is similar and obviously closely related to *H. miniatus*, from which it differs by the darker antennae and the shape of the aedeagus (Figs. 45–47).

Etymology

Named after the type locality.

Greenarus belokobylskii* sp. n. (Figs. 48–50)Description*

Male. Black. Metatrochanters brown; elytra reddish-brown.

Head with two minute round impressions behind antennal prominence. Eyes relatively large (interocular distance about 2 times as long as the radius). Maxillary palpi slender, with ultimate palpomere parallel-sided, flattened at apex. Antennae filiform, extending to slightly beyond two thirds the length of elytra, with antennomere 3 about twice as long and wide as antennomere 2 and twice as short as antennomere 4; antennomeres 4–10 subequal in length, antennomere 11 the longest, 1.7 times longer than antennomere 10; antennomeres 1–3 with decumbent pubescence, antennomeres 4–11 with short erect pubescence.

Pronotum transverse, 1.3 times wider than long, with conspicuous rhomboidal median areola, connected with side margins by prominent straight carinae; lateral margins narrowing anteriorly, with hind angles prominent and acute. Scutellum elongate, slightly narrowing apically, emarginate at apex.

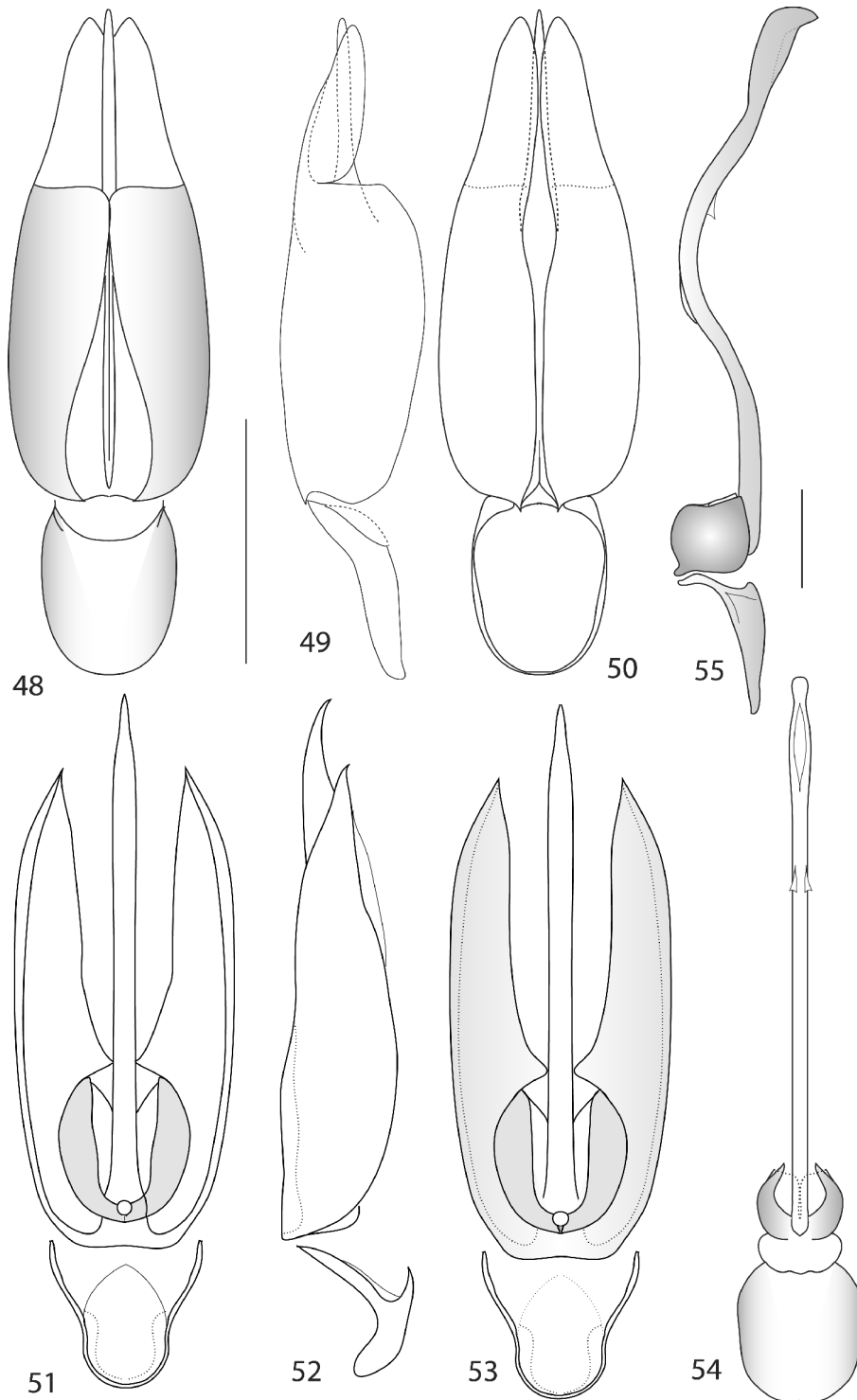
Elytra long, 3.15 times longer than wide at humeri, slightly widening posteriorly, with 4 primary costae; costae 3 and 4 prominent, costa 2 reduced, becoming inseparable from secondary ones from base, costa 1 reduced, becoming inseparable from secondary ones in basal sixth. Elytra with only 3 apparent interstices; interstice 1 with three rows of relatively regular mostly square cells, except at base; interstice 2 with one row of cells, except in middle third where two rows of irregular cells are present; interstice 3 with one row of cells. Pubescence uniform, short and relatively sparse.

Metatrochanters with blunt posterior angles.

Aedeagus with parameres ventrally incised at apex (Figs. 48–50).

Length: 7.3–7.4 mm. Width (humeraly): 1.95–2.0 mm.

Female. Unknown.



FIGURES 48–55. Aedeagi. 48 — *Greenarus belokobylskii* sp. n., ventrally; 49 — laterally; 50 — dorsally; 51 — *Eropterus glebulus* sp. n., ventrally; 52 — laterally; 53 — dorsally; 54 — *Propy-ropterus* (s. str.) *plateroides* sp. n., ventrally; 55 — laterally. Scale: 0.5 mm.

Type material

Holotype male: Vietnam, Hoa Binh Pr., Mai Chan Distr., Pa Co, 1100–1200 m, 20°45′N 104°54′E, 27–28.IV.2002, S.Belokobylsky leg. (ZIN); Paratype male: Vietnam, Hoa Binh Pr., Mai Chan Distr., Hang Kia, 1300 m, 20°44′N 104°54′E, 25–26.IV.2002, S.Belokobylsky leg. (SVK).

Diagnosis

G. belokobylskii sp. n. is placed in the genus *Greenarus* due to the structure of the aedeagus and minute apical plantar pad on metatarsomere 1. *G. belokobylskii* is also similar to *Benibotarus (Sibetarus) taygetanos* in terms of its elytral reticulation, but is easily separable from all *Sibetarus* species by its coloration, the extremely weakened first elytral costa and the different type of aedeagus (Figs. 48–50).

Etymology

Named after its collector, Dr. S.Belokobylsky (St. Petersburg).

Eropterus glebulus* sp. n. (Figs. 51–53)Description*

Male. Black. Elytral humeri testaceous.

Head convex behind antennal prominence. Eyes small (interocular distance about 3 times as long as the radius). Maxillary palps slender, with ultimate palpomere elongate, parallel-sided and flattened apically, about the length of palpomeres 2 and 3 combined. Ultimate labial palpomere widened apically. Antennae filiform, extending to slightly beyond the middle of elytra; antennomere 3 equal in length and width to antennomere 2 and both combined about 1.2 times shorter than antennomere 4; antennomeres 4–10 subequal in length; antennomeres 1–3 with decumbent, antennomeres 4–11 with erect pubescence.

Pronotum transverse, 1.3 times wider than long, with inconspicuous anterior median rib, with short oblique lateral carinae; lateral margins parallel-sided, slightly incised before small acute posterior angles. Scutellum elongate, slightly narrowing posteriorly, with posterior margin straight.

Elytra relatively long, 2.75 times longer than wide at humeri, slightly widening posteriorly, with 4 primary costae; costa 1 indistinguishable in posterior two thirds, interstice 1 with four rows of irregular cells; costa 3 noticeably stouter than others in posterior half; interstices with double rows of mostly roundish irregular cells. Relatively long semi-erect pubescence distributed along costae.

Legs slender and narrow; metatrochanters with rounded posterior angles, tarsomere 1 without plantar pad, tarsomere 2 with apical plantar pad.

Aedeagus relatively wide, with laterally flattened median lobe (Figs. 51–53).

Length: 5.9 mm. Width (humeral): 1.8 mm.

Female. Unknown.

Type material

Holotype male: C Laos, Bolikhamsai, Ban Nape, Kaew Nua Pass, 18°22.3'N 105°09.1'E, 500–700 m, 18–30.V.1998, Strba & Hergovits leg. (ICM).

Diagnosis

E. glebulus sp. n. differs from all its congeners by the short antennomere 3, which is equal in length and width to antennomere 2. At the same time it may be placed near *E. nothus* (Kiesenwetter) due to the similar structure of the aedeagus, differing from it, in addition to the antennal structure, in coloration and the details of the aedeagus (Figs. 51–53). *E. glebulus* is the southernmost occurring representative of the genus *Eropterus*, which is for the first time recorded from the Oriental region.

Etymology

Derived from the Latin for "a little clod or lump of earth or anything".

***Propyropertus* (s. str.) *plateroides* sp. n. (Figs. 54–55)**

Description

Male. Black. Pronotum, scutellum and elytra bright red.

Head flat, with longitudinal depression behind antennal prominence. Eyes small (interocular distance about 4 times as long as the radius). Maxillary palps slender, with ultimate palpomere elongate, widened and flattened apically, about two thirds of length of palpomeres 2 and 3 combined. Ultimate labial palpomere widened apically and considerably larger than palpomeres 2 and 3. Antennae filiform, antennomeres 4–11 slightly compressed, extending to approximately three fourths the length of elytra; antennomere 3 only slightly longer and wider than antennomere 2 and both combined about 1.6 times shorter than antennomere 4; antennomeres 4–11 gradually increasing in length; antennomeres 1–3 with decumbent pubescence, antennomeres 4–11 with short erect pubescence.

Pronotum transverse, 1.1 times wider than long, trapezoidal, with pronounced, blunt anterior angles and conspicuous acute posterior angles. Median areola well-developed, rhomboidal, connected with side margins by prominent, curved carinae. Scutellum elongate, parallel-sided and deeply incised at apex.

Elytra relatively long, about 3 times longer than wide at humeri, noticeably widening posteriorly, with 4 equally developed primary costae; interstices with double rows of weak, irregular cells, with secondary costae more or less prominent and straight in basal fourth. Minute decumbent pubescence distributed along costae.

Legs slender and narrow; metatrochanters short, with rounded posterior angles; tarsomere 1 with plantar pad occupying about half of the tarsomere.

Median lobe of aedeagus narrow, slightly curved in lateral view, with a pair of minute teeth in preapical portion (Figs. 54–55).

Length: 12.9 mm. Width (humerally): 3.7 mm.

Female. Unknown.

Type material

Holotype male: Taiwan, Hualien Co., Pilushi For., 22.V.2000, 2150 m, Bishkin leg. (ICM).

Diagnosis

P. plateroides sp. n. differs from *P. kanoi* Nakane and *P. pygidialis* Nakane by its uniformly black underside and in the details of the structure of aedeagus (Figs. 54–55).

Etymology

The name is derived from the genus *Plateros* Bourgeois due to the similarity of the aedeagus of the new species to that of members the aforementioned genus.

***Lycoprogenes himalejicus* (Bourgeois, 1881), comb. n.**

Pyropterus himalejicus Bourgeois, 1881: CXLIV

Material studied: Holotype, female, "Sikkim, 1870", "*Pyropterus himalejicus* Brg. female" (Bourgeois' manuscript label), "Type?" (MNHN).

Lycoprogenes Pic (not *Lycoprogenthes*, as indicated in Bocák & Bocáková, 1990) (type species *L. pouilloni* Pic) is hereby transferred to the tribe Taphini of the Erotinae from the subfamily Calochrominae. The holotype of the type of *Lycoprogenes*, a female, labelled "Darjeeling (Pouillon)", "Genre intermediaire entre *Dictyoptera* et *Taphes*" (Bourgeois' manuscript label), "Type", "*Lycoprogenes Pouilloni* Pic" (Pic's manuscript label) (MNHN) has been studied. *Lycoprogenes himalejicus* (Bourgeois), comb. n. is another species of this genus.

***Lateralis oculata* (Gorham, 1886)**

Eros oculatus Gorham, 1886: 401

Benibotarus sanguinipennis Nakane, 1958: 80, **syn. n.**

Material studied: Holotype, female, "Type", "Miyanoshita. 24.4-5.80", "Japan. G.Lewis

1910-320", "female *Eros oculatus* Gorham" (NNHM); male, Mt. Hortu, Suzu, Ishikawa, 6.V.1978, T.Mikage, "*Benibotarus sanguinipennis* Nakane et Ohbayashi, K.Matsuda det. 2003"; female, Misake Amaruage, Hyogo, 5.IV.1973, H.Ohira leg., "*Benibotarus sanguinipennis* Nakane et Ohbayashi, K.Matsuda det. 2003" (KMPC).

Comparison of the type of *Eros oculatus* with specimens of *Benibotarus sanguinipennis* from Japan (KMPC) has confirmed a previously-held, description-based assumption (Kazantsev, 1990) that the two taxa are synonymous.

***Greenarus nigripennis* (Nakane & Ohbayshi, 1958), comb. n.**

Benibotarus nigripennis Nakane & Ohbayshi, 1958: 80

Material studied: female, Japan, Mt. Kurodake, Kujyu, Oita Pref., 26.VI.1993, S.Ogata leg. (KMPC).

Study of *Benibotarus nigripennis* previously placed in *Lateralis* (Kazantsev, 1992), suggests that it must be transferred to *Greenarus* as agreeing in all characters to the latter taxon. *G. nigripennis* has an aedeagus remarkably close to that of *G. thoracicus*, but it is distinguished from all congeners, except differently coloured *G. belokobylskii* sp. n., which also has only one row of cells between the suture and primary costa 1, by the almost complete weakening of primary elytral costa 1, separable from secondary costae only in the basal eighth.

***Punicealis miranda* (Barovskij, 1930), nom. rev.**

Dictyoptera miranda Barovskij, 1930: 360

Material studied: Paratype male, Primorsk obl., Ulahe R., 25.V.1912, V.K.Arsenjev leg., "Dictyoptera miranda m., Cotype, W.Barovsky det." (Barovskij's manuscript label) (ZIN); female, Ussurijskij Kraj, south slopes of Sikhote-Aliní, 9.V.1929, (Phillipov leg.); male and female, S Primorje (Ussuri), env. Kamenushka, 3.VI.1989, Kurbatov leg.; male, S Primorje (Ussuri), 50 km E Ussurijsk, Upper Artemovka R., 7–8.VI.1990, S.Kazantsev leg. (SVK).

Study of the paratype of *D. miranda*, as well as additional material, has confirmed the validity of the species. It is easily separable from both *Lateralis oculata* (Gorham) and *Punicealis medvedevi* Kazantsev, being most closely related to *Punicealis munda* (Say) from the eastern USA, from which it is distinguishable by the details of its coloration and male genitalia. The synonymy to *Punicealis medvedevi* (referred to as *Dictyoptera oculata*) was suggested by Nakane (1969) without any study of the types.

Phaneros (Kleinella) Kazantsev, 1992: 44

type species: *Kleinella pudica* Kazantsev, 1992: 44

Key to genera and subgenera of Erotini and Dictyopterini of the world

1. Median pronotal cell absent or clearly divided into anterior and posterior parts. Spiculum gastrale with lateral arms (Figs. 14–15) or absent (Fig. 19) [Erotini] 2
- Median pronotal cell complete and undivided. Spiculum gastrale without lateral arms (Figs. 16–18) [Dictyopterini] 9
2. Median pronotal cell divided into anterior and posterior parts *Eros*
- Median pronotal cell absent or formed by parallel or divergent anterior ribs 3
3. Median pronotal structure represented by at least two ribs anteriorly 4
- Median pronotal structure represented by one longitudinal rib 7
4. Male femora without foveae *Konoplatycis*
- Male femora with foveae 5
5. Pronotum posteriorly without distinct ribs. Hind wing with cell formed by Cu₁ and Cu₂ closed (Fig. 8) *Platycis*
- Pronotum posteriorly with distinct ribs. Hind wing with cell formed by Cu₁ and Cu₂ open [*Erotides*] 6
6. Male metatrochanters with foveae *Erotides*
- Male metatrochanters without foveae *Glabroplatycis*
7. Pronotal longitudinal rib represented by inconspicuous anterior prominence. Spiculum gastrale with lateral arms [*Pseudaplatopterus?*] *Eropterus*
- Pronotal longitudinal rib complete. Spiculum gastrale absent (Fig. 16) .. [*Lopheros*] 8
8. Parameres about half as long as median lobe of the aedeagus. Coxites free, valvifers fused apically (Fig. 21) *Lopheros*
- Parameres vestigial. Coxites fused, valvifers not fused apically (Fig. 24) .. *Eulopheros*
9. Male penultimate abdominal sternite straight or convex apically (Fig. 3) [Flagraxina, subtr. n.] 10
- Male penultimate abdominal sternite with median incision apically [Dictyoptera] 13
10. Antennomere 3 similar in length and vestiture to antennomere 4. Male ultimate abdominal segments completely hidden inside penultimate ones (Fig. 3). Parameres free, not enveloping median lobe of the aedeagus *Flagrax*
- Antennomere 3 similar in length and vestiture to antennomere 2. Male ultimate abdominal segments not hidden inside penultimate ones. Parameres enveloping median lobe of the aedeagus [*Phaneros*] 11

11. All primary elytral costae equally developed, including in basal half *Kleineria* nom. n.
 - Elytral primary costa 2 less developed in basal half 12
12. All elytral interstices with double rows of cells. Last elytral interstice well visible from above, at least in apical half *Phaneros*
 - Last elytral interstice with one row of cells and not visible from above, including in apical half *Bourgeoisiella*
13. Ultimate maxillary palpomere pointed apically. Each elytron with 3 primary costae ...
 *Chinotaphes*
 - Ultimate joint of maxillary palpi flattened apically 14
14. Elytral costa 4 obsolete, last elytral interstice with 3 rows of cells, at least basally .. 15
 - Elytral costa 4 fully developed, last elytral interstice never with 3 rows of cells 17
15. Elytral costa 3 definitely stouter than costa 1 for almost all its length *Kolibaceum*
 - Elytral costa 3 stouter than costa 1 in apical portion only [*Lateralis*] 16
16. Last elytral interstice with full 3 rows of cells *Tricostaeptera*
 - Last elytral interstice with 3 rows of cells basally *Lateralis*
17. Elytral costa 2 reduced, elytron appears to bear three primary costae, except basally .
 18
 - Elytral costa 2 fully developed, elytron appears to bear four primary costae 20
18. Parameres of the aedeagus complete; hind tarsomere 1 with plantar pad occupying about half the tarsomere [*Benibotarus*] 19
 - Parameres of aedeagus ventrally incised at apex (Fig. 48); hind tarsomere 1 with minute apical plantar pad *Greenarus*
19. First elytral interstice with two rows of cells *Benibotarus*
 - First elytral interstice with one row of cells, except at base and apex *Sibetarus*
20. Metatrochanters long, about a third to half the length of metatibiae. Elytral interstices with two rows of cells. Coxites not fused with each other, valvifers fused apically
 *Punicealis*
 - Metatrochanters short, slightly longer than wide. Coxites and valvifers varied 21
21. Elytral costa 3 considerably stouter than costae 1 and 2. Elytral interstices with one row of cells. Coxites fused with each other, valvifers not fused apically ...*Helcophorus*
 - Elytral costa not stouter than costae 1 and 2. Coxites and valvifers varied 22
22. Elytral interstices with one row of cells 23
 - Elytral interstices with two rows of cells 24
23. Elytral pubescence uniform *Pyropterus*
 - Elytral pubescence distributed along costae *Taphomimus*
24. Elytral reticulation robust. Parameres about as long as median lobe of the aedeagus (Figs. 39–41) *Dictyoptera*
 - Elytral reticulation weak. Parameres short..... [*Propyropterus*] 25
25. Parameres much shorter than median lobe of the aedeagus, median lobe narrow and bent (Figs. 54–55) *Propyropterus*

- Parameres about half length of median lobe of the aedeagus; median lobe relatively robust and straight *Paralopheros*

Check-list of the Erotini and Dictyopterini of the world

EROTINI Leconte, 1881

Erotes Leconte, 1881: 429

type genus: *Eros* Newman, 1838

Eros Newman, 1838: 382

type species: *Lycus humeralis* Fabricius, 1801

- *humeralis* (Fabricius, 1801). Eastern USA and Canada.

Lycus humeralis Fabricius, 1801: 111

Omalisus obliquus Say, 1835: 156

Eros incestus Leconte, 1847: 78

[Neotropical *E. antennalis* Kirsch 1870, *E. auratocollis* Fauv. 1861, *E. crocatus* Er. 1847, *E. decoratus* Er. 1847, *E. melanopterus* Lucas 1857, *E. melanurus* Blanch. 1843, *E. patruelis* Kirsch 1873, *E. phaleratus* Blanch. 1843 and *Dictyoptera woodlarkiana* Montrouzier, 1855 (assigned to *Eros* in Kleine, 1933) from Murua Island were described during a time when almost all not *Lycus*- or *Calopteron*-looking lycids were attributed to *Eros* and probably belong in other genera and subfamilies]

Platycis Thomson, 1864: 162

type species: *Pyrochroa minuta* Fabricius, 1787

- *consobrina* Bourgeois, 1902: 90. Japan.

- *minuta* (Fabricius, 1787). Europe.

Pyrochroa minuta Fabricius, 1787: 163

Lampyris pusilla Gmelin, 1790: 1886

Platycis siculus Pic, 1914: 50

Erotides Waterhouse, 1879, **nom. rev.**

Erotides Waterhouse, 1879: 37

type species: *Omalisus sculptilis* Say, 1835

Erotides (*Erotides*) Waterhouse, 1879: 37

type species: *Omalisus sculptilis* Say, 1835

- *sculptilis* (Say, 1835), **comb. n.** E USA, SE Canada.

Omalisus sculptilis Say, 1835: 156

Eros oblitus Newman, 1838: 382

Dictyopterus axillaris Melscheimer, 1846: 302

Erotides (Glabroplatycis) Pic, 1914, **nom. rev.**

Glabroplatycis Pic, 1914: 50

type species: *Dictyopterus cosnardi* Chevrolat, 1829

- *cosnardi* (Chevrolat, 1829), **comb. n.** Central Europe.
Dictyopterus cosnardi Chevrolat, 1829: 45
Dictyopterus merki Mulsant, 1838: 80
Platycis flavescens Redtenbacher, 1849: 319
- *nasuta* (Kiesenwetter, 1874), **comb. n.** E Europe, Northern Asia.
Eros nasuta Kiesenwetter, 1874: 255
Platycis raddensis Pic, 1914: 50
- *schneideri* (Kiesenwetter, 1877|1878), **comb. n.** Azerbaijan (Talysh).
Eros schneideri Kiesenwetter, 1877|1878: 206
Eros abdominalis Reiche, 1878: XXVIII
- *taiwana* (Kono, 1932), **comb. n.** Taiwan.
Platycis taiwana Kono, 1932: 59
- *kanoi* (Nakane, 1967), **comb. n.** Taiwan.
Platycis kanoi Nakane, 1967: 285
- *matsudai* (Bocák, 1996), **comb. n.** China (Yunnan).
Platycis matsudai Bocák, 1996: 1

Konoplatycis Nakane, 1969: 155

type species: *Platycis otome* Kono, 1832

- *otome* (Kono, 1932). Japan.
Platycis otome Kono, 1932: 59

Lopheros Leconte, 1881|1882: 23

type species: *Omalisus fraternus* Randall, 1838

Lopheros (Lopheros) Leconte, 1881|1882: 23

type species: *Omalisus fraternus* Randall, 1838

Aplatopterus Reitter, 1911: 250 type species: *Lycus rubens* Gyllenhal, 1817

Falsoconderis Pic, 1926: 22 type species: *Falsoconderis pubescens* Pic, 1926

Eudictyoptera Barovskij, 1930: 287 type species: *Eudictyoptera brevicornis* Barovskij, 1930

- *braeti* (Bourgeois, 1905). India (Bengal).
Dictyoptera braeti Bourgeois, 1905: 46
 - *brevicornis* (Barovskij, 1930). Russian Far East (Maritime Terr.).
Eudictyoptera brevicornis Barovskij, 1930: 288
 - *Aplatopterus imanensis* Medvedev, 1970: 165
 - *brunneorubens* (Medvedev, 1966). Russian Far East (Kunashir), Japan.
Aplatopterus brunneorubens Medvedev, 1966: 37
 - *Lopheros konoii* Nakane, 1969: 115
 - *crassipalpis* Nakane, 1969: 117. Japan.
 - *crenatus* (Germar, 1824). E USA, SE Canada.
Homaligus crenatus Germar, 1824: 61
 - *Omaligus cruciatus* Randall, 1838: 15
 - *fraternus* (Randall, 1838). E USA.
Omaligus fraternus Randall, 1838: 15
 - *lineatus* (Gorham, 1883). Central Europe (Poland), Russian Far East (Maritime Terr.), Japan.
Plateros lineatus Gorham, 1883: 406
 - *Dictyoptera motschulskii* Barovskij, 1930: 359
 - *Aplatopterus mamaevi* Medvedev, 1966: 36
 - *mandshuricus* (Kleine, 1940). NE China.
Eudictyoptera mandshurica Kleine, 1940: 112
 - *minimus* Nakane, 1969: 120. Japan.
 - *pubescens* (Pic, 1926). Laos, Vietnam.
Falsoconderis pubescens Pic, 1926: 23
 - *Falsoconderis apicicornis* Pic, 1931: 97
 - *rubens* (Gyllenhal, 1817). Europe.
Lycus rubens Gyllenhal, 1817: 31
 - *Cassida sanguinea* Scopoli, 1763: 38 [HM]
 - *septentrionalis* (Kono, 1932). Russian Far East (Sakhalin, Kunashir), Japan.
Aplatopterus septentrionalis Kono, 1932
 - *Aplopterus japonicus* Pic, 1942: 2
- Lopheros (Eulopheros)* Kazantsev, 1995: 41
type species: *Eros harmandi* Bourgeois, 1902
- *harmandi harmandi* (Bourgeois, 1902). Russian Far East (Sakhalin, Kunashir), Japan.
Eros harmandi Bourgeois, 1902: 89
 - *Aplatopterus nakanei* Winkler, 1952: 407
 - *harmandi hirosimensis* Nakane, 1969: 109. Japan (Hiroshima).
 - *harmandi shikokuanus* Nakane, 1969: 110. Japan (Shikoku).

Eropterus Green, 1951: 14

type species: *Dictyopterus trilineatus* Melsheimer, 1846

Asioplateros Nakane, 1969: 9 type species: *Asioplateros flavipennis* Nakane, 1967

- *arculus* Green, 1951: 17. E USA, SE Canada.

- *aritai* (Sato & Ohbayashi, 1968). Japan.

Aplatopterus aritai Sato & Ohbayashi, 1968: 66

- *bilineatus* Green, 1951: 17. E USA (Tennessee).

- *flavipennis* (Nakane, 1969). Taiwan.

Asioplateros flavipennis Nakane, 1969: 9

- *nothus* (Kiesenwetter, 1874). Japan.

Eros nothus Kiesenwetter, 1874: 58

- *ohkurai* Matsuda, 1992: 94. Taiwan.

- *glebulus* **sp. n.** Laos.

- *rectus* Green, 1951: 16. E USA.

- *taiwanus* Matsuda, 1992: 92. Taiwan.

- *trilineatus* (Melsheimer, 1846). E USA, SE Canada.

Dictyopterus trilineatus Melsheimer, 1846: 303

- *yakushimaensis* (Ohbayashi, 1954). Japan.

Plateros yakushimaensis Ohbayashi, 1954: 22

Pseudaplatopterus Kleine, 1940: 179

type species *P. ascheelei* Kleine, 1940

- *ascheelei* Kleine, 1940: 179. Extinct. Baltic amber.

DICTYOPTERINI Kleine, 1928, nom. rev.

Dictyopterinae Kleine, 1928: 6

type genus: *Dictyoptera* Latreille, 1829

DICTYOPTERINA Kleine, 1928

Dictyopterinae Kleine, 1928: 6

type genus: *Dictyoptera* Latreille, 1829

Benibotarus Kono, 1932: 56

type species: *Eros spinicoxis* Kiesenwetter, 1874

Benibotarus (*Benibotarus*) Kono, 1932: 32

type species: *Eros spinicoxis* Kiesenwetter, 1874

- *spinicoxis* (Kiesenwetter, 1874). Russia (Far East), China (Shaanxi, Sichuan, Jiangxi, Guizhou), Taiwan, Japan. New record for China.

Eros spinicoxis Kiesenwetter, 1874: 254

Dictyoptera krivolutzkii Medvedev, 1966: 36

Benibotarus (Sibetarus) Bocák & Bocáková, 1991: 319

type species: *Dictyopterus taygetanus* Pic, 1905

- *arnoldii* (Barovskij, 1932). Azerbaijan (Talysh), Iran (Talysh).
Pyropterus arnoldii Barovskij, 1932: 139
- *taygetanos* (Pic, 1905). Greece, Czech Republic, Ukraine. New record for Ukraine.
Dictyopterus taygetanos Pic, 1905: 185
Dictyopterus fiedleri Reitter, 1907: 25
- *alternatus* (Fairmaire, 1856). Spain (Pyreneans), France (Pyreneans).
Dictyopterus alternatus Fairmaire, 1856: 531
- *rubripes* (Pic, 1897). Algeria, Morocco. New record for Morocco.
Pyropterus rubripes Pic, 1897: 220
- *longicornis* (Reiche, 1878). Georgia. Russia (Northern Caucasus).
Eros longicornis Reiche, 1878: XXVII
Pyropterus shelkovnikovi Barovskij, 1930: 65

Greenarus Kazantsev, 1995, **stat. n.**

Benibotarus (Greenarus) Kazantsev, 1995: 40

type species: *Eros thoracicus* Randall, 1838

- *thoracicus* (Randall, 1838). USA, Canada.
Eros thoracicus Randall, 1838: 14
Eros praefectus Newman, 1838: 382
- *nigripennis* (Nakane & Ohbayashi, 1958): 80, **comb. n.** Japan.
Benibotarus nigripennis Nakane & Ohbayshi, 1958: 80
- *belokobylskii* **sp. n.** Vietnam.

Kolibaceum Winkler, 1987: 62

type species: *K. balticum* Winkler, 1987

Pietrzeniukia Winkler, 1987: 68 type species: *Pietrzeniukia kunowi* Winkler, 1987

- *balticum* Winkler, 1987: 63. Extinct. Baltic amber.
Pietrzeniukia kunowi Winkler, 1987: 70

Laterialis Kazantsev, 1990, **stat. n.**

Dictyoptera (Laterialis) Kazantsev, 1990: 14

type species: *Eros oculus* Gorham, 1886

Laterialis (Laterialis) Kazantsev, 1990: 14

type species: *Eros oculus* Gorham, 1886

- *oculata* (Gorham, 1886). Japan.

Eros oculus Gorham, 1886: 401

Pyropterus diversicollis Pic, 1942: 2

Benibotarus sanguinipennis Nakane & Ohbayashi, 1958: 80, **syn. n.**

Laterialis (Tricostaeptera) Kazantsev, 1997, **comb. n.**

Kolibaceum (Tricostaeptera) Kazantsev, 1997: 160

type species: *Tricostaeptera sanguinea* Kazantsev, 1997

- *sanguinea* Kazantsev, 1997: 160. China (Hubei).

- *tricostata* (Pic, 1927), **comb. n.** Vietnam.

Pyropterus tricostatus Pic, 1927: 6

- *shirozui* (Nakane, 1968), **comb. n.** Taiwan.

Benibotarus shirozui Nakane, 1968: 218

Punicealis Kazantsev, 1990, **stat. n.**

Dictyoptera (Punicealis) Kazantsev, 1990: 11

type species: *P. medvedevi* Kazantsev, 1990

- *barovskii* (Medvedev, 1966). Russian Far East (Sakhalin and Kunashir). This species is evidently close to *P. miranda*, similar in the structure of the aedeagus, but distinguishable by the structure of the pronotum, with acute anterior margin of a relatively narrow median cell, vs. rounded anterior margin of a wide median cell connected to anterior margin with distinct rib in *P. miranda*.

Dictyoptera barovskii Medvedev, 1966: 36

- *hamata* (Mannerheim, 1843). NW of North America (from Idaho and Washington to Alaska).

Eros hamatus Mannerheim, 1843: 245

- *martensi* Kazantsev, 1993: 61. Nepal.

- *medvedevi* Kazantsev, 1990: 11. Russian Far East (Maritime Terr. and Kunashir), Japan.

Dictyoptera oculata Nakane, 1969: 125, nec Gorham

- *miranda* (Barovskij, 1930), **nom. rev.** Russian Far East (Maritime Terr.).

Dictyoptera miranda Barovskij, 1930: 360

- *munda* (Say, 1835). Eastern USA (from Pennsylvania and Illinois to Georgia and Arizona).

Omalisus mundus Say, 1835: 155

Chinotaphes Bocák & Bocáková, 1999: 48

type species: *C. weibaoshanensis* Bocák & Bocáková, 1999

- *weibaoshanensis* Bocák & Bocáková, 1999: 48. China (Yunnan).

Helcophorus Fairmaire, 1891, **stat. n.**

Helcophorus Fairmaire, 1891: 129

Pyropterus (Helcophorus) Fairmaire, 1891: Kazantsev, 1993

type species: *H. miniatus* Fairmaire, 1891

Xylobanoides Kleine, 1928: 237 type species: *Xylobanus unicolor* Gorham, 1903

Hiekeolycus Winkler, 1987: 66 type species: *Hiekeolycus berendti* Winkler, 1987

- *angustatus* (Pic, 1929). N Vietnam.

Dictyopterus angustatus Pic, 1929: 7

- *berendti* (Winkler, 1987). Extinct. Baltic amber.

Hiekeolycus berendti Winkler, 1987: 67

- *brevilobus* Bocáková, 1994. Kashmir.

- *delicatus* Kazantsev, 1996: 84. China (Hubei, Gansu). New record for Gansu.

- *gobindanus* **sp. n.** N India (UP).

- *miniatus* Fairmaire, 1891: 129. Kashmir, Pakistan.

Xylobanus unicolor Gorham, 1903: 324

Dictyoptera miniata Pic, 1928: 267

- *murzini* **sp. n.** China (Yunnan).

- *ostindicus* Kazantsev, 1996: 83. N India (Darjeeling).

- *tricolor* Kazantsev, 2000. China (Sichuan, Yunnan).

Pyropterus Mulsant, 1838: 81

type species: *Lycus affinis* Paykull, 1799 [*Pyropterus nigroruber* (Degeer, 1774)]

- *gilvus* Kleine, 1928: 6. India (Himalaya).

- *incisus* Pic, 1925: 6. Java.

- *insularis* Kazantsev, 1995: 35. Russian Far East (Kunashir Is.), Japan. New record for Japan.

- *klossi* Blaire, 1928: 179. Sumatra.

- *malaccanus* Pic, 1922: 13. Malaysia.

- *maritimus* Kazantsev, 1995: 37. Russian Far East (Maritime Terr.).

- *nigroruber* (Degeer, 1774). Europe, Siberia.

Lampyris nigro-ruber Degeer, 1774: 46

Lycus affinis Paykull, 1799: 176

- *pahanganus* Kleine, 1939: 366. Malaysia.

Dictyoptera Latreille, 1829: 465

type species: *Pyrochroa aurora* Herbst, 1784

- *aurora* (Herbst, 1784). Europe, Northern Asia, North America north of Mexico.

Pyrochroa aurora Herbst, 1784: 105

Cantharis sanguineus Linnaeus, 1761: 202 [HM], nec Linnaeus, 1758

Cantharis coccineus Linnaeus, 1767: 648 [HM?]

Omalisus coccinatus Say, 1835: 155

Eros hybridus Mannerheim, 1843: 88

Dictyoptera superba Motschulsky, 1860: 115

Eros nigripes Schaeffer, 1911: 121

- *bicoloricornis* Pic, 1933: 110. N Vietnam.
- *crassicornis* Matsumura, 1911: 124. FE Russia (Sakhalin).
- *elegans* Nakane & Winkler, 1952. Japan.

Dictyoptera elegans Nakane & Winkler, 1952: 133

- *formosana* Nakane, 1969: 217. Taiwan.

- *forticornis* Pic, 1942: 1. China.

- *gansuensis* **sp. n.** China (Gansu).

- *gorhami* Kono, 1932. Japan.

Dictyoptera gorhami Kono, 1932: 57 [RN]

Eros erythropterus Gorham, 1883: 400, nec Baudi, 1871

- *laosensis* (Pic, 1926). Laos.

Conderis laosensis Pic, 1926: 23

- *marginicollis* Boheman, 1858: 73. China (Hong Kong).

- *quadricostata* Pic, 1927: 6. N Vietnam.

- *sapporensis* Kono, 1932. Russian Far East (Kunashir Is.), Japan. New record for Russia.

Dictyopterus sapporensis Kono, 1932: 57

Dictyoptera ohbayashii Nakane, 1969: 129

- *simplicipes* Mannerheim, 1843: 245. Western North America (from Alaska to Arizona).

Dictyoptera laeta Motschulsky, 1860: 115

- *speciosa* Ohbayashi, 1954: 19. Japan.

- *velata* (Gorham, 1883). Russian Far East (Kunashir). Japan.

Eros velatus Gorham, 1883: 402.

Dictyoptera pseudovelata Medvedev, 1966: 36

Propyropterus Nakane, 1968: 219

type species: *P. pygidialis* Nakane, 1968

Propyropterus (Propyropterus) Nakane, 1968: 219

type species: *P. pygidialis* Nakane, 1968

- *kanoi* Nakane, 1968: 222. Taiwan.
- *pygidialis* Nakane, 1968: 219. Taiwan.
- *plateroides* **sp. n.** Taiwan.

Propyropterus (Paralopheros) Kazantsev, 1993, **stat. n.**

Paralopheros Kazantsev, 1993: 64

type species: *Conderis diversipennis* Pic, 1921

- *diversipennis* (Pic, 1921). China (Yunnan).
- Conderis diversipennis* Pic, 1921: 7
- *fukiensis* (Kleine, 1940). China (Fujiang, Guangdong).
- Pyropterus fukiensis* Kleine, 1940: 91

FLAGRAXINA subtr. n.

type genus: *Flagrax* Kazantsev, 1992

Flagrax Kazantsev, 1992: 38

type species: *Stadenus auberti* Bourgeois, 1881

- *atripes* (Pic, 1922). S Africa.
- Stadenus atripes* Pic, 1922: 6
- *auberti auberti* (Bourgeois, 1881). Tropical Africa.
- Stadenus auberti* Bourgeois, 1881: XXXVII
- Stadenus angustatus* Pic, 1946: 5
- Stadenus antennalis* Bourgeois, 1889: 246
- Stadenus auberti* var. *atricollis* Pic, 1915: 13
- Stadenus breveapicalis* Pic, 1946: 5
- Stadenus innotatus* Pic, 1928: 61
- Stadenus leonensis* Pic, 1946: 5
- Stadenus mocquerysi* Pic, 1915: 13
- Stadenus mocquerysi* var. *geniculatus* Pic, 1915: 14

- Stadenus rufifrons* Pic, 1915: 13
- Stadenus subelongatus* var. *notaticollis* Pic, 1946: 5
- *auberti semifulvus* (Fairmaire, 1891). St. Tome Is.
- Stadenus semifulvus* Fairmaire, 1891: 116
- Stadenus nodieri* Pic, 1946: 6
- *bicoloripes* (Pic, 1946). Gabon.
- Stadenus bicoloripes* Pic, 1946: 5
- *bifoveolatus* (Pic, 1924). Biafra Gulf.
- Stadenus bifoveolatus* Pic, 1924: 161
- *bolivari* (Bourgeois, 1905). W Africa.
- Stadenus bolivari* Bourgeois, 1905: 193
- *grandis* (Kleine, 1942). W Africa.
- Stadenus grandis* Kleine, 1942: 4
- *laticornis* (Pic, 1946). W Africa.
- Stadenus laticornis* Pic, 1946: 5
- *parallelus* (Pic, 1922). W Africa.
- Stadenus parallelus* Pic, 1922: 6
- *subelongatus* (Pic, 1915). W Africa.
- Stadenus subelongatus* Pic, 1915: 13
- Stadenus lamottei* Pic, 1958: 160
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- Phaneros* Kazantsev, 1992: 42
type species: *Stadenus xanthopterus* Bourgeois, 1908
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- Phaneros (Phaneros)* Kazantsev, 1992: 42
type species: *Stadenus xanthopterus* Bourgeois, 1908
- *caffer* (Kleine, 1933). SE Africa (L. Nyasa).
- Stadenus caffer* Kleine, 1933: 4
- *costatus* (Pic, 1915). Cameroon.
- Stadenus costatus* Pic, 1915: 12
- *inapicalis* (Pic, 1928). Uganda, Congo (Zaire).
- Stadenus inapicalis* Pic, 1928: 61
- Stadenus incrassicornis* Pic, 1946: 6
- *nigricollis* (Pic, 1946). Congo (Zaire).
- Stadenus nigricollis* Pic, 1946: 6
- *xanthopterus* (Bourgeois, 1908). East Africa (Kenya, Tanzania).
- Stadenus xanthopterus* Bourgeois, 1908: 274
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- Phaneros (Bourgeoisella)* Kazantsev, 1992: 44
type species: *Stadenus ruficeps* Bourgeois, 1910

- *ruficeps* (Bourgeois, 1910). Kenya, Tanzania.

Stadenus ruficeps Bourgeois, 1910: 117

Stadenus sjoestedti Bourgeois 1910: 118

Phaneros (Kleineria) nom. n. pro Kleinella Kazantsev, 1992 preocc. by *Kleinella* Adams, 1860 (Mollusca)

Phaneros (Kleinella) Kazantsev, 1992: 44

type species: *Kleinella pudica* Kazantsev, 1992

- *pudica* Kazantsev, 1992. Tanzania (Tandaia).

Phaneros (Kleinella) pudica Kazantsev, 1992: 44

DICTYOPTERINI INCERTAE SEDIS

Taphomimus Kazantsev, 1996: 400

type species: *Taphomimus sarawakanus* Kazantsev, 1996

- *diocisus* (Bocák & Bocáková, 1991). Vietnam.

Pyropterus diocisus Bocák & Bocáková, 1991: 318

- *nanensis* **sp. n.** Thailand.

- *sarawakanus* Kazantsev, 1996: 401. E Malaysia.

- *tonkineus* (Pic, 1923). Vietnam.

Taphes tonkineus Pic, 1923: 16

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