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REVISION OF THE EUROPEAN HELCONINI (HYMENOPTERA: BRACONIDAE: HELCONINAE)

by

C. VAN ACHTERBERG

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The European genera and species of Helconini (Braconidae: Helconinae) are keyed and partly illustrated. The genus *Helconidea* Viereck, 1914 is excluded from the genus *Wroughtonia* Cameron, 1899, *Helconidea meridionalis* spec. nov. is described, and the remaining Palaearctic species of *Wroughtonia* are keyed. Lectotypes are designated for *Ichneumon redactor* Thunberg, 1822; *I. distensor* Thunberg, 1822; *I. nunciator* Fabricius, 1793; *Pimpla dentator* Fabricius, 1804; *Helcon femoralis* Thomson, 1892 and *Helcon tardator* Nees, 1814. Additional proposed combinations: *Helcon angustator* Nees, 1814 stat. nov. (Syn. nov.: *Ichneumon redactor* Thunberg, 1822; *I. distensor* Thunberg, 1822; *Helcon lignator* Lepeletier de St. Fargeau & Audinet-Serville, 1827; *H. cylindricus* Wesmael, 1835), *Helcon nunciator* (Fabricius, 1793) comb. nov. (Syn. nov.: *Helcon pedalis* Cresson, 1873; *Helcon femoralis* Thomson, 1892); *Helconidea dentator* (Fabricius, 1804) comb. nov. (Syn. nov.: *Helcon armator* Marshall, 1897); *H. ruspator* (Linnaeus, 1758) comb. nov.; *Wroughtonia cornuta* (Cameron, 1886) stat. nov. Finally a neotype is designated for *Helcon angustator* Nees, 1814.

C. van Achterberg, Rijksmuseum van Natuurlijke Historie, Postbus 9517, 2300 RA Leiden, The Netherlands.

INTRODUCTION

Despite the large size of European Helconinae (fore wing usually 6-11 mm) a reliable identification is far from easy with the existing keys. New keys are published here, in addition to the discovery of a new species in the genus *Helconidea* and of a cryptic species in the genus *Helcon*. The latter species

* Abbreviations: BMNH = British Museum (Natural History), London; HC = Haeselbarth Collection, München; RMNH = Rijksmuseum van Natuurlijke Historie, Leiden; ZSM = Zoologische Staatssammlung, München.

(*Ichneumon nunciator* Fabricius, 1793) was listed by Shenefelt (1978: 1871-1872) as a species not assigned to any genus. It was described from Germany, so it is extremely remarkable that it remained nearly two centuries in obscurity, since the types are still extant and in reasonable condition. Helconini are (rather) large, possess a distinct lamella on the frons and the hind femur is partly rugose ventrally (Van Achterberg, 1983: fig. 1A). They can be collected from recently cut wood infested by wood-boring coleopterous larvae, especially those belonging to the Cerambycidae. A new record of a species for a country is indicated by an asterisk*.

TRIBE HELCONINI FOERSTER

Diagnosis. — Frons with medial lamella or triangular horn (fig. 9); vein 1-SR of fore wing distinct (figs. 5, 25, 35, 40), occasionally obsolescent in some *Helcon tardator* specimens; vein 2A of fore wing distinct (fig. 40) and usually mainly unsclerotized (figs. 25, 35, 37); propodeal spiracle situated medially (fig. 1); outer apex of fore tibia with large and wide lamella (figs. 3, 30); hind femur partly rugose ventrally (figs. 10, 38, 39); inner hind spur shorter or subequal to outer hind spur and narrower (fig. 10).

Contains three genera in the Palaearctic region: *Helcon* Nees, 1814, *Wroughtonia* Cameron, 1899, and *Helconidea* Viereck, 1914. Parasites of wood boring coleopterous larvae, belonging to the Cerambycidae, Buprestidae, Curculionidae, and Melandryidae (= Serropalpidae).

KEY TO THE PALAEARCTIC GENERA OF THE TRIBE HELCONINI

1. Hind femur with a ventral tooth (figs. 36, 38, 40, 41) 2
- Hind femur without ventral tooth (figs. 10, 39) *Helcon* Nees
2. Marginal cell of hind wing distinctly widened apically (figs. 25, 40); occipital carina remains separated from hypostomal carina above base of mandible, but connected near apex of hypostomal carina below level of mandible base; antenna of ♀ with white band; medio-posterior depression of scutellum wide and usually comparatively short (fig. 29); area in front of tegula with a more or less developed carina and crenulate; pronope deep and usually close to anterior margin of pronotum (fig. 27); hind tarsus whitish; propleuron flattened (except in Nearctic spp.)
 *Wroughtonia* Cameron
- Marginal cell of hind wing (sub)parallel-sided or slightly widened apically

(figs. 35, 37); occipital carina connected to hypostomal carina distinctly above level of base of mandible (cf. fig. 17); antenna of ♀ without white band; medio-posterior depression of scutellum narrower and longer (cf. fig. 13); area in front of tegula without carina and puct(ul)ate; pronope shallow, if deep then distinctly removed from anterior margin of pronotum; hind tarsus yellowish or dark brown; propleuron at least partly convex *Helconidea* Viereck

Helcon Nees

Helcon Nees von Esenbeck, 1814: 216; Shenefelt, 1970: 192-196. Type-species: *Helcon tardator* Nees, 1814 (designation by Lepeletier de St. Fargeau & Audinet-Serville, 1827).

Syn.: *Gymnosceles* Foerster, 1862; *Edyia* Cameron, 1905; *Coelostephanus* Kieffer, 1911. The types of all three type-species have been examined. *Edyia* Cameron is somewhat aberrant because of the marginal cell of hind wing, which is distinctly widened apically, and the distinctly bent vein SC + R1 of the hind wing. *Coelostephanus* Kieffer has also the marginal cell widened, but lacks the precoxal sulcus completely, the mesosternal groove is absent medially, the first metasomal tergite is smooth, and the prepectal carina is weakly developed.

KEY TO EUROPEAN SPECIES OF THE GENUS *HELCON*

1. Antennal segments 34-37; antenna brown apically; marginal cell of hind wing somewhat widened apically (fig. 14); first metasomal tergite evenly widened posteriorly (fig. 23); length of fore wing 4-8.6 mm; hind femur comparatively robust (fig. 39) *claviventris* Wesmael
- Antennal segments 39-46, exceptionally 35-38; antenna black apically; marginal cell of hind wing parallel-sided apically (fig. 5); first tergite usually largely parallel-sided (figs. 11, 24) or somewhat widened (fig. 20); length of fore wing 6.3-11 mm; hind femur less robust (fig. 10) 2
2. Tegula brownish, contrasting with largely dark brown humeral plate; maximum width of eye 1.1-1.2 times length of malar space (fig. 17); first metasomal tergite robust (figs. 11, 24; ♀: 1.2-1.5 times its apical width, ♂: 1.4-1.6 times), with (rather) elevated dorsal carinae anteriorly; labial palp more or less infuscated; lateral carina of propodeum distinctly protruding dorsally as a lamella (fig. 1); propleuron rather convex (fig. 1) *tardator* Nees

- Tegula and humeral plate largely similarly coloured, brownish or yellowish; maximum width of eye 1.3-2.1 times length of malar space (figs. 15, 16); first tergite (rather) slender (fig. 20; ♀: 1.4-2.0 times its apical width, ♂: 1.6-2.1 times), with dorsal carinae largely indistinct; labial palp (except first segment) yellowish or brown; lateral carina of propodeum at most weakly protruding as a lamella; propleuron strongly to moderately flattened (figs. 18, 19) 3
3. Occipital flange comparatively slender, 1.0-1.3 times basal width of mandible (fig. 16); tegula (straw-)yellowish; propleuron moderately flattened (fig. 19) to rather convex; tooth of frons distinctly visible in lateral view of head (fig. 16); first metasomal tergite of ♀ more robust, its length 1.4-1.6 (– 1.7) times its apical width (♂: 1.6-2.0 times), more or less widened apically (fig. 20); subbasal cell of fore wing of ♀ at least partly regularly setose medially (fig. 34); maximum width of eye of ♀ 1.3-1.6 times length of malar space (fig. 16; ♂: about 1.7 times); length of malar space of ♀ 1.1-1.4 times basal width of mandible (♂: 0.9-1.1 times) *nunciator* (Fabricius)
- Occipital flange robust, 0.5-0.8 times basal width of mandible (fig. 15); tegula at least along inner margin brownish, sometimes both tegula and humeral plate dark brown; propleuron largely flattened (fig. 18); tooth of frons scarcely visible in lateral view of head (fig. 15); first tergite of ♀ (sub)parallel-sided, its length 1.6-2.0 times its apical width (♂: up to 2.1 times); subbasal cell of fore wing of ♀ nearly glabrous, frequently with a medial row of setae, exceptionally sparsely setose medially (fig. 33); maximum width of eye of ♀ 1.5-2.1 times length of malar space (fig. 15); length of malar space of ♀ 0.9-1.5 times basal width of mandible (♂: 1.1-1.2 times) *angustator* (Nees)

***Helcon angustator* Nees stat. nov.**

(figs. 15, 18, 33)

Helcon angustator Nees, 1814: 219.

Helcon tardator p.p.; Shenefelt, 1970: 195-196.

Ichneumon redactor Thunberg, 1822: 273. **Syn. nov.**

Helcon redactor; Hedqvist, 1967: 141, figs. 7D-E; Shenefelt, 1970: 194; Tobias, 1976b: 91.

Ichneumon distensor Thunberg, 1822: 274. **Syn. nov.**

Helcon lignator Lepeletier de St. Fargeau & Audinet-Serville, 1827: 41. **Syn. nov.**

Helcon cylindricus Wesmael, 1835: 183. **Syn. nov.**

Helcon angustator was described from some females from Italy (donated by Sanvitali; Dahl Collection, Vienna) and a male given by Gravenhorst. There is no type-material of this species, neither in the Naturhistorisches Museum Wien, nor in the Gravenhorst Collection (Wroclaw). The only specimen under *angustator* is a female without head ("H. angustator v. E./H. tibialis?", "H. angustator β ", "Type, *Helcon angustator* Nees, det. Papp. J., 1980, ♀") and this cannot be a type-specimen. In the original description no "var. β " is mentioned, the labels are probably not written by Nees, and the specimen belongs to *H. nunciator* (Fabricius). As a result the types of *H. angustator* are considered to be lost.

Of *Ichneumon redactor* Thunberg four males and two females are present in the Thunberg Collection; one female is designated lectotype (the female without label by Dr. A. Roman, who studied the Thunberg types), the other female is a paralectotype and has Roman's label "*Helcon redactor* Thbg." The four males are labelled paralectotypes and all specimens belong to *angustator*.

Ichneumon distensor Thunberg is represented by two females, labelled " α " and " β ", respectively, and they belong to two species. The specimen labelled " α " is here designated lectotype; it has the subbasal cell of fore wing glabrous and it is a typical *angustator*. The other specimen (" β ") is a paralectotype; it has the subbasal cell setose, and belongs to *nunciator*.

Helcon lignator Lepeletier de St. Fargeau & Audinet-Serville belongs certainly to the Braconidae judging from the lengthy generic description. The remark by Fahringer (1939: 322) that it could belong to the Ichneumonidae is considered incorrect. The type-series should be in the Paris Museum or in the Spinola Collection (Turin). I could not find any trace of the types in the Paris Museum during several visits and the Spinola Collection lacks material from these authors and belonging to the genus *Helcon*. Because of the reddish palpi *H. tardator* is excluded, by the size (about 15 mm) also *H. claviventris* and there remain *H. angustator* and *H. nunciator*. *Helcon nunciator* is most common in submontane areas (1100-1400 m) and *H. angustator* is most common in lowland areas (below 700 m); because it was stated that *lignator* was common in the surroundings of Paris, *lignator* is most likely a synonym of *angustator*.

In the Wesmael Collection (Brussels) under *cylindricus* three females and two males are present; however, the original description is based on one female only. One female was collected after publication ("1840 Jacobs"), the remaining two females differ by the sculpture of the second metasomal tergite. One female has the tergite largely smooth (only some indistinct sculpture basally), the other female has the basal three-quarters of tergite

distinctly and rather coarsely sculptured. According to the original description (“finement rugueux vers la base”) the latter female (“*Helcon cylindricus* mihi ♀, det. C. Wesmael”, “Type”) is the holotype and labelled accordingly. The holotype has a short occipital flange and is a typical *angustator*.

A neotype is here designated for *Helcon angustator* Nees, 1814: (“Museum Leiden, Holland (Gld.), Vierhouten, 18.VII.1968, J.T. Wiebes”) and deposited in the Rijksmuseum van Natuurlijke Historie, Leiden. Length of fore wing 8 mm, of body 11.4 mm.

Head. — Antennal segments 41, length of third segment 1.1 times fourth segment; length of third, fourth, and penultimate segments 3.4, 3.1, and 1.3 times their width, respectively; length of maxillary palp 1.4 times height of head; fourth segment of labial palp slender, more than of *nunciator* (cf. fig. 22); horn of frons hardly visible in lateral view of head (fig. 15); length of eye in dorsal view 1.4 times length of temple; maximum width of eye 1.8 times length of malar space; length of malar space 1.5 times basal width of mandible; length of occipital flange 0.6 times length of malar space (fig. 15); mandible somewhat twisted.

Mesosoma. — Length of mesosoma twice its height; propleuron (except posteriorly) flattened (fig. 18); propodeal carinae less protruding dorsally than in *tardator*; propodeum rather coarsely and densely reticulate-rugose (except narrowly anteriorly).

Wings. — Fore wing: subbasal cell largely glabrous, except a medial row of setae (fig. 33). Hind wing: marginal cell parallel-sided apically.

Legs. — Length of fore tarsus 1.5 times length fore tibia.

Metasoma. — Length of first tergite 1.9 times its apical width, parallel-sided, largely densely rugose-reticulate, apically smooth, and its dorsal carinae weakly developed; second tergite rugose antero-laterally, coriaceous medially, and remainder largely smooth; length of ovipositor sheath 1.21 times fore wing.

Colour. — Black; antenna (except its apical sixth and annellus), palpi basally, tegula, pterostigma and most veins, dark brown; apical sixth of antenna and annellus, brown; humeral plate, palpi (except basally), legs largely, yellowish-brown; hind tibia and two basal segments of hind tarsus infuscated; wing membrane weakly infuscated, stronger near veins 1-M, cu-a and M+CU1 of fore wing.

Distribution. — Most common species of *Helcon* is lowland areas. Specimens seen from Belgium, *Bulgaria, Czechoslovakia, East Germany, France, *Hungary (ex *Agrilus sulcicollis* Lac.), Italy (HC), *The Netherlands (Bergeijk-Welbosch (ex *Quercus*), Best (ex *P. testaceus* L.). Putten (G., ex *Quercus* infested by *Phymatodes testaceus* L. and *Pyrrhidium sanguineum*

(L.), *Blaricum* (ex *Phymatodes* in *Quercus*), Echt, 't Harde, Heelsum (ex *Quercus* infested by *Phymatodes testaceus* L.), Strijbeek, Vierhouten, Wageningen, Well (L.), West Germany (ex *Phymatodes testaceus* L.; ex *Tetropium gabrieli* Weise; ex *Obera pupillata* Gyllenhal in *Lonicera* (HC)), ex *Callidium variabile* L.; ex *Monochamus* sp. (ZSM)), *Romania, Sweden, and *Yugoslavia. According to literature North to Finland, East to Siberia, Japan and Korea, and South to Turkey. However, misidentifications occur frequently and *Helcon yezonicum* Watanabe, 1931 from Japan is incorrectly synonymized with this species (Hedqvist, 1967: 141, with *redactor*). *H. yezonicum* has base of third tergite sculptured, hind coxa and femur black, and antennal segments about 35.

Biology. — Parasite of Cerambycidae in *Quercus* and *Lonicera*.

***Helcon claviventris* Wesmael**

(figs. 14, 23, 39)

Helcon claviventris Wesmael, 1835: 184, fig. vi; Hedqvist, 1967: 141, figs. 7, A-C; Shenefelt, 1970: 192-193.

I could not find any type specimen in the Wesmael Collection (Brussels); three females are present but all are collected after the original publication (“Diest 1846” or “1844”). The specimens probably identified by Wesmael agree with the current interpretation. Additional specimens examined from *England (Oxford (BMNH)), West Germany (ZSM) and Switzerland (ZSM).

***Helcon nunciator* (Fabricius) comb. nov.**

(figs. 16, 19, 20, 22, 34)

Ichneumon nunciator Fabricius, 1793: 166; Shenefelt, 1978: 1871-1872 (“unplaced species”); Van Rossem, 1980: 98.

Ophion nunciator; Fabricius, 1804: 134.

Helcon pedalis Cresson, 1873: 85; Shenefelt, 1970: 193-194. **Syn. nov.**

Helcon femoralis Thomson, 1892: 1725; Shenefelt, 1970: 194 (synonym of *redactor*). **Syn. nov.**

Under *I. nunciator* in the Fabricius Collection (Copenhagen) are eight specimens, three Ichneumonidae (one is a *Glypta* spec.) and five Braconidae. The Braconidae fit the original description best and a female is here designated lectotype. It belongs to a cryptic species of the genus *Helcon*, only recognized in the past by Thomson.

The lectotype of *H. nunciator* lacks the antenna (44 segments in the female paralectotype) but is in a fair condition. The length of the malar space is 1.4 times basal width of mandible, the maximum width of the eye is 1.3 times length of malar space, occipital flange about as long as basal width of mandible, length of body 11.3 mm, of fore wing 7.8 mm, and of ovipositor sheath 1.15 times fore wing (1.21 times in paralectotype), length of fore tarsus 1.4 times fore tibia, length of first tergite 1.6 times its apical width, strongly rugose, and its dorsal carinae only basally (fig. 20), lateral propodeal carinae rather lamelliform in posterior half of propodeum, whole second tergite coriaceous, hind tibia completely reddish, and labial palp yellow, its third and fourth segments rather robust (fig. 22). The types of *H. nunciator* (lectotype, 1 ♀ + 3 ♂ paralectotypes) originate from Germany.

In the Thomson Collection (Lund) are 14 specimens under *femoralis*, all belonging to *H. nunciator*. Two females are excluded because the label has a different handwriting and is probably added later; there remain six females and six males. One female ("Norl."; with nearly whole hind tibia, femur (except base) and tarsus dark brown) is here designated lectotype. It has 43 antennal segments, length of body 11.1 mm, of fore wing 8.2 mm, length of ovipositor sheath 1.1 times fore wing, length of malar space 1.2 times basal width of mandible, maximum width of eye 1.6 times length of malar space, subbasal cell of fore wing moderately setose (cf. fig. 34), length of first tergite 1.4 times its apical width, and second (and base of third) tergite largely coriaceous. The remaining specimens are labelled paralectotypes and originate from Sweden.

Specimens examined from *Austria (Aschbach (1400 m; RMNH), Oberinntal (1000-1400 m; BMNH), Langenfeld (1100 m; BMNH), Mayrhofen), *Czechoslovakia (ZSM), *Italy (Bolzano, 1100-1250 m; Castrozza, 1440 m (ZSM)), *The Netherlands (Wageningen; RMNH), Sweden (BMNH), *U.S.A. ("Hudson Bay"), West Germany (Heidelberg; ex *Pronocera* spec. (HC)). Parasite of Cerambycidae in *Picea*.

Note. — The Nearctic *Helcon pedalis* Cresson, 1873 is extremely similar to *H. nunciator*; the only difference found is the infuscated hind femur. However, I have seen two females from Sweden (BMNH) which have also dark hind femora. Therefore *H. pedalis* Cresson, 1873 is considered to be a junior synonym of *H. nunciator*.

Helcon tardator Nees
(figs. 1-13, 17, 21, 24)

Helcon tardator Nees, 1814: 218-219, figs. 6a-d; Lindemans, 1919: ix (report from The Netherlands (Ommen, from Cerambycid larvae in *Pinus*, and Valkenburg) but needs reconfirmation); Hedqvist, 1967: 141, figs. 7F-G; (without synonyms); Shenefelt, 1970: 195-196; Tobias, 1976: 91.

Mr. A. Taeger (Eberswalde) kindly informed me that some types of Nees survived in the Berlin Museum; the remainder of the Braconidae of the Nees collection was deliberately destroyed in the 1880's in Bonn. One of very few specimens which survived is the figured specimen of *H. tardator* (Nees, 1814, fig. 4-6) with mandibles prepared out. The female specimen (as the male he described) originates from Sickershausen (West Germany, a farm-estate near Göttingen) and is labelled: "29.6.1808, Germania" (handwritten recent label), "VIII Helcon 1" (see Nees, 1814: 216, actually 2), "tardator f. 29. Jun. 08" (old handwritten label). The female is here designated lectotype. According to the original description the palpi are piceous; the length of the fore wing is 10.1 mm, of body 13.3 mm, length of ovipositor sheath 1.05 times fore wing, length of malar space 1.4 times basal width of mandible, maximum width of eye 1.1 times length of malar space (fig. 17), length of occipital flange 0.8 times basal width of mandible, length of first tergite 1.4 times its apical width, robust (figs. 24), propodeal carinae rather protruding and lamelliform, second tergite smooth and its medial length 1.4 times medial length of third tergite. According to the original description it was captured on a *Quercus*-trunk.

Specimens examined from Czechoslovakia (ex *Clytus* sp. in *Quercus robur* L.), France, Hungary, Italy, The Netherlands (Apeldoorn, 't Harde, Heerde, Hoog-Soeren, "Limburg" (ex *Picea* spec.), Nunspeet), Sweden (BMNH), Switzerland, and West Germany (ex *Plagionotus arcuatus* L. (BMNH), ex *Monochamus* spec. (ZSM)). Reported from Sweden to Algeria, west to England, east to Poland, Romania and Korea, south to Turkey and Adzerbaidjan (U.S.S.R.).

Parasite of Cerambycidae in coniferous and deciduous trees.

Helconidea Viereck

Helconidea Viereck, 1914: 67. Type-species: *Helcon aequator* Nees, 1814 (= *Pimpla dentator* Fabricius, 1804) (by original designation).

KEY TO EUROPEAN SPECIES OF THE GENUS *HELCONIDEA*

1. Vein 3-SR of fore wing much shorter than vein r (fig. 48); vein SR1 of fore wing sinuate (fig. 48); second submarginal cell nearly subtriangular (fig. 48); propodeum rather weakly sculptured *miroshnikovi* (Tobias)
 - Vein 3-SR of fore wing distinctly longer than vein r (figs. 35, 37, 51); vein SR1 of fore wing straight (fig. 37); second submarginal cell distinctly quadrangular (figs. 37, 51); propodeum variable 2
2. Mesosternal sulcus obsolescent or narrow and more or less narrowly crenulate (fig. 57); hind coxa yellowish; malar space finely and densely rugulose; propodeum rather weakly sculptured; hind tibia usually largely blackish or infuscated dorsally; hind femur comparatively slender and its tooth more distally situated (fig. 36); occipital flange comparatively narrow, more than 3 times longer than wide; dorsal carinae of first metasomal tergite weakly developed; vein r-m of fore wing vertical (fig. 35); scutellum punctulate *dentator* (Fabricius)
 - Mesosternal sulcus deep and widely crenulate (fig. 54); hind coxa (largely) black; malar space coarsely vermiculate rugose (fig. 55); propodeum (very) coarsely sculptured; hind tibia brownish; hind femur robust and its tooth more medially situated (fig. 38); occipital flange comparatively wide, its length about 3 times its width or shorter (fig. 55); dorsal carinae of first tergite strong, distinctly elevated above basal half of tergite; vein r-m and scutellum variable 3
3. Scutellum coarsely rugose and protruding dorsally (figs. 49, 50); vein r-m of fore wing strongly inclivous (fig. 37); ovipositor sheath 2.0-2.2 times hind tibia *ruspator* (Linnaeus)
 - Scutellum only remotely punctate with some rugulae (fig. 53), and not or slightly protruding dorsally (figs. 52); vein r-m of fore wing (sub)vertical (fig. 51); length of ovipositor sheath about 1.8 times hind tibia *meridionalis* spec. nov.

Helconidea dentator (Fabricius) comb. nov.

(figs. 35-36)

Pimpla dentator Fabricius, 1804: 114.

Helconidea dentator; Hedqvist, 1967: 140; Shenefelt, 1970: 197-198.

Wroughtonia dentator; Watanabe, 1972: 5; Tobias, 1976: 90, figs. 27: 2, 4.

Helcon aequator Nees, 1814: 219 (type probably lost, not in the Gravenhorst Collection).

Helcon rugator Ratzeburg, 1848: 67.

Helcon armator Marshall, 1897: 230-231. **Syn. nov.**

In the Fabricius Collection (Copenhagen) under *dentator* two specimens are present. One male with hind femur simple (“*variat mas . . .*” of Fabricius, 1804) and belonging to *Helcon tardator*. The other specimen is a female with dentate hind femur; this is obviously the specimen from Moravia upon which the main part of the original description is based. This female (without original labels) is here designated lectotype. The condition is fair, but the body is partly mouldy and ovipositor (and its sheath) partly broken off. Length of fore wing 9.9 mm, of body 12 mm; length of remaining part of ovipositor about 1.1 times fore wing length. The lectotype originates from Czechoslovakia (Moravia).

The holotype *Helcon armator* Marshall is deposited in the Naturhistorisches Museum Bern and has been examined. It is labelled “Marshall det.”, “2369”, “3.vi.83, Bern”, “n.sp.”, “*Helcon armator* Marsh.” It is a rather pale (bleached?) male of *H. dentator* with the hind tibia, hind tarsus and antenna basally brown. According to the original description the number of antennal segments is 54, but in the type the antennae are incomplete and the actual number was most likely 44 instead of 54. The maximum number of antennal segments of the male of *H. dentator* observed is 47.

Specimens examined from Austria (800-1350 m), *Belgium (BMNH), Czechoslovakia (750 m), *Denmark, Finland (BMNH), *France (BMNH; St. Genis Laval, ex *Tetropium fuscum* F. (HC)), Hungary, Italy (1000 m), *Norway (BMNH), *Romania (ZSM), Sweden (BMNH), Switzerland, and West Germany. Reported from Europe (England, north to Finland and south to Italy (but not from The Netherlands, Belgium and France) and East Palaearctic.

Parasite of various Cerambycidae, especially *Tetropium* spp. The types of *Helcon rugator* Ratzeburg are all lost, however, this species seems to be based only upon larger and more sculptured specimens of *H. dentator*. Both *H. dentator* and *H. rugator* have been reared from *Tetropium luridum* (Linnaeus).

Helconidea meridionalis spec. nov.

(figs. 51-56)

Material examined. — 1♀, (RMNH), holotype: "France, Isère, Tréminis, 1100 m, 20.vii.1985, A. Teunissen" (wings damaged). Paratypes, 6 ♂♂, all from the CSIRO Sirex Project B.M. 1971-132, (BMNH, RMNH): 2♂♂, Yugoslavia, Belasica, 1 & 2.7.(19)65, Frank Wilson; 2♂♂, S.E. France, Turini, 30.6 & 8.7(19)66; 1♂, Greece, Pertovli; 13-15.6(19)70; 1♂, Switzerland, Chatillon, 23.5(19)67.

Holotype, female, length of body 9.1 mm.

Head. — Antennal segments 33, length of third segment 1.1 times fourth segments; length of third, fourth, and penultimate segments 3.7, 3.5, and 1.3 times their width, respectively; length of maxillary palp 1.2 times height of head; fourth segment of labial palp slender; horn of frons hardly visible in lateral view of head; length of eye in dorsal view 0.9 times temple; maximum width of eye 1.6 times length of malar space; face and dorsal half of clypeus coarsely rugose; ventral half of clypeus smooth; malar space coarsely vermiculate rugose (fig. 55); frons crest-shaped elevated and rugose laterally, medially partly smooth, concave and with large lamelliform horn; vertex largely remotely punctate; mandibles somewhat twisted apically; length of malar space equal to basal width of mandible; occipital flange wide (fig. 55), its length 0.7 times length of malar space.

Mesosoma. — Length of mesosoma 1.6 times its height; propleuron moderately convex, punctate, but rugose anteriorly; mesosternal sulcus widely crenulate and deep posteriorly (fig. 54); precoxal sulcus widely and rather irregularly rugose; mesoscutum normally convex (separating it from the Japanese *H. planidorsum* (Watanabe, 1952)); scutellum remotely punctate, with some rugulae (fig. 53) and not or slightly protruding posteriorly (fig. 52); propodeal carinae strongly protruding posteriorly, surface of propodeum and metapleuron coarsely reticulate.

Wings. — Fore wing (partly absent): subbasal cell largely glabrous, but with cluster of setae near cu-a; cu-a vertical, postfurcal; 1-CUI widened; r-m (sub)vertical (paratype: fig. 51); 3-SR longer than r. Hind wing: cu-a rather inclivous (fig. 51).

Legs. — Length of fore tarsus 1.3 times fore tibia; length of femur, tibia and basitarsus of hind leg 3.1 (without teeth), 10.0, and 7.1 times their width, respectively; length of outer and inner hind spur 0.3 and 0.2 times hind basitarsus, respectively; hind femur robust, with its tooth rather far removed from apex of femur (fig. 56), and largely rugose ventrally.

Metasoma. — Length of first tergite 1.7 times its apical width, distinctly gradually widened posteriorly, reticulate-rugose, but medially somewhat

depressed and largely smooth, its dorsal carinae strong and distinctly elevated basally, reaching basal 0.9 of tergite; second tergite distinctly rugose sublaterally, but medially and posteriorly smooth; length of ovipositor sheath 1.8 times length of hind tibia.

Colour. — Black; palpi, legs (except coxae and trochanters) brown; tarsus pale brown; hind coxa, tegulae and trochanters black(ish); five basal antennal segments, fore and middle coxae and trochanters dark brown; remainder of antenna black; wing membrane somewhat infuscated; ptero- and parastigma (paratypes) and most veins dark brown to blackish.

Male. — Very similar to holotype; scapus, pedicellus, hind trochanter and trochantellus dark brown or black; antennal segments 37 (1), 38 (2), 39 (1), or 40 (1); length of fore wing 7.1-8.1 mm, of body 8-11 mm; length of first metasomal tergite about 1.6 times its apical width.

Note. — Most likely *H. meridionalis* is the sister-species of *H. ruspator* and has a more southern distribution (S. France, Switzerland, Yugoslavia, Greece) than *H. ruspator* (N. and NW. Europe, northern part of C. Europe). The biology is unknown.

***Helconidea miroshnikovi* (Tobias) comb. nov.**

(fig. 49)

Wroughtonia miroshnikovi Tobias, 1986: 151, fig. 92-17.

Described from the Krasnodarskij district (USSR) and reared from *Rhopalopus clavipes* F. (Cerambycidae).

***Helconidea ruspator* (Linnaeus) comb. nov.**

(figs. 37-38)

Ichneumon ruspator Linnaeus, 1758: 565.

Helconidea ruspator; Hedqvist, 1967: 138, figs. 4: A, B; Shenefelt, 1970: 200-201.

Wroughtonia ruspator; Watanabe, 1972: 6; Tobias, 1976: 90, fig. 27: 3, 5; Čapek et al., 1982: 337 (new host record).

Helcon dentator Nees, 1814: 220 (nec *H. dentator* (Fabricius, 1804)).

Specimens examined from Austria, *Belgium (Moulin Hideux), England (BMNH; flying around log with *Strangalia aurulenta* F.), East Germany, France, The Netherlands (Aayen (ex *Populus*), Cadier (ex *Sambucus*), de Dellen (Gld.), Epe, Neer (ex *Betula*), Veenhuizen) and *West Germany

(Kirchhorst, Hannover, on *Betula* with *Strangalia quadrifasciata* L. (ZSM)). Reported from Europe and the East Palaearctic region. Parasites of various Cerambycidae in deciduous and coniferous trees.

Wroughtonia Cameron sensu stricto

Wroughtonia Cameron, 1899: 56. Type-species: *Wroughtonia cornuta* Cameron, 1899 (nec *Helcon cornutus* Cameron, 1886 (by monotypy)). Not renamed because it may be a synonym of *Helcon unicornis* Turner, 1918, which has second tergite more sculptured (rugulose) and of *Duportia cincticornis* Kieffer, 1921. Mr. T. Huddleston kindly informed me that the type of *H. unicornis* has the scutellum protruding subposteriorly (cf. fig. 28) and possesses a curious double tubercle on the frons.

Syn.: *Duportia* Kieffer, 1921. Synonymized by Watanabe (1972: 3), and most likely correct. The types (3♂♂) of the type-species (*Duportia cincticornis* Kieffer, 1921, by monotypy) could not be found in the Paris Museum or in the Kieffer Collection and are considered to be lost. The aberrant feature of *W. cornuta* Cameron (the protruding scutellum) is not mentioned in the original description (Kieffer, 1921: 3).

The synonymy of *Helconidea* Viereck, 1914 with *Wroughtonia* Cameron, 1899 (Watanabe, 1972: 3) is not acceptable because of some remarkable differences between both genera, e.g. the marginal cell of the hind wing is strongly widened and the different position of the occipital carina (could not be checked in type-species because the head is missing) in *Wroughtonia*. The holotype of *W. cornuta* is in the Hope Department, Oxford and is damaged; head and hind legs (except coxa) are missing. It is labelled "Wroughtonia cornutus (sic!) Cam., Type, Khasia [= India]". Length of fore wing 8.0 mm, propleuron flat or slightly concave (fig. 31); pronope deep, large, triangular and near anterior margin of pronotum (fig. 27); scutellum protruding posteriorly (fig. 28) and widely crenulate posteriorly (fig. 29); laterope deep and large, in wide glymna; hind coxa comparatively slender and strongly protruding antero-ventrally (fig. 32); length of fore tarsus 1.3 times fore tibia; apex of fore tibia with wide triangular lamella (fig. 30); wings: fig. 25; sub-basal cell of fore wing sparsely setose (fig. 26); first metasomal tergite pale, its length 1.3 times its apical width; second tergite with some punctures only; length of ovipositor sheath 1.34 times fore wing.

In Europe *Wroughtonia* contains only one species: *W. spinator* and there are two additional species in Japan.

KEY TO PALAEARCTIC SPECIES OF THE GENUS *WROUGHTONIA*

1. Whole hind femur and coxa (except base) reddish-brown; complete precoxal sulcus coarsely and widely reticulate-rugose; hind coxa only punctulate; first metasomal tergite slender, parallel-sided, its length about 1.5 times its apical width (fig. 44); (Europe, N. Africa, ?Japan)
..... *spinator* (Lepeletier & Audinet-Serville)
- At least basal half of hind femur, and hind coxa black; precoxal sulcus only punctate; hind coxa punctate; first tergite more robust, more or less widened apically, its length about 1.3 times its apical width (figs. 42, 47); (Japan) 2
2. Vein SR1 of hind wing straight basally (fig. 40); length of vein 3-SR of fore wing about 1.5 times vein r and about 1.2 times vein 2-SR (fig. 40); vein cu-a of fore wing comparatively oblique (fig. 40); trochantellus and apical half of hind femur black; tooth of hind femur more pronounced (fig. 41) *cornuta* (Cameron)
- Vein SR1 of hind wing distinctly curved basally (fig. 45); length of vein 3-SR of fore wing about equal to length of vein r and about 1.6 times vein 3-SR (fig. 45); trochantellus and apical half of hind femur reddish; tooth of hind femur less pronounced (fig. 46) .. *mikagei* Hedqvist & Togashi

***Wroughtonia cornuta* (Cameron) stat. nov.**
(figs. 40-42)

Helcon cornutus Cameron, 1886: 270; Shenefelt, 1970: 201 (as synonym of *S. spinator*); Watanabe, 1972: 5 (id.).

The holotype (from Fukui, Japan) has been examined (“Type”, “B.M. Type Hym. 3.c.884”, “*Helcon cornutus* Cam. Type, Fukui, Japan, Trans. N.H. Glasg. 1883.270”) and is certainly different from *W. spinator*.

***Wroughtonia mikagei* Hedqvist & Togashi**
(figs. 45-47)

Wroughtonia mikagei Hedqvist & Togashi, 1979: 95-96, figs. 1-11.

Known from type-series (Japan, Honshu, Mt. Joo, near Kanazawa) only. Reared from *Brachyclytus singularis* Kraatz (Cerambycidae).

Wroughtonia spinator (Lepeletier & Audinet-Serville)

(figs. 43-44)

Helcon spinator Lepeletier de St. Fargeau & Audinet-Serville, 1827: 41.*Helconidea spinator*; Shenefelt, 1970: 201.*Wroughtonia spinator*; Watanabe, 1972: 4-5.*Helcon annulicornis* Nees, 1834: 231.*Helconidea annulicornis*; Shenefelt, 1970: 196-197.

A species easily recognizable by its colour; specimens examined from "British Isles" (BMNH), France, *Italy (HC), *The Netherlands (Bemelen (from pole), Ede (Gld.), Ginkel, Putten (Gld.) and Krachtighuizen (near Putten)) and West Germany, (ex ?*Anaglyptus* spec. in *Carpinus* (ZSM)). Reported from Algeria, Belgium, England, France, Germany, Japan, Sweden, and Switzerland; the report from Japan needs reconfirmation. Parasite of Cerambycidae.

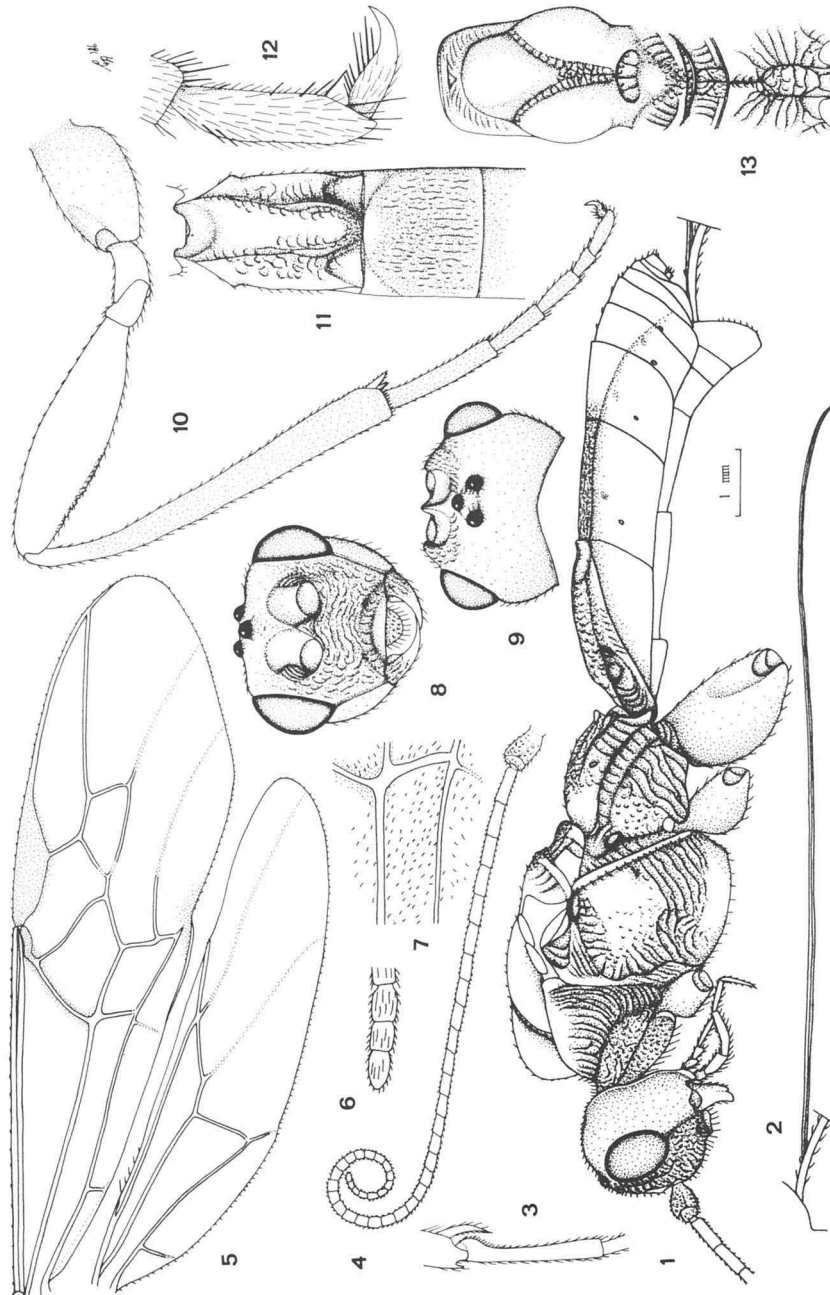
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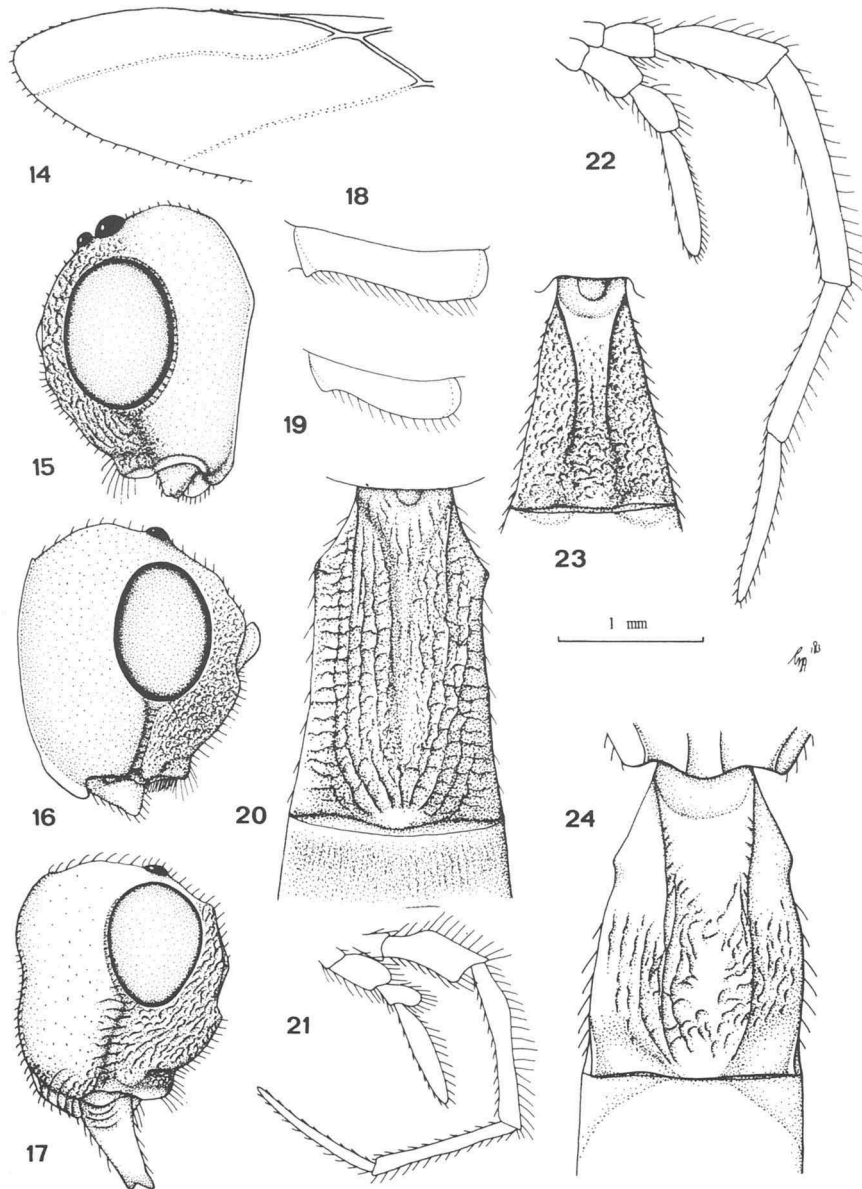
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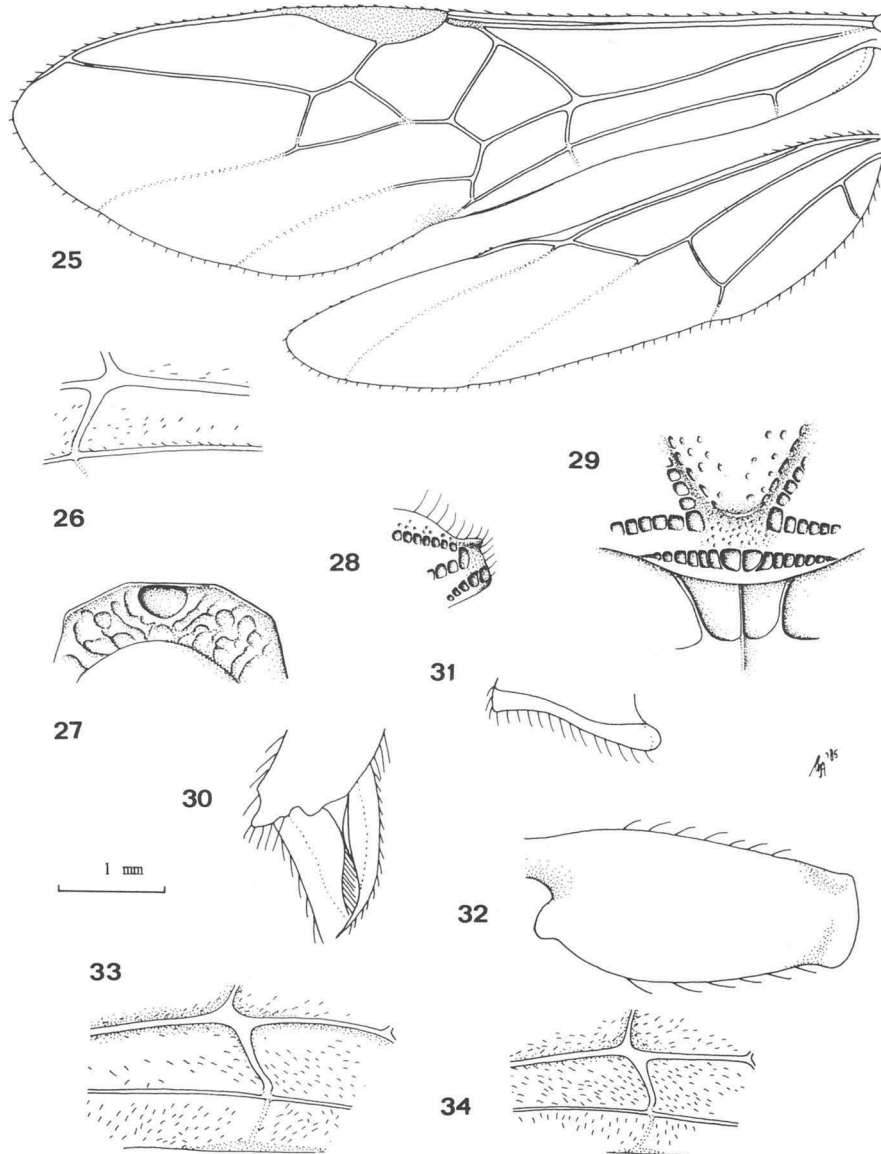
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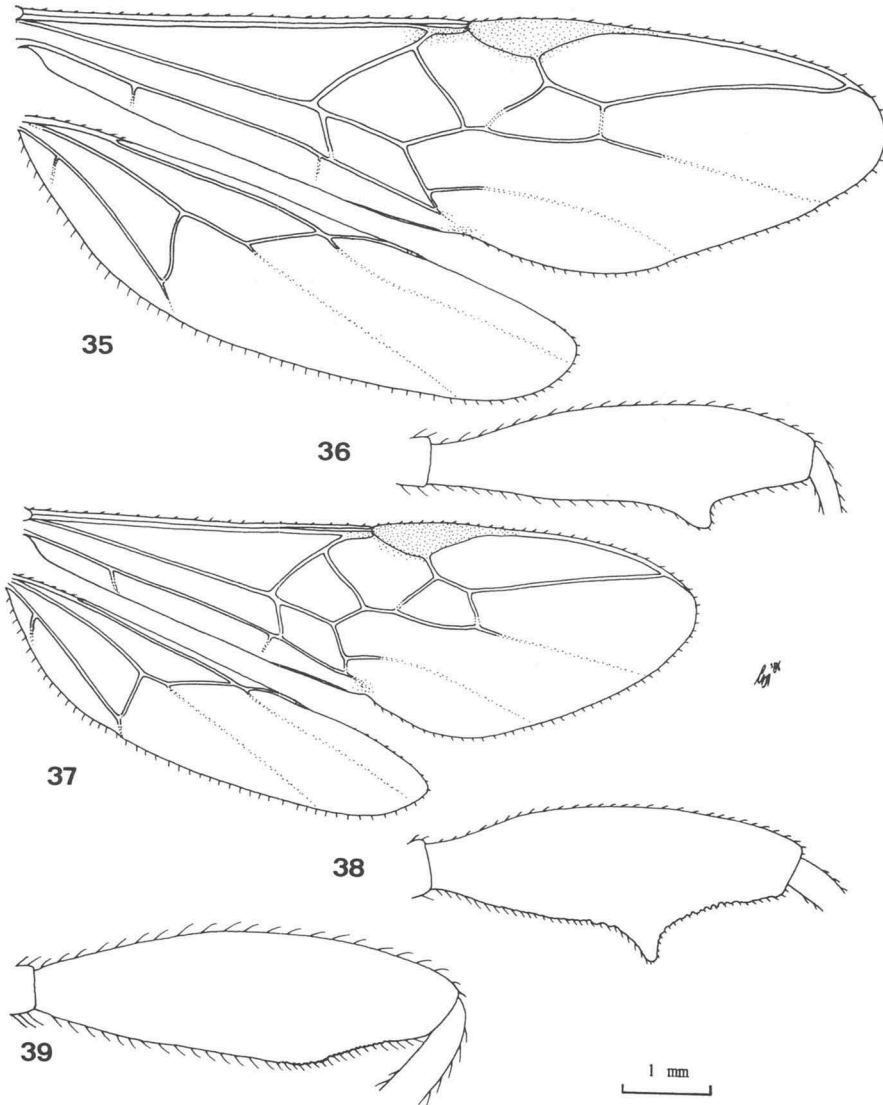
Figs. 1-13, *Helcon tardator* Nees, ♀, Netherlands, Nunspeet. 1, habitus, lateral aspect; 2, ovipositor; 3, apex of fore tibia and spur; 4, antenna; 5, wings; 6, apex of antenna; 7, apical part of subbasal cell of fore wing; 8, head, frontal aspect; 9, head, dorsal aspect; 10, hind leg; 11, first and second metasomal tergites; 12, outer hind claw; 13, mesosoma, dorsal aspect. 1, 2, 4, 5, 10, 11, 13: scale-line (= 1 ×); 3, 7: 2 ×; 6, 12: 5 ×; 8, 9: 1.2 ×.



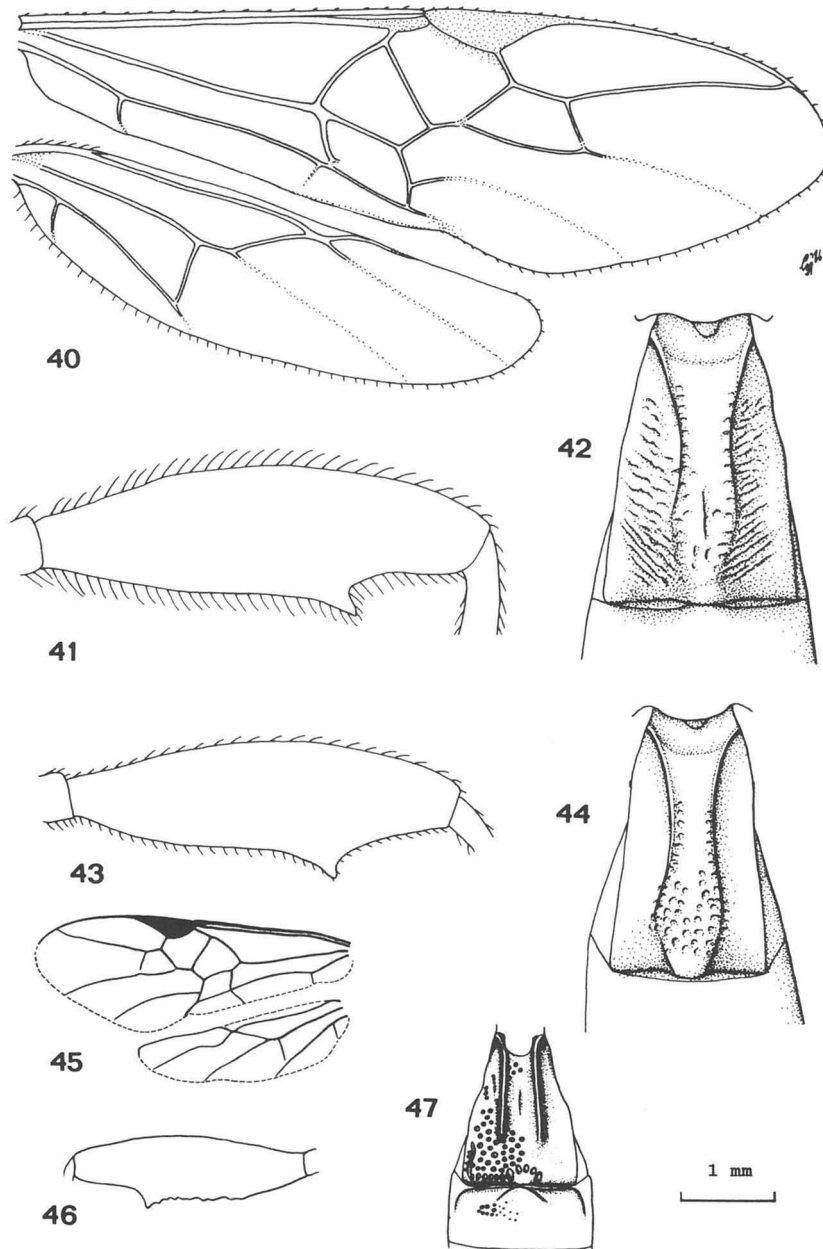
Figs. 14, 23, *Helcon claviventris* Wesmael, ♀, Austria, Piesting. Figs. 15, 18, *Helcon angustator* Nees, ♀, neotype. Figs. 16, 19, 20, 22, *Helcon nunciator* (Fabricius), ♀, lectotype. Figs. 17, 21, 24, *Helcon tardator* Nees, ♀, lectotype. 14, apex of hind wing; 15-17, head, lateral aspect; 18, 19, propleuron, lateral aspect; 20, 23, 24, first metasomal tergite, dorsal aspect; 21, 22, palpi. 14, 17, 23, 24: 0.8 ×; 15, 16, 18-20: scale-line (= 1 ×); 21: 1.7 ×; 22: 2 ×.



Figs. 25-32, *Wroughtonia cornuta* Cameron, 1899 (nec 1866), ♀, holotype. Fig. 33, *Helcon angustator* (Nees), ♀, neotype. Fig. 34, *Helcon nunciator* (Fabricius), ♀, Austria, Aschbach. 25, wings; 26, 33, 34, apical part of subbasal cell of fore wing; 27, pronotum, dorsal aspect; 28, scutellum, lateral aspect; 29, scutellum, dorsal aspect; 30, apex of fore tibia and spur; 31, propleuron, lateral aspect; 32, hind coxa, inner aspect. 25: scale-line (= 1 ×); 26, 27, 31, 32: 2 ×; 28, 29: 3 ×; 33, 34: 1.5 ×.



Figs. 35-36, *Helconidea dentator* (Fabricius), ♀, lectotype. Figs. 37-38, *Helconidea ruspator* (Linnaeus), ♀, Netherlands, Cadier. Fig. 39, *Helcon claviventris* Wesmael, ♀, origin unknown. 35, 37, wings; 36, 38, 39, hind femur, lateral aspect. 35, 37: scale-line (= 1 ×); 36, 38, 39: 1.5 ×.



Figs. 40-42, *Wroughtonia cornuta* (Cameron, 1886), ♀, holotype. Figs. 43-44, *Wroughtonia spinator* (Lepelletier & Audinet-Serville), ♀, Netherlands, Ede. Figs. 45-47, *Wroughtonia mikagei* Hedqvist & Togashi, after Hedqvist & Togashi, 1979. 40, 45, wings; 41, 43, 46, hind femur, lateral aspect; 42, 44, 47, first metasomal tergite, dorsal aspect. 40: scale-line (= 1 ×); 41-44: 1.5 ×.

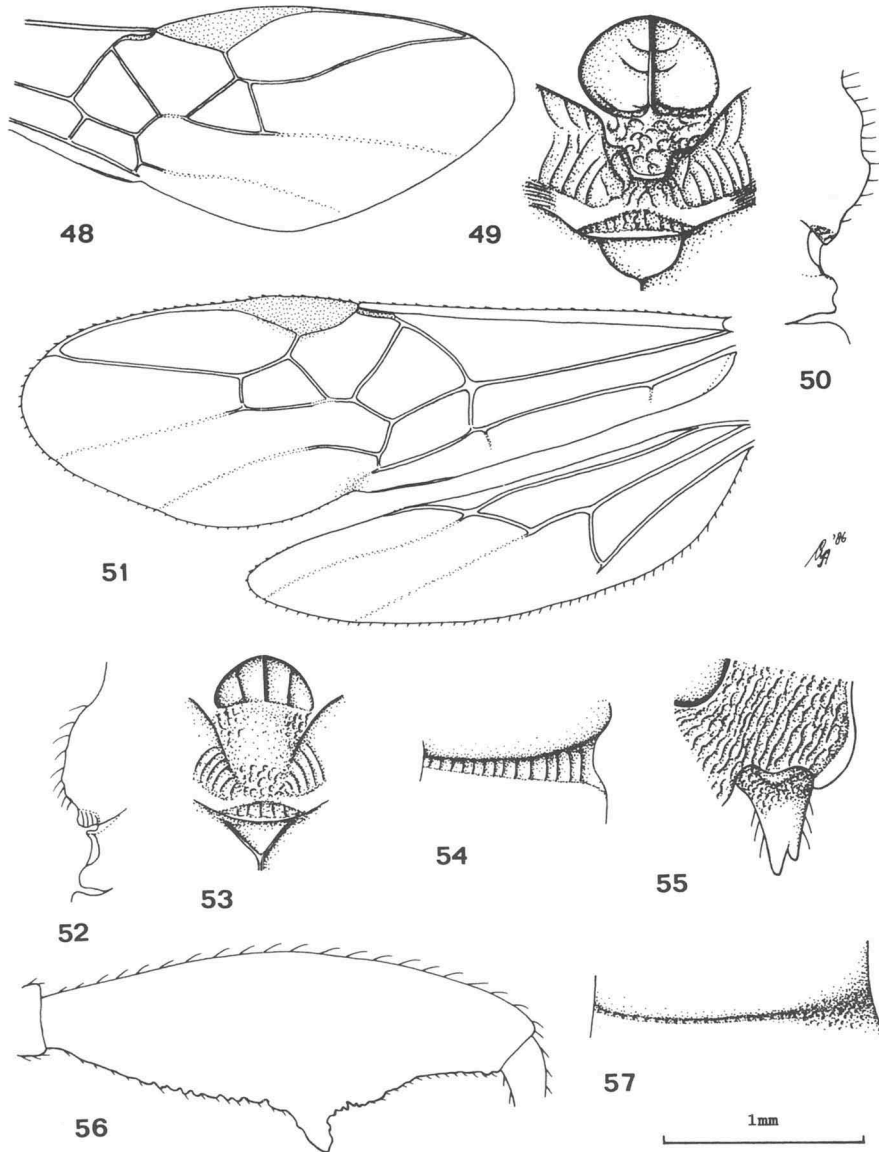


Fig. 48, *Helconidea miroshnikovi* Tobias, distal part of fore wing. Figs. 49, 50, *Helconidea ruspator* (Linnaeus), ♀, Netherlands, Well. Figs. 51-56, *Helconidea meridionalis* spec. nov., ♀, holotype, but 51 of ♂, paratype, Yugoslavia, Belasica. Fig. 57, *Helconidea dentator* (Fabricius), ♀, Czechoslovakia, Malužina; 49, 53, scutellum, dorsal aspect; 50, 52, scutellum, lateral aspect; 51, wings; 54, 57, mesosternal sulcus; 55, malar space and occipital flange; 56, hind femur, outer lateral aspect; 48, after Tobias, 1986; 49, 50, 52-57, scale-line (= 1 ×), 51: 0.4 ×.