

# ***Perilampus neglectus* and other neglected species: new records of Palaearctic Perilampidae (Hymenoptera, Chalcidoidea), with a key to European species of *Perilampus***

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## **Abstract**

New faunistic records of Palaearctic Perilampidae (Hymenoptera: Chalcidoidea) are given, based on newly collected material in South-East Europe, South Korea and specimens from the Natural History Museum in London. *Euperilampus* Walker, 1871 is recorded for the first time in South Korea, with females of *E. sinensis* Bouček, 1978 being discovered and described for the first time. The genera *Perilampus* Latreille, 1809 and *Steffanolampus* Peck, 1974 are recorded for the first time in Greece. *Perilampus noemi* Nikol'skaya, 1952, collected on Crete and Salamina islands (Greece), is recorded for the first time in Europe. The following species are new to Greece: *P. aeneus* (Rossius, 1790), *P. laevifrons* Dalman, 1822, *P. micans* Dalman, 1820, *P. minutalis* Steffan, 1952, *P. neglectus* Bouček, 1956, *P. ruficornis* (Fabricius, 1793), *P. tristis* Mayr, 1905, and *S. salicetum* (Steffan, 1952). The following species are new to Romania: *P. aeneus*, *P. auratus* (Panzer, 1798), *P. aureoviridis* Walker, 1833, *P. chrysonotus* Förster, 1859, and *P. laevifrons*. The following species are new to Turkey: *P. auratus*, *P. cephalotes* Bouček, 1956, *P. ruficornis*, and *P. tristis*. Additionally, *P. cephalotes* and *P. polypori* Bouček, 1971 are new to Austria; *P. masculinus* Bouček, 1956 is new to Sweden; *P. ruficornis* is new to South Korea; and *P. tristis* is new also to Cyprus and Spain. The first host record for *P. cephalotes* and a new host record for *P. laevifrons* are also given. A key to 20 European species of *Perilampus* is included. Each species is diagnosed using macrophotography to facilitate its future recognition. The males of *P. intermedius* Bouček, 1956 and *P. neglectus* are described for the first time.

**Keywords**

Distribution, *Euperilampus*, host, key, parasitoid, *Perilampus*, *Steffanolampus*

**Introduction**

The status of the family Perilampidae has been recently revised by Zhang et al. (2021) in the context of a larger group called “the planidial larva clade”, which also includes the families Chrysolampidae and Eutrichosomatidae. Thus, the family Perilampidae now consists of six genera: *Burksilampus* Bouček, 1978, *Euperilampus* Walker, 1871, *Krombeinius* Bouček, 1978, *Monacon* Waterson, 1922, *Perilampus* Latreille, 1809, and *Steffanolampus* Peck, 1974. A key to these genera is given by Bouček (1978).

In general, there are no recent data on Palearctic Perilampidae. While in North-Western Europe the family is somewhat better known, the situation is very different in the South-Eastern part of the continent. For example in Greece the only species known to date is *Philomides paphius* Haliday, 1862 (now placed in Chrysolampidae), while in Romania only five species of *Perilampus* are recorded: *P. cuprinus* Förster, 1859, *P. neglectus* Bouček, 1956, *P. nitens* Walker, 1834, *P. ruschkai* Hellen, 1924 and *P. tristis* Mayr, 1905 (Noyes 2019). No species of Perilampidae are known from South Korea, although the family is mentioned by Paik (1978). An exception to this situation is an investigation of the perilampid fauna of the Arabian Peninsula, where the family has been recently recorded for the first time (Darling and Yoo 2021).

*Steffanolampus* is monotypic and can be easily identified (e.g., Bouček 1956; the present paper). *Euperilampus* consists of 19 valid species, out of which three are known to occur in East Palearctic (Noyes 2019): *E. scutellatus* (Girault, 1915), *E. sinensis* Bouček, 1978, and *E. spina* Bouček, 1978. They are keyed by Bouček (1978).

*Perilampus* is the most speciose genus within Perilampidae, with 158 valid species worldwide and 47 species in the Palearctic region (Noyes 2019). In addition, five new species with Palearctic and Afrotropical affinities have been recently described by Darling and Yoo (2021). Although many species of *Perilampus* are among the largest and most colourful chalcid wasps, they are still poorly known even in Europe, as our study demonstrates.

In order to identify the European species of *Perilampus*, users must rely on rather old and often difficult identification keys (Nikol'skaya 1952; Steffan 1952; Bouček 1956, 1983), with no colour illustrations, or no illustrations at all for some of the species. Only recently a handful of species have been illustrated using macrophotography (Darling and Yoo 2021). For a discussion about the taxonomic impediments regarding the study of the Palearctic fauna of Perilampidae, see Darling and Yoo (2021). Although a taxonomic revision of all Palearctic species of *Perilampus* would be very useful, it is hoped that until this is accomplished, the present identification key to 20 European species, the first one accompanied by colour macrophotographs and detailed diagnoses, will facilitate the recognition of many European species and encourage future studies.

## Methods

Most examined specimens were collected in Greece, Romania and South Korea using a variety of methods, i.e., the sweeping net, yellow pan traps (**YPT**), Malaise traps, or by hand. They were kept in alcohol until air-dried or dried using hexamethyldisilazane (**HMDS**), glued on rectangular or triangular cards and deposited in the first author's collection (**MICO**) and at the Zoological Museum of the University of Athens (**ZMUA**). Another part of the material represents specimens deposited in the Natural History Museum, London, UK (**NHMUK**), which were used mostly for comparison. Observations were made using a Leica S8APO stereomicroscope. Images were taken mostly using a Leica DFC500 digital camera attached to a Leica M205A automated research stereomicroscope. The images were then assembled with Zerene Stacker and their clarity was further enhanced using Adobe Photoshop 7.0; all scale bars are 0.2 mm.

The morphological terminology follows Bouček (1956) and Bouček and Rasplus (1991). The collected specimens were identified using the keys of Steffan (1952), Nikol'skaya (1952), Bouček (1956, 1978, 1983). Comparative material identified mainly by Z. Bouček, but also G.J. Kerrich and Ch. Ferrière, was examined for all recorded and/or keyed species, except *P. aquilus* Nikol'skaya, *P. eximius* Masi and *P. maceki* Bouček, where no material was available for study at this time (see Material examined).

For all treated species a diagnosis for both sexes was given, primarily using the examined material, and supplemented with information from the above mentioned literature when one of the sexes was not available for direct study. The information regarding colour variation and body dimensions was also combined with literature data. When no reference to one sex is mentioned, the diagnosis characters refer to both sexes.

The two sexes can be separated by examining the gastral apex, although this sometimes proves difficult because of the strongly retracted terminal tergites. In males *Perilampus* the scape has pores on at least part of its ventral surface, being slightly to strongly widened distally (e.g., Figs 4B, 5B, 8B, 12B); in the same time, the flagellum is usually thicker and darker than in females. Moreover, in species with frontal keels present, these are more developed and sharper in males (e.g., Fig. 11B) than in females, where they are smaller and rounder (e.g., Fig. 11A). All identified species of *Perilampus* have a more or less indicated ridge between the median ocellus and the lateral ocellus (e.g., Figs 3C, 11C, 14C), but these can be continued with frontal keels that go along the inner eye margin or not. If this feature is not clear in frontal view of the head, observing the head in dorsal view may be useful (e.g., frontal keels present – e.g., Figs 2C, 16C; frontal keels absent – e.g., Figs 3C, 11C, 13C, 14C, 18C). When the face sculpture is evaluated (e.g., smooth or striate), the occasional presence of piliferous punctures is not considered. Body coloration can be rather variable, so it should be used with care.

In *Euperilampus*, a character used by Bouček (1978) in his key is the length of the labio-maxillary complex. This is measured from its apex to the lower clypeal margin and compared with the breadth of the left mandible.

Information on geographic distribution and hosts is taken from Noyes (2019), if not stated otherwise. For generic synonyms, new combinations, and a detailed list of

host species, see the previously mentioned source. Information on specimen labels is given *ad litteram*.

Abbreviations used in the figures: **atp** = anterior tentorial pit; **cly** = clypeus; **frk** = frontal keel; **lmc** = labio-maxillary complex; **mdp** = malar depression; **mssl** = malar sulcus; **sca** = supraclypeal area; **OOL** = oculo-ocellar line; **scp** = scutellar projection; **vp** = ventral pores.

## Results

### *Euperilampus* Walker, 1871

Fig. 1

*Euperilampus* Walker, 1871: 67. Type species: *Perilampus gloriosus* Walker, 1862; by original designation and monotypy.

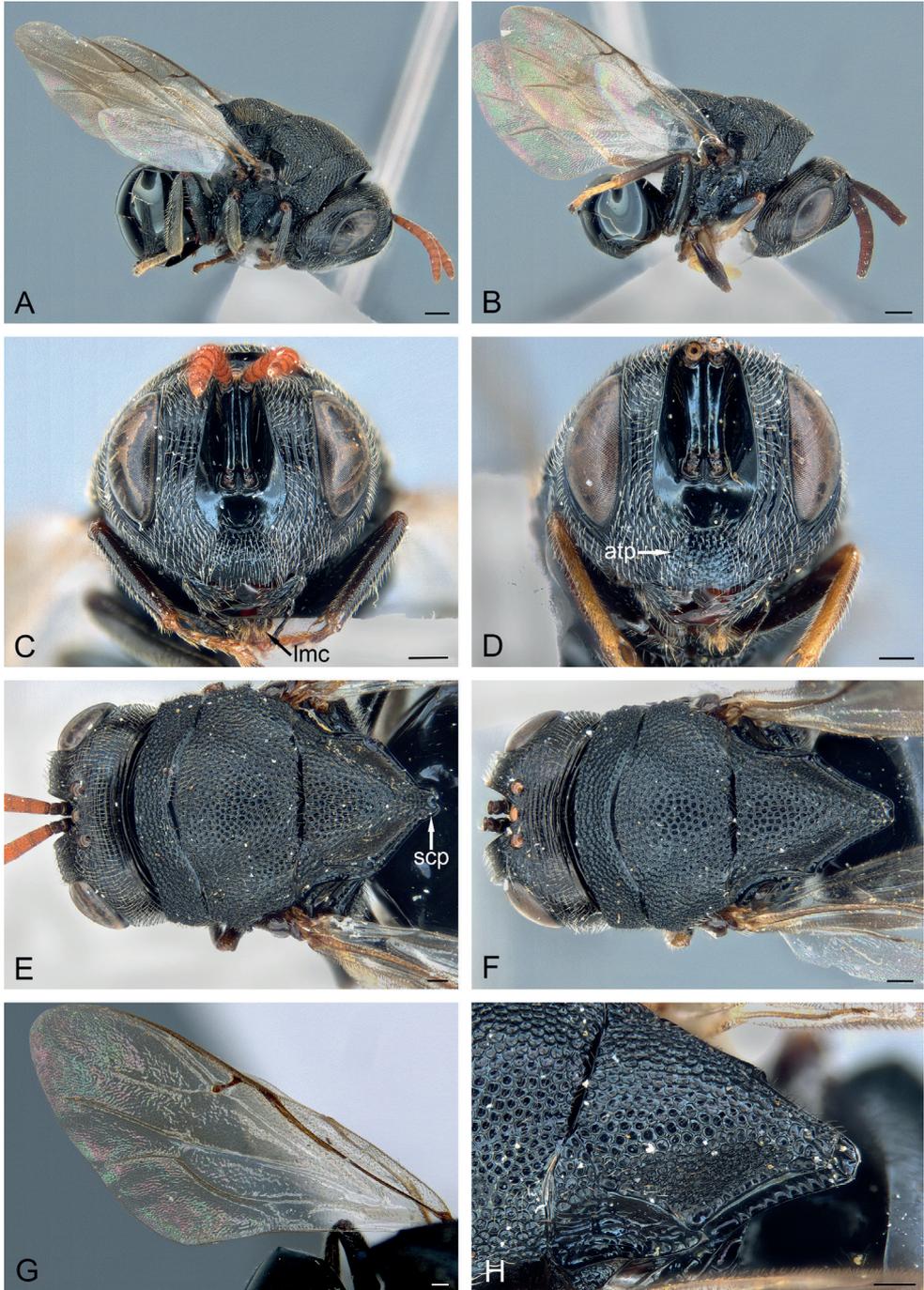
**Diagnosis.** Face without a horn. Scrobes laterally bordered by a complete and distinct carina (Fig. 1C, D). Head with longitudinal striae (Fig. 1C, D). Pronotum without elevations (Fig. 1A, B, E, F). Prepectus narrow, considerably shorter than half of the adjacent pronotal collar (Fig. 1A, B). Scutellum strongly produced over propodeum, its entire free margin with crenulate rim (Fig. 1A, B, E, F, H); marginal vein shorter than postmarginal vein (Fig. 1G). Petiole inconspicuous. Ovipositor sheaths straight, not projecting, hidden under apical tergites (Fig. 1A).

### *Euperilampus sinensis* Bouček, 1978

Fig. 1

*Euperilampus sinensis* Bouček, 1978: 305.

**Diagnosis.** Both sexes. Body black, without any metallic reflections (Fig. 1A, B); femora dark (Fig. 1A, B); fore wing slightly infumate (Fig. 1G). Labio-maxillary complex only slightly protruding beyond closed mandibles (Fig. 1C, D). Dorsal side of mesosoma without any rugae (Fig. 1E, F). Inner axillular margins almost parallel (Fig. 1E, F). Sides of scutellum steep in posterior part (Fig. 1E, F, H). Posterior scutellum projection truncate to emarginate (Fig. 1E, F, H). Marginal vein more than 1.5× as long as stigmal vein (Fig. 1G). Female. Flagellum dark orange, claval apex slightly darker (Fig. 1A, C); tibiae blackish brown (Fig. 1A, C). Male. Flagellum dorsally dark brown, ventrally dark reddish-brown (Fig. 1B); tibiae dark brown except distal third getting yellowish-brown or brownish yellow on inner side of fore tibia (Fig. 1B, D). Clypeus with short setae, anterior tentorial pits slightly to distinctly visible (Fig. 1D). Antennal scape normal, not laminate or foliaceous (Fig. 1D).



**Figure 1.** *Euperilampus sinensis* **A** female, habitus in lateral view **B** male, habitus in lateral view **C** female, head in frontal view **D** male, head in frontal view **E** female, mesosoma in dorsal view **F** male, mesosoma in dorsal view **G** female, fore wing **H** male, scutellum in dorso-lateral view.

**Material examined.** SOUTH KOREA: 2♀, 2♂, “S. KOREA, GYONGBUK, Ulleungdo, trail in forest, from Nari Basin to Seonginbong Peak / 500–1000 m, 16.VIII.2010, P. Tripotin rec.” (MICO).

**Description. Female. Body length:** 4.5–5.0 mm. **Colour.** Body black, without any metallic reflections (Fig. 1A). Body setation brown on dorsal side of mesosoma and whitish on clypeus and face (Fig. 1C, E). Scape and pedicel black; flagellum dark orange, claval apex brownish (Fig. 1A, C). Eyes brown, ocelli dark orange to brown (Fig. 1C). Mandibles dark reddish brown (Fig. 1C). Labio-maxillary complex dark brown. Legs with coxae, trochanters, femora and tibiae blackish brown; knees, extreme tibial apices and most tarsal segments reddish brown; basal tarsal segments and apical segment dark brown (Fig. 1A, C). Tegula dark brown. Fore wing slightly infumate (Fig. 1G).

**Head.** Striae on vertex, parascrobal areas, temples and genae generally strong and dense (Fig. 1C, E). Scrobes with their lateral carinate margins strongly converging both downwards and upwards, very slightly sinuate in the upper part (Fig. 1C). Supraclypeal area poorly defined, subquadrate, slightly convex in middle, its lower corners setose (Fig. 1C). Clypeus nearly flat, with strongly diverging lateral margins, densely setose, anterior tentorial pits indistinct; both upper and lower clypeal margins conspicuously emarginate; setae much longer than distance between dense piliferous punctures; clypeus surface apart from piliferous punctures with fine but conspicuous transverse striae, most visible on sides (Fig. 1C). Piliferous punctures on basal halves of mandibles less dense than those on the clypeus. Labio-maxillary complex protruding beyond clypeal margin to about 1.8× breadth of left mandible (Fig. 1C). Scape very slightly curved and widened distally, without any laminate expansion, its maximum width about 0.7× maximum width of flagellum (Fig. 1C); flagellum subfusiform, funicular segments 1–4 longer than wide (length of first segment 1.25–1.33× width), 5 subquadrate, 6–7 transverse; clava shorter than the three preceding segments (Fig. 1A).

**Mesosoma.** Pronotal collar in middle about 0.3× as long as mesoscutum. Both pronotal collar and mesoscutum regularly punctuate-reticulate, without smooth areas except for a narrow band at posterior margin of pronotal collar (Fig. 1E). Scutellum as coarsely sculptured as mesoscutum except lateral sloping sides with much coarser reticulation; scutellum from very slightly longer than wide to virtually as long as wide; lateral margins almost parallel; postero-lateral sided steep, slightly concave; terminal protruding process slightly (smaller female) to conspicuously emarginate (larger female) (Fig. 1E). Propodeum with carinate spiracular sulci and triangular median depression, the latter with a slightly indicated median carina; median propodeal area irregularly striate; spiracles narrow, reniform. Fore wing with parastigma and marginal vein slightly widened (Fig. 1G). Marginal vein 1.6–1.7× as long as stigmal vein; postmarginal vein about 2.8× as long as marginal vein, but apical end difficult to define.

**Metasoma.** Wider than long, much shorter and wider than mesosoma (Fig. 1A). Posterior margin of first tergite virtually straight; second gastral tergite 2.2–2.6× as

wide as long; anterior  $1/3$ – $1/4$  and anterior  $1/2$  of second and third tergites respectively with a transverse band of very shallow piliferous punctures.

**Male.** Differs from the female mainly as follows. Body length: 4 mm. Flagellum dark reddish brown, ventrally slightly lighter, claval apex darker (Fig. 1B). Tibiae dark brown, gradually becoming yellowish brown on apical third on outer surface and brownish yellow on most inner surface of fore tibia; tarsi entirely yellowish brown except dark brown arolia and claws (Fig. 1B, D). Longitudinal striae on upper face (between upper third of eye and scrobes) shallower and more irregular (Fig. 1D). Lateral margins of scrobes less strongly converging upwards (Fig. 1D). Setae on upper half of clypeus shorter (Fig. 1D), their length only slightly greater than distance between piliferous punctures. Anterior tentorial pits slightly to distinctly visible (Fig. 1D). Flagellum thicker (Fig. 1B); length of first funicular segment  $1.11$ – $1.15\times$  width. Scutellum longer, length about  $1.3\times$  maximum width, terminal protruding process only very slightly emarginate (Fig. 1F). Posterior margin of first tergite broadly emarginate. Piliferous punctures on gastral tergites two and three deeper. For additional information, see the description of the male in Bouček (1978).

**Hosts.** Unknown.

**Distribution.** Peoples' Republic of China. New genus and species to South Korea.

**Comments.** As stated in Darling (1983), *Euperilampus* differs from other perilampid genera mainly in the prepectus size, and in having a distinctly shorter marginal vein, compared to the postmarginal vein. There are currently three species of *Euperilampus* known from East Palaearctic: *E. scutellatus*, *E. sinensis* and *E. spina* (Noyes 2019). So far, the females of *E. sinensis* and *E. spina* have been unknown. Following Bouček's key (1978) we have identified the above listed specimens as being closest to *E. sinensis*. However, the almost indistinct anterior tentorial pits shed some doubt about the identification. Further clarification came after the examination of images of the male holotype of *E. sinensis*, kindly provided by Natalie Dale-Skey (NHMUK). The male specimens we examined differ from the holotype mainly in having (1) tentorial pits barely visible (*versus* conspicuous); (2) longitudinal striae on upper face (between scrobes and upper third of eye) shallow and irregular (*versus* stronger and regular); (3) clypeus aside from piliferous punctures slightly more sculptured (*versus* almost smooth); and (4) body setation very dense (*versus* sparser). The latter difference is probably just a conservation artifact, given the considerably older age of the holotype, in which the bare piliferous punctures indicate that many of the setae have fallen. The other differences are most probable due to intraspecific variability. However, they may indicate a new species, but without any females for comparison and without any evidence about the intraspecific variability of *E. sinensis*, its validity cannot be correctly assessed at present.

### *Perilampus* Latreille, 1809

Figs 2–18

*Perilampus* Latreille, 1809: 30. Type species: *Cynips italica* Fabricius, 1793; by subsequent designation of Westwood (1839: 67).

**Diagnosis.** Face without a horn. Scrobes laterally not carinate (European species) (e.g., Figs 2A, 3A, 6A, 10A, 12A, 14A). Head mostly without longitudinal striae (or these confined to upper face), sometimes with more or less distinct frontal keels (e.g., Figs 2A–C, 3B, 11B, 16B). Pronotum without elevations (e.g., Figs 2C, 4C, 7C, 10C). Prepectus variable but considerably longer than at least half the adjacent pronotal collar (e.g., Figs 2D, 4D, 8D, 11D, 14D, 18D). Scutellum at most slightly produced over propodeum, its posterior margin sometimes with protruding bilobed process (e.g., Figs 2C, 8C, 14C); marginal vein longer than postmarginal vein; petiole inconspicuous, sometimes with dorsal scale; ovipositor sheaths straight, not projecting, hidden under apical tergites.

**Key to European species of *Perilampus***

- 1 Prepectus poorly defined anteriorly (i.e., appearing virtually fused with pronotum) and very narrow (Figs 7D, 18D); male with scape only slightly widened distally (Figs 7B, 18B)..... **2**
- Prepectus well defined anteriorly (i.e., with a conspicuous suture between its anterior margin and pronotum) (e.g., Figs 2D, 4D, 6D, 8D, 11D, 13D, 16D), either narrow or wider; male with scape sometimes strongly widened distally (Figs 4B, 8B)..... **3**
- 2(1) Dorsal side of mesosoma virtually without metallic reflections (Fig. 18C); middle funicular segments strongly transverse (Fig. 18A); male with frontal keels distinct (Fig. 18B); male scape with ventral pores on slightly less than half scape length (Fig. 18B)..... ***P. tristis* Mayr**
- Dorsal side of mesosoma with distinct metallic reflections (Fig. 7C); middle funicular segments at most slightly transverse (Fig. 7A); male with frontal keels absent (Fig. 7B); male scape with ventral pores on slightly more than half scape length (Fig. 7B) ..... ***P. intermedius* Bouček**
- 3(1) Mesoscutum with small median tubercle (Fig. 3C); head and pronotum golden green, mesosoma blue (Fig. 3C); prepectus with anterior margin without any row of punctures (Fig. 3D); male scape only slightly widened (Fig. 3B)..... ***P. auratus* (Panzer)**
- Mesoscutum without any median tubercle (e.g., Figs 2C, 4C, 5C, 6C, 11C, 13C, 16C); body colour mostly different; male scape sometimes strongly widened distally (Figs 4B, 8B); prepectus sometimes with anterior margin with complete or incomplete row of punctures (e.g., Figs 5D, 9D, 13D, 15D).... **4**
- 4(3) Mesosoma narrow (i.e., laterally compressed), length at least 1.5× width, with bright golden green reflections (Fig. 10B); scutellum in dorsal view with double carina at posterior margin (Fig. 10B); face between clypeus and eye strongly and extensively striate (Fig. 10A); propodeum without two large smooth or superficially sculptured areas (Fig. 10D)..... ***P. micans* Dalman**
- Mesosoma wider, length at most 1.35× width (e.g., Figs 4C, 6C, 8C, 9C, 11C, 13C, 14C), rarely narrower (*P. cephalotes* – Fig. 5C; *P. maceki*; *P. poly-pori* – Fig. 15C), and then black, or with at most slight metallic reflections; scutellum in dorsal view without double carina (e.g., Figs 5C, 8C, 11C, 15C,

- 16C); face between clypeus and eye without strong extensive striation (e.g., Figs 5A, 6A, 8A, 9A, 11A, 13A, 15A), rarely with indication of striation along gena near mouth corner (Figs 4B, 9B); propodeum with two large smooth or superficially sculptured areas (Fig. 17D)..... **5**
- 5(4) Head in frontal view only slightly wider than high, supraclypeal area higher than wide (Fig. 6A, B); mesoscutum and scutellum with sparse punctures, interspaces larger than punctures (Fig. 6C); prepectus narrow, anterior margin without a row of punctures (Fig. 6D)..... ***P. chrysonotus* Förster**
- Head in frontal view distinctly wider than high, supraclypeal area at least slightly wider than high (e.g., Figs 8A, 9A, 11A, 13A, 16A); mesoscutum and scutellum with denser punctures, interspaces smaller than punctures (e.g., Figs 8C, 9C, 11C, 13C, 14C, 16C); prepectus sometimes wider and/or its anterior margin with a row of punctures (e.g., Figs 9D, 13D, 15D, 17C)..... **6**
- 6(5) Ocelli large, OOL only 1.4–1.5× diameter of lateral ocellus in female (Fig. 11C) and 1.0–1.1× in male (Fig. 11B); clypeal margin strongly convex (Fig. 11A, B); mesosoma black (Fig. 11C) ..... ***P. minutalis* Steffan**
- Ocelli smaller, OOL usually longer in both sexes (e.g., Figs 5D, 6C, 9C, 13C, 16C); if approaching the above (female of *P. noemi*), mesosoma with distinct metallic reflections (Fig. 14C)..... **7**
- 7(6) Female with funicular segments longer than wide; male with funicular segments quadrate; face between scrobes and eye smooth; head and mesosoma dark blue, metasoma black..... ***P. aquilus* Nikol'skaya**
- Female with most funicular segments quadrate to transverse (e.g., Figs 4A, 5A, 11A, 13A, 15A, 18A); male with funicular segments mostly transverse (e.g. Figs 2B, 11B, 16B, 18B); if proximal funicular segments longer than wide (female of *P. laevifrons*), than face between scrobes and eye at least slightly striate (Fig. 8A); body colour variable..... **8**
- 8(7) Head with frontal keels, these usually stronger in males (Figs 2A–C, 16A–C) .... **9**
- Head without frontal keels (e.g. Figs 13A–C, 14A–C), although sometimes more or less striate between scrobes and eye (Figs 4A, B, 8A, B) ..... **11**
- 9(8) Anterior margin of prepectus with complete row of punctures (Fig. 2D); female antenna black (Fig. 2A); ocelli large (Fig. 2C); dorsal side of mesosoma bright golden green (Fig. 2C)..... ***P. aeneus* (Rossius)**
- Anterior margin of prepectus without any row of punctures (Fig. 16D); female antenna entirely bright reddish except dark claval apex (Fig. 16A); ocelli smaller (Fig. 16C); dorsal side of mesosoma with pink, green or bluish green reflections (Fig. 16C) ..... **10**
- 10(9) Head and mesosoma with pink and greenish reflections; clypeus more strongly transverse ..... ***P. eximius* Masi**
- Head and mesosoma bluish green (Fig. 16A–C); clypeus less strongly transverse (Fig. 16A)..... ***P. ruficornis* (Fabricius)**
- 11(8) Body black, at most with very slight metallic reflections (Figs 5, 12, 15)..... **12**
- Body with more distinct, sometimes bright, metallic reflections (Figs 4, 8, 9, 13, 14, 17)..... **15**

- 12(11) Male only; mesosoma narrow (i.e., laterally compressed – cf. Fig. 10B), length 1.9–2.0× width; mesoscutum and scutellum with interspaces between punctures as wide as or wider than punctures ..... ***P. maceki* Bouček**  
 – Both sexes; mesosoma wider, length 1.2–1.5× width (e.g., Figs 4C, 5C, 12C, 14C, 15C); mesoscutum and scutellum with interspaces between punctures less than 1/3 the diameter of punctures (e.g., Figs 4C, 5C, 12C, 14C, 15C)..... **13**
- 13(12) Head width about 1.8× length in dorsal view; temples large and separated from eye by wide sulcus, also visible in frontal view of head (Fig. 5A, B); supraclypeal area distinctly transverse (Fig. 5A, B); mesoscutum and scutellum with interspaces between punctures relatively wide (Fig. 5C); mesosoma with dark metallic reflections (Fig. 5C) ..... ***P. cephalotes* Bouček**  
 – Head width hardly less than twice as broad as long; temples smaller, at most with very narrow sulcus near posterior eye margin, not visible in frontal view of head (Figs 12A, B, 15A, B); supraclypeal area only slightly transverse (Figs 12A, B, 15B); mesoscutum and scutellum with interspaces between punctures very narrow (Figs 12C, 15C); mesosoma virtually without metallic reflections (Figs 12C, 15C) ..... **14**
- 14(13) Mesosoma wide, length about 1.2× width (Fig. 12C); prepectus narrow, anterior margin with at most a row of tiny punctures (Fig. 12D).....  
 ..... ***P. neglectus* Bouček**  
 – Mesosoma narrower, length 1.4–1.5× width (Fig. 15C); prepectus wider, with an incomplete row of small punctures along anterior margin (Fig. 15D).....  
 ..... ***P. polypori* Bouček**
- 15(11) Frons between eye and scrobes without any striation, although sometimes strongly punctuate (Figs 13A, 14A, B, 17A)..... **16**  
 – Frons between eye and scrobes with at least some traces of striation among punctures, which are usually stronger in males (Figs 4A, B, 8A, B, 9A, B) . **18**
- 16(12) Mesosoma dorsally dark, with bronze-violet reflections (Fig. 14C); prepectus narrow, almost entirely punctuate, leaving only a small smooth central area (Fig. 14D)..... ***P. noemi* Nikol'skaya**  
 – Mesosoma dorsally bright green or blue (Figs 13C, 17D); prepectus wider, always with a larger smooth central area (Figs 13D, 17C) ..... **17**
- 17(16) Frons between eye and scrobes not strongly punctuate (Fig. 17A); supraclypeal area rather well defined (Fig. 17A); male eyes large (Fig. 17A); body green, except darker metasoma (Fig. 17)..... ***P. ruschkai* Hellen**  
 – Frons between eye and scrobes strongly punctuate (Fig. 13A, B); supraclypeal area poorly defined (Fig. 13A, B); male eyes smaller (Fig. 13B); body entirely blue (Fig. 13) ..... ***P. nitens* Walker**
- 18(15) Clypeal margin slightly (Fig. 4A) to strongly emarginate (Fig. 4B); metasoma with distinct metallic reflections; male face with large oval impressions at each side of supraclypeal area (Fig. 4B) ..... ***P. aureoviridis* Walker**  
 – Clypeal margin truncate (Figs 8A, B, 9A, B); metasoma black; male face without any impressions (Figs 8B, 9B)..... **19**

- 19(18) Supraclypeal area less transverse, less than 1.5× as wide as high, and less wide than clypeal area (Fig. 8A, B); male scape strongly widened distally (Fig. 8B); face blue-green (Fig. 8A, B)..... *P. laevifrons* Dalman
- Supraclypeal area transverse, at least 1.5× as wide as high, and almost as wide as clypeal area (Fig. 9A, B); male scape only slightly widened distally (Fig. 9B); face mostly dark green, with bronze reflections (Fig. 9A, B).....  
..... *P. masculinus* Bouček

***Perilampus aeneus* (Rossius, 1790)**

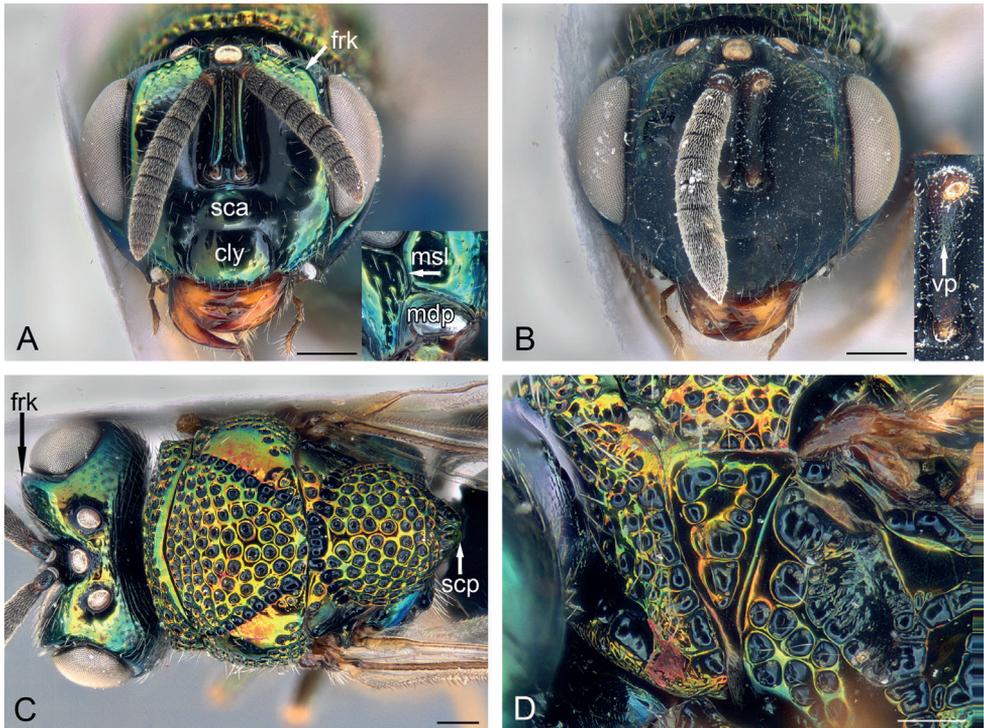
Fig. 2

*Chalcis aenea* Rossius, 1790 in Rossi (1790: 59).

*Cynips italica* Fabricius, 1793: 103. Synonymy by Steffan (1952: 73).

**Diagnosis.** Head and mesosoma except propodeum dorsally bright bronze green, head sometimes bluish; propodeum and metasoma blue green; female flagellum black. Body size: 2.50–5.00 mm. Head shape in frontal view (Fig. 2A, B) much wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 2A, B) truncate. Supraclypeal area (Fig. 2A, B) slightly transverse (less than 1.5× as wide as high), sides not defined; in male without oval lateral impressions. Malar sulcus versus anterior margin of malar depression shorter in female, about equal in male. Frontal keels (Fig. 2A, B) well developed. Face between scrobes and eye (Fig. 2A, B) almost smooth. Face between clypeus and eye (Fig. 2A, B) smooth. Lateral ocellus small (OOL at least twice the largest ocellar diameter). Funicular segments in female (Fig. 2A): most segments quadrate to transverse. Male scape (Fig. 2B) slightly widened distally; ventral pores on about half scape length. Mesosoma (Fig. 2C) not narrow (less than 1.4× as long as wide). Mesoscutum sculpture (Fig. 2C) without smooth median tubercle; interspaces smaller than punctures, smooth. Scutellum hind margin (Fig. 2C) without a double carina, with large bilobed protruding projection. Prepectus (Fig. 2D) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); all sides with punctures, leaving a large smooth central area.

**Material examined.** GREECE: 1♀, “Kerkini Lake N. Park, Promohonas, Procom site, Malaise, 23.V to 29.V.2007, 41°22'38.1"N, 23°21'58.8"E, Leg. Gordon Ramel” (MICO); 1♀, “Kerkini Lake N. Park, Promohonas, Procom site, Malaise, 22–28.VIII.2007, 41°22'38.1"N, 23°21'58.8"E, Leg. Gordon Ramel” (MICO); 1♀, “Kerkini lake; Malaise trap; Krousia Mts. Site, 12.IX to 18.IX.2007, 41°11'32.4"N, 23°03'59.5"E, Leg. Gordon Ramel” (MICO); 3♀♀, “Kerkini Lake N. Park, Kerkini, Krousia Mts site, Malaise tr., 13.VI-19.VI.2007, 41°11'32.4"N, 23°03'59.5"E, 190 m, Leg. Gordon Ramel” (MICO); 1♂, “Rizari, nr. Edessa, 40.792366°N, 22.107232°E”, “OP cherry, M2 – P1-2, 3.05.2019, leg. F. Karamaouna” (MICO).



**Figure 2.** *Perilampus aeneus* **A** female, head in frontal view (insert: detail of the genal area) **B** male, head in frontal view (insert: detail of scape) **C** female, head and mesosoma, dorsal view **D** female, prepectus.

ROMANIA: 1♀, “IS, Ciric-Izvor, 10.VIII.2006, leg. M.-D. Mitroiu” (MICO); 1♀, “Iași county, Valea lui David Natural Reserve, 02.viii.1998, sweep, M.-D. Mitroiu leg.” (MICO); 1♀, “Brăila county, Smârdan, 30.viii.2005, herbaceous vegetation along canal, Popovici O. & Moglan I.” (MICO); 1♀, 1♂, “Tulcea county, near Babadag, 15–17.v.2009, L. Fusu leg.” (MICO); 1♂, “Constanța county, Gura Dobrogei Natural Reserve, 12.v.2007, L. Fusu leg.” (MICO). TURKEY: 1♀, “Turkey: Kastamonu, Kastamonu area, 18.vii.1962, 1000 m”, “Guichard & Harvey, B.M. 1962-299”, “♀ *Perilampus aeneus* (Rossius), Z. Bouček det. 1972” (NHMUK); 1♂, “Turkey: Amasya, Alt. I. 400 Ft”, “6.6.1959, K.M. Guichard”, “♂ *Perilampus aeneus* (Rossius), Z. Bouček det. 1972” (NHMUK).

**Hosts.** Associated with Curculionidae (Coleoptera), Tenthredinidae (Hymenoptera), and Tortricidae (Lepidoptera); presumably a hyperparasitoid.

**Distribution.** Bosnia Herzegovina, Croatia, Czechia, Germany, Hungary, Italy, Moldova, Netherlands, Russia, Serbia, Slovakia, Spain, Sweden, Turkey, United Kingdom. New species to Greece and Romania.

**Comments.** *Perilampus aeneus* is somewhat similar to *P. eximius* and *P. ruficornis* due to its bright colour and presence of frontal keels. From both species it can be sepa-

rated by the sculpture of the prepectus, which has a complete (although sometimes shallow) row of punctures near its anterior margin (Fig. 2D), and the bigger ocelli (Fig. 2C). Furthermore, the female of *P. aeneus* can be separated from the females of the previously mentioned species by the colour of the flagellum, which is black and not reddish (Fig. 2A).

***Perilampus auratus* (Panzer, 1798)**

Fig. 3

*Cynips auratus* Panzer, 1798: table 1.

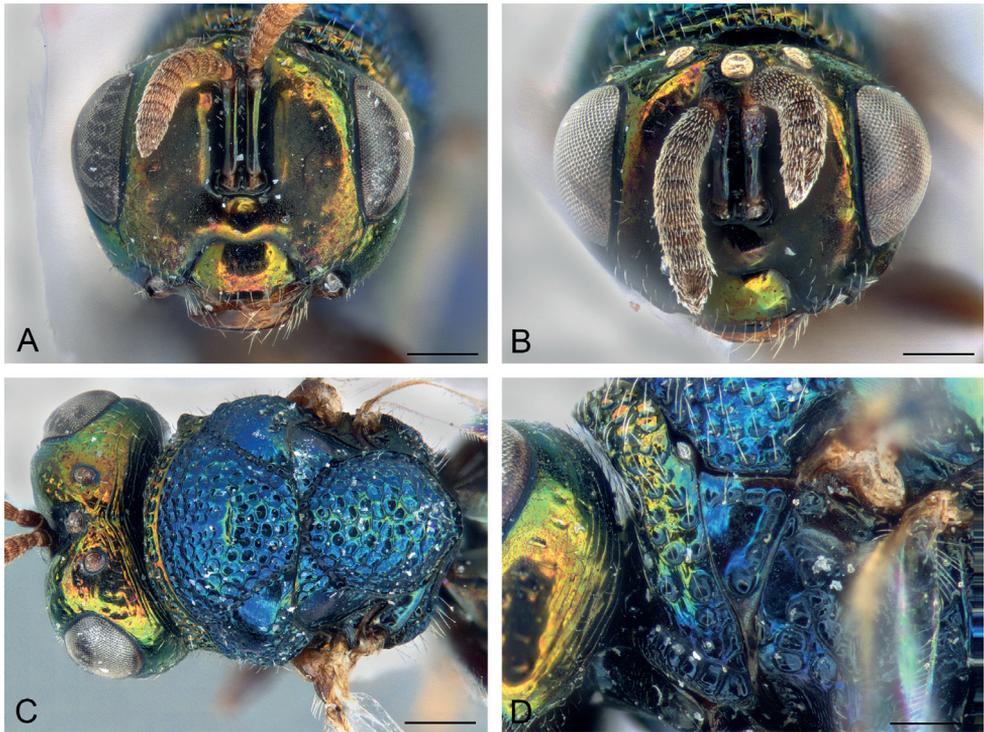
**Diagnosis.** Head and pronotum bronze gold, with slight green reflections; mesosoma blue green; metasoma green, with blue and bronze reflections; female flagellum orange, clava slightly darker. Body size: 1.75–5.00 mm. Head shape in frontal view (Fig. 3A, B), much wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temples. Clypeal margin (Fig. 3A, B) slightly emarginate to truncate. Supraclypeal area (Fig. 3A, B) slightly transverse (less than 1.5× as wide as high), sides not defined; in male without oval lateral impressions. Malar sulcus versus length of anterior margin of malar depression longer in female, about equal in male. Frontal keels (Fig. 3A, B) poorly developed. Face between scrobes and eye (Fig. 3A, B) almost smooth. Face between clypeus and eye (Fig. 3A, B) smooth. Lateral ocellus small (OOL at least twice the largest lateral ocellus diameter). Funicular segments in female (Fig. 3A): most segments transverse. Male scape (Fig. 3B) slightly widened distally; ventral pores on less than half scape length. Mesosoma (Fig. 3C) not narrow (less than 1.4× as long as wide). Mesoscutum sculpture (Fig. 3C) with smooth median tubercle; interspaces smaller than punctures, smooth. Scutellum hind margin (Fig. 3C) without a double carina, with small more or less bilobed protruding projection. Prepectus (Fig. 3D) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e., suture with pronotum very distinct); anterior margin without punctures.

**Material examined.** ROMANIA: 2♀♀, 1♂, “Iași county, Iași city, inside apartment, 25.i.2008, M.-D. Mitroiu leg.” (MICO). TURKEY: 1♀, 1♂, “Turkey: Ankara, Kavaklıdere, 6.viii.1960. 2,700”, “Guichard & Harvey, B.M. 1960-364”, “♀/♂ *Perilampus auratus* (Panz.), Z. Bouček det. 1972” (NHMUK).

**Hosts.** Associated with Crabronidae (Hymenoptera) and Tenthredinidae (Hymenoptera); presumably a hyperparasitoid.

**Distribution.** Croatia, Czechia, Germany, Hungary, Kazakhstan, Moldova, Netherlands, Russia, Slovakia, Sweden, Ukraine. New species to Romania and Turkey.

**Comments.** This is one of the easiest species to identify, being the only one with a median tubercle on the mesoscutum (Fig. 3C). Moreover, the colour pattern of this species seems unique at least among the European species.



**Figure 3.** *Perilampus auratus* **A** female, head in frontal view **B** male, head in frontal view **C** female, head and mesosoma, dorsal view **D** female, prepectus.

***Perilampus aureoviridis* Walker, 1833**

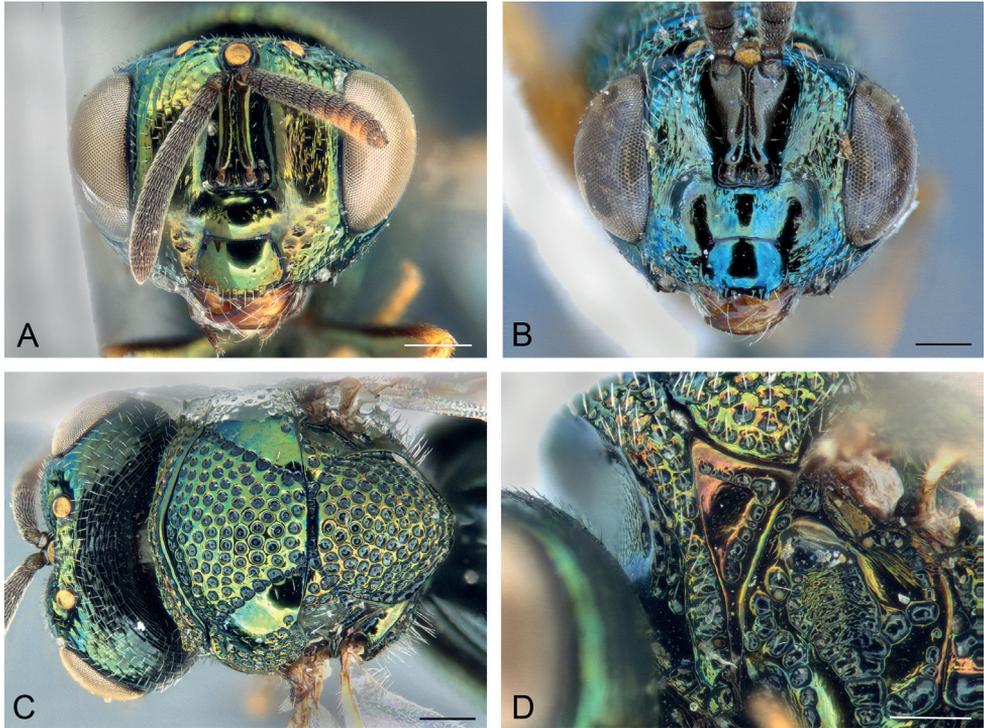
Fig. 4

*Perilampus aureoviridis* Walker, 1833: 142.

*Perilampus emarginatus* Thomson, 1876: 23. Synonymy by Bouček and Graham (1978: 72).

*Perilampus lacunosus* Nikol'skaya, 1952: 195. Synonymy by Bouček (1983: 116).

**Diagnosis.** Head and mesosoma green, with bronze gold reflections; metasoma blue green; female flagellum dark brown, ventrally reddish-brown. Body size: 2–3 mm. Head shape in frontal view (Fig. 4B) much wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 4B) slightly emarginate. Supraclypeal area (Fig. 4B) slightly transverse (less than 1.5× as wide as high), sides slightly defined; in male with oval lateral impressions (Fig. 4B). Malar sulcus versus anterior margin of malar depression shorter in female. Frontal keels (Fig. 4B) absent. Face between scrobes and eye (Fig. 4B) striate. Face between clypeus and eye (Fig. 4A, B) almost smooth. Lateral ocellus large (OOL less than twice the largest ocellar diameter). Funicular segments in female (Fig. 4A): most segments quadrate to transverse. Male scape (Fig. 4B) strongly widened distally,



**Figure 4.** *Perilampus aureoviridis* **A** female, head in frontal view **B** male, head in frontal view **C** female, head and mesosoma, dorsal view **D** female, prepectus.

ventral pores on nearly all scape length. Mesosoma (Fig. 4C) not narrow (less than 1.4× as long as wide). Mesoscutum sculpture (Fig. 4C) without smooth median tubercle; interspaces smaller than punctures, smooth. Scutellum hind margin (Fig. 4C) without a double carina, with small more or less bilobed protruding projection. Prepectus (Fig. 4D) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); anterior margin without punctures.

**Material examined.** MONGOLIA: 1♀, “Mongolia: Central aimak, 12 km S von Somon Bajanbaraat, 1380 m, Exp. Dr. Z. Kaszab, 1967”, “Nr. 918, 13.VII.1967”, “*Perilampus lacunosus* Nik. ♀, Bouček det. 1982” (NHMUK). ROMANIA: 1♀, “Iași county, Gorban, 29.viii.2005, Popovici O. & Moglan I.” (MICO).

**Hosts.** Unknown.

**Distribution.** Czechia, Germany, Mongolia, Netherlands, Russia, Slovakia, Sweden, Ukraine, United Kingdom. New species to Romania.

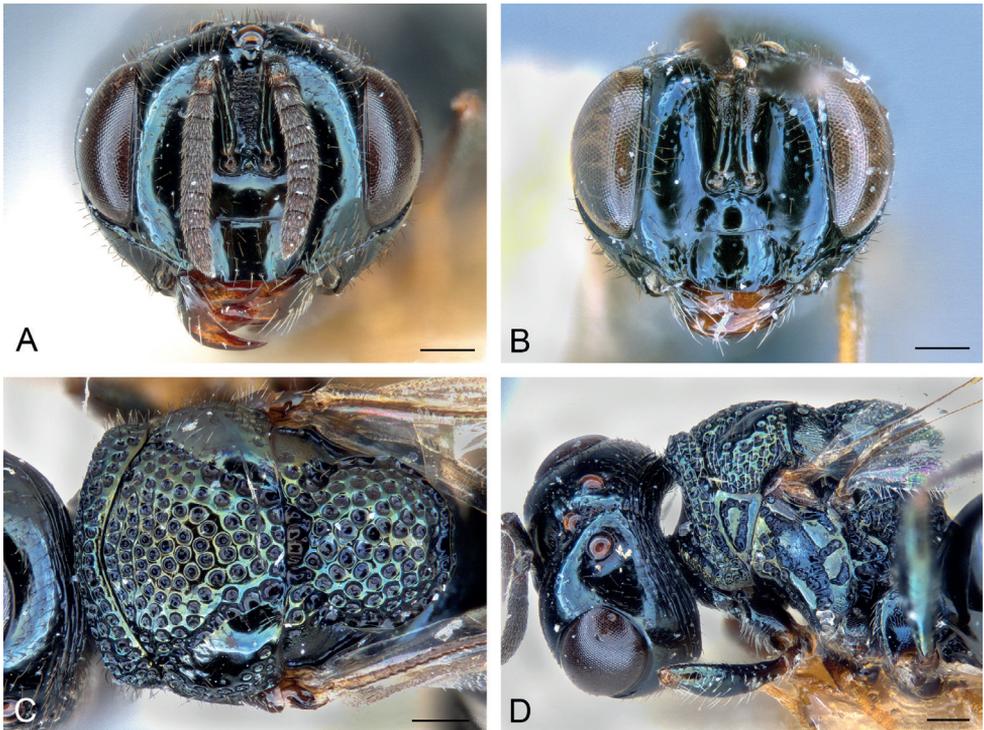
**Comments.** The female of *P. aureoviridis* can be confused to those of *P. laevifrons* and *P. masculinus*; it can be distinguished from those mainly by the larger interspaces on mesoscutum and scutellum (Fig. 4C) and the entirely green body, with slight golden or bronze reflections (Fig. 4A). The males of *P. aureoviridis* should be easily recognizable being the only ones with oval lateral impressions adjacent to the supraclypeal area and ventral pores on nearly all scape length (Fig. 4B).

*Perilampus cephalotes* Bouček, 1956

Fig. 5

*Perilampus cephalotes* Bouček, 1956: 89–90.

**Diagnosis.** Head and metasoma black, mesosoma dark green; female flagellum dark brown. Body size: 3.0–3.5 mm. Head shape in frontal view (Fig. 5A, B) much wider than high. Head in lateral view unusually long, with distinct sulcus separating posterior eye margin from temple (Fig. 5D). Clypeal margin (Fig. 5A, B) truncate. Supraclypeal area (Fig. 5A, B) transverse (more than 1.5× as wide as high), sides not defined; in male without oval lateral impressions. Malar sulcus versus anterior margin of malar depression shorter. Frontal keels (Fig. 5A, B) absent in female, poorly developed in male. Face between scrobes and eye (Fig. 5A, B) smooth. Face between clypeus and eye (Fig. 5A, B) smooth. Lateral ocellus small (OOL at least twice the largest ocellar diameter). Funicular segments in female (Fig. 5A): most segments transverse. Male scape (Fig. 5B) slightly widened distally; ventral pores on less than half scape length. Mesosoma (Fig. 5C) narrow (more than 1.4× as long as wide). Mesoscutum sculpture (Fig. 5C) without smooth median tubercle; interspaces smaller than punctures, smooth. Scutellum hind margin (Fig. 5C) without a double carina, without bilobed



**Figure 5.** *Perilampus cephalotes* **A** female, head in frontal view **B** male, head in frontal view **C** female, head and mesosoma, dorsal view **D** female, prepectus.

protruding projection. Prepectus (Fig. 5D) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); all sides with punctures, central area smooth.

**Material examined.** AUSTRIA: 1♂, “Austria inferior, Dürnstein, 1973. H. Aspöck, ex *Raphidia*”, “ex *Nemeritis* sp. in *Raphidia ratzeburgi* Brauer”, “*Perilampus cephalotes* Bčk. ♂, Z. Bouček det. 1973” (NHMUK). TURKEY: 1♀, “Prov. Bolu 75/03, Bolu-Abantsee, 950 m, 40°41'N, 31°25'E, 17.V.”, “Iran-Anatolien Expedition 1975, H. & U. Aspöck, H. & R. Rausch, P. Ressler”, “*Perilampus cephalotes* Bčk. ♀, Z. Bouček det. 1975” (NHMUK).

**Hosts.** *Nemeritis* sp. (Hymenoptera: Ichneumonidae) in *Puncha* (= *Raphidia*) *ratzeburgi* (Brauer) (Raphidioptera: Raphidiidae) – new biological association. The female specimen listed above was glued near the remains of a raphidiopteran larva, but without additional information.

**Distribution.** Slovakia. New to Austria and Turkey.

**Comments.** Easy to distinguish from all other species due to its unusually large head (Fig. 5D), with a conspicuous sulcus posterior to eye (Fig. 5A–C).

### *Perilampus chrysonotus* Förster, 1859

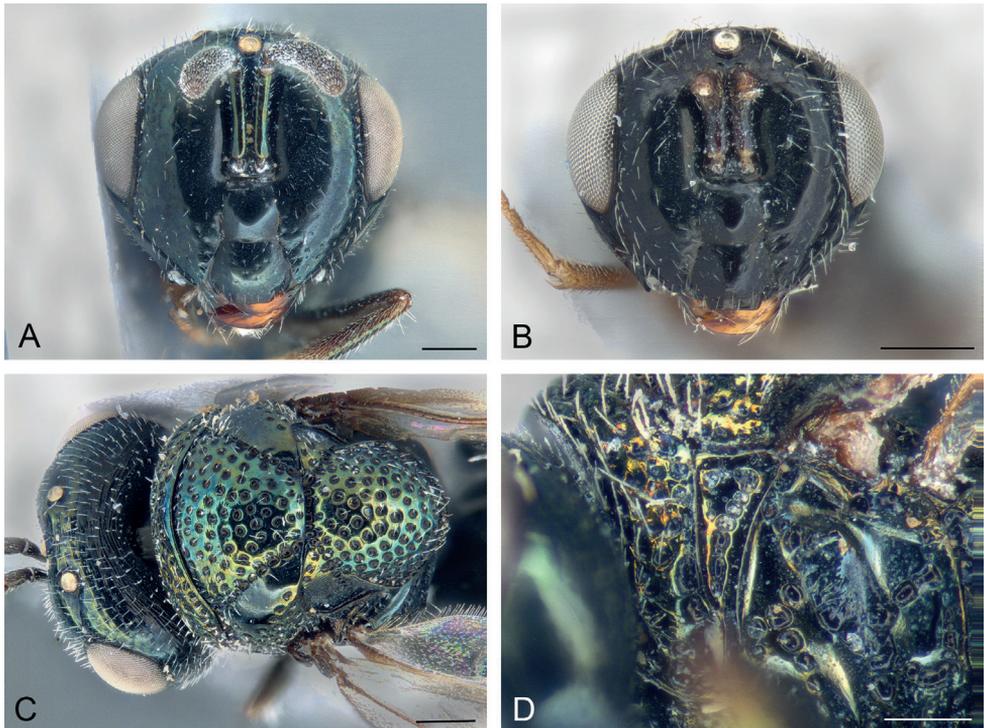
Fig. 6

*Perilampus chrysonotus* Förster, 1859: 120–121.

*Perilampus nigellus* Nikol'skaya, 1952: 194. Synonymy by Trjapitzin (1978: 54).

**Diagnosis.** Head and mesosoma except propodeum dorsally dark green to bronze, with slight golden reflections; or black, with bluish reflections mostly on dorsal side of mesosoma; propodeum and metasoma black; female flagellum dark brown, ventrally reddish-brown. Body size: 1.5–3.0 mm. Head shape in frontal view (Fig. 6A, B) only slightly wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 6A, B) truncate to slightly emarginate. Supraclypeal area (Fig. 6A, B) higher than wide, sides well defined; in male without oval lateral impressions. Malar sulcus versus anterior margin of malar depression about equal. Frontal keels (Fig. 6A, B) absent. Face between scrobes and eye (Fig. 6A, B) smooth. Face between clypeus and eye (Fig. 6A, B) smooth. Lateral ocellus small (OOL at least twice the largest ocellar diameter). Funicular segments in female: most segments quadrate to transverse. Male scape (Fig. 6B) slightly widened distally; ventral pores on less than half scape length. Mesosoma (Fig. 6C) not narrow (less than 1.4× as long as wide). Mesoscutum sculpture (Fig. 6C) without smooth median tubercle; interspaces as large as or larger than punctures, smooth. Scutellum hind margin (Fig. 6C) without a double carina, without any protruding projection. Prepectus (Fig. 6D) narrow, dorsal margin about as long as pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); all sides with punctures, leaving just a very small smooth central area.

**Material examined.** CZECHIA: 1♀, 1♂, “Moravia mer., Mohelno, Bouček lgt. / 6.7.57”, “*Perilampus chrysonotus* Först. ♀/♂, Det. Z. Bouček 1957” (NHMUK). ROMANIA: 1♀,



**Figure 6.** *Perilampus chrysonotus* **A** female, head in frontal view **B** male, head in frontal view **C** female, head and mesosoma, dorsal view **D** female, prepectus.

“Iași county, Breazu village, near Mârzești forest, steppic vegetation, 05.vii.2011, L. Fusu leg.” (MICO); 1♂, “Constanța county, Gura Dobrogei Natural Reserve, 12.v.2007, L. Fusu leg.” (MICO). SWEDEN: 1♀, “Sk. Åhus, 8/8 1967, K.-J. Hedqvist”, “Standing over: *Perilampus maceki* in Hedqvist coll., NHMUK(E) 2011-27” (NHMUK).

**Hosts.** Associated with Lymantriidae (Lepidoptera); hyperparasitoid of Ichneumonidae (Hymenoptera).

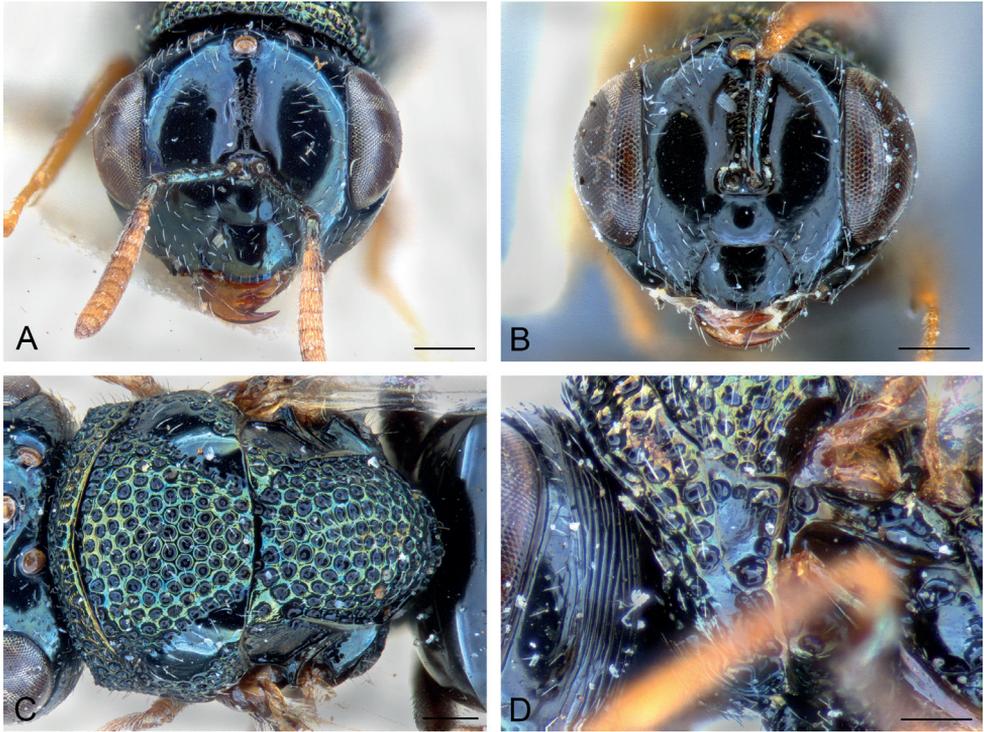
**Distribution.** Czechia, France, Germany, Hungary, Mongolia, Netherlands, Russia, Serbia, Slovakia, Sweden, Ukraine. New species to Romania.

**Comments.** This is one of the two European species having a high head in both sexes (Fig. 6A, B). The other species with a similar head is *P. intermedius* (Fig. 7), which greatly differs from *P. chrysonotus* mainly in having the prepectus poorly defined anteriorly (i.e., appearing virtually fused with pronotum) and very narrow (Fig. 7D).

***Perilampus intermedius* Bouček, 1956**

Fig. 7

*Perilampus intermedius* Bouček, 1956: 90–91.



**Figure 7.** *Perilampus intermedius* **A** female, head in frontal view **B** male, head in frontal view **C** female, head and mesosoma, dorsal view **D** male, prepectus.

**Diagnosis.** Head, lateral sides of mesosoma and metasoma black, dorsal side of mesosoma mainly dark olive green, with slight bronze reflections; female flagellum reddish brown. Body size: 2.2–2.7 mm. Head shape in frontal view (Fig. 7A, B) slightly wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 7A, B) convex. Supraclypeal area (Fig. 7A, B) transverse (about 1.5× as wide as high), sides not defined; in male without oval lateral impressions. Malar sulcus versus anterior margin of malar depression shorter. Frontal keels (Fig. 7A, B) absent in both sexes. Face between scrobes and eye (Fig. 7A, B) smooth. Face between clypeus and eye (Fig. 7A, B) smooth. Lateral ocellus small (OOL at least twice the largest ocellar diameter). Funicular segments in female (Fig. 7A): most segments quadrate to transverse. Male scape (Fig. 7B) slightly widened distally; ventral pores on half scape length. Mesosoma (Fig. 7C) not narrow (less than 1.4× as long as wide). Mesoscutum sculpture (Fig. 7C) without smooth median tubercle; interspaces smaller than punctures, smooth. Scutellum hind margin (Fig. 7C) without a double carina, without bilobed protruding projection. Prepectus (Fig. 7D) narrow, dorsal margin shorter than pronotal collar; poorly defined anteriorly (i.e. suture with pronotum indistinct); anterior margin without punctures.

**Material examined.** MONGOLIA: 1♀, “Suchebaator aimak, 44 km SSW von Baruum urt, 1050 m, Exp. Dr. Z. Kaszab, 1965”, “Nr. 349, 2–3.VIII.1965”, “*Perilampus intermedius* Bčk., Bouček det. 1982” (NHMUK); 1♂, “Bajanchongor aimak, Oase Echimgol, 90 km NO von Grenzposten Caganbulag, 950 m, Exp. Dr. Z. Kaszab, 1967”, “Nr. 855, 27–28.VI.1967”, *Perilampus intermedius* Bčk., Bouček det. 1982” (NHMUK).

**Hosts.** Unknown.

**Distribution.** Croatia, Finland, Germany, Mongolia, Slovakia.

**Comments.** This species is closest to *P. tristis* (Fig. 18), based on the narrow prepectus, which is completely fused with the pronotum. The main features to distinguish both sexes of the two species are given in the key.

### *Perilampus laevifrons* Dalman, 1822

Fig. 8

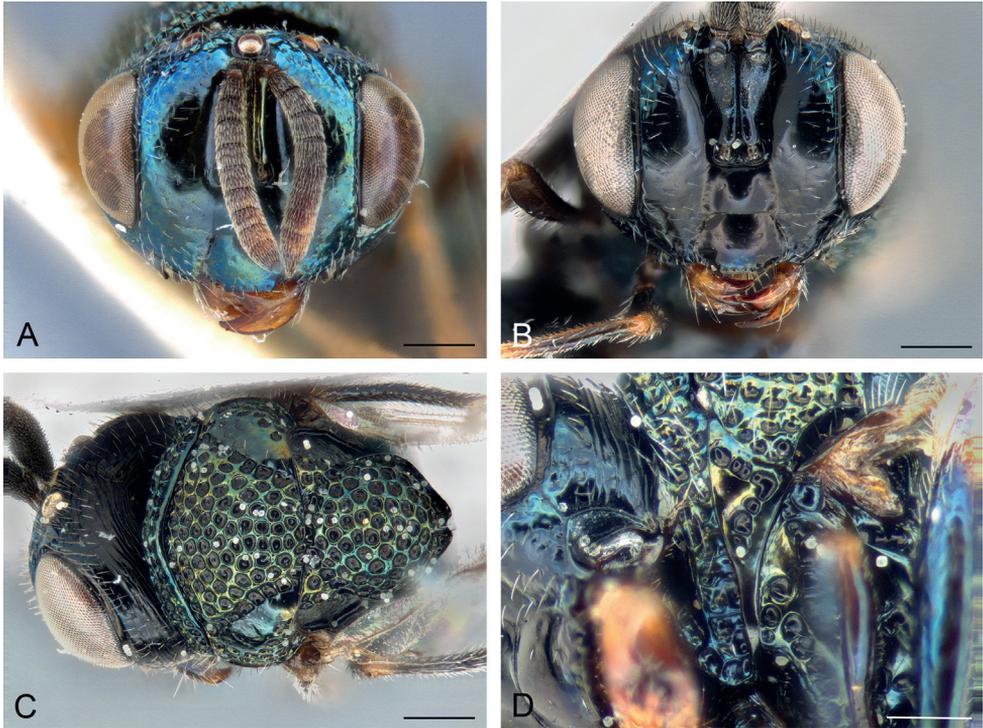
*Perilampus laevifrons* Dalman, 1822: 400–401.

*Perilampus inaequalis* Förster, 1859: 122. Synonymy by Mayr (1905: 569).

*Perilampus nigriventris* Förster, 1859: 119. Synonymy by Mayr (1905: 569).

**Diagnosis.** Head black, dorsally with blue green reflections; mesosoma dorsally green with golden or bronze reflections; female flagellum brown. Body size: 1.75–3.00 mm. Head shape in frontal view (Fig. 8B) much wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 8B) truncate. Supraclypeal area (Fig. 8B) slightly transverse (less than 1.5× as wide as high), sides well defined; in male without oval lateral impressions. Malar sulcus versus anterior margin of malar depression shorter. Frontal keels (Fig. 8B) absent. Face between scrobes and eye (Fig. 8B) striate (more strongly so in male). Face between clypeus and eye (Fig. 8A, B) almost smooth. Lateral ocellus small (OOL at least twice the largest ocellar diameter). Funicular segments in female (Fig. 8A): most segments quadrate to transverse. Male scape (Fig. 8B) strongly widened distally; ventral pores on more than half scape length. Mesosoma (Fig. 8C) not narrow (less than 1.4× as long as wide). Mesoscutum sculpture (Fig. 8C) without smooth median tubercle; interspaces smaller than punctures, rugose. Scutellum hind margin (Fig. 8C) without a double carina, with large bilobed protruding projection. Prepectus (Fig. 8D) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); anterior margin without punctures.

**Material examined.** GREECE: 1♂, “Attiki, Salamina, Patris hill, 37.970°N, 23.489°E, xi.2020, By hand Leg. Koutsoukos, V.” (MICO). ITALY: 1♂, “Italia (Ferrara): Comacchio, Lido d. Naz., 19.8./11.xi.83. Pantaleoni”, “ex planidium fixed to *Chrysopa viridana* and transferred on *Anisochrysa flavifrons*”, “*Perilampus laevifrons* Dalm., Bouček det. 1983” (NHMUK). MONGOLIA: 1♀, “Mongolia: Central aimak, Tosgoni oboo, 5–10 km N von Ulaan-Baator, 1500–1700 m, Exp. Dr. Z. Kaszab, 1967”, “Nr. 926, 19–20.–23–24.VII.1967”, *Perilampus laevifrons* Dalm., Bouček det. 1982”



**Figure 8.** *Perilampus laevifrons* **A** female, head in frontal view **B** male, head in frontal view **C** male, head and mesosoma, dorsal view **D** male, prepectus.

(NHMUK). ROMANIA: 1♀, “Cornereva, Caraş-Severin, 44.98325°N, 22.49011°E, 617 m, 16.07.2015, Popovici & Trufin” (MICO); 1♀, “Tulcea county, Măcin National Parc, meadow, Malaise trap, 23–25.vii.2004, M.-D. Mitroiu leg.” (MICO).

**Hosts.** Associated with Tortricidae (Lepidoptera); hyperparasitoid of Braconidae and Ichneumonidae (Hymenoptera). According to Steffan (1952) a primary parasitoid of Chrysopidae (Neuroptera). This seems to be confirmed by the information above, the species being reared from *Pseudomallada* (= *Anisochrysa*) *flavifrons* (Brauer) (Neuroptera: Chrysopidae) – new biological association.

**Distribution.** Belarus, Bulgaria, Czechia, France, Germany, Hungary, Italy, Moldova, Mongolia, Netherlands, North Africa, Russia, Serbia, Slovakia, Sweden, Ukraine, United Kingdom. New species to Greece and Romania.

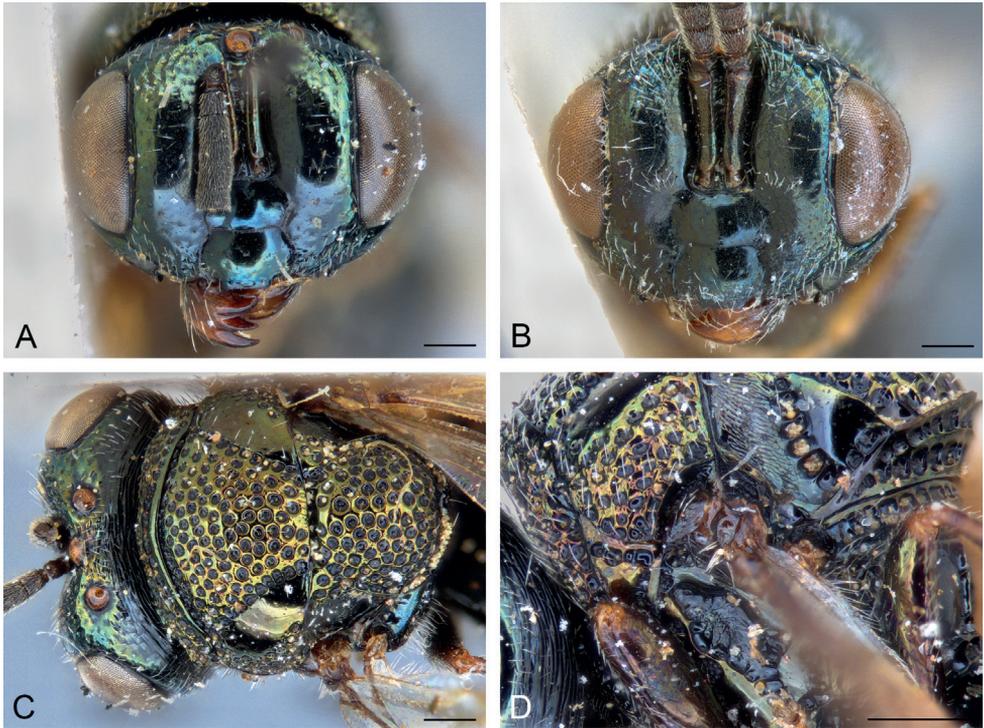
**Comments.** The female of *P. laevifrons* can be confused to those of *P. aquilus*, *P. masculinus* (Fig. 9) and *P. aureoviridis* (Fig. 4). It differs from females of *P. aquilus* in having at least the distal funicular segments quadrate to transverse (Fig. 8A) and the face at least slightly striate between scobes and eye (face smooth in *P. aquilus* according to Nikol'skaya (1952)) (Fig. 8A, B); from females of *P. masculinus* mainly in having the supraclypeal area less than 1.5× as wide as high and narrower than the clypeal area (Fig. 8A, B); for differences between *P. laevifrons* and *P. aureoviridis*, see the comments on the latter species.

*Perilampus masculinus* Bouček, 1956

Fig. 9

*Perilampus masculinus* Bouček, 1956: 91–92.

**Diagnosis.** Head black, upper face and vertex with blue green or bronze green reflections; mesosoma dorsally bronze green, occasionally dark bronze or with slight violet reflections; female flagellum brown. Body size: 2.50–3.25 mm. Head shape in frontal view (Fig. 9A, B) much wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 9A, B) truncate. Supraclypeal area (Fig. 9A, B) strongly transverse (at least 1.5× as wide as high), sides well defined; in male without oval lateral impressions. Malar sulcus versus anterior margin of malar depression shorter. Frontal keels (Fig. 9A, B) absent. Face between scrobes and eye (Fig. 9A, B) slightly striate. Face between clypeus and eye (Fig. 9A, B) slightly striate near anterior margin of malar depression. Lateral ocellus large (OOL less than twice the largest ocellar diameter). Funicular segments in female (Fig. 9A): most segments quadrate to transverse. Male scape



**Figure 9.** *Perilampus masculinus* **A** female paratype, head in frontal view **B** male paratype, head in frontal view **C** female paratype, head and mesosoma, dorsal view **D** female paratype, prepectus.

(Fig. 9B) slightly widened distally, ventral pores on more than half scape length. Mesosoma (Fig. 9C) not narrow (less than 1.4× as long as wide). Mesoscutum sculpture (Fig. 9C) without smooth median tubercle; interspaces smaller than punctures, rugose. Scutellum hind margin (Fig. 9C) without a double carina, with large bilobed protruding projection. Prepectus (Fig. 9D) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); anterior margin without punctures.

**Material examined.** SLOVAKIA: 1♀ paratype, “Somotor. Slov. or. 28. VI. 48. Bouček”, “Paratype”, “*Perilampus masculinus* Bčk. ♀, Det. Bouček, 1955”, “Pres by Com Inst Ent, B.M. 1957-682” (NHMUK); 1♂ paratype, “V. Kevežd, Slov. or. 28. VI. 48. Bouček”, “Paratype”, “*Perilampus masculinus* Bčk. ♂, Det. Bouček, 1955”, “Pres by Com Inst Ent, B.M. 1957-682” (NHMUK). SWEDEN: 1♀, “Upl. Vallentuna 13/7 1961, K-J Hedvist”, “Standing over: *Perilampus aquilus* in Hedqvist coll., NHMUK(E) 2011-27” (NHMUK).

**Hosts.** Unknown.

**Distribution.** Czechia, Kazakhstan, Moldova, Russia, Slovakia, Ukraine. New species to Sweden.

**Comments.** The females can be confused to those of *P. laevifrons* (Fig. 8) and *P. aureoviridis* (Fig. 4); see comments on those species.

### *Perilampus micans* Dalman, 1820

Fig. 10

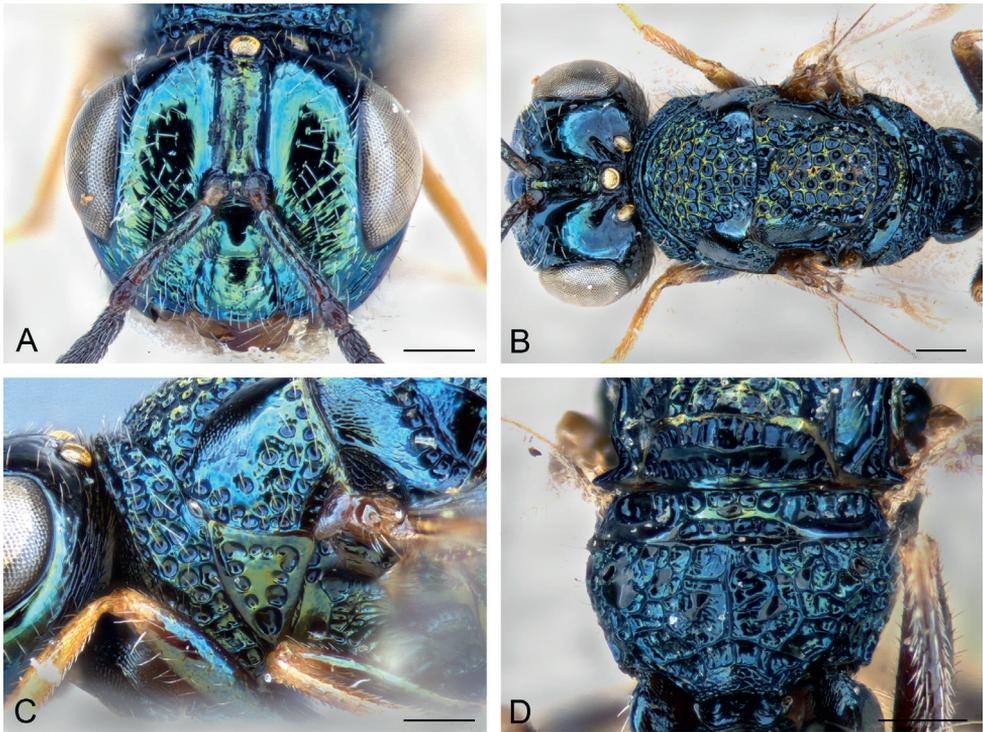
*Perilampus micans* Dalman, 1820: 173.

*Perilampus auriceps* Walker, 1833: 142. Synonymy by Kerrich (1958: 77).

*Perilampus femoralis* Walker, 1833: 142. Synonymy by Darling (1996: 119).

*Chrysolampus lycti* Crawford, 1914: 75. Synonymy by Darling (1986: 918).

**Diagnosis.** Head green or blue-green; mesosoma dorsally blackish with slight blue-green reflections; metasoma black; female flagellum dark brown. Body size: 2.0–3.5 mm. Head shape in frontal view (Fig. 10A) much wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 10A) truncate. Supraclypeal area (Fig. 10A) quadrate, sides well defined; in male without oval lateral impressions. Malar sulcus versus anterior margin of malar depression slightly shorter. Frontal keels (Fig. 10A) not developed. Face between scrobes and eye (Fig. 10A) almost smooth. Face between clypeus and eye (Fig. 10A) strongly striate. Lateral ocellus small (OOL at least twice the largest ocellar diameter). Funicular segments in female: most segments quadrate to transverse. Mesosoma (Fig. 10B) narrow (more than 1.4× as long as wide). Mesoscutum sculpture (Fig. 10B) without smooth median tubercle; interspaces smaller than punctures, carinate. Scutellum hind margin (Fig. 10B) with a double carina, without bilobed



**Figure 10.** *Perilampus micans* **A** female, head in frontal view **B** female, head and mesosoma, dorsal view **C** female, prepectus **D** female, propodeum.

protruding projection. Prepectus (Fig. 10C) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); all sides with punctures, leaving a smooth central area.

**Material examined.** GERMANY: 1♀, “Germany, Munich, VI.1922, Prof. Eseheneiel”, “Ex *Lyctus linearis*”, “Pres. by Imp. Inst. Ent. Brit. Mus. 1933-190”, “*Perilampus micans* Dlm., Ch. Ferrière det.” (NHMUK). SWEDEN: 1♀, “Sm., Hornsö, Långemåla, 9/7 1941, O. Lundblad”, “Standing over *Perilampus micans* in Hedqvist coll., NHMUK(E) 2011-27” (NHMUK).

**Hosts.** Associated with Lyctidae (Coleoptera), Oecophoridae, Pyralidae (Lepidoptera); hyperparasitoid of Braconidae (Hymenoptera). According to Bouček, the “*micans*-group [contains] primary parasites of xylophagous beetles” (Bouček 1956: 89).

**Distribution.** Armenia, Croatia, France, Germany, Hungary, India, Indonesia, Malaysia, Slovakia, Sweden, United Kingdom, United States of America.

**Comments.** This is one of the most distinct species of *Perilampus* due to the strongly striate lower face (Fig. 10A), the narrow mesosoma (Fig. 10B), the double carina at the posterior margin of scutellum (Fig. 10D), and the completely reticulate propodeum (Fig. 10D).

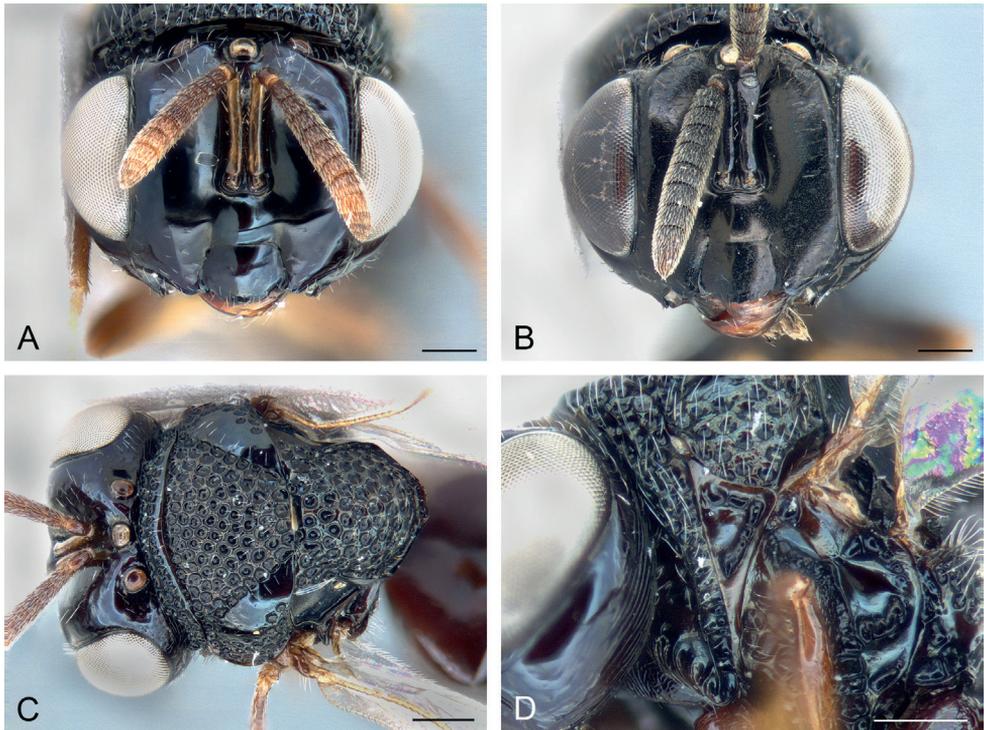
*Perilampus minutalis* Steffan, 1952

Fig. 11

*Perilampus minutalis* Steffan, 1952: 74.

**Diagnosis.** Head, mesosoma and metasoma black; female flagellum dark brown, ventrally lighter. Body size: 1.8–2.7 mm. Head shape in frontal view (Fig. 11A, B) much wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 11A, B) convex. Supraclypeal area (Fig. 11A, B) slightly transverse (less than 1.5× as wide as high), sides well defined; in male without oval lateral impressions. Malar sulcus versus anterior margin of malar depression shorter. Frontal keels (Fig. 11A, B) poorly developed (stronger in male). Face between scrobes and eye (Fig. 11A, B) smooth. Face between clypeus and eye (Fig. 11A, B) smooth. Lateral ocellus large (OOL less than twice the largest ocellar diameter). Funicular segments in female (Fig. 11A): most segments quadrate to transverse. Male scape (Fig. 11B) slightly widened distally; ventral pores on less than half scape length. Mesosoma (Fig. 11C) not narrow (less than 1.4× as long as wide). Mesoscutum sculpture (Fig. 11C) without smooth median tubercle; interspaces smaller than punctures, almost smooth. Scutellum hind margin (Fig. 11C) without a double carina, with small hardly bilobed protruding projection. Prepectus (Fig. 11D) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); anterior margin without punctures.

**Material examined.** FRANCE: 1♀, 1♂, “France, Var: St. Tropez, 16.VI.80 Bouček”, “♀/♂ *Perilampus minutalis* Steff., det. Z. Bouček, 1981” (NHMUK). GREECE: 7♀♀, “Kerkini Lake N. Park, Kerkini, Krousia Mts site, Malaise tr. 13.VI-19.VI.2007, 41°11'32.4"N, 23°03'59.5"E, 190 m, Leg. Gordon Ramel” (MICO); 3♀♀, “Kerkini Lake N. Park, Kerkini, Krousia Mts site, Malaise tr. 27.VI-03.VII.2007, 41°11'32.4"N, 23°03'59.5"E, 190 m, Leg. Gordon Ramel” (MICO); 7♀♀, “Kerkini Lake N. Park, Kerkini, Krousia Mts site, Malaise tr. 20.VI-26.VI.2007, 41°11'32.4"N, 23°03'59.5"E, 190 m, Leg. Gordon Ramel” (MICO); 2♀♀, “Kerkini lake, Malaise trap, Krousia Mts. Site, 04.VII to 10.VII.2007, 41°11'32.4"N, 23°03'59.5"E, Leg. Gordon Ramel” (MICO); 1♀, “Kerkini lake, Malaise trap, Ecotourism Site, Lithotopos, 29.VIII-04. IX.2006, 41°18'15.6"N, 23°13'01.2"E, Leg. Gordon Ramel” (MICO); 1♀, “Kerkini Lake N. Park, Kerkini, Krousia Mts site, Malaise tr. 06.VI-12.VI.2007, 41°11'32.4"N, 23°03'59.5"E, 190 m, Leg. Gordon Ramel” (MICO); 1♀, “Kerkini lake; Malaise trap; Krousia Mts. Site, 12.IX to 18.IX.2007, 41°11'32.4"N, 23°03'59.5"E, Leg. Gordon Ramel” (MICO); 1♀, 1♂, “Kerkini Lake N. Park, Promohonas, Procom site, Malaise, 22–28.VIII.2007, 41°22'38.1"N, 23°21'58.8"E, Leg. Gordon Ramel” (MICO); 1♀, “Kerkini Lake N. Park, Promohonas, Procom site, Malaise, 20.VI to 26.VI.2007, 41°22'38.1"N, 23°21'58.8"E, Leg. Gordon Ramel” (MICO); 6♂♂, “Attiki, Salamina, Ano Vasilika, 37.98822°N, 23.49196°E, ix.2020, By hand Leg. Koutsoukos, V.” (MICO); 3♂♂, “Attiki, Salamina, Ano Vasilika, 37.98822°N, 23.49196°E,



**Figure 11.** *Perilampus minutalis* **A** female, head in frontal view **B** male, head in frontal view **C** female, head and mesosoma, dorsal view **D** female, prepectus.

14.ix.2020, By hand Leg. Koutsoukos, V.” (MICO) ; 1♂, “Attiki, Salamina, Ano Vasiliika, 37.98822°N, 23.49196°E, 14.ix.2020, By hand Leg. Koutsoukos, V.” (ZMUA).

**Hosts.** Unknown.

**Distribution.** Croatia, France, Germany, Italy, Moldova, Spain. New species to Greece.

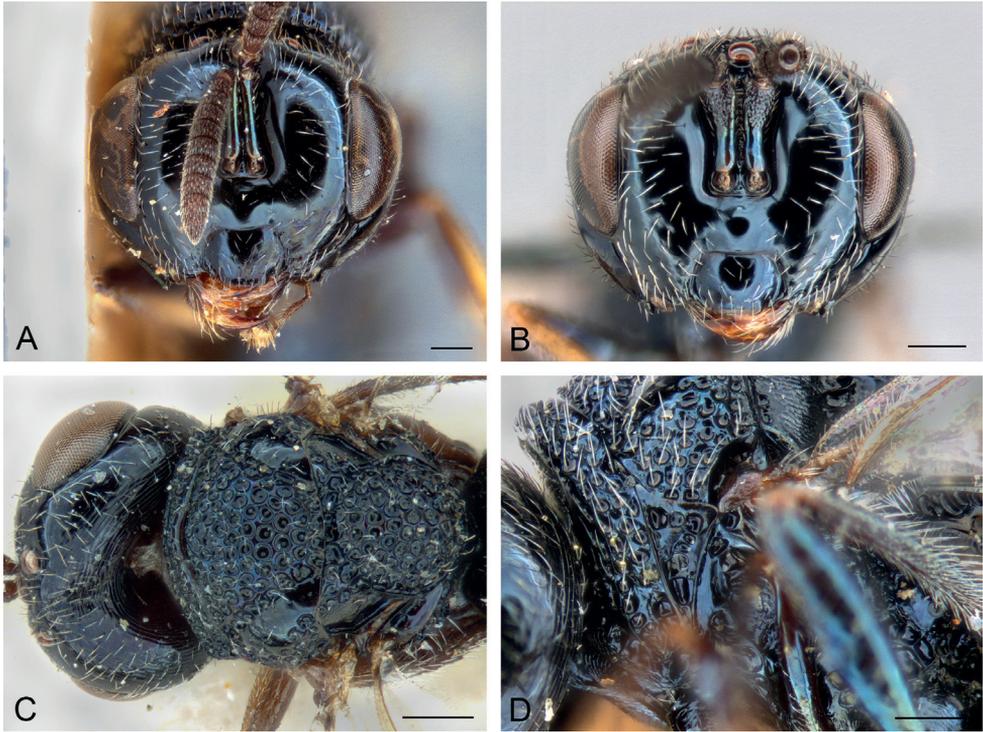
**Comments.** This species is similar to *P. neglectus* (Fig. 12) and *P. noemi* (Fig. 14). From the first species it can be separated by the larger ocelli in both sexes, while from the latter mainly by the body colour (without metallic reflections) and larger ocelli, at least in male.

### *Perilampus neglectus* Bouček, 1956

Fig. 12

*Perilampus neglectus* Bouček, 1956: 92–93.

**Diagnosis.** Head, mesosoma and metasoma black; female flagellum dark brown. Body size: 2.0–2.6 mm. Head shape in frontal view (Fig. 12A, B) much wider than high.



**Figure 12.** *Perilampus neglectus* **A** female, head in frontal view **B** male, head in frontal view **C** female paratype, head and mesosoma, dorsal view **D** female, prepectus.

Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 12A, B) truncate to very slightly convex. Supraclypeal area (Fig. 12A, B) slightly transverse (less than 1.5× as wide as high), sides slightly defined; in male without oval lateral impressions. Malar sulcus versus anterior margin of malar depression shorter. Frontal keels (Fig. 12A, B) absent. Face between scrobes and eye (Fig. 12A, B) smooth. Face between clypeus and eye (Fig. 12A, B) smooth. Lateral ocellus small (OOL at least twice the largest ocellar diameter). Funicular segments in female (Fig. 12A): most segments quadrate to transverse. Male scape (Fig. 12B) slightly widened distally; ventral pores on half scape length. Mesosoma (Fig. 12C) not narrow (less than 1.4× as long as wide). Mesoscutum sculpture (Fig. 12C) without smooth median tubercle; interspaces smaller than punctures, smooth. Scutellum hind margin (Fig. 12C) without a double carina, with small hardly bilobed protruding projection. Prepectus (Fig. 12D) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); anterior margin at most with extremely small punctures.

**Material examined.** GREECE: 1♀, “Kerkini Lake N. Park, Promohonas, Procom site, Malaise, 13.VI to 19.VI.2007, 41°22'38.1"N, 23°21'58.8"E, Leg. Gordon Ramel” (MICO). MOLDOVA: 1♀, “Onițcani MCCP, 7.VII.69, Talitzki [in Russian]”, Yp.

malinellus 44 (18.VI.69 – N. armillata”, “Presented to NHMUK 1974, Z. Bouček”, “Perilampus neglectus Bčk. ♀, Z. Bouček det. 1973”. SLOVAKIA: 1 ♀ Paratype, “Slovakia or. Turňa nad Bodv., Bouček”, “Paratype”, “Perilampus neglectus ♀, n, Bčk., Det. Z. Bouček 1955” (NHMUK).

**Hosts.** Associated with Gelechiidae, Lymantriidae, Pyralidae, Tortricidae (Lepidoptera); hyperparasitoid of Braconidae (Hymenoptera).

**Distribution.** Austria, Croatia, Czechia, Germany, Italy, Moldova, Romania, Slovakia. New species to Greece.

**Comments.** For differences from similar species see *P. minutalis* (Fig. 11). The male was not described by Bouček (1956), or by subsequent authors. It is very similar to the female in most characters (see the diagnosis above), but differs mainly in having darker and thicker antennae, including the scape, with ventral pores visible on half the scape length (Fig. 12B).

### *Perilampus nitens* Walker, 1834

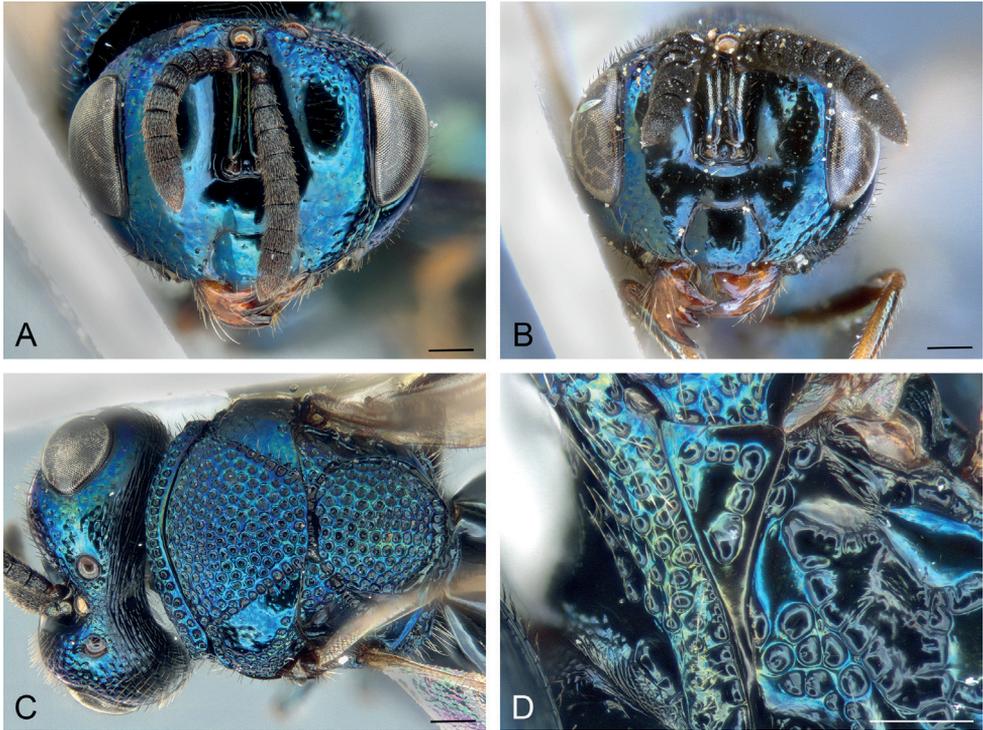
Fig. 13

*Perilampus nitens* Walker, 1834: 163.

*Perilampus antennatus* Walker, 1834: 163. Synonymy by Mayr (1905: 566).

*Perilampus selectus* Walker, 1874: 313. Synonymy by Kerrich (1958: 77).

**Diagnosis.** Head and mesosoma blue, with slight green or bronze reflections; metasoma bluish-black; female flagellum brownish-black, partly lighter ventrally. Body size: 3–5 mm. Head shape in frontal view (Fig. 13A, B) much wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 13A, B) emarginate. Supraclypeal area (Fig. 13A, B) slightly transverse (less than 1.5× as wide as high), sides not defined; in males without oval lateral impressions. Malar sulcus versus anterior margin of malar depression about equal in female. Frontal keels (Fig. 13A, B) absent. Face between scrobes and eye (Fig. 13A, B) smooth. Face between clypeus and eye (Fig. 13A, B) smooth. Lateral ocellus small (OOL at least twice the largest ocellar diameter). Funicular segments in female (Fig. 13A): most segments quadrate to transverse. Male scape (Fig. 13B) slightly widened distally, ventral pores on more than half scape length. Mesosoma (Fig. 13C) not narrow (less than 1.4× as long as wide). Mesoscutum sculpture (Fig. 13C) without smooth median tubercle; interspaces smaller than punctures, smooth. Scutellum hind margin (Fig. 13C) without a double carina, with small hardly bilobed protruding projection. Prepectus (Fig. 13D) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); all sides with punctures (anterior side sometimes with much smaller punctures or partly interrupted), leaving a large smooth central area.



**Figure 13.** *Perilampus nitens* **A** female, head in frontal view **B** male, head in frontal view **C** female, head and mesosoma, dorsal view **D** female, prepectus.

**Material examined.** FRANCE: 2♀, “Ventoux: Col de Perrache (4) 8. 8. 1988”, “fts descr. of chlorinus Fö.”, “*Perilampus nitens* Wlk. ♀, Bouček det. 1989” (NHMUK); 1♂, “Mont Ventoux, Col de Perrache (2) 22. 7. 1978”, “*Perilampus nitens* Wlk. ♂, Bouček det. 2001” (NHMUK). ROMANIA: 1♀, 1♂, “Iași county, Bârnova forest, Poiana Ciobanului, 21.vi.2007, L. Fusu & O. Popovici leg.” (MICO); 1♀, “Iași county, Bârnova forest, Poiana cu Schit Nat. Res., 28.vi.2017, ent. net, Leg. M.-D. Mitroiu” (MICO).

**Hosts.** Associated with Lasiocampidae (Lepidoptera); hyperparasitoid of Braconidae (Hymenoptera).

**Distribution.** Bulgaria, Croatia, Czechia, France, Germany, Hungary, North Macedonia, Netherlands, Romania, Russia, Slovakia, Slovenia.

**Comments.** *Perilampus nitens* is part of the group of species without any frontal keels. It most closely resembles *P. ruschkai* (Fig. 17) and can be separated from it mainly by the more strongly punctate gena and frons between eye and scrobes (Fig. 13A, B), the supraclypeal area poorly defined (Fig. 13A, B), and the body entirely blue (Fig. 13). According to Bouček (see Material examined), *P. chlorinus* Förster, 1859 could be the same as *P. nitens*; however, these have not been formally synonymized, as the type of *P. chlorinus* is probably lost.

***Perilampus noemi* Nikol'skaya, 1952**

Fig. 14

*Perilampus noemi* Nikol'skaya, 1952: 194.

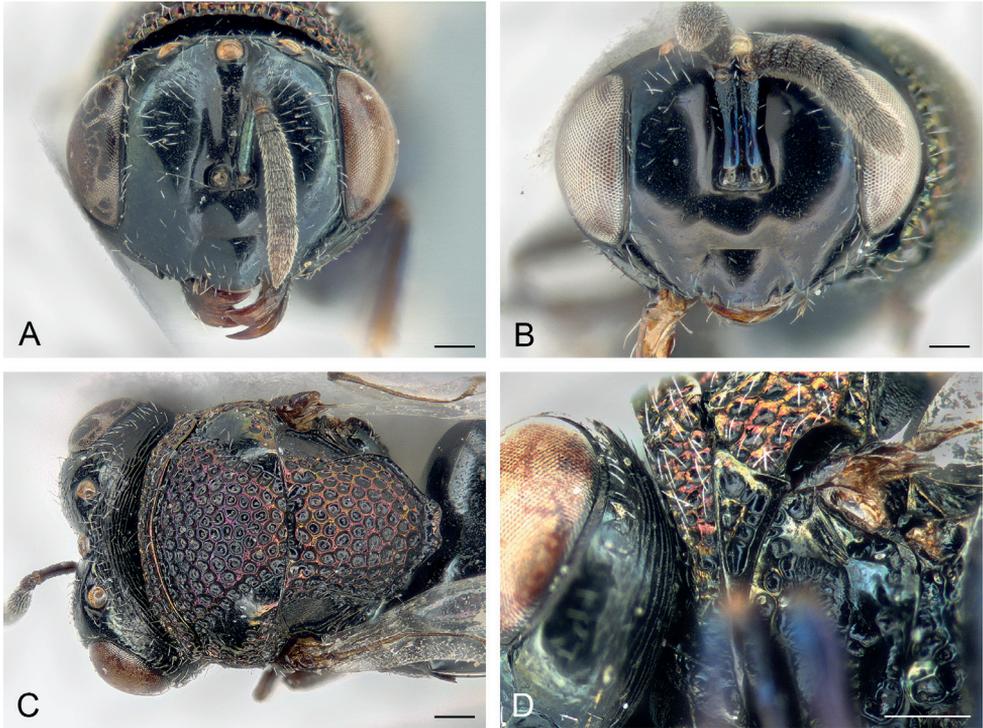
**Diagnosis.** Head and metasoma black; mesosoma dorsally black, with distinct violet, bronze or/and golden green reflections; female flagellum brownish-black, clava somewhat lighter. Body size: 1.75–3.00 mm. Head shape in frontal view (Fig. 14A, B) much wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 14A, B) slightly convex. Supraclypeal area (Fig. 14A, B) slightly transverse (less than 1.5× as wide as high), sides slightly or not defined; in male without oval lateral impressions. Malar sulcus versus anterior margin of malar depression shorter. Frontal keels (Fig. 14A, B) absent. Face between scrobes and eye (Fig. 14A, B) smooth. Face between clypeus and eye (Fig. 14A, B) smooth. Lateral ocellus large (OOL less than twice the largest ocellar diameter). Funicular segments in female (Fig. 14A): most segments quadrate to transverse. Male scape (Fig. 14B) slightly widened distally, ventral pores on about half scape length. Mesosoma (Fig. 14C) not narrow (less than 1.4× as long as wide). Mesoscutum sculpture (Fig. 14C) without smooth median tubercle; interspaces smaller than punctures, rugose. Scutellum hind margin (Fig. 14C) without a double carina, with large bilobed protruding projection. Prepectus (Fig. 14D) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); all sides with punctures (anterior side with much smaller punctures or partly interrupted), leaving just a very small smooth central area.

**Material examined.** GREECE: 1♀, “Attiki, Salamina, Agios Lavrendios, 37.962996°N, 23.514664°E, v.2020, By Hand, Leg. Koutsoukos, V.” (MICO); 1♀, “Attiki, Salamina, Agios Lavrendios, 37.962996°N, 23.514664°E, vii.2020, By Hand, Leg. Koutsoukos, V.” (MICO); 1♀, 3♂♂, “Attiki, Salamina, Ano Vasilika, 37.98822°N, 23.49196°E, ix.2020, By hand, Leg. Koutsoukos, V.” (MICO); 1♀, 1♂, “Attiki, Salamina, Patris hill, 37.970°N, 23.489°E, x.2020, By hand Leg. Koutsoukos, V.” (MICO); 1♂ “Greece/Crete; 35.094319°N, 24.706687°E; 18.10.2022 on *Urginea maritima*”, “E. Klimsa leg.”. MONGOLIA: 1♀ “Mongolia, Gobi Altaj aimak, Zachuj Gobi, 10 km N von Chatan chajrchan Gebirge, 1150 m, Exp. Dr. Z. Kaszab, 1966”, “Nr. 591, 27.VI.1966”, “*Perilampus noemi* Nik. ♀ Bouček det. 1982” (NHMUK); 1♂ “Mongolia: Bajanchongor aimak, Cagan Bogd ul, zw. Talyn bilgech bulag und Caganbulag, 25 km WSW v. Quelle, 1450 m, Exp. Dr. Z. Kaszab, 1966”, “Nr. 842, 24.VI.1967”, “*Perilampus noemi* Nik. ♂ Bouček det. 1982”, “NHMUK014583387” (NHMUK).

**Hosts.** Unknown.

**Distribution.** Mongolia and Tadzhikistan, the latter cited by Bouček (1983). New species to Europe.

**Comments.** In Bouček's key (1956) specimens of *P. noemi* go to couplet 17 (*P. laevifrons* and *P. neglectus*). However, *P. noemi* differs from both these species mainly in the shape and sculpture of the prepectus (Fig. 14D) and body colour (Fig. 14). Additionally, from *P. laevifrons* (Fig. 8) it differs mainly in having the



**Figure 14.** *Perilampus noemi* **A** female, head in frontal view **B** male, head in frontal view **C** female, head and mesosoma, dorsal view **D** female, prepectus.

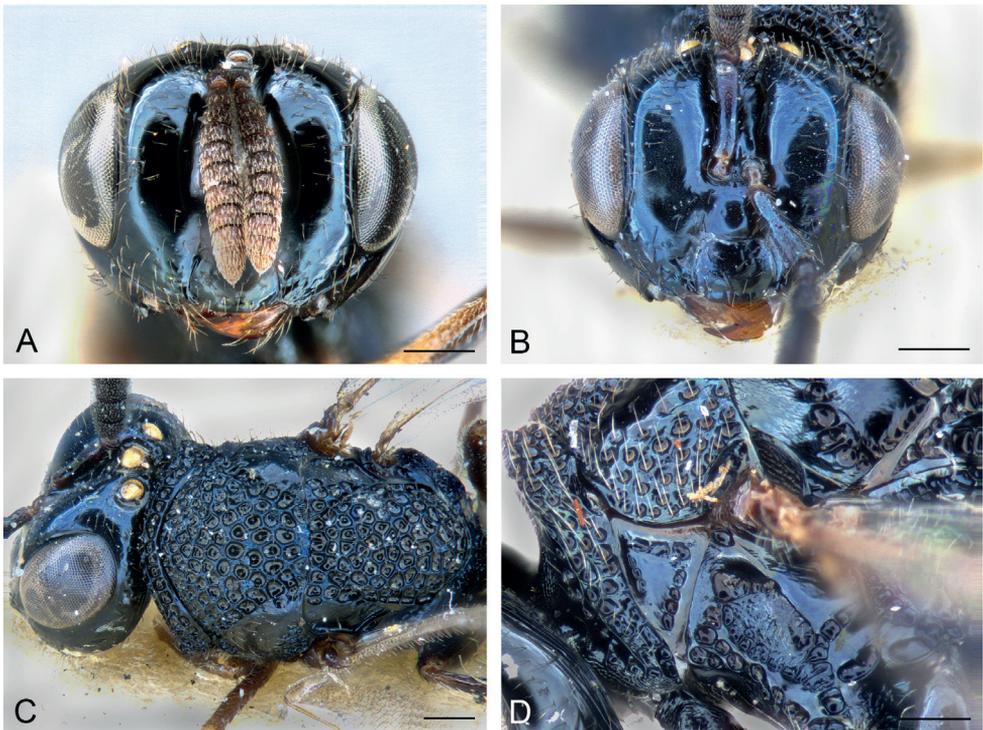
upper face smooth and the clypeal margin slightly convex (Fig. 14A, B), while from *P. neglectus* (Fig. 12) in having the posterior margin of scutellum with a larger bilobed protruding projection (Fig. 14C). According to Darling and Yoo (2021), females of *P. noemi* are undistinguishable from females of *P. khor* Yoo & Darling, 2021 (described from the United Arab Emirates), while the males of the two species can be separated based on several features, the structure of the scape being the most striking (Darling and Yoo 2021: 114). However, the scape of the NHMUK014583387 male (identified as *P. noemi* by Bouček, see Material examined) is much more similar to the scape of the *P. khor* male (Darling and Yoo 2021: fig. 4J, K) than the scape of the ROME188145 male (Darling and Yoo 2021: fig. 5D, also identified as *P. noemi*), although in NHMUK014583387 the ventral pores occupy a rather larger portion of the scape as compared to those in *P. khor*. Concerning scape morphology, all males from Greece (Fig. 14B) are similar to NHMUK014583387 and different from ROME188145. One possibility is that ROME188145 is in fact not *P. noemi*, as also indicated by differences from the *P. noemi* female: the arrangement of the ocelli, the shape of the clypeal margin, and the relative dimensions of the clypeal and supra-clypeal areas. However, Nikols'kaya's original material of *P. noemi* as well as additional specimens should be examined before assessing the variability of the involved species and taking any taxonomic decisions.

***Perilampus polypori* Bouček, 1971**

Fig. 15

*Perilampus polypori* Bouček, 1971: 52–54.

**Diagnosis.** Head, mesosoma and metasoma black; female flagellum dark brown. Body size: 2.8–3.4 mm. Head shape in frontal view (Fig. 15A, B) much wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 15A, B) truncate to very slightly convex. Supraclypeal area (Fig. 15B) slightly transverse (less than 1.5× as wide as high), sides well defined; in male without oval lateral impressions. Malar sulcus versus anterior margin of malar depression shorter. Frontal keels (Fig. 15A, B) absent. Face between scrobes and eye (Fig. 15A, B) smooth. Face between clypeus and eye (Fig. 15A, B) smooth. Lateral ocellus large (OOL less than twice the largest ocellar diameter). Funicular segments in female (Fig. 15A): most segments quadrate to transverse. Male scape (Fig. 15B) slightly widened distally; ventral pores on less than half scape length. Mesosoma (Fig. 15C) narrow (more than 1.4× as long as wide). Mesoscutum sculpture (Fig. 15C) without smooth median tubercle; interspaces smaller than punctures, smooth. Scutellum hind margin (Fig. 15C) without a double carina, without bilobed



**Figure 15.** *Perilampus polypori* **A** female, head in frontal view **B** male, head in frontal view **C** male, head and mesosoma, dorsal view **D** female, prepectus.

protruding projection. Prepectus (Fig. 15D) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); anterior margin with incomplete row of small punctures.

**Material examined.** AUSTRIA: 1♀, “Austria Inferior, Bezirk Scheibbs, ex Raphidia, 1973. H. Aspöck”, “1075”, “*Perilampus polypori* Bčk. ♀, Z. Bouček det. 1973” (NHMUK). SWEDEN: 1♂, “Ör. dist. – A.J., 14/8 82”, “Sweden: Örebro distr., leg. A. Jansson”, “*Perilampus polypori* Bčk. ♂, Z. Bouček det. 1972” (NHMUK).

**Hosts.** *Raphidia* sp. (Raphidioptera: Raphidiidae).

**Distribution.** Croatia, Czechia, Slovakia, Sweden, United Kingdom. New species to Austria.

**Comments.** Superficially similar to other small black species, e.g., *P. cephalotes* (Fig. 5), *P. maceki*, *P. minutalis* (Fig. 11), *P. neglectus* (Fig. 12) or *P. tristis* (Fig. 18), from which it can be separated using the characters given in the key.

### *Perilampus ruficornis* (Fabricius, 1793)

Fig. 16

*Cynips ruficornis* Fabricius, 1793: 103.

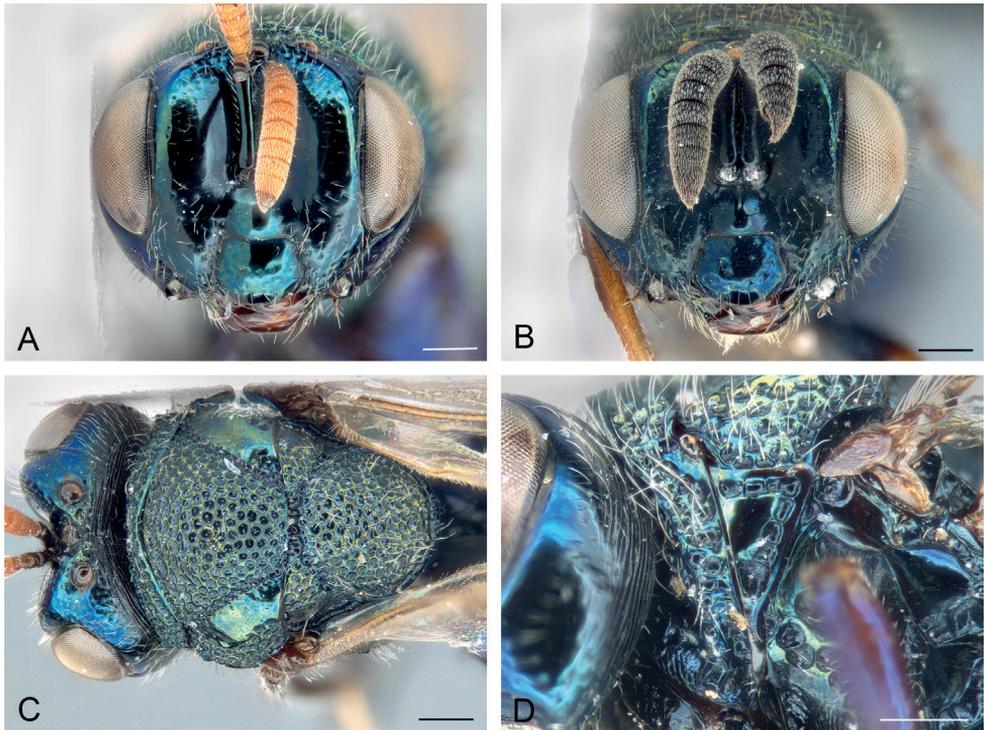
*Diplolepis violacea* Fabricius, 1804: 149. Synonymy by Dalla Torre (1898: 356).

*Perilampus nigricornis* Walker, 1833: 141. Synonymy by Dalla Torre (1898: 356).

*Perilampus scaber* Nikol'skaya, 1952: 194. Synonymy by Bouček (1983: 112).

**Diagnosis.** Head blue, with slight green reflections; mesosoma except propodeum dorsally dark green, with slight golden bronze reflections; propodeum and metasoma blue with violet reflections; female flagellum orange, claval apex dark. Body size: 3.0–3.8 mm. Head shape in frontal view (Fig. 16A, B) much wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 16A, B) truncate. Supraclypeal area (Fig. 16A, B) slightly transverse (less than 1.5× as wide as high), sides slightly defined; in males without oval lateral impressions. Malar sulcus versus anterior margin of malar depression shorter. Frontal keels (Fig. 16A, B) well developed. Face between scrobes and eye (Fig. 16A, B) smooth. Face between clypeus and eye (Fig. 16A, B) smooth. Lateral ocellus small (OOL at least twice the largest ocellar diameter). Funicular segments in female (Fig. 16A): most segments quadrate to transverse. Male scape (Fig. 16B) slightly widened distally; ventral pores on about half scape length. Mesosoma (Fig. 16C) not narrow (less than 1.4× as long as wide). Mesoscutum sculpture (Fig. 16C) without smooth median tubercle; interspaces smaller than punctures, rugose. Scutellum hind margin (Fig. 16C) without a double carina, without any protruding projection. Prepectus (Fig. 16D) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); anterior margin without punctures.

**Material examined.** FRANCE: 1♂, “France, Vaucluse, Mt. Ventoux, III. 1981. P. du Merle”, “ex *Lypha dubia* in *T. viridana*”, “♂ *Peril. ruficornis* (F.), Z. Bouček det. 1984” (NHMUK). GREECE: 1♀, “Kerkini Lake nr. Promahonah, Procom site, Malaise



**Figure 16.** *Perilampus ruficornis* **A** female, head in frontal view **B** male, head in frontal view **C** female, head and mesosoma, dorsal view **D** female, prepectus.

tr. 21–27.IV.2008, 41°22'38.1"N, 23°21'58.8"E, Leg. Gordon Ramel" (MICO); 2♂♂, "Kerkini Lake N Park, Kerkini Mts, nr. Ramna st., YPT, temp. forest nr. stream, 640 m, 41°17'44"N, 23°11'37"E, 08.IV.2010, Leg. Gordon Ramel" (MICO). SOUTH KOREA: 1♀, "S. Korea Gyeongido Gapyeong-gun Seo-myeon Magok-I / 3 Mal. tr. in forest. area, 37°42.97'N, 127°35.45'E, 4.V–6.VI.2006 Tripotin rec." (MICO). TURKEY: 1♀, "Turkey, Artvin. Above Artvin. 900 m., 6.vi.1962, Guichard & Harvey. B.M. 1962-299", "♀ *Perilampus ruficornis* (F.), Z. Bouček det. 1971" (NHMUK).

**Hosts.** Associated with Glossinidae (Diptera), Crabronidae, Cynipidae (Hymenoptera), Geometridae, Lasiocampidae, Lymantriidae, Noctuidae, Pyralidae, Tortricidae (Lepidoptera); hyperparasitoid of Tachinidae (Diptera), Braconidae, Ichneumonidae (Hymenoptera).

**Distribution.** Austria, Bulgaria, Canada, Croatia, Czechia, France, Germany, Hungary, Italy, Japan, Lithuania, Netherlands, Nigeria, Peoples' Republic of China, Russia, Serbia, Slovakia, Sweden, Ukraine, United Kingdom, United States of America. New species to Greece, South Korea and Turkey.

**Comments.** Very similar to *P. eximius*. Except for body colour, the separation characters given by Nikol'skaya (1952), Steffan (1952) and Bouček (1956) are difficult to interpret without comparative material. In the examined specimens the pronotal collar

is considerably shorter medially than laterally (as stated for *P. eximius*), but the scutellum is hardly convex in the female (as in *P. ruficornis*), but clearly convex in the male (as in *P. eximius*). Because the body colour (Fig. 16) better matches *P. ruficornis* than *P. eximius* and the posterior margin of the scutellum has a very slight emargination (as stated by Nikol'skaya for *P. ruficornis*) we decided in the favour of the latter species; however, more material should be examined before deciding if these are meaningful differences to separate the two species. The comparative material from NHMUK identified by Z. Bouček is very similar to our specimens, but unfortunately we could not find any specimens of *P. eximius* in NHMUK.

### *Perilampus ruschkai* Hellén, 1924

Fig. 17

*Perilampus ruschkai* Hellén, 1924: 13.

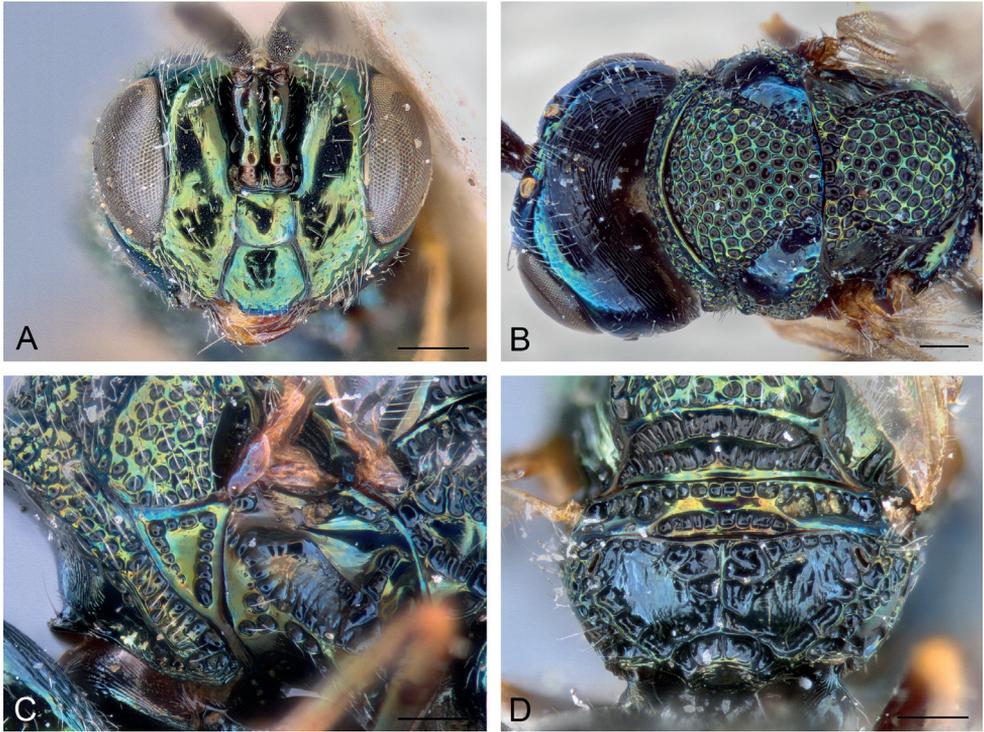
**Diagnosis.** Head and mesosoma mostly green, with golden or bronze reflections; metasoma black, dark green or bronze green in distal half; female flagellum dark brown, lighter ventrally. Body size: 3–4 mm. Head shape in frontal view (Fig. 17A) much wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 17A) truncate. Supraclypeal area (Fig. 17A) slightly transverse (less than 1.5× as wide as high), sides well defined; in males without oval lateral impressions. Malar sulcus versus anterior margin of malar depression shorter. Frontal keels (Fig. 17A) absent in female, slightly defined in male. Face between scrobes and eye (Fig. 17A) smooth. Face between clypeus and eye (Fig. 17A) smooth. Lateral ocellus large (OOL less than twice the largest ocellar diameter). Funicular segments in female: most segments quadrate to transverse. Male scape slightly widened distally, ventral pores on more than half scape length. Mesosoma (Fig. 17B) not narrow (less than 1.4× as long as wide). Mesoscutum sculpture (Fig. 17B) without smooth median tubercle; interspaces smaller than punctures, smooth. Scutellum hind margin (Fig. 17B) without a double carina, without bilobed protruding projection. Prepectus (Fig. 17C) wide, dorsal margin longer than pronotal collar; well defined anteriorly (i.e. suture with pronotum very distinct); all sides with punctures, leaving a large smooth central area.

**Material examined.** FINLAND: 1♂, “17093”, “Lojo”, “Forsius”, “coll. Hellen”, “*Perilampus ruschkai* Hellén ♂, G.J. Kerrich det. 1957”, “Pres by Com Inst Ent BM 1958-391” (NHMUK). SWEDEN: 1♀, “Gotska Sandön, 17/7 1952, K.-J. Hedqvist”, “*Perilampus ruschkai* Hellén ♀, G.J. Kerrich det. 1960” (NHMUK).

**Hosts.** Associated with Geometridae (Lepidoptera); presumably a hyperparasitoid.

**Distribution.** Finland, Germany, Hungary, Netherlands, Romania, Russia, Sweden.

**Comments.** Very similar to *P. nitens* (Fig. 13), from which it differs in having the frons between eye and scrobes not punctate (Fig. 17A), the supraclypeal area rather well defined (Fig. 17A), the male eyes larger (Fig. 17A), and the head and mesosoma mostly green (Fig. 17).



**Figure 17.** *Perilampus ruschkai* **A** male, head in frontal view **B** female, head and mesosoma, dorsal view **C** female, prepectus **D** female, propodeum.

### *Perilampus tristis* Mayr, 1905

Fig. 18

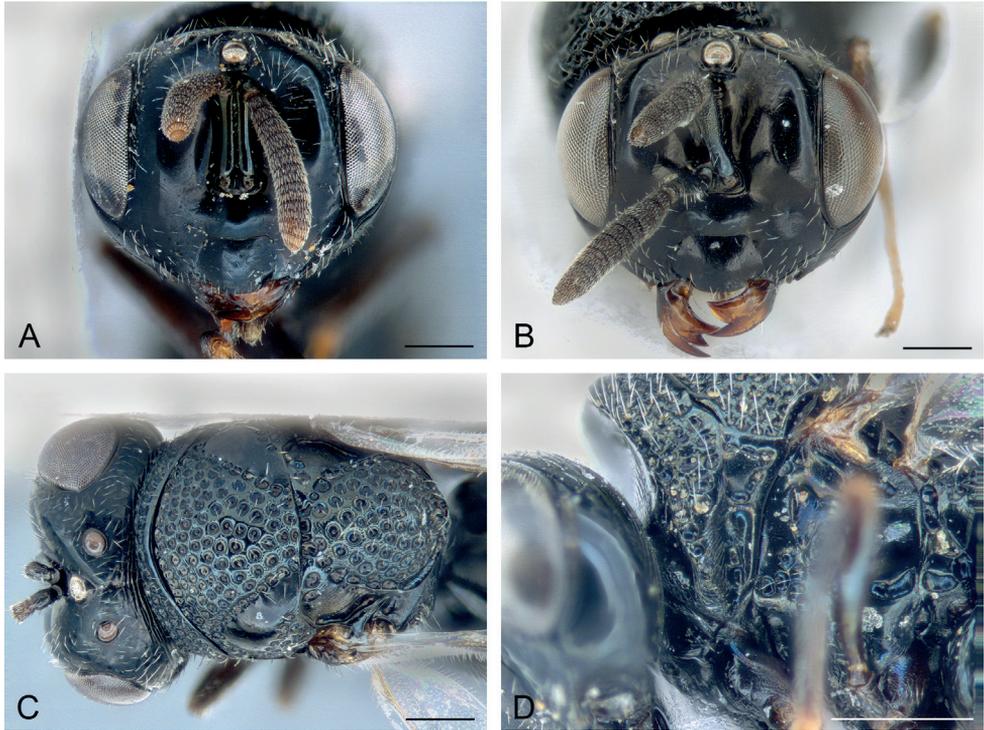
*Perilampus tristis* Mayr, 1905: 566.

*Perilampus batavus* Smits van Burgst, 1919: 146. Synonymy by Ruschka (1924: 93).

*Perilampus capitatus* Smulyan, 1936: 397. Synonymy by Steffan (1952: 72).

*Perilampus oracula* Nikol'skaya, 1952. Synonymy by Bouček (1983: 119).

**Diagnosis.** Head, mesosoma and metasoma black; mesosoma rarely with faint bluish or bronze reflections; female flagellum brown, ventrally reddish-brown. Body size: 1.50–2.75 mm. Head shape in frontal view (Fig. 18A, B) much wider than high. Head in lateral view not unusually long, without distinct sulcus separating posterior eye margin from temple. Clypeal margin (Fig. 18A, B) truncate to slightly convex. Supraclypeal area (Fig. 18A, B) slightly transverse (less than 1.5× as wide as high), sides slightly defined; in males without oval lateral impressions. Malar sulcus versus anterior margin of malar depression about equal in female, shorter in male. Frontal keels (Fig. 18A, B) poorly developed. Face between scrobes and eye (Fig. 18A, B) smooth. Face between clypeus and eye (Fig. 18A, B) smooth. Lateral ocellus small (OOL at least twice the



**Figure 18.** *Perilampus tristis* **A** female, head in frontal view **B** male, head in frontal view **C** female, head and mesosoma, dorsal view **D** female, prepectus.

largest ocellar diameter). Funicular segments in female (Fig. 18A): most segments quadrate to transverse. Male scape (Fig. 18B) strongly widened distally; ventral pores on about half scape length. Mesosoma (Fig. 18C) not narrow (less than  $1.4\times$  as long as wide). Mesoscutum sculpture (Fig. 18C) without smooth median tubercle; interspaces smaller than punctures, smooth to finely striate. Scutellum hind margin (Fig. 18C) without a double carina, without any protruding projection. Prepectus (Fig. 18D) narrow, dorsal margin shorter than pronotal collar; poorly defined anteriorly (i.e. suture with pronotum almost indistinct); anterior margin without punctures.

**Material examined.** CYPRUS: 2♀ “Cyprus: Pera Pedi., 13.vi.1937.”, “G.A. Mavromoustakis, B.M. 1937-808”, “♀ *Perilampus tristis* Mayr, Z. Bouček det. 1972” (NHMUK); 1♂ “Cyprus: Limassol, 21.viii.1934, G.A. Mavromoustakis, B.M. 1935-55”, “*Perilampus tristis* Mayr ♂, Z. Bouček det. 1981” (NHMUK). GREECE: 3♀♀, “Attiki, Zografou, Panepistimioupolis, 37.9719°N, 23.7584°E, v.2020, By Hand, Koutsoukos, V.” (MICO); 1♀, “Attiki, Zografou, Panep/lis, 37.97191°N, 23.7584°E, 2.v.18, 130 m, Coll: Demetriou, J.” (MICO); 1♀, “Attiki, Salamina, Kokkinovraxos, 37.9422°N, 23.5020°E, iv.2020, By hand Leg. Koutsoukos, V.” (MICO); 1♀, 1♂, “Attiki, Salamina, Kokkinovraxos, 37.9422°N, 23.5020°E, 30.iv.2020, By hand Leg. Koutsoukos, V.” (MICO); 1♀, “Attiki, Athens, Geoponiko, 37.9832°N, 23.7048°E,

11.ix.2020, By hand Leg. Koutsoukos, V.” (MICO); 1♂, “Attiki, Salamina, Kokkinovraxos, 37.9422°N, 23.5020°E, v.2020, By hand Leg. Koutsoukos, V.” (MICO); 1♂, “Attiki, Salamina, Patris hill, 37.970°N, 23.489°E, x.2020, By hand Leg. Koutsoukos, V.” (MICO); 4♂♂, “Attiki, Salamina, Pilos, 37.92358°N, 23.49558°E, 3.v.2020, By hand Leg. Koutsoukos, V.” (MICO); 1♂, “Attiki, Salamina, Lamprano, 37.8921°N, 23.4266°E, 1.v.2020, By hand Leg. Koutsoukos, V.” (MICO); 1♀, “Attiki, Salamina, Kokkinovraxos, 37.9422°N, 23.5020°E, 17.iv.2021, By hand Leg. Koutsoukos, V.” (ZMUA). ROMANIA: 1♀, “MH, P. Fier, Dubova, Ciucaru Mare, 14–16.VII.09, 44°36′01.8″N, 22°15′34.8″E, OP & LF, sweep, 200 m” (MICO); 1♀, “Iași county, Valea lui David Natural Reserve, 11.vi.1999, sweep, Fusu leg.” (MICO); 12♀♀, 10♂♂, “Iași county, Breazu village, near Mârzești forest, steppic vegetation, 05.viii.2011, L. Fusu leg.” (MICO); 2♂♂, “Tulcea county, Măcin National Parc, meadow, Malaise trap, 23–25.vii.2004, M.-D. Mitroiu leg.” (MICO). SPAIN: 3♀, “Cañada de la Costa (Barcelona) Spain, Bouček VI.1971” (NHMUK); 1♀, “Spain (Granada): La Herradura, 2.vii.74. Z. Bouček”, “BM1974-321”, “*Perilampus tristis* Mayr ♀, Bouček det. 1974” (NHMUK); 2♀, “Spain (Madrid): Escorial, 7.vii.1974. Z. Bouček”, “BM1974-321”, “♀ *P. tristis* Mayr, det. Z. Bouček 1981” (NHMUK); 1♀, “Spain (Malaga): Estepona, 29–30.vi.74. Z. Bouček”, “BM1974-321”, “*Perilampus tristis* Mayr ♀, Bouček det. 1974” (NHMUK). TURKEY: 1♀, “Turkey, Ankara, 7.viii.1951, S. Erkilic”, “ex larva of *Carpocapsa pomonella*”, “Com. Inst. Ent., coll. no. 12540”, “*Perilampus tristis* Mayr ♀, G.J. Kerrich det. 1962”, “Pres by Com Inst Ent BM 1953-623” (NHMUK); 4♀, 1♂, “Turkey: Kutahya, Murat Dagi. 1200 m, 31.vii.1962”, “Guichard & Harvey, B.M. 1962-299”, “*Perilampus tristis* Mayr ♀, Bouček det. 1981” (NHMUK).

**Hosts.** Associated with Cossidae, Gelechiidae, Oecophoridae, Pyralidae, Tortricidae (Lepidoptera), Raphidiidae (Neuroptera); hyperparasitoid of Tachinidae (Diptera), Braconidae, Ichneumonidae (Hymenoptera). During our field work, this species was abundantly found on *Phlomis fruticosa*.

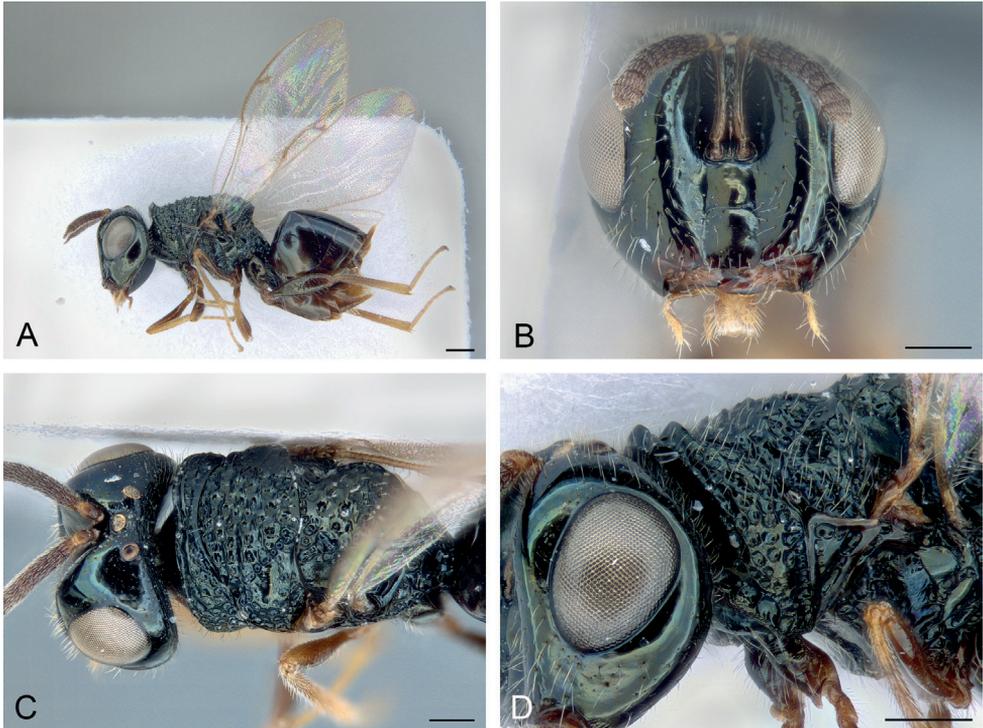
**Distribution.** Argentina, Austria, Belgium, Canada, Czechia, France, Germany, Hungary, Iraq, Israel, Italy, Kazakhstan, Lebanon, Moldova, Mongolia, Netherlands, Peoples’ Republic of China, Romania, Russia, Serbia, Slovakia, Sweden, Switzerland, Syria, Ukraine, United Kingdom, United States of America. New species to Cyprus, Greece, Spain and Turkey.

**Comments.** *Perilampus tristis* is one of the most easily recognizable species due to the black body colour (Fig. 18) and prepectus structure, which is virtually fused with the pronotum, with virtually no suture line separating it from the pronotum, and very narrow (Fig. 18D).

### *Steffanolampus* Peck, 1974

Fig. 19

*Steffanolampus* Peck, 1974: 555. Type species: *Perilampus salicetum* Steffan, 1952; by original designation and monotypy.



**Figure 19.** *Steffanolampus salicetum* **A** female, habitus in lateral view **B** female, head in frontal view **C** female, head and mesosoma, dorsal view **D** female, detail of head and mesosoma in lateral view.

**Diagnosis.** Face without a horn (Fig. 19B). Scrobes laterally not carinate (Fig. 19B). Pronotum with two transverse projections (Fig. 19C, D). Prepectus about equal to length of adjacent pronotal collar (Fig. 19D). Scutellum only slightly produced over propodeum (Fig. 19A). Marginal vein longer than postmarginal vein (Fig. 19A). Petiole inconspicuous, ovipositor sheaths curved upwards and projecting (Fig. 19A).

*Steffanolampus salicetum* (Steffan, 1952)

Fig. 19

*Perilampus salicetum* Steffan, 1952: 72.

**Diagnosis.** See generic diagnosis.

**Material examined.** GREECE: 1♀, “Kerkini Lake N. Park, Promohonas, Procom site Malaise, 04.VII -10.VII.2007, 41°22'38.1"N, 23°21'58.8"E, Leg. Gordon Ramel” (MICO); 1♀, “Kerkini Lake N. Park, Promohonas, Procom site, Malaise, 20.VI to 26.VI.2007, 41°22'38.1"N, 23°21'58.8"E, Leg. Gordon Ramel” (MICO); 1♀, “Kerkini Lake N. Park, Kerkini, Krousia Mts site, Malaise tr. 13.VI-19.VI.2007, 41°11'32.4"N, 23°03'59.5"E, 190 m, Leg. Gordon Ramel” (MICO).

**Table 1.** The European species of *Perilampus*, indicating new faunistic records.

Species / new to	Europe	Austria	Cyprus	Greece	Romania	South Korea	Spain	Sweden	Turkey
<i>P. aeneus</i>				+	+				
<i>P. aquilus</i>									
<i>P. auratus</i>					+				+
<i>P. aureoviridis</i>					+				
<i>P. cephalotes</i>		+							+
<i>P. chrysonotus</i>					+				
<i>P. eximius</i>									
<i>P. intermedius</i>									
<i>P. laevisfrons</i>				+	+				
<i>P. maceki</i>									
<i>P. masculinus</i>								+	
<i>P. micans</i>									
<i>P. minutalis</i>				+					
<i>P. neglectus</i>				+					
<i>P. nitens</i>									
<i>P. noemi</i>	+			+					
<i>P. polypori</i>		+							
<i>P. ruficornis</i>				+		+			
<i>P. ruschkai</i>									+
<i>P. tristis</i>			+	+			+		+

**Hosts.** Associated with Anobiidae (Coleoptera).

**Distribution.** Austria, Canada, Hungary; recently recorded from Poland (Wiśniowski and Olbrycht 2021); introduced to Europe from the Nearctic realm (United States of America) (Peck 1974). New species to Greece.

**Comments.** Apart from the characters mentioned in the diagnosis, *Steffanolampus* is otherwise very similar to *Perilampus*.

## Discussion

We here report taxonomic and faunistic data for three genera of Perilampidae. *Euperilampus* is recorded for the first time in South Korea, with the first description of the *E. sinensis* female. *Perilampus* and *Steffanolampus* are recorded for the first time in Greece. The new records of *Perilampus* species are summarized in Table 1.

One of the most surprising discoveries was the presence of *P. noemi* in Salamina and Crete islands, Greece. Previously, the species has been recorded only from Mongolia and Tajikistan (Nicol'skaya 1952; Bouček 1983). Its presence in the Mediterranean area may be explained either by its introduction from central Asia or by its natural distribution in both geographical areas; we tend to favor the second hypothesis, but only future faunistic studies in Middle East, or perhaps molecular investigations, could confirm or reject it.

The most common species identified in this study, as reflected by the number of collected specimens, was *P. tristis*. This species is widely distributed in the Holarctic (Noyes

2019) and appears to be associated with many species of Lepidoptera, being a hyperparasitoid of Braconidae and Ichneumonidae (Hymenoptera), as well as Tachinidae (Diptera).

Given the scarcity of studies regarding the Palaearctic fauna of Perilampidae, there is a high probability that most of the European species (and even some Central Asian ones) will prove to have much wider distributions than currently known. Thus, we expect the number of species especially in South–Eastern Europe to be considerably higher, and hope that this study will stimulate further investigations.

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