

**REVISION OF EUROPEAN PSILOMMINA (HYMENOPTERA,
DIAPRIIDAE) 1. PSILOMMA AND ACANOSEMA COMPLEX**

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Taxonomy, classification, morphology, keys, distribution, new genus, new species, lectotype, synonymy.

Abstract. The subtribe Psilommina is briefly characterised; identification keys to genera and species, diagnoses and descriptions or re-descriptions are provided for all genera and species recognized. The following previously known genera are redescribed: *Psilomma* Foerster, *Acanopsilus* Kieffer, *Acanosema* Kieffer and *Cardiopsilus* Kieffer. The synonymy of *Brunnicophilus* with *Acanosema* Kieffer is confirmed. The new genus and species *Psilommacra oligomera* is described. The following specific names are considered synonyms: *Psilomma crassicornis* Kieffer, *Psilomma flavipes* Kieffer and *Psilomma atriceps* of *Psilomma dubia* Kieffer, *Psiloma nigra* Kieffer of *Psilomma fusciscapis* Foerster; *Acanopsilus clavatus* Kieffer and *Psilomma radiata* Kieffer of *Acanopsilus heterocerus* (Haliday); *Psilomma caudata* Cameron, *Acanosema alpestre* Kieffer, *Acanosema reitteri* Kieffer, *Acanosema brevipenne* Kieffer, *Acanopsilus arcuatus* Kieffer, *Acanopsilus laticeps* Kieffer, *Aclista curvinnervis* Kieffer of *Acanosema nervosum* Thomson; *Brunnicophilus donisthorpei* Nixon of *Acanosema rufum* Kieffer. The following junior specific synonyma were substituted by valid senior ones as: *Psilomma nigra* Kieffer by *Psilomma fusciscapis* Foerster; *Psilomma atriceps* Kieffer, by Nixon misinterpreted, replaced by valid *Psilomma fuscicornis* Kieffer.

About 30 species of Psilommina were described in the territory of Europe. Since many of the species were often misidentified, even on generic level, a thorough study based on type revision was urgently needed. Moreover, such revision became imperative because of preparational work on the Diapriidae for the Palearctic catalogue of Hymenoptera. The revision will now be published in two parts, this part will deal with the genera *Psilomma* Foerster and *Acanosema* complex both representing a monophyletic group of Psilommina. Morphological characteristics as well as phylogenetical relationships of the above genera will also be given. The Psilommina have been elevated to subtribal rank only very recently by Macek (1988), after being recognized as a clearly defined group of tribe Pantolytini. The Psilommina may be characterised by a set of ground-plan characters, which are apomorphous in terms of the ground-plan of the Pantolytini:

1. radialis, when indicated, parallel with the fore wing margin, radial cell open or absent; 2. subgenital plate of females meets the apical tergites (8. and 9.) at median level; 3. male genitalia slender, elongated with stiletoid paramerae, dentes fused with volsellae.

The seven genera are now recognized forming the subtribe Psilommina. The present distributional data are referred to Holarctic region only, but it does not mean they are confined to this territory only. The adults occur in humid forest habitats predominantly. Some species have been reared from larvae of fungivorous Diptera living in rotten wood or leaf litter. A few species have been found in ant nests. Terminology of characters as used here is that adapted based on Naumann (1982). The whole of abdomen posterior to petiolus is named gaster. In its simplest form, the gaster is composed of seven tergites and five sternites in females and seven tergites and sternites in males, respectively. The gastral segments may be homologised with 3.—9. abdominalis metamers (the first one is fused with metathorax thus forming propodeum, the second one constitutes petiolus). The first gastral segment (= 3. abdominal metamer) is enlarged in Diapriidae at all and called macrosegment, which is composed of enlarged plates (macrotergite and macrosternite). The whole segments following the macrosegment assist in oviposition and became the subject of modifications in accordance with mode of oviposition. In the most simple state they are ring-like, close to each other following the macrosegment. The 8.—9. tergites and 7. sternite (= subgenital plate) form so called hypopygium, which term, however cannot be applied in general sense. The area composed of segments inserted between hypopygium and macrosegments may be called prae-hypopygium. All the terms as introduced here were established to simplify the diagnosis.

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Key to the genera of subtribe Psilommina

- 1 Mandibles ocercrossing apically; mandibular apicis incurved 2
- Mandibles attached mesally with their apicis downcurved, mandibles become of beak-like form 6
- 2 (1) Mandibles of sickle form with inner tooth equal to the length of mandibular apex *Psilomma* Foerster (3 spp.)
- Mandibles of pincer form with inner tooth reduced not reaching the length of mandibular apex 3
- 3 (2) Eyes with scarce but distinct pubescence 4
- Eyes bare 5

- 4 (3) The axis of petiolus overreaching that of gaster; the base of female macrosternite projecting anteriorely, female petiolus of heart-form, female antennae 15-segmented *Cardiopsilus* Kieffer (1 sp.)
 — Both axes continuous; female petiolus cylindrical, the base of female macrosternite slightly convex, female antennae 13-segmented
 *Psilomma* gen. nov. (1 sp.)
- 5 (3) Scapus short and stout with apical rim raised to the flange armed with blunt tooth at each side; female antennae 15-segmented, female petiolus subhexagonal, femora short and stout *Acanosema* Kieffer (3 spp.)
 — Scapus long, slender with apical rim simple; female antennae 14-segmented; female petiolus cylindrical, the base of female macrosternite at most with small blunt angle; femora slender
 *Acanopsilus* Kieffer (1 sp.)
- 6 (1) Body compressed, antennal sockets produced to the small spines anteriorely *Sundholmiella* Hedquist (1. sp.)
 — Body convex; antennal sockets with anterior margin rounded off
 7
- 7 (6) Petiolus subhexagonal in both sexes with white dense pubescence; male flagellomeras submoniliform; female antennae 12-segmented
 *Synacra* Foerster (3 spp.)
 — Petiolus cylindrical in both sexes with sparse grey pubescence; flagellomeras filiform in males; female antennae 14-segmented
 *Polypeza* Foerster (1 sp.)

Psilomma Foerster, 1856

Psilomma Foerster, 1856, Hym. Stud., 2: 128, 130, 132.

Type species: *Psilomma fuscicapis* Foerster, 1861, first included species.

Characteristics. Mandibles sickle-shaped, overcrossing apically with inner tooth reaching the length of mandibular apex, female antennae 15-segmented, scapus with simple apical rim, flagellomeras become widened and shortened towards apex; eyes bare, in *Psilomma dubia* Kieff. very sparsely pubescent; the pits beneath the pronotal shoulders bare or scarcely pubescent; epomia absent; pronotal collare with contiguous greyish pubescence; radial cell reduced, radialis obliterated or absent; femora slender with long femoral stalk; petiolus cylindrical; gaster fusiform, sharply pointed towards apex; hypopygium as long as praehypopygium, straight, conical; base of female macrosternite simple, at most slightly angled; endoovipositor as long as gaster. The genus was established by Foerster (1856) without species included. Subsequently the same author [1861] included *Psilomma fuscicapis* Foerster as a first species belonging here. Kieffer (1908, 1916) noticed eight species of *Psilomma* with designation of *Psilomma tenuicornis* Kieffer as a type species. *Psilomma tenuicornis* Kieffer was described from the specimen in the Foerster collection upon which the genus was based, but under a decision of the International Commission on Zoological Nomenclature (Bull. Zool. Nom., vol. 4, pp. 160, 346) only the first species to be included

shall be eligible for designation of a genus originally published without included species. Based on type revision of species available the primary species account was reduced to the three valid species belonging to the *Psilomma*. The other taxa were either transferred or synonymized. A brief account of this follows as: 1. *Psilomma tenuicornis* Kieffer transferred to *Acanosema* in new combination *Acanosema tenuicornis* (Kieffer); 2. *Psilomma incerta* transferred and synonymized to *Pantolyta pallida* Kieffer, 3. *Psilomma radialis* Kieffer transferred and synonymized with *Acanopsilus heteroceris* (Haliday), 4. *Psilomma flavipes* Kieffer, *Psilomma atriceps* Kieffer and *Psilomma crassicornis* Kieffer are new synonyma to *Psilomma dubia* Kieffer; 5. *Psilomma nigra* Kieffer was synonymized to *Psilomma fusciscapis* Foerster; 6. *Psilomma crassicornis* var. *fuscicornis* Kieffer was erected to the species status thus substituting the misinterpreted *Psilomma atriceps* Kieffer (sensu Nixon).

All records as to distribution are confined to Europe. From the scarcity of the species in collections the genus may be considered as uncommon in occurrence.

Key to the species of *Psilomma*

- 1 Pronotal shoulder weak, almost rounded off, and only a feeble keel extending backwards from it towards the spiracle; radialis clearly indicated; inner lateral keel of propodeum distinct almost to posterior margin, though feeble *fuscicornis* Kieffer
- Pronotal shoulder, seen from above, conspicuous, right-angled and with a well defined keel extending backwards to the posterior margin of the pronotum; radialis reduced to a mere angulation at tip of stigmatis; inner, lateral keel of propodeum fading out half-way 2
- 2 [1] Head with a dense, matted pubescence which is as thick on temples as on cheeks; antennae dark brown throughout; flagellum slender, with first segment 4—5 times longer than wide and the 3 praeapical segments not wider than long, the whole flagellum only feebly widened towards apex; macrosternite not produced at base; scape in males distinctly shorter than flagellum 1 *fusciscapis* Foerster
- Head thickly hairy but the pubescence on cheeks denser than that on temples; antennae rich fulvous throughout; flagellum thicker, the first segment 3 times as long as wide and the 3 preapical segments slightly transverse; whole flagellum more thickened towards apex; scape in males distinctly longer than flagellum 1 *dubia* Kieffer

***Psilomma fuscicornis* Kieffer, 1908**

Psilomma crassicornis var. *fuscicornis* Kieffer, 1908, in André, Spec. Hym. Eur. Alg., 10: 426.

Psilomma crassicornis fuscicornis: Kieffer, 1916, Das Tierreich, 44: 427.

Psilomma atriceps; Nixon, 1957 (nec Kieffer, 1908), Hand. Ident. Brit. Insects, 8 (3): 20, misident.

Characteristics. Body length 2.1—3.1 mm, black, gaster black brown with anterior part paler; legs mandibles and basal part of antennae ful-

vous; head transverse from the dorsal view with antennal sockets prominent, the temples rounded off with short, dense, greyish pubescence; genae rounded off, supraclypeal area with deep short furrows proximally; antennal sockets with fine rugosity; mandibles overcrossing at tips widely, asymmetrical; scapus slightly curved with apical rim simple; female flagellomeres of equal width thus becoming shorter towards apex; its basal half composed of more cylindrical the distal one of submoniliform segments; male antennae with cylindrical segments, scapus only a little longer than the first flagellomera with distinct basal emargination, the following flagellomeres become rather shorter and narrower as compared with the first flagellomera; mesosoma stout in appearance, a little wider than width of head, its dorsal surface with greyish contiguous pubescence; pronotum short and wide with pronotal collar reduced, pronotal neck short and stout, pronotal shoulders weak, almost rounded off and only a feeble keel extending backwards from it towards spiracle; all pronotal pits bare; mesonotum steeply declining to the posterior margin of pronotum; mesonotum large, convex with epomia absent and notalices distinct. Mesoscutellar fovea large; dorsellum prominent; propodeum transverse with posterior margin upraised, all its keels simple with the lateral ones abruptly diverging posteriorly thus projecting into sharp prominence; radialis spurious, hardly indicated, the visible part shorter than stigmalis to which it is attached, marginalis shorter than parastigma, postmarginalis as long as radialis, cubitalis distinct, curved; the femoral stalks as long as one third of length of femur; petiolus cylindrical, a little longer than wide, ribbed longitudinally; gaster stout, fusiform, tapering to the sharp point posteriorly; macrotergite with regular short basal striation; macrosternite simple; hypopygium as long as praehypopygium, apical tergite very narrow and obviously longer than wide.

This species differs from the other *Psilomma* on the base of stout habitus, reduced pronotal collar, blunt pronotal shoulders and mesonotum steeply declining to the base of pronotum.

Taxonomical remarks. Nixon (1957), without type revision, identified this species with *Psilomma atriceps* Kieffer. Due to the anonymity of type my conception of *Psilomma atriceps* Kieffer is based on original description which agrees obviously with diagnosis of *Psilomma dubia* Kieffer. The revision of type of *Psilomma crassicornis* var. *fuscicornis* Kieffer confirmed conspecificity with *Psilomma atriceps* auct. In consequence, *Psilomma atriceps* auct. must be replaced by name *Psilomma fuscicornis* Kieffer.

Lectotype designation. Kieffer (1908) described *Psilomma crassicornis* var. *fuscicornis* K. from one male specimen from France (Fontainebleau). The specimen is preserved in coll. Kieffer, Paris. The specimen, with head lacking, was remounted on triangular label and provided with lectotype label des. Macek, 1985. Besides that, the specimen is provided with original identification label as well as locality.

Distribution. England, Ireland, France, Switzerland, Czechoslovakia. Material examined. France: Fontainebleau, lectotype coll. Kieffer, Paris). Czechoslovakia: Praha-Radotín, 3 vii. 1985, 1 ♀; Nižbor, 26. vi. 1982, 1 ♀;

Praha-Závist, 20 vi. 1985, 1 ♂; Koda u Srbska, 28. viii. 1984, 1 ♂; Zákolany, 20. vi. 1981, 1 ♂; Gryblá, mt., 1. vii. 1982, ♂; Stará obora, Hluboká n. Vltavou, 10. vi. 1982, 1 ♂; Úhošť, res. Kadaň env., 19. v. 1981, 2 ♂♂; Znojmo, 23. vi. 1983, 1 ♂; Ohniště, res., Nížké Tatry, mts., 3. viii. 1984, 1 ♂ (all Macek, Praha).

***Psilomma fusciscapis* Foerster, 1861**

Psilomma fusciscapis Foerster, 1861, Program Realschule Aachen, p. 43.

Psilomma nigra Kieffer, 1908, Spec. Hym. Eur., 10: 423, **syn. nov.**

Characteristics. Body length 2.7–3.3 mm, black, gaster black to black brown, legs, mandibles and antennae black brown to brown; head transverse from the dorsal view with antennal sockets prominent, temples converging to the foramen occipitale covered with dense, pale, contiguous pubescence; genae slightly rounded off, converging to the meatus oris; supraclypeal area polished with short pale contiguous pubescence, the deep short furrows extending from the base to the antennal sockets as shallow depressions; antennal sockets with fine rugosity beneath; mandibles overcrossing at tips widely, asymmetrical; female antennae 15-segmented; all flagellomeres of equal width, cylindrical thus becoming shorter towards apex; scapus two and a half time longer than the first flagellomere; the first flagellomere three and half time as long as wide and one and half time as long as the second flagellomere; the praepical one a little longer than wide; the basal flagellomeres long, cylindrical, the apical ones short, submoniliform; the male antennae filiform with the first flagellomere distinctly longer than scapus; its flagellomeres long, cylindrical with erect pubescence, thus becoming shortened and narrowed towards apex; the first flagellomere five and half time as long as wide with deep emargination covering basal third of segment; the basal part of the first flagellomere convex opposite the emargination; mesosoma stout, as wide as head covered with long greyish contiguous pubescence on dorsal surface; pronotum with pronotal shoulders distinct but not conspicuously suromounted by sharp keel; the proximal part of pronotum slanting to pronotal neck, the pronotal pits with no differentiated patterns of pubescence, epomia absent; mesonotum falling steeply to the base of pronotum with notaulices distinct; mesoscutellar fovea larger than postfoveal plate; propodeum with posterior margin concave, upraised, all its keels simple with lateral ones converging posteriorly thus sharply projected into teeth; radialis absent, stigmalis shorter than marginalis, perpendicular to the fore wing margin, marginalis shorter than parastigma; parastigma longer than basalis; cubitalis distinct, downcurved; the femora slender; petiolus subcylindrical, widening posteriorly with longitudinal ribs, its sides with long erect pubescence; gaster fusiform, tapering to a sharp point posteriorly; merotergite with deep medial furrow and a pair of short wrinkles at each side; macrosternite simple; hypopygium as long as praehypopygium, apical tergite very narrow and obviously longer than wide.

This species is closely allied to *Psilomma fuscicornis* Kieffer differing from it by longer antennae covered with erect short pubescence, re-

distinct pronotal shoulders and distinct medial furrow at base of macrotergite.

Type series of *Psilomma fusciscapis* Foerster, as preserved in Vienna collection, consists of two quite different species belonging to other genera. Specimen selected and designated by Masner in 1963 as lectotype corresponds with Foerster *Psilomma* conception, the other ones, however, belong to the *Synacra*. Kieffer (1908) when revising Foerster's collection might have had at his disposal only part of series composed of *Synacra*. Therefore he assigned it correctly to *Synacra* in new combination *Synacra fusciscapis* (Foerster). At the same time he described *Psilomma nigra* Kieffer which recently revealed to be conspecific with *Psilomma fusciscapis* Foerster. For the indisputable validity of former *Psilomma fusciscapis* Foerster, this name must replace the latter *Psilomma nigra* Kieffer.

Distribution. Austria, Hungary, Poland, Czechoslovakia, Sweden. Material examined. Czechoslovakia: Znojmo, 23. vi. 1983, 1 ♀; Bulhary, 27. vi. 1983, 1 ♀; Medník, mt., 16. vi. 1985, 2 ♂♂; Lísek, Beroun distr., 7. vi. 1982, 1 ♂; Ostrý, mt., Beroun distr., 26. vi. 1982, 1 ♂; Stará obora, Hluboká n. Vltavou env., 30. vi. 1981, 2 ♂♂; Šíp mt., Kralovany env., 5. viii. 1982, 1 ♂; Hungary: Hübösvölgy, Budapest distr., 24. x. 1913 (Birò, Budapest); Poland: Podkowa Lesna, 7—14. viii. 1984, 1 ♂ (Ekipa, Praha).

***Psilomma dubia* Kieffer, 1908**

Psilomma dubia Kieffer, 1908, in André, Spec. Hym. Eur. Alg., 10426.

Psilomma crassicornis Kieffer, 1908, in André, Spec. Hym. Eur., 10: 425, **syn. nov.**

Psilomma flavipes Kieffer, 1908, in André, Spec. Hym. Eur. Alg., 10: 423, **syn. nov.**

Psilomma atriceps Kieffer, 1908, in André, Spec. Hym. Eur. Alg., 10: 422, **syn. nov.**

Characteristics. Body length 2.8—3.2 mm, body black, antennae, legs and mandibles fulvous; head transverse in dorsal view with antennal sockets fused into the prominent compact antennal conus; temples slightly convex, converging regularly to the foramen occipitale which is margined with dense, contiguous pubescence; the pubescence of head sparse, on postgenae obviously denser; head triangular in frontal view with genae converging regularly to the meatus oris; supraclypeal area polished, the supraclypeal furrows extending towards antennal conus as fine paralleling depression; antennal conus with fine rugosity beneath; mandibles overcrossing at tips widely, asymmetrical; eyes with sparse short pubescence; antennae in female 15-segmented with flagellum thicker and shorter, the basal flagellomeres cylindrical, the apical ones quadrate and thickened, submoniliform; the first flagellomera two and half time as long as wide, the following flagellomeres become shortened and merely thickened towards apex; the male antenna filiform with the first flagellomera a little shorter than scapus, scapus slightly curved with apical rim simple; the following flagellomeres became shortened and narrowed successively towards apex, its pubescence short, contiguous, the emargination of the first flagellomera very shallow; mesosoma more slender, as wide as head, covered with long, sparse pubescence, the

dorsal surface of mesosoma polished; pronotum cervicoid with longer pronotal neck distinctly separated from pronotal collar; the pronotal collar slanting to the pronotal neck with conspicuous pronotal shoulders surmounted with dense pubescence; epomia absent, the depressions beneath the pronotal shoulders with conspicuous pale pubescence, mesonotum falling moderately to the base of pronotum; mesoscutellar fovea large, subcircular, larger than postfoveal plate behind; dorsellum surmounted with prominent longitudinal keel; propodeum longer than wide with posterior margin straight and upraised; all its keels simple, the lateral ones produced into sharp prominences; radialis absent, stigmalis shorter than marginalis, slanting to fore wing margin; postmarginalis longer than stigmalis, marginalis a little shorter than parastigma; parastigma as long as basalis; cubitalis distinct, longer than marginalis, slightly downcurved; the femora slender; petiolus subcylindrical; ribbed longitudinally with long erect pubescence at sides; gaster slender, fusiform, tapering to the sharp point posteriorly, macrotergite with homogenous basal striation; the base of macrosternite is somewhat produced, the hump surmounted with a dense tuft of pale pubescence; hypopygium as long as praehypopygium, apical tergite very narrow and obviously longer than wide. This species is related to *Psilomma fusciscapis* Foer. differing from it by structure of antennae, produced base of macrosternite, homogenous basal striation of macrotergite and conspicuous pronotal shoulders.

Based on the type revision, *Psilomma crassicornis* Kieffer was confirmed identical with *Psilomma dubia* Kieffer. However, conjecture has arisen as to the true identity of *Psilomma flavipes* Kieffer and *Psilomma atriceps* Kieffer, respectively, due to the lack of types. Nixon (1957) interpreted both species in a subjective way and there are no doubts as to misconception of both species when we compare original diagnosis with that of Nixon's. Based on the original diagnosis of both species, the characters given agree surprisingly with those of *Psilomma dubia* Kieffer. Therefore, I think, is no doubt as to synonymy of both species with *Psilomma dubia* Kieffer.

Distribution. England, Ireland, France, Sweden, Schotland, Hungary, Czechoslovakia, Poland.

Material examined. France: Amiens, ♂, *Psilomma crassicornis* K. lectotype (Kieffer, Paris); Czechoslovakia: Květná mt., Příbram distr., 12. ix. 1981, 1 ♂; Praha-Komořany, 4. ix. 1984, 1 ♂; Habartice, Klatovy distr., 1. viii. 1982, 1 ♂; Kamenice n. Lipou, Pelhřimov distr., 24. vii. 1982, 1 ♂; Velký Osek, Nymburk distr., 13. vii. 1988, 1 ♀; Spačice, Chrudim distr., 20. vii. 1985, 2 ♂♂; Pořana mt., Slov. Rudohoří, mts., 2. viii. 1986, 2 ♂♂; Třebotov, Praha distr., 3. vii. 1985, 1 ♂ (all Macek, Praha); Polonia: Belsk dol., Modrzewina res., 20. vii. 1982, 1 ♂ (Ekipa, Praha).

Acanopsilus Kieffer, 1908

Acanopsilus Kieffer, 1908, Spec. Hym. Eur. Alg., 10: 426.

Type species: *Acanopsilus clavatus* Kieffer, 1908, Spec. Hym. Eur. Alg. 10: 427 (by monotypy) = *Acanopsilus heterocerus* (Haliday, 1857).

Mandibles nearly symmetrical, overcrossing at tips slightly; the antennae of both sexes 14-segmented; scapus long, slender with apical margin simple; female flagellomeres become widened towards apex; eyes bare; foramen occipitale margined with short dense pubescence; pronotum cervicoid, pronotal collar not distinct; the pits below the pronotal shoulders with tiny tuft of white pubescence; pronotal shoulders distinct; propodeum slanting posteriorely with medial keel rather raised into short ridge anteriorely: lateral keels of propodeum converging posteriorely thus projecting into the compact lamellae at each side of pronotum; femora slender, femoral stalk not abruptly separated from femoral trunk; radialis almost indicated as a spur parallel to the fore wing margin marginalis shorter than parastigma; hind wings with basal cell obliterated; petiolus subcylindrical, with longitudinal keels; gaster slender, fusiform, tapering to a sharp point towards apex; hypopygium sharply pointed behind, slightly downcurved, base of macrosternite simple or slightly angled, surmounted with dense tuft of pubescence; male genitalia slender, dentes fused with volsellae, paramerae long stiletoid; endoovipositor as long as gaster with stiletoid valvulae.

Distribution. A monotypic genus with wide distribution over Europe. Biology unknown.

Taxonomical notes. The genus was established monobasically by Kieffer (1908). Subsequently, Kieffer (1909) included here three other species. Nixon (1957) pointed out on the close relationships of *Acanopsilus* to *Acanosema* thus included it here. Hellén (1964) separated *Acanopsilus* back as a genus based on the different number of female antennal segments (14). Recently, based on the comparison of apomorphies as well as plesiomorphies inferred, *Acanopsilus* suggests to be a more plesiomorphic (8 plesiomorphies: 4 apomorphies) as to *Acanosema* s. str. The following differential characters argue cogently to keep this species in separate genus *Acanopsilus*: 1. long, slender scapus with simple apical margin; 2. slender femora; 3. cylindrical petiolus; 4. 14-segmented antennae in females.

***Acanopsilus heterocerus* (Haliday, 1857)**

Belita heterocera Haliday, 1857, Nat. Hist. Rev., 4: 169.

Pantolyta heterocera; Kieffer, 1916, Das Tierreich, 44: 433.

Acanopsilus clavatus Kieffer, 1908, Spec. Hym. Eur. Alg., 10: 427, **syn. nov.**

Psilomma radiata Kieffer, 1908, Spec. Hym. Eur. Alg. 10: 424, **syn. nov.**

Characteristics. Body length 2.6–3.2 mm; body black, shining with gaster brown; head from the dorsal view transverse with prominent antennal conus; temples converging posteriorely; entire head covered with long pale pubescence; genae rounded off, rather longer than eye diameter; antennal conus with a tiny furrow between antennal sockets with distinct rugosity below; supraclypeal area bare and polished; clypeus prominent, convex; fore tentorial pits placed in deep hollows; mandibles fulvous, nearly symmetrical slightly overcrossing at tips; left mandible with single inner tooth, the right mandible with malar plate

arisen by fusion of a pair of small teeth; eyes bare; foramen occipitale margined with a dense pale pubescence at each side; antennae 14-segmented, female antenna with scapus as long as six following segments together, slender with simple apical margin; flagellomeras become widened towards apex; the last five flagellomeras submoniliform, pronotum cervicoid with indistinct pronotal collar indicated by conspicuous pronotal shoulders and long, erect pubescence; pronotal neck with two large medial and lateral pits; epomia absent; the lateral pits with a tiny tuft of white pubescence; mesonotum convex long hairy on the dorsal surface; mesoscutellar fovea larger than postfoveal plate, semicircular; dorsellum with longitudinal ridge surmounted by long dense pubescence; propodeum slightly concave posteriorely with anterior part of medial keel raised into ridge and lateral keels fused into prominent compact lamella; legs slender; radialis spurious, parallel to the fore wing margin; stigmalis perpendicular to the marginalis, marginalis shorter than parastigma, twice longer than stigmalis, Sc + R, basalis and cubitalis distinct; petiolus cylindrical, narrowed anteriorely longitudinally ribbed; gaster slender, fusiform, tapering into sharp point, rather compressed posteriorely; hypopygium as long as praehypopygium, sharply pined; macrosternite slightly angled at base, surmounted with pale tuft of pubescence.

Variability. Apart from size, the form of antennae and gaster in females are subject to considerable variation in this species. The form of particular flagellomeras can vary from quadrate to long cylindrical; the gastral form varies from slender, fusiform to widely elipsoid tapering towards apex abruptly. Correlated with shape of gaster is the development of macrosternal keel, which is conspicuous in morphs with slender, fusiform gaster and lacking in those with stout elipsoid gaster. The intermediates exhibit various successive stages of keel development. In males the variation as to size and form of emargination on the first flagellomera is of considerable importance. The emargination can vary from hardly indicated state to deep thus bowling the basal part of flagellomera out. Due to the great intraspecific polymorphism, the particular morphs have been treated as separate nominal species. *Belita heterocera* Haliday as described from the female specimen from England corresponds with the morph of slender fusiform gaster; Ashmead (1893) assigned it to his *Pantolyta*, Kieffer (1908) for the lack of type revision as well as vague original description removed it to species incertae sedis within the scope of *Pantolyta*. He, at the same time established monobasic genus *Acanopsilus* for *Acanopsilus clavatus* Kieffer. The type series which is composed of seven female specimens preserved in Genova, agrees with morph of elipsoid gaster. Kieffer (1909) included here three other species which, based on type revision, revealed to be inconsistent with recent generic concept of *Acanopsilus*. Types of *Acanopsilus arcuatus* Kieffer and *Acanopsilus laticeps* Kieffer were revised and identified with *Acanosema nervosum* Th., the identity of *Acanopsilus brevinervis* Kieffer is uncertain for lack of type but based on original diagnosis there are no doubts as to synonymy *Acanopsilus brevinervis* Kieffer to *Anommatium*

ashmeadi Mayr. Nixon (1957) neglecting the high polymorphism of this species considered both morphs as good species confusing their names reciprocally (his *Acanosema clavata* Kieffer agrees with *Acanopsilus heterocerus* Hal. and vice versa).

Lectotype designation. Haliday (1859) described this species from single female from England without proper type designation provided by identification label only. This specimen was designated subsequently by me as lectotype and is preserved in National Museum of Ireland in Dublin.

Distribution. England, West Germany, Austria, Hungary, Italy, Greece, Czechoslovakia, Sweden.

Material examined. Types: *Belita heterocera* Hal., 1 ♀ (lectotypus) (Haliday, Dublin); *Psilomma radiata* Kieffer, Svabhegy, Hungary, ♂ (lectotypus) (Szepliget, Budapest); *Acanopsilus clavatus* K., Isle Giglio, Italy, 7 ♀♀ (lectotype + paralectotypes) (Doria, Genova). No types: Sweden, 26 ♂♂, 18 ♀♀ (Jansson et Sundholm, Lund); France: Agay Var, 27. v., 1 ♂ (Obenberger, Praha); West Germany: Värstteten, 30. vi. 1986, 3 ♀♀ (Ssymank, Muenchen); Austria: Lechtaler, 14. viii. 1974, 2 ♂♂ (Hasselbarth, Muenchen); Czechoslovakia: Nová Obora, Hluboká n. Vltavou env., 30. vi. 1981, 2 ♂♂; Praha-Radotín, 3. vii. 1985, 1 ♂; Tatranská Kotlina, Vysoké Tatry mts., 11. viii. 1982, 2 ♂♂, 1 ♀ (all Macek, Praha); Greece: Antr. Jovis, Creta isl., 1906 (Biro, Budapest).

***Psilommacra* gen. nov.**

Type species: *Psilommacra oligomera* sp. n. (by monotypy).

Characteristics. Mandibles slightly asymmetrical, slightly overcrossing at apex; righth mandible with single malar plate developed from fusion of two reduced teeth; eyes pubescent; female antennae 13-segmented; scapus short and stout with apical margin simple; female flagellomeres become widened and shortened towards apex; the lateral pits of pronotal neck below pronotal shoulders with only scarce pubescence; pronotal collar with long erect hairs; radialis spurious, parallel to the fore wing margin, radial cell reduced; female with frequent pterygopolymorphism; female petiolus cylindrical; hypopygium pointed towards apex, slightly compressed and downcurved.

Relationships. The new genus *Psilommacra* may be characterised by a set of ground-plan characters, which are apomorphic in term of ground plans of the *Psilommina*: 1. radial cell reduced, radialis spurious, parallel to the fore wing margin; 2. male genitalia slender with paramerae stiletoid or lancetoid, dentes fused with volsellae; 3. hypopygium exposed downcurved, slightly compressed posteriorely, subgenital plate meets apical tergites mesally.

The true relationships of *Psilommacra* to the other genera of *Psilommina* are obscured by the mosaic of apomorphies and plesiomorphies combined. Based on the number of apomorphies retained (5), this genus could be regarded as rather advanced among *Psilommina*. As a unique character, peculiar to *Psilommacra*, the 13-segmented antennae in female

may be considered. The combination of characters as summarized in Table 1. argues cogently for independent generic status of this species. The new genus includes only the single species *Psilommarca oligomera* sp. n. described from Central Europe.

***Psilommarca oligomera* sp. n.**

Female. Macropterous, length 2.85 mm, general colour ferrugineous with gaster paler, antennae yellowish brown, legs yellowish. Head sub-pentagonal with prominent antennal conus; temples slightly converging behind, longer than eye diameter with scarce adherent pubescence; foramen occipitale wide, its diameter wider than length of genae; ocelli conspicuous, arranged in equilateral triangle; the hind ocelli as far as half distance of each ocellus from oculus; head as long as high from lateral view; genae as long as eye diameter with long adherent pubescence, mouthparts hypognathous with mandibles crossing at tips, right mandible with large inner tooth evolved by fusion of two reduced teeth; antennal conus finely rugous beneath, antennal sockets separated by the shallow furrow; postfrontal area smooth, shining hardly prominent; the fore tentorial pits placed in the deep depressions; antennae 13-segmented with flagellomeres becoming widened and shortened towards apex; scapus a little shorter than five following segments together, slightly curved with apical margin simple; pedicellus as long as the first flagellomera; all flagellomeres covered with short adherent pubescence.

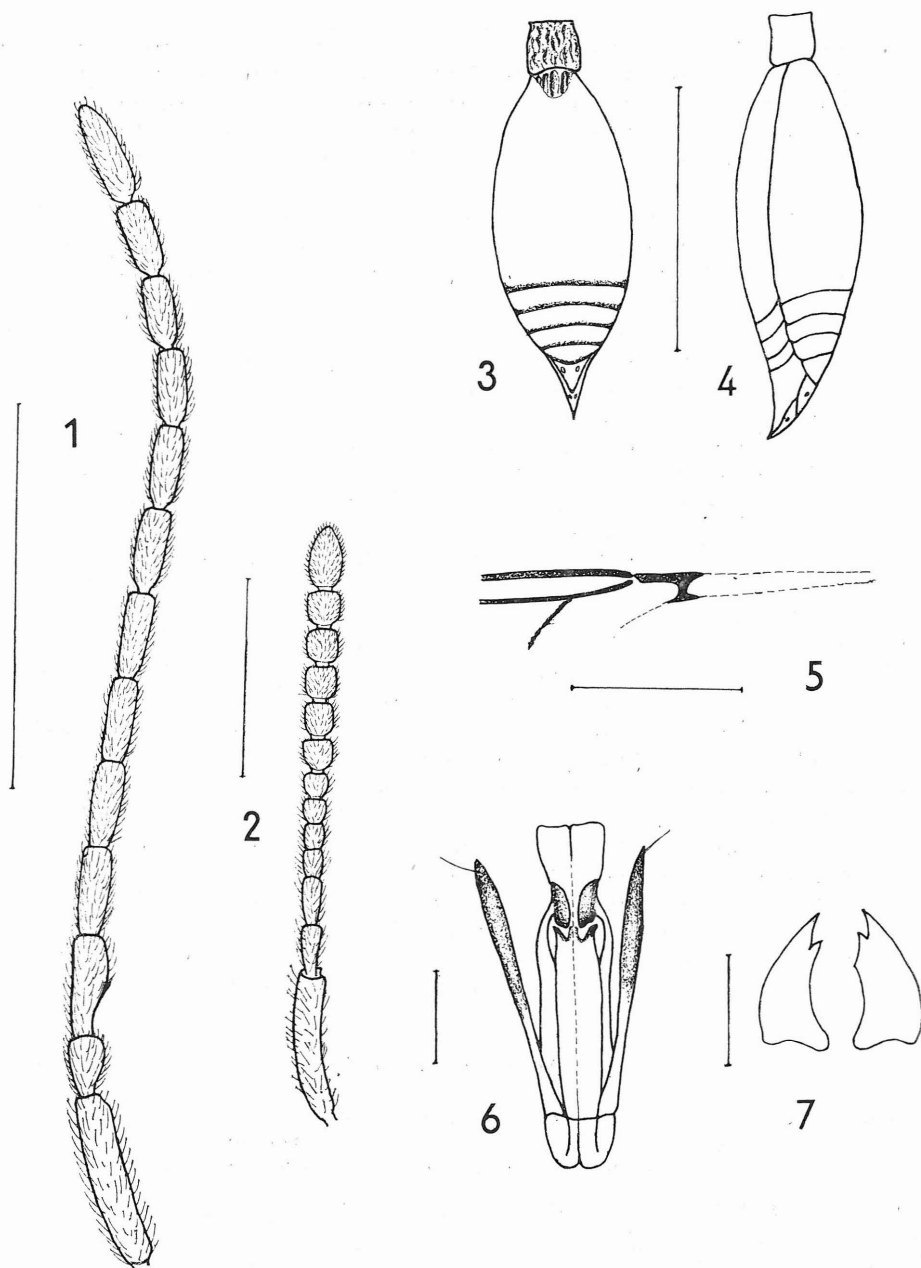
Pronotum cervicoid; pronotal collar inconspicuously separated from pronotal neck, covered with long, adherent pubescence; the lateral pits beneath the pronotal shoulders scarcely pubescent; pronotal neck with medial fovea and two lateral pits at each side; mesonotum a little narrower than head, slightly convex, polished, covered with long pubescence; notaulices deep, converging posteriorly; mesoscutellar fovea quadrate, large, wider than distance of notaulices at base; postfoveal plate smaller than mesoscutellar fovea; dorsellum prominent.

Propodeum wider than longer with hind margin concave; medial keel simple, lateral keels parallel, thus forming compact plate projecting behind; dorsal surface of propodeum bare, scarcely pubescent at each side.

Wing venation reduced, radialis obliterated, spurious parallel to the fore wing margin; stigmalis very short, marginalis a little shorter than parastigma, basalis spurious; all other veins slightly indicated; basal cell of hind wing absent.

Petiolus subcylindrical, distinctly widened posteriorly with irregular rugosity on its dorsal surface.

Gaster fusiform, tapering to a sharp point posteriorly; hypopygium as long as praehypopygium, downcurved; endoovipositor as long as gaster; base of macrotergite with sparse regular striation, base of macrosternite simple.



Figs. 1—7: *Psilommacra oligomera* sp. n.: 1: male antenna, 2: female antenna, 3: female gaster [distal view], 4: female gaster [lateral view], 5: fore wing costal margin, 6: male genitalia, 7: mandibles. Scale — 1 mm [figs. 2—4], 0.5 mm [figs. 1, 2, 5], 0.1 mm [figs. 6—7].

Male. Antennae 14-segmented with cylindrical flagellomeres, scapus twice as long as the first flagellomere, the second one a little shorter than the first, the first flagellomere three times as long as wide with shallow emargination reaching as far as the half of the first flagellomere; the other flagellomeres equal in length, a little shorter than the first one.

Variation. Female affected by considerable range of pterygopolymorphism. Based on collecting data, the macropterous morphs seem to be more frequent than alate ones. Further, the form of antennae of both sexes is subject of variation. In females the basal flagellomeres vary from slender, cylindrical to short, oblong, the distal flagellomeres vary from short cylindrical to transverse; in males the extension of emargination of the first flagellomere varies from half to three quarter of the segment.

Type material: Holotype-female: Hungary, Visegrad, 12. vi. 1926, macropterous (Biró, coll. Budapest). Paratypes: Romania; O. Sebeshely, 25. vi.—3. vii. 1913, 5 ♀♀; Riu Mare, Alp. Kudsir, 19. vii. 1913, 4 ♀♀; Riu Gliu, Alp. Kudsir, 14. vii. 1913, 1 ♀; Priszlop, Alp. Kudsir, 29. vii. 1914, ♀ (all Biró, coll. Budapest); Hungary: Budapest, 8. x. 1913, ♂; 11. vi. 1919, ♂; 28. ix. 1927 ♂; 21. vi. 1916, ♂ (all Biró, coll. Budapest) Fejervarcsurgo, 23. vii. 1923, ♀; Visegrad, 12. vi. 1926, ♂; Tihany, 25. ix. 1930, ♂ (all Biró, coll. Budapest); Szilvavarad, Gerennavár, 6. vii. 1982, ♂ (Papp, coll. Budapest); Oberbergen, Kaiserstuhl, Baden, ii—vi. 1980; vii. 1981, 4 ♀♀ (all Gack, Munchen) Värstetten, Freiburg dist., Südbaden, 205 m, ♂ (Ssymank, coll. Munchen); Czechoslovakia: Praha-Roztoky, 25. vi. 1986, ♂; Dobřichovice, Praha env., 15. ix. 1985, ♂; Vonoklasy, Praha env., 29. vi. 1985, ♂; Kraví Hora, Moravia mer., 21. 1983, ♂ (all Macek, coll. Praha).

The new species is very characteristic with 13-segmented antennae in females and pubescent eyes, the characters separating this species from related of *Acanopsilus* and *Acanosema*. The biology is poorly known, the scarce collecting data suggest the female is of epigeic habits, thus inhabiting the upper soil strata, leaf litter, moss where their hosts are searched for. The males are more active than the females.

Genus *Acanosema* Kieffer, 1908

Acanosema Kieffer, 1908, in André: Spec. Hym. Eur. Alg., 10: 407.

Brunnicophilus Nixon, 1931, Rec. Ent. London, 43: 83—84, **syn. nov.**

Type species: *Acanosema rufum* Kieffer, 1908, in André: Spec. Hym. Eur. Alg., 10: 411 (by original designation).

Characteristics. Adults black brown to yellow; body length 1.2—3 mm; head globular with distinct antennal sockets; mouthparts hypognathous, mandibles shortly crossing at tips, rather asymmetrical; scape rather short, thick with well developed apical rim; female antenna 15-segmented with flagellomeres widening towards apex, its apical flagellomere the largest of all; male antenna 14-segmented with cylindrical flagellomeres

of variable length; foramen occipitale margined with white dense pubescence; pronotum divided into distinct neck and broad collar area; pronotal shoulders hardly indicated, smooth and rounded off, pits at sides of pronotal collar deep and conspicuous, separated above by a flat bridge and internally by a fenestra and each filled below with a conspicuous tuft of pubescence; mesoscutum having a bare, polished appearance, being covered only with long, semidecubent hairs being numerous on the front part of the middle lobe; notaulices distinct in primitive state or fading out in apomorphic state, mesoscutelar fovea large and deep in plesiomorphic state or shallow and square separating the postfoveal plate in perfection; propodeum with simple medial keel often raised anteriorelly thus forming a triangular basal ridge; femora stout and short with short femoral stalk and abruptly expanded femoral trunk; wings when present with radialis when indicated parallel to the fore wing margin, radial cell open, postmarginalis absent, stigmalis short vertical to the marginalis, marginalis at most as long as parastigma, cubitalis slightly indicated; female petiolus usually strongly swollen at sides, subhexagonal to heart-shaped with dorsal surface smooth or finely striated, with long erect white hairs at sides; female gaster fusiform to elipsoid, sharply pointed and compressed behind, the apical tergite narrow, longer than wide; large sternite more or less right angled at base; endoovipositor as long as gaster, stiletoid; male gaster elipsoid, male genitalia slender, narrow with paramerae stiletoid, dentes, attaching to the volsellae tightly and upturned to vertical position.

Differential diagnosis. Closely related to *Acanopsilus* and *Cardiopsilus*. From *Acanopsilus* differs by the 15-segmented female antennae, subhexagonal petiolus, stout femora, raised scapal apical rim and base of macrosternite projecting to the angle. From *Cardiopsilus* differs by the bare eyes, short and stout scapus with raised apical rim and white pronotal pubescence.

Distribution. Holarctic with 5 species (Europe — 3; North America — 2). Biology. Poorly known; adults inhabiting humid, shady situations in forests preferring beech associations. The winged morphs are free-living, the micropterous and myrmecophilous are hidden, inhabiting the upper soil strata, decaying litter or ant nests, ascending the vegetation only at time of mating. The fragmented data suggest larvae to be parasitoids of sapro-fagous larvae of Nematocera. The relations of myrmecophilous species to their hosts are unclear.

Taxonomical remarks. The conception of the genus has been a subject of conjecture up to this time, due to lack of type revisions and neglect of high polymorphism in some species. Consequently many invalid nominal taxa came into existence assigned to various genera. Nixon (1957) pointed out the close relationships among *Cardiopsilus*, *Acanopsilus* and *Acanosema* having included them in collective genus *Acanosema*. Hellén (1964) retained *Acanopsilus* in separation, however *Cardiopsilus* and *Acanosema* he included in his *Cardiopsilus*. The differential characters among above mentioned genera argues cogently for its separate status.

Key to the European species of genus *Acanosema* Kieffer

- 1 Occipital margin with thick collar of pubescence; notaulices tending to be obliterated in middle; postfoveal plate quite separated from parafoveal area *Acanosema rufum* Kieffer
- Occipital margin with less developed collar of pubescence; notaulices distinct throughout; postfoveal plate connected with parafoveal area by parafoveal bridge 2
- 2 (1) Mandibles widely crossing at apex; female macrosternite more or less angled at base *Acanosema nervosum* (Thomson)
- Mandibles crossing at their tips; female macrosternite rounded off *Acanosema tenuicornis* (Kieffer)

1. *Acanosema rufum* Kieffer, 1908

Acanosema rufum Kieffer, 1908, in André: Spec. Hym. Eur. Alg., 10: 411.

Brunnicophilus donisthorpei Nixon, 1931, Ent. Rec. London, 43: 83, *syn. nov.*

Characteristics. Reddish to fulvous yellow; body length 2.8—3.6 mm; head rather pentagonal from above, temples converging posterioerely, twice long as eye diameter, ocelli tiny, arranged in an equilateral triangle, vertex with two densely pubescent areas narrowly interrupted in middle; antennal sockets compact, both vertex and frons rather convex, genae twice as long as the eye diameter; mandibles slightly asymmetrical, overcrossing apically, tentorial pits in large, deep depressions; genae converging regulary towards mouthparts; clypeus outstanding, convex; postfrons smooth, polished, slightly convex medially; female antennae 15-segmented, flagellomeras widening towards apex, submoniliform, eyes bare. Neck of pronotum with dense contiguous pubescence, medial pits distinct, pronotal collar with dense erect pubescence, epomia wanting, pronotal shoulders rounded off; mesonotum slightly convex, flattened behind, notaulices obliterated medially, two parapsidal short furrows out of notaulices; mesoscutellar fovea large, oblonge, communicating with parafovea by the furrow thus quite separating the postofveal plate; metanotum with flatened dorsal area covered by thick whice pubescence; propodeum square, slightly concave posterioerely, medial keel simple, dorsal area of propodeum with sparse contiguous pubescence; lateral keels slightly projecting posterioerely; femora shortly clavicoïd. Wings yellowish, radialis obliterated, stigmalis short, vertical to the marginalis, as long as half of this; postmarginalis very short, not longer than stigmalis, parastigma 1.5x longer than marginalis, slightly longer than basalis; both medialis and cubitalis slightly indicated; hind wing lancetoid, wide with pale basal cell; petiolus heart-like, smooth, with dense wide pubescence at each side; gaster fusiform, hypopygium (8.—9. abdominal tergite + 7. abdominal sternite) longer than the praehypopygium (4.—7. abdominal tergites and sternites), macrotergite (3. abdominal tergite) with dense pubescence anteriorely, macrosternite (3. abdominal sternite) with angular prominence anteriorely covered with dense tuft of pubescence on angular tip, the 7. sternite not overreaching the sides of the 8. and 9. tergites.

Taxonomical notes. The morphological analysis gives evidence of the isolated position of this species in relation to all species comprising the *Acanosema* complex. All the apomorphies inferred seem to be associated with myrmecophily and subterranean life (dense pubescence of pronotum, occiput and base of macrosternite; obliteration of notaulices, separation of postfoveal plate).

In spite of uniqueness of these characters in Belytinae at all, they have insignificant taxonomical value because of it being an adaptive character. Besides the unique characters, this species retains a set of ones in common with other *Acanosema* species [structure of antennae, wing venation, shape of petiolus, structure of macrosternite as well as structure of femora]. All the characters indicated could be considered as synapomorphies to *Acanosema* and thus give good evidence for the inclusion of this species here. Nixon (1931) described from the nest of *Lasius brunneus* Latr. a new genus and species *Brunnicophilus donisthorpei* Nix. Based on the type revision the morphological identity with *Acanosema rufum* Kieffer was ascertained. Both nominal species differ from each other only by the colour (*Brunnicophilus donisthorpei* Nix. fulvous yellow; *Acanosema rufum* Kieffer — rufous reddish). Regarding the fact that colour in Diapriidae is subject to considerable variation, both species seems me to be only colour aberrations of the same species *Acanosema rufum* Kieffer.

Lectotype designation. Kieffer (1908) described this species on the base of a single female from Central Bosna. The specimen has not been designated appropriately, but provided with locality and identification labels only. The recognition of the type specimen made on the base of comparison of literature data with those of specimen considered. The type specimen is in good condition remounted on the triangular label. Lectotype designated by me in 1983.

Distribution. Very rare species with scattered records from England, West Germany and Hungary.

Biology. Poorly known; Nixon (1934) noticed it from the nest of the ant *Lasius brunneus* Latr.

Material examined. England: Berks, Windsor Forest, 1 ♀, 1 ♂ (Nixon, coll. London); Hungary: Bosna, 1 ♀, (Reitter, coll. Budapest) (Lectotype).

2. *Acanosema nervosum* (Thomson, 1858)

Cinetus nervosus Thomson, 1858, Öfv. Ak. Förh., 15: 165.

Pantolyta nervosa; Dalla Torre, 1893, Cat. Hym., 5: 458.

Psilomma caudata Cameron, 1881, Tr. Ent. Soc. London, 8: 557, **syn. nov.**

Psilomma caudatum; Dalla Torre, 1898, Cat. Hym., 5: 452.

Acanosema caudatum; Kieffer, 1908, Spec. Hym. Eur. Alg., 10: 409.

Acanosema alpestre Kieffer, 1908, Spec. Hym. Eur. Alg., 10: 412, **syn. nov.**

Acanosema reitteri Kieffer, 1909, Ann. Soc. Sci. Bruxelles, 33: 393, **syn. nov.**

Acanosema brevipenne Kieffer, 1908, Spec. Hym. Eur. Alg., 10: 408, **syn. nov.**

Cardiopsilus rufiventris Kieffer, 1909, Ann. Soc. Sci. Bruxelles, 33: 392.

Acanopsilus arcuatus Kieffer, 1909, Ann. Soc. Sci. Bruxelles, 33: 393, **syn. nov.**

Acanopsilus laticeps Kieffer, 1909, Ann. Soc. Sci. Bruxelles, 33: 393, **syn. nov.**

Aclista microcera Kieffer, 1909, Hym. Eur. Alg., 10: 470.

Aclista curvinervis Kieffer, 1913, Broteria, 11: 172, **syn. nov.**

Acanosema flavipes; Nixon, 1957, Hand. Ident. Brit. Insects, 8 (3): 24.
Gardiopsilus nervosus; Hellén, 1964, Fauna Fennica, 18: 57.

Characteristics. Body length 1.6—4.00 mm; colour varies from fulvous yellow to shining black with gaster paler; head from frontal view triangular, genae at first slightly after its middle more strongly converging to the mouth aperture, twice longer than eye diameter; postfrons smooth, clypeus prominent, compressed at sides, triangular; antennal sockets prominent, compact; vertex with long white hairs; temples moderately converging to the foramen occipitale; foramen occipitale margined with dense white pubescence; eyes bare; female antenna 15-segmented; scapus short, stout, slightly curved and narrowed distally with raised apical rim projecting to two tiny lateral denticles; scapus as long as the four following segments together; pedicellus cylindrical, larger than the first flagellomera, the following flagellomeras becomes widened towards apex, subcylindrical, the last four submoniliform with the apical segment the largest of all; male flagellomeras slender cylindrical to submoniliform; due to variation of flagellomeral index (width: length of flagellomera), the appearance of flagellomeras at both sexes varies to considerable extent (basal flagellomeras slender cylindrical to quadrate in females and cylindrical to submoniliform with varying shape of emargination on the first flagellomera); basal flagellomeras with short contiguous pubescence the distal flagellomeras with adherent pubescence (in female); the colour of antennae varies from fulvous yellow with progressive darkening of distal part; mandibles crossing at apex, slightly asymmetrical. Pronotum cervicoid with collare and neck indistinctly subdivided; the appearance of medial neck pits variable (shallow pits to transparent fenestra); the dense tuft of white pubescence filling the depressions below the pronotal shoulders as well as medial pits posteriorly; pronotal shoulders rounded off; epomia absent; the pronotal collare with stiff adherent long pubescence; the appearance of mesonotum varies from distinctly convex anteriorely with depressed posterior part to slightly globose in all parts; notaulices deep, converging posteriorly, however close to the mesoscutelar suture narrow and diverging abruptly; mesonotum polished with sparse long contiguous pubescence; mesonotal fovea quadrate, wider than postfoveal plate, postfoveal plate flat, polished; metanotum with prominent, keeled dorsellum; propodeum a little wider than long with lateral keels slightly converging posteriorly, projecting into small tubercles behind; the posterior margin of propodeum straight or at most slightly concave; medial keel raised into triangular ridge anteriorely; the shape of medial keel variable, in micropterous morphs the medial keel is simple. Femora shortly clavicoïd with short femoral stalk. Considerable pterygopolymorphism, specimens with fully developed wings or wings reduced to scale-like rudiments; radial cell open, radialis slightly indicated, spurious, parallel with fore wing margin; stigmalis short, vertical to the marginalis, as long as half of marginalis, the length ratio of marginalis to parastigma variable (marginalis at most as long as parastigma or at least half as long as parastigma); medialis and cubitalis slightly indicated, spurious. The petiolus

of female varies from distinctly heart-like to subhexagonal with variable dorsal surface texture (smooth to striated); petiolus with long adherent pubescence at sides; male petiolus subcylindrical to cylindrical.

Female gaster fusiform with macrotergite finely striated at base; macrosternite strongly produced (more or less right-angled) at base with dense white pubescence; gastral apex slightly downcurved; male gaster longitudinally ellipsoid to ovoid; endoovipositor very long with basal insertion inside of macrosternite prominence; sheaths stiletoid; male genitalia slender with lancetoid paramerae, dentes large vertical to the aedeagal axis, attaching to the volsellar tips.

Differential diagnosis. Closely related to the unclear species *Acanosema tenuicornis* Kieffer differing from it only on the base of macrosternite structure of females.

Variation. This species is affected by a considerable range of polymorphism in consequence of various life habits. Collecting data suggests the high frequency of micropterous morphs at higher altitudes (Carpathians, Alps, Sierra Nevada) whilst alate morphs seem to be more eurytopic. Both morphs can be found in the same situations simultaneously. The micropterous morph is closely associated with epigeism, ascending to the soil surface as well as vegetation in time of mating. The epigeism gives rise to its aberrant appearance (wing reduction, depigmentation, shortening of limbs, stout habitus). In opposition, the free-living morphs retained those characters enabling adults the free-living activity (fully developed wings, strong pigmentation, longer limbs, slender habitus). The ecological plasticity as expressed in this species is implied by its considerable polymorphism. However both ultimate morphs are connected by a sequence of intermediates with simultaneous occurrence in nature. The special adaptations to the epigeism as expressed in this species can be compared with those of *Acanosema rufum* Kieffer, the species closely associated with ants. Now, we can consider myrmecophily without doubt as a special alternative to epigeism. However, the evolution tending to rigid specialization, as myrmecophily is, gave rise to this species to the restriction of polymorphism to a considerable extent, with development of special myrmecophilous structures (areas of dense pubescence).

Lectotype designation. Thomson (1858) described this species on the base of a single male specimen deposited in the Zoological museum of Stockholm. This unlabeled specimen was identified as type, remounted and provided by lectotype designation (des. Macek, 1988) and identification label with original combination. The specimen is in good condition.

Taxonomical remarks. Thomson (1858) referred this species to *Cinetus*. Nixon (1957) transferred it to *Acanosema* in new combination *Acanosema nervosum* (Thomson). Due to the considerable polymorphism the elder authors (Cameron, 1881; Kieffer, 1908; 1909) described particular morph as valid species. The type revision revealed these taxa to be conspecific with *Acanosema nervosum* Th. The synonymized species are reviewed as follow: *Acanosema caudata* (Cameron) and *Acanosema brevipenne* Kieffer although I did not revise the types for their

anonymity there are no doubts as to the synonymy of both species with micropterous morphs of *Acanosema nervosum* Th.; *Acanosema alpestre* Kieffer, *Acanopsilus arcuatus* Kieffer, *Acanopsilus laticeps* Kieffer and *Aclista curvinervis* Kieffer based on the type revisions are conspecific with male of *Acanosema nervosum* Th.; *Aclista microcera* Kieffer is a male specimen with subglobular flagellomeres thus representing a variety of male of *Acanosema nervosum* Th.; *Cardiopsilus rufiventris* Kieffer and *Acanosema reitteri* Kieffer, based on the type revision, are alate morphs of female of *Acanosema nervosum* Th., *Acanosema flavipes* (Kieffer) was misinterpreted and inappropriately transferred from *Psilomma* by Nixon (1957), *Acanosema flavipes* (Kieffer, sensu Nixon) is conspecific with *Acanosema nervosum* Th., however original *Psilomma flavipes* Kieffer is conspecific with *Psilomma dubia* Kieffer.

Biology. Poorly known; the collecting data suggest that the adults prefer the shade, humid situations in forest habitats, especially in beech association. Hosts are saprophagous larvae of Sciaridae and Mycetophilidae living in rotten wood (Nixon, 1957).

Distribution. The collecting data suggest this species to be widespread all over Europe.

Material examined. Types: *Cinetus nervosus* Thomson, Sweden, ♂, lectotype des. Macek, 1988 (Boheman, coll. Stockholm); *Acanosema alpestre* Kieffer, Nava VIII., Italy, lectotype des. Macek, 1983 (Solari, coll. Genova); *Acanosema reitteri* Kieffer, Hercegovina, Yugoslavia, ♀, lectotypus des. Macek, 1983 (Reitter, coll. Budapest); *Cardiopsilus rufiventris* Kieffer, Scotland, ♀, type des. Nixon, 1957 (Cameron, coll. London); *Acanopsilus arcuatus* Kieffer, Monte Frontero, VIII., Italy, ♂, lectotype des. Macek, 1983, (Solari, coll. Genova); *Acanopsilus laticeps* Kieffer, Nava, Italy, ♂, lectotype des. Macek, 1983 (Solari, coll. Genova); *Aclista microcera* Kieffer, Scotland, ♂, type des. Nixon, 1957 (Cameron, coll. London); *Aclista curvinervis* Kieffer, Rörwik Vikten, Norway, ♂, lectotype des. Macek, 1987 (Strand, coll. Berlin). No types: Bohemia: Černé Voděradý, 22. vi. 1985, 5 ♂♂ (Macek, coll. Praha); Běstvína, 18. vii. 1985, 8 ♀♀, (Macek, coll. Praha); Nižbor, 30. vi. 1985, 6 ♂♂, 2 ♀♀, Slovakia: Polana, mt., 2. viii. 1986, 11 ♂♂ (Macek, coll. Praha); Tatranská Kotlina Tatry, mts., 13. viii. 1982, 16 ♂♂, 4 ♀♀ (Macek, coll. Praha). Hungary: Vacz, 30. v. 1927, 2 ♂♂ (Biro, coll. Budapest). Poland: Klembow, res. Debina, 21. viii. 1981, 2 ♀♀ (Ekipa, coll. Praha). England: Norwood, S. E. London, vii., 1929, 28 ♂♂, 15 ♀♀ (Nixon, coll. London). Sweden: Hls. Enanger, 6. viii. 1968, 2 ♂♂ (Sundholm, coll. Lund).

3. *Acanosema tenuicornis* (Kieffer, 1909)

Psilomma tenuicornis Kieffer, 1909, Spec. Hym. Eur. Alg., 10: 421.

Rhynchopsilus apertus; Nixon, 1957 (nec Kieffer, 1909), Hand. Ident. Brit. Insects, 8 (3): 13.

Characteristics. Colour fulvous yellow with head and mesosoma darker; body length 2.0—2.2 mm; head globose, both vertex and temples rounded off; genae longer than eye diameter; antennal sockets short, separated

each other by shallow furrow; foramen occipitale margined with dense white pubescence; head in frontal view triangular with genae converging to the mandibular basis; clypeus prominent, rounded off; postfrons smooth, polished; antennal sockets rugous; fore tentorial pits in deep hollows; mandibles symmetrical, overcrossing at apex; female antennae 15-segmented; scapus with raised apical rim projecting to the blunt teeth at sides; flagellomeres become widening towards apex with apical flagellomera the largest of all; basal flagellomeres subcylindrical, the distal ones submoniliform. Pronotal collar with dense white pubescence; the pits beneath the pronotal shoulders with dense white tuft of pubescence; epomia absent; pronotal shoulders rounded off; medial pits on the dorsal neck area large, shallow; mesonotum slightly convex, notaulices distinct, converging posteriorly; mesoscutellar fovea quadrate, deep; both postfoveal and parafoveal plates connected by bridge; postfoveal plate flat, quadrate; dorsellum prominent with short white pubescence; propodeum quadrate, slightly concave posteriorly, medial propodeal keel simple, lateral keels converging posteriorly to the blunt tubercles; propodeum with pale pubescence at sides. Radial cell obliterated; stigmalis as long as $\frac{1}{3}$ or marginalis; postmarginalis a rather longer than stigmalis; radialis absent; marginalis a little shorter than parastigma; medialis and cubitalis spurious; hind wing narrow, blade-like with basal cell desclerotized. Petiolus subcylindrical, widened anteriorly with wide long pubescence at sides. Gaster fusiform slightly compressed behind with apex downcurved; macrosternite basis rounded off with short white pubescence at the tip; base of macrotergite with regular fine striation; covered with short lateral strips of white pubescence.

Differential diagnosis. Closely related to *Acanosema nervosum* Th. differing from it by the simply convex basal part of macrosternite in females and quite symmetrical mandibles. From the scarcity of the species in collections we cannot assess the variation range.

Lectotype designation. The species was described by Kieffer (1908) based on the female specimen, from Foerster's collection deposited in Zoological museum in Vienna. Type has not been designated appropriately, provided by the original identification label only, written in Kieffer's manuscript. Lectotype designated by me in 1983. Nixon (1957) misinterpreted this species with *Rhynchopsilus apertus* Kieffer, which belongs to the genus *Opazon* correctly.

Biology. Poorly known, the collecting data suggests adults inhabiting the upper soil strata, leaf litter and moss in forest associations.

Distribution. England, Switzerland, West Germany, Denmark.

Material examined. Switzerland: Chancy, Geneve distr., 27. v. 1968, ♂ (Besuchet, coll. Praha); Enseigne, Valaise distr., 10. vii. 1970, 1 ♂, 1 ♀ (Besuchet, coll. Praha); la London, Genève distr., 16. vi. 1965, 1 ♀ (Besuchet, coll. Praha). Denmark: Norreskov v. Kolding fjord, Jylland NG, 18. vii. 1982 (Munk, coll. Praha).

Genus *Cardiopsilus* Kieffer, 1908

Cardiopsilus Kieffer, 1908, in André, Spec. Hym. Eur. Alg., 10: 405.

Type species: *Cardiopsilus productus* Kieffer, 1908 in André, Spec. Hym. Eur. Alg., 10: 407 (by monotypy).

Characteristics. Body black shining, with gaster a little paler; body length 2—4 mm; mandibles slightly asymmetrical, right mandible with two reduced denticles, left mandible with one distinct denticle; both mandibles slightly curved and crossing at apex; eyes pubescent; female antennae 15-segmented with apical flagellomeres slightly widened towards apex; scapus long and slender with apical margin simple; pronotal collar with long, greyish, adherent pubescence; medial and lateral neck pits fused thus forming a large fovea with grey tuft of pubescence behind; fore wing with radial cell obliterated; radialis vestigial parallel to the fore wing margin; femora shortly clavicorn with short femoral stalk; petiolus heart-shaped with smooth, shining dorsal surface; propodeum flat with dorsal area bare, shining with posterior margin straight; its medial keel simple; lateral keels diverging each other posteriorly, the outer one projecting into the small tubercle posteriorly; gaster long fusiform, with hypopygium longer than the 4.—7. abdominal tergites together, slightly compressed and downcurved; macrosternite produced into the hump-like projection anteriorly.

Distribution. A monotypic European genus of very scarce occurrence. The recent faunistic records are confined to the Czechoslovak territory.

Biology. Poorly studied, the collecting data suggests the adults prefer shady, humid habitats in termophilous oak associations.

Differential diagnosis. The genus *Cardiopsilus* is related to the *Acanosema* Kieffer differing from him by pubescent eyes, slender, long scapus with simple apical margin; grey pronotal pubescent with large neck foveas; oblong, flat propodeum with straight posterior margin, simple medial keel and diverging lateral keels.

1. *Cardiopsilus productus* Kieffer, 1908

Cardiopsilus productus Kieffer, 1908, in André, Spec. Hym. Eur. Alg., 10: 407.

Characteristics. Body colour black-shining with gaster a little paler, body length 2.0—4.0 mm; head black, shining covered with grey, long matricaria; the head triangular in frontal view; genae as wide as mouth cleft and longer than eye diameter; fore tentorial pits in deep hollows, clypeus bare, prominent, rounded off; labrum triangular; supra-clypeal area bare, smooth; antennal sockets prominent with medial furrow behind; mandibles blackbrown, crossing at apex, the right mandible with two short denticles, the left mandible with one distinct denticle; each mandible slightly incurved; the temples slightly convex with adherent long pubescence; eyes pubescent; female antennae 15-segmented; scapus slender with simple apical rim, as long as four following segments together, pedicellus twice as long as wide; the first flagellomere three times as long as wide and twice as long as the second flagellomere;

the following flagellomeras becoming shorter, subcylindrical, the last six flagellomeras submoniliform, a little widened; male flagellomera 14-segmented, flagellomeras cylindrical, scapus as long as three following segments; the first flagellomera three times as long as wide with shallow emargination at basal half; the remaining flagellomeras three times as long as wide. Pronotum cervicoid; pronotal collar slightly indicated, oblique to the neck with dense grey adherent pubescence; neck with large hollows at each side with tuft of grey pubescence behind; pronotal shoulders rounded off; mesonotum slightly convex with long adherent pubescence; notaulices distinct, slightly diverging posteriorly; meso-scutellar fovea square, shorter than distance of notaulices; dorsellum with prominent medial ridge; propodeum oblong, flat with medial keel simple and posterior margin straight; lateral keels diverging posteriorly with outer keel projecting into the small tubercle. Wings with radial cell open, radialis vestigial, parallel to the forewing margin; marginalis shorter than parastigma; parastigma as long as basalis; the other veins vestigial. Legs yellow brown, femoral stalk short, femoral trunk stout. Female petiolus conspicuously heart-shaped with dorsal surface smooth and shining; male petiolus cylindrical, slightly narrowed anteriorly; petiolus of both sexes with long erect pubescence at sides. Female gaster fusiform, sharply pointed at apex; hypopygium slightly compressed, sharply pointed and slightly downcurved, longer than tergites 4.—7. together; the basal area of macrotergite smooth in females; with scarce striation in males; female macrosternite projecting into hump-like prominence.

Lectotype designation. Kieffer (1908) described this species on the basis of the female from Austria (Tragöss). From insufficient designation of type specimen (provided by the identification label with manuscript species name) the specimen had to be designated subsequently as lectotype by me in 1988. Finally, the specimen after remounting has been provided (besides original identification and locality label) by lectotype label (des. Macek, 1988) and determination label (*Cardiopsilus productus* Kief., det. Macek, 1988). The type specimen is in good condition and is deposited in Foerster's collection in Zoological Museum in Vienna.

Distribution. Switzerland, Austria, Czechoslovakia, Hungary, Finland.

Biology. Poorly known, adults occurring in humid habitats of termophilous oak associations.

Material examined. Czechoslovakia: Nižbor, 30. vi. 1985, 2 ♀♀; Praha-Klánovice, 27. vi. 1985, 2 ♀♀; Vonoklasy, 29. vi. 1986, 1 ♀; Praha-Krč, 12. vi. 1985, 1 ♀; Praha-Radotín, 12. vi. 1985, 1 ♂ (all Macek, coll. Praha). Austria: Tragöss, 1 ♀ (lectotype) (coll. Graeffe, Wien).

<i>Genus</i>	Pleisiomorph.	Intermed.	Apomorph.
<i>Psilomma</i>	13—14	0	1—2
<i>Cardiopsilus</i>	8	2	5
<i>Acanopsilus</i>	8	3	4
<i>Psilommacra</i>	5	2	8
<i>Acanosema</i>	1	2	12
<i>Polypeza</i>	5	1	9
<i>Sundholmiella</i>	2	0	13
<i>Synacra</i>	0	0	15

Table 1. A synopsis of significant characters applied to subtribe Psilomniina.

Explanation of characters and symbols. The coding symbols * and — indicates the apomorphies and plesiomorphies inferred.

1. mandibles: (—) — strongly asymmetrical; (0) — slightly asymmetrical; (*) — symmetrical.
2. the malar side of righth mandible: (—) with two teeth; (*—) malar plate formed by fusions of both teeth.
3. mandibles: (—) widely overcrossing; (0) — slightly overcrossing at tips; (*) — not overcrossing but attaching mesally.
4. eyes: (—) — pubescent; (*) — bare.
5. female antennae: (—) — 15 — segmented; (0) — segmented; (*) — 13 — segmented; (**) — 12 — segmented.
6. scapus: (—) — slender, long; (*) — stout, short.
7. scape margin: (—) — simple; (*) — flanged.
8. female flagellomeres: (—) — cylindrical, at most feebly widening towards apex; (*) — quadrate, distinctly widening towards apex.
9. lateral pronotal pits: (—) — with no differentiated pubescence (*) — with differentiated pubescence.
10. pronotal collar: (—) — with homogenous, soft pubescence (*) — with differentiated dense stiff pubescence.
11. radialis: (—) — converging to the fore wing margin (*) — paralleling to the fore wing margin.
12. pterygopolymorphism: (—) — absent; (*) — present.
13. femora: (—) — slender with longer femoral stalk; (*) — thick with short femoral stalk.
14. petiolus: (—) — cylindrical or subcylindrical; (*) — heart-formed.
15. hypopygium: (—) — straight, conical; (*) — downcurved, compressed.

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