

# Revisionary notes on the subfamily Homolobinae (Hymenoptera: Braconidae)

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Key words: Hymenoptera; Braconidae; Homolobinae; *Homolobus*; Indo-Australian; Indonesia; New Guinea; Australia; distribution; key.

Two new species of the genus *Homolobus* Foerster, 1862, one from Lombok, Java, the other from New Guinea, are described. The genus *Westwoodiella* Szépligeti, 1904, is redescribed and illustrated; the new tribe Westwoodiellini is created to include it in the subfamily Homolobinae. *Rogas pectoralis* Herrich-Schäffer, 1838 is synonymized with *Homolobus discolor* (Wesmael, 1835) syn. nov., and *R. simplex* Herrich-Schäffer, 1838 with *Homolobus annulicornis* (Nees, 1834) syn. nov. *Homolobus simplex* (Watanabe, 1932) nec Herrich-Schäffer, 1838 is renamed as *H. watanabei* nom. nov.

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## Introduction

The subfamily Homolobinae van Achterberg, 1979 has been completely revised by van Achterberg (1979). Among material kindly made available by Mr G. Nishida (BPBM) an additional new species of *Homolobus* Foerster, 1862 (Braconidae: Homolobinae: Homolobini) was discovered, closely related to another recently described species from New Guinea, *Homolobus hirashimai* Maetô, 1982. During the 1991-expeditions of the Nationaal Natuurhistorisch Museum to Indonesia, a second undescribed species was found on Lombok. Both species are described and illustrated below. Among the genera to be examined for the revision of the genera of the Braconidae one genus, *Westwoodiella* Szépligeti, 1904, proved to be highly aberrant and not to fit in the subfamily Helconinae Foerster, 1862. In fact, it was found to have more affinity with the Homolobinae: first tergite without dorsal carinae and narrowed behind spiracles (fig. 26), and possession of a distinct antescutal depression (figs 18, 25). Therefore, it is included into the Homolobinae, occupying its own tribe, the Westwoodiellini tribus nov. In addition, notes on some species described by Herrich-Schäffer (1838) are added.

The biology of *Westwoodiella* and of both new taxa is unknown, but members of the tribe Homolobini are endoparasites of larvae mainly of Noctuidae and Geometridae, but Lymantriidae and Lasiocampidae are also parasitised (van Achterberg, 1979).

For the identification of the subfamily Homolobinae, see van Achterberg (1990), and for identification of the genera of the Homolobinae, see van Achterberg (1979). For the terminology used in this paper, see van Achterberg (1988).

## Descriptions

*Homolobus (Oulophus) intermedius* spec. nov.

(figs 1-13)

Material.— Holotype, ♀ (BPBM), "New Guinea, NE, Kepilam, 2420-2490 m, 23.vi.1963, J. Sedlacek, coll.". Paratypes (2 ♀♀): 1 ♀ (BPBM), "New Guinea, NE, Kegsugl, nr Mt. Wilhelm, 2500-2720 m, 1.vii.1963", "J. Sedlacek, Bishop"; 1 ♀ (RMNH), "New Guinea: NE, Mt. Kaindi, 16 km SW of Wau, 2200 m, 8-9.vi.1962", "light trap, J. Sedlacek, Bishop".

Holotype, ♀, length of body 7.2 mm, of fore wing 8.0 mm.

Head.— Antennal segments 44, length of third segment 1.2 times fourth segment, third segment with antennal carina (fig. 5; but absent in one paratype), length of third, fourth and penultimate segments 4.2, 3.6 and 2.6 times their width, respectively (figs 3, 8); length of maxillary palp 1.3 times height of head; length of fourth segment of labial palp 6.3 times length of third segment; in dorsal view length of eye twice temple (fig. 7); temple directly narrowed posteriorly; OOL:diameter of ocellus:POL = 4:6:4; frons slightly concave and with some striae (fig. 7); vertex flat and (nearly) smooth; face rather flat, punctulate, with some rugae dorsally and coriaceous (fig. 6); clypeus rather convex and sparsely punctate, its ventral margin rather thin, and straight medially; length of malar space 0.5 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum smooth dorsally, crenulate medio-anteriorly and posteriorly, and punctulate medio-ventrally (fig. 4); mesopleuron smooth (as precoxal sulcus); metapleuron punctulate ventrally, remainder largely smooth; mesoscutum indistinctly punctulate, completely setose; surface of propodeum smooth, except some rugae medio-anteriorly, and some indistinct costal rugae, posteriorly with a V-shaped carina (fig. 13).

Wings.— Fore wing: SR1 slightly bent, nearly straight (fig. 1); r:3-SR:SR1 = 12:23:86; 2-SR:3-SR:r-m = 21:23:12; area basal of 2A largely glabrous (fig. 12); 2A basally sclerotized. Hind wing: SC+R1 slightly bent; 2-SC+R longitudinal (fig. 1); SR largely unsclerotized and basally straight (fig. 1).

Legs.— Hind coxa densely punctulate; all claws with small subapical tooth, weakly concave basal of subapical tooth (fig. 10); inner claw of hind tarsus subequal to outer claw, but somewhat irregularly convex subbasally (figs 9, 10); length of femur, tibia and basitarsus of hind leg 6.2, 9.5, and 8 times their width, respectively; length of hind tibial spurs 0.6 and 0.5 times hind basitarsus.

Metasoma.— Length of first tergite 2.1 times its apical width, its surface largely smooth, with some micro-sculpture, its dorsal carinae weakly developed basally (fig. 2); length of ovipositor sheath 0.12 times fore wing.

Colour.— Brownish-yellow; fore and middle legs somewhat paler than hind leg; basal quarter of flagellum dark brown; scapus and pedicellus infuscated; stemmaticum black.

Variation.— Length of fore wing 7.1-8.5 mm, and of body 6.3-8.9 mm, length of ovipositor sheath 0.09-0.12 times fore wing; no distinct carina or rugae on middle of propodeum of one paratype, with antennal carina visible or absent; antennal base may be only yellowish-brown.

Note.— At first sight intermediate between the subgenera *Homolobus* Foerster, 1862 and *Oulophus* van Achterberg, 1979, because of the slightly concave inner hind claws and the holotype has the antennal carina present (fig. 5). I include this species in the subgenus *Oulophus* because the claws are only slightly concave, the antennal carina of the ♀ can be absent, and the apparently most closely related species belong to *Oulophus*. The new species appears to be most closely related to *H.(O.) hirashimai* Maetô, 1982 (holotype, ♀ (BPBM) examined: "New Guinea, Wau [c. 1200 m], 22.vii.1969, Y. Hirashima leg."). *H. hirashimai* has the inner hind claw very similar to

the outer claw (figs 14, 15), no indication of an antennal carina at the base of the flagellum, length of malar space 0.45 times basal width of mandible, length of penultimate antennal segment twice its width, vein r of hind wing present, length of fore wing 5.7 mm, and length of ovipositor sheath 0.13 times fore wing. Both species should be inserted in the key by van Achterberg (1979: 329) as follows:

- 6a. Precoxal suture with some rugae antero-dorsally (fig. 553, van Achterberg, 1979); costulae of propodeum at least partly developed (fig. 553); vein cu-a of fore wing parallel to vein 3-CU1; Holarctic ..... *H. flagitator* (Curtis)
- Precoxal suture smooth antero-dorsally (fig. 4); costulae of propodeum usually absent (fig. 13); vein cu-a of fore wing variable ..... 6b
- 6b. Hind claw with rather wide lamelliform subapical tooth, and inner hind claw straight medio-ventrally (figs 570, 571, l.c.); antennal segments 45-48; first metasomal tergite slender (fig. 661, l.c.), length 2.3-2.7 times its apical width; second metasomal suture obsolescent medially; S Nearctic, Neotropical .....  
..... *H. acares* van Achterberg
- Hind claw with comparatively slender subapical tooth, and inner hind claw slightly concave medio-ventrally (figs 10, 14); antennal segments 42-44; first metasomal tergite more robust (fig. 2), length 2.0-2.1 times its apical width; second metasomal suture distinctly impressed medially; New Guinea ..... 6c
- 6c. Head dark brownish; antennal segments of ♀ about 42; subapical tooth of hind claws minute, slightly protruding (figs 14, 15) ..... *H. hirashimai* Maetô
- Head yellowish-brown; antennal segments of ♀ about 44; subapical tooth of hind claws medium-sized, distinctly protruding (figs 9, 10) .....  
..... *H. intermedius* spec. nov.

#### *Homolobus (Phylacter) kahonoi* spec. nov.

(figs 27-37)

Material.— Holotype, ♀ (RMNH), "Indonesia: Lombok, Gn. Rinjani, c 1600 m, Pos II, 15.x.1991, RMNH'91, S. Kahono & J. Krikken". Paratypes (4 ♂♂ + 1 ♀): 3 ♂♂ (MZB, RMNH), topotypic, "1600-2000 m, 16.iii.1991, montane forest, C. v.Achterberg & S. Kahono" (1 ♂), id., but "c 1600 m, Pos II, 15.x.1991" (1 ♂), id., but "c 1700 m" (1 ♂); 1 ♂ (RMNH), "[Java], Idjen, 1850 m, Ongop-ongop, v.1924, Dammerman"; 1 ♀ (ZIL), "Holl. Ost. Ind. Ost Java, juni 1891, leg. H. Fruhstorfer, ex coll. C.G. Thomson".

Holotype, ♀, length of body 9.4 mm, of fore wing 9.1 mm.

Head.— Antennal segments 53, length of third segment 1.4 times fourth segment, length of third, fourth and penultimate segments 4.4, 3.8 and 2.0 times their width, respectively (figs 35, 36); length of maxillary palp 1.7 times height of head; in dorsal view length of eye 3.1 times temple (fig. 30); temple directly narrowed posteriorly; OOL:diameter of ocellus:POL = 3:6:4; frons flat or nearly so, with some striae laterally (fig. 30); vertex flat and smooth; face rather flat, moderately punctulate, somewhat granulate sculpture dorsally; clypeus rather convex and sparsely punctate; occipital flange distinctly protruding below base of mandible (fig. 37); length of malar space 0.4 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.6 times its height (of *H. annulicornis* about 1.5 times); side of pronotum largely rugose (fig. 37); epicnemial area rugose; precoxal sulcus reticulate-rugose, but punctate posteriorly (fig. 37); remainder of mesopleuron finely punctate; metapleural flange large and apically rounded; metapleuron punctulate ventrally, with some rugae ventrally; notauli finely crenulate; mesoscutal lobes

punctulate; surface of propodeum largely smooth, with some rugae medially and sub-posteriorly, its median carina absent, except for a very short anterior part.

Wings.— Fore wing: SR1 rather curved (fig. 27);  $r:3-SR:SR1 = 8:14:45$ ;  $2-SR:3-SR:r-m = 9:14:5$ ; cu-a distinctly postfurcal, nearly straight and similarly oblique as 3-CU1 (fig. 27);  $1-CU1:2-CU1 = 1:10$ ; area basal of 2A sparsely setose (fig. 34); 2A unsclerotized. Hind wing: SC+R1 slightly bent; 2-SC+R short, horizontal (fig. 27); basal third of SR largely sclerotized and curved (fig. 27).

Legs.— Hind coxa densely and finely punctate; all claws with an acute tooth-shaped lamella (fig. 33), yellowish pectinate except inner hind claw; inner claw of hind tarsus equal to outer claw; length of femur, tibia and basitarsus of hind leg 7.4, 10.3, and 11.6 times their width, respectively; length of hind tibial spurs 0.6 and 0.4 times hind basitarsus.

Metasoma.— Length of first tergite 3.8 times its apical width, its surface largely smooth, with some superficial micro-sculpture, its dorsal carinae absent, except for short basal part (fig. 28); length of ovipositor sheath 0.16 times fore wing (0.14 times in female from Java).

Colour.— Brownish-yellow; stemmaticum (and its direct surroundings) blackish; hind tarsus (except telotarsus and basal 0.6 of basitarsus), contrasting with colour of hind tibia; pterostigma light yellowish-brown.

Variation.— Length of fore wing 7.6-9.4 mm, and of body 7.0-9.1 mm, length of ovipositor sheath 0.14-0.16 times fore wing; antennal segments 49(1 ♂), 50(1♂) or 53(1 ♀+1 ♂); length of first tergite 3.6(♂)-3.8-3.9(♂).

Note.— The new species is the only species of the subgenus *Phylacter* Reinhard, 1863, known to occur outside the Palaearctic region (including Himalayan area). The type specimens were collected in montane forest. The species is named after Mr S. Kahono (Bogor) because he collected the holotype and he has been an excellent collector and counter-part during the expeditions of the Nationaal Natuurhistorisch Museum in Sulawesi and Lombok.

#### Key to species of the subgenus *Phylacter* Reinhard

1. Tarsal claws bifurcate, its subapical tooth large and in ♀ truncate apically (figs 488, 491 in van Achterberg, 1979); length of ovipositor sheath 0.12-0.16 times fore wing (fig. 481, l.c.); SE Palaearctic ..... *H. bifurcatus* van Achterberg
- Tarsal claws with an acute and tooth-shaped ventral lamella (fig. 33); length of ovipositor sheath 0.14-0.25 times fore wing (fig. 37) ..... 2
2. Vein 2-SC+R of hind wing vertical (transverse), wider than long (fig. 507, l.c.); hind tarsus equally whitish-yellow, only weakly contrasting with hind tibia; SW Palaearctic: Mediterranean ..... *H. meridionalis* van Achterberg
- Vein 2-SC+R of hind wing longitudinal, longer than wide or quadrate (fig. 27); base of hind tarsus more yellowish basally than medially, its second-fourth segments whitish, contrasting with hind tibia ..... 3
3. Length of ovipositor sheath 0.17-0.22 times fore wing; first metasomal tergite of ♀ 2.9-3.5 times its apical width (fig. 315, l.c.); vein cu-a of fore wing distinctly less oblique than vein 3-CU1 (fig. 494, l.c.); ocelli somewhat smaller (fig. 499, l.c.); Palaearctic, except Mediterranean ..... *H. annulicornis* (Nees)
- Length of ovipositor sheath 0.14-0.16 times fore wing; first metasomal tergite of ♀ 3.6-3.8 times its apical width (fig. 28); vein cu-a of fore wing nearly as oblique as vein 3-CU1 (fig. 27); ocelli somewhat larger (fig. 30); Oriental ..... *H. kahonoi* spec. nov.

Notes on species of *Homolobus* named by G.A.W Herrich-Schäffer

In 1838 Herrich-Schäffer named some species in his section III of no. 156 in the genus *Rogas* auct. which belong to *Homolobus* Foerster, 1862.

1. *Rogas pectoralis* Herrich-Schäffer, 1838. From the very short description and its name it is judged that it concerns *Homolobus discolor* (Wesmael, 1835) **syn. nov.**

In 1979 I synonymized *Phylax aestivalis* Snellen van Vollenhoven, 1858 with *Homolobus discolor* (Wesmael) because of a remark by Snellen van Vollenhoven. However, the holotype has been found (♀ (RMNH), from The Netherlands, near The Hague) and proved to be conspecific with *Aleiodes dissector* (Nees, 1834). Later Snellen van Vollenhoven became aware about this synonymy and published it in 1873 (Krikken et al., 1981).

2. *Rogas simplex* Herrich-Schäffer, 1838. From the description ("yellow, ovipositor nearly half as long as metasoma, body large, propodeum without areolae, compressed metasoma") it is clear that he had *Homolobus annulicornis* Nees, 1834, **syn. nov.** in front of him. In *Homolobus* the name "*simplex*" is preoccupied by *Homolobus simplex* (Watanabe, 1932); therefore I rename the latter species into *H. watanabei* **nom. nov.** in honour of the prominent Japanese entomologist, Dr C. Watanabe (Sapporo).

3. *Rogas annulicornis* sensu Herrich-Schäffer, 1838, nec Nees, 1834 (fig. 156.5). Concerns *Homolobus infumator* (Lyle, 1914).

4. *Rogas chlorophthalmus* sensu Herrich-Schäffer, 1838, nec Spinola, 1808. Concerns *Homolobus truncator* (Say, 1828).

## Westwoodiellini trib. nov.

Diagnosis.— Apex of antenna without spine (fig. 19); malar suture deep (figs 18, 23); anterior subalar depression extensively crenulate (fig. 18); antescutal depression medium-sized (fig. 25); vein 1-SR of fore wing distinct (fig. 16); vein r-m of fore wing present, second submarginal cell quadrangular (fig. 16); marginal cell of hind wing subparallel-sided apically (fig. 16); vein 2A of hind wing absent; first metasomal tergite distinctly narrowed behind spiracles (fig. 26); laterope deep (fig. 18).

Distribution.— Contains one genus, *Westwoodiella* Szépligeti, 1904, from Australia.

Note.— Both tribes of the subfamily Homolobinae can be separated as follows:

1. Marginal cell of hind wing widened apically (figs 1, 27); vein 1-SR of fore wing absent or obsolescent (fig. 27); malar suture absent (fig. 6); apex of antenna with spine (fig. 8); mesosoma robust, and largely smooth (figs 4, 37); clypeus comparatively wide (fig. 29); anterior subalar depression with one carina (fig. 4) .....  
..... tribe Homolobini van Achterberg
- Marginal cell of hind wing subparallel-sided apically (fig. 16); vein 1-SR of fore wing distinct (fig. 16); malar suture deep (figs 18, 23); apex of antenna without spine (fig. 19); mesosoma slender and extensively (fig. 18); clypeus comparatively narrow (fig. 23); anterior subalar depression extensively (fig. 18) .....  
..... tribe Westwoodiellini nov.

**Westwoodiella Szépligeti, 1904**  
(figs 16-26)

*Westwoodiella Szépligeti*, 1904: 155; Shenefelt, 1970: 220. Type species (by monotypy): *Westwoodiella bicolor Szépligeti*, 1904.

**Diagnosis.**— Antenna with about 36 segments; maxillary and labial palpi with 6 and 4 segments, respectively; occipital carina complete; clypeus comparatively narrow and ventrally truncate (fig. 23); mandible not twisted apically; mesosoma slender (fig. 18), length about 2.5 times its height and extensively sculptured; lateral carina of mesoscutum present; mesosternal suture widened posteriorly, maximally as wide as middle trochantellus and coarsely crenulate; precoxal sulcus complete and crenulate (fig. 18); episternal scrobe absent (fig. 18); metapleural flange nearly absent (fig. 18); notauli complete; scutellar sulcus curved and rather short (fig. 25); propodeal spiracle round, minute, and in front of middle of propodeum; propodeum without median carina or areola (fig. 25); vein m-cu of fore wing antefurcal and converging to vein 1-M posteriorly (fig. 16); outer side of hind tibia with cluster of brownish spiny setae apically (fig. 24); fore tarsus slightly longer than fore tibia; first metasomal tergite without dorso-lateral carinae and dorsal carinae on basal quarter of tergite present (fig. 26); second metasomal tergite smooth; second metasomal suture obsolescent and smooth; setae of tergite mostly in rows, but on epipleuron spread; second and following tergites without sharp lateral crease; ovipositor straight and longer than fore wing, with notch and nodus dorsally, but without teeth ventrally.

**Distribution.**— Only the type species from Australia.

**Westwoodiella bicolor Szépligeti, 1904**  
(figs 16-26)

*Westwoodiella bicolor Szépligeti*, 1904: 220; Shenefelt, 1970: 220 (lectotype designation by J. Papp).

**Material.**— Lectotype, ♀ (TMA), "Australia, Biro 1900", "Sydney, Botany B.", "Lectotypus ♀ *Westwoodiella bicolor Szépl.*, 1904, det. Papp 1967", "*Westwoodiella bicolor* m.", "Hym. Typ. No. 699, Mus. Budapest".

Lectotype, ♀, length of body 5.1 mm, of fore wing 3.8 mm.

**Head.**— Antennal segments 36, with long setae, third segment as long as fourth segment (both without crest or depressions), length of third, fourth and penultimate segments 3.6, 3.6 and 1.3 times their width, respectively (figs 17, 19); length of maxillary palp 0.7 times height of head; in dorsal view length of eye 1.5 times temple; OOL:diameter of ocellus:POL = 6:3:8; frons nearly flat, medially rugose, laterally punctate, largely glabrous medially, but densely setose laterally; vertex rather flat and punctulate; face densely beset with greyish setae, densely finely punctate, rather flat; anterior tentorial pits small and shallow (fig. 23); clypeus flat, sparsely punctulate; length of malar space 0.5 times basal width of mandible.

**Mesosoma.**— Length of mesosoma 2.4 times its height; side of pronotum largely rugose, dorsally punctate (fig. 18); prepectal carina complete, hardly curved, just not reaching anterior margin of mesopleuron (fig. 18); precoxal sulcus complete, crenulate, remainder of mesopleuron largely punctate, but smooth medio-posteriorly; notauli shallowly impressed posteriorly and distinctly crenulate (fig. 25); mesoscutal lobes

rather convex, densely punctate and setose; scutellar sulcus curved, wide and short, with 7 carinae (fig. 25); scutellum flat, rather sparsely punctate; surface of propodeum very coarsely punctate, subreticulate posteriorly and laterally rugose (figs 18, 25).

Wings.— Fore wing: r:3-SR:SR1 = 8:9:45; 1-SR+M and SR1 straight; 1-CU1:2-CU1 = 3:8; 1-CU1 oblique (fig. 16); 2-SR:3-SR:r-m = 11:9:7; subbasal cell sparsely setose; area basal of 2A glabrous; 2-R1 distinct (fig. 16). Hind wing: cu-a long and straight, vertical (fig. 16).

Legs.— Hind coxa punctulate; all tarsal claws somewhat pectinate, with distinct acute lobe (fig. 20); length of femur, tibia and basitarsus of hind leg 3.8, 7.9 and 7.4 times their width, respectively; length of hind tibial spurs 0.4 and 0.3 times hind basitarsus; no comb at inner side of hind tibia; outer apex of hind tibia with cluster of spiny setae, brownish; length of fore tarsus 1.1 times fore tibia.

Metasoma.— Length of first tergite 1.5 times its apical width, its surface coarsely striate, except in front of dorsal carina and near apex of tergite (fig. 26); length of ovipositor sheath 1.42 times fore wing.

Colour.— Black; metasoma (except first tergite and ovipositor sheath), legs (but base of hind coxa black, fore and middle tarsi infuscated), yellowish-brown; tegulae and palpi pale yellowish; pterostigma, parastigma and veins brown; wing membrane subhyaline.

### Acknowledgements and abbreviations

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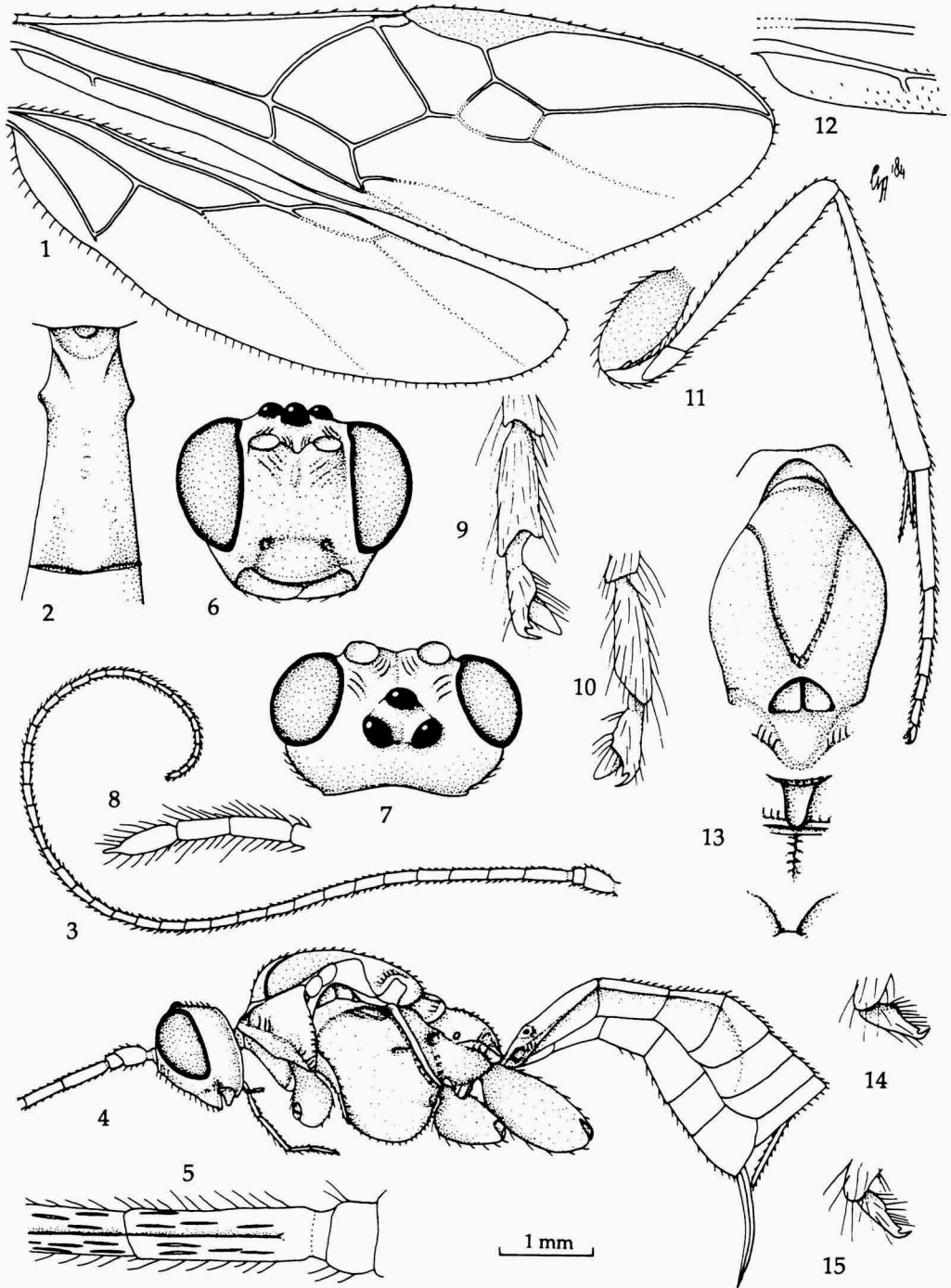
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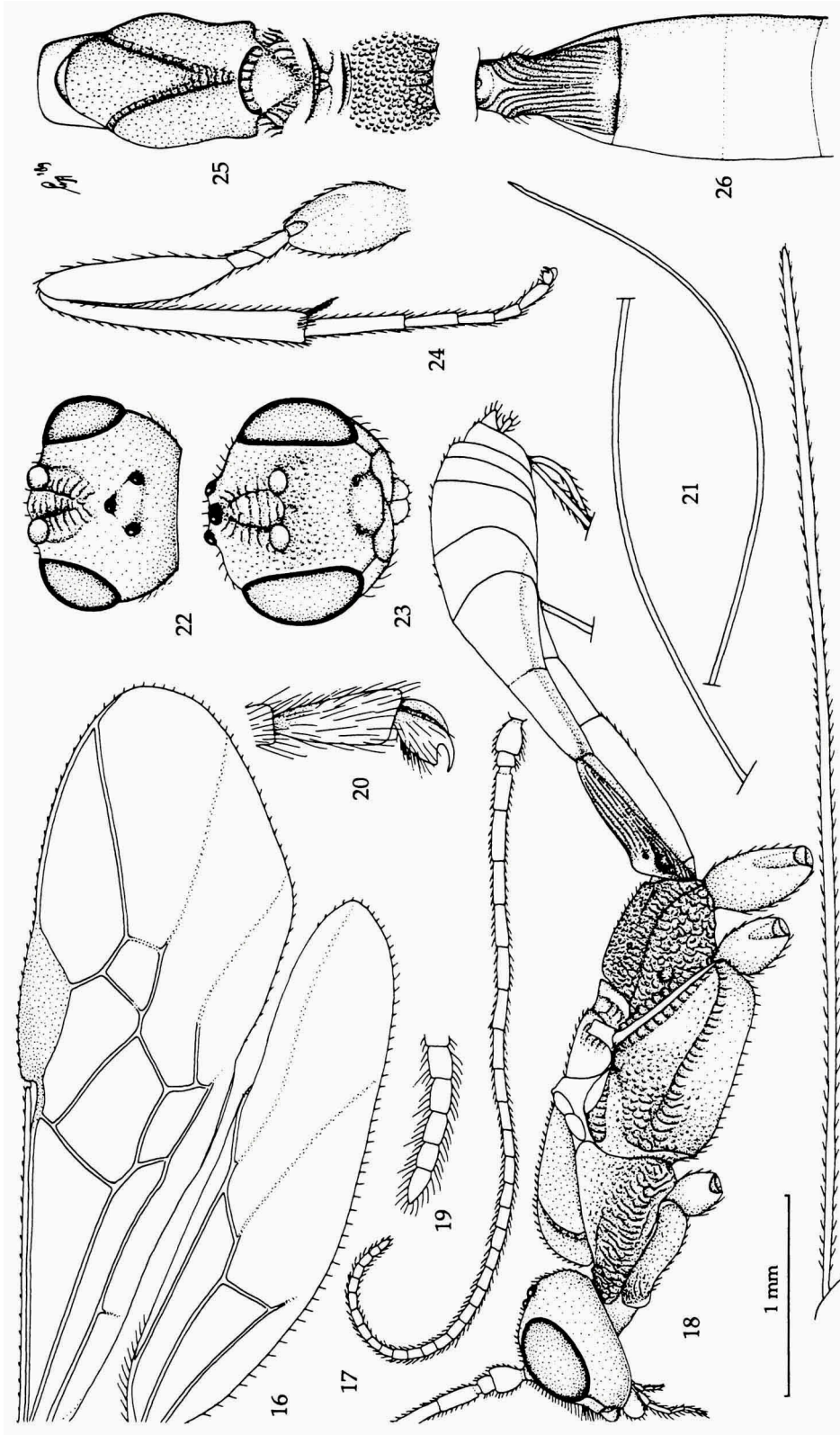
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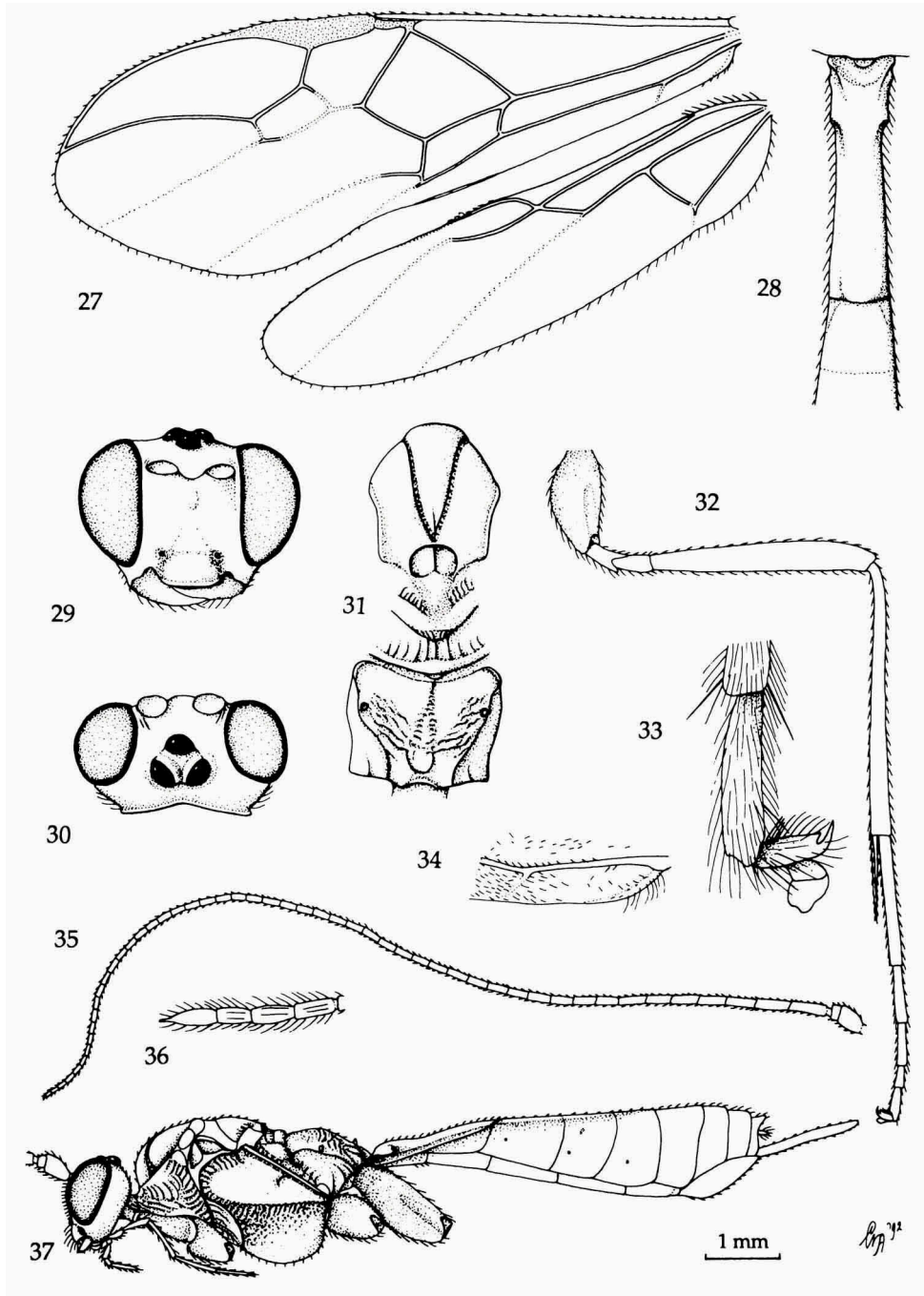


Figs 1-13, *Homolobus (Oulophus) intermedius* spec. nov., ♀, holotype; figs 14, 15, *H. (O.) hirashimai* Maetô, ♀, holotype. 1, wings; 2, first metasomal tergite, dorsal aspect; 3, antenna; 4, habitus, lateral aspect; 5, third antennal segment, inner side; 6, head, frontal aspect; 7, head, dorsal aspect; 8, apex of antenna; 9, 14, outer hind claw; 10, 15, inner hind claw; 11, hind leg; 12, detail of vein 1A+2A of fore wing; 13, mesosoma, dorsal aspect. 1, 3, 4, 11: 1 x scale-line; 2, 6, 7, 12, 13: 2 x; 5, 8, 9, 10, 14, 15: 5 x.





Figs 16-26, *Westwoodiella bicolor* Szépligeti, ♀, holotype. 16, wings; 17, antenna; 18, habitus, lateral aspect; 19, apex of antenna; 20, hind claw; 21, ovipositor; 22, head, dorsal aspect; 23, head, frontal aspect; 24, hind leg; 25, mesosoma, dorsal aspect; 26, first-third metasomal tergite, dorsal aspect. 16-18, 21, 24-26: 1 x scale-line; 19: 2.5 x; 20: 3.5 x; 22, 23: 1.2 x.



Figs 27-37, *Homolobus (Phylacter) kahonoi* spec. nov., ♀, holotype. 27, wings; 28, first and second metasomal tergites, dorsal aspect; 29, head, frontal aspect; 30, head, dorsal aspect; 31, mesosoma, dorsal aspect; 32, hind leg; 33, inner hind claw; 34, detail of vein 1A+2A of fore wing; 35, antenna; 36, apex of antenna; 37, habitus, lateral aspect. 27, 32, 35, 37: 1 x scale-line; 28-30, 34: 2 x; 31: 1.5 x; 33, 36: 5 x.