Two new species of Braconidae (Hymenoptera: Euphorinae, Braconinae) from Switzerland and The Netherlands

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Achterberg, C. van. Two new species of Braconidae (Hymenoptera: Euphorinae, Braconinae) from Switzerland and The Netherlands.
Zool. Med. Leiden 75 (22), 24.xii.2001: 397-404, figs 1-24.— ISSN 0024-0672.
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Key words: Hymenoptera; Braconidae; Euphorinae; Braconinae; *Meteorus*; *Bracon*; Palaearctic; Switzerland; The Netherlands.
Meteorus angiclypealis spec. nov. (Hymenoptera: Braconidae: Euphorinae) from Switzerland and *Bracon flevo* spec. nov. (Braconinae) from The Netherlands are described and illustrated.

Introduction

During inventories of the hymenopterous family Braconidae Nees, 1812, in the central Alps of Switzerland (by Dr L. Rezbanyai-Reser; van Achterberg & Rezbanyai-Reser, 2001) and the newly reclaimed Flevopolder area in the centre of The Netherlands (by Mr M. van der Hout) several taxa have been found new to science. Two of these species are described in this paper: *Meteorus angiclypealis* spec. nov. (subfamily Euphorinae Foerster, 1862) from Switzerland and *Bracon flevo* spec. nov. (subfamily Braconinae Nees, 1812) from The Netherlands.

The biology of the new species are unknown, but closely related species of the genus *Meteorus* are endoparasitoids of larvae of Coleoptera. Species of the genus *Bracon* are ectoparasitoids of larvae of holometabolous insects.

For the recognition of the subfamilies, see van Achterberg (1990, 1993, 1997), and for the terminology used in this paper, see van Achterberg (1988). The genus *Meteorus* Haliday can be recognised by the combination of the petiolate first tergite (fig. 12) with the apically narrowed marginal cell of hind wing (fig. 1) and the largely glabrous third metasomal tergite. The genus *Bracon* Fabricius can be recognised by the short vein 1r-m of hind wing (fig. 11) combined with a short and apically truncate scapus (fig. 19) and the third metasomal tergite without distinct antero-lateral grooves (fig. 15).

Subfamily Euphorinae Foerster, 1862
Meteorus Haliday, 1835
Meteorus angiclypealis spec. nov.
(figs 1-12)

Meteorus angiclypealis; van Achterberg & Rezbanayi, 2001: 115 (nom. nudum).

Material.— Holotype, ♀ (RMNH), "CH [= **Switzerland**], Lauerz, SZ, Schuttwald, 480 m, 24.vii.1990, Lf [= light trap], L. Rezbanayai-Reser".

Holotype, ♀, length of body 2.7 mm, and of fore wing 2.7 mm.

Head.— Antenna 1.4 times as long as combined length of head and mesosoma,

antenna with 24 segments, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 3.8, 3.6 and 1.3 times their width, respectively (figs 3, 6, 7); maxillary palp as long as height of head; occipital carina complete, evenly curved dorsally; frons largely smooth and weakly concave and largely glabrous medially, laterally convex and setose; OOL:diameter of posterior ocellus:POL = 7:2:9; vertex convex, smooth and setose; length of eye in dorsal view 0.9 times temple (fig. 4); temples subparallel behind eyes, roundly narrowed posteriorly (fig. 2); face punctulate, dorsally with some rugae (fig. 5); clypeus punctulate, convex dorsally, flattened ventrad and sparsely with long setae (figs 5, 8); width of clypeus 0.7 times minimum width of face (fig. 5); malar suture largely absent (fig. 5); length of malar space 0.6 times basal width of mandible; mandible hardly or not twisted apically, with dorsal tooth distinctly longer than ventral tooth.

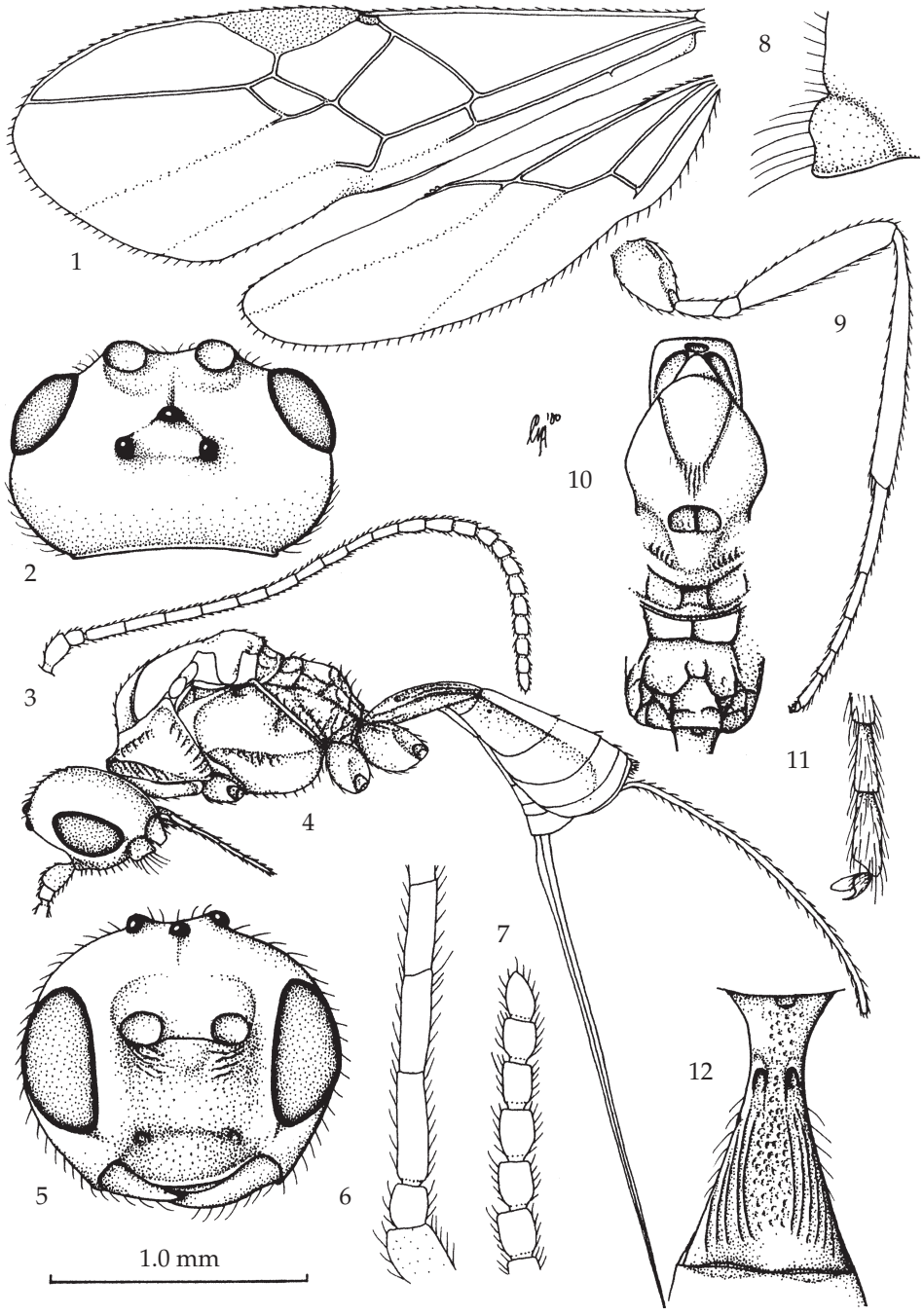
Mesosoma.— Length of mesosoma 1.3 times its height; pronope rather large, in front of largely flat posterior triangle (fig. 10); side of pronotum largely smooth medially, crenulate dorsally and posteriorly and rugose antero-ventrally (fig. 4); prepectal carina complete but rather irregular; epicnemial area smooth; precoxal sulcus incomplete, narrow, superficially and sparsely crenulate (fig. 4); remainder of mesopleuron smooth; pleural sulcus finely crenulate; metapleuron smooth dorsally, with some rugae ventrally (fig. 4); metapleural flange small; notauli narrowly impressed and largely smooth, but posteriorly wider and rugose (fig. 10); mesoscutum largely setose (less so latero-posteriorly); scutellar suclus deep and with one carina; scutellum smooth and moderately convex (fig. 4), medio-posteriorly with a very narrow depression; side of scutellum narrowly crenulate (fig. 10); metanotum without median carina; propodeal tubercles absent, but carinae somewhat protruding (fig. 8), surface of propodeum largely smooth except for subbasal transverse carina and some coarse reticulation posteriorly, and with irregular medial areola (fig. 10).

Wings.— Fore wing: normally setose, only below 1-1A sparsely setose; 1-SR narrow, medium-sized (fig. 1); 1-R1 about 10 times longer than distance between apex of marginal cell and apex of wing; r:3-SR:SR1 = 7:9:87; cu-a vertical; 1-CU1:2-CU1 = 3:34; second submarginal cell narrowed anteriorly (fig. 1); 2-SR:3-SR:r-m = 22:9:16; parastigma rather small (fig. 1); r much shorter than width of pterostigma; 2-R1 absent; m-cu subparallel to 1-M, and baso-posteriorly angulate (fig. 1). Hind wing: M+CU:1-M: cu-a = 23:10:16.

Legs.— Hind coxa largely smooth, with few weak rugae (fig. 9); tarsal claws setose, without lobe and somewhat widened medially (fig. 11); length of femur, tibia and basitarsus of hind leg 4.5, 12.0, and 9.0 times their width, respectively; length of hind tibial spurs 0.2 and 0.3 times hind basitarsus.

Metasoma.— Length of first tergite 1.6 times its apical width, widely open ventrally and rather slender, its surface punctate medially, and laterally with some striae, its side largely smooth (fig. 4), dorsal carinae absent, medially rather flat, and basally flat (fig. 9); glymma and laterope absent (fig. 4), dorsope distinct but rather small (fig. 12); second and third tergites smooth; length of ovipositor sheath 0.54 times fore wing, 1.4 times hind tibia and 2.7 times first tergite (fig. 2); setae of ovipositor sheath about as long as width of sheath; hypopygium small (fig. 4).

Colour.— Blackish; antenna, mesosoma (somewhat darker dorsally), hind coxa (except apically) and most veins rather dark brown; pterostigma dark brown and



Figs 1-12, *Meteorus angiclypealis* spec. nov., ♀, holotype. 1, wings; 2, head, dorsal aspect; 3, antenna; 4, habitus, lateal aspect; 5, head, frontal aspect; 6, base of antenna; 7, apex of antenna; 8, clypeus, lateral aspect; 9, hind leg; 10, mesosoma, dorsal aspect; 11, outer hind claw; 12, first metasomal tergite, dorsal aspect. 1, 3, 4, 9: 1 × scale-line; 2, 5: 2.0 ×; 6-8, 11: 2.5 ×; 12: 1.5 ×.

basally with small pale (subhyaline) spot; clypeus, mandible, palpi, tegulae and remainder of legs yellowish-brown, but femora and tarsi slightly darker; wing membrane subhyaline.

Note.— This species belongs to the group of *Meteorus* with the hind coxae punctulate and largely smooth, (but sometimes ventro-laterally or dorsally (reticulate-)punctate), the antenna of ♀ with 23-29 (♂ 29-32) segments, the segments of apical half of antenna at most slightly longer than wide (♀); OOL 2.5-3.0 times diameter of ocellus; the clypeus without medio-ventral notch and yellowish; the ovipositor sheath 1-3 times length of first tergite, and as fas as known parasitoids of larvae of Coleoptera. The new species is closely related to *Meteorus brevicauda* Thomson, 1895, and *M. obfuscatus* (Nees, 1812). The Palaearctic species of this group can be separated as follows:

1. Hind leg dark brown; first metasomal tergite about 1.5 times its apical width; antenna segments of ♀ 28-29; (ex Scolytidae) ..... ***M. ipidivorus*** Tobias, 1986
- Hind leg yellowish; first tergite 1.7-1.8 times its apical width; antenna segments of ♀ 23-29 2
2. Clypeus of ♀ distinctly narrower than minimum width of face (0.7 times; fig. 5); ovipositor sheath about 2.5 times as long as first tergite (fig. 4) and about 0.5 times fore wing; length of eye in dorsal view about 0.8 times temple (fig. 2) ..... ***M. angiclypealis*** spec. nov.
- Clypeus of ♀ about as wide as minimum width of face; ovipositor sheath 1-2 times as long as first tergite, and 0.25-0.35 times as long as fore wing; length of eye in dorsal view equal to temple or longer 3
3. Mandibles not twisted, large; clypeus about as wide as minimum width of face; ovipositor sheath about 1.5 times first tergite, and about 0.25 times fore wing; legs more robust; clypeus testaceous ..... ***M. brevicauda*** Thomson, 1895
   Syn.: *Meteorus thuringiacus* Schmiedeknecht, 1897; *M. mongolicus* Fahringer, 1935.
- Mandibles rather twisted and smaller; clypeus of ♀ about 0.9 times minimum width of face; ovipositor sheath about 2 times first tergite, and about 0.35 times fore wing; legs slender; clypeus often brownish-black (but of ♂ testaceous); (ex Melandryidae (*Orchesia micans* (Panzer)) ..... ***M. obfuscatus*** (Nees, 1812)
   Syn.: *Meteorus thoracicus* (Curtis, 1832); *M. formosus* (Wesmael, 1835); *M. wesmaeli* (Boie, 1850); *M. fodori* Papp, 1973.

Subfamily Braconinae Nees, 1812

Bracon Fabricius, 1804

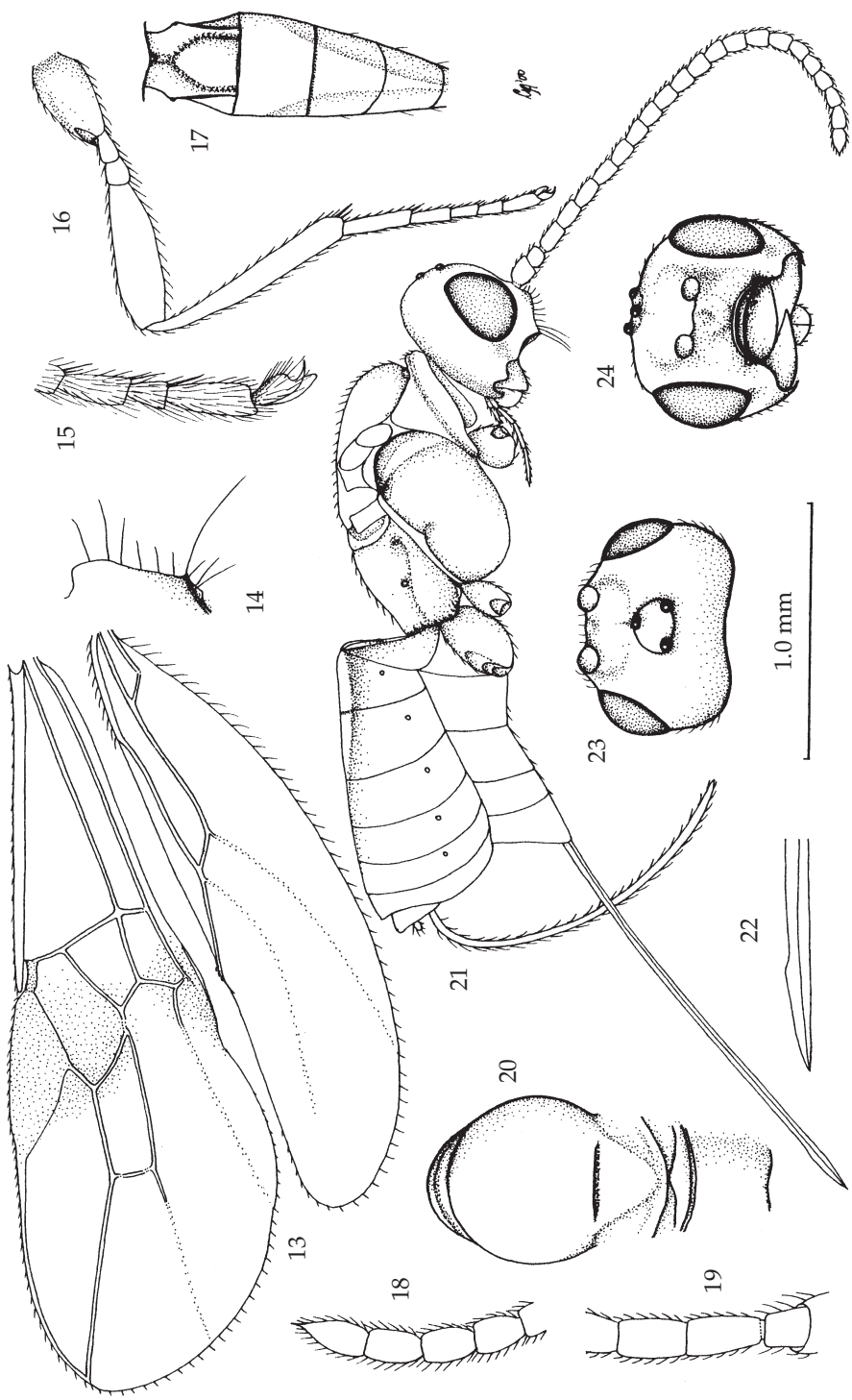
Bracon flevo spec. nov.

(figs 12-24)

Material.— Holotype, ♀ (RMNH), "**Netherlands**: Flevoland, Lelystad, A72, 10-16.viii.1993, Mal. trap, M. v.d. Hout, RMNH'93".

Holotype, ♀, length of body 2.6 mm, and of fore wing 2.8 mm; body with rather short yellowish setae, semi-appressed.

Head.— Antenna with 22 segments, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 3.0, 2.7 and 1.5 times their



Figs 13-24. *Bracon flevo* spec. nov., ♀, holotype. 13, wings; 14, clypeus, lateral aspect; 15, inner hinc claw; 16, hind leg; 17, first metasomal tergite, dorsal aspect; 18, apex of antenna; 19, base of antenna; 20, mesosoma, dorsal aspect; 21, habitus, lateal aspect; 22, apex of ovipositor; 23, head, dorsal aspect; 24, head, frontal aspect. 13, 16, 21: 1 × scale-line; 14: 2.8 ×; 15, 18, 19, 22: 2.5 ×; 17, 20, 23, 24: 1.2 ×.

width, respectively, and apical segment with short spine (figs 18, 19, 21); scapus short and ovoid; length of maxillary palp 0.6 times as long as height of head; frons smooth, without median groove and largely glabrous; OOL:diameter of posterior ocellus:POL = 9:3:5; vertex convex, smooth and setose; length of eye in dorsal view 1.2 times temple (fig. 23); temples subparallel behind eyes, rounded posteriorly (fig. 23); face rather flat, smooth, except for some superficial granulation near antennal sockets and malar space, above clypeus depressed and flattened laterally (figs 16, 21, 24); face about 3 times wider than high (fig. 24); dorsal part of clypeus very narrow, carina-like and ventral part depressed (figs 21, 24), ventrally concave, without carina; hypoclypeal depression very wide, 0.7 times minimum width of face (fig. 24); occipital flange rather large (fig. 21); malar suture absent; length of malar space 0.5 times basal width of mandible; mandible distinctly twisted apically, with dorsal tooth distinctly longer than ventral tooth.

Mesosoma.— Length of mesosoma 1.6 times its height; pronope absent, only with shallow transverse groove (fig. 20); side of pronotum smooth; picnemial area smooth; meso- and metapleuron smooth; pleural sulcus smooth; mesosternal sulcus shallow and smooth; metapleural flange small; notauli completely absent (figs 20, 21); mesoscutum largely glabrous, only setose near notaulic area and medio-posteriorly; scutellar suclus narrow, finely crenulate; scutellum smooth and flat; side of scutellum smooth; metanotum without median carina; surface of propodeum smooth.

Wings.— Fore wing: evenly setose; angle between 1-SR and C+SC+R 70˚ (fig. 13); 1-SR medium-sized, in line with 1-M (fig. 13); 1-R1 distinctly longer than pterostigma (fig. 13); r:3-SR:SR1 = 7:18:42; 2-Sr slightly curved; cu-a vertical, interstitial; second submarginal cell moderately slender (fig. 13); 2-SR:3-SR:r-m = 9:18:13; r much shorter than width of pterostigma; 2-R1 absent; m-cu converging to 1-M, and baso-posteriorly angulate (fig. 13). Hind wing: cu-a medium-sized, reclivous (fig. 13); M+CU:1-M = 14:31; 1-M weakly sinuate.

Legs.— Hind coxa smooth; tarsal claws rather robust, setose, without distinct lobe but widened medially (fig. 15); length of femur, tibia and basitarsus of hind leg 3.4, 7.2, and 4.0 times their width, respectively; length of hind tibial spurs 0.4 and 0.5 times hind basitarsus.

Metasoma.— Length of first tergite 1.2 times its apical width, its surface smooth except crenulate sublateral groove (fig. 17), dorsal carinae absent, dorso-lateral carinae rather distinct behind spiracles; glymma, laterope and dorsope absent; second and third tergites smooth; second tergite 0.9 times as long as third segment (fig. 17); third and following tergites strongly compressed (fig. 21); no segments after first segment with sharp lateral crease; ovipositor normal, upper valve without notch and lower valve with almost no teeth, obsolescent (fig. 22); length of ovipositor sheath 0.54 times fore wing, apex of sheath acute but without spine; hypopygium medium-sized, truncate (fig. 21).

Colour.— Blackish or dark brown; antenna, fore and middle legs mainly yellowish-brown (but middle coxa and femora (except apically and telotarsi) brown); hind leg mainly dark brown but base of hind tibia, apex of femur, trochanter and trochantellus brownish-yellow; malar space with yellowish-brown spot; upper depressed part of clypeus brownish-yellow; wing veins dark brown; tegula mainly yellowish-brown; humeral plate largely dark brown; pterostigma largely darkened;

palpi pale yellowish; upper orbita brownish; sternites largely pale brown; wing membrane mainly subhyaline, but band below pterostigma largely darkened (fig. 11).

Note.— This species runs in Tobias (1986) to *Bracon infernalis* Telenga, 1936, from Caucacus and Central Asia (Kazakhstan), but *B. infernalis* has the body with long erect grey setae, the antenna of ♀ with 32 segments (♂ with about 40 segments), hypoclypeal depression 0.8 times as wide as face, eyes less widened (narrow elliptical, see fig. 84-4b in Tobias, 1986), the apical antennal segments transverse, the third tergite distinctly longer than wide, the marginal cell of fore wing ending in front of apex of fore wing and length of body about 4 mm. The new species shares with *Bracon fumigidus* Szépligeti, 1901, (known from Hungary, Austria and Russia) the narrow clypeus, the strongly transverse smooth face, the robust femora and the reclivous short vein cu-a of hind wing. However, *B. fumigidus* has the lateral areas of the first tergite wider, the first tergite distinctly convex posteriorly and with some faint sculpture, the second tergite with a small medio-basal area and with some rugosity near it, the antennal segments of ♀ much more robust (as of *B. infernalis*), the antenna narrowed apicad, the metasoma of ♀ depressed apically, and the body dorsally partly orange-brown, the basal third of fore wing brownish, the propodeum with some sculpture medio-posteriorly, the palpi dark brown, the hind tarsus completely dark brown and the second tergite about 0.7 times as long as third tergite.

Acknowledgements and abbreviations

I wish to thank Dr L. Rezbanyai-Reser (Luzern) and Mr M. van der Hout (Lelystad) for the gift of the material. RMNH stands for Nationaal Natuurhistorisch Museum, Leiden.

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Received: 3.x.2001
Accepted: 4.x.2001
Edited: M.J.P. van Oijen