THE EUROPEAN PAMPHILIIDAE (HYMENOPTERA: SYMPHYTA), WITH SPECIAL REFERENCE TO THE NETHERLANDS

by

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Keys are given to the European genera and species of the Pamphiliidae (Symphyta: Megalodontoidea). Ten species are added to the list of the Dutch Hymenoptera. *Cephalcia alashanica europaea* Beneš, 1976 is synonymized with *C. a. alashanica* Gussakovskij, 1935 (syn. nov.), *Acantholyda parvula* Zirngiebl, 1937 with *A. laricis* (Giraud, 1861) (syn. nov.), *Cephaleia intermedia* Hellén, 1948 with *Cephalcia lariciphila* (Wachtl, 1898) (syn. nov.), and *Pamphilius hortorum bicinctus* Benson, 1945 with *P. hortorum* (Klug, 1808) s.s. (syn. nov.). *Pamphilius nigricornis* Snellen van Vollenhoven, 1858 is provisionally treated as a valid species (stat. nov.) *Caenolyda binaghii* Pesarini & Pesarini, 1976 (stat. nov.) is upgraded to species level. Some data on biology and habitats are added. Additionally, *Pamphilius viridipes* spec. nov. is described from The Netherlands and *Acantholyda teunisseni* spec. nov. from Spain.

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CONTENTS

INTRODUCTION

The Pamphiliidae are a small family, which is restricted to the Northern Hemisphere, with about 160 species in nine genera: the eight genera treated in this paper and the East Palaearctic genus *Chinolyda* Beneš: a genus close to *Acantholyda* Costa, but with a long oblique vein m + cu-a of fore wing (cf. fig. 5). Of the 56 European species, 36 species (64%) are recorded from The Netherlands in this paper; 12 species are recorded for the first time (cf. checklist of Van Ooststroom, 1976). The impetus for this paper was an extensive collection of Pamphiliidae collected by the second author in The Netherlands. Identifications proved to be problematical, because there are no updated keys to the European Pamphiliidae as a whole; the papers which come close to it are those of Viitasaari (1982b, very well illustrated, completely in Finnish) and Móczár & Zombori (1973, completely in Hungarian). The European species of one genus (*Cephalcia*) have been recently revised (Beneš, 1976a), but even in this genus problems were encountered in the identification of the Dutch specimens. Therefore the first author made new keys to the Dutch species, and these keys were later extended to include the other known European species. For a key to the families of Symphyta, see Van Achterberg, 1982.

The Pamphiliidae are flattened, often rather broad, sawflies, 7-15 mm long, sun-loving and very fast on the wing. The antenna is long and has (14-)18-37 segments. The abdomen has a distinct lateral crease and the second tergite is divided medially (figs. 36, 78); the wing venation is complete, only vein SR1 of the fore wing is absent (fig. 5); the fore wing has vein SC free basally and vein 2r present (figs. 5, 31); at least the middle and hind tibiae possess preapical spurs; the fore tibia has two apical spurs (fig. 9) and the hypopygium of ♀ is modified (fig. 24-26, 29, 30). The eggs are deposited free on the leaves or needles of the host plant (fig. 49, 56). The larvae have no abdominal legs, the thoracic legs and the subanal processes are setaceous, and the antennae are 7-8 segmented (fig. 326). Usually the larvae live solitarily or gregariously in a web (figs. 359-361), or in a leaf rolled with silk (figs. 193, 209, 304, 306, 357); larvae of some species (e.g. *Pamphilius inanitus* (De Villers)) may carry their leafroll. Pupation is in an earthen cell underground. The Cephalciinae,

especially, are liable to remain for more than one year (up to four years) in the resting stage as eonymph. This many lead to a more even population-density of a species. The Pamphiliidae are an ancient group, having been in existence since at least Lower Cretaceous.

In addition to the collection of the second author, we have examined the collections in the Rijksmuseum van Natuurlijke Historie (Leiden), the Instituut voor Taxonomische Zoologie (Amsterdam), the Natuurhistorisch Museum (Maastricht), the Laboratorium voor Entomologie (L.H., Wageningen), the Plantenziektenkundige Dienst (Wageningen), and the collections of Mrs. J. A. W. Lucas (Rotterdam) and A. W. M. Mol (Den Bosch).

The main literature sources found to be useful in the preparation of this paper concern Viitasaari (1982b), Beneš (1976a, b, 1972), Benson (1951), Klima (1937, the most recent catalogue), Gussakovskij (1935), and Enslin (1912-1918). For a review of the biology and of the larvae see Lorenz & Kraus (1957). A well-illustrated introduction (in Finnish) is given by Viitasaari (1982a); for the nomenclature of the venation of the fore wing see fig. 5. The figures of leafrolls and infested leaves are taken from Viitasaari (1982b) and Lorenz & Kraus (1957), which are partly original and partly based on publications by Chambers (1952), Conde (1934), Kontuniemi (1949), and Stritt (1935, 1937, 1951). The species marked with an asterisk (*) are new to the Dutch fauna.

PHYLOGENETIC RELATIONSHIPS

The Pamphiliidae are a well-characterized monophyletic group (figs. 364, 365) related to the Megalodontidae, together forming the superfamily Megalodontoidea. The Pamphiliidae fall apart into two subfamilies: the Cephalciinae (larvae on Coniferae) and the Pamphiliinae (larvae on Angiospermae). The Pamphiliinae consist of two discrete groups: the tribes Pamphiliini and Neurotomini (fig. 366).

The supposed apomorphy of the character-states used, is based on outgroup occurrence; as outgroups primarily the sister-group is used. The setosity of the costal cell of the fore wing of the females is problematic. Both states (glabrous or setose) occur in the subfamilies Cephalciinae and Pamphiliinae, and in the tribes Pamphiliini and Neurotomini. Because males of the genus *Pamphilius* have a more or less setose costal cell and females only partly, a setose costal cell is considered the plesiomorphous state. Obviously the glabrous costal cell has been developed several times by parallelism in the Pamphiliidae.

Within the genera of the Pamphiliidae the phylogenetic relations are more obscure. Within most genera only species-pairs are easily recognizable (e.g. *Cephalcia abietis* - *C. alashanica, C. arvensis* - *C. erythrogaster)*. Only the genus *Pamphilius* is large enough to be more rewarding. The 28 European species can be divided among four sections and into six species-groups: the *histrio*-group (8 spp., with *P. inanitus* and *P. latifrons* as aberrant spp.), the *sylvarum*-group (2 spp.), the *varius*-group (4 spp.), the *hortorum*-group (6 spp.), the *alternans*-group (5 spp., with *P. norimbergensis* as aberrant species), and the *sylvaticus*-group (2 spp.). Remains *P. nemorum,* which has some affinities to the *sylvaticus*-group, but is comparatively isolated (table 1). The grouping of species of Palaearctic *Pamphilius* has been done by Beneš only; our *sylvarum*-group (Beneš, 1982), *alternans*-group (Beneš, 1976b; but without *P. marginatus*), and *histrio*-group (Beneš, 1974, but with *P. nemorum*) are largely comparable. However, the *vafer*-group of Beneš (1976b) includes our *varius*- and *hortorum*-groups, as well as *P. latifrons.*

KEY TO THE EUROPEAN GENERA OF PAMPHILIIDAE CAMERON

1. Tarsal claws with minute inner tooth perpendicular to the claw (figs. 19, 21); tibial spurs and spines with soft membranous subhyaline tip (figs. 9, 10); fore wing membrane irregularly coriaceous apically, without distinct folds (figs. 6, 7); fore tibia sometimes with pre-apical spur (*Acantholyda,* fig. 10); larvae on Coniferae (Pinaceae); (subfamily Cephalciinae Benson) 2
– Tarsal claws bifurcate, inner tooth points to apex of claw, and is longer than its basal width (figs. 13, 14, 17); tibial spurs and spines completely sclerotized, hard at the tip (figs. 18); fore wing membrane more or less folded apically (fig. 8); fore tibia without pre-apical spur (cf. fig. 9); larvae on Angiospermae (especially Rosaceae, Salicaceae, Betulaceae, and Corylaceae); (subfamily Pamphiliinae Cameron) 4
2. Anterior branch of subcostal vein or fore wing (SC1 in fig. 5) reaching pterostigma, thus costal cell undivided (figs. 6, 31, 34); vein 1-SR of fore wing absent (fig. 6); wing membrane completely strongly coriaceous (fig. 6); (tribe Caenolydini Benson) ..... *Caenolyda* Konow
– Anterior branch of subcostal vein of fore wing ending far from pterostigma, dividing costal cell into two cells (fig. 5); vein 1-SR of fore wing present (figs. 2, 5); wing membrane partly strongly coriaceous (fig. 7); (tribe Cephalciini Benson) 3
3. Fore tibia with pre-apical spur (fig. 10); costal cell of fore wing of ♀ glabrous or nearly so; larvae on *Pinus* ..... *Acantholyda* Costa

– Fore tibia without pre-apical spur (fig. 9); costal cell of fore wing of ♀ setose; larvae on *Abies, Picea,* or *Larix* ..... *Cephalcia* Panzer

4. Basal costal cell of fore wing open distally (vein SC 1 absent: fig. 8), exceptionally closed in *N. nemoralis;* longitudinal grooves on the vertex diverging anteriorly (fig. 22), frequently shallow or obsolescent; frons without longitudinal grooves (fig. 22); hypopygium of ♀ with distinct triangular depression (fig. 24); hind femur strongly widened medially (fig. 23); tarsal claw with 1 long bristle at lower half of claw (fig. 17); larvae mainly on Rosaceae; (tribe Neurotomini Benson) ..... *Neurotoma* Konow

– Basal costal cell of fore wing closed distally (fig. 5); longitudinal grooves on vertex curved or subparallel (figs. 27, 180); frons with grooves nearly always complete, sometimes weakly indicated; hypopygium of ♀ without triangular depression apically or obsolescent (figs. 26, 29); hind femur weakly widened medially (fig. 28); tarsal claw with 2 long bristles at lower half (fig. 13); larvae on Rosaceae or catkins-bearing trees: Corylaceae, Salicaceae, Betulaceae, and Fagaceae; (tribe Pamphiliini Cameron) . 5

5. Vein lr of fore wing very short and much narrower than other veins, which are comparatively wide and somewhat wrinkled (figs. 37, 39); vein 1-SR of fore wing absent or very short (figs. 37, 39); wings with conspicuous dark patches (figs. 37, 39) 6

– Vein lr of fore wing distinct, similar to other (rather narrow) veins (figs. 5, 174); vein 1-SR of fore wing present (figs. 4, 5); wings usually subhyaline or partly infuscated (figs. 4, 174) 7

6. Pterostigma narrow, nearly 4 times as long as wide (fig. 37); vein 2r of fore wing subequal to or longer than width of pterostigma (fig. 37); vein 1-M of fore wing distinctly angled with vein SR + M (fig. 37); 3rd antennal segment about as long as 4th-6th segments combined ..... *Pseudocephaleia* Zirngiebl

– Pterostigma wide, about 2.5 times as long as wide (fig. 39); vein 2r shorter than width of pterostigma; vein 1-M of fore wing gently merging into vein SR + M (to form a curve (fig. 39)); 3rd antennal segment about 1.5 times as long as 4th segment, much shorter than 4th-6th segments combined ..... *Kelidoptera* Konow

7. Malar space with distinctly differentiated setose depression, in ♀ with few curved specialized setae (figs. 15, 16), in ♂ with large depression, with many curved, short and specialized setae and a long bristle (fig. 20); tarsal claws with acute basal lobe (fig. 14); stemmaticum of ♀ with V-shaped yellowish patch in European spp. (fig. 133) ... *Onycholyda* Takeuchi

– Malar space without distinct depression and setae, if present, unspecializ-

ed and straight (figs. 11, 12); tarsal claws without distinct lobe (figs. 13, 17); stemmaticum of ♀ without such V-shaped yellowish patch (figs. 167, 244) but partly yellowish in *P. sylvarum* (figs. 143, 149, 150) .... *Pamphilius* Latreille

Caenolyda Konow
(fig. 6)

Caenolyda Konow, 1897: 15.
Type-species: *Tenthredo reticulata* Linnaeus, 1758.
Syn.: *Dictyolyda* Semenov Tian-Shanskij, 1934.

A small Palaearctic genus, both species of which occur in Europe. The larvae of the type-species live on the young parts of *Pinus* spp.

KEY TO THE EUROPEAN SPECIES OF THE GENUS *CAENOLYDA* KONOW

– Hind wing largely dark brown; fore wing with narrow subhyaline bands (fig. 34); vertex without pubescence; (S. Italy) .... *binaghii* Pesarini & Pesarini
– Hind wing with complete band and basally extensively subhyaline (figs. 1, 31); fore wing with wide subhyaline bands (fig. 31); vertex distinctly pubescent; (N., C. & E. Europe) ..... *reticulata* (Linnaeus)

Caenolyda reticulata (Linnaeus)
(figs. 1, 31)

Tenthredo reticulata Linnaeus, 1758: 558.
Syn.: *Cephaleia klarki* Jurine, 1807.

A seldomly collected species, known from Finland, Sweden, Poland, European USSR and Central Europe. Two to four larvae live in a small web with many faecal pellets, on the young parts of *Pinus* spp. (fig. 13 in Viitasaari, 1982b).

Caenolyda binaghii Pesarini & Pesarini stat. nov.
(fig. 34)

Caenolyda binaghii Pesarini & Pesarini, 1976: 54-56, fig. 2 (as subspecies of *C. reticulata).*

Only known from the type-series from S. Italy (Calabria). The biology is unknown. The differences given by Pesarini & Pesarini (1976: 56) indicate that it is most likely a species distinct from *C. reticulata.*

Acantholyda Costa
(fig. 25)

Acantholyda Costa, 1894: 232.
Type-species: Tenthredo erythrocephala Linnaeus, 1758.
Syn.: *Acanthocnema* Costa, 1859 (suppressed by Opinion 290) (1954)); *Itycorsia* Konow, 1897.

A medium-sized Holarctic genus with eight European species, of which five occur in the Netherlands. The basal costal and subcostal cells of fore wing of ♀ and ♂ glabrous; ovipositor sheath simple, only with short bristly setae. The larvae live on *Pinus* spp., and possibly on *Larix (A. laricis);* often in a communal web with needles spun together (figs. 359-361). Some species may temporarily be a pest; viz., *A. erythrocephala* (L.) (gregarious, and especially on *Pinus strobus* L. in Central Europe) and *A. posticalis* Matsumura (solitary, and later in the year than *erythrocephala*).

KEY TO THE EUROPEAN SPECIES OF THE GENUS *ACANTHOLYDA* COSTA

1. Thorax metallic-bluish (or -greenish) black; occipital carina absent; pterostigma dark brown to black; pronotum and mesoscutellum black; body length 9-12 mm 2
– Thorax without metallic shine; occipital carina usually present behind eyes (absent in *populi,* but *populi* has length of body 14-18 mm); pterostigma, pronotum and/or mesoscutellum (partly) yellowish ... 4
2. Abdomen yellowish-red, only base and apex bluish-black; thorax with greenish shine ..... *pumilionis* (Giraud)
– Abdomen completely bluish-black; thorax with bluish shine 3
3. Third antennal segment 0.9-1.1 times fourth to sixth antennal segments combined (fig. 43); setae of head of ♀ shorter (fig. 42) and brownish, about as long as second antennal segment or shorter; dorsal setae of scapus medium-sized (fig. 43); vertex of ♀ medially yellowish-or reddish-brown; fore wing of ♀ dark brown medially, distal costal cell of fore wing of ♀ sparsely covered with very short setae .... *erythrocephala* (Linnaeus)
– Third antennal segment 0.6-0.7 times fourth to sixth segments combined

(fig. 44); setae of head of ♀ distinctly longer than second antennal segment (fig. 46) and blackish; dorsal setae of scapus long (fig. 44); vertex of ♀ medially dark metallic bluish; fore wing of ♀ subhyaline medially; distal costal cell of fore wing of ♀ completely glabrous .... *flaviceps* (Retzius)

4. Basal half of fore wing largely yellowish; fore wing with dark brown patch below base of pterostigma (fig. 50); second to fifth tergites (largely) brownish-yellow, and apex of abdomen black; frons between antennal sockets crest-shaped medially (fig. 54) ..... *hieroglyphica* (Christ)
- Basal half of fore wing largely (sub)hyaline; fore wing usually without brown patch near pterostigma, at most with wide dark band or completely brownish, only ♀ of *laricis* with dark patch; second to fifth tergites at least apically blackish or medically with black patches; frons obtusely elevated medially 5
5. Fore tibia with two pre-apical spurs; occipital carina completely absent; apical half of pterostigma black; wing membrane brownish .... *populi* (Linnaeus)
- Fore tibia with one pre-apical spur (fig. 10); occipital carina present behind eyes; apical half of pterostigma usually yellowish; wing membrane usually partly (sub)hyaline, at most with brownish band or patch below pterostigma 6
6. Head of ♀ long whitish setose (figs. 58, 59); vertex coarsely sculptured, interspaces about as wide as punctures (fig. 58); pterostigma nearly completely blackish; wing membrane infuscated apically; abdomen with metallic-bluish shine; all tibiae completely black dorsally; third to seventh epipleura with dark patch anteriorly; frons in front of anterior ocellus convex ..... *teunisseni* spec. nov.
- Head of ♀ short setose (fig. 61, 64); vertex moderately sculptured, interspaces mostly wider than punctures (fig. 61); at least apical half of pterostigma yellowish; wing membrane subhyaline apically; abdomen without metallic-bluish shine; all tibiae completely yellowish; third to seventh epipleura completely yellowish; frons in front of anterior ocellus rather flat and with shallow medial depression 7
7. Fore wing membrane not or slightly pigmented below pterostigma, similar to colour of membrane near apex of fore wing (♀) or whole apical half darkened (♂); apical half of hind wing of ♂ moderately darkened; area in front of anterior ocellus (nearly) flat (fig. 65); antenna with 30-36 segments; pterostigma nearly completely yellowish, at most somewhat darkened basally; temples ventrally and usually near occipital carina (largely) yellow; vertex of ♂ longer setose (fig. 64); area around antennal

sockets of ♂ largely yellowish (fig. 64) ..... *posticalis* Matsumura

– Fore wing membrane with wide brownish band (♂) or patch below pterostigma (♀) distinctly darker than apex of fore wing; apical half of hind wing of ♂ rather strongly darkened; area in front of anterior ocellus with small groove (fig. 67); antenna with 21-27 segments; at least (basal) third of pterostigma dark brown; temples near occipital carina largely black; vertex of ♂ short setose (fig. 66); area around antennal sockets of ♂ black ..... *laricis* (Giraud)

Acantholyda erythrocephala (Linnaeus)
(figs. 2, 10, 21, 25, 42, 43, 45, 359, 360)

Tenthredo erythrocephala Linnaeus, 1758: 558.

Rather a common species in the centre of The Netherlands, but outside this area uncommon. Occurs in the main part of the Palaearctic region to Japan and Korea, south to the Caucasus and Italy, and was introduced into N. America at the beginning of this century. The males have the wings lighter coloured than the females. The larvae live more or less gregariously on about one-year old branches of *Pinus* spp., especially of *P. strobus* L. (figs. 359, 360). About 10-year old trees are favoured. The eggs are deposited in rows of 3-12 on the upper side of the needles, glued to each other. There is a communal web, but within it every larvae has its own small web covered with a few faecal pellets. The life-cycle usually lasts one year.

*Acantholyda flaviceps** (Retzius)
(figs. 44, 46-49)

Tenthredo flaviceps Retzius, 1783: 73.
Syn.: *Lyda cyanea* Klug, 1808.

This species has seldomly been collected in The Netherlands; known from Echt (Zuid-Limburg: Geurts), Ede (Gelderland: Van Rossem), and Bergh (Gelderland, Montferland: Van Aartsen). Otherwise known from Central Europe, Poland, Sweden, Finland and N. USSR. The eggs are deposited in rows on the needles of *Pinus contorta* Douglas (fig. 49; Viitasaari, 1975).

Acantholyda hieroglyphica (Christ)
(figs. 50, 54, 361)

Tenthredo hieroglyphica Christ, 1791: 459.
Syn.: *Lyda bimaculata* Taschenberg, 1861.

A species very seldomly collected in The Netherlands: known from a series of 2♂♂ and 1♀ from one web on *Pinus contorta* Douglas (Putten, Gelderland: Oudemans) and 2♀♀ from the Oldenbroek heath (Gelderland: Van Aartsen). Occurs in Europe (Spain to Finland) and Transcaucasia. Larvae usually on 3-4 year old *Pinus,* and every larva in its own web. The easily visible web is copiously filled with faeces (fig. 361). Only one egg per needle is deposited. The life-cycle usually lasts one year, but it may be two-yearly.

*Acantholyda laricis (Giraud)
(figs. 66, 67, 363)

Lyda laricis Giraud, 1861: 91.
Syn.: *Acantholyda parvula* Zirngiebl, 1937 (syn. nov.)

A seldomly collected species, in The Netherlands only 4♂♂ have been collected: Cromvoirt (Noord-Brabant: Teunissen), De Steeg (Gelderland), Diever (Drenthe, both Van Aartsen), and Echt (Zuid-Limburg: Geurts). Otherwise known from Italy, Hungary, Austria, Germany, Switzerland and Poland. The biology is unknown, but *A. laricis* may be associated with *Larix*; Schroevers (1942: 24) has suggested that larvae of a Pamphiliid distinct from *Cephalcia lariciphila* that have been found on *Larix* in the Netherlands may concern *A. laricis* (fig. 363). Unfortunately we have not seen any specimen reared belonging to *A. laricis* from these larvae. *A. parvula* Zirngiebl is only known from the type, a damaged ♀ probably from Austria, which is deposited in the Vienna Museum according to the original description. However, it could not been found (Dr. M. Fischer, in litt.) and is probably lost. The differences mentioned by Zirngiebl (occipital carina obsolescent, fore wing with only a brownish patch and vertex less punctuate) are considered to be sex-related.

Acantholyda posticalis Matsumura
(figs. 53, 55-57, 61-65)

Acantholyda posticalis Matsumura, 1912: 76.

Syn.: *Tenthredo stellata* Christ, 1791, nec Fourcroy, 1785); *Lyda nemoralis* sensu Thomson, 1871 nec Linnaeus, 1758; *Acantholyda pinivora* Enslin, 1917.

A rather common species in *Pinus* woods, especially those of *Pinus sylvestris* L. and the commonest species of the genus *Acantholyda* in The Netherlands. Otherwise known from Europe (including Spain and Lapland), Siberia, North Mongolia and Japan.

Acantholyda populi (Linnaeus)

Tenthredo populi Linnaeus, 1758: 927.

A very seldomly collected species: known only from S. Italy (Calabria) and Romania (Banat). The type-locality is uncertain, and the biology is inknown. For a redescription, see Pesarini & Pesarini (1976).

Acantholyda pumilionis (Giraud)

Lyda pumilionis Giraud, 1861: 90.

A seldomly collected species, known from the Alps, the Carpathians, the Dinarids (Croatia) and the Dolomites. The larva lives solitarily on young *Pinus cembrae* L. and probably also *P. mugo* Turra between 1700-2200 m, exceptionally found at lower altitudes (Schedl, 1973). The life-cycle lasts one year.

Acantholyda teunisseni spec. nov.
(figs. 51, 52, 58-60)

Holotype in the Rijksmuseum van Natuurlijke Historie, Leiden: "Moscardon (Ter.(= Teruel)), E. (=Spain), 31-5-1984, ± 1900 m, Leg. H. Teunissen".

Holotype, ♀, length of fore wing 11.8 mm, of body 15.1 mm.

Head. — Antennal segments 34, third about as long as scapus, its length 5.1 times its width and twice the length of fourth segment; clypeus strongly shiny and with coarse punctures, interspaces mostly wider than the diameter of the punctures, and medio-ventrally thin; area between antennal socket and

eye slightly convex and largely smooth; frons rather mat and coarsely vermiculate-punctate and long setose; area in front of anterior ocellus largely flat; area between antennal sockets similar punctate as clypeus and evenly convex; vertex very coarsely punctate, with interspaces about equal to diameter of punctures or less and long whitish setose (figs. 58, 59); occipital carina present and irregular laterally, and absent dorsally.

Thorax. — Transverse band on middle lobe and longitudinal band on lateral lobes distinctly punctate with interspaces about equal to diameter of punctures; scutellum with more spaced punctures; remaining parts of mesoscutum largely smooth; propleuron punctate and long setose; mesepisternum shiny coriaceous-punctate; mesosternum remotely punctate and with pair of anteriorly converging grooves distinct; metapleuron with some punctures and superficially coriaceous.

Wings. — Basal costal and subcostal cell of fore wing completely glabrous; distal costal cell of fore wing with regularly and widely spaced very short setae.

Legs. — Claws robust, with submedial tooth comparatively large (fig. 51); fore tibia with one slender pre-apical spur and with apex subhyaline and obtuse; both hind tibial spurs comparatively robust (fig. 60), 0.35 and 0.4 times as long as hind basistarsus; length of hind basitarsus 3.7 times its maximum width (fig. 60); middle and hind tibiae with one submedial and two pre-apical spurs in addition to the glabrous and obtuse apical spurs.

Abdomen. — Robust; tergites and sternites shiny coriaceous, ovipositor sheath short bristly setose, without distinct appendage (as in other species of *Acantholyda*); hypopygium with comparatively wide triangular apical impression (fig. 52).

Colour. — Black; clypeus (except ventral margin, pair of patches, and stripe to antennal sockets; fig. 59), V-shaped patch between antennal sockets, large patch between antennal sockets and eyes, two large and two elongate patches on vertex (fig. 59), temple largely, mandibles (but with basal spot and dark brown submedially and apically), propleuron with curved wide band, pronotal sides largely, pronotal margin posteriorly, pair of patches on middle lobe of mesoscutum, mesoscutellum and tegulae largely, mesosternum anteriorly, large patch on mesepisternum and posterior margin of mesepisternum, and metapleuron largely, ivory; legs dorsally black (except tarsi), ventrally largely yellowish (including coxae); fore tarsus brown; middle and hind tarsi dark brown; tergites largely black with metallic bluish sheen; lateral margin of abdomen narrow yellowish; epipleura with black spot anteriorly; sternites anteriorly black (and middle of hypopygium), rest yellowish; wing membrane only subapically infuscated; pterostigma largely blackish, only a

spot near its apex brown; setea of head and pronotum long and whitish; antenna black(ish) dorsally, scapus completely black, pedicellus apico-ventrally and third segment ventrally, brown; palpi yellowish, but fourth labial palpsegment and third maxillary palpsegment largely black.

Notes. — Because of the nearly completely blackish pterostigma, the predominantly black head dorsally, and the fore tibia with one pre-apical spur related to *Acantholyda fumata* Enslin, 1910 from Turkey. The new species is easily separable by the largely black tergites (in *fumata* only first, seventh (medially only) and eighth tergites black), clypeus largely yellowish (black in *fumata*), fore wing subapically darker than medially and basally (evenly infuscated in *fumata*), femora and tibia completely black dorsally (in *fumata* only fore femur largely, and other femora partly black), mesopleuron with black band (largely yellowish in *fumata*) and head densely and coarsely punctate (in *fumata* remotely punctate).

It is a pleasure to name this species after its collector Mr. H. G. M. Teunissen, Oss, who made valuable collections of Hymenoptera from The Netherlands and the Mediterranean area.

Cephalcia Panzer
(figs. 7, 29, 30)

Cephalcia Panzer, 1805: 86, pl. 9.

Type-species: *Tenthredo signata* Fabricius, 1781 (nec Scopoli, 1763; = *Cephalcia arvensis* Panzer, 1805).

Syn.: *Cephalcia* Jurine, 1801 (invalid according to Opinion 135 (1939); *Cephaleia* Jurine, 1807; *Liolyda* Ashmead, 1898; *Cephalaia* Nielsen & Henriksen, 1915 (typographical error); *Cephalia* Semenov Tian-Shanskij, 1934 (unjustified emendation).

A medium-sized Holarctic genus, very closely related to *Acantholyda,* but the larvae live on *Picea, Abies, Tsuga* or *Larix* spp. However, there is circumstantial evidence that the larvae of *C. hartigii* (Bremi) live on *Pinus* (Beneš, 1976a: 48). Larvae of most species live solitary in silken tubes on *Picea,* but *C. abietis* lives gregariously. The life-histories of *C. hartigii, C. lariciphila,* and *C. pallidula* are incompletely known.

In Europe eight species occur, of which six in the Netherlands. The key to the European species of *Cephalcia* published by Beneš (1976a) proved to be unreliable for the identification of most Dutch species. The new key presented here is more deliberately directed towards the separations of the NW. European species. However, identification *Cephalcia* spp. (especially of males) remains a difficult task.

KEY TO THE EUROPEAN SPECIES OF THE GENUS *CEPHALCIA* PANZER

1. Fore wing with very conspicuous brownish band posterior of pterostigma; vein 2-CUla of fore wing absent or nearly so (= second stub from above near apex of fore wing); tegulae and thorax completely black; basal half of fore wing of ♂ glabrous, rest sparsely setose; fifth tot ninth antennal segments of ♀ (♂: 6th-7th) pale yellow ..... ***hartigii*** (Bremi)
– Fore wing at most diffusely brownish, usually subhyaline posterior of pterostigma; vein 2-CUla of fore wing usually distinct (cf. fig. 5); tegulae and at least posterior margin of pronotum (partly) pale; mesoscutum partly pale or, if completely black, then fore wing distinctly setose; fifth to ninth antennal segments variable 2
2. Vertex of ♀ with a distinct longitudinal groove medially (fig. 71); fourth to seventh antennal segments of ♀ usually largely whitish; vertex completely black (figs. 69, 70), if rarely with yellow patches then they are smaller than the stemmaticum (fig. 68); second antennal segment (dark) brown; ♂ with scapus (except apex) completely black; femora partly dark brown or blackish ..... ***fallenii*** (Dalman)
– Vertex of ♀ without a distinct longitudinal groove medially (fig. 104), though it is sometimes partly present; fourth to seventh antennal segments of ♀ light or dark brown; vertex of ♀ with large yellow patches at least as large as stemmaticum (figs. 72, 79, 95, 101, 117); 2nd antennal segment variable; ♂ with scapus partly yellowish; colour of femora variable 3
3. Pedicellus (=2nd antennal segment) of ♀ partly (dark) brown or black; anterior side of hind coxa nearly completely black, as is usually the anterior side of hind femur of ♀ (hind femur of ♂ often completely yellow); ♀ with a pair of distinct, yellowish spots in front of ocelli (figs. 101-103); frons distinctly rugose; fore femur of ♂ black or brown basally; area between antennal sockets completely black (fig. 105); sides of pronotum usually with comparatively small yellowish patch below (figs. 106, 107); abdominal tergites and sternites largely black; larvae on *Larix* spp. .... ***lariciphila*** (Wachtl)
– Pedicellus of ♀ completely yellow, exceptionally partly brown; at least 1/3 of hind coxa yellow or reddish; anterior side of hind femur of both sexes completely or largely yellow; if ♀ has hind coxae and basal half of hind femur largely black, then yellowish spots in front of ocelli absent or obsolescent (***abietis*** and ***alashanica,*** figs, 72, 73, 93-95) or frons nearly smooth (***erythrogaster,*** figs. 117, 120); fore femur of ♂ (nearly) completely yellowish; side of pronotum with large yellow patch below (figs. 74, 84,

but sometimes small (fig. 108)); abdominal tergites largely yellowish, exceptionally males with only some light transverse stripes; abdominal sternites usually largely yellowish, but 1/2-3/4 of sternites in ***abietis*** and ***alashanica*** dark brown or black; larvae on *Picea* spp. 4

4. Pterostigma brownish-yellow; area between ocelli of ♀ largely yellowish ***and*** with dark triangular patch in front of anterior ocellus (figs. 79-82); ♂ with clypeus completely yellowish ***and*** vertex with a pair of large yellowish patches (figs. 81, 82); scapus, meso- (largely), and metascutellum, third to fifth abdominal segments (including sternites!), and femora, yellow ..... ***pallidula*** (Gussakovskij)

– Pterostigma brownish to blackish; area between ocelli of ♀ blackish (fig. 95), if yellowish (figs, 110, 111, 117), then scapus partly dark brown and/or dark patch in front of anterior ocellus absent or appearing as a dark stripe (***arvensis,*** fig. 111); ♂ with clypeus partly black (figs. 77, 115, 121) or, if nearly completely yellowish, then vertex without a pair of large yellowish patches ***(alashanica,*** fig. 98); scapus often partly black or, if completely yellow, then meso- and metascutellum black; third of fifth abdominal segments and/or femora usually partly black 5

5. Ventral margin of clypeus thick medially, and often slightly emarginate; clypeus convex medio-ventrally, not or only slightly flattened, and strongly punctate (figs. 87, 90); mesepisternum of ♀ largely black, only yellowish dorsally, with at most an additional narrow stripe posteriorly (***alashanica,*** fig. 108); posterior sides of basal half of fore and middle femora of ♀ largely black; lateral lobes of mesoscutum of ♀ black or rather narrowly yellowish posteriorly; anterior halves of second and third sternites of ♀ largely black; membrane of fore wing of ♀ rather extensively infuscated; yellow patch between antennal sockets of ♂ not widened dorsally (figs. 76, 97); vertex of ♂ completely black (figs. 76, 97); abdomen of ♀ comparatively robust (fig. 78); temporal groove distinctly impressed (figs. 88, 91, 92) 6

– Ventral margin of clypeus (rather) thin medially, and not distinctly emarginate; clypeus more or less flattened medio-ventrally (fig. 83), and if rather convex medio-ventrally, then its surface largely smooth (fig. 123); mesepisternum of ♀ with long and wide yellowish band; posterior sides of basal half of fore and middle femora of ♀ largely yellowish; lateral mesoscutal lobes of ♀ conspicuously widely yellow posteriorly (figs. 116, 125); anterior halves of second and third sternites of ♀ usually (largely) yellowish or brown; membrane of fore wing of ♀ (except apically) slightly pigmented; yellow patch between antennal sockets of ♂ widened dorsally (figs. 113, 121), less commonly parallel-sided (figs. 113, 122);

vertex of ♂ usually with yellowish patches (figs. 115, 122); abdomen of ♀ comparatively slender (fig. 86); temporal groove usually shallow or absent 7

6. Temporal groove of ♀ distinctly removed from eye, its maximum width about equal to its distance from eye (fig. 91, ♂: 92); clypeus of ♀ laterally black (figs. 72, 73); hypopygium of ♂ broadly rounded posteriorly (fig. 75); third of fifth abdominal sternites of ♂ completely brownish-yellow; lateral lobes of mesoscutum of ♀ black posteriorly; mesepisternum of ♀ without a narrow yellowish stripe posteriorly ; mesoscutellum of ♂ broadly yellowish ..... *abietis* (Linnaeus)

– Temporal groove of ♀ close to eye, its maximum width more than its minimum distance from eye (fig. 88, ♂: 89); clypeus of ♀ laterally at least partly yellow (figs. 93-95); hypopygium of ♂ rather narrowed posteriorly (fig. 100); anterior half of third to fifth sternites of ♂ largely black, lateral lobes of mesoscutum of ♀ partly brownish or yellowish posteriorly; mesepisternum of ♀ with an interrupted narrow yellowish stripe posteriorly (fig. 108); mesoscutellum of ♂ black .... *alashanica* (Gussakovskij)

7. Meso-, and metascutellum of ♀ black medially; frons sparsely and superficially punctate or smooth (fig. 120); antenna of ♀ directly beyond middle light yellow; hind margins of third to fifth abdominal tergites yellow; area in front of anterior ocellus largely flattened and smooth (fig. 120); area between eye and antennal socket evenly convex; ♂ with whole fore wing slightly infuscated; hind coxa nearly completely black .... *erythrogaster* (Hartig)

– Meso- and usually also metascutellum of ♀ yellowish medially; frons largely coarsely and rather densely punctate (fig. 85); antenna of ♀ directly beyond middle somewhat darkened, brownish; hind margins of third to fifth abdominal tergites more or less black, but sometimes completely yellow; area in front of anterior ocellus less flattened and more or less rugose-punctate (fig. 85); area between eye and antennal socket more or less flattened, especially near the antennal socket; ♂ with at most apical half of fore wing slightly infuscated; at least 1/3 of hind coxa yellowish ..... *arvensis* (Panzer)

Cephalcia abietis (Linnaeus)
(figs. 72-78, 90-92)

Tenthredo abietis Linnaeus, 1758: 566.
Syn.: *Lyda alpina* Klug, 1808; *L. hypotrophica* Hartig, 1834; *Cephaleia testacea* Gimmerthal, 1836; *Lyda klugi* Schummel, 1836; *Tenthredo affinis* Schrank, 1837; *Lyda scutellaris* Thomson, 1871; *Cephaleia abietis;* Klima, 1937.

An easily misidentified species, but it is more robust than the related species (fig. 78), except *C. alashanica.* In The Netherlands it is rather scarce, and mainly restricted to the Veluwe and Noord-Brabant. Occurs in the North and Central Palaearctic region to North China. The larvae live gregariously (often in large numbers) on *Picea* in silken nests densily covered with faeces, within which every larva has its own tube, and often cause serious damage to spruce plantations (Beneš, 1976a: 12). The 40-100 eggs of one ♀ are deposited in strings of 4-12 on one of the four sides of the needle. The life-cycle lasts 2-4 years, but the active period of the larvae is only 6-8 weeks in the first year. The larva constructs a pupation çavity in the earth at 5-20 cm depth in August, wherein the larva remains 2-4 years as eonymph. In the autumn before the year of emergence it becomes a pronymph and finally it pupates in spring (Emschermann, 1984: 290). Emergence in The Netherlands is mostly in May.

***Cephalcia alashanica** (Gussakovskij)
(figs. 87-89, 93-100, 108)

Cephaleia alashanica Gussakovskij, 1935: 370.
Syn.: *Cephaleia chinensis* Gussakovskij, 1935; *C. halashanica* Gussakovskij, 1935 (typographical error); *Lyda saltuum* auct. p.p. (nec Linnaeus, 1758); *Cephalcia alashanica europaea* Beneš, 1976a (syn. nov).

In the Netherlands very seldomly collected, and easily confused with *abietis.* Beneš (1976a: 15) recognized the European populations as distinct from the type-series from Mongolia. However, the differences (mainly colour) listed (Beneš, 1976a: 20) are highly variable among the few European specimens in the collection of the Rijksmuseum van Natuurlijke Historie, and therefore we consider that the grounds for recognizing the European specimens as a distinct subspecies as insufficient (cf. figs. 93-95). In North China the larvae live on *Picea koraiensis* Nakai, and in Czechoslovakia it is known from *Picea abies* (L.). In The Netherlands it has been collected only in the neighbourhood of Arnhem (Gelderland. Van Medenbach de Rooy; Van Aartsen). Otherwise known from Finland, Sweden, Czechoslovakia, Switzerland, USSR, Mongolia and North China.

Cephalcia arvensis Panzer
(figs. 3, 9, 19, 30, 83-86, 109-116)

Cephalcia arvensis Panzer, 1805: 86.
Syn.: *Tenthredo signata* Fabricius, 1781 (nec Scopoli, 1763); *Lyda vafra* Fallén, 1808 (nec Linnaeus, 1767); *L. campestris* Fallén, 1808; *L. irrorata* Dahlbom, 1835; *L. saxicola* Hartig, 1837 (lectotype examined); *L. adusta* Dietrich, 1868.

This is one of the commonest species of the Pamphiliidae in The Netherlands, but also one of the most variable (figs. 109-112). Frequently confused with *abietis,* but *arvensis* is a more slender species (fig. 86). Known from Europe and Siberia. After examination of the lectotype we agree with Beneš (1976a: 22) that *Lyda saxicola* Hartig, 1837 belongs here; superficially the type seems to be intermediate to *C. lariciphila.* The larvae live solitarily on *Picea* spp. in smooth, brownish silken tubes in an incoherent web, at first almost without faeces (but old webs are sometimes filled with faeces), and may cause damage to trees in suboptimal condition. The eggs are deposited singly and irregularly on one of the four sides of the needle.

Cephalcia erythrogaster (Hartig)
(figs. 117-125)

Lyda erythrogaster Hartig, 1837: 339.
Syn.: *Cephaleia erythrogastra* auctt. (unjustified emendation).

A seldomly collected species in the Netherlands; specimens so identified in old collections usually belong to *arvensis.* In The Netherlands known from the Veluwe (Putten, Otterlo, both Gelderland; Oudemans and Van Heijningen respectively), Bilthoven (Utrecht), and Schayk (Noord-Brabant; Teunissen). Otherwise known from Central Europe (Yugoslavia to Germany), and rarely from Northwest Europe (Belgium, Denmark, Sweden and Finland). The larvae live solitarily in silken tubes on *Picea abies* (L.).

Cephalcia fallenii (Dalman)
(figs. 68-71)

Lyda fallenii Dalman, 1823: 95.
Syn.: *Lyda alpina* auctt. (nec Klug, 1808); *L. abietina* Hartig, 1837; *L. annulata* Hartig, 1837; *Cephaleia alpina* var. *luctuosa* Enslin, 1917; *C. arvensis* var. *hilaris* Enslin, 1917; *C. arvensis* var. *pseudalpina* Enslin, 1917; *Cephalcia falleni;* Beneš, 1976a (unjustified emendation).

A seldomly collected species in The Netherlands, but known from Amsterdam (Noord-Holland; Van Aartsen, collected on *Thuja* spec.), Barneveld (Utrecht; Speijer), Bilthoven (id.), De Steeg (Gelderland; Van Aartsen), Recht, and Best (Noord-Brabant; Lucas and Van Aartsen respectively). Occurs in North and Central Europe, and North USSR. The larvae live solitarily in silken tubes on *Picea abies* (L.) and *P. obovata* Ledebour. The Dutch specimens are as dark as the figured Finnish specimens (figs. 69, 70).

Cephalcia hartigii (Bremi)

Lyda hartigii Bremi, 1849: 92.
Syn.: *Cephaleia hartigi;* Klima, 1937 (unjustified emendation).

A rare species, known from Central and South Europe, North Africa, and USSR (Caucasus). The biology is unknown, but the type has been collected on *Pinus;* its distributional pattern suggests that this indeed may be the host plant (Beneš, 1976a: 48).

Cephalcia lariciphila (Wachtl)
(figs. 101-107, 362)

Cephaleia lariciphila Wachtl, 1898: 93.
Syn.: *Cephaleia alpina* auctt. p.p. (nec Klug, 1808); *Cephaleia abietis* var. *intermedia* Hellén, 1948 (syn. nov.).

Only European species of *Cephalcia* sometimes injurious to *Larix* spp., on which the larvae live solitary in silken tubes. It has been recorded from the Central and North Palaearctic Region (in Europe south to North Italy, west to England, and north to Finland). Rather common in the eastern and southern provinces of The Netherlands. The holotype of *C. intermedia* ("Paanajärri [= N. USSR, Karelskaya ASSR]", "Hellén", "abietis v. intermedia m., ♀, Hellén"), which was kindly made available by Dr. O. Biström, Helsinki Museum, has been examined. It is a normal ♀ of *lariciphila* with a somewhat richer yellowish pattern (figs. 101, 106). Vikberg (1982) and Viitasaari (1982b) treated *intermedia* as a valid species. However, Vikberg (1982) and Viitasaari (1982b) treated *intermedia* as a valid species. However, Vikberg (1982) overlooked the possibility of synonymy with *lariciphila,* and Viitasaari (1982b) indicated only the resemblance of the penis valve of the males of *intermedia* and *lariciphila.*

Cephalcia pallidula (Gussakovskij)
(figs. 79-82)

Cephaleia pallidula Gussakovskij, 1935: 154.
Syn.: *Cephalcia flavistigma* Lindqvist, 1962.

Larvae on *Picea abies* (L.) and *P. obovata* (Ledebour); known from the North Palaeartic Region (Scandinavia, Finland and across Siberia to Sakhalin) only.

Neurotoma Konow
(figs. 8, 22-24)

Neurotoma Konow, 1897: 18.
Type-species: *Tenthredo flaviventris* Retzius, 1783 (= *T. saltuum* Linnaeus, 1758).
Syn.: *Congylocorsia* Konow, 1897 (group without occipital carina).

A small Holarctic genus with five European species, three of which occur in the Netherlands. The larvae live gregariously or singly in webs and are mainly attached to *Rosaceae*.

KEY TO THE EUROPEAN SPECIES OF THE GENUS *NEUROTOMA* KONOW

1. Lower half of temples with occipital carina; body without metallic-bluish colour 2
– Lower half of temples without occipital carina; body completely metallic-blue ..... *mandibularis* (Zaddach)
2. Membrane of fore wing below pterostigma (sub)hyaline; ♀ with ivory patch behind eyes (figs. 129, 131); sixth and seventh abdominal tergites at least partly black or dark brown 3
– Membrane of fore wing below pterostigma dark brown; ♀ without patches behind eyes, at most small patch adjacent to eye (fig. 128); sixth and seventh abdominal tergites yellow-brown, exceptionally partly back . 4
3. Vertex of ♀ with 4-6 ivory patches or stripes (fig. 131); basal half of antenna black; sixth and seventh abdominal tergites black with posterior ivory stripe ..... *nemoralis* (Linnaeus)
– Vertex of ♀ with only an ivory patch behind eye (fig. 129); basal half of antenna yellow; sixth and seventh abdominal tergites without ivory stripe ..... *iridescens* (André)
4. Second and third abdominal tergites coriaceous and rather mat; scapus

usually completely yellow, exceptionally somewhat darkened; head of ♀ largely black, only the area between middle of clypeus and centre of frons usually yellow (fig. 128); vertex of ♂ completely black; malar space of ♂ black; length of body 10.5-14 mm ..... *saltuum* (Linnaeus)

– Second and third abdominal tergites smooth and strongly shiny; at least upper side of scapus dark brown or black; head of ♀ above antennal sockets largely yellow, with only stemmaticum black (fig. 126); vertex of ♂ orange laterally (fig. 127); malar space of ♂ yellowish; length of body 7-10 mm ..... *fausta* Klug

*Neurotoma fausta (Klug)
(figs. 126, 127)

Lyda fausta Klug, 1808: 277.

Only once collected in The Netherlands (Gerendal, Zuid-Limburg); otherwise known from West Europe (except Great Britain, with The Netherlands as its most northern locality), and Central Europe (south to Italy, Albania, the Ukraine and Turkey). The biology is unknown.

Neurotoma iridescens (André)
(figs. 129, 130)

Lyda iridescens André, 1882: 443.
Syn.: *Lyda nigrocoerulea* Rohwer, 1910; *Neurotoma sorbi* Forsius, 1911; *Lyda nigricans* Matsumura, 1912.

A seldomly collected species, known from Germany, Finland, N. USSR, Korea and Japan. The larvae live gregariously in a fist-sized web on *Sorbus aucupariae* L.

Neurotoma mandibularis (Zaddach)

Lyda mandibularis Zaddach, 1865: 147.
Syn.: *Lyda parisiensis* Giraud, 1870.

A seldomly collected species, known from England, France, Germany, Czechoslovakia, Hungary, the Ukraine and Romania. Larvae in pairs in rolls of *Quercus* leaves.

Neurotoma nemoralis (Linnaeus)
(figs. 131, 132)

Tenthredo nemoralis Linnaeus, 1758: 558.
Syn.: *Tenthredo punctata* Fabricius, 1798; *Psen caprifolii* Schrank, 1802; *Lyda lucorum* Fallén, 1808; *L. drupacearum* Nördlinger, 1855; *Lyda maculifrons* Snellen van Vollenhoven, 1858 (holotype (RMNH) examined).

A rather seldomly collected species in The Netherlands, mainly in the eastern provinces and the Veluwe. However, Betrem collected at Wassenaar (near The Hague) 2 ♂♂ injurious to *Prunus*. Occurs in Central and West Europe (south to Italy and north to Sweden). The larvae live in communal webs on (cultivated) *Prunus* spp.

Neurotoma saltuum (Linnaeus)
(figs. 17, 22-24)

Tenthredo saltuum Linnaeus, 1758: 559.
Syn.: *Tenthredo flaviventris* Retzius, 1783; *Psen pyri* Schrank, 1802; *Lyda clypeata* Klug, 1808; *L. albifrons* Fallén, 1808; *Tenthredo lutescens* Panzer, 1809; *Pamphilius dimidiata* Latreille, 1812; *Lyda fasciata* Curtis, 1831; *Lyda fasciatipennis* Costa, 1864.

In the last 50 years seldomly collected in The Netherlands, found only at Bennekom (Van Rossem), Putten (Van der Vecht; both localities in the province of Gelderland) and Wijlre (Thomas; province of Limburg). Otherwise known from England (local), Central Europe to Italy, Ukraine, Turkey, Caucasus, Transcaucasus and Siberia to Korea. Larvae live in communal webs on *Pyrus communis* L., *Prunus avium* L., and other *Prunus* spp, *Crataegus, Cotoneaster,* and *Mespilus* spp. They may defoliate (pear-)trees, but their occurrence is local.

Pseudocephaleia Zirngiebl

Pseudocephaleia Zirngiebl, 1937: 339.
Type-species: *Pseudocephaleia brachycercus* Zirngiebl, 1937.
Syn.: *Pseudocephalcia* Benson, 1945 (unjustified emendation).

Only one species known.

Pseudocephaleia praeteritorum (Semenov Tian-Shanskij) (figs. 36-38)

Dictyolyda praeteritorum Semenov Tian-Shanskij, 1934: 63.
Syn.: *Pseudocephaleia brachycercus* Zirngiebl, 1937 (synonymy based on note by Dr. K. Beneš in "Symphytos" 2 (1984): 10, who examined the holotype of *P. praeteritorum); Cephalcia pseudoreticulata* Zombori, 1967.

This is the only known species of *Pseudocephaleia* and the biology is unknown. It occurs in South and Southeast Europe (Romania, Yugoslavia and Albania), and USSR (Altai Mountains).

Kelidoptera Konow

Kelidoptera Konow, 1897: 20.
Type-species: *Lyda maculipennis* Stein, 1876.

Only one species known.

Kelidoptera maculipennis (Stein) (figs. 32, 39-41)

Lyda maculipennis Stein, 1876: 57.

This is the only known species of the genus. The biology is unknown, but it may be associated with *Prunus spinosa* L. It occurs from Turkey to Israel.

Onycholyda Takeuchi (figs. 14-16, 20, 26)

Onycholyda Takeuchi, 1938: 218.
Type-species: *Pamphilius viriditibialis* Takeuchi, 1930 (Opinion 1807 (1977)).

Rather a small genus, with three European species, of which none has been collected yet in the Netherlands, but *O. kervillei* has been collected in Belgium not far from the Dutch border. The larvae live in rolled leaves (figs. 134, 135) of *Rubus, Dasiphora, Filipendula, Alnus* and *Cornus* spp. Most species occur in the East Palaearctic Region.

KEY TO THE EUROPEAN SPECIES OF THE GENUS *ONYCHOLYDA* TAKEUCHI

1. Third to fifth abdominal segments reddish; base of hind femur yellowish; (North Europe, incl. Scandinavia) ..... ***sertata*** (Konow)
– Third to fifth abdominal segments black; base of hind femur variable 2
2. Mesoscutellum, metascutellum, and apex of ninth abdominal segment of ♀ pale yellow; base of hind femur yellowish; yellowish band of vertex wide; (South East Europe: Caucasus) ..... ***trigaria*** (Konow)
– Mesoscutellum, metascutellum, and apex of ninth segment of ♀ completely black; base of hind femur black; yellowish band of vertex narrow; (West Europe) ..... ***kervillei*** (Konow)

Onycholyda kervillei (Konow)
(figs. 33, 35)

Pamphilius kervillei Konow, 1903: 38.

A very seldomly collected species, known from West Europe (France, Belgium and Germany). The biology is unknown.

Onycholyda sertata (Konow)
(figs. 133-136)

Pamphilius sertatus Konow, 1903: 37.
Syn.: *Pamphilius thomsoni* Malaise, 1921 (= *Lyda arbustorum* sensu Thomson, 1871 (nec Fabricius, 1793)).

Rather seldomly collected, and the only species of the genus known from North Europe (Sweden, Finland, N. USSR) to the Urals and Altai area. Larvae on *Filipendula ulmaria* L. (fig. 136).

Onycholyda trigaria (Konow)

Pamphilius trigarius Konow, 1897: 241, 247, 254.

Known from the Caucasus and the Transcaucasus. The biology is unknown. Pasteels (1947: 289) lists *O. trigaria* from Belgium, but the

specimens concerned are probably the males of *kervillei* and obviously differ from the females of *trigaria* by their more extended yellowish colour pattern.

Pamphilius Latreille
(fig. 326)

Pamphilius Latreille, 1802: 303.
Type-species: *Tenthredo sylvatica* Linnaeus, 1758.
Syn.: *Lyda* Fabricius, 1804; *Anoplolyda* Costa, 1894; *Bactroceros* Konow, 1897.

A rather large Holarctic genus, with 28 European species, 21 of which occur in The Netherlands. The larvae live singly in leafrolls, mostly on Rosaceae or catkins-bearing trees (Corylaceae, Betulaceae, Salicaceae and Fagaceae).

SECTIONS AND SPECIES-GROUPS OF THE GENUS *PAMPHILIUS*.

According to the cladistic analysis (shown in tables 1 and 2) the genus *Pamphilius* can be subdivided into four sections:

Section I. Contains the *varius*- and *hortorum*-groups. The inner side of the scapus is (partly) black, the third antennal segment is long and the leafroll of larvae is comparatively simple. The *varius*-group has the costal cell of ♀ setose and has larvae on Betulaceae; two species (*P. pallipes* and *P. vafer*) have an aberrant, convex appendage of the ovipositor sheath (figs. 276, 281). The *hortorum*-group contains some species with only few apomorphous character-states (e.g. *P. stramineipes*); the group is characterized by the glabrous costal cell of ♀ and the larvae live on Rosaceae (except of *P. thorwaldi*; on Caprifoliaceae).

Section II. Contains the *sylvaticus*-group and *P. nemorum*; the larvae live on Rosaceae en Corylaceae and have a short third antennal segment. The costal cell of ♀ is setose as in the *hortorum*-group, to which this section is closely related. The *sylvaticus*-group is characterized by the peculiarly shaped setose appendage of the ovipositor sheath (figs. 346, 352, 353).

Section III. Contains the *sylvarum*- and *histrio*-groups, and is characterized by the glabrous appendage of the ovipositor sheath (but with very short bristles in *P. histrio*) or the absence of the appendage. The costal cell of fore wing of ♀ is glabrous except in *P. inanitus*. The *sylvarum*-group is a small group with larvae on Fagaceae, with the inner side of scapus black. The *histrio*-group has a conspicuously convex and smooth frons in front of anterior ocellus except in *P. latifrons*. This convexity is usually medially

divided by a through, resulting in two swellings (fig. 178); the convexity is undivided in *P. lethierryi*. Larvae on Salicaceae and (only *P. inanitus*) Rosaceae. The *histrio*-group consists of three subgroups: the *betulae*-subgroup with banded wings, appendage of ovipositor sheath absent (but present in *P. lethierryi*) and (rather) long inner tooth of claws; the larvae do not make leafrolls (figs. 225, 230). The *histrio*-subgroup is characterized by the wide appendage of ovipositor sheath and long inner tooth of claws. Finally the species of the *inanitus*-subgroup have comparatively short 3rd antennal segment and a small appendage of ovipositor sheath. *P. latifrons* does not belong to the *histrio*-group s.s., but is related by biology and by habitus to the *histrio*-subgroup.

Section IV. Contains only the *alternans*-group: larvae on Aceraceae and Corylaceae in a specialized leafroll (figs. 300, 301, 304), inner side of scapus completely yellowish, and appendage of ovipositor sheath large.

KEY TO THE EUROPEAN SPECIES OF THE GENUS *PAMPHILIUS* LATREILLE

1. Posterior face of middle and hind femora largely blackish; length of third antennal segment 1.8-2.2 times fourth segment and about as long as maximum length of scapus or longer (figs. 141, 146); longitudinal grooves of frons (very) deep (figs. 145, 153) 2
– Posterior face of middle and hind femora largely yellowish, at most the basal half largely black *and* length of third antennal segment 0.1-1.3 times fourth antennal segment, shorter than the maximum length of scapus (fig. 351); longitudinal grooves of frons variable 4
2. Vertex and frons almost completely dark yellowish (fig. 137) and finely punctulate; anterior face of hind femur almost completely black; wings with (sometimes incomplete) subapical dark band (fig. 140); both pits near antennal socket close together (fig. 137) ..... *lethierryi* (Konow)
– Vertex and frons pale yellow with six black patches (figs. 143, 149, 156) or completely black (figs. 150, 155) and punctate or rugose; anterior face of hind femur largely pale yellowish; wings without subapical dark band; both pits near antennal socket further apart (fig. 150) 3
3. Pterostigma yellow or light brown; frons largely punctate (fig. 147); vertex comparatively finely punctate, distances between punctures usually much more than diameter of punctures (fig. 179); longitudinal grooves of frons shallower anteriorly than length of pedicellus (fig. 145); second abdominal sternite (= sternite partly covered by hind coxae) partly yellow; frons near antennal sockets rather convex ..... *sylvarum* (Stephens)
– Pterostigma dark brown; frons mostly rugose (fig. 152); vertex rather

coarsely punctate, medially the distances between the punctures about equal to the diameter of the punctures (fig. 180); longitudinal grooves of frons anteriorly about as deep as length of pedicellus (fig. 153); second sternite (except hind margin) black; frons near antennal sockets flat; (may be unknown male of *sylvarum*) .... *nigricornis* (Snellen van Vollenhoven)

4. Head of ♀ completely dark yellowish, except for a black patch around ocelli (figs. 157, 167); wings of ♀ with a distinct dark subapical band (figs. 174, 197); mesoscutellum with a shallow longitudinal groove medially (figs. 159, 170); ♂ with area between ocelli and antennal sockets distinctly V-shaped convex *and* mesoscutellum black; length of third antennal segment 1.5-1.7 times fourth antennal segment (figs. 165, 175); subapical tooth of claws longer than apical tooth (figs. 169, 171) 5

– Head of ♀ largely black (fig. 347) or with distinct blackish pattern (figs. 244, 271); wings of ♀ without dark subapical band, at most with dark patch; mesoscutellum moderately convex or flat and without a longitudinal groove; ♂ with area in front of ocelli rather flat or mesoscutellum yellowish or ivory; length of third antennal segment 0.8-1.2 (fig. 338) or 1.9-3.2 times (fig. 246) fourth antennal segment in Dutch specimens; subapical tarsal tooth variable (figs. 184, 194) ... 6

5. Fifth and sixth sternites of ♀ black (fig. 173); veins 2-1A, 3-1A, 2-2A, 2-CU1, cu-a and CU1b of fore wing and surroundings yellowish (fig. 174); ovipositor sheath comparatively long setose dorsally (fig. 168); sixth and seventh tergites of ♀ black laterally (fig. 172); scutellum slightly protruding (fig. 169); lateral lobes of vertex of ♀ distinctly (but sparsely) finely punctate; head of ♀ behind mandibles largerly black ventrally .... *festivus* Pesarini & Pesarini

– Fifth and sixth sternites of ♀ yellowish (fig. 164); vein 2-1A, 3-1A, 2-2A, 2-CU1, cu-a and CU1b of fore wing and surroundings (dark) brown (fig. 197); ovipositor sheath shorter setose dorsally (fig. 158); sixth and seventh tergites of ♀ yellowish laterally (fig. 163); scutellum more or less protruding (fig. 161); lateral lobes of vertex of ♀ superficially punctate; at least half of area behind mandibles of ♀ yellowish .... *betulae* (Linnaeus)

6. Area in front of ocelli with a pair of distinct small swellings (fig. 178); vertex scarcely punctate, nearly smooth; centre of frons with small pit or flat; scapus and basal half of pterostigma completely pale yellow .. 7

– Area in front of ocelli flat or weakly convex, without discrete swellings; vertex, frons and colour variable 10

7. Basal costal cell of fore wing of ♀ short and sparsely setose (fig. 186);

1/3-1/2 of pterostigma of ♀ largely dark brown (may be completely yellow in ♂); mesoscutum and mesoscutellum completely black; second abdominal segment of ♀ orange-yellow; length of third antennal segment 0.8-1.2 times fourth segment and distinctly shorter than maximum length of scapus (fig. 183); clypeus distinctly convex medially and only punctate; appendage of ovipositor sheath obsolescent (fig. 183); apical tooth of hind claw of ♀ distinctly longer than inner tooth (fig. 184); larvae on Rosaceae ..... *inanitus* (De Villers)

– Basal costal cell of fore wing of ♀ glabrous (figs. 192, 200); pterostigma (almost) completely yellow; mesoscutum with V-shaped patch anteriorly and mesoscutellum pale yellow; at least half of second abdominal segment of ♀ black; length of third antennal segment 2.0-2.5 times fourth segment and about as long as maximum length of scapus (figs. 191, 204) or, if 1.3-1.4 times fourth segment and distinctly shorter than scapus (fig. 199), then clypeus flattened and largely rugose; appendage of ovipositor sheath large and robust (figs. 189, 206), but obsolescent in *brevicornis* (fig. 202); inner tooth of hind claw of ♀ subequal to apical tooth (figs. 194, 201, 207); larvae on Salicaceae 8

8. Length of third antennal segment 1.3-1.4 times fourth segment and distinctly shorter than maximum length of scapus (fig. 199); clypeus flattened and largely rugose; area between antennal sockets of ♀ with rust-coloured patch (fig. 196); appendage of ovipositor sheath obsolescent (fig. 202) ..... *brevicornis* Hellén

– Length of third antennal segment 2.0-2.5 times fourth antennal segment and about as long as maximum length of scapus (figs. 191, 204); clypeus medially convex and largely only punctate; area between antennal sockets without rust-coloured patch (figs. 187, 203); appendage of oviposterior sheath large and robust (figs. 189, 206) 9

9. Area between antennal sockets and eyes distinctly and evenly convex; clypeus of ♀ yellow, except for patches around antennal sockets (fig. 203); area below antennal sockets almost completely smooth; ♂ without yellowish band below pterostigma; vein R of fore wing yellowish; mesopleuron usually largely rugose; appendage of ovipositor sheath smaller (fig. 206); inner tooth of claws slightly longer than apical tooth (fig. 207) ..... *histrio* (Latreille)

– Area between antennal sockets and eyes only slightly or not convex, comparatively flat; dorsal half of clypeus of ♀ largely black except for a triangular yellowish patch medially (figs. 187, 188); area below antennal sockets more or less coriaceous; ♂ with a yellowish band below pterostigma; vein R of fore wing largely (dark) brown; mesopleuron

superficially to moderately rugulose; appendage of ovipositor sheath larger and comparatively wide (fig. 189); inner tooth of claws slightly shorter than apical tooth (fig. 194); (sculpture of face varies from nearly smooth to strongly rugose) ..... *gyllenhali* (Dahlbom)

10. Length of third antennal segment 2.2-3.2 times fourth antennal segment and about as long as maximum length of scapus or longer (figs. 234, 246, 273); if exceptionally 1.9-2.2 times (*aucupariae* (fig. 214), *hortorum* (fig. 228)), then area between antennal sockets and eyes rugose-punctate (fig. 222) 11
- Length of third antennal segment 1.0-1.9 times fourth segment and usually distinctly shorter than maximum length of scapus (figs. 220, 338, 351), exceptionally distinctly longer than scapus (*latifrons,* fig. 312); if third antennal segment longer than 1.6 times fourth segment (*stramineipes* (fig. 342)), then centre of area between antennal sockets and eyes sparsely punctate, with distances between punctures more than diameter of punctures 22

11. Scapus partly black or dark brown; area around antennal sockets of ♀ black (figs. 221, 231, 244, 271); basal costal cell of fore wing of ♀ variable (figs. 223, 266, 277) 12
- Scapus completely yellow; area around antennal sockets of ♀ (almost) completely yellow (figs. 290, 296, 302, 316); basal costal cell of fore wing of ♀ completely setose (figs. 303, 322) 19

12. Basal costal cell of fore wing of ♀ largely rather densely setose (figs. 214, 223, 233); clypeus of ♀ almost completely black (figs. 210, 221, 231) (yellow in ♂ (figs. 212, 235), but less in *hortorum* (fig. 226)); at least border of pterostigma dark brown; larvae on Rosaceae (except *Prunus* spp.) 13
- Basal costal cell of fore wing of ♀ largely glabrous (figs. 247, 266, 277) or, if medially setose, then sparsely so (*vafer* p.p., *albopictus,* fig. 258); clypeus (♀♂) largely yellow (figs. 245, 267, 270, 279); pterostigma yellow or yellowish-brown, exceptionally (*albopictus,* fig. 257) more or less darkened laterally; larvae on Betulaceae and Rosaceae (only *Prunus* spp.) 15

13. Frons near eyes narrowly yellowish (♀♂, figs. 210, 212); pedicellus, second and sixth tergites completely yellow; ovipositor sheath without distinct appendage (fig. 211) ..... *aucupariae* Vikberg
- Frons near eyes (almost) completely black (figs. 221, 226, 231, 235); inner side of pedicellus, second and sixth tergites (partly) dark brown or black; ovipositor sheath with distinct appendage (figs. 229, 237) 14

14. Vertex with pair of yellow bands behind eyes (♀♂, figs. 231, 235); frons

remotely rugose, in part with smooth patches, fifth sternite of ♀ black with yellowish hind margin; border of pterostigma dark brown, the remainder largely lighter brown; length of third antennal segment (2.0-) 2.6-3.2 times fourth segment (fig. 234); appendage of ovipositor sheath slender and with at most one seta (fig. 237) ..... ***balteatus*** (Fallén)

– Vertex without pair of yellowish bands behind eyes, at most with pair of elongate patches (figs. 221, 226); frons densely rugose, without distinct smooth patches (fig. 222); fifth sternite of ♀ largely orange with hind margin usually yellow; pterostigma largely dark brown; length of third antennal segment 1.9-2.6 times fourth segment (fig. 223); appendage of oviposterior sheath robust, and with several setae (fig. 229) ..... ***hortorum*** (Klug)

15. Vertex almost completely glabrous (fig. 244), nearly smooth and conspicuously glossy; setae of frons of ♀ reaching about upper level of ocelli (figs. 253, 254; in ♂ longer); ♀ with a short and narrow rather deep groove behind anterior ocellus; ♂ with the yellow patch between antennal sockets V-shaped and widened dorsally (figs. 249, 250), the third abdominal tergite largely black or dark brown antero-laterally, and the fore wing usually with a pale yellowish band ..... ***varius*** (Lepeletier)

– Vertex sparsely setose (figs. 256, 267, 271), distinctly punct(ul)ate and only moderately glossy; setae of frons of ♀ distinctly protruding above ocelli (fig. 282); ♀ with at most a shallow groove behind anterior ocellus; ♂ (unknown of ***albopictus*** and ***viridipes***) with the yellow patch between antennal sockets not distinctly widened dorsally (figs. 274, 275), the third tergite largely brownish- or greenish-yellow or ivory antero-laterally, and the fore wing membrane evenly yellowish 16

16. Anterior border of pterostigma darkened, but sometimes only moderately (fig. 257); tergites ivory or pale greenish laterally, appendage of ovipositor sheath (almost) flat and slender (figs. 260, 268); lateral lobes of mesoscutum of ♀ adjacent to middle lobe broadly yellowish (figs. 256, 261, 264); larvae on Rosaceae (unknown of ***viridipes***) 17

– Anterior border of pterostigma yellow, exceptionally slightly darkened; tergites yellowish-brown laterally; appendage of ovipositor sheath distinctly convex and robust, knob-like (figs. 276, 281); lateral lobes of mesoscutum of ♀ adjacent to middle lobe usually largely black; larvae on Betulaceae 18

17. Distal half of basal cell of fore wing of ♀ sparsely setose (fig. 258); appendage of ovipositor sheath glabrous (figs. 255, 260); apex of ovipositor sheath without specialized setae (fig. 260); area between antennal sockets of ♀ partly yellowish (fig. 256), but may be black (fig. 261); lateral dark

patches on vertex diffuse (figs. 256, 261); pale parts of body yellowish or ivory ..... *albopictus* (Thomson)

– Distal half of basal costal cell of fore wing of ♀ completely glabrous (fig. 266); appendage of ovipositor sheath setose (figs. 267, 268); apex of ovipositor sheath with specialized truncate setae (fig. 268); area between antennal sockets of ♀ black (fig. 267); lateral dark patches of vertex sharply delimited (fig. 267); palpi, mandible, legs, sternites and pale parts of body greenish (in fresh specimens, becoming more or less pale yellow in dead specimens) ..... *viridipes* spec. nov.

18. Dorsal two-thirds of frons regularly and densely rugose, without distinct smooth patches (fig. 287); yellow patch between antennal sockets of ♀ not or only slightly widened dorsally (fig. 279); surroundings of antennal sockets of ♂ largely black (fig. 285); anterior half of fifth sternite partly black; appendage of ovipositor sheath glabrous (fig. 281) .... *pallipes* (Zetterstedt)

– Dorsal two-thirds of frons irregularly and remotely rugose, with distinct smooth patches (fig. 283); yellow patch between antennal sockets of ♀ broadly V-shaped and widened dorsally (figs. 270-272); surroundings of antennal sockets of ♂ usually largely yellow (fig. 274), but sometimes black (fig. 275); fifth sternite (almost) completely yellow; appendage of ovipositor sheath short setose (fig. 276) ..... *vafer* (Linnaeus)

19. Pterostigma bi-colorous (fig. 317); mesoscutellum black; abdomen of ♀ medially orange; ovipositor sheath without appendage (fig. 319) .... *alternans* (Costa)

– Pterostigma completely yellow; mesoscutellum pale yellow or, if mesoscutellum completely black, then abdomen of ♀ black medially; appendage of ovipositor sheath present (figs. 293, 299, 305) 20

20. Mesoscutellum largely black, seldom only half black; abdomen black dorsally and ivory laterally; appendage of ovipositor sheath small (fig. 293); temples of ♀ almost completely pale yellow; vertex nearly smooth; larvae on Corylaceae ..... *marginatus* (Lepeletier)

– Mesoscutellum completely yellow; abdomen partly yellowish dorsally and without ivory marks laterally; appendage of ovipositor sheath larger (figs. 299, 305); temples of ♀ partly black; vertex variable; larvae on Aceraceae 21

21. Appendage of ovipositor sheath conspicuous (fig. 305); hind tarsus robust (fig. 308); length of third antennal segment about six times its width (fig. 307); vertex nearly smooth; lateral fields of frons largely black (fig. 302); centre of frons with small round black patch (fig. 302); length of body 7.5-9.5 mm ..... *ignymontiensis* Lacourt

– Appendage of ovipositor sheath less conspicuous (fig. 299); hind tarsus less robust (fig. 309); length of third antennal segment 7(♂) - 7.7 (♀) times its width (fig. 297); vertex distinctly punctulate; lateral fields of frons orange (fig. 296); centre of frons without black patch (fig. 296); length of body 8.5-11 mm ..... *aurantiacus* (Giraud)

22. Area between antennal sockets of ♀ largely yellow (fig. 310); temples almost completely yellow; scapus distinctly shorter than third antennal segment (fig. 312); pterostigma and scapus largely yellow; frons of ♀ with slightly elevated and more or less isolated black patch medially (fig. 310); area in front of anterior ocellus distinctly concave; mesoscutum of ♀ with (usually six) yellowish patches; appendage of ovipositor sheath robust (fig. 313); larvae on Salicaceae ..... *latifrons* (Fallén)

– Area between antennal sockets of ♀ completely black (figs. 215, 334-336), exceptionally about half yellowish (*thorwaldi,* fig. 323); temples largely black; scapus nearly as long as third antennal segment or longer (figs. 220, 330, 338, 351); pterostigma (partly) dark brown; scapus usually partly black (except ♀ of *fumipennis* and *norimbergensis*); frons without isolated patch (figs. 323, 327, 340, 347); area in front of anterior ocellus flat or weakly concave; mesoscutum of ♀ completely black (but with small inconspicuous yellowish patches in *thorwaldi*); appendage of ovipositor sheath less robust (figs. 325, 339, 346, 353); larvae on Rosaceae, Corylaceae and Caprifoliaceae 23

23. Central lobe of vertex distinctly convex (fig. 219), glabrous and almost completely smooth, with some punctures only posteriorly; basal half of hind femur of ♀ largely black; scapus and third antennal segment of ♀ completely black; third to fifth abdominal segments of ♀ completely yellow-orange (♂: nearly completely black); clypeus completely black (♀♂, figs. 215, 218); base of pterostigma pale yellow, contrasting with dark centre of pterostigma; ovipositor sheath without distinct appendage (fig. 216); length of third antennal segment 1.0-1.1 times fourth segment (fig. 220) ..... *nemorum* (Gmelin)

– Central lobe of vertex less convex (fig. 329) and usually rather flat, (sparsely) setose, punctate and laterally often somewhat coriaceous; basal half of hind femur of ♀ at least half yellow; scapus and third antennal segment of ♀ (partly) yellowish or brown or, if rather dark, then clypeus (partly) yellow (figs. 334, 335, 340) and/or base of pterostigma similar in colour to its centre; third to fifth abdominal segments of ♀ variable, often (partly) black; ovipositor sheath with a more or less developed appendage (figs. 243, 339, 353); length of third antennal segment 1.0-1.9 times fourth segment (figs. 330, 338, 350) 24

24. Basal third of pterostigma largely yellow; basal half of clypeus yellow (figs. 238, 241, 323, 327, 334, 340); length of third antennal segment of ♀ 1.4-1.9 times fourth segment (figs. 239, 330, 342; ♂: 1.1-1.5 times); posterior half of third to fifth abdominal sternites largely yellowish; base of hind femur largely yellow; antenna with 20-34 segments 25
– Basal third of pterostigma largely dark brown; basal half of clypeus black (figs. 336, 347), at most with narrow yellow ventral border (figs. 354, 355); length of third antennal segment of ♀ 1.0-1.2 (♂: 1.0-1.3) times fourth segment (figs. 338, 351); third to fifth abdominal segments completely black; base of hind femur with black patch or completely black; antenna with 23-31 segments 27
25. Centre of pterostigma black, contrasting with the pale yellow basal third; clypeus medio-dorsally and area between antennal sockets largely smooth; mesoscutellum (of ♀♂) black; clypeus of ♀ yellow dorsally (fig. 238); appendage of ovipositor sheath glabrous (fig. 243) .... *norimbergensis* Enslin
– Centre of pterostigma completely yellowish, at most somewhat darkened laterally, not contrasting with rest of pterostigma; clypeus medio-dorsally and area between antennal sockets punctate-rugose; scutellum yellowish or ivory; clypeus of ♀ black dorsally (figs. 323, 334, 335); appendage of ovipositor sheath setose (figs. 325, 339) 26
26. Clypeus of ♀ largely yellow, dorso-lateral margin of yellow part straight (fig. 323); length of third antennal segment of ♀ 1.4-1.6 (♂: 1.2-1.4) times fourth segment (fig. 330); area between antennal sockets and eyes slightly convex and distinctly rugose-punctate (fig. 324); vertex completely black between bands behind eyes (figs. 323, 327); mesopleuron of ♀ with an ivory patch; fourth of sixth sternites of ♀ almost completely yellow; larvae on Caprifoliaceae ..... *thorwaldi* Kontuniemi
– At least half of clypeus of ♀ black, dorso-lateral margin of yellow part distinctly curved (figs. 334, 335); length of third antennal segment of ♀ 1.6-1.9 (♂: 1.4-1.5) times fourth segment (fig. 342); area between antennal sockets and eyes distinctly convex and (largely) smooth; vertex often with two short yellowish patches or small bands between bands behind eyes (figs. 334, 335, 340), but f. *facetus* Konow lacks these patches; mesopleuron of ♀ completely black, except near its dorsal margin; anterior half of fourth to sixth sternites of ♀ (almost) completely black; larvae on Rosaceae ..... *stramineipes* (Hartig)
27. Area between antennal sockets and eyes evenly convex (fig. 344); scapus of ♀ completely yellow; veins of fore wing (except at base) largely brown; yellow patch above eye small or nearly absent (fig. 336); at least apical

half of antenna brownish; ovipositor sheath with acute bristles (fig. 346); larvae on Corylaceae ..... *fumipennis* (Curtis)

– Area between antennal sockets and eyes rather flattened (fig. 348); inner side of scapus of ♀ more or less brown or black (♂: sometimes completely yellow); veins of basal half of fore wing largely yellowish (in West European specimens); vertex with conspicuous yellow stripe or triangular patch above eyes (figs. 347, 354, 355); antenna (of West European specimens) completely yellow, except for scapus; ovipositor sheath with some truncate bristles (figs. 352, 353); larvae on Rosaceae .... *sylvaticus* (Linnaeus)

Pamphilius albopictus (Thomson)
(figs. 255-261)

Lyda albopicta Thomson, 1871: 312.
Syn.: *Pamphilius altaicus* Gussakovskij, 1935.

Occurs in Central Europe and Fennoscandia, east to Siberia. Larvae on *Prunus* spp. This species is included in the key after examination of the lectotype of *albopictus* and 3 Finnish females from the Helsinki Museum. The lectotype of *albopictus* ("Falsns, 30.6.38", "ant. 19 artien", "L. depressa", "Lectotype", "P. albopictus Ths., ♀ det. K. Beneš, 1970") is in the Lund Museum. It has the vertex with sparse coarse punctures and setose, setae slightly protruding above level of stemmaticum; for colour pattern of the head and thorax, see fig. 256; inner side of scapus and pedicellus and remainder of antenna dark brown; second sternite anteriorly and pair of patches on third sternite dark brown; basal costal cell distinctly setose (fig. 258); appendage of ovipositor sheath medium-sized, flattened, rather mat and glabrous (fig. 260).

Pamphilius alternans (Costa)
(figs. 316-319, 321, 322)

Lyda alternans Costa, 1859: 3.
Syn.: *Lyda inanis* Klug, 1808 (suppressed by Opinion 1066 (1978)).

This species is rarely collected: in The Netherlands only 1♀ from Cadier (Limburg; Van Aartsen). The biology is unknown. It occurs in Italy, Central and Southwest Europe, north to Belgium and The Netherlands.

Pamphilius aucupariae Vikberg
(figs. 210-214)

Pamphilius aucupariae Vikberg, 1971: 140.

Only known from Finland. Holotype (♀) examined (kindly loaned by L. O. Biström, Helsinki Museum). Closely resembles *P. thorwaldi,* has 23 antennal segments and the ovipositor sheath with short dark brown (rather sparse) setae and no distinct appendage (fig. 211). The larvae live on *Sorbus aucuparia* L.

***Pamphilius aurantiacus** (Giraud)
(figs. 296-301, 309)

Lyda aurantiaca Giraud, 1857: 183.
Syn.: *Lyda neglecta* Zaddach, 1865.

A conspicuous, but seldomly collected species; in The Netherlands known only from Cadier (Zuid-Limburg; Van Aartsen). Known from Belgium (Wolf, 1965: 459, as *neglectus*), Luxemburg (RMNH), France, Germany, and Central Europa, south to Yugoslavia. The solitary larvae live in free portable leafrolls on *Acer pseudoplatanus* L. (fig. 301), and may walk with the roll to another leaf.

Pamphilius balteatus (Fallén)
(figs. 231-237)

Lyda balteata Fallén, 1808: 225.
Syn.: *Lyda cingulata* Latreille, 1812; *L. suffusa* Hartig, 1837; *L. albopicta* Thomson, 1871 (♂ not ♀ lectotype).

A rather local species; in The Netherlands known from the dunes (Wassenaar, Meijendel, Noordwijk, Warmond), Veluwe (Heerde, Nunspeet, Ermelo, Putten) and Limburg (Epen, Cadier). Widespread in Europe (south to Italy, west to England and Scotland, and north to Finland), and through Siberia to Kamchatka. Larvae on *Rosa* spp.; according to Beneš, 1976b also on *Prunus padus* L. and *Spiraea media* F. Schmidt.

Pamphilius betulae (Linnaeus)
(figs. 4, 157-166, 197, 225, 230)

Tenthredo betulae Linnaeus, 1758: 559.
Syn.: *Tenthredo fulva* Retzius, 1783; *Lyda aurita* Klug, 1808.

A conspicuous species, but infrequently collected in The Netherlands, found mainly in the eastern parts. Occurs in Europe (from Italy and Spain to Finland) and the USSR (Siberia). Larvae on *Populus tremula* L. and *P. alba* L. (figs. 225, 230).

***Pamphilius brevicornis** (Hellén)
(figs. 195, 196, 198-202)

Pamphilius histrio var. *brevicornis* Hellén, 1948: 40.

A seldomly collected species in West Europe; in The Netherlands collected at Terlet (Gelderland; Van Aartsen) on isolated *Populus tremula* L. Otherwise known from Belgium, Czechoslovakia, Finland, and the USSR. The biology is unknown, but the circumstances of collection in The Netherlands suggest it may feed on *Populus tremula* L.

***Pamphilius festivus** Pesarini & Pesarini
(figs. 167-176)

Pamphilius festivus Pesarini & Pesarini, 1984: 95-98, figs. 1, 2, 4.

A very seldomly collected species, but may be confused with the closely resembling *P. betulae.* In The Netherlands collected at Elzeterbosch (Limburg; C. de Jong). Otherwise known from North Italy (Lombardy and Piedmont) only. The biology is uncertain, the holotype was collected on *Populus tremula* L.

Pamphilius fumipennis (Curtis)
(figs. 333, 336-338, 344-346)

Lyda fumipennis Curtis, 1831: 381.
Syn.: *Lyda stigma* Stephens, 1835: *L. carpini* Brischke, 1892.

Seldomly collected in The Netherlands, and found mainly in the southern parts (the provinces of Limburg and Noord-Brabant). Otherwise known from England, Belgium, Germany, Austria, Italy, Finland and the USSR. Larvae on *Corylus avellana* L. (fig. 333).

Pamphilius gyllenhali (Dahlbom)
(figs. 187-194)

Lyda gyllenhali Dahlbom, 1835: 40.

Rather seldomly collected in The Netherlands, also known from Italy, Central and Northwest Europe (west to England and Scotland, north to Finland), and Siberia. Larvae on *Salix* spp. (e.g., *S. caprea* L. and *S. aurita* L., fig. 193).

***Pamphilius histrio** Latreille
(figs. 203-209)

Pamphilius histrio Latreille, 1812: 689.
Syn.: *Lyda flaviventris* sensu Stephens, 1835 (nec Retzius, 1783).

Seldomly collected in The Netherlands, and mainly from Terlet (Gelderland; Van Aartsen, on *Populus tremula* L.); there is one additional record from Limburg viz., Bemelerberg. Known from Central and Northwest Europe (west to England and Scotland, north to Finland), Italy and Siberia to Kamchatka. Larvae on *Populus tremula* L. (fig. 209).

Pamphilius hortorum (Klug)
(figs. 221-224, 226-229)

Lyda hortorum Klug, 1808: 278.
Syn.: *Pamphilius hortorum bicinctus* Benson, 1945 (syn. nov.).

One of the most commonly collected species of Pamphiliidae in The Netherlands; known from Central and Northwest Europe (west to England and Scotland, north to Finland), and Siberia. Benson (1951: 14) separated *P. bicinctus* Benson, 1945 as subspecies on the colour of the third abdominal tergite (dark in *bicinctus,* reddish-yellow in the nominate subspecies).

However, the colour of the third tergite is highly variable in the Dutch populations, and the separation of this subspecies is considered highly artificial. The larvae live on *Rubus idaeus L.* (fig. 224).

*Pamphilius ignymontiensis Lacourt
(figs. 302-308)

Pamphilius ignymontiensis Lacourt, 1973: 697.
Syn.: *Pamphilius aurantiacus* auctt. (nec Giraud, 1857).

In The Netherlands known only from Cadier (Limburg; Van Aartsen); otherwise known from France (type-series), Germany, Belgium (Wolf, 1965: 458, as *aurantiacus*), Austria, Hungary, Yugoslavia and Italy. Larvae on *Acer platanoides* L. and *A. campestre* L. (fig. 301).

Pamphilius inanitus (De Villers)
(figs. 177, 178, 181-186)

Tenthredo inanita De Villers, 1789: 125.
Syn.: *Tenthredo agrestis* Panzer, 1865; *Lyda fallax* Lepeletier, 1823.

In The Netherlands widespread, but the ♂ is very seldomly collected. Known from Central and Northwest Europe (west to England, Ireland and Scotland; north to Finland), Italy and Siberia to Kamchatka. Larvae on *Rosa* spp. in characteristic leafrolls (fig. 181), of which the oldest (= narrowest) part is filled with faeces.

Pamphilius latifrons (Fallén)
(figs. 310-315, 320)

Lyda latifrons Fallén, 1808: 226.
Syn.: *Lyda maculosa* Zaddach, 1865 (♀ lectotype, not ♂).

In The Netherlands known only from Terlet (Gelderland; Van Aartsen); otherwise reported from Central and North Europe (west to England, north to Finland), and the Lake Baikal area. Larvae on *Populus tremula* L. (figs. 315, 320).

Pamphilius lethierryi (Konow)
(figs. 137-142)

Lyda lethierryi Konow, 1887: 4.

A seldomly collected species, closely resembling *P. betulae;* in The Netherlands collected at Vaals (Limburg; Brakman). Known from Belgium (Ardennes), Germany, France, Austria, Hungary, Czechoslovakia and the Caucasus. The biology is unknown. For the description of the male, see Lacourt (1973).

Pamphilius marginatus (Lepeletier)
(figs. 290-295, 300)

Lyda marginata Lepeletier, 1823: 12.
Syn.: *Lyda bicolor* Herrich-Schäffer, 1833; *Tenthredo ratzeburgi* Ratzeburg, 1844.

In The Netherlands mainly collected in Limburg; outside this province very scarce, and known only from Didam, De Steeg (both Gelderland; Van Aartsen) and Udenhout (Noord-Brabant; Van der Krift). Otherwise known from Sweden, Denmark, Belgium, France, Germany and Central Europe. The larvae live in a leafroll connected to the rest of the leaf (fig. 300) on *Corylus avellana* L. and *Carpinus betulus* L.

Pamphilius nemorum (Gmelin)
(figs. 215-220)

Tenthredo nemorum Gmelin, 1788: 2670.
Syn.: *Tenthredo arbustorum* Fabricius, 1763 (nec Cameron, 1885); *Lyda juncunda* Eversmann, 1847; *Lyda arbuti* Zaddach, 1865.

A rarely collected species, not yet known from The Netherlands; recorded from Bulgaria, England (type of *arbustorum*), France, Germany, Italy, Finland and USSR. Our interpretation of this species is based on a ♀ from Finland (Sortavala; Helsinki Museum). The larvae live on *Fragaria vesca* L.

Pamphilius nigricornis (Snellen van Vollenhoven) stat. nov.
(figs. 150-153, 155, 180)

Lyda nigricornis Snellen van Vollenhoven, 1858: 279.

In The Netherlands known from the holotype (from the Hague (RMNH), a damaged ♂) and a ♂ from Schoonloo (Drenthe; Van Aartsen). Benson (1951: 12) considered *P. nigricornis* to be the unknown male of *P. sylvarum*. However, *sylvarum* (♀) and *nigricornis* (♂) differ to an extent unknown to us in the two sexes of any other species of *Pamphilius*. Therefore we consider it justified to restore *nigricornis* as a valid species for the time being, until more specimens and biological data become available. Outside The Netherlands known only from England and West Germany. The biology is unknown.

Pamphilius norimbergensis Enslin
(figs. 238-243)

Pamphilius norimbergensis Enslin, 1917: 655 (♂), 741 (♀).

Known only from South Germany, and Yugoslavia; the biology is unknown. Closely resembling *P. alternans,* but differs by the length of third antennal segment, which is about 1.1 (♂) - 1.6 (♀) times length of fourth segment in *norimbergensis* (figs. 239, 242), and about 2.2 times (♀) in *alternans* (fig. 318). In *norimbergensis* about 1/3 of pterostigma and in *alternans* ± 1/2 of pterostigma is yellowish. Otherwise *norimbergensis* has the ovipositor sheath rather short brownish setose, with glabrous appendage (fig. 243), but in *alternans* the setae are long and yellowish and the appendage is setose (fig. 320). The holotype (♂, Enslin Collection in the Zoologische Staatssammlung, München) from Nürnberg has been examined: length of third antennal segment 1.1 times fourth segment (fig. 242), scapus distinctly longer than third segment; central lobe of mesoscutum distinctly punctate and short remotely setose; all sternites yellow; antennal segments 22. In the Enslin Collection is a later described ♀ from Yugoslavia (Krapina, Croatia) and incorrectly labelled as type; this ♀ is doubtless correctly associated with the ♂ holotype. Length of third antennal segment 1.6 times fourth antennal segment (fig. 239); scapus completely yellow: temple completely black between lateral stripes (fig. 238); clypeus yellow except dark patch around tentorial pits (fig. 238); ovipositor sheath with glabrous appendage and rather short brownish setae (fig. 243); mesopleuron completely black. In both sexes only basal 1/3 of pterostigma

yellow and area between antennal sockets and clypeus medio-dorsally largely smooth.

Pamphilius pallipes (Zetterstedt)
(figs. 279-281, 284-287)

Lyda pallipes Zetterstedt, 1838: 355.
Syn.: *Lyda flavipes* Zetterstedt, 1838: *L. variegata* Zaddach, 1865; *Pamphilius pallidipes* Dalla Torre, 1894 (unjustified emendation); *P. archiducalis* Konow, 1897.

In The Netherlands mainly collected in the central and eastern provinces; otherwise known from Central and North Europe (west to England, Ireland and Scotland, north to Lapland), Siberia to Kamchatka and Japan. The larvae live on *Betula* spp.

Pamphilius stramineipes (Hartig)
(figs. 334, 335, 339-343)

Lyda stramineipes Hartig, 1837: 347.
Syn.: *Pamphilius facetus* Konow, 1898.

Known from North and subalpine Europe (Scotland, Norway, France, Germany, Austria, Italy, Czechoslovakia, Hungary and Yugoslavia) and Siberia. Larvae on *Rosa* spp.; one or more leaves are loosely spun together, distinct leafrolls are not made.

***Pamphilius sylvarum** (Stephens)
(figs. 143-149, 154, 156, 179)

Lyda sylvarum Stephens, 1835: 100.
Syn.: *Lyda fulvipennis* Zaddach, 1865; *Pamphilius silvarum* auctt. p.p. (unjustified emendation).

A seldomly collected species in The Netherlands (all ♀♀), and only in the province of Gelderland (Heerde: Wolschrijn; Beek: Van Rossem; Ede: Speijer, Nijkerk, and Nunspeet: both Van Aartsen). According to Benson (1951: 12) *P. nigricornis* is the unknown male of *P. sylvarum*. Known also from Germany, Austria, Czechoslovakia, England and Belgium. The larvae live on *Quercus robur* L.

Pamphilius sylvaticus (Linnaeus)
(figs. 5, 11-13, 18, 27-29, 347-358)

Tenthredo sylvatica Linnaeus, 1758, 558.
Syn.: *Tenthredo fulvipes* Retzius, 1783: *Pamphilius silvaticus* auctt. p.p. (unjustified emendation).

The most commonly collected and widespread species of the Pamphiliidae in The Netherlands. Known from Europe (including Great Britain and Ireland, north to Finland, south to Italy, east to the Caucasus and the Urals), and the Lake Baikal area. The larvae live gregariously on *Crataegus, Prunus* and *Sorbus* spp. (figs. 356-358).

Pamphilius thorwaldi Kontuniemi
(figs. 323-325, 327-332)

Pamphilius thorwaldi Kontuniemi, 1946: 133.

Known from Finland, Germany and Czechoslovakia. The holotype (♀, Helsinki Museum) of *thorwaldi* (identified as *P. stramineipes* by Benson in 1955) has been examined. Indeed it is closely to *P. stramineipes,* but it differs in biology, colour and morphology. Antennal segments 22; scapus (except outer side) blackish; pedicellus and third antennal segment yellowish-brown, but apex of third segment darkened; scutellum ivory, area in front of it brownish; middle lobe of mesoscutum with a pair of small ivory patches; vertex distinctly punctate; ovipositor sheath with moderately long, brownish bristly setae, its appendage acute, medium sized and setose (fig. 325). The larvae live on *Lonicera xylosteum* L.; the leaf-margin is rolled like a (small) cylinder (figs. 331, 332).

Pamphilius vafer (Linnaeus)
(figs. 270-278, 282, 283, 288, 289)

Tenthredo vafra Linnaeus, 1767: 927.
Syn.: *Tenthredo depressa* Schrank, 1781; *Psen alni* Schrank, 1802.

A widespread and rather common species in The Netherlands; it is easily confused with *P. varius.* Occurs in Central (to North Italy), North (west to England and Scotland, north to Finland) and East Europe (to the Urals). The

larvae live on *Alnus glutinosa* L., *A. incana* L., and *Betula* spp. (Konow, 1903: 329) and roll the leaf to a conical sack (fig. 289), but sometimes only partially (fig. 288, *"depressus"*). According to Viitasaari (1982b: 47) *P. depressus* should be treated as a valid species. However, the differences given are of low value because of the extensive variation seen in the Dutch populations; e.g. in a conspecific series collected at Lager Westerbork (Drenthe; Speijer), especially concerning the colour of the head. The remaining characters concern the (nearly completely) black metascutellum of the ♂, the comparatively dark area below the eyes and the ♂ genitalia possessing somewhat stronger bristles (fig. 3lf in Viitasaari, 1982b). The larva of *depressus* is said to be confined to *Alnus incana* L., and the larva of *vafer* s.s. to *A. glutinosa* L. and *Betula* spp. We have not seen specimens completely agreeing with the diagnosis of *depressus* from The Netherlands, but the colour pattern as described by Viitasaari (excluding the dark metascutellum) frequently occurs in Dutch specimens of *vafer*. In view of this, and the minor nature of the other differences, we consider it more appropriate to retain *depressus* as a synonym of *vafer*.

Pamphilius varius (Lepeletier)
(figs. 244-254)

Lyda varia Lepeletier, 1823: 9.
Syn.: *Lyda infida* Zaddach, 1865; *Pamphilius flavifrons* Kirby, 1882: *Lyda konowi* Jakolev, 1891; *Anoplolyda engelhardti* Dovnar-Zapolskij, 1930; *Pamphilius vafer* auctt. p.p.

In The Netherlands somewhat less commonly collected than *vafer*. It occurs in Central and North Europe (including England, Ireland and Finland) and Siberia to Kamchatka. Larvae on *Betula verrucosa* L. (fig. 248); frequently no leafrolls are made, but leaves are spun together.

***Pamphilius viridipes** spec. nov.
(figs. 262-269)

Holotype labelled: "Kranenborg, Gem. Vorden; Gld. (= Gelderland, The Netherlands), 16.V.1984, B. v. Aartsen", in the Rijksmuseum van Natuurlijke Historie, Leiden. Paratype: 1♀, topotopic, 15.V.1985, B. v. Aartsen, on *Prunus padus* L. (Collection Van Aartsen).

Holotype, ♀, length of fore wing and of body both 8.7 mm.

Head. — Antennal segments 20, third antennal segment about as long as scapus, its length 5.7 times its width and 2.1 times length of fourth segment (fig. 263); clypeus and vertex coarsely punctate with most interspaces wider than diameter of punctures; frons coarsely rugose-reticulate, only near eye with, nearly flat, smooth interspaces and without swellings; vertex distinctly setose, setae protruding above ocelli; grooves of frons and vertex deep; lateral dark patches of vertex sharply delimited (fig. 267); occipital carina strong, laterally upto level of eyes, rest obsolescent and medio-dorsally absent.

Thorax. — Thorax smooth dorsally, except spaced punctures at middle of of lateral mesoscutal lobes, and of meso- and metascutellum; pronotum laterally and mesepimeron shiny coriaceous; mesepisternum (= large part of mesopleuron) smooth; mesosternum with heart-shaped pattern of punctures, rest smooth; metapleuron punctulate, largely smooth and shiny.

Wings. — Basal costal cell and subcostal cell of fore wing completely glabrous (fig. 266); distal costal cell of fore wing with greenish elevation posteriorly and rest largely setose.

Legs. — Claws bifurcate, with subapical tooth slightly shorter than apical tooth (fig. 269); hind tibial spurs 0.4 and 0.5 times hind basitarsus; length of hind basitarsus 3.8 times its maximum width; fore tibia without additional spurs, middle and hind tibiae with one submedial and two pre-apical spurs, additional to both shorter apical spurs.

Abdomen. — Tergites and sternites shiny coriaceous; apex of ovipositor sheath with specialized truncate setae (figs. 262, 268); appendage of ovipositor sheath rather flat, with three setae, shiny and moderately slender (fig. 268).

Colour. — Black; clypeus (except dorsally, fig. 267), orbits, temples, small patch above stemmaticum, lateral band of vertex, pair of patches along grooves of vertex, pronotum narrowly anteriorly, ventrally and posterior 2/3 largely, middle lobes of mesoscutum (except anteriorly), lateral lobes with anterior and posterior patch, meso- and metascutellum largely, tegulae, mesepisternum (except antero-ventrally and postero-ventrally), metapleuron largely, legs (except tarsi), lateral margins of tergites, fifth to ninth tergites apically, and sternites yellow (but anterior 2/3 of second and anterior 1/3 of third sternite and triangular basal patch of hypopygium black); palpi, mandibles and tarsi still more or less green, in fresh specimen according to the collector the yellow parts are largely green; veins C, SC, R1 largely, basal half of 1A and 2A of fore wing yellowish, rest of veins of fore wing dark brown; pterostigma yellowish-brown, with anterior and posterior margin infuscated (fig. 265); hind wing veins pale brown; scapus and pedicellus largely black, but ventro-laterally yellowish, rest of antenna dark brown, ventrally somewhat paler.

Note. — Runs in the key to the Siberian species of the genus *Pamphilius* related to *P. vafer* (L.) (Beneš, 1976b) to *P. albopictus* but *P. viridipes* differs by the greenish colour (e.g., tarsi), glabrous basal costal cell of fore wing (fig. 266), blackish scapus, paired sublateral patches of vertex (fig. 267), no fuzzy margins of black pattern of vertex, specialized setae of ovipositor sheath (fig. 268), and third antennal segment about as long as scapus (fig. 263).

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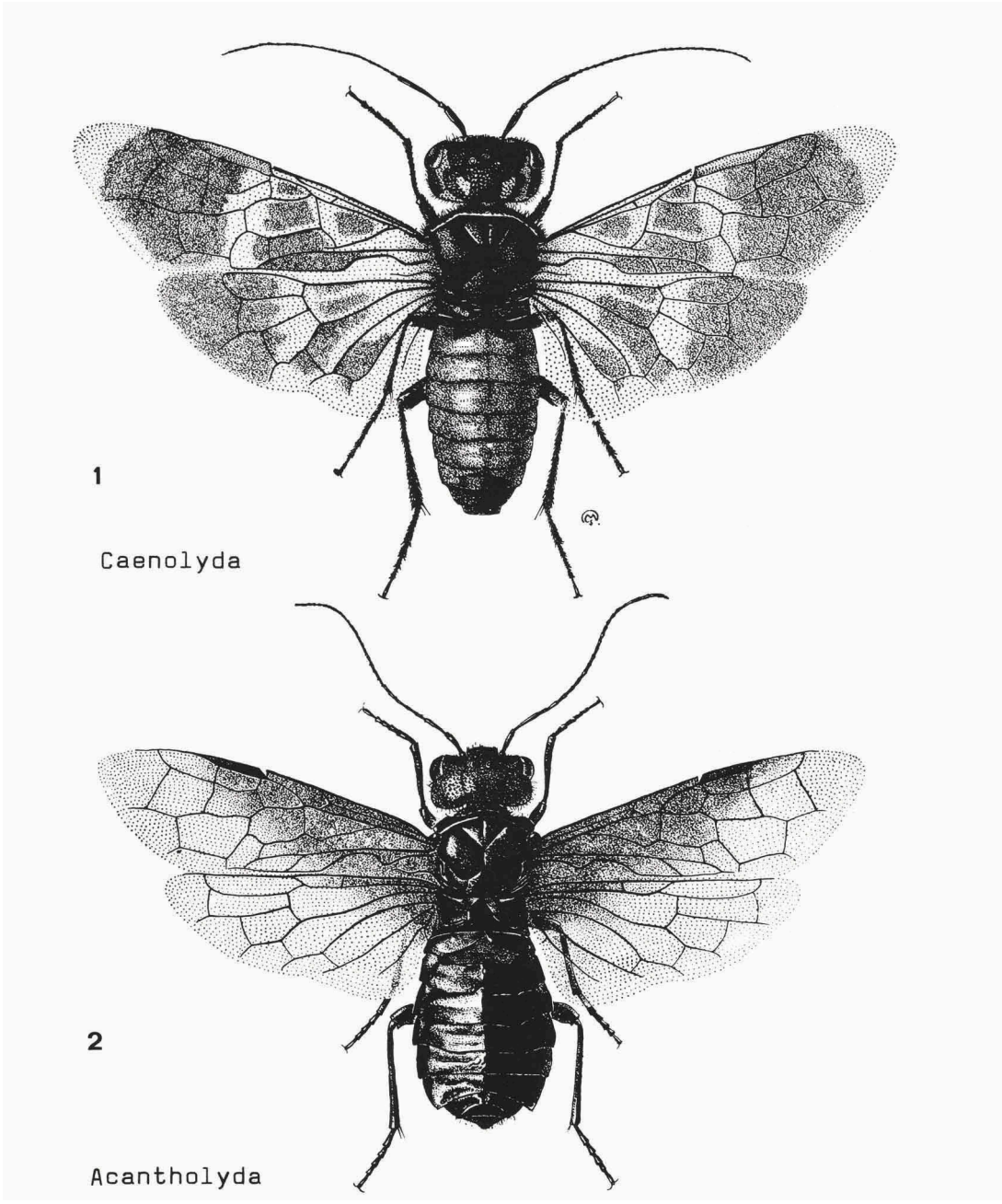


Fig. 1. *Caenolyda reticulata* (Linnaeus), ♀; after Móczár & Zombori (1973). Fig. 2, *Acantholyda erythrocephala* (Linnaeus), ♀; id.

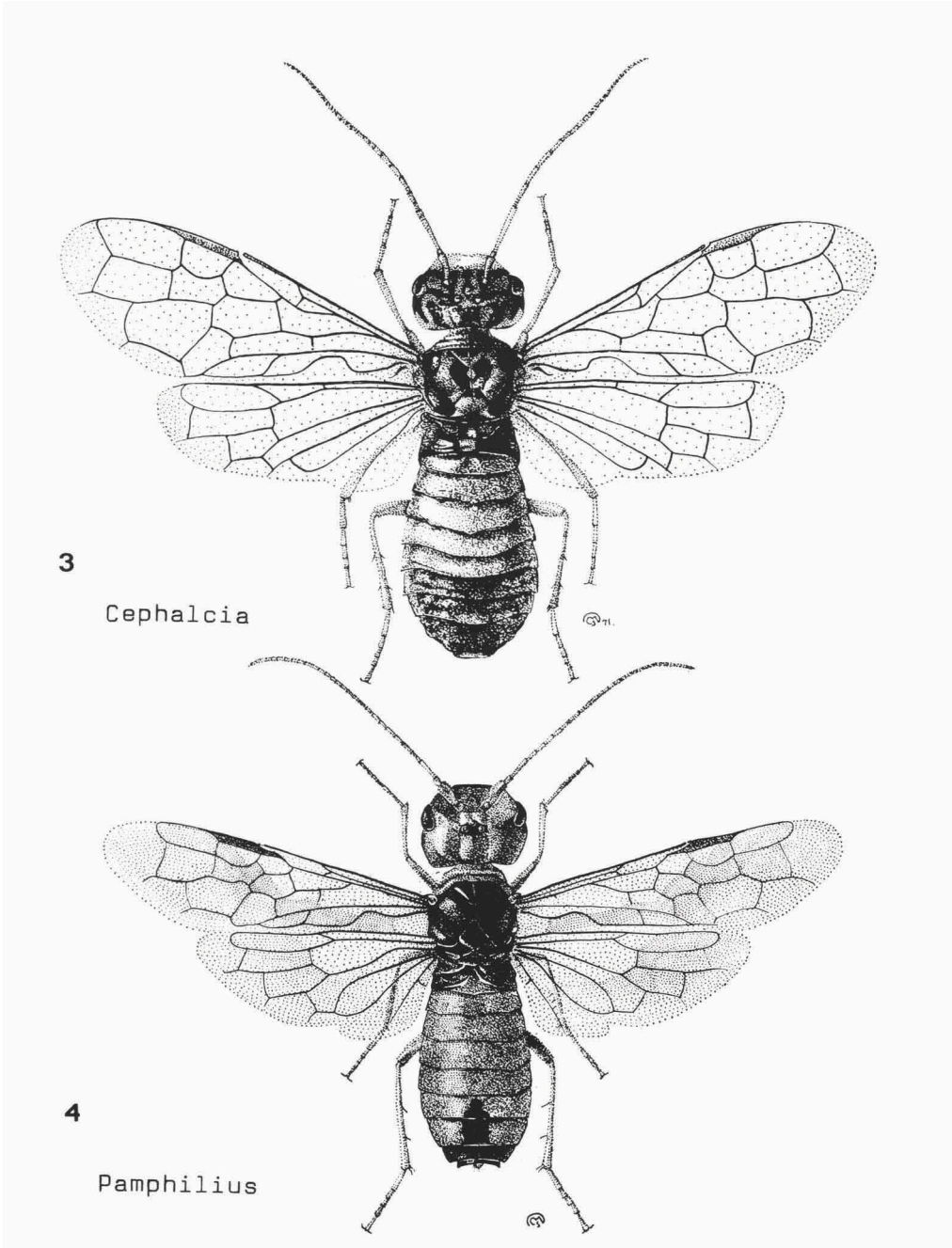


Fig. 3. *Cephalcia arvensis* Panzer, ♀; after Móczár & Zombori (1973). Fig. 4. *Pamphilius betulae* (Linnaeus), ♀; id.

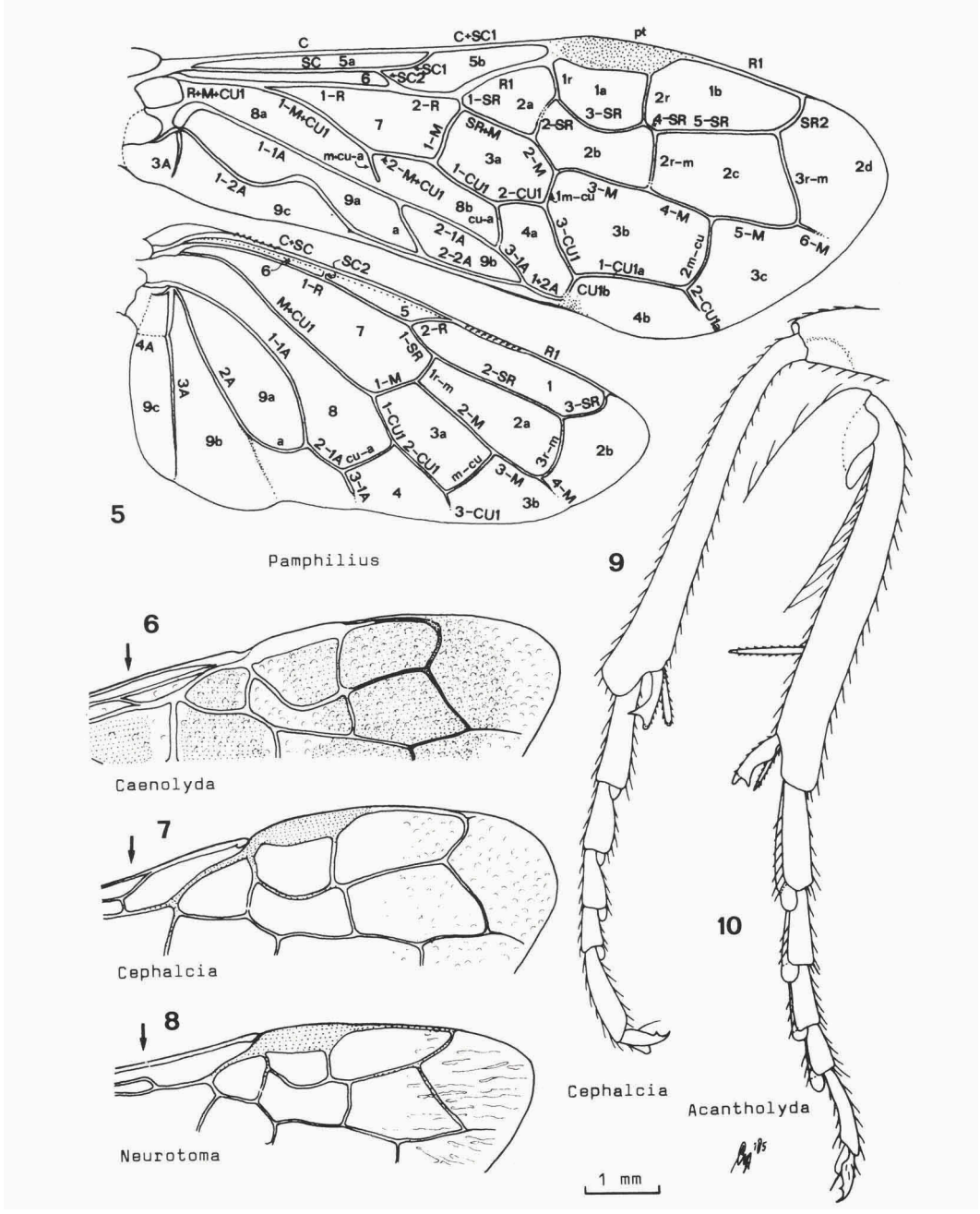
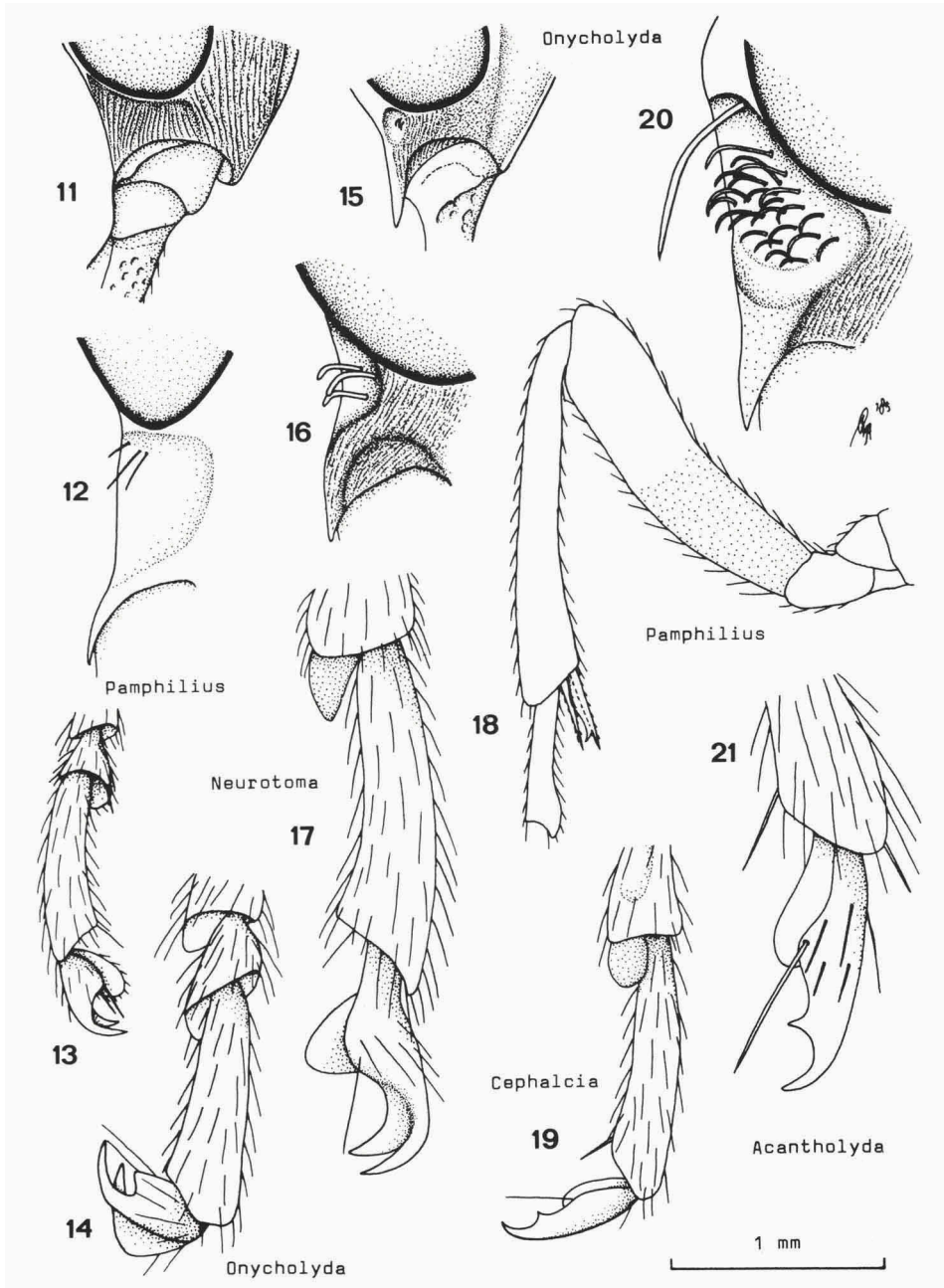
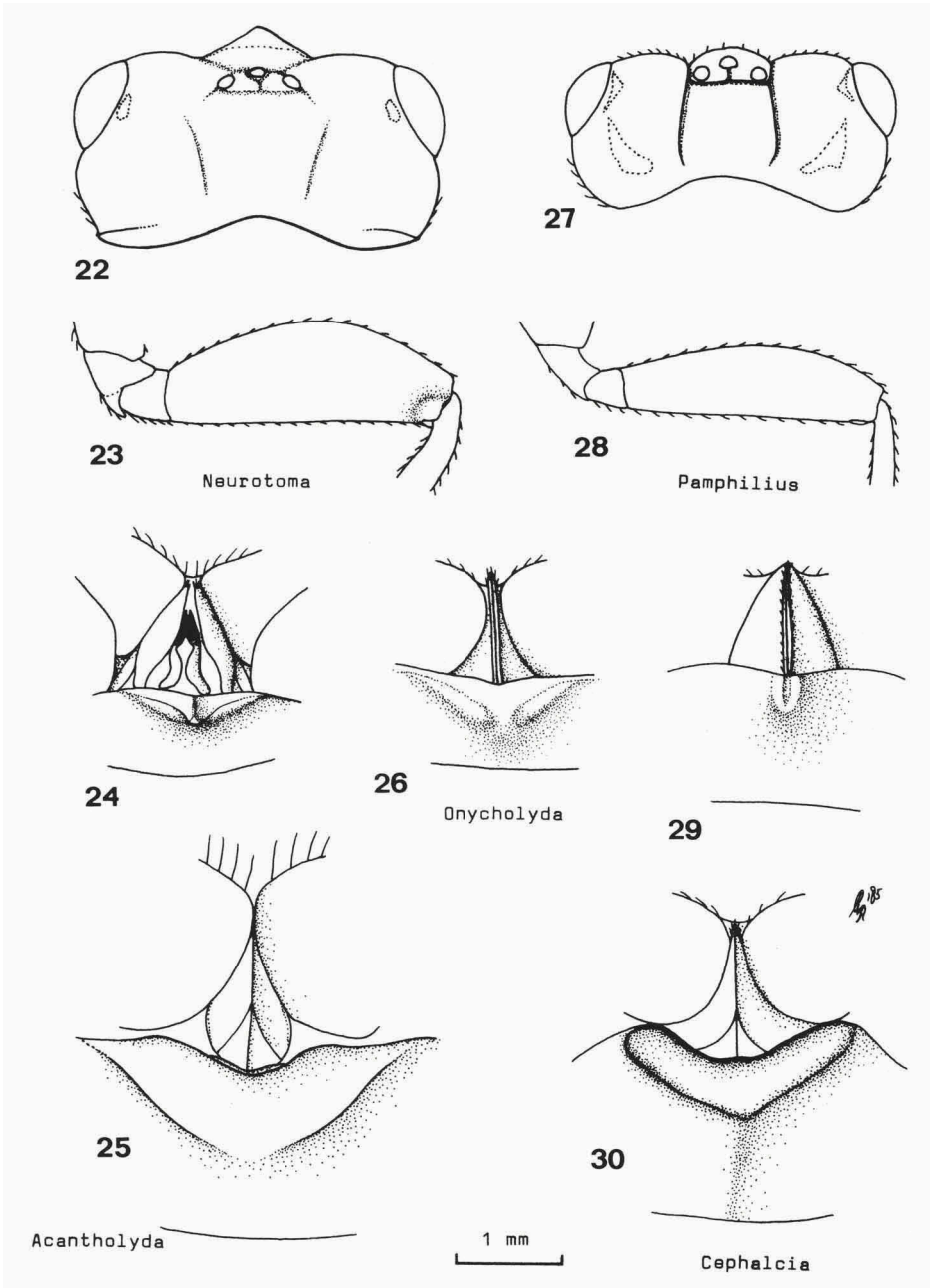


Fig. 5. *Pamphilius sylvaticus* (Linnaeus), ♀, wings. Figs. 6-8, part of fore wing. 6, *Caenolyda;* 7, *Cephalcia;* 8, *Neurotoma.* Fig. 9, *Cephalcia arvensis* Panzer, ♀, fore tibia and tarsus. Fig. 10, *Acantholyda erythrocephala* (Linnaeus), ♂, id. Fig. 5: pt = pterostigma; la-b = marginal cells; 2a-d = submarginal cells; 3a-c = distal cells; 4a-b = subdiscal cells; 5a = basal costal cell; 5b = distal costal cell; 6 = subcostal cell; 7 = basal cell; 8a-b = subbasal cells; 9a-c = anal cells. Figs. 6-8, after (= 1×); 9: 2.7×; 10: 2×.



Figs. 11-13, 18. *Pamphilius sylvaticus (Linnaeus)*, ♀, The Netherlands, Cadier. Figs. 14-16, 18. *Onycholyda lucida* (Rohwer), ♀, Japan, Kamiange (Tokyo Pref.). Fig. 20, id. ♂, Japan, Nakazawa (Tokyo Pref.). Fig. 17. *Neurotoma saltuum* (Linnaeus), ♀, The Netherlands, Wijlre. Fig. 19. *Cephalcia arvensis* Panzer, ♀, The Netherlands, Schayk. Fig. 21. *Acantholyda erythrocephala* (Linnaeus), ♀, The Netherlands, Rhenen. Figs. 11, 15: malar space, lateral aspect. Figs. 12, 16, 20, malar space, postero-lateral aspect. Fig. 18, fore femur and tibia. Figs. 13, 14, 17, 19, 21: hind claw. 11, 15, 18: scale-line (= 1×); 12, 14, 16, 17, 19: 2.5×; 13, 21: 1.8×.



Figs. 22-24. *Neurotoma saltuum* (Linnaeus), ♀, The Netherlands, Wijlre. Fig. 26. *Onycholyda lucida* (Rohwer), ♀, Japan, Kamiange (Tokyo Pref.). Fig. 25, *Acantholyda erythrocephala* (Linnaeus), ♀, The Netherlands. Rhenen. Figs. 27-29. *Pamphilius sylvaticus* (Linnaeus), ♀, Netherlands, Cadier. Fig. 30. *Cephalcia arvensis* (Linnaeus), ♀, The Netherlands, Schayk. Figs. 22, 27, head of ♀, dorsal aspect; 23, 28, hind femur, lateral aspect; 24-30, hypopygium, ventral aspect. 22, 23, 27, 28: 1× (= scale-line); 24-30: 2×.

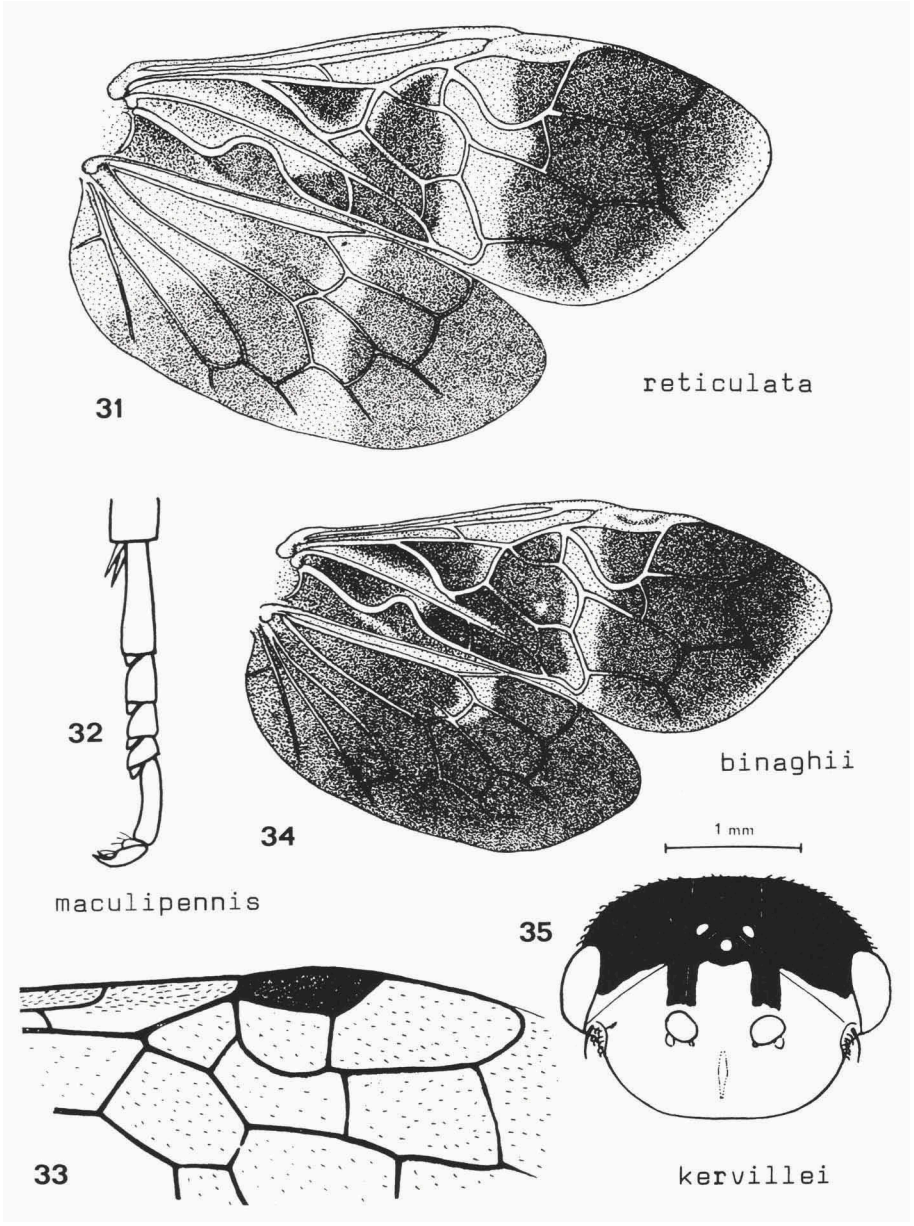
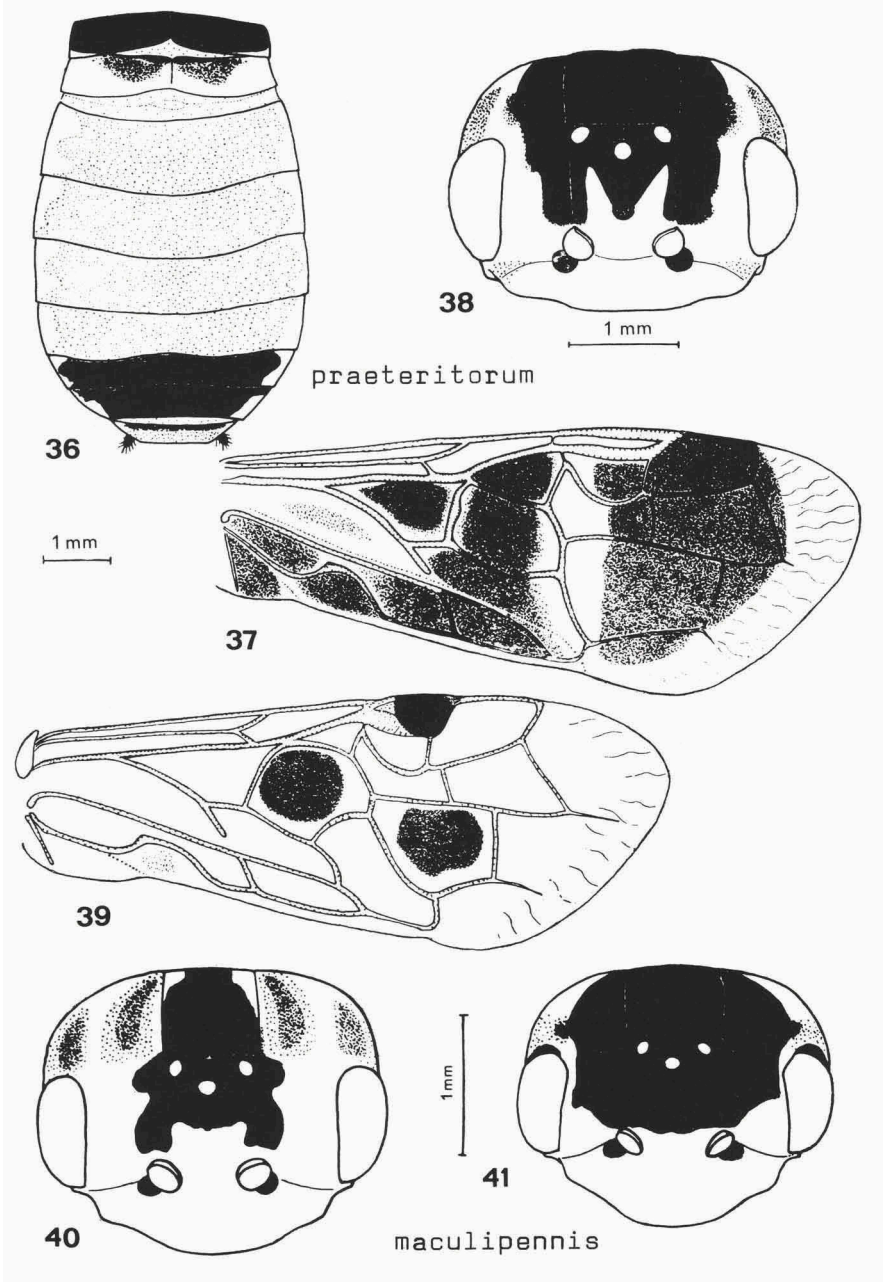
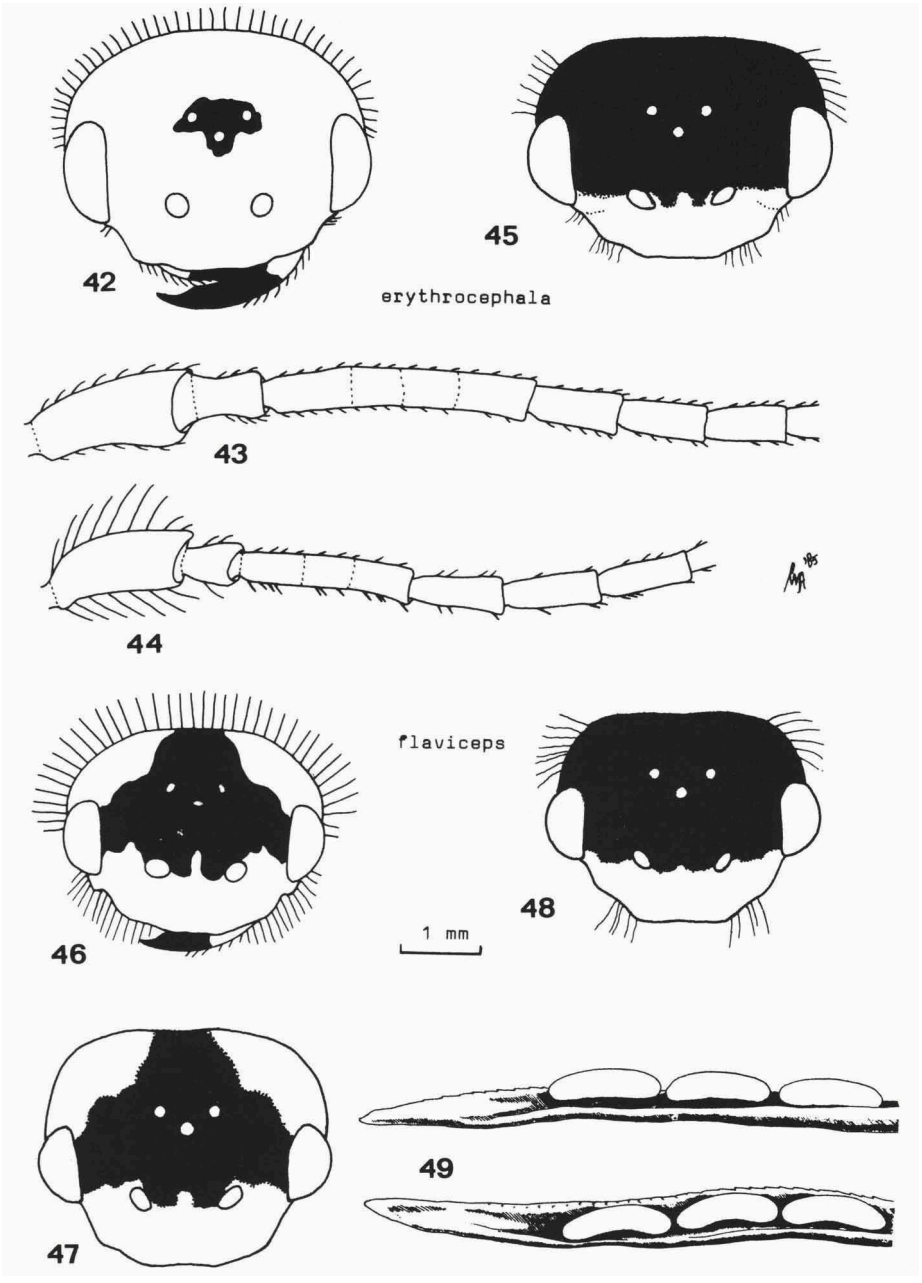


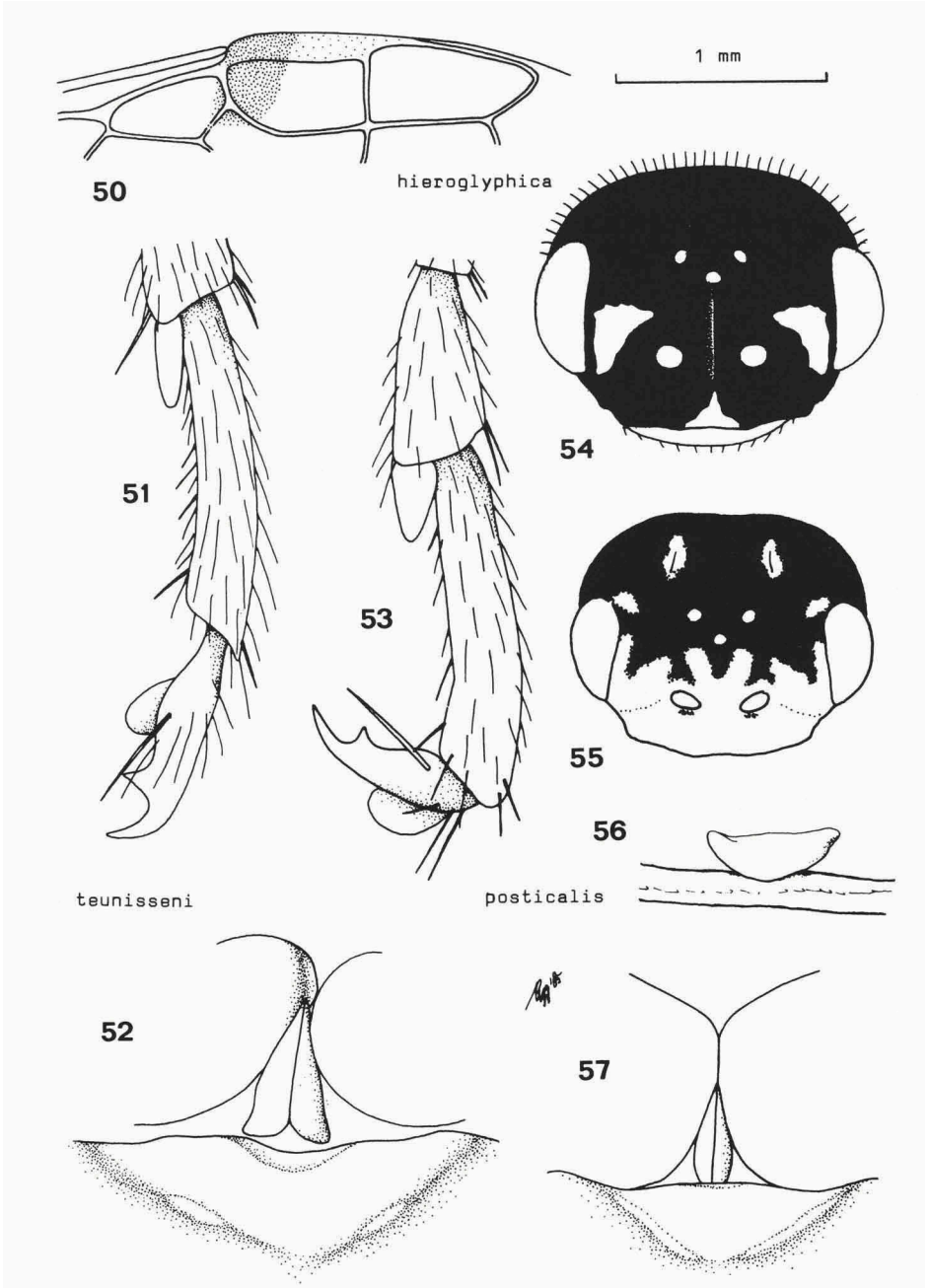
Fig. 31. *Caenolyda reticulata* (Linnaeus), ♂, Germany, wings. Fig. 32. *Kelidoptera maculipennis* (Stein), ♀, Turkey, hind tarsus. Figs. 33, 35. *Onycholyda kervillei* (Konow), ♂ (= allotype), France. 33, part of fore wing; 35, head of ♂, frontal aspect. Fig. 34. *Caenolyda binaghii* Pesarini & Pesarini, ♂, holotype (Italy), wings. 31, 34: after Pesarini & Pesarini (1976); 32, 33, 35: after Beneš (1972).



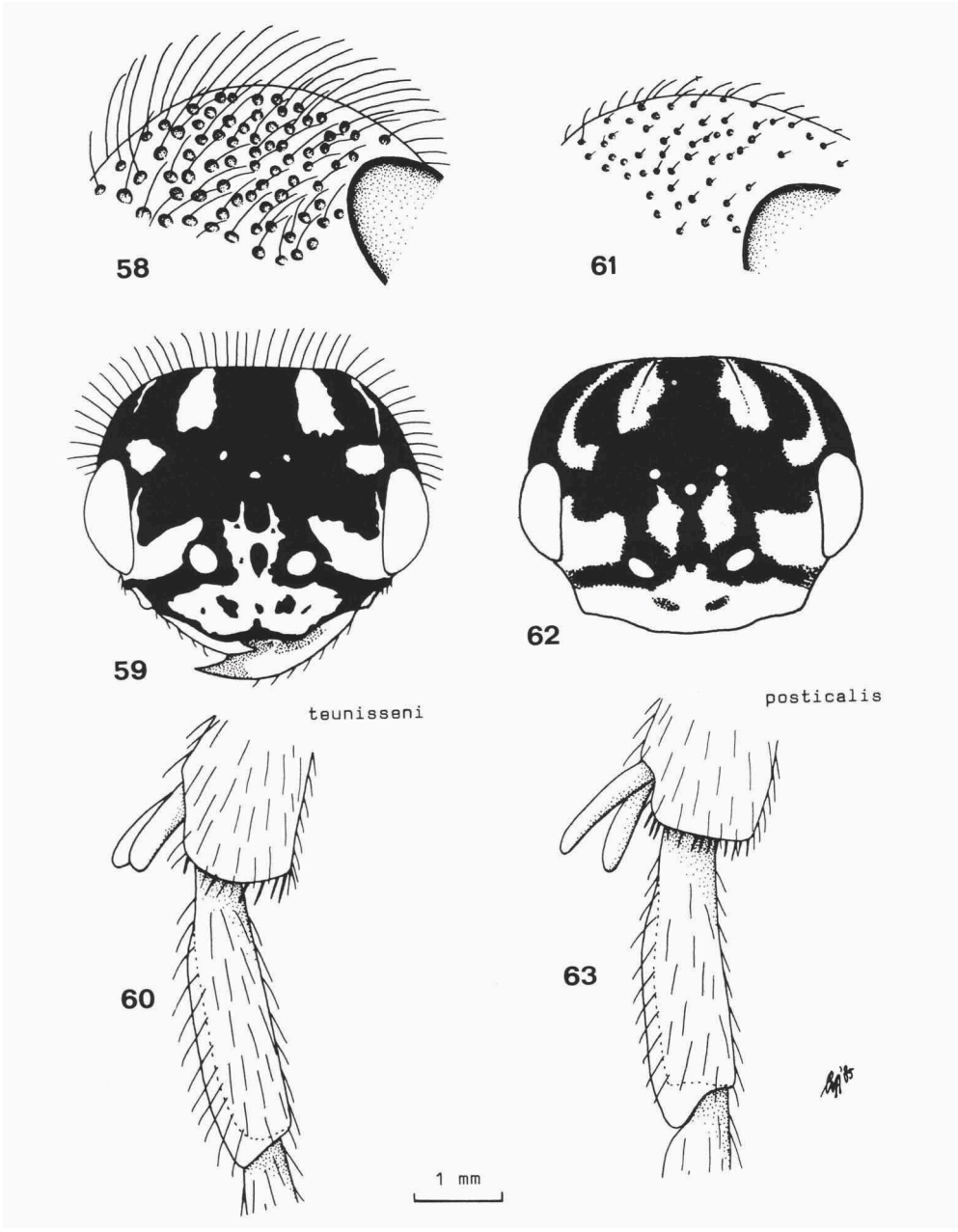
Figs. 36-38. *Pseudocephaleia brachycercus* Zirngiebl (= *P. praeteritorum* (Semenov Tian-Shanskij)), ♀ (= holotype), Albania, Figs. 39, 40. *Kelidoptera maculipennis* (Stein), ♀, Turkey; 41, id., ♂, Turkey. Fig. 36. abdomen, dorsal aspect; 37, 39, fore wing; 38, 40, head of ♀, frontal aspect; 41, head of ♂, frontal aspect. After Beneš (1972).



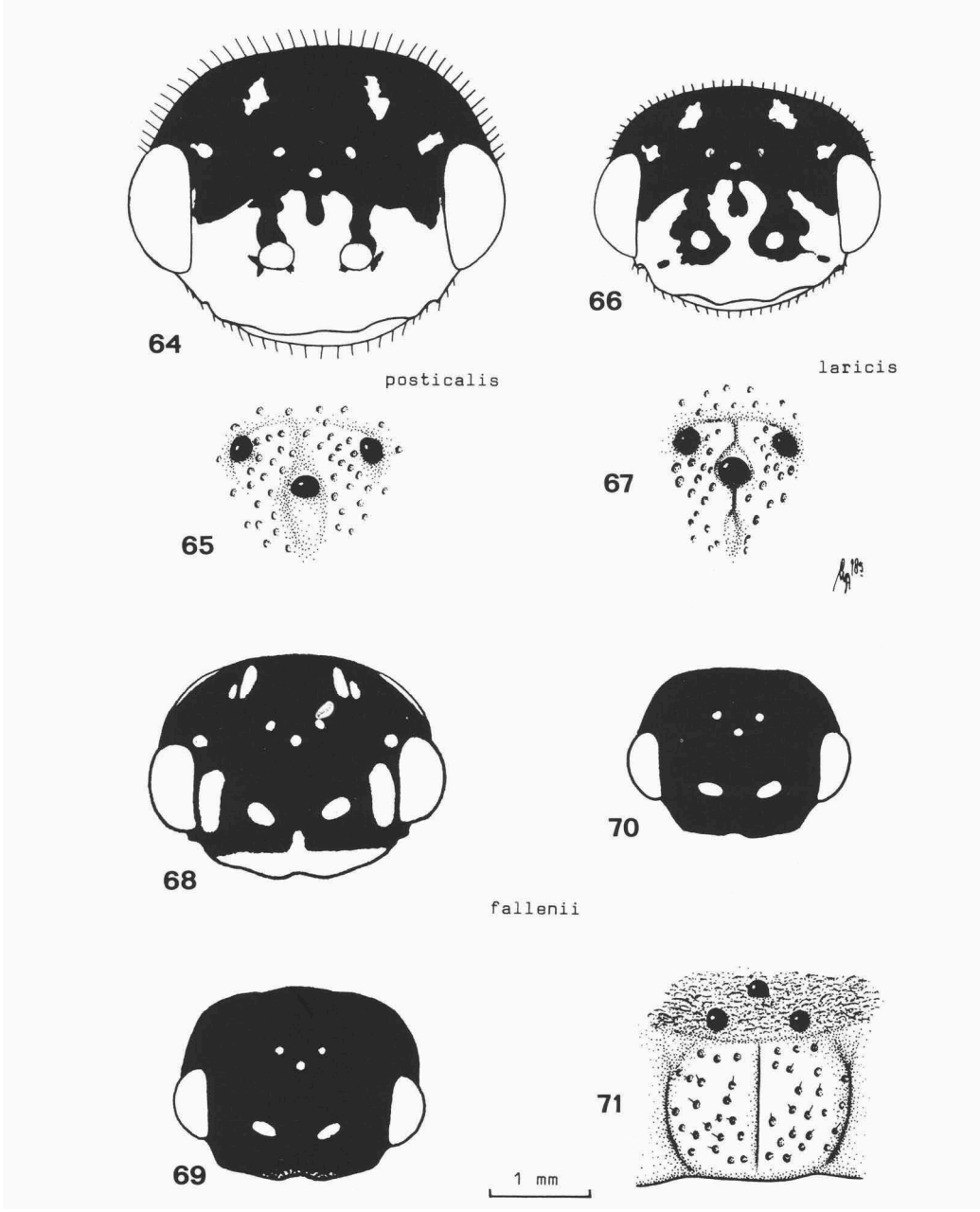
Figs. 42, 43. *Acantholyda erythrocephala* (Linnaeus), ♀ The Netherlands, Rhenen. Fig. 45, id., ♂, Finland. Fig. 46. *Acantholyda flaviceps* (Retzius), ♀, no locality. Figs. 47-49. id., Finland. Figs. 42, 46, 47, head of ♀, frontal aspect; 45, 48, head of ♂, frontal aspect; 43, 44, first to sixth antennal segments of ♀, outer aspect; 49, eggs. 42, 46: scale-line (= 1×); 43, 44: 2.7×; 45, 47-49: after Viitasaari (1982b).



Figs. 50, 54. *Acantholyda hieroglyphica* (Christ), ♀, Belgium, Winterslag. Figs. 51, 52. *Acantholyda teunisseni* spec. nov., ♀, holotype, Spain. Figs. 53, 57. *Acantholyda posticalis* Matsumura, ♀, The Netherlands, Haelen. Figs. 55, 56. id., Finland. Fig. 50, part of fore wing; 51, 53, hind claw; 52, 57, hypopygium, ventral aspect; 54, head of ♀, frontal aspect; 55, head of ♂, frontal aspect; 56, egg. 50, 54: 0.4×; 51, 53: 2.5×; 52, 57: scale-line (= 1×); 55, 56: after Viitasaari (1982b).



Figs. 58-60. *Acantholyda teunisseni* spec. nov., ♀, holotype, Spain. Figs. 61, 63. *Acantholyda posticalis* Matsumura, ♀, The Netherlands, Haelen. Fig. 62, id., ♀, Finland. Figs. 58, 61, detail of vertex of ♀; 59, 62, head of ♀, frontal aspect; 60, 63, hind spurs of ♀. 58, 61: 2.3×; 59: scale-line (= 1×); 60, 63: 3×; 62: after Viitasaari (1982b).



Figs. 64, 65. *Acantholyda posticalis* Matsumura, ♂, Netherlands, Tegelen. Figs. 66, 67. *Acantholyda laricis* (Giraud), ♂, The Netherlands, Cromvoirt. Fig. 68. *Cephalcia fallenii* (Dalman), ♀, ČSSR, N. Bohemia; Fig. 69. id., ♀, Finland; Fig. 70. id., ♂, Finland; Fig. 71. id., ♀, The Netherlands, Barneveld; Figs. 64, 66, 70, head of ♂, frontal aspect; 65, 67, stemmaticum, frontal aspect; 68, 69, head of ♀, frontal aspect; 71, middle part of vertex, dorsal aspect. 64, 66: scale-line (= 1×); 65, 67: 2×; 71: 1.6×; 68: after Beneš (1976); 69, 70: after Viitasaari (1982b).

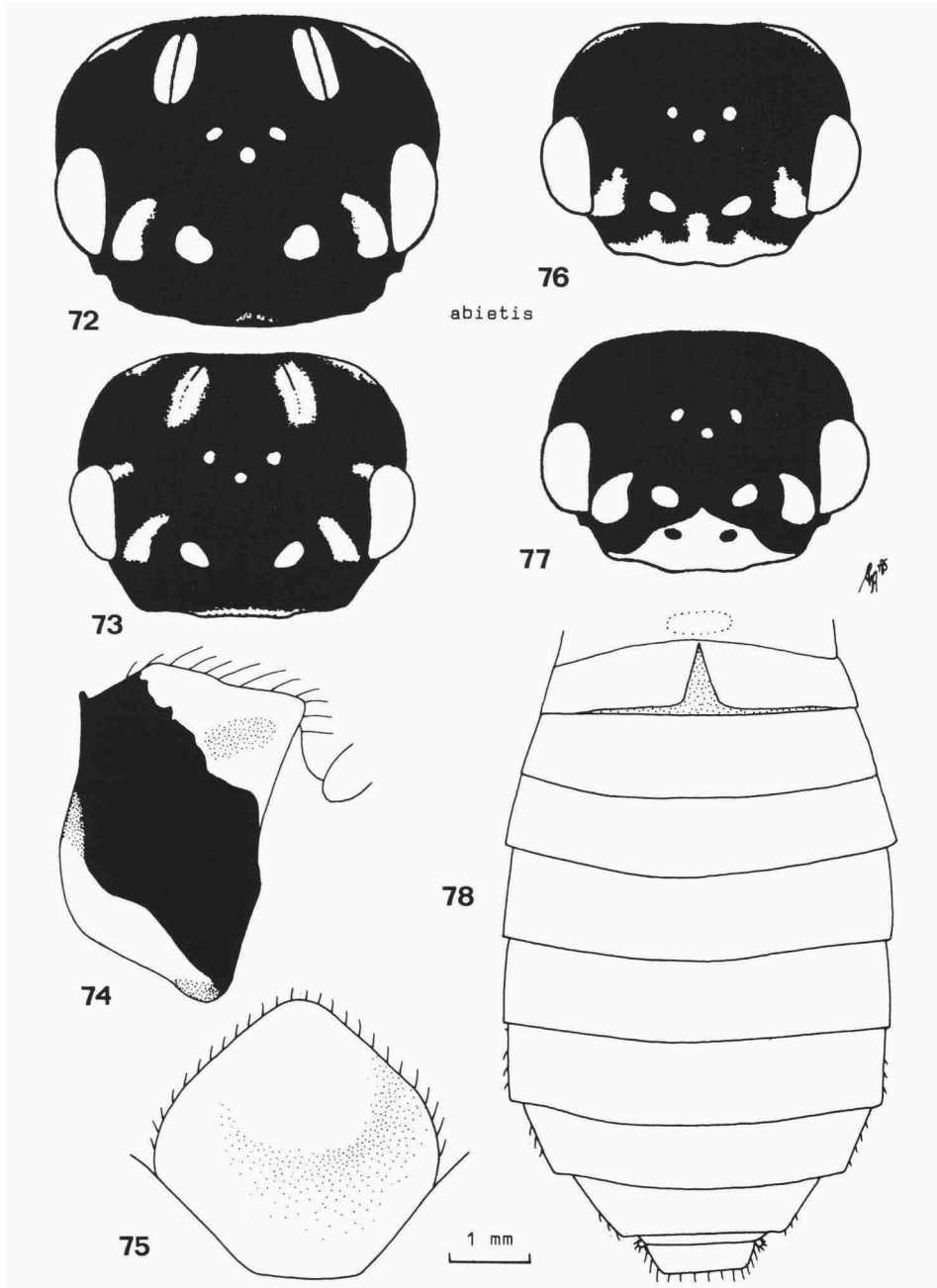


Fig. 72. *Cephalcia abietis* (Linnaeus), ♀ (lectotype of *C. scutellaris* (Thomson)), Sweden; Fig. 73, id., ♀, Finland; Figs. 74, 78. id., ♀, The Netherlands, Den Dungen; Fig. 75, id., ♂, The Netherlands, Den Dungen; Fig. 76. id., ♂, Finland; Fig. 77. id., ♂, ČSSR, N. Bohemia. Figs. 72, 73, head of ♀, frontal aspect; 74, pronotal side of ♀, lateral aspect; 75, hypopygium of ♂, ventral aspect; 76, 77, head of ♂, frontal aspect; 78, abdomen of ♀, dorsal aspect. 74, 75: 2.7×; 78: scale-line (= 1×); 72, 77: after Beneš (1976); 73, 76: after Viitasaari (1982b).

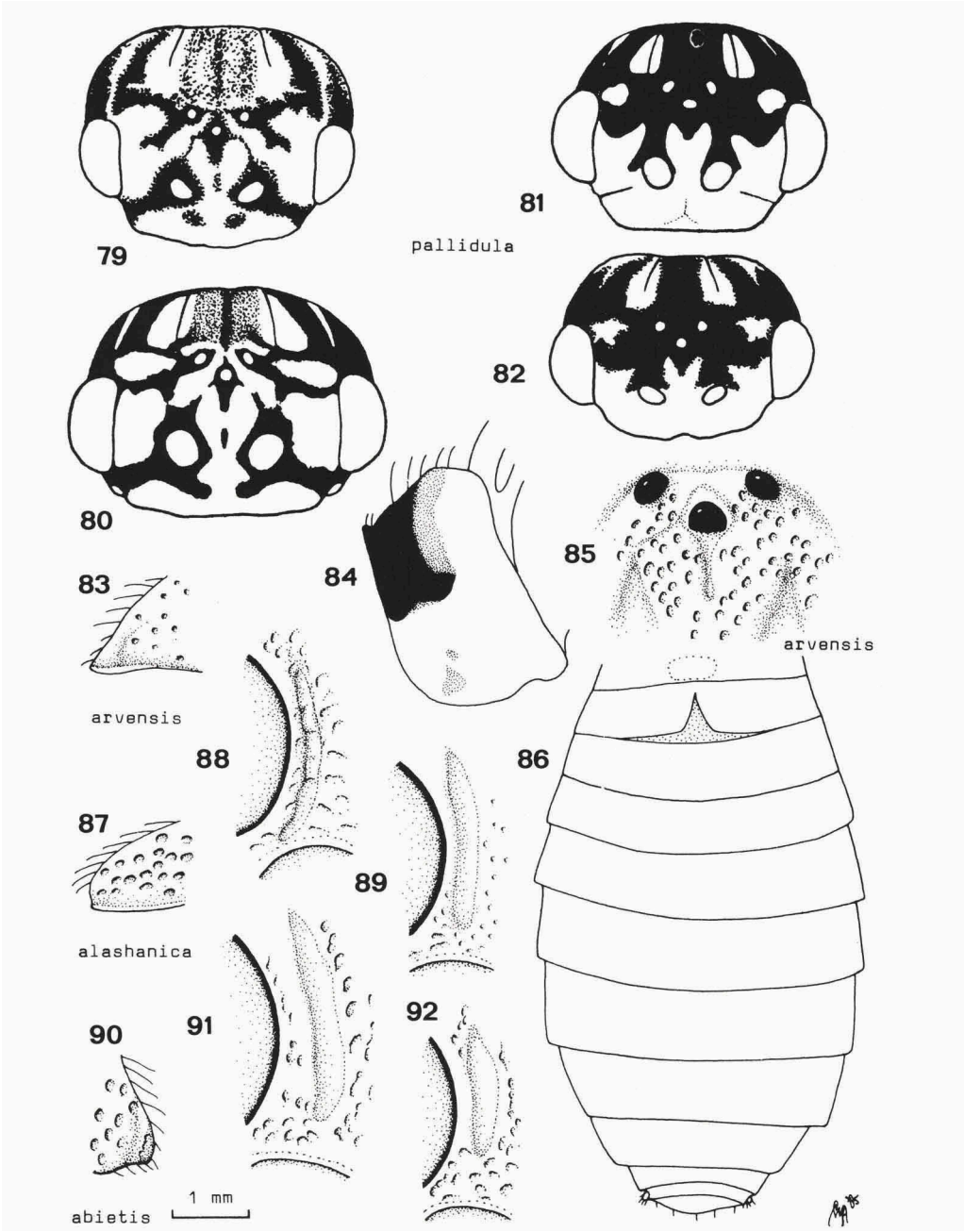
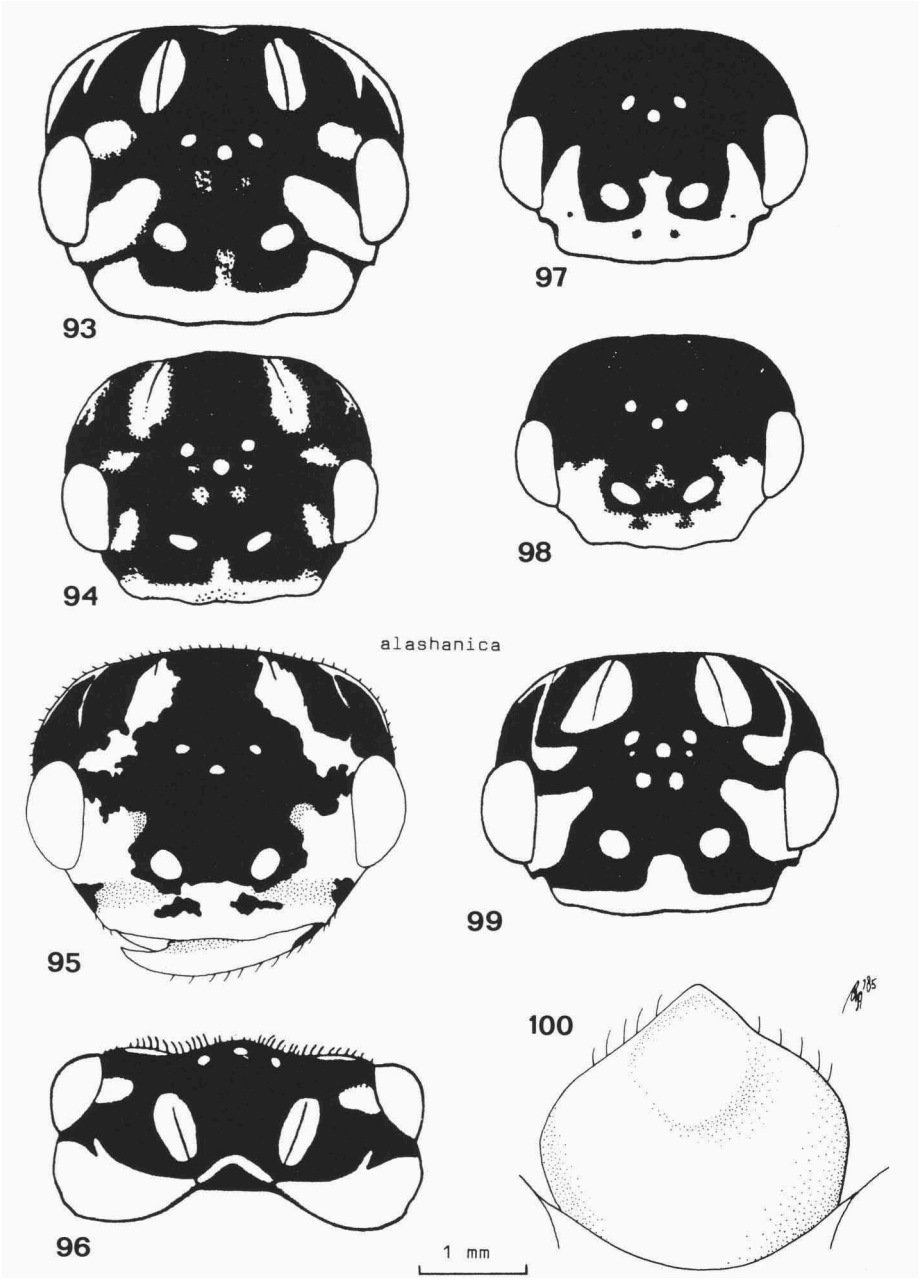
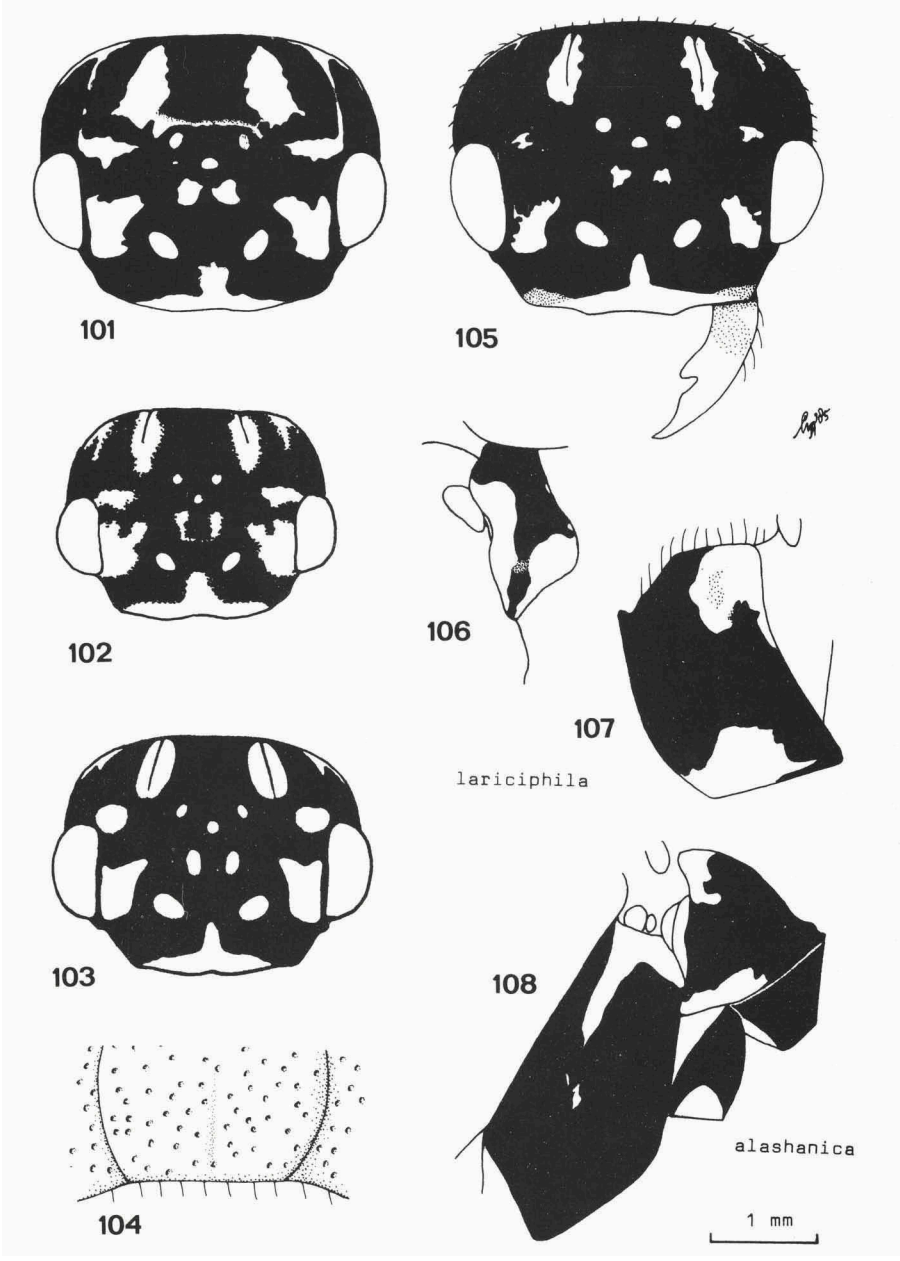


Fig. 79. *Cephalcia pallidula* (Gussakovskij), ♀, Finland; Fig. 80. id., ♀ (= holotype of *C. flavistigma* Lindqvist), Finland; Figs. 81, 82, id., ♂, Finland. Figs. 83-86. *Cephalcia arvensis* Panzer, ♀, Netherlands, Schayk. Figs. 87, 88. *Cephalcia alashanica* (Gussakovskij), ♀, The Netherlands, Montferland: 89. id., ♂, Switzerland, St. Luc-Ayer (Valais). Figs. 90, 91. *Cephalcia abietis* (Linnaeus), ♀, The Netherlands, Den Dungen; 92, id., ♂, id., 83, 87, 90: 4.3×; 84, 85, 88, 89, 91, 92: 2.7×; 86: scale-line (= 1×); 79, 82: after Viitasaari (1982b); 80, 81: after Beneš (1976).



Figs. 93, 96. *Cephalcia alashanica* (Gussakovskij), ♀, paralectotype, S. Mongolia; Fig. 94. id., ♀, Finland; Fig. 95. id., ♀, The Netherlands, Montferland; Fig. 97, id., ♂, (= paratype of *C. a. europaea* Beneš), ČSSR, S. Bohemia; Fig. 98. id., ♂, Finland; Fig. 99. is., ♀, (= paratype of *C. a. europaea* Beneš), Sweden; Fig. 100. id., ♂, Switzerland, St. Luc-Ayer (Valais). Figs. 93-95, 99, head of ♀, frontal aspect; 96, head of ♀, dorsal aspect; 97, 98, head of ♂, frontal aspect; 100, hypopygium of ♂, ventral aspect. 95: scale-line (= 1×); 100: 2×; 93, 96, 97, 99: after Beneš (1976); 94, 98: after Viitasaari (1982b).



Figs. 101, 106. *Cephalcia lariciphila* (Wachtl), ♀ (= holotype of *C. intermedia* (Hellén)), Finland. Fig. 102. id., ♀, Finland. Fig. 103. id., ♀, Switzerland. Figs. 104, 107. id., ♀, The Netherlands, Gilze-Rijen. Fig. 105. id., ♂, Netherlands, Schayk (on *Larix*). Fig. 108. *Cephalcia alashanica* (Gussakovskij), ♀, Netherlands, Montferland. Figs. 101-103, head of ♀, frontal aspect; 104, middle part of vertex of ♀, dorsal aspect; 105, head of ♂, frontal aspect; 106, 107, pronotal sides of ♀, lateral aspect; 108, id. but including mesepisternum. 101, 106, 108: scale-line (= 1×); 104, 107: 2×; 105: 1.3×; 102: after Viitasaari (1982b); 103: after Beneš (1976).

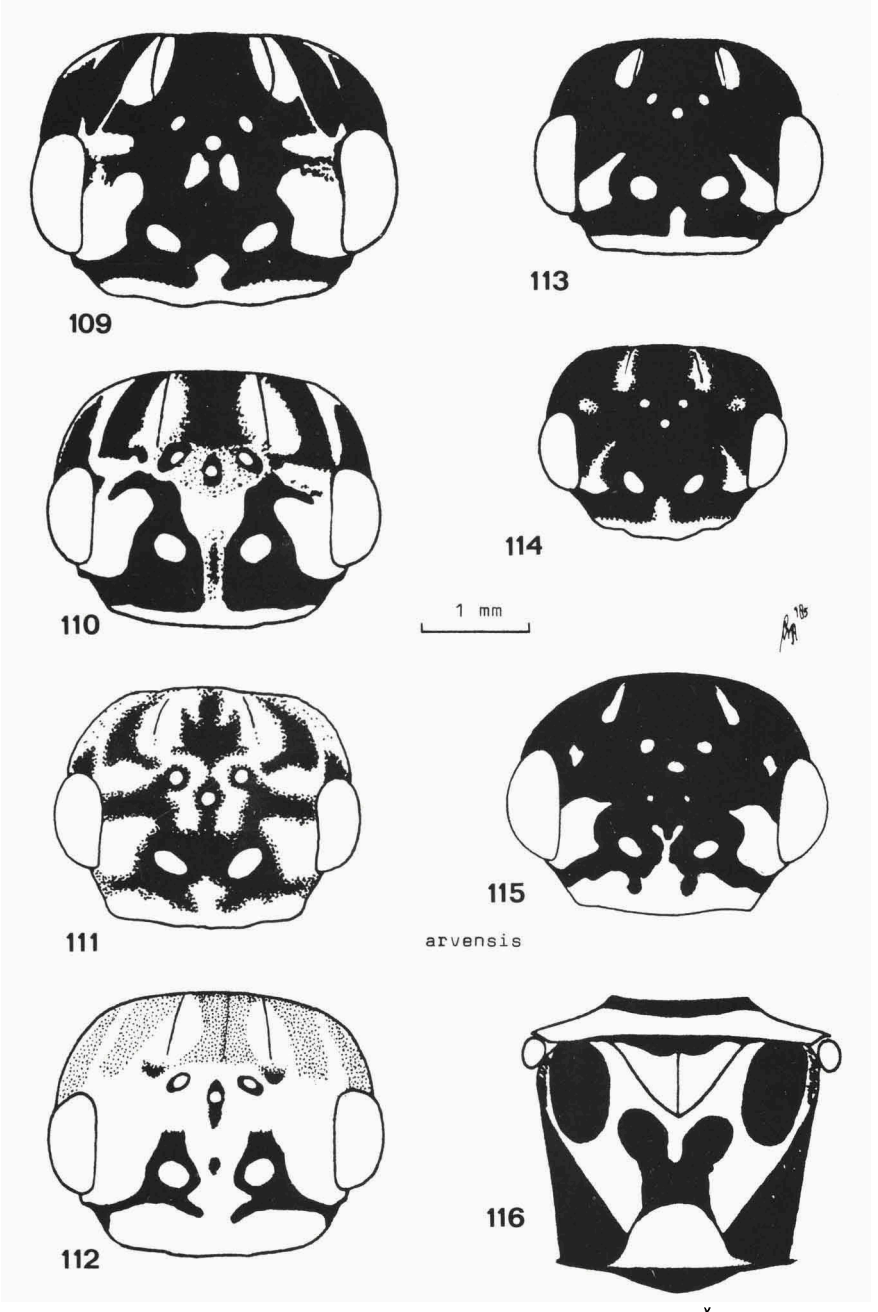
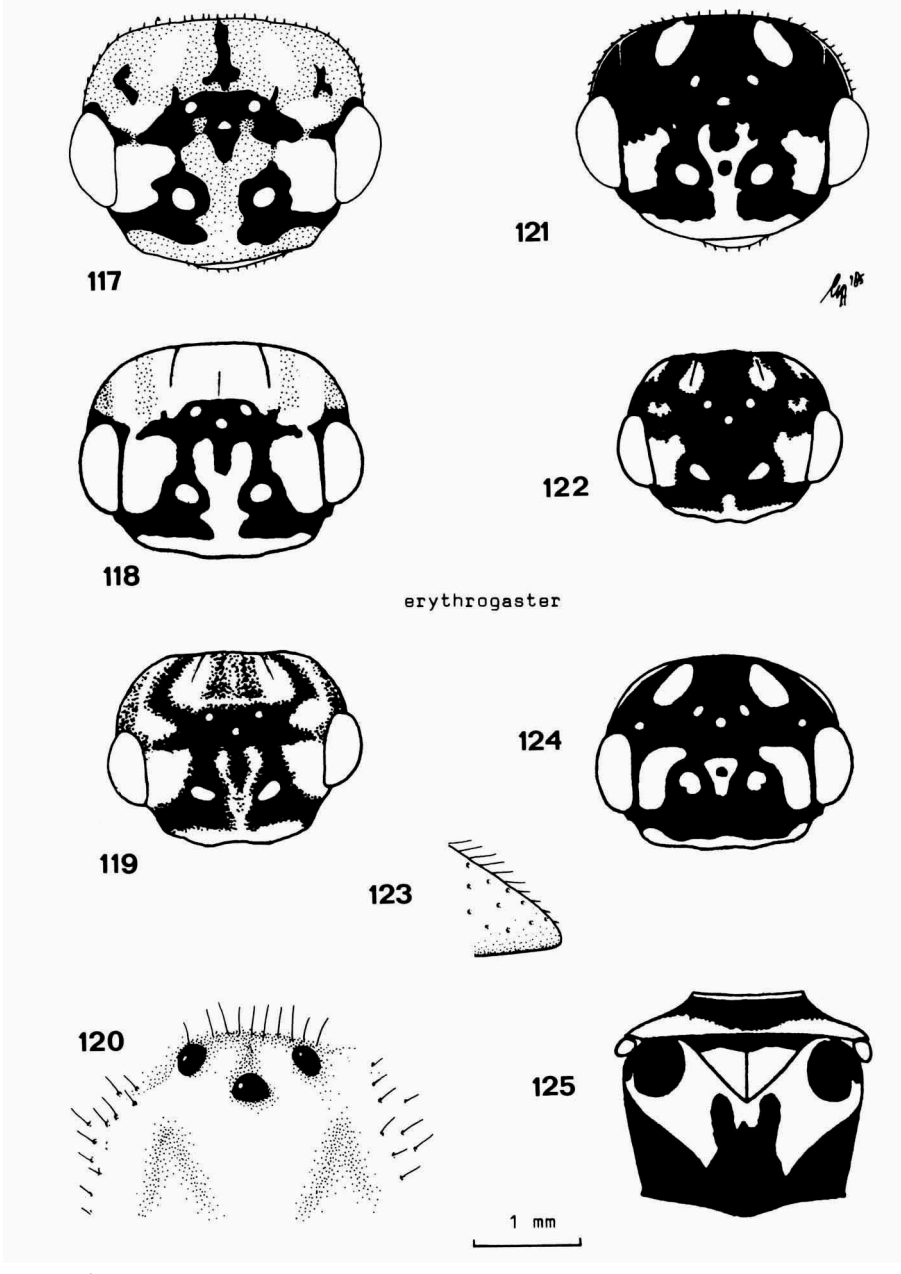


Fig. 109. *Cephalcia arvensis* Panzer, ♀, Finland. Figs. 110, 116. id., ♀, ČSSR, N. Bohemia. Fig. 111. id., ♀, Finland. Fig. 112. id. (f. *irrorata* (Dahlbom)), ČSSR, S. Bohemia. Fig. 113, id., ♂, ČSSR, N. Bohemia. Fig. 114. id., ♂, Finland. Fig. 115. id. (= lectotype of *C. saxicola* (Hartig)), ♀, Germany. Figs. 109-112, head of ♀, frontal aspect; 113-115, head of ♂, frontal aspect; 116, pro- and mesonotum of ♀, dorsal aspect. 115: scale-line (= 1×); 109, 110, 112, 113, 116: after Beneš (1976); 111, 114: after Viitasaari (1982b).



Figs. 117, 120, 123. *Cephalcia erythrogaster* (Hartig), ♀, The Netherlands, Schayk. Fig. 118, id., ♀, ČSSR, N. Bohemia. Fig. 119. id., ♀, Finland. Fig. 121. id., ♂, Netherlands, Otterlo. Fig. 122. id., ♂, Finland. Fig. 124. id., ♂, Germany. Fig. 125. id., ♀, Germany. Figs. 117-119, head of ♀, frontal aspect; 120, stemmaticum and part of frons, frontal aspect; 121-124, head of ♂, frontal aspect; 123, clypeus medially, lateral aspect; 125, pro-and mesonotum, dorsal aspect. 117, 121: scale-line (= 1×); 120: 2×; 123: 3.3×; 118, 124, 135: after Beneš (1976); 119, 122: after Viitasaari (1982b).

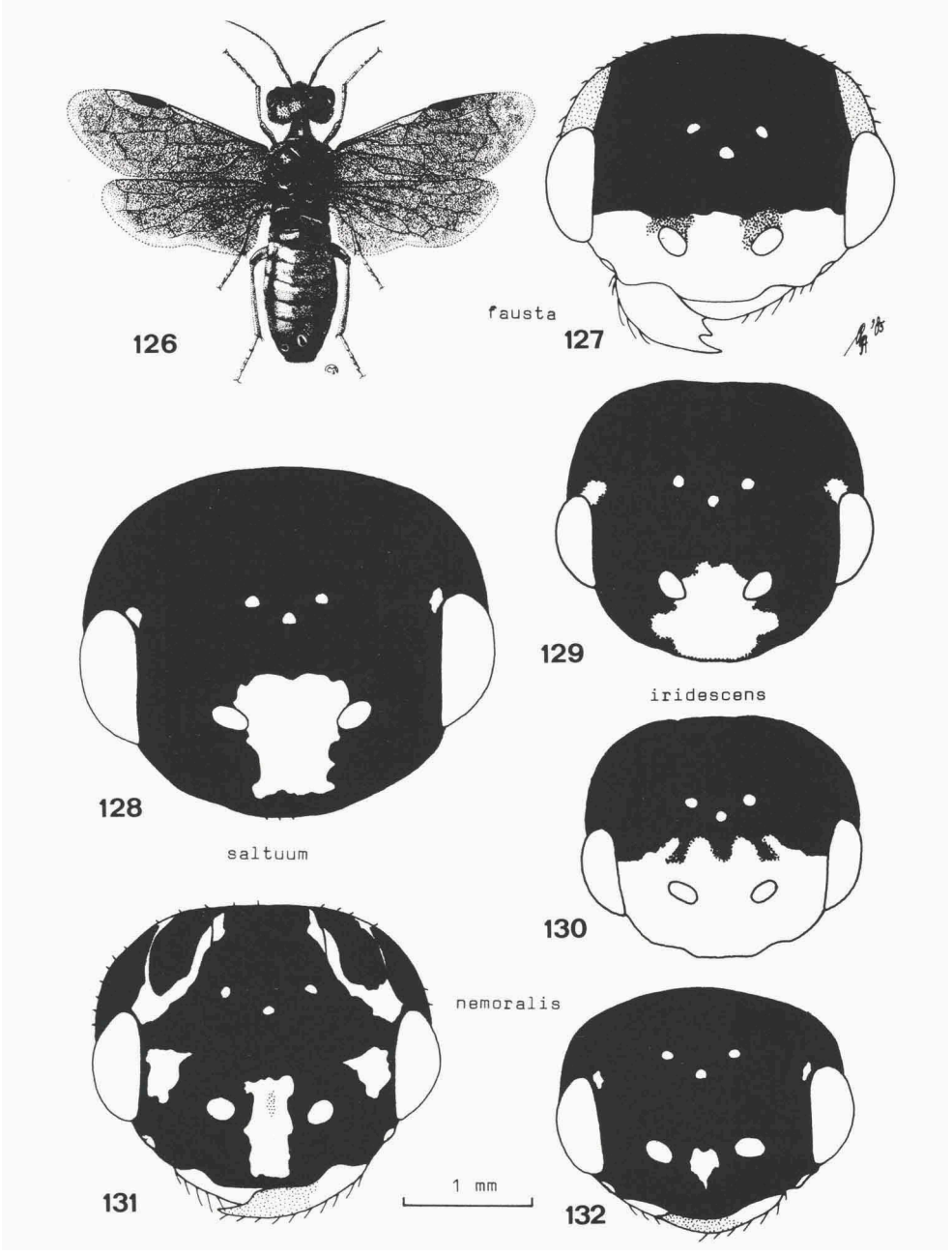
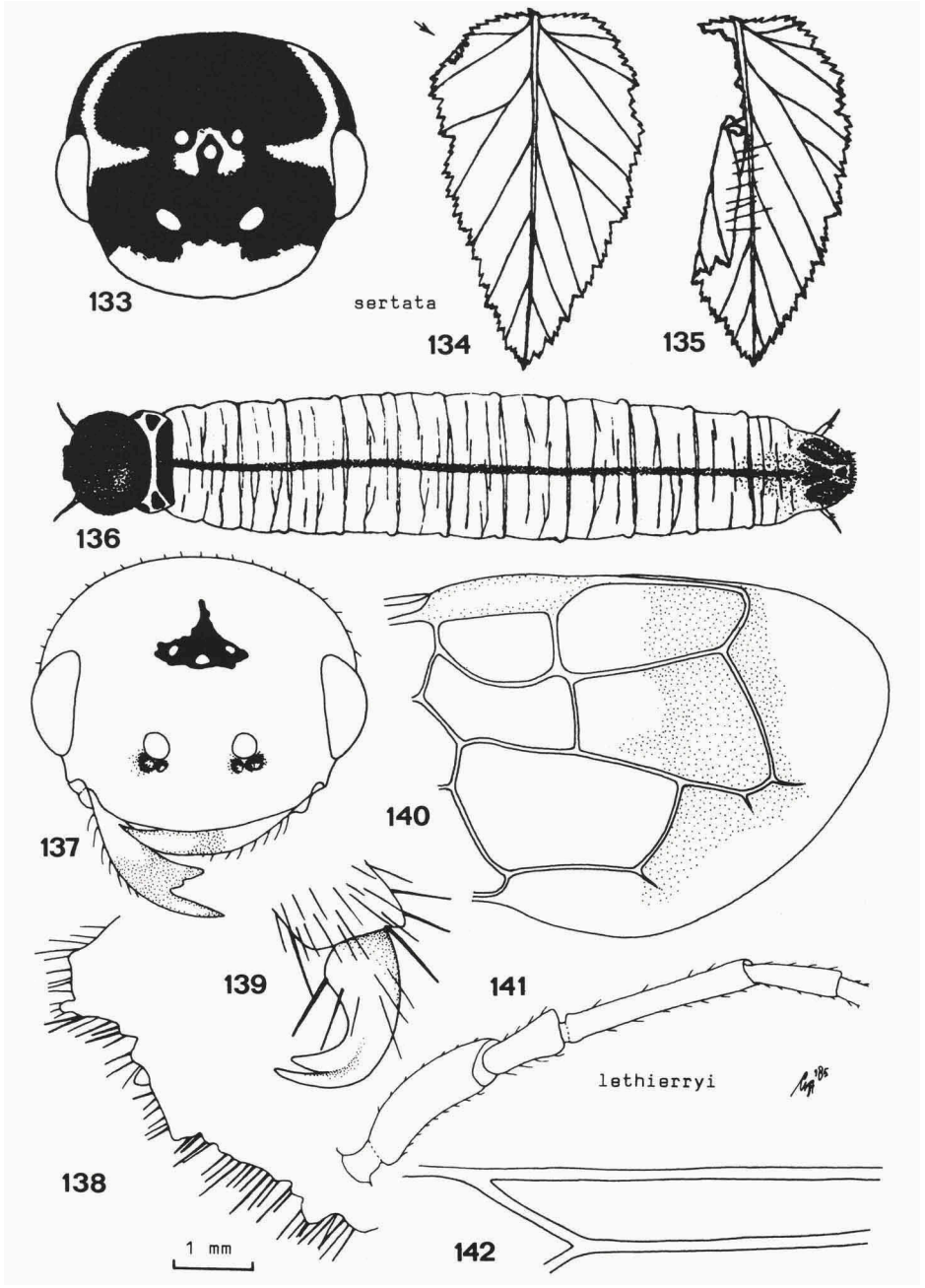
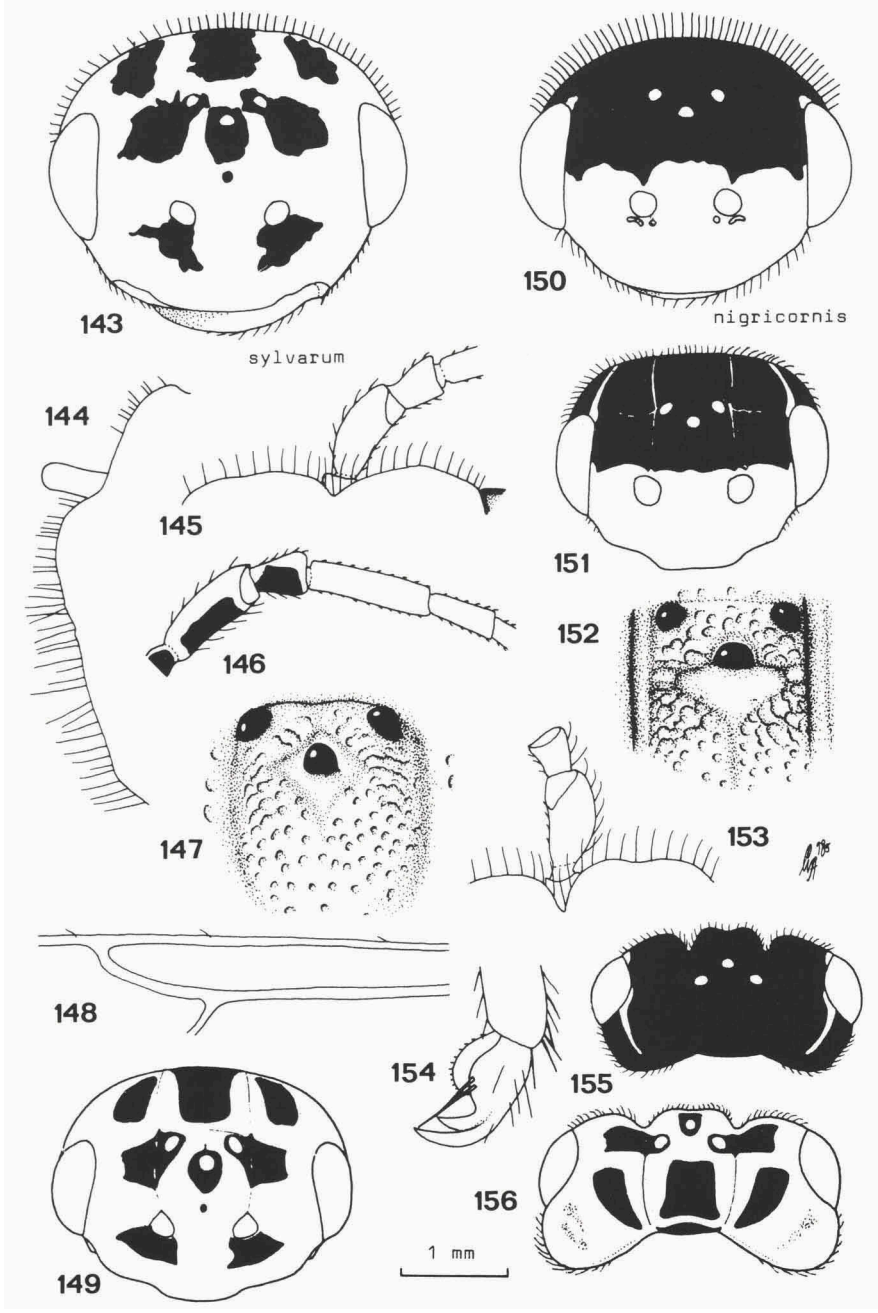


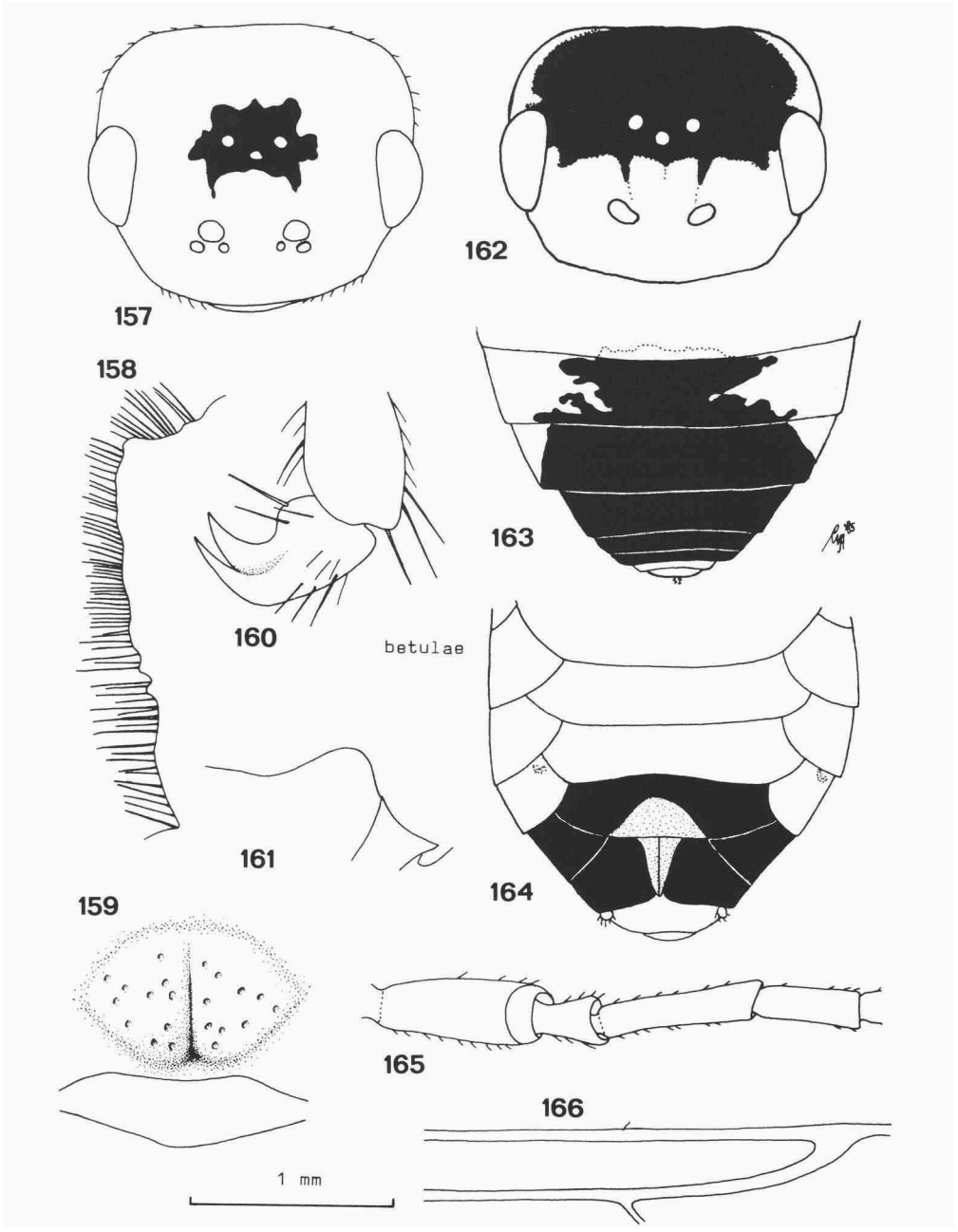
Fig. 126. *Neurotoma fausta* (Klug), ♀, Hungary. Fig. 127. id., ♂, The Netherlands, Gerendal. Fig. 128. *Neurotoma saltuum* (Linnaeus), ♀, The Netherlands, Wijlre (Eiserbos). Fig. 129. *Neurotoma iridescens* (André), ♀, Finland; Fig. 130. id., ♂, id. Fig. 131. *Neurotoma nemoralis* (Linnaeus), ♀, The Netherlands, Babberich; 132. id., ♂ (= holotype of *N. maculifrons* (Snellen van Vollenhoven)), The Netherlands, Utrecht. Fig. 126, habitus, dorsal aspect; 128, 129, 131, head of ♀, frontal aspect; 127, 130, 132, head of ♂, frontal aspect. 127, 131, 132: scale-line (= 1×); 128: 0.8×; 126: after Móczár & Zombori (1973); 129, 130: after Viitasaari (1982b).



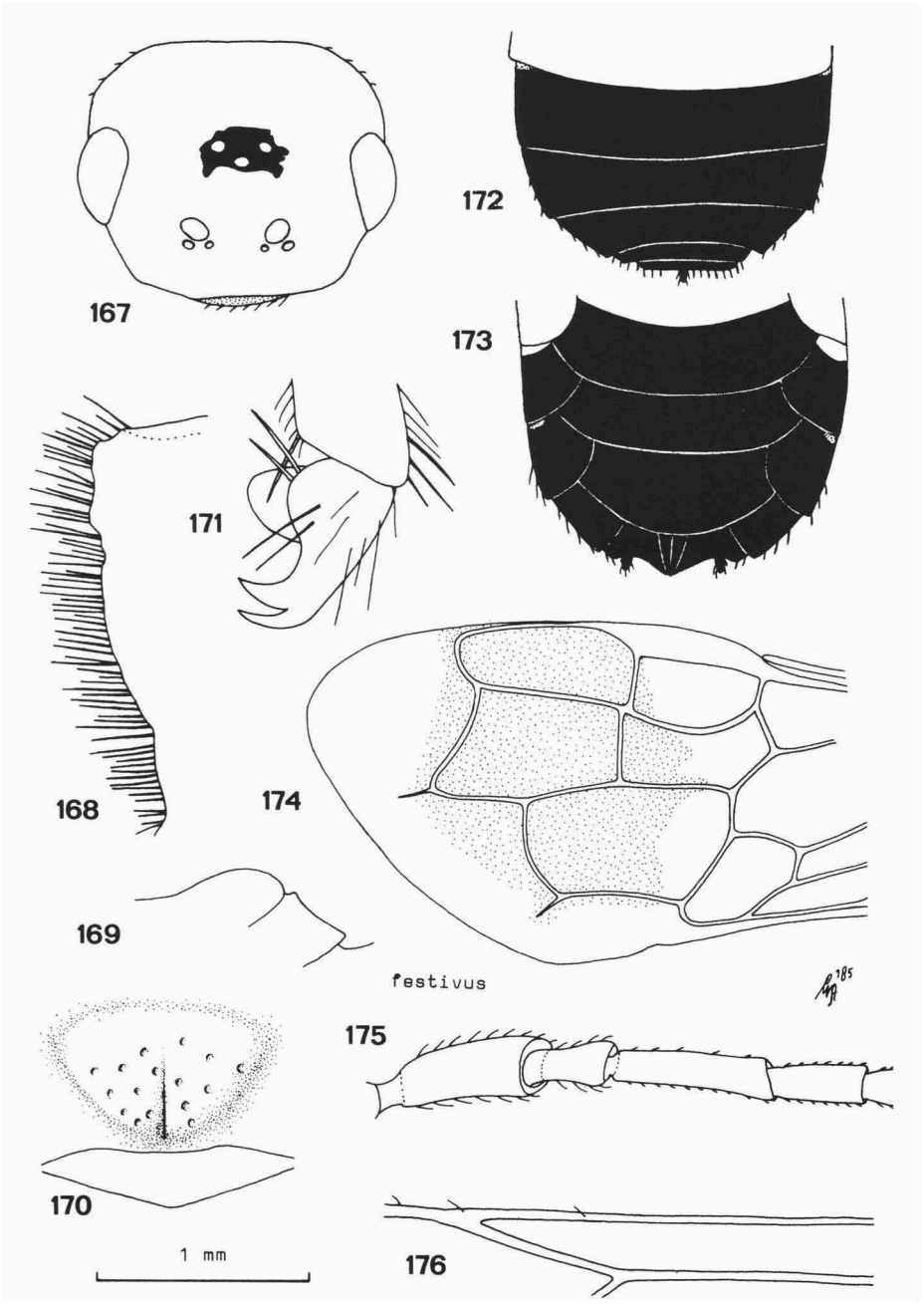
Figs. 133-136. *Onycholyda sertata* (Konow), Finland. Figs. 137-140, 142. *Pamphilius lethierryi* (Konow), ♀, Austria, Tyrol; Fig. 141. id., ♀, The Netherlands, Vaals. Figs. 133, 137, head of ♀, frontal aspect; 134, 135, infested leaves; 136, larva, dorsal aspect; 138, apex of ovipositor sheath, lateral aspect; 139, hind tarsal claw of ♀; 140, apical half of fore wing of ♀; 141, first to fourth antennal segments of ♀; 142, apical third of basal costal cell of fore wing of ♀. 137, 140: scale-line (= 1×); 138, 139: 6.7×; 141, 142: 2.7×; 133-136: after Viitasaari (1982b).



Figs. 143-148, 154. *Pamphilius sylvarum* (Stephens), ♀, The Netherlands, Ede; Figs. 149, 156. id., ♀ (= lectotype of *P. fulvipennis* (Zaddach)), Germany. Figs. 150, 152, 153. *Pamphilius nigricornis* (Snellen van Vollenhoven), ♂, (= holotype), Den Haag; Figs. 151, 155, id., ♂, Germany. Lünnenburg. Figs. 143, 149: head of ♀, frontal aspect; 144, apex of ovipositor sheath, lateral aspect; 145, 153, frons, dorsal aspect; 146, first to fourth antennal segments of ♀; 147, 152, stemmaticum and medial part of frons, frontal aspect; 148, apical third of basal costal cell of fore wing of ♀; 150, 151, head of ♂, frontal aspect; 154, hind claw of ♀; 155, 156, head, dorsal aspect. 143, 150: scale-line (= 1×); 144, 154; 2.5×; 145-148, 153: 2×; 149, 151, 154, 155: after Beneš (1982).



Figs. 157-161, 163-166. *Pamphilius betulae* (Linnaeus), ♀, The Netherlands, Wijster. Fig. 162. id., ♂, Finland. Fig. 157, head of ♀, frontal aspect; 158, apex of ovipositor sheath, lateral aspect; 159, mesoscutellum, dorsal aspect; 160, hind claw of ♀; 161, mesoscutellum, lateral aspect; 162, head of ♂, frontal aspect; 163, sixth and following abdominal tergites of ♀, dorsal aspect; 164, sixth and following abdominal sternites of ♀, ventral aspect; 165, first to fourth antennal segments of ♀, outer aspect; 166, apical third of basal costal cell of fore wing of ♀. 157, 163, 164: 0.4×; 158, 160: 2.5×; 159, 161, 165, 166: scale-line (= 1×); 162: after Viitasaari (1982b).



Figs. 167-176. *Pamphilius festivus* Pesarini & Pesarini, ♀, The Netherlands, Elzeterbosch. Fig. 167, head of ♀, frontal aspect; 168, apex of ovipositor sheath, lateral aspect; 169, mesoscutellum, lateral aspect; 170, mesoscutellum, dorsal aspect; 171, hind claw of ♀; 172, sixth and following abdominal tergites, dorsal aspect; 173, sixth and following abdominal sternites, ventral aspect; 174, apical half of fore wing; 175, first to fourth antennal segments, outer aspect; 176, apical third of basal costal cell of fore wing of ♀. 167, 172-174: 0.4×; 168, 171: 2.5×; 169, 170, 175, 176: scale-line (= 1×).

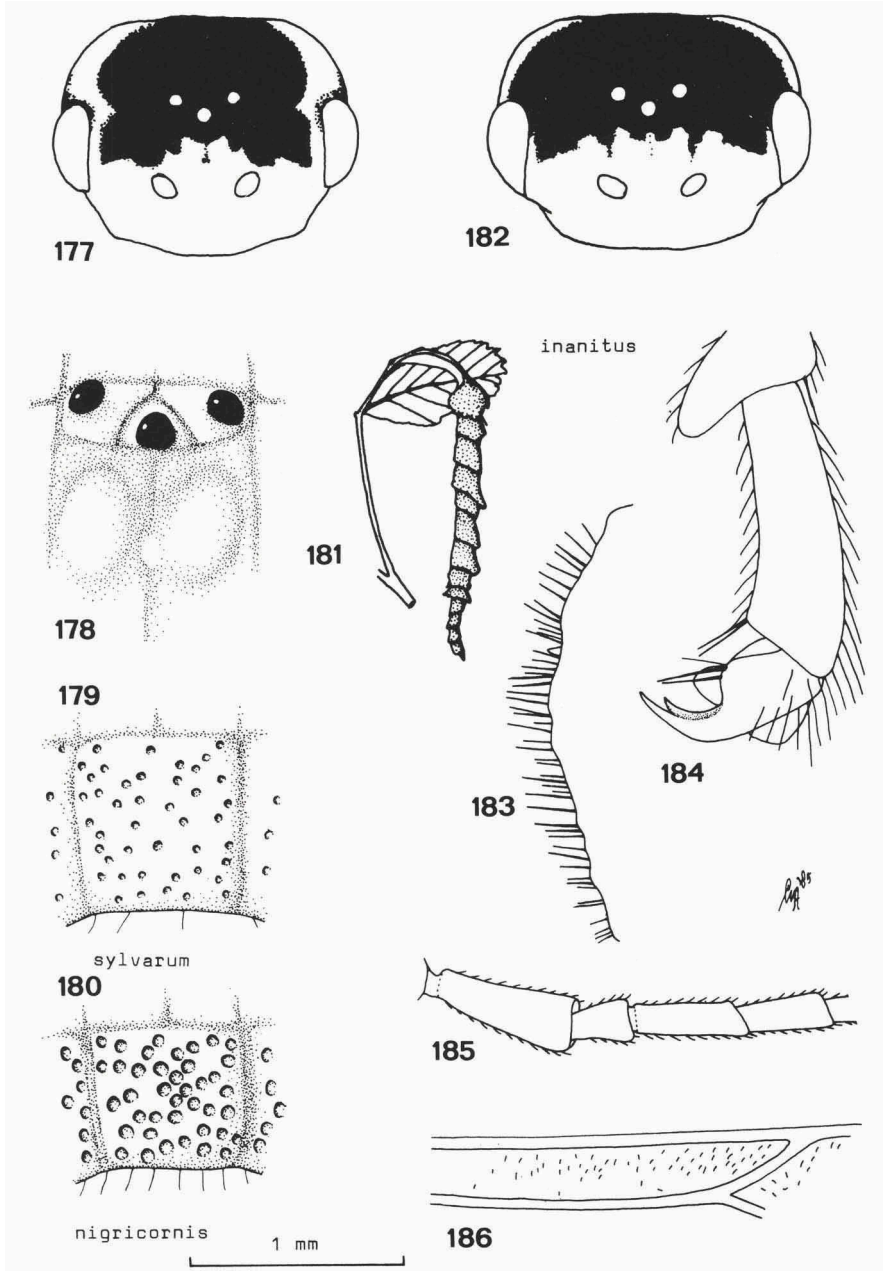
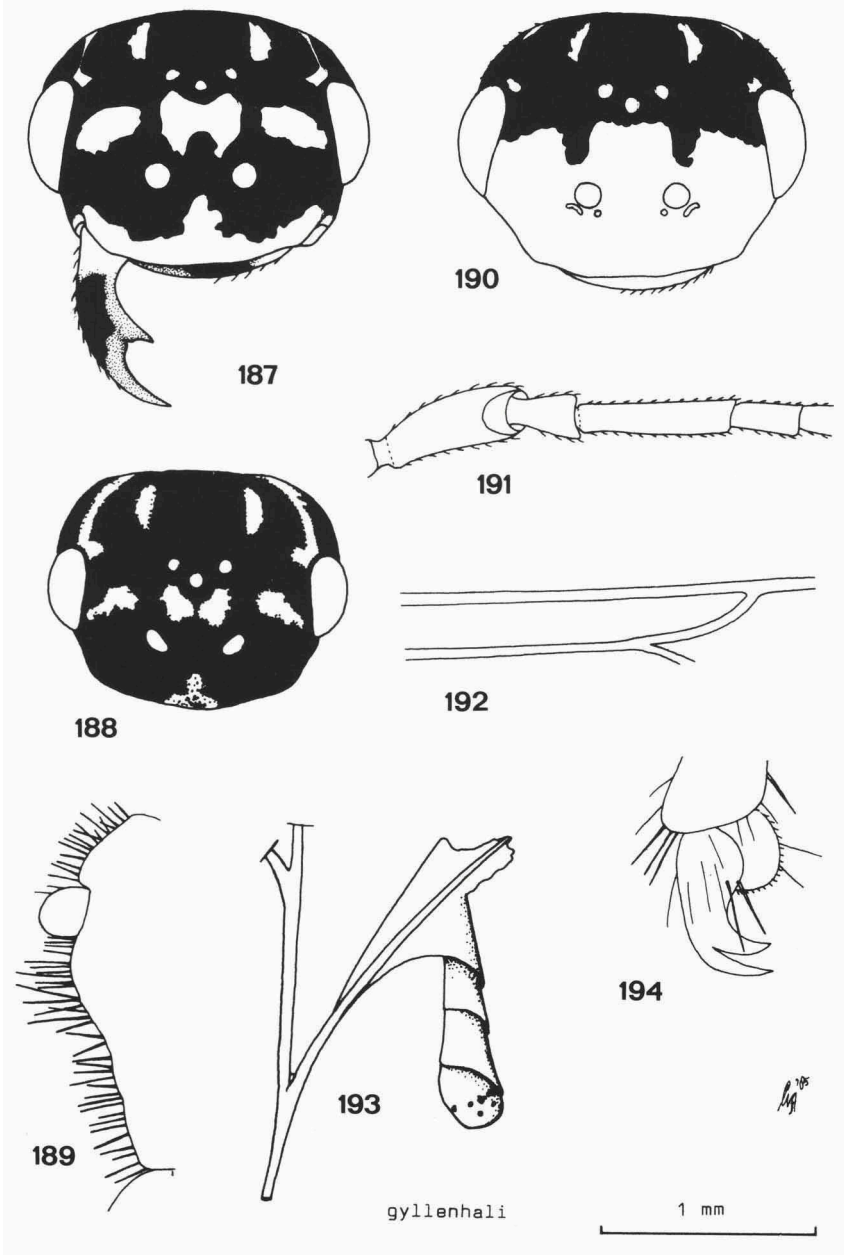


Fig. 177. *Pamphilius inanitus* (De Villers), ♀, Finland; Figs. 178, 184-186. id., ♀, The Netherlands, Haaren; Fig. 183. id., ♀, The Netherlands, Hoogmade; Fig. 182. id., ♂, Finland. Fig. 179. *Pamphilius sylvarum* (Stephens), ♀, The Netherlands, Ede. Fig. 180. *Pamphilius nigricornis* (Snellen van Vollenhoven), ♂ (= holotype), The Netherlands, Den Haag. Fig. 177, head of ♀, frontal aspect; 178, frons medially, frontal aspect; 179, 180, middle part of vertex, dorsal aspect; 181, leafroll of larva; 182, head of ♂, frontal aspect; 183, apex of ovipositor sheath, lateral aspect; 184, hind claw of ♀; 185, first to fourth antennal segments; 186, apical third of basal costal cell of fore wing of ♀. 178-180, 185, 186: scale-line (= 1×); 183, 184: 2.5×; 177, 181, 182: after Viitasaari (1982b).



Figs. 187, 189, 191, 192, 194. *Pamphilius gyllenhali* (Dahlbom), ♀, The Netherlands, Limbricht; Fig. 188. id., ♀, Finland; Fig. 195. id., ♂, The Netherlands, Hilversum (Crailo). Figs. 187, 188, head of ♀, frontal aspect; 189, apex of ovipositor sheath, lateral aspect; 190, head of ♂, frontal aspect; 191, first to fourth antennal segments, outer aspect; 191, first to fourth antennal segments, outer segments; 192, apical third of basal costal cell of fore wing of ♀, 193, leafroll of larva; 194, hind claw of ♂. 187, 190: 0.4×; 189, 194: 2.5×; 191, 192: scale-line (= 1×); 188, 193: after Viitasaari (1982b).

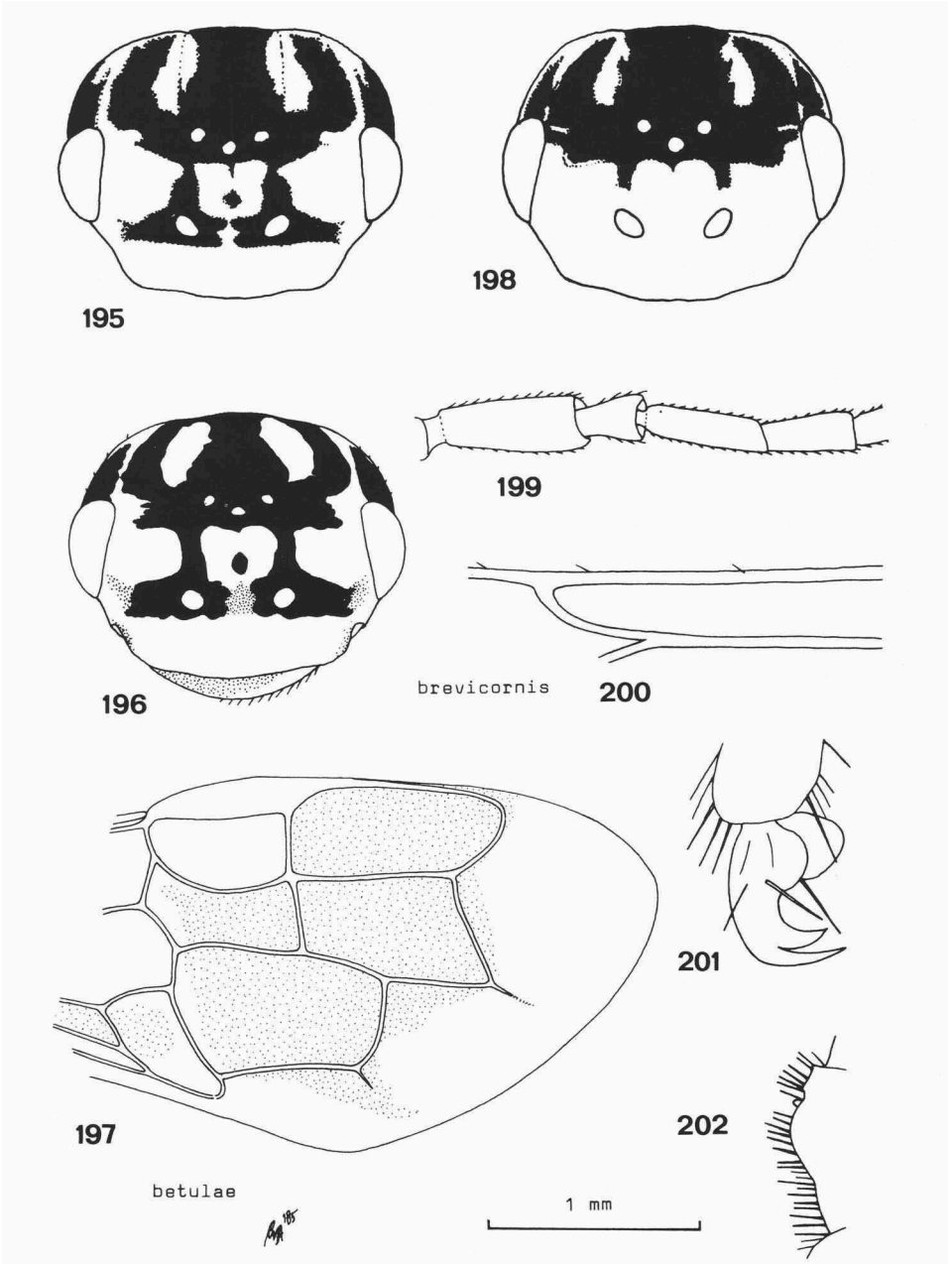


Fig. 195. *Pamphilius brevicornis* Hellén, ♀, Finland; Figs. 196, 199-202. id., ♀, The Netherlands, Terlet; Fig. 198. id., ♂, Finland. Fig. 197. *Pamphilius betulae* (Linnaeus), ♀, The Netherlands, Wijster. Figs. 195, 196, head of ♀, frontal aspect; 197, apical half of fore wing; 198, head of ♂, frontal aspect; 199, first to fourth antennal segments: 200, apical third of basal costal cell of fore wing of ♀; 201, hind claw of ♀; 202, apex of ovipositor sheath, lateral aspect. 196, 197: 0.4×; 199, 200: scale-line (= 1×); 201, 202: 2.5×; 195, 198: after Viitasaari (1982b).

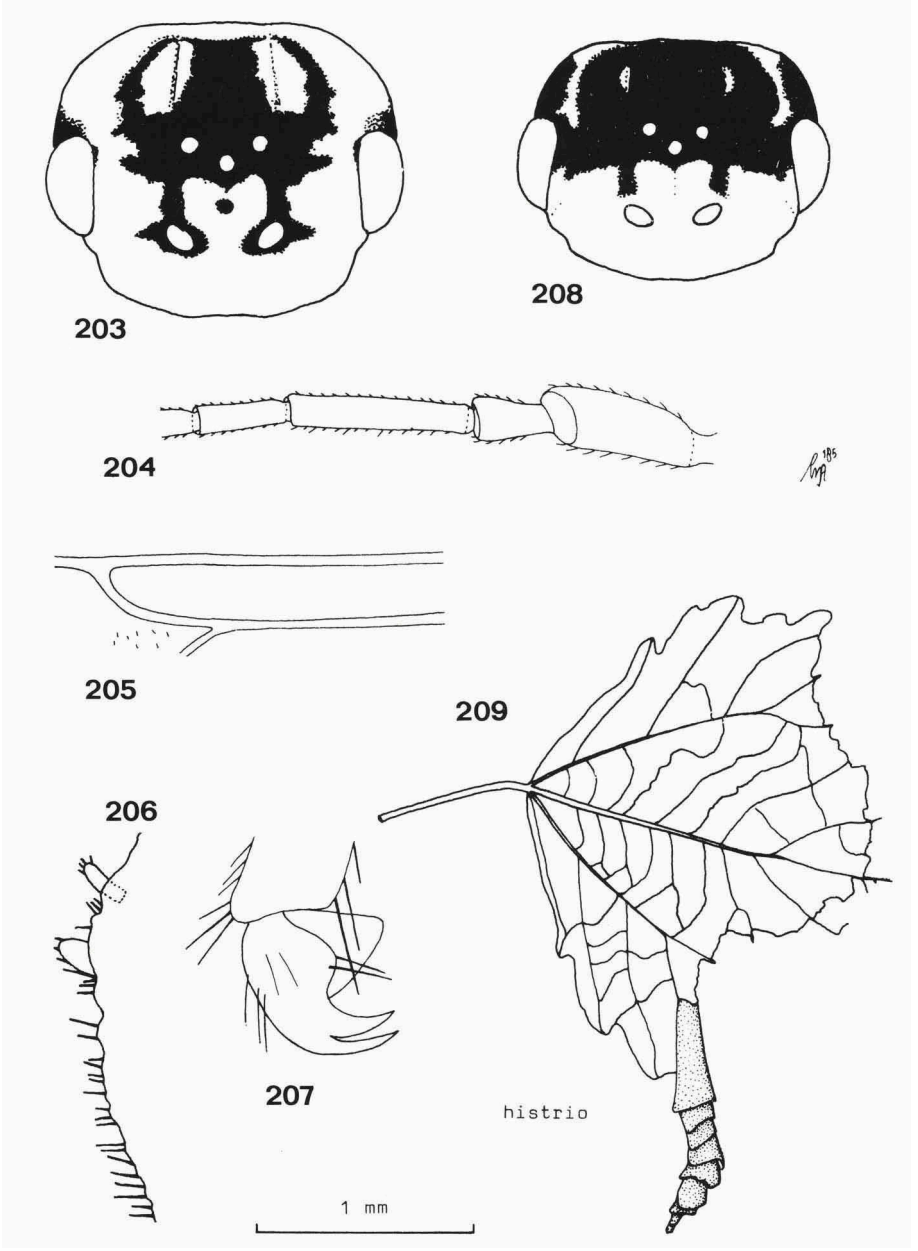


Fig. 203. *Pamphilius histrio* Latreille, ♀, Finland; Figs. 204-207. id., ♀, The Netherlands, Terlet; Fig. 208. id., ♂, Finland. Fig. 203, head of ♀, frontal aspect; 204, first to fourth antennal segments, outer aspect; 205, apical third of basal costal cell of fore wing of ♀; 206, apex of ovipositor sheath, lateral aspect; 207, hind claw of ♀; 208, head of ♂, frontal aspect; 209, leafroll of larva. 204, 205: scale-line (= 1×); 206: 3.4×; 207: 2.5×; 203, 208, 209: after Viitasaari (1982b).

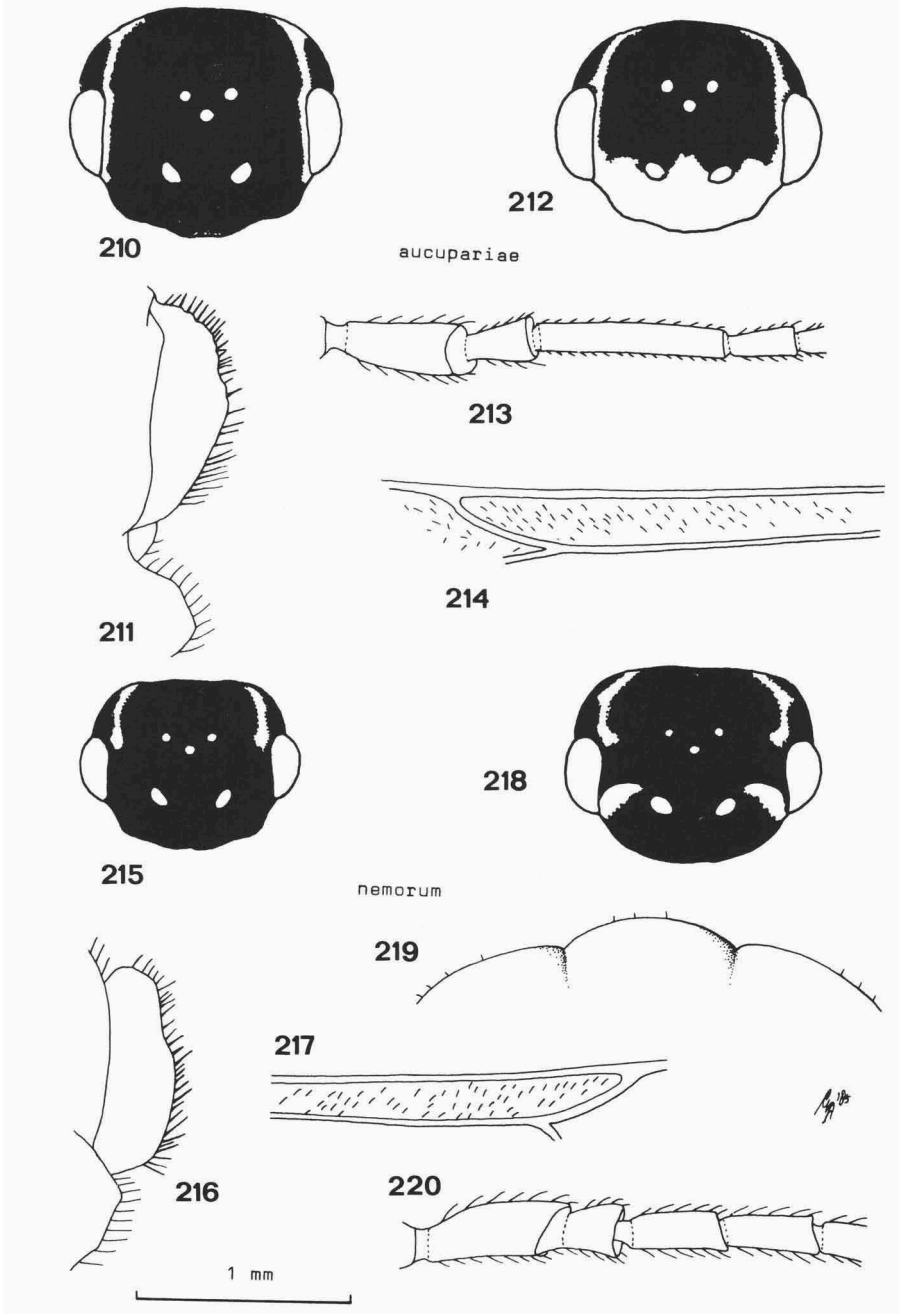


Fig. 210. *Pamphilius aucupariae* Vikberg, ♀, Finland; Figs. 211, 213, 214, id., ♀ (= holotype), Finland; Fig. 212. id., ♂, Finland. Fig. 215. *Pamphilius nemorum* (Gmelin), ♀, Finland; Figs. 216, 217, 219, 220. id., ♀, Finland, Sortavala; Fig. 218. id., ♂, Finland, Figs. 210, 215, head of ♀, frontal aspect; 211, 216, apex of ovipositor sheath, lateral aspect; 212, 218, head of ♂, frontal aspect; 213, 220, first of fourth antennal segments; 215, 217, apical third of basal costal cell of fore wing of ♀; 219, profile of vertex. 211, 216: 1.5×; 213, 214, 217, 219, 220: scale-line (= 1×); 210, 212, 215, 218: after Viitasaari (1982b).

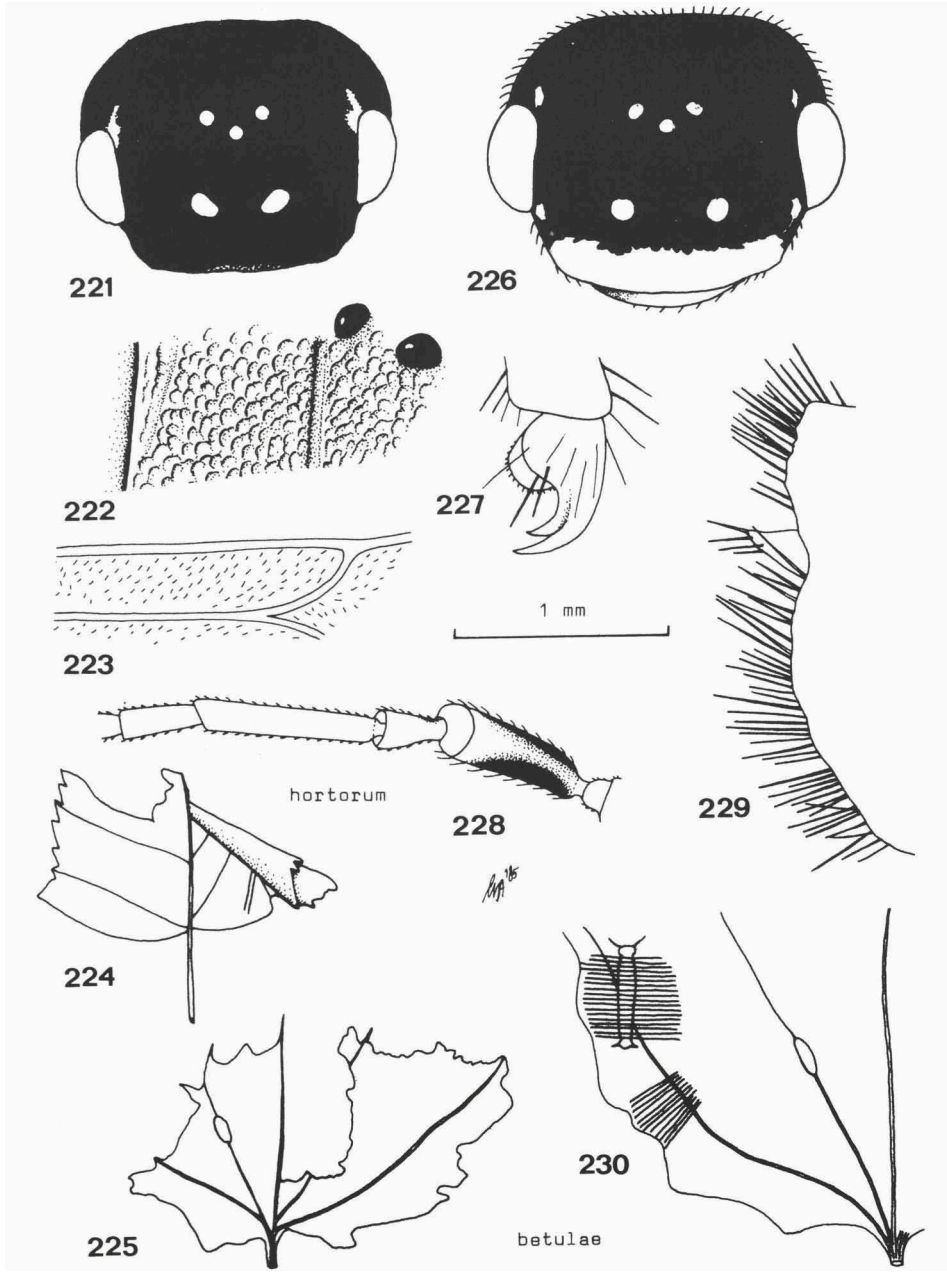


Fig. 221. *Pamphilius hortorum* (Klug), ♀, Finland; Figs. 222-224, 227, 228, id., ♀, The Netherlands, Emmen; Fig. 229. id., ♀, The Netherlands, Hulshorst; Fig. 226. id., ♂, Switzerland, Glion. Fig. 221, head of ♀, frontal aspect; 222, lateral part of frons, frontal aspect; 223, apical third of basal costal cell of fore wing of ♀; 224, leafroll of larva of *P. hortorum;* 225, 230, leaves infested by larva of *P. betulae* (Linnaeus); 226, head of ♂, frontal aspect; 227, hind claw of ♀; 228, first to fourth antennal segments; 229, apex of ovipositor sheath, lateral aspect. 222, 223, 228: scale-line (= 1×); 227, 229: 2.5×; 221, 225, 230: after Viitasaari (1982b); 224: after Lorenz & Kraus (1957).

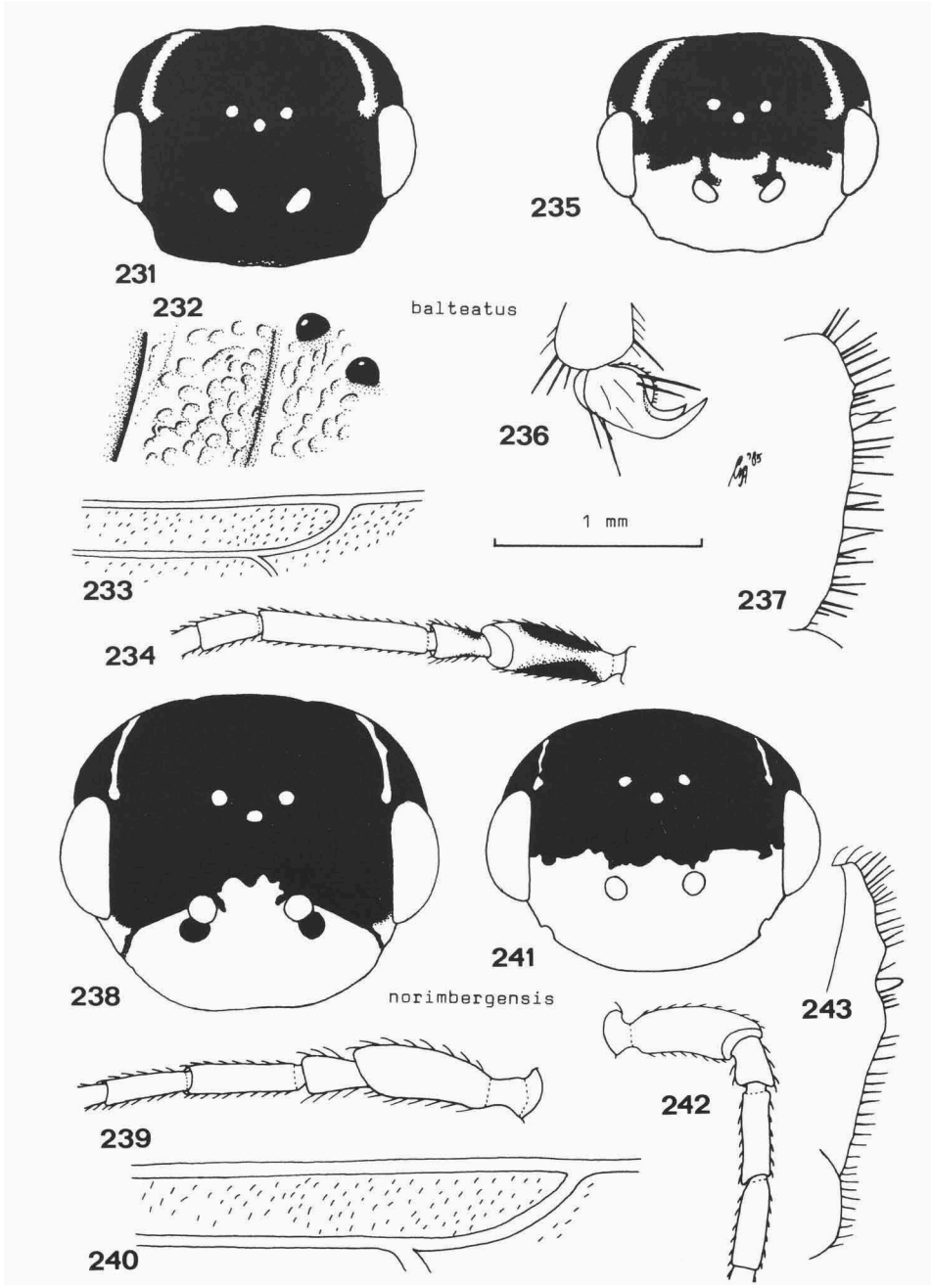
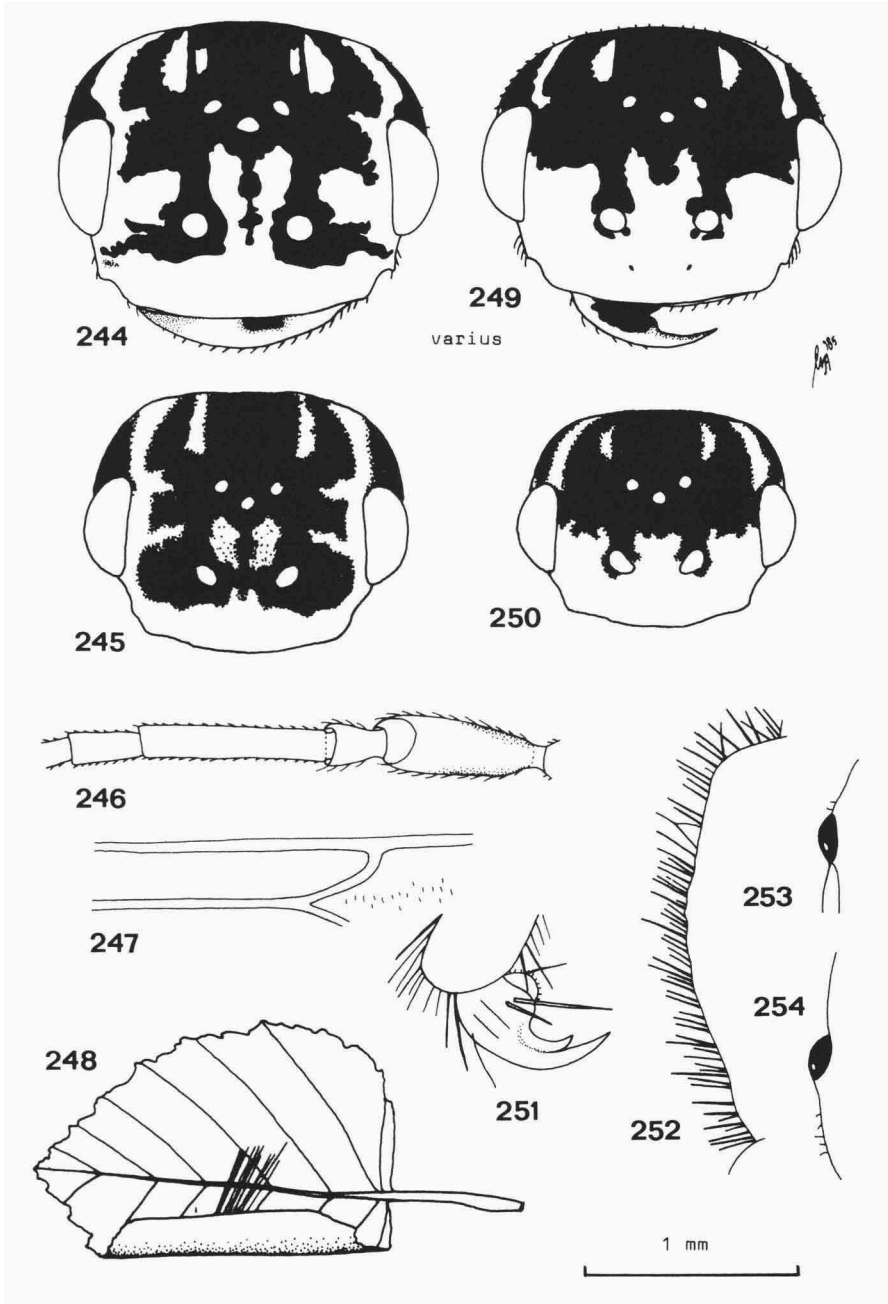
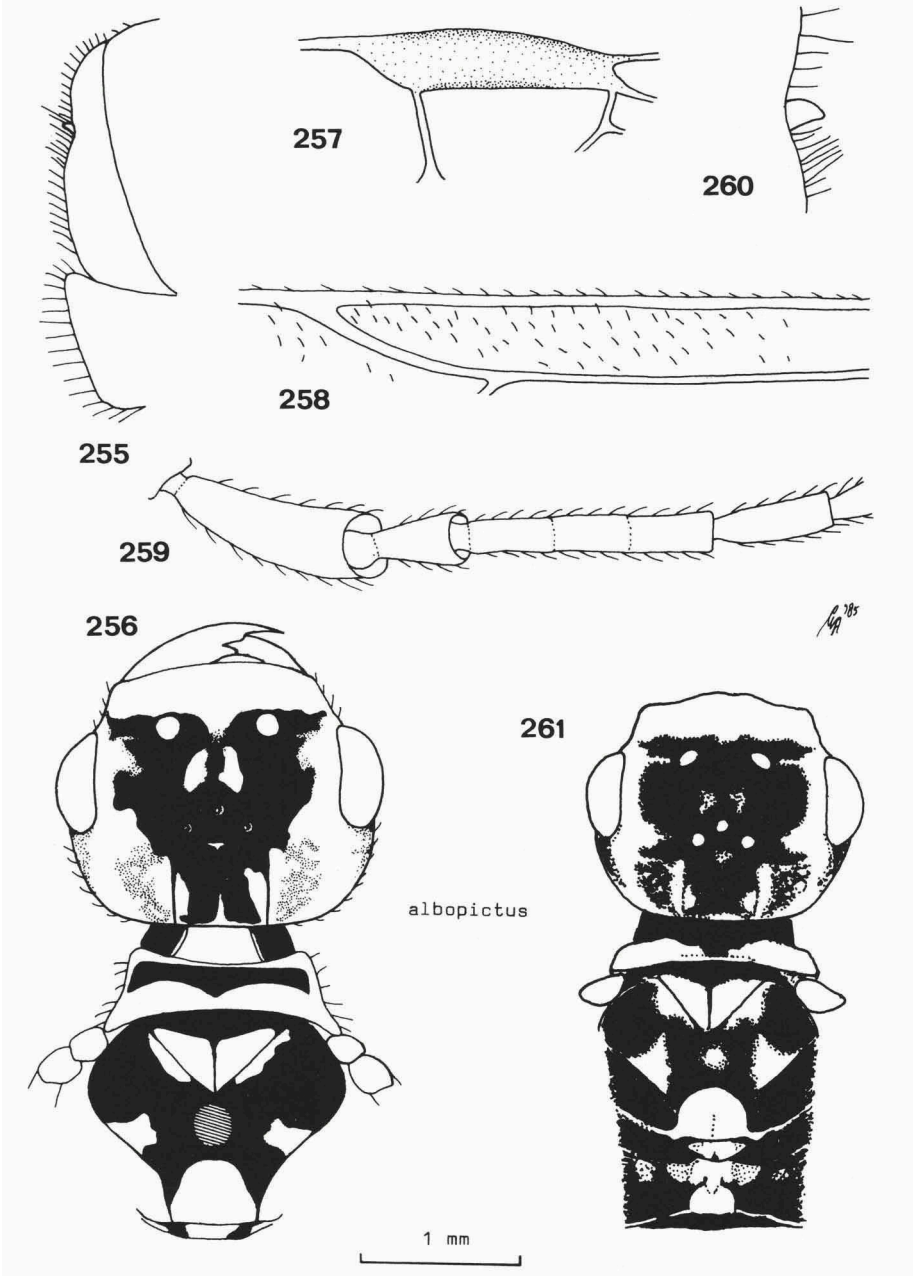


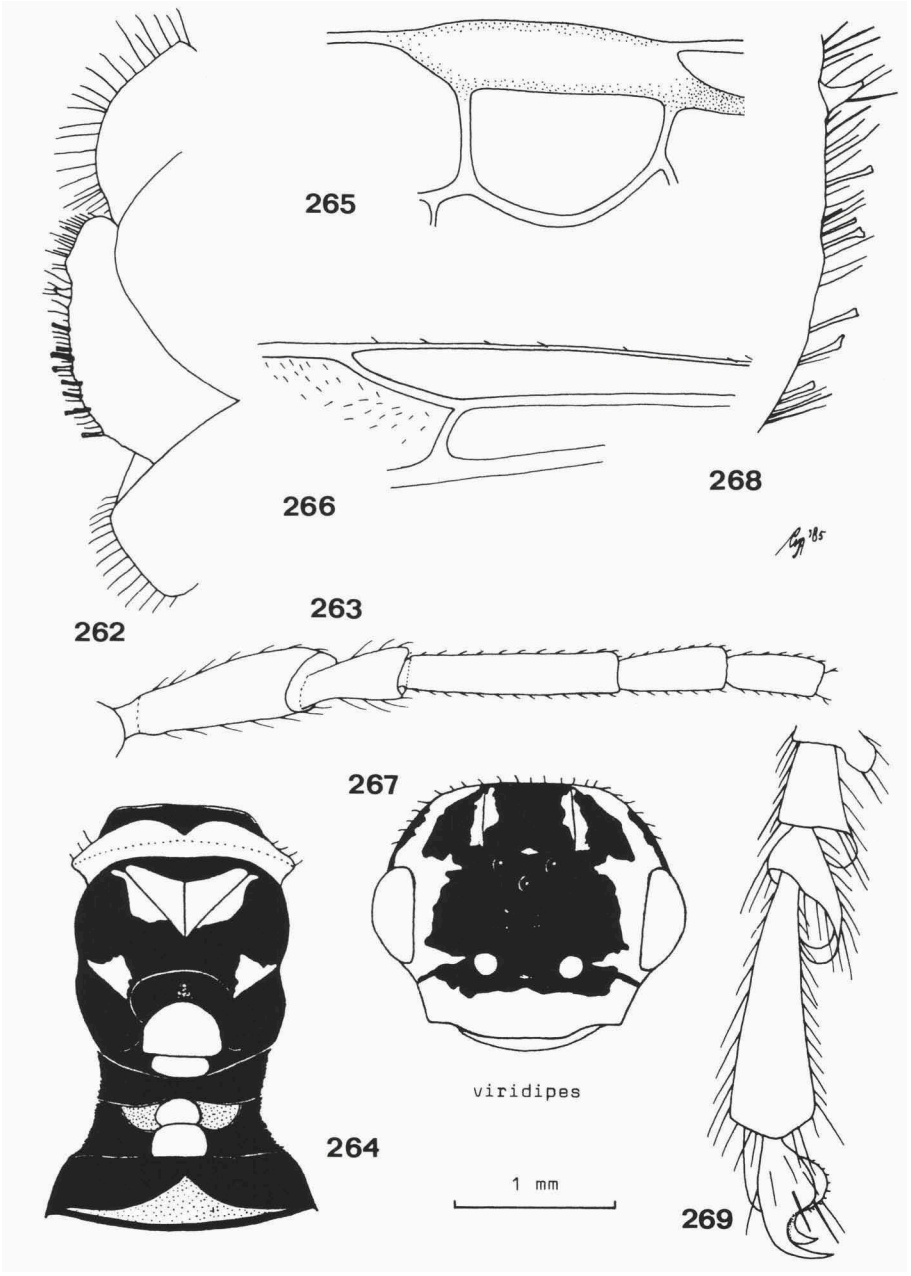
Fig. 231. *Pamphilius balteatus* Fallén), ♀, Finland; Figs. 232-234, 236, 237, id., ♀, The Netherlands, Noordwijk; Fig. 235. id., ♂, Finland. Figs. 238. 240, 243. *Pamphilius norimbergensis* Enslin, ♀, Yugoslavia, Krapina; Figs. 241, 242. id., ♂ (= holotype), Germany. figs. 231, 238, head of ♀, frontal aspect; 232, lateral part of frons, frontal aspect; 233, 240, apical third of basal costal cell of fore wing of ♀; 234, 239, 242, first to fourth antennal segments, 234, 242, outer aspect, 239, inner aspect; 236, hind claw of ♀; 237, 243, apex of ovipositor sheath, lateral aspect. 232, 234, 239, 242: scale-line (= 1×); 236, 237, 243: 2.5×; 238, 241: 0.5×; 240: 1.5×; 231, 235: after Viitasaari (1982b).



Figs. 244, 246, 247, 251, 254. *Pamphilius varius* (Lepeletier) ♀, The Netherlands, Middelbeers; Fig. 245. id., ♀, Finland; Fig. 248. id.; Fig. 249. id., ♂, The Netherlands, Putten; Fig. 250. id., ♂, Finland; Figs. 252, 253. id., ♀, The Netherlands, Hulshorst. Figs. 244, 245, head of ♀, frontal aspect; 246, first to fourth antennal segments of ♀, outer aspect; 247, apical third of basal costal cell of fore wing of ♀; 248, leafroll of larva; 249, 250, head of ♂, frontal aspect; 251, hind claw of ♀; 252, apex of ovipositor sheath, lateral aspect; 253, 254, lateral ocellus of ♀, lateral aspect. 244, 249: 0.5×; 246, 247, 253, 254: scale-line (= 1×); 251, 252: 2.5×; 245, 248, 250; after Viitasaari (1982b).



Figs. 255-260. ***Pamphilius albopictus*** (Thomson), ♀ (= lectotype), Sweden; Fig. 261. id., ♀, Finland. Fig. 255. apex of ovipositor sheath, lateral aspect; 256, 257, head and thorax, dorsal aspect; 257, pterostigma; 258, apical third of basal costal cell of fore wing of ♀; 259, first to fourth antennal segments, outer aspect; 260, detail of appendage of ovipositor sheath. 255, 258: 2×; 256, 257, 259: scale-line (= 1×); 260: 5×; 261: after Viitasaari (1982b).



Figs. 262-269. *Pamphilius viridipes* spec. nov., ♀ (= holotype), The Netherlands. 262, ovipositor sheath, lateral aspect; 263, first to fifth antennal segments, outer aspect; 264, thorax, dorsal aspect; 265, pterostigma; 266, apical third of basal costal cell of fore wing of ♀; 267, head of ♀, frontal aspect; 268, apex of ovipositor sheath, lateral aspect; 269, hind claw of ♀. 262: 2×; 263, 265: scale-line (= 1×); 264, 267: 0.7×; 266: 1.3×; 268: 5×; 269: 3.3×.

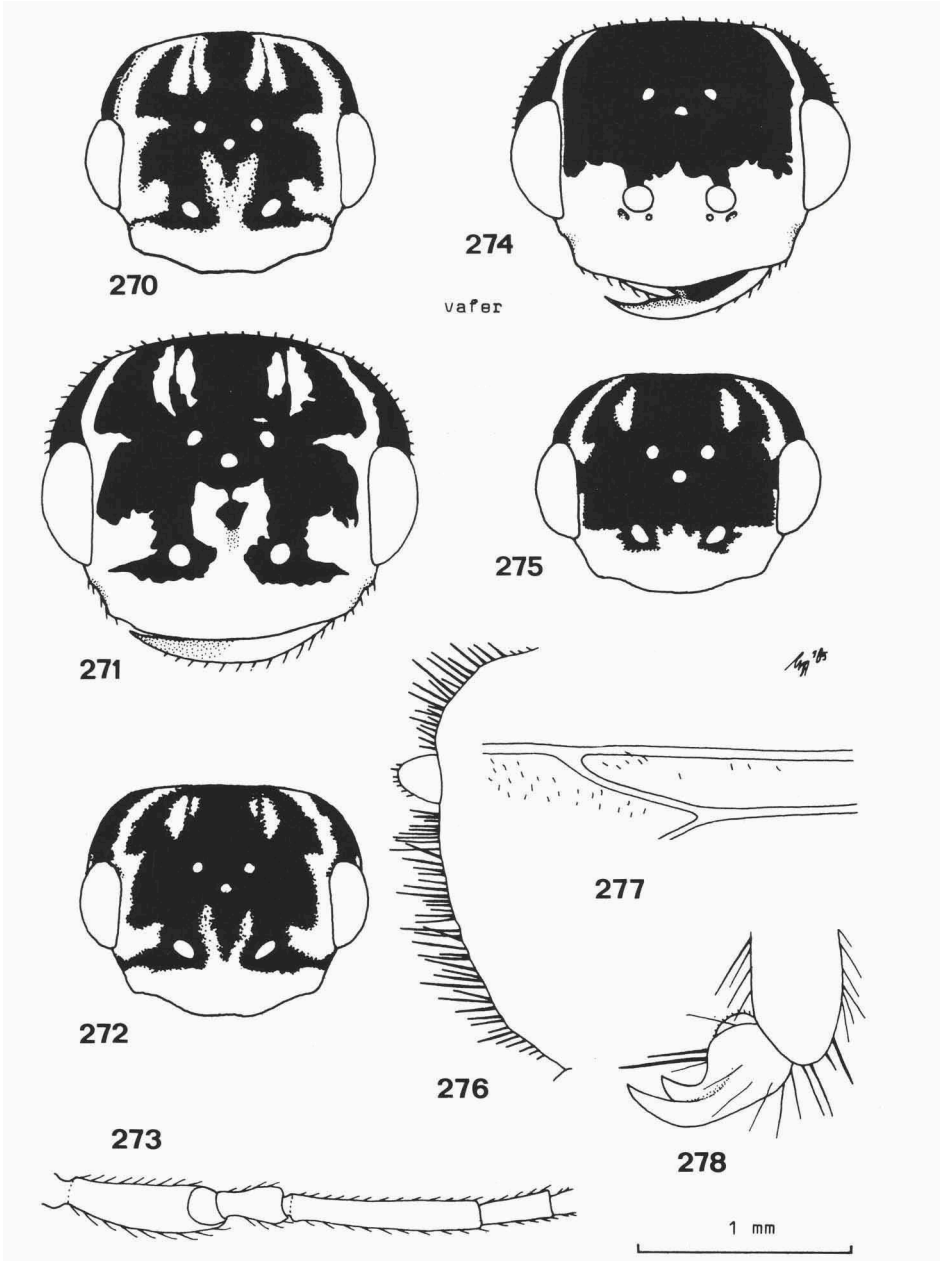


Fig. 270. *Pamphilius vafer* (Linnaeus), ♀, Finland; Figs. 271, 273, 276-278. id., ♀, The Netherlands, Herpen; Fig. 272, id., ♀ (= *depressus* sensu Viitasaari), Finland; Fig. 274. id., ♂, The Netherlands, Lager Westerbork; Fig. 175, id., ♂, Finland. Figs. 270-272, head of ♀, frontal aspect; 273, first to fourth antennal segments, outer aspect; 274, 275, head of ♂, frontal aspect; 276, apex of ovipositor sheath, lateral aspect; 277, apical third of basal costal cell of fore wing of ♀; 278, hind claw of ♀. 271, 274: 0.5×; 273, 277: scale-line (= 1×); 276, 278: 2.5×; 270, 272, 275: after Viitasaari (1982b).

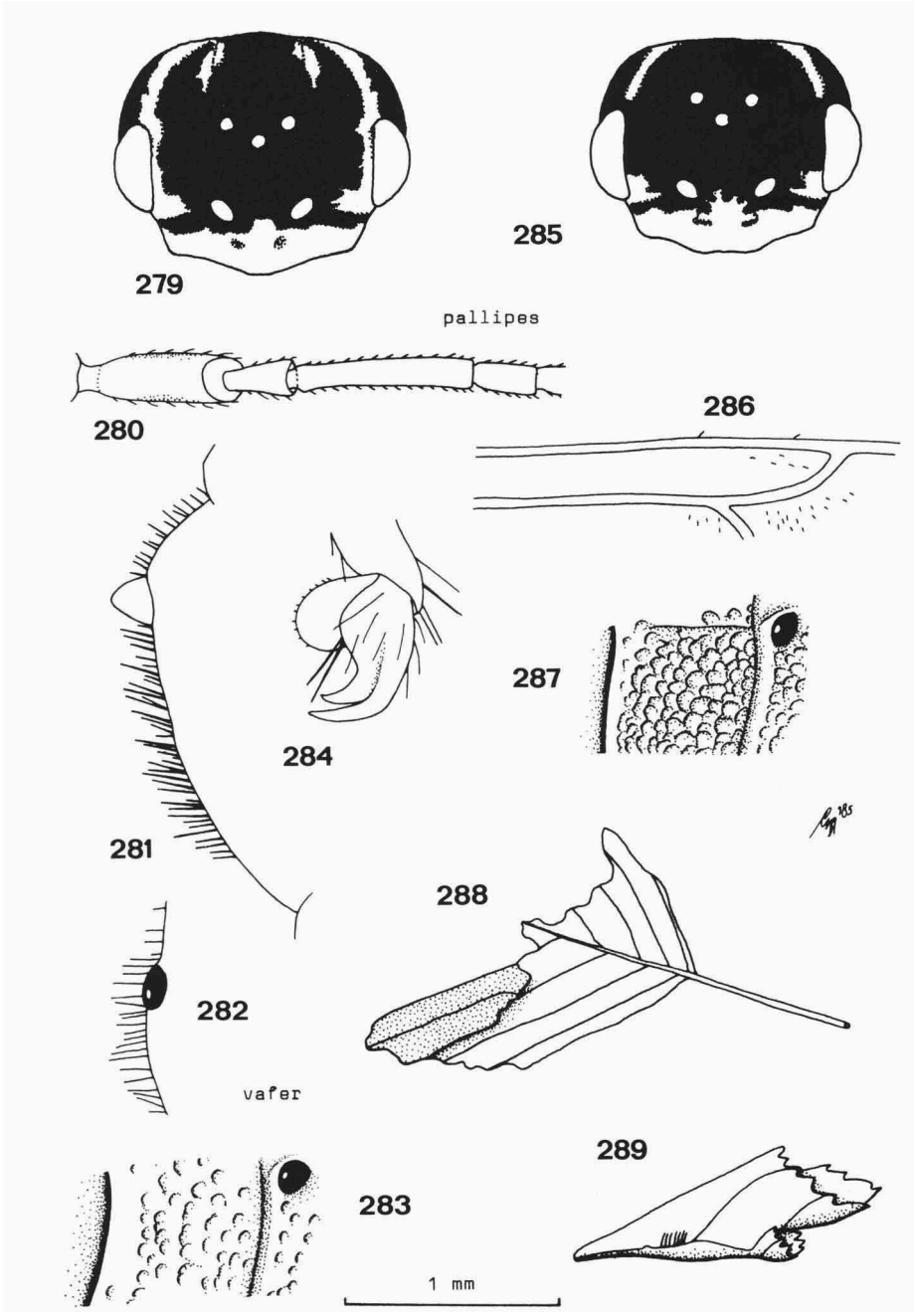
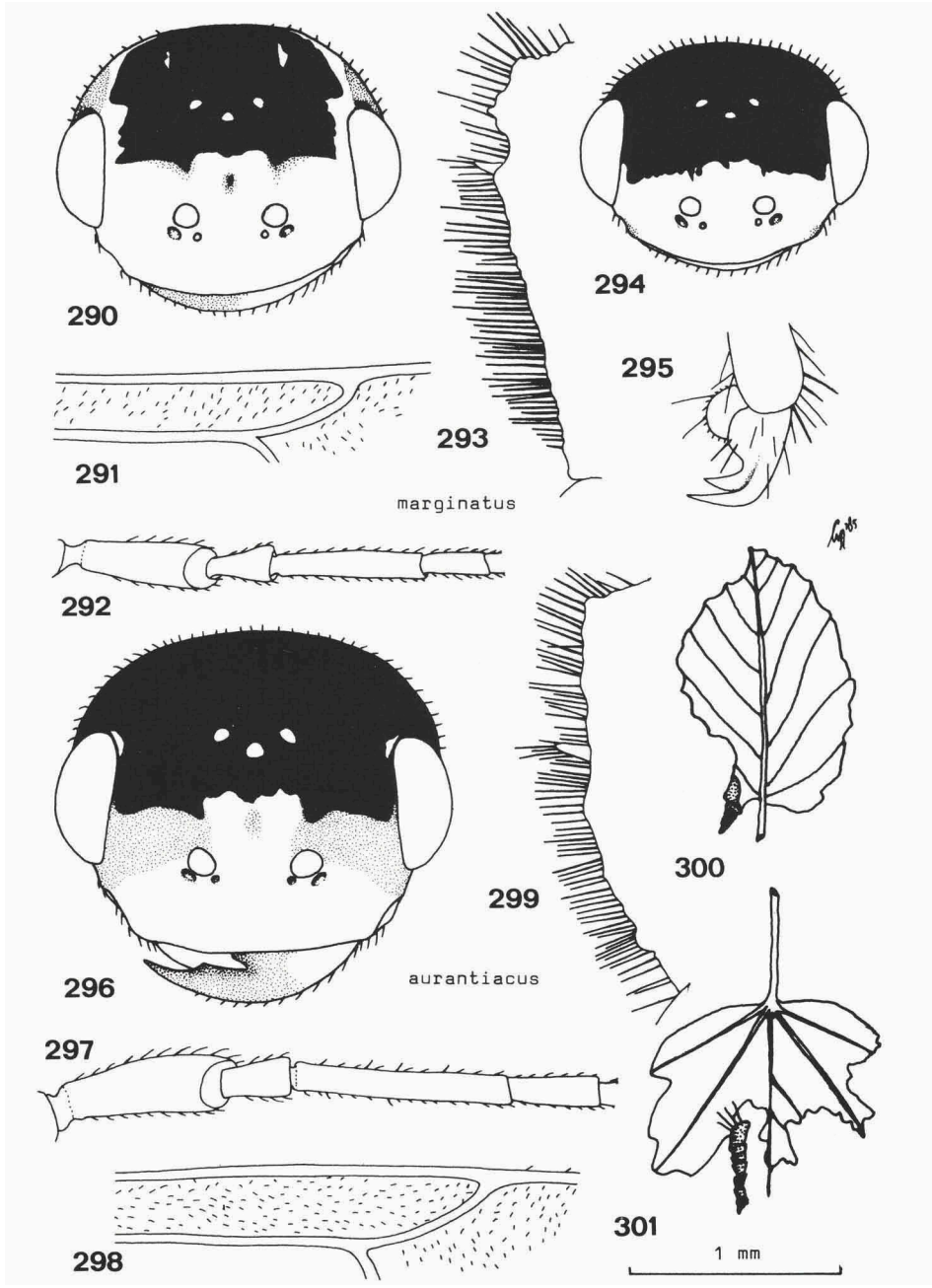
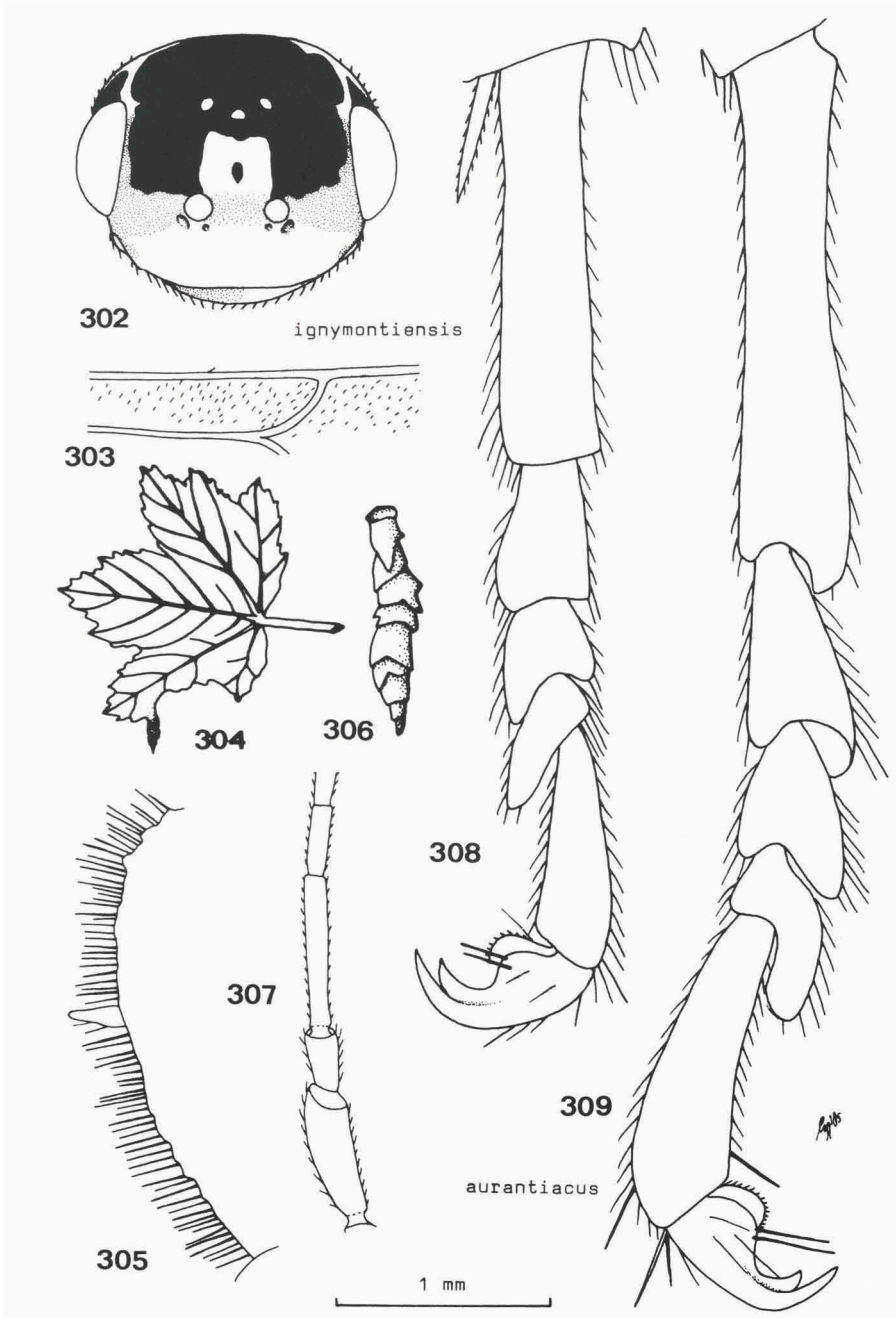


Fig. 279. *Pamphilius pallipes* (Zetterstedt), ♀, Finland; Figs. 280, 281, 284, 286, 287. id., ♀, The Netherlands, Otterlo; Fig. 285. id., ♂, Finland. Figs. 282, 283. *Pamphilius vafer* (Linnaeus), ♀, The Netherlands, Herpen; Figs. 288, 289. id. Fig. 279, head of ♀, frontal aspect; 280, first to fourth antennal segments, outer aspect; 281, apex of ovipositor sheath, lateral aspect; 282, lateral ocellus, lateral aspect; 283, 287, lateral part of frons of ♀; 284, hind claw of ♀; 285, head of ♂, frontal aspect; 286, apical third of basal costal cell of fore wing of ♀; 288, 289, leaves infested by larva. 280, 282, 283, 286, 287: scale-line (= 1×); 281, 284: 2.5×; 279, 285, 288 (of *"depressus"*): after Viitasaari (1982b); 289: after Lorenz & Kraus (1957).



Figs. 290-292. *Pamphilius marginatus* (Lepeletier), ♀, The Netherlands, Savelsbos; Figs. 293, 295. id., ♀, The Netherlands, Udenhout; Fig. 294. id., ♂, The Netherlands, St. Pietersberg; Fig. 300. id., leafroll. Figs. 296-299. *Pamphilius aurantiacus* (Giraud), ♀, The Netherlands, Cadier; Fig. 301, id., leafroll. Figs. 290, 296, head of ♀, frontal aspect; 291, 298, apical third of basal costal cell of fore wing of ♀; 292, 297, first to fourth antennal segments, outer aspect; 293, 299, apex of ovipositor sheath, lateral aspect; 294, head of ♂, frontal aspect; 295, hind claw of ♀; 300, 301, leafroll of larva. 290, 296, 294: 0.5×; 291, 292, 297, 298: scale-line (= 1×); 293, 295, 299: 2.5×; 300, 301: after Lorenz & Kraus (1957).



Figs. 302, 303, 305-308. *Pamphilius ignymontiensis* Lacourt, ♀, Germany, Würzburg; Figs. 304, 306, id. Fig. 309. *Pamphilius aurantiacus* (Giraud). Fig. 302, head of ♀, frontal aspect; 303, apical third of basal costal cell of fore wing of ♀; 304, leaf infested by larva; 305, apex of ovipositor sheath, lateral aspect; 306, leafroll of larva; 307, first to fourth antennal segments, outer aspect; 308, 309, hind tarsus of ♀. 302: 0.5×; 303, 307: scale-line (= 1×); 305: 2.5×; 308, 309: 3.5×; 304, 306: after Lorenz & Kraus (1957).

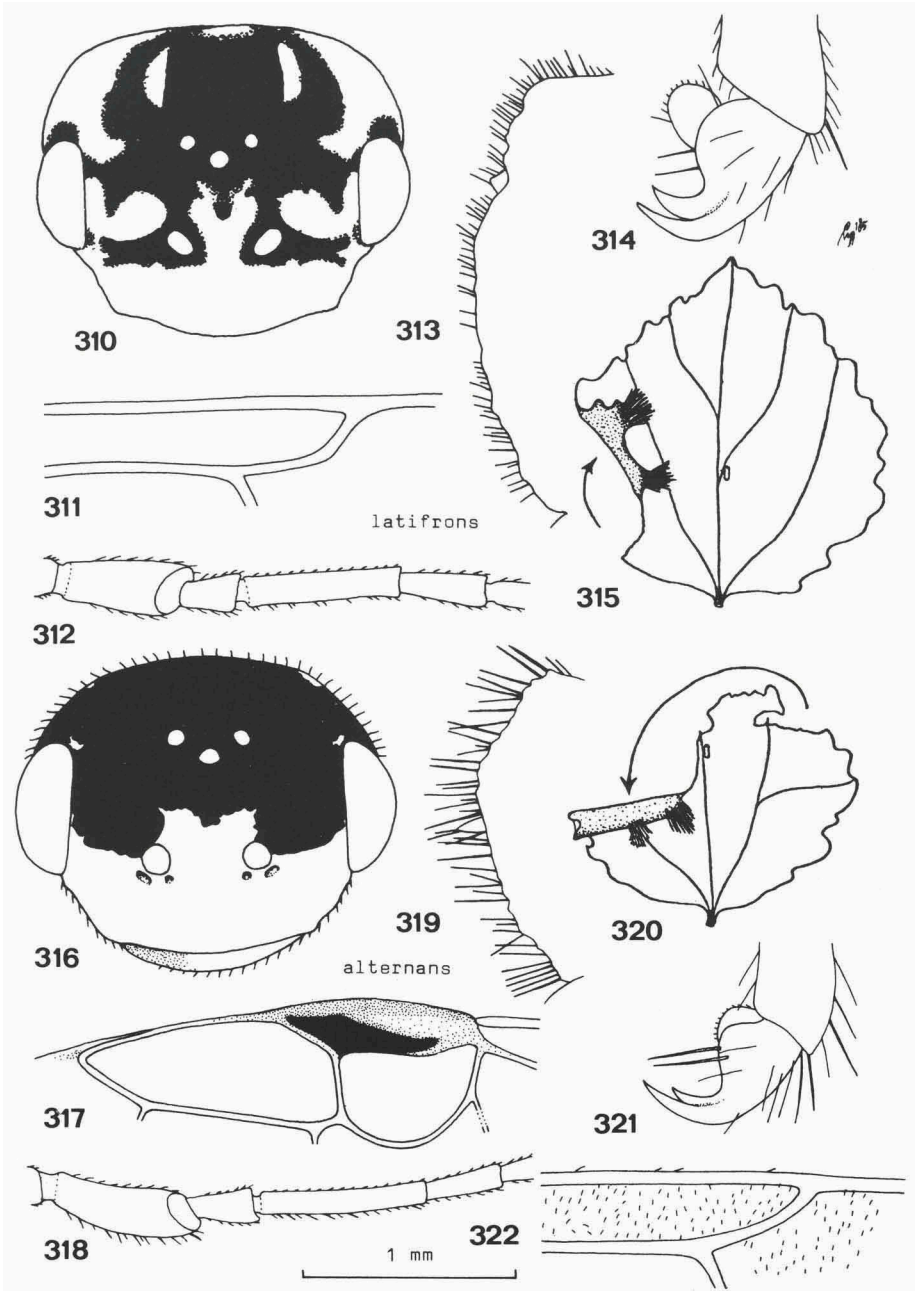


Fig. 310. *Pamphilius latifrons* (Fallén), ♀, Finland; Fig. 311-314, id., ♀, The Netherlands, Terlet; Fig. 315, 320. id. Figs. 316-319, 321, 322. *Pamphilius alternans* (Costa), ♀, The Netherlands, Cadier. Figs. 310, 316, head of ♀, frontal aspect; 311, 322, apical third of basal costal cell of fore wing of ♀; 312, 318, first to fourth antennal segments, outer aspect; 313, 319, apex of ovipositor sheath; 314, 321, hind claw of ♀; 315, 320, leaf infested by larva; 317, pterostigma of ♀. 311, 312, 318, 322: scale-line (= 1×); 313, 314, 319, 321: 2.5×; 316, 317: 0.5×; 310, 315, 320: after Viitasaari (1982b).

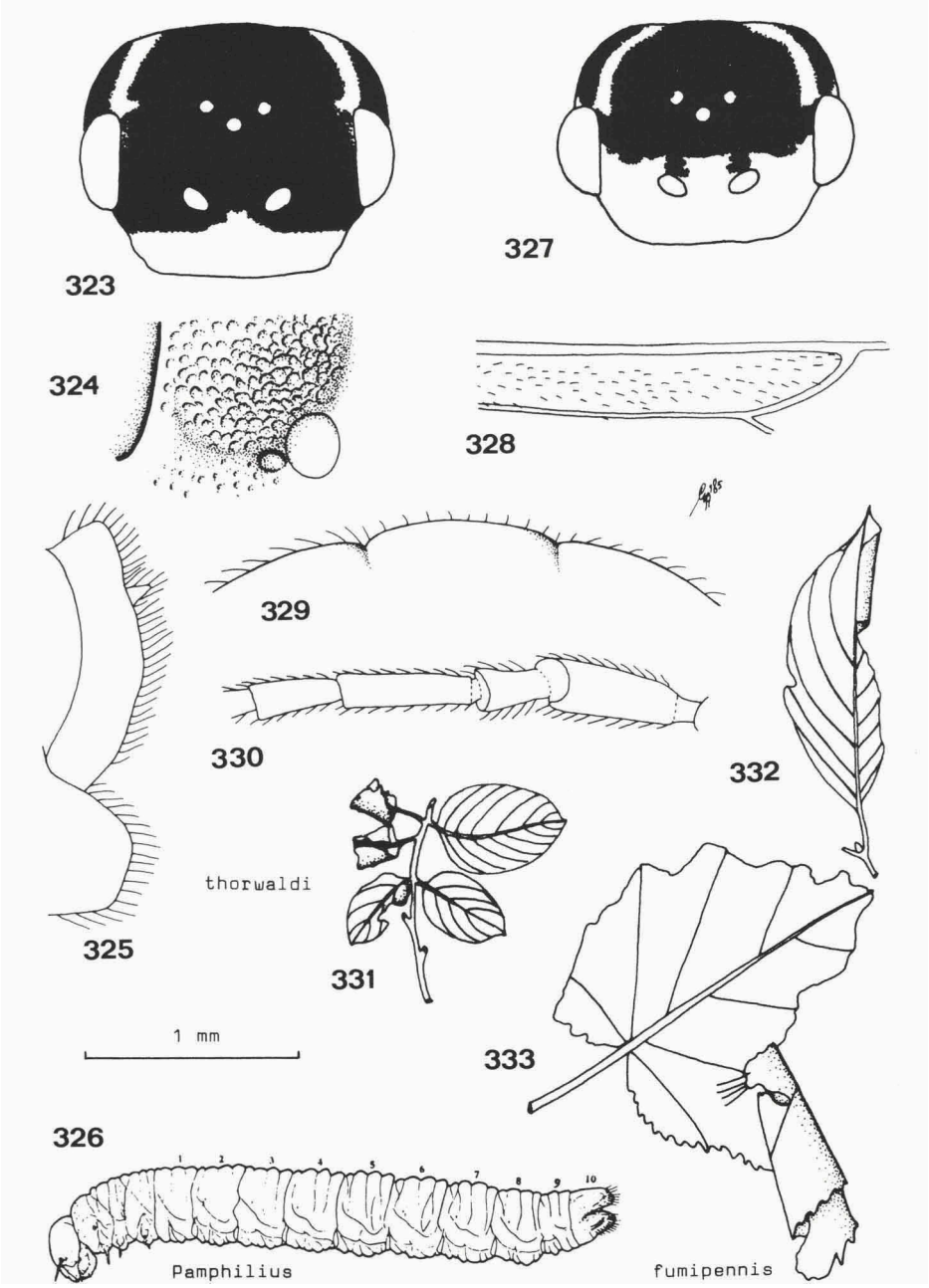
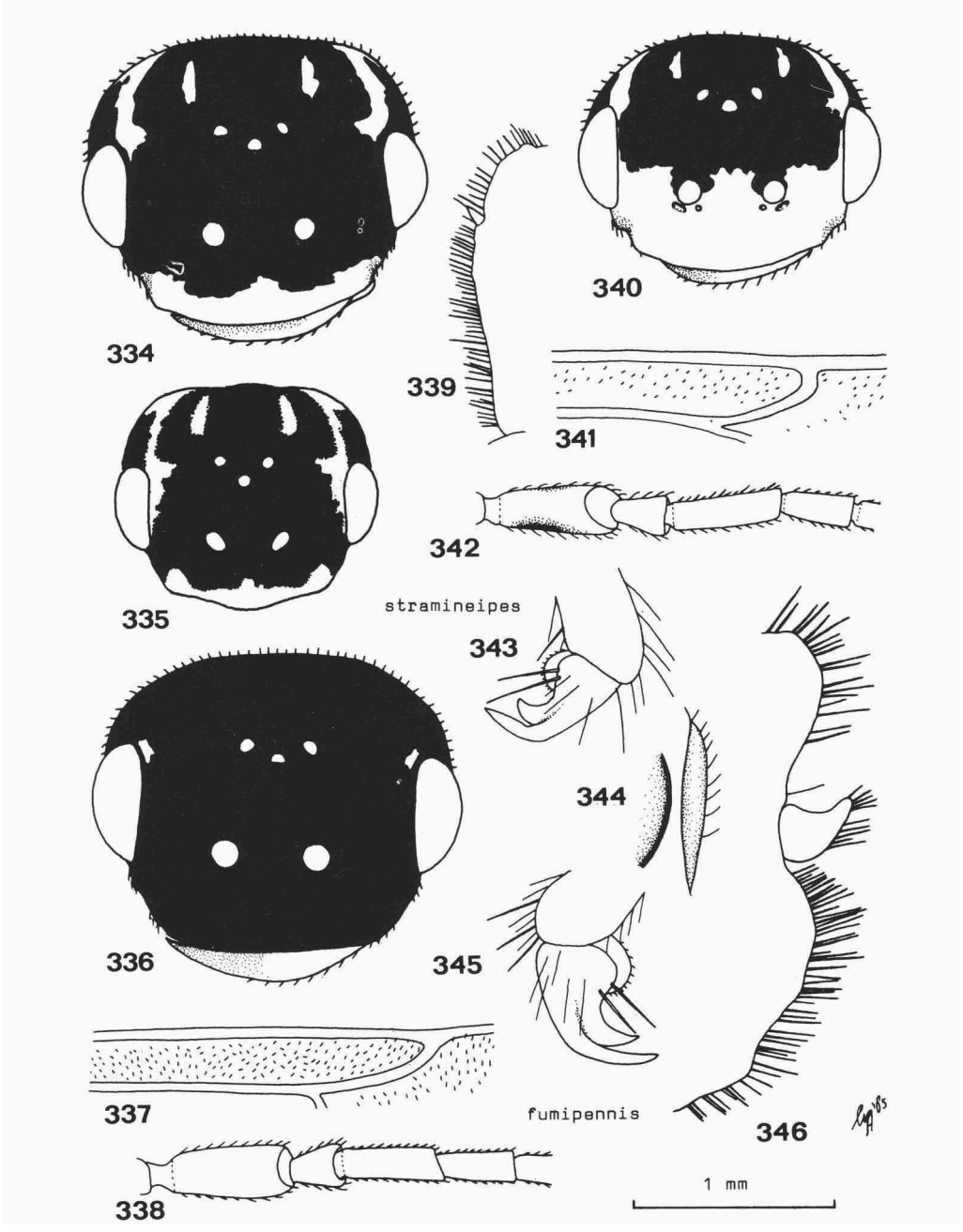


Fig. 323. *Pamphilius thorwaldi* Kontuniemi, ♀, Finland; Figs. 324, 325, 328-330. id., ♀ (= holotype), Finland; Figs. 331, 332, id., Fig. 326. *Pamphilius* sp. Fig. 333. *Pamphilius fumipennis* (Curtis), infested leaf. Fig. 323, head of ♀, frontal aspect; 324, lateral part of frons, frontal aspect; 325, ovipositor sheath, lateral aspect; 326, larva, lateral aspect; 327, head of ♀, frontal aspect; 328, apical third of basal costal cell of fore wing of ♀; 329, profile of vertex; 330, first to fourth antennal segments, outer aspect; 331-333, leaves infested by larva. 324, 328-330: scale-line (= 1×); 325: 1.5×; 323, 326, 327, 332, 333: after Viitasaari (1982b): 331: after Lorenz & Kraus (1957).



Figs. 334, 341, 342. *Pamphilius stramineipes* (Hartig), ♀, Switzerland, Graubünden; Fig. 335., id., ♀, Finland; Fig. 339, 343. id., ♀, N. Italy, Vilnöss; Fig. 340, id., ♂, no locality. Figs. 336-338, 344-346. *Pamphilius fumipennis* (Curtis), ♀, The Netherlands, Ulvenhout. Figs. 334-336, head of ♀, frontal aspect; 337, 341, apical third of basal costal cell of fore wing of ♀; 338, 342, first to fourth antennal segments, outer aspect; 339, 346, apex of ovipositor sheath, lateral aspect; 340, head of ♂, frontal aspect; 343, 345, hind claw of ♀; 344, lateral part of frons, lateral aspect. 334, 336, 340: 0.5×; 337, 338, 341-343: scale-line (= 1×); 339, 343, 345, 346: 2.5×; 335: after Viitasaari (1982b).

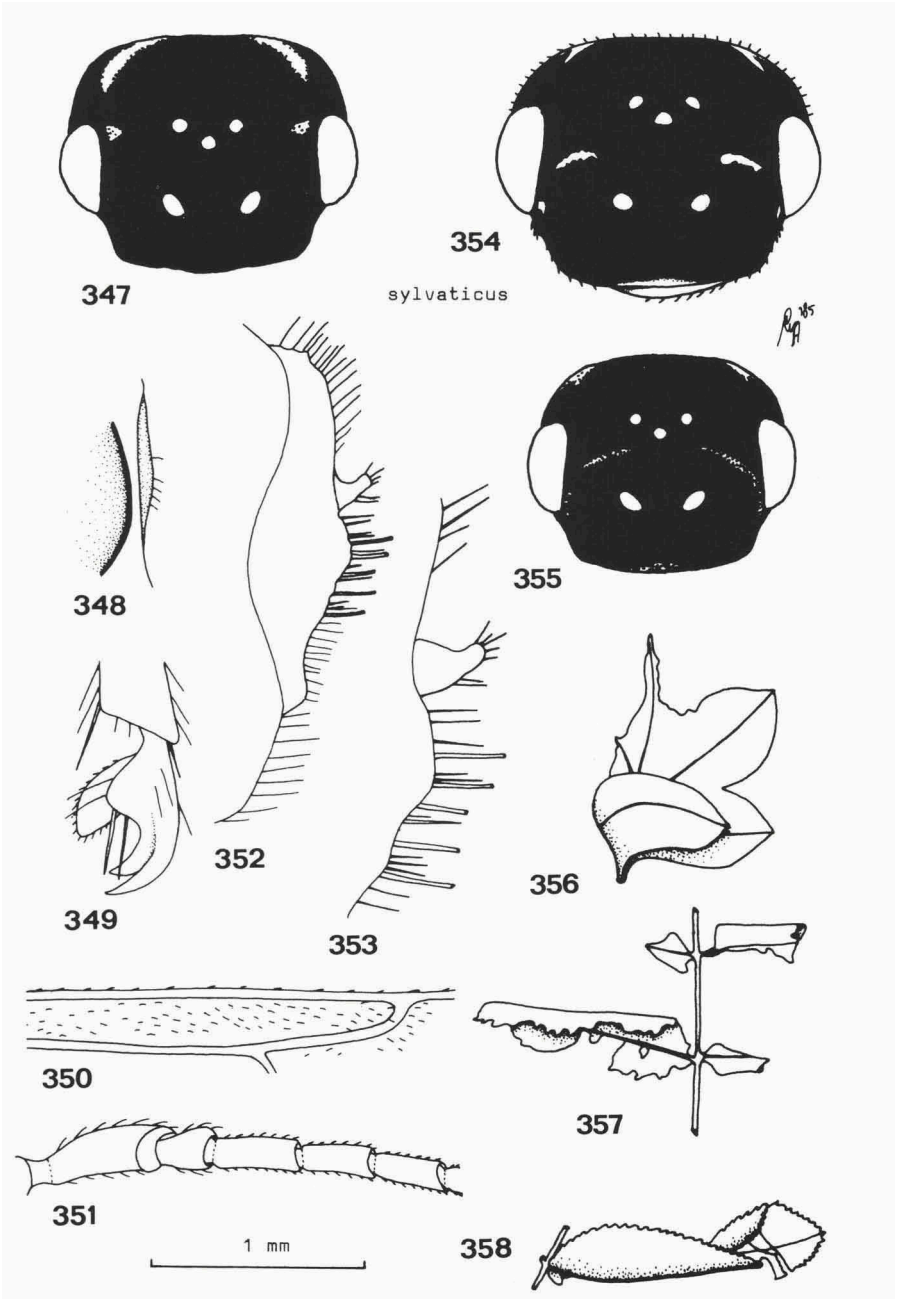


Fig. 347. *Pamphilius sylvaticus* (Linnaeus), ♀, Finland; Figs. 348-353, id., The Netherlands, Cadier; Fig. 354. id., ♂, The Netherlands, Zuidwolde; Fig. 355. id., ♂, Finland; Figs. 356-358. id. Fig. 347, head of ♀, frontal aspect; 348, lateral part of frons, lateral aspect; 349, hind claw of ♀ ; 350, apical third of basal costal cell of fore wing of ♀; 351, first to fourth antennal segments, outer aspect; 352, ovipositor sheath, lateral aspect; 353, apex of ovipositor sheath; 354, 355, head of ♂, frontal aspect; 356-358, leaves infested by larva. 348, 350, 351: scale-line (= 1×); 349, 352: 2.5×; 353: 4.2×; 354: 0.5×; 347, 355, 356, 357: after Viitasaari (1982b): 358: after Lorenz & Kraus (1957).

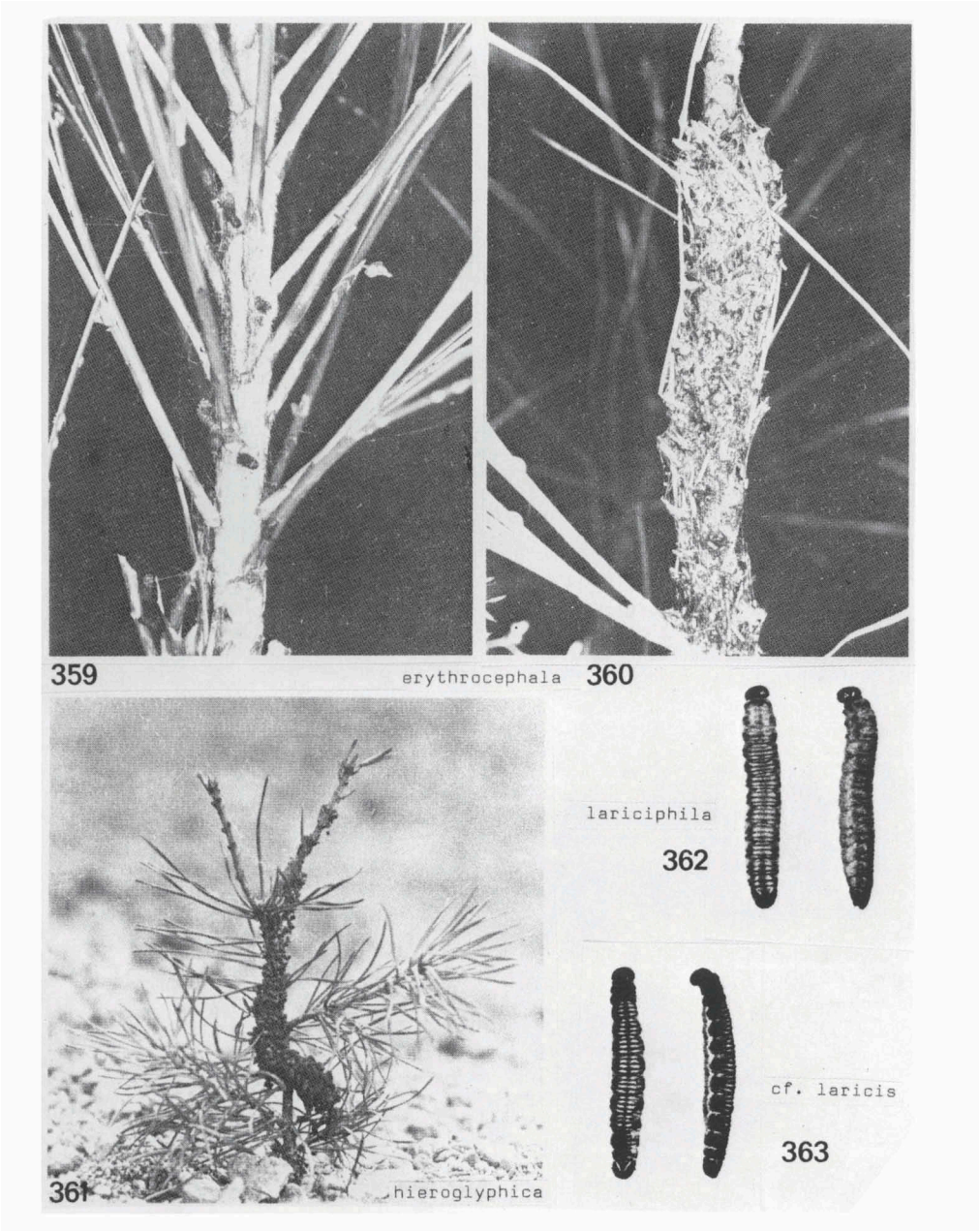


Fig. 359, 360. *Acantholyda erythrocephala* (Linnaeus), Finland. Fig. 361. *Acantholyda hieroglyphica* (Christ), Finland. Fig. 362. *Cephalcia lariciphila* (Wachtl), The Netherlands. Fig. 363. *Acantholyda* cf. *laricis* (Giraud), The Netherlands. Fig. 359, early infestation; 360, 361, later infestation; 362, 363, larvae. 359-361: after Viitasaari (1982b); 362, 363: after Schroever (1942).

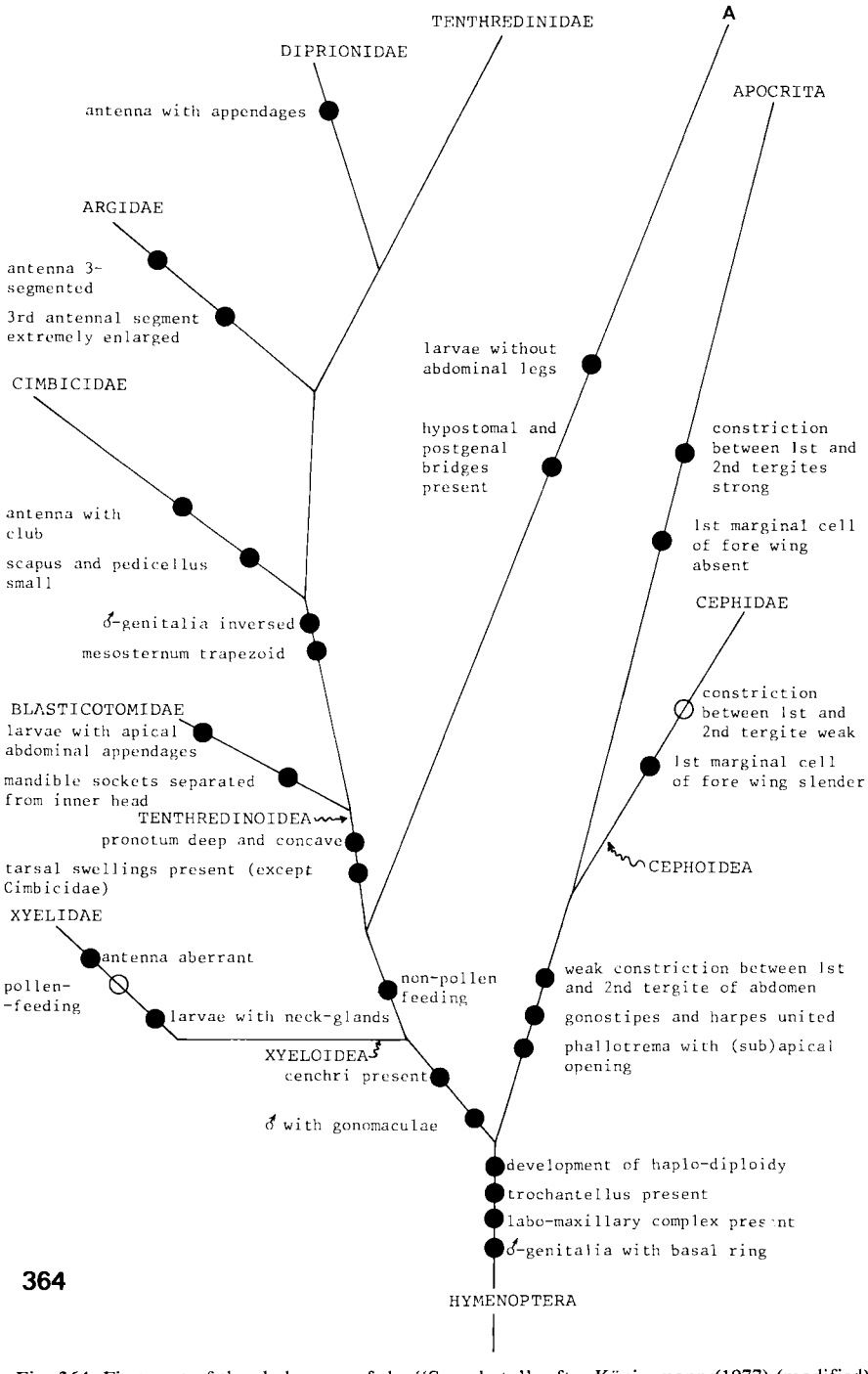


Fig. 364. First part of the cladogram of the "Symphyta"; after Königsmann (1977) (modified).

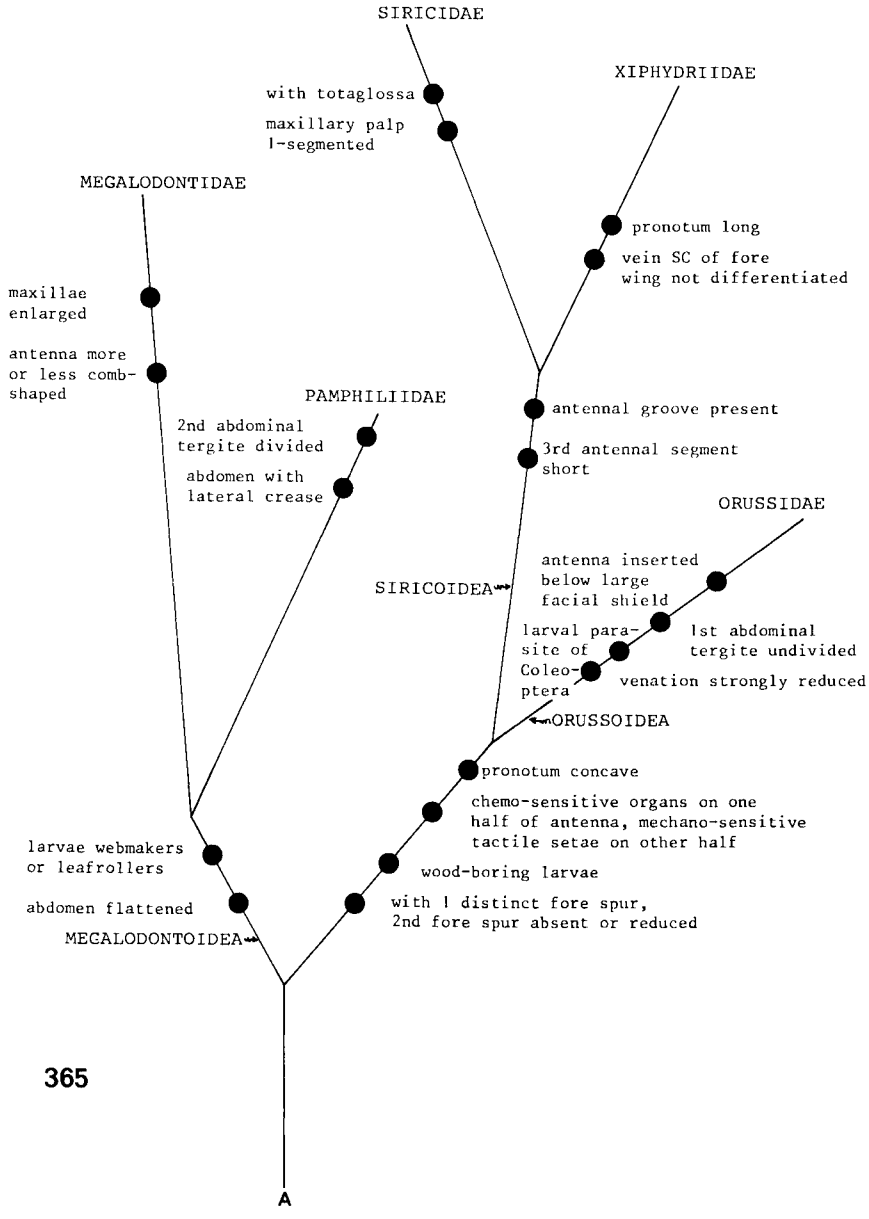


Fig. 365. Second part of the cladogram of the "Symphyta"; after Königsmann (1977) (modified).

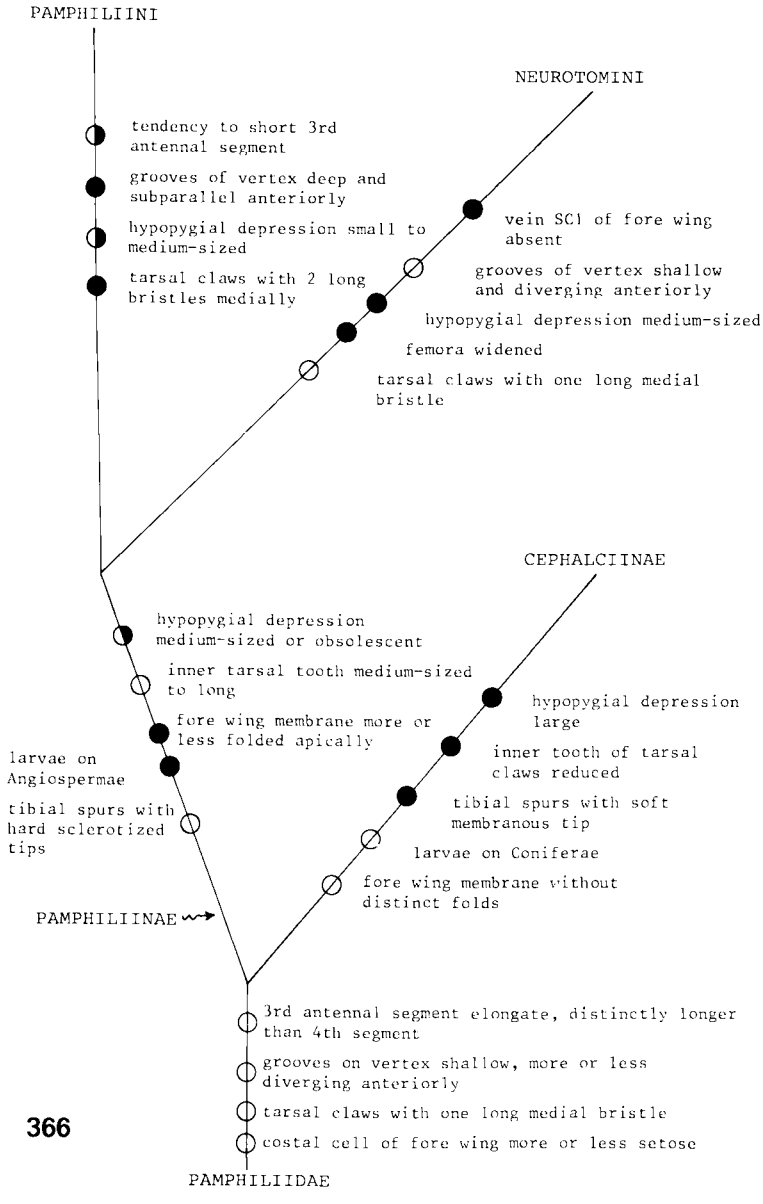


Fig. 366. Cladogram of the Pamphiliidae.

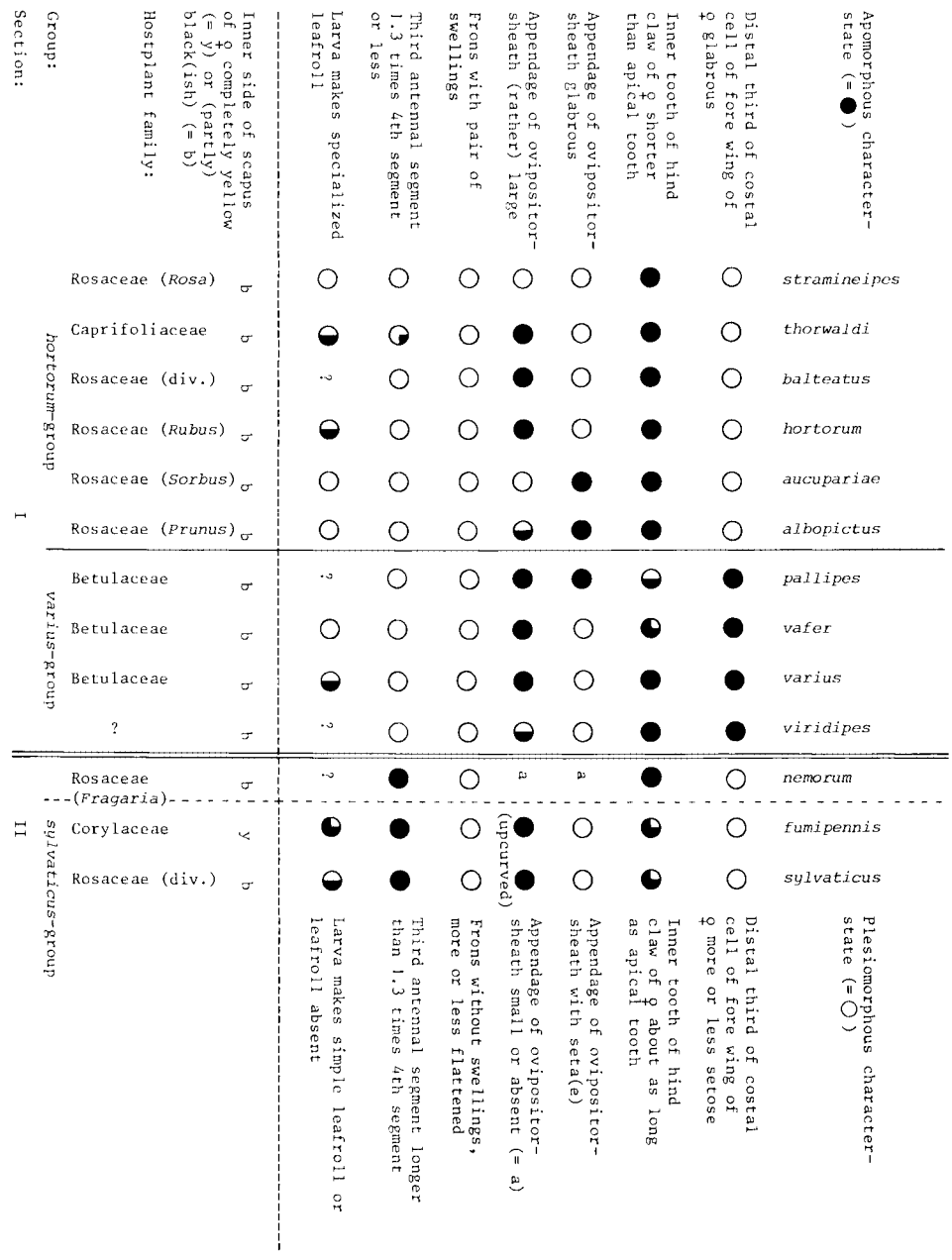


Table 1. Synoptic table of the *hortorum-*, *varius-* and *sylvaticus*-groups of the genus *Pamphilius*.

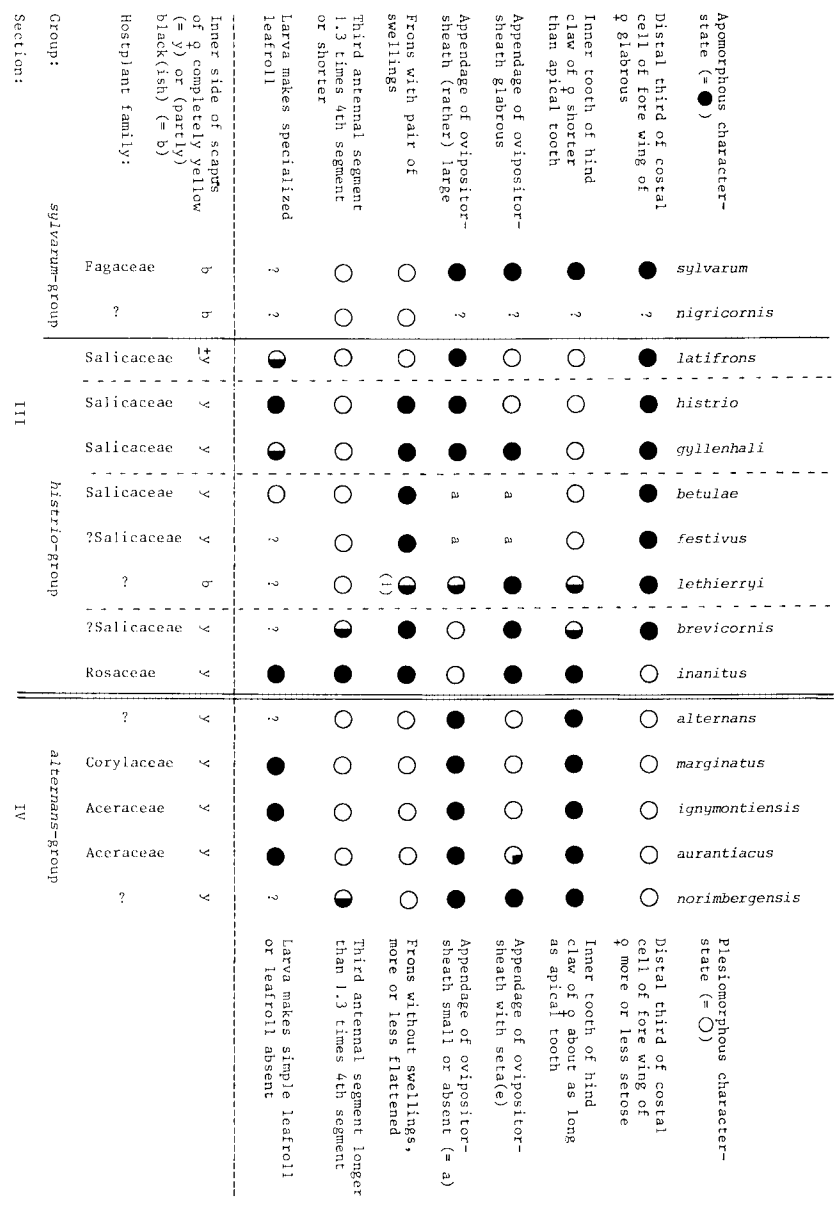


Table 2. Synoptic table of the *sylvarum-*, *histrio-*, and *alternans*-groups of the genus ***Pamphilius***.