The West Palaearctic species of the subfamily Paxylommatinae (Hymenoptera: Ichneumonidae), with special reference to the genus *Hybrizon* Fallén

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The West Palaearctic species of the subfamily Paxylommatinae are reviewed and the species of the genus *Hybrizon* Fallén, 1813, from the Palaearctic region are keyed. *Hybrizon juncoi* (Ceballos, 1957) is recognized as a valid species, a neotype is designated for *Hybrizon latebricola* Nees, 1834, and a lectotype is designated for *Plancus apicalis* Curtis, 1833. *Paxylomma grandis* Rudow, 1883, *Ogkosoma schwarzi* Haupt, 1913, and *Eurypterna arakawae* Matsumura, 1918, are new junior synonyms of *Eurypterna cremieri* (de Romand, 1838).

Introduction

The small subfamily Paxylommatinae Foerster, 1862, has been included traditionally in the family Braconidae Nees, 1812 (Foerster, 1862 (as Pachylommatoidae); Shenefelt, 1969 (as Hybrizoninae); Capek, 1970 (as Paxylommatinae); and van Achterberg, 1976a, 1976b (as Hybrizontinae)), because of the reduction of venation of the fore wing. Tobias (1968, 1988; as Paxylommatidae), Marsh (1979; as Hybrizontidae, 1988; as Paxylommatidae) and Kasparyan (1988a, 1988b; as Paxylommatidae) treat the group as a family. The group is treated as a subfamily of the family Ichneumonidae Latreille, 1802, by Rasnitsyn (1980) and Yu & Horstmann (1997), and indeed the structure of the connection of the second and third metasomal tergites and the venation of the hind wing seem to indicate a closer relationship with the family Ichneumonidae (Sharkey & Wahl, 1987; Wahl & Sharkey, 1988). From the analysis of the 28S ribosomal RNA from *Hybrizon* it may be concluded that the Paxylommatinae are at a very basal position of the Ichneumonidae-lineage (Belshaw et al., 1998).

According to Mason (1981) the Paxylommatinae cannot be included in the Ichneumonidae because of the vein 1r-m of hind wing is still present (its loss is a synapomorphy of the Ichneumonidae and Aculeata). Instead the vein 2r-m should be absent; its absence as a sclerotised vein is one of the synapomorphies of the Braconidae (the other, the joined second and third metasomal tergites, is missing in the Paxylommatinae). Mason's conclusion seems to be wrong; one fossil genus of Paxylommatinae (*Ghilarovites* Kasparyan, 1988) has the position of vein r-m of hind wing more distad than in Braconidae, similar to several Ichneumonidae-Campopleginae (e.g. the genus *Scirtetes* Hartig, 1838) and Ichneumonidae-Neorhacodinae. Obviously, there is a tendency within the Ichneumonidae to have a more basal position of the distal transverse veins, including this vein 2r-m. Most likely the vein r-m of the hind wing of Paxylommatinae is in fact vein 2r-m and it seems best to follow Rasnitsyn (1980) to include the group in the Ichneumonidae because all synapomorphies of the family are shared.

Morphologically similar to some degree is only the subfamily Neorhacodinae, which contains parasitoids of Hymenoptera-Aculeata. It has the same fusion of vein SR and M (= vein 3-SR+M) of fore wing (as a result no r-m is present; fig. 7 in Townes, 1970), the rather basal position of vein 2r-m of hind wing, and the antenna of both sexes consists of only 13 segments. Of the two small genera included in the Neorhacodinae only for *Neorhacodes* Hedicke, 1922, some biological data are known; it appears to attack larvae of the genus *Spilomena* Shuckard, 1838 (family Crabronidae Latreille, 1802). On the basis of the larval head skeleton (Short, 1978) and structure of the ovipositor (Fitton, in litt.), it is suggested that it is an endoparasitoid; the larva makes a fairly thick cocoon.

The biology of the Paxylommatinae is hardly known and based on circumstantial evidence. Obviously the development takes place in ant-nests, from which they have been reared several times, and where the naked cocoons can be found among the ant cocoons (Donisthorpe & Wilkinson, 1930). In The Netherlands females of *Hybrizon buccatus* have been seen to be attracted by the formic acid used during spring ant-wars in the dunes of Meijendel (near The Hague). The females were diving at the fighting ants; the supposed oviposition went very fast and no eggs could be found externally on the ants (pers. comm. G.J. de Bruin). Marsh (1988) refers to three specimens of *Hybrizon rileyi* (Ashmead, 1899) which were attracted to a disturbed nest of *Lasius alienus* (Foerster, 1850). From the circumstantial evidence it is concluded that they probably are endoparasitoids of ants (Capek, 1970; van Achterberg, 1976b).

All three extant genera of the subfamily Paxylommatinae are very similar and can be recognised easily by the typical venation of the wings (figs 1, 10, 15, 23, 41; less in the fossil genus *Tobiasites* Kasparyan, 1988), the slender hind coxa and fore tarsus (figs 2, 31; less in the fossil genera *Tobiasites* and *Paxylommites* Kasparyan, 1988), the reduced palpi (figs 8, 33, 39; less in fossil genera), the narrow clypeus (fig. 25), the low number of antennal segments of both sexes (13; but 23 segments in the fossil genus *Ghilarovites* Kasparyan, 1988) and in extant species the somewhat dilated ovipositor sheath (van Achterberg, 1976a; fig. 14). For a key to the fossil genera of the Paxylommatinae, see Kasparyan (1988a). For the terminology used in this paper, see van Achterberg (1988). An asterisk indicates a new record for the country.

Subfamily Paxylommatinae Foerster, 1862

Pachylommatoidea Foerster, 1862: 228, 247 (to be corrected to Paxylommatinae because it is based on an invalid emendation).
Pachylommatidae; Marshall, 1891: 619.
Pachylommaninae; Szépligeti, 1896: 184, 310.
Pachylommatinae; Dalla Torre, 1898: 1.
Paxylommatinae; Schmiedeknecht, 1907: 537; Capek, 1970: 847; Yu & Horstmann, 1997: 786.
Paxylommidae; Viereck, 1918: 70.
Paxylommatidae; Watanabe, 1935: 90; Tobias, 1968: 14, 1988: 131; Mason, 1981: 433 (priority of family-name); Kasparyan, 1988a: 125; Marsh, 1988: 29.
Paxylommatini; Yu & Horstmann, 1997: 786.
Hybrizontides Marshall, 1872: 109.
Hybrizoninae; Shenefelt, 1969: 1.
Hybrizontidae; van Achterberg, 1976b: 48; Marsh, 1979: 313.
Hybrizontinae; van Achterberg, 1976b: 48.

Eupachylommidae Viereck, 1918: 71.
Ghilarovitinae Kasparyan, 1988a: 128 (fossil).
Tobiasitini Kasparyan, 1988a: 128 (fossil).

Small subfamily with 3 fossil (Oligocene) genera (*Ghilarovites* Kasparyan, 1988; *Tobiasites* Kasparyan, 1988; and *Paxylommites* Kasparyan, 1988) and 3 valid extant genera (*Eurypterna* Foerster, 1862; *Ghilaromma* Tobias, 1988; and *Hybrizon* Fallén, 1813).

Yu & Horstmann (1997) list the genus *Spilomma* Morley, 1909 (type species: *Spilomma falconivibrans* Morley, 1909) as belonging to the subfamily Paxylommatinae, but this is erroneous. The genus *Spilomma* belongs to the family Braconidae and was correctly synonymised by Muesebeck (1936) with the genus *Myiocephalus* Marshall, 1898.

Key to the extant genera of the subfamily Paxylommatinae

1. Hind tibia and basitarsus strongly blade-like compressed (figs 4, 5); in lateral view hind basitarsus 3.0-3.5 times width of second hind tarsal segment (fig. 4); scapus distinctly longer than pedicellus (fig. 6); temples absent (fig. 3); hind tibial spurs strongly widened subbasally and about 0.2 times hind basitarsus (fig. 4); length of fore wing 8-11 mm .... ***Eurypterna*** Foerster
- Hind tibia and basitarsus subcylindrical (figs 7, 12, 16, 22, 32, 34); hind basitarsus about 1.5 times width of second hind tarsal segment (figs 7, 12, 16, 22, 32, 34); scapus about as long as pedicellus or shorter (figs 13, 17, 20, 38); temples present (fig. 29); hind tibial spurs gradually widened subbasally and about 0.3 times hind basitarsus (figs 7, 12, 16, 32, 34) ; length of fore wing about 3 mm 2
2. Vein 3-SR+M of fore wing much longer than vein r (fig. 10); vein SR1 of fore wing distinctly curved (fig. 10) .... ***Ghilaromma*** Tobias
- Vein 3-SR+M of fore wing shorter than vein r (figs 18, 23, 41) or nearly absent (fig. 11); vein SR1 of fore wing straight (figs 15, 18, 21, 41) or nearly so (figs 11, 23) .... ***Hybrizon*** Fallén

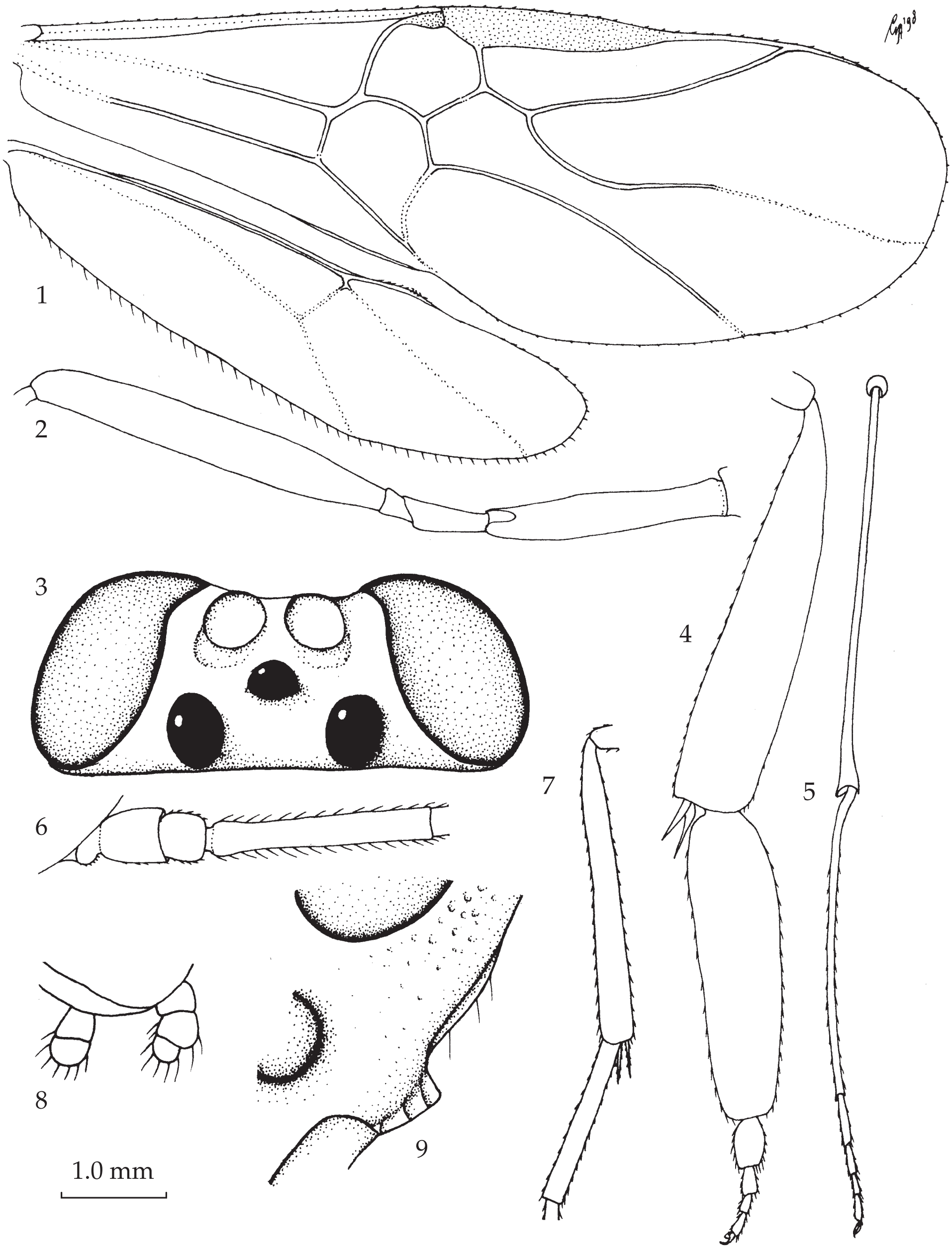
Genus *Eurypterna* Foerster, 1862

Eurypterna Foerster, 1862: 247; Shenefelt, 1969: 2 (as synonym of *Hybrizon* Fallén, 1813); Marsh, 1979: 313 (id.), 1988: 30 (id.); Tobias, 1988: 135, 141-142 (as valid genus; key to species); Yu & Horstmann, 1997: 786. Type species (by monotypy): *Paxilomma cremieri* de Romand, 1838.

Ogkosoma Haupt, 1913: 247; Shenefelt, 1969: 2 (as synonym of *Hybrizon* Fallén, 1813); Marsh, 1979: 313 (id.), 1988: 30 (id.). Type species (by monotypy): *Ogkosoma schwarzi* Haupt, 1913 (= *Paxilomma cremieri* de Romand, 1838, **syn. nov.**).

Eurypterna cremieri (de Romand, 1838)
(figs 1-6)

Paxilomma cremieri de Romand, 1838: 434, pl. 12B: 1-6 (Holotype probably lost; could not be traced in the de Saussure collection, Genève (Dr C. Besuchet, in litt.)).
Eurypterna cremieri; Foerster, 1862: 247.
Hybrizon cremieri; Shenefelt, 1969: 4.
Eurypterna cremeri [sic!]; Tobias, 1988: 136.
Paxylomma grandis Rudow, 1883: 246 (type not found). **Syn. nov.**



Figs 1-6, *Eurypterna cremieri* (de Romand), ♀, ?Germany; figs 7-9, *Ghilaromma fuliginosi* (Wilkinson), ♀, Germany, Itzehoe. 1, wings; 2, basal half of hind leg, lateral aspect; 3, head, dorsal aspect; 4, apical half of hind leg, lateral aspect; 5, id., but dorsal aspect; 6, basal segments of antenna; 7, hind tibia and basitarsus, lateral aspect; 8, palpi; 9, detail of malar space. 1: scale-line (= 1 ×); 2, 4, 5: 1.1 ×; 3, 6: 3.0 ×; 7: 1.7 ×; 8: 9.4 ×; 9: 8.5 ×.

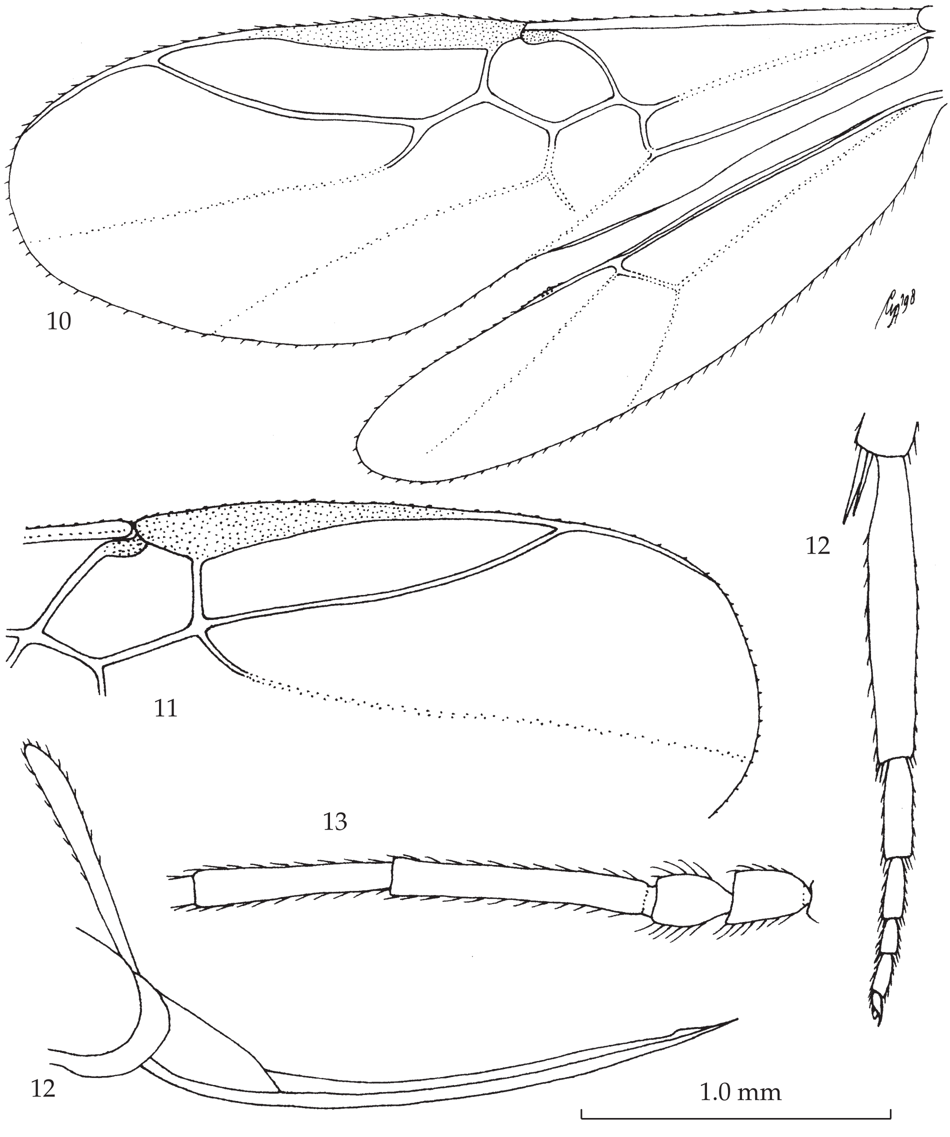


Fig. 10, *Ghilaromma fuliginosi* (Wilkinson), ♀, Netherlands, Groningen; figs 11-14, *Hybrizon ghilarovi* Tobias, ♀, Bulgaria, Brodilovo. 10, wings; 11, antero-distal part of fore wing; 12, hind tarsus, lateral aspect; 13, basal segments of antenna; 14, ovipositor and its sheath. 10: scale-line (= 1 ×); 11, 12: 1.2 ×; 13, 14: 1.8 ×.

Hybrizon grande; Shenefelt, 1969: 4.
Eurypterna grandis; Tobias, 1988: 136.
Ogkosoma schwarzi Haupt, 1913: 53 [not examined]; Shenefelt, 1969: 4 (as synonym of *Hybrizon grande* (Rudow, 1883)); Tobias, 1988: 136 (as synonym of *E. grandis*). **Syn. nov.**
Eurypterna arakawae Matsumura, 1918: 121 [not examined]; Shenefelt, 1969: 4 (as synonym of *Hybrizon grande* (Rudow, 1883)); Tobias, 1988: 136 (as synonym of *E. grandis*). **Syn. nov.**

Only one species known from the West Palaearctic region. The differences given in literature between *E. cremieri* and *E. grandis* are based on the inaccurate figures (which are obviously just sketches) of de Romand (1838). The possible synonymy is already indicated by Tobias (1988).

Distribution.— Austria, Czechoslovakia, France, Germany, Italy, Japan, Netherlands. The specimen reported from The Netherlands by Wasmann (1898) could neither be found in the Wasmann collection (Maastricht) nor in the Natural History Museum (London). It was identified by Rev. T.A. Marshall, it originated from Exaeten (near Roermond, Limburg) and was found in a *Formica rufa*-nest.

Note.— In addition two East Palaearctic species are known: *E. rufiventris* Tobias, 1988, is very similar to *E. cremieri* (having the hind basitarsus twice as long as remainder of tarsus, and the face slightly higher than its minimum width), but it has the hind tibia, the metasoma apically and the propodeum pale yellowish-brown (these are dark brown in *E. cremieri*). *E. angustifacialis* Tobias, 1988, has the hind basitarsus 3 times as long as remainder of tarsus and the height of the face about twice its minimum width.

Genus *Ghilaromma* Tobias, 1988

Ghilaromma Tobias, 1988: 135, 139; Yu & Horstmann, 1997: 786. Type species (by original designation): *Ghilaromma orientalis* Tobias, 1988.

Ghilaromma fuliginosi (Wilkinson, 1930)
(figs 7-10)

Paxylomma fuliginosi Wilkinson in Donisthorpe & Wilkinson, 1930: 87 (BMNH, ♀, 3.c.910).
Hybrizon fuliginosi; Shenefelt, 1969: 4.
Ghilaromma fuliginosi; Tobias, 1988: 135; Yu & Horstmann, 1997: 786.

Material.— 1 ?♀ (RMNH), "[Netherlands], Groning[en], C. Muld[er]" (damaged, with round, 19th century label by Snellen van Vollenhoven); 7 ♀♀ (one female held between mandibles of ant!; coll. Wasmann, Maastricht), "[Germany], Itzehoe, b[ei] *Las[ius] fuliginosus*, ix.[19]02, cf. VII, S. 71".

Only species known from the West Palaearctic region. Variation of examined specimens of *G. fuliginosi*: length of fore wing 3.4-3.5 mm, of body 4.1-4.6 mm, length of ovipositor sheath 0.12-0.15 times fore wing.

Distribution.— England, *Germany, ?Japan, *Netherlands.

Notes.— The Japanese record (Watanabe, 1984) of this species may refer to *G. orientalis* Tobias, 1988, which is very similar and differs mainly by having only the basal half of the first metasomal tergite rugose (*G. fuliginosi* has the basal half of the metasoma mainly longitudinally aciculate). The third known species, *G. ussuriensis* Tobias, 1988, differs from both species by having vein 3-SR+M of fore wing about twice as long as vein r.

Genus *Hybrizon* Fallén, 1813

Hybrizon Fallén, 1813: 19 (no species); Shenefelt, 1969: 2; Marsh, 1979: 313; Tobias, 1988: 133-134 (key to Palaearctic species); Marsh, 1988: 30-31 (key to Nearctic species); Yu & Horstmann, 1997: 786. Type species (by subsequent monotypy): *Hybrizon latebricola* Nees, 1834 (= *Hybrizon buccatus* (de Brébisson, 1825)).

Paxylomma de Brébisson, 1817: 66 (no species); Shenefelt, 1969: 2 (as synonym of *Hybrizon* Fallén, 1813); Marsh, 1979: 313 (id.), 1988: 30 (id.); Tobias, 1988: 133 (id.). Type species (by subsequent monotypy): *Paxylomma buccata* de Brébisson, 1825.

Paxyloma Stephens, 1835: 119; Shenefelt, 1969: 2. Misspelling for *Paxylomma* de Brébisson, 1817.

Paxylomme Wesmael, 1835: 88; Shenefelt, 1969: 2. Misspelling for *Paxylomma* de Brébisson, 1817.

Paxyllomma Curtis, 1837: 115; Shenefelt, 1969: 2. Misspelling for *Paxylomma* de Brébisson, 1817.

Paxylloma Blanchard, 1840: 335; Shenefelt, 1969: 2. Misspelling for *Paxylomma* de Brébisson, 1817.

Pachylomma Ratzeburg, 1848: 53; Shenefelt, 1969: 2. Invalid emendation of *Paxylomma* de Brébisson, 1817.

Plancus Curtis, 1833: 188; Shenefelt, 1969: 2 (as synonym of *Hybrizon* Fallén, 1813); Marsh, 1979: 313 (id.), 1988: 30 (id.); Tobias, 1988: 133 (id.). Type species (by monotypy): *Plancus apicalis* Curtis, 1833 [examined; = *Hybrizon buccatus* (de Brébisson, 1825)].

Eupachylomma Ashmead, 1894: 58; Shenefelt, 1969: 1 (as valid genus); Marsh, 1979: 313 (as synonym of *Hybrizon* Fallén, 1813), 1988: 30 (id.). Type species (by original designation): *Wesmaelia rileyi* Ashmead, 1889.

Notes.— Both Nearctic species belong to the subgenus *Eupachylomma* Ashmead, 1894, because the area behind the malar space is flat or nearly so (more or less depressed in the subgenus *Hybrizon*), vein CU1b of fore wing is shorter than vein 3-CU1 (about as long in the subgenus *Hybrizon*) and the hind basitarsus is less enlarged.

Key to Palaearctic species of the genus *Hybrizon* Fallén

1. Face yellow; hind basitarsus slender, not distinctly widened compared to second tarsal segment (figs 2-4 in Tobias, 1988); distance between posterior ocelli about 1.5 times diameter of ocellus; basal cell of fore wing largely setose; East Palaearctic (Far East Russia) .... ***H. flavofacialis*** Tobias, 1988

\- Face dark brown, except near its tentorial pits; hind basitarsus distinctly widened compared to second tarsal segment (figs 12, 16, 22, 32, 34); distance between posterior ocelli usually about twice diameter of ocellus (fig. 29); setosity of basal cell of fore wing variable 2

2. Basal cell of fore wing (except basally) largely densely setose (fig. 19); posteriorly propodeum with strong curved carinae (but sometimes disappearing in rugosity); in lateral view length of hind basitarsus about 6 times its maximum width (figs 12, 16); vein 1-M of fore wing weakly and gradually curved anteriorly or straight (figs 11, 15, 18, 19); third antennal segment comparatively slender (figs 13, 17); ventral half of face and scutellum granulate; disco-submarginal cell of fore wing comparatively slender (figs 11, 15, 18); ventral half of metapleuron rugose or densely rugulose; maximum width of face 1.2-1.3 times its minimum width; marginal cell of fore wing 4-5.5 times longer than maximum width (figs 11, 18) 3

\- Basal cell of fore wing largely glabrous, with at most 15 setae; posteriorly propodeum with weak or obsolescent curved carinae (fig. 37); in lateral view length of hind basitarsus 4-5 times its maximum width (figs 22, 32, 34); vein 1-M of fore wing stronger curved anteriorly (figs 21, 23, 41); third antennal segment less slender (figs 20, 38); ventral half of face and scutellum largely smooth; disco-submarginal cell of fore wing comparatively robust (figs 21, 23, 41); ventral half of metapleuron coriaceous; maximum width of face 1.4-1.5 times its minimum width (fig. 25); marginal cell of fore wing 5-7 times longer than maximum width (figs 21, 23, 41) 4

3\. Pedicellus as wide as scapus, and shorter than scapus (fig. 13), similarly yellowish coloured as scapus; vein 1-M of fore wing straight (fig. 11); pterostigma widened basally (fig. 11); setose part of ovipositor sheath comparatively long (fig. 14), about 0.6 times as long as second metasomal tergite; anteriorly propodeum granulate; lower half of mesopleuron superficially granulate or smooth; parastigma ivory; East Palaearctic and Southeast Europe .... ***H. ghilarovi*** Tobias, 1988

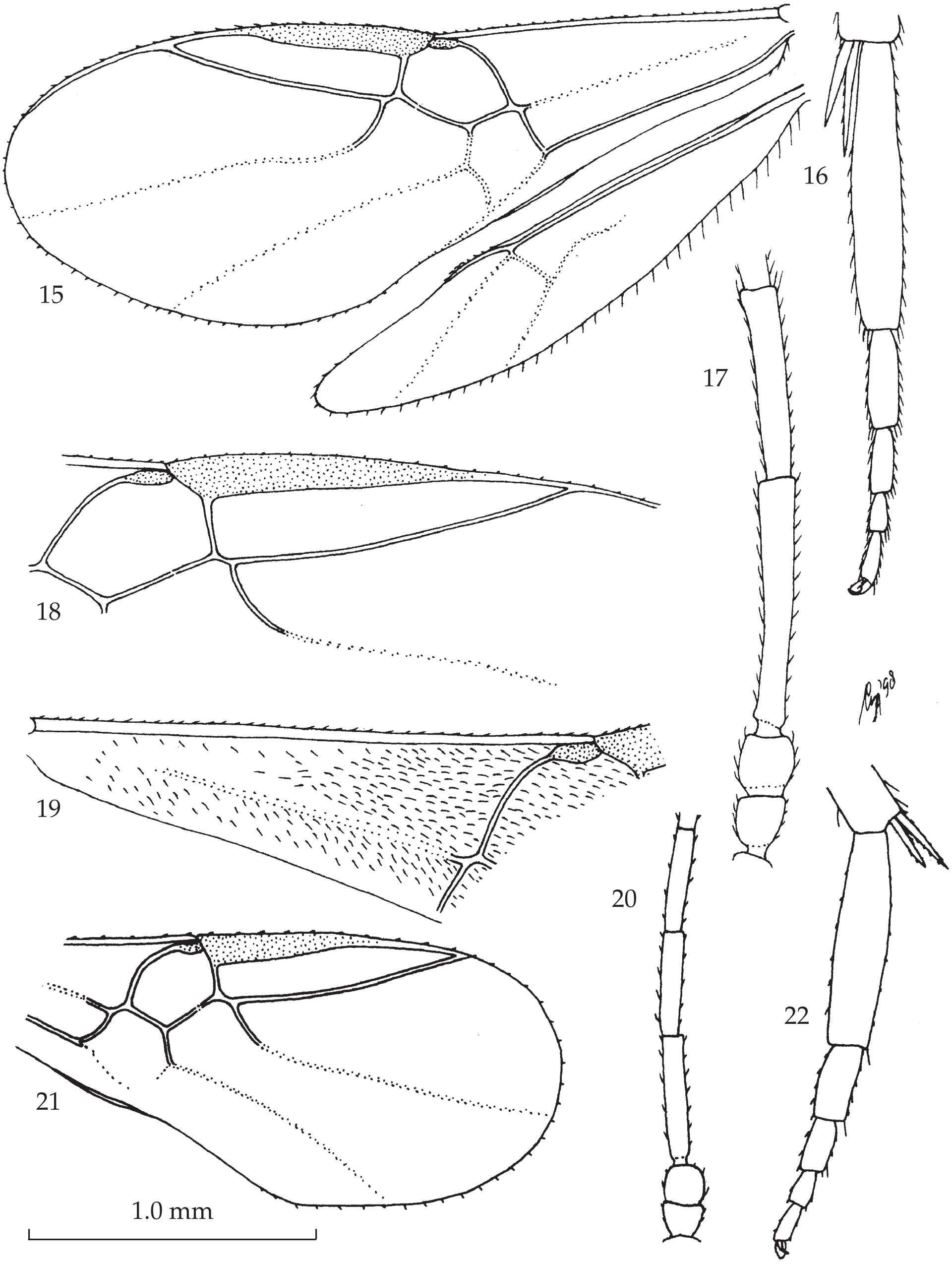
\- Pedicellus wider and longer than scapus (fig. 17), dark brown, contrasting with yellowish scapus; vein 1-M of fore wing weakly curved anteriorly (figs 15, 18, 19); pterostigma subparallel-sided basally (figs 15, 18); setose part of ovipositor sheath shorter, 0.2-0.4 times as long as second tergite; anteriorly propodeum distinctly and densely rugulose or finely rugose; lower half of mesopleuron distinctly granulate; parastigma dark brown; West Palaearctic .... ***H. pilialatus*** Tobias, 1988

4\. Vein r of fore wing issued distinctly removed from base of pterostigma (fig. 41); mesoscutum without bands of punctures, at most with some punctulation (fig. 35); vein 1-M of fore wing as dark as vein 2-CU1 of fore wing; scapus about as large as pedicellus (fig. 38); scutellum (except medio-anteriorly) and more or less notaulic area of mesoscutum ivory (fig. 35); length of fore wing 3.0-3.5 mm; propodeum distinctly rugose-granulate (fig. 37); Southwest Palaearctic (Spain) .... ***H. juncoi*** (Ceballos, 1957)

\- Vein r of fore wing issued close to base of pterostigma (figs 21, 23); mesoscutum with pair of bands of distinct punctures (fig. 26), rarely punctures largely absent or obsolescent; vein 1-M of fore wing paler than vein 2-CU1 of fore wing; scapus somewhat smaller than pedicellus (fig. 20); scutellum (except sometimes laterally) and notaulic area of mesoscutum usually dark brown; length of fore wing 2-3 mm; propodeum largely smooth or granulate, except for medial carinae (fig. 28); Northwest and East Palaearctic .... ***H. buccatus*** (de Brébisson, 1825)
Note.— The relative length of vein r of fore wing is very variable; typical *H. buccatus* has vein r 1.6-3.5 times vein 3-SR+M, but shorter (1.2-1.4 times vein 3-SR+M; var. *latebricola* Nees, 1834) occurs as well.

Hybrizon buccatus (de Brébisson, 1825)
(figs 20-33, 42)

Paxylomma buccata de Brébisson, 1825: 23 (type lost).
Hybrizon buccata; Shenefelt, 1969: 3.
Hybrizon buccatus; Yu & Horstmann, 1997: 786.
Plancus apicalis Curtis, 1833: 188; Shenefelt, 1969: 3 (as synonym of *H. buccata* (de Brébisson, 1825)). Lectotype here designated, ♀ (NMV).



Figs 15-19, *Hybrizon pilialatus* Tobias, ♀, Italy, Funes; figs 20-22, *H. buccatus* (de Brébisson), ♀, lectotype of *Plancus apicalis* Curtis. 15, wings; 16, 22, hind tarsus, lateral aspect; 17, 20, basal segments of antenna; 18, antero-distal part of fore wing; 19, basal half of fore wing; 21, apical half of fore wing. 15: 0.9 ×; 16, 17: 2.0 ×; 18, 19, 22: 1.3 ×; 20: 1.5 ×; 21: scale-line (= 1 ×).

Hybrizon latebricola Nees, 1834: 28-29; Shenefelt, 1969: 3 (as synonym of *H. buccata* (de Brébisson, 1825)). Neotype here designated, ♀ (RMNH), "Holland, Asperen, 29.vii.1972, C.J. Zwakhals".

Hybrizon laevigatus Hartig in Ratzeburg, 1848: 53 (as synonym of *H. buccatus*).

N.B. *Hybrizon pubicornis* Zetterstedt, 1840 (listed as synonym by Shenefelt (1969), belongs to the genus *Anteon* Jurine, 1807 (Dryinidae) [examined]. Holotype, ♂ (ZIL), "*H. pubicornis* ♂, Jok. Pro.", "1984/371".

Most common species in Northwest Europe; in The Netherlands common in the dunes where *Formica*-nests are common. The five syntypes of *Plancus apicalis* Curtis, 1833 (NMV) are all collected near London. The lectotype has the length of the fore wing 2.4 mm, and of the body 3.0 mm, the propodeum is only coriaceous, head, mesosoma, pedicellus, fourth metasomal tergite (except base of latter) and following tergites are dark brown, scapus, tegulae, legs and basal three metasomal tergites are yellowish.

In the original description of *Hybrizon latebricola* Nees (1834) mentioned that the maxillary and labial palpi should have 4 and 3 segments, respectively. The fourth minute segment of the maxillary palp referred to ("quarto minimo, ovato, obtuso") is obviously a mistake, only the somewhat separated protruding tip of the comparatively long third segment may have given the impression of a fourth segment (fig. 33). From the description it is most likely that this species is a synonym of *H. buccatus* (only comparatively dark) and not of *H. fuliginosi*; to stabilize the taxonomy of the group a neotype is designated.

Distribution.— Austria, Bulgaria (RMNH: Nikolovo (Rhodopi Mts); Karamansi (id.); Melnik (near Petric); Pastra (near Rila); Sofia; Brodilovo (Strandzha)), Central Asia, European Russia, Finland, France (including Corsica; RMNH: nr Châtillon, Drôme), Germany, *Italy (RMNH: Sarntal, 1250 m), Japan, Mongolia, *Netherlands (RMNH: (dunes:) Westenschouwen, Renesse, Rockanje, Oostvoorne, Meijendel, Overveen, (sandy regions:) Ede, Nunspeet, Putten, Wijster, Melick; (other areas:) Asperen, Vorden, Deventer, St. Pietersberg (c. 150 m)), Poland (RMNH: Gdansk; Mirków), Siberia, Sweden (RMN: Transtrand, Värmland; Boda Kyrkby, Dalarna), Switzerland, Spain.

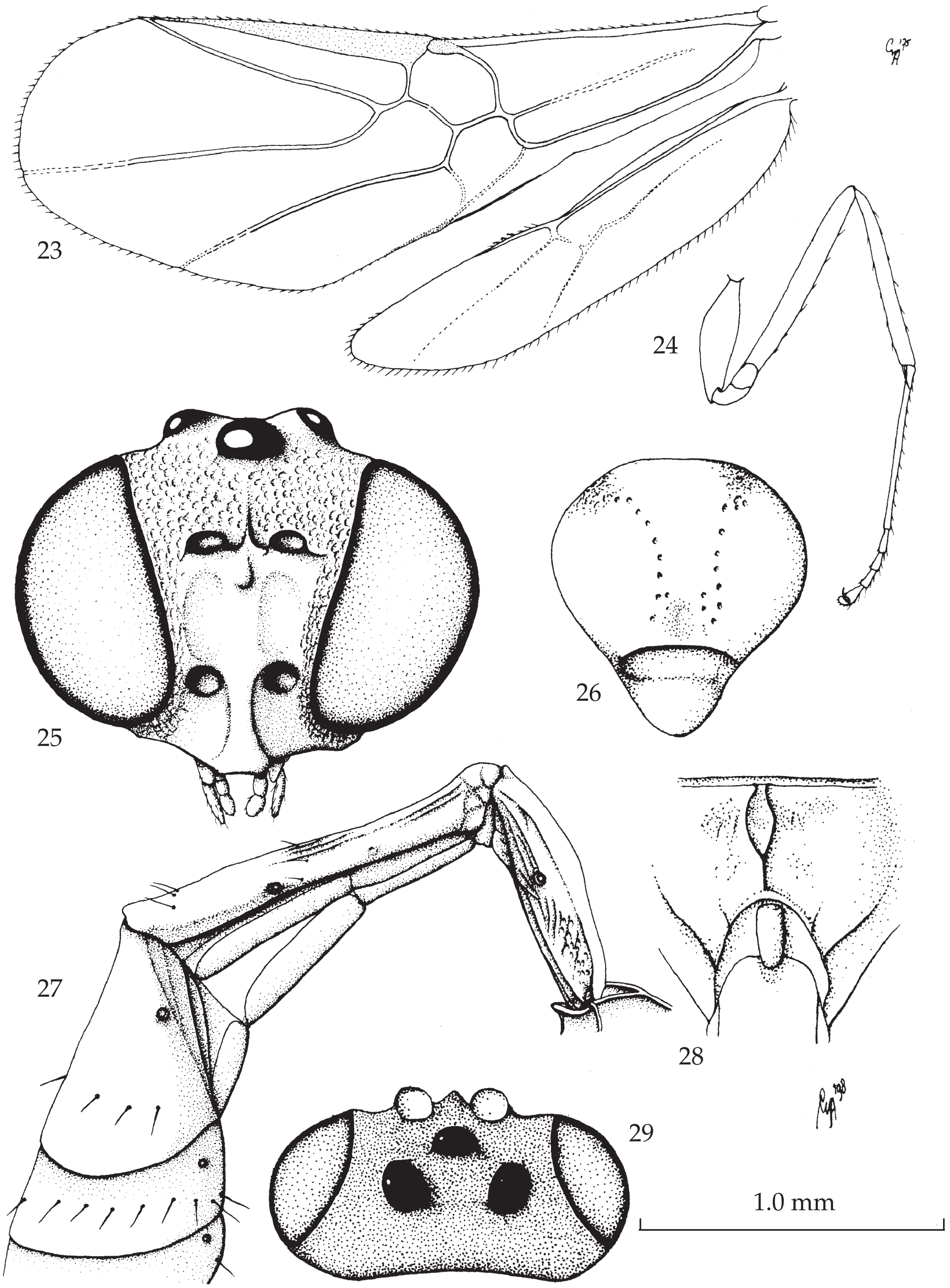
Hybrizon ghilarovi Tobias, 1988
(figs 11-14)

Hybrizon ghilarovi Tobias, 1988: 133, 136-137, figs 1: 1-4; Yu & Horstmann, 1997: 786.

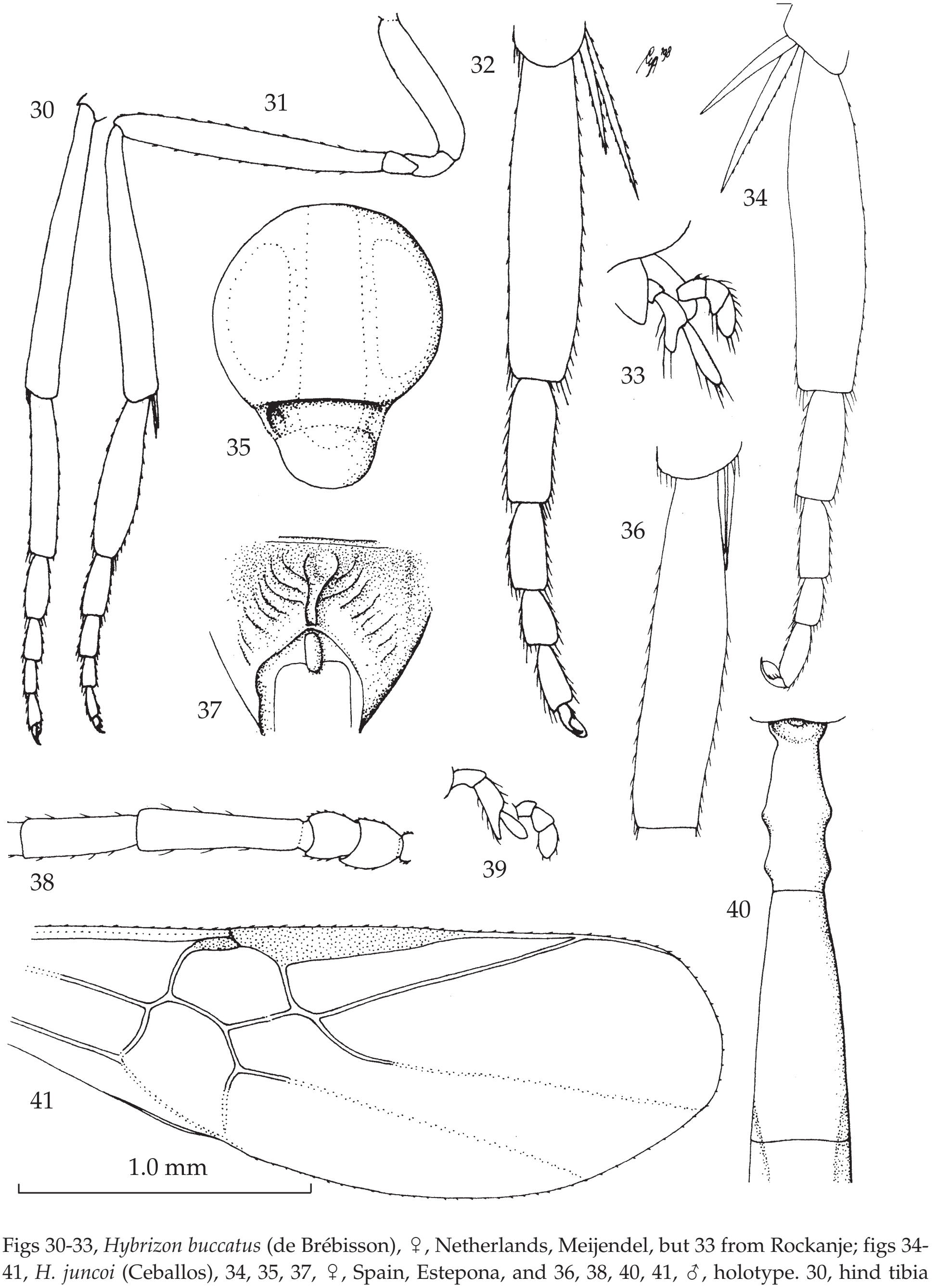
Material.— 1 ♀ (RMNH), "SE Bulgaria, [Strandzha], Brodilovo, 80 km S Burgas, c. 30 m, Mal. trap, 29.vii-2.viii.1997, C. v. Achterberg & P.V. Atanassova"; 1 ♀ (RMNH), "SW Bulgaria, Pastra, near Rila, c. 850 m, Mal. tr[ap] 7, 1-28.vi.1998, C. v. Achterberg, R. de Vries, P.V. Atanassova, RMNH'98".

The specimens from Bulgaria differ by having the marginal cell of fore wing 5.5-5.7 times longer than wide and by virtually lacking the fused vein 3-SR + M of fore wing (fig. 11, but intermediate in specimen from Pastra), which according to Tobias (1988) occurs also in the Bulgarian paratype of *H. pilialatus* Tobias.

Distribution.— *Bulgaria, Far East Russia.



Figs 23-29, *Hybrizon buccatus* (de Brébisson), ♀, Netherlands, Meijendel. 23, wings; 24, fore leg, lateral aspect; 25, head, frontal aspect; 26, mesonotum, dorsal aspect; 27, basal segments of metasoma; 28, propodeum, dorsal aspect; 29, head, dorsal aspect. 23, 24: scale-line (= 1 ×); 25, 27: 2.0 ×; 26: 1.4 ×; 28: 2.1 ×; 29: 1.6 ×.



Figs 30-33, *Hybrizon buccatus* (de Brébisson), ♀, Netherlands, Meijendel, but 33 from Rockanje; figs 34-41, *H. juncoi* (Ceballos), 34, 35, 37, ♀, Spain, Estepona, and 36, 38, 40, 41, ♂, holotype. 30, hind tibia and tarsus, dorsal aspect; 31, hind leg, lateral aspect; 32, 34, hind tarsus, lateral aspect; 33, 39, palpi; 35, mesonotum, dorsal aspect; 36, hind basitarsus, lateral aspect; 37, propodeum, dorsal aspect; 38, basal segments of antenna; 40, first and second metasomal tergites, dorsal aspect; 41, fore wing (except for its basal part). 30, 31: 1.2 ×; 32: 2.0 ×; 33: 2.6 ×; 34, 37: 1.3 ×; 35, 40, 41: scale-line (= 1 ×); 36: 2.3 ×; 38: 1.5 ×; 39: 2.2 ×.

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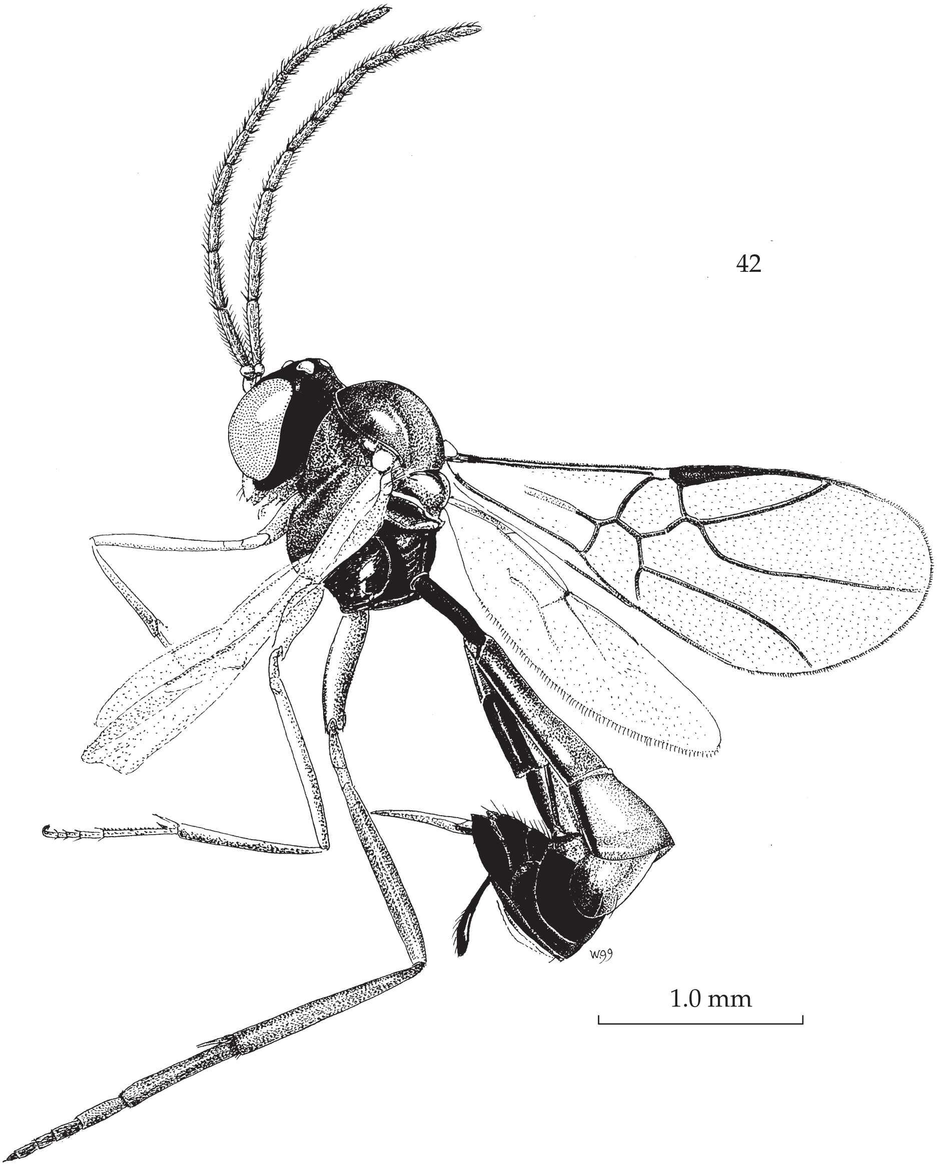

Fig. 42, *Hybrizon buccatus* (de Brébisson), ♀, Bulgaria, Brodilovo; habitus, latero-dorsal aspect. Drawing by A. Watsham.

Hybrizon juncoi (Ceballos, 1957)
(figs 34-41)

Pachylomma juncoi Ceballos, 1957: 11; Tobias, 1988: 135 (unplaced) [examined].
Hybrizon juncoi; Shenefelt, 1969: 4.

Material.— Holotype, ♂ (MNCN), "[Spain]. El Pardo, 13.vi.[19]43, Junco", "Tipo", "Holotipo", "*Pachylomma juncoi* G. Ceballos det."; 1 ♀ (RMNH), Museum Leiden, Spanje, Estepona, 3.x.1952, Bär, Blöte, de Jong & Osse"; 1 ♀ (Valencia), "Esp.: Huesca, Castillonroy, 17.ix.1985, leg. J.V. Falcó".

The holotype of *H. juncoi* could be examined through the kindness of Dr J.V. Falcó (Alicante) and the authorities of the Museo Nacional de Ciencias Naturales, Madrid. The identity of this species has always been an enigma, and only after the examination of the male holotype it could be concluded that it is a valid species, which is very similar to *H. buccatus*. The holotype has the basal cell of fore wing largely glabrous, length of fore wing 3.1 mm, and of body 4.3 mm, scapus somewhat larger than pedicellus (fig. 38), notaulic area, scutellum (except antero-medially) and stripe on mesopleuron ivory, but face dark brown; hind basitarsus is somewhat convex-sided in dorsal view, and 4.5 times longer than wide, and the mesoscutum is without any punctation (fig. 35). The female specimens have the mesoscutum largely dark brown and the ivory band of the mesopleuron is absent, the maximum width of the face is 1.4 times its mimimum width, and distance between anterior tentorial pits nearly twice diameter of tentorial pit.

Distribution.— Spain.

Hybrizon pilialatus Tobias, 1988
(figs 15-19)

Hybrizon pilialatus Tobias, 1988: 134, 138-139, figs 2: 5-8; Yu & Horstmann, 1997: 786.

Material.— 1 ♀ (RMNH) "[Germany], B.R.D., Bad Kreuznach, Dielkirchen, Mal[aise] F.[= trap], 5-19.vii.1988, leg. Mohr, Risch, Sorg"; 1 ♀ (RMNH) "Italia, prov. Bolzano, Funes -[Villnöss], 20.vii-9.viii.1968, G. van Rossem", "S. Pietro, 1200-1400 m"; 1 ♀ (RMNH), "W Bulgaria, Sofia, Univ. Exper. Farm, c. 600 m, Mal. tr[ap] 8, 2.ix-29.x.1997, P.V. Atanassova, RMNH'98".

Usually with a more coarsely sculptured metasoma than *H. buccatus*, but also the latter may have a coarsely striate or costate second tergite, and the notaulic area of *H. pilialatus* is only granulate.

Distribution.— Bulgaria, *Germany, *Italy, European part of Russia.

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MNCN stands for Museo Nacional de Ciencias Naturales, Madrid, Spain, NMV for National Museum of Victoria, Abbotsford, Victoria, Australia, RMNH for Nationaal Natuurhistorisch Museum. Naturalis, Leiden, Netherlands, and ZIL for Zoological Institute, Lund, Sweden.

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