Cuniculobracon verdui gen nov. & spec. nov. and a new species of *Polemochartus* Schulz (Hymenoptera: Braconidae) from Spain, with a note on *Eremita* Kasparyan (Hymenoptera: Ichneumonidae)

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Key words: Hymenoptera; Braconidae; Helconinae; Brachistini; Alysiinae; *Cuniculobracon*; new genus; *Polemochartus*; new species; Ichneumonidae; *Eremita*; Palaearctic; Spain.
Cuniculobracon gen. nov. (type species: *C. verdui* spec. nov.) from Spain (Braconidae: Helconinae) and *Polemochartus ibericus* spec. nov. from Spain (Braconidae: Alysiinae) are described and illustrated. A key to the West Palaearctic species of *Polemochartus* Schulz is added. *Eremita perepetshaenkoi* Kasparyan, 1995 (Ichneumonidae: Neorhacodinae) is reported from Central Spain.

Introduction

The Iberian Peninsula is still a very interesting area for the study of Ichneumonoidea; here we describe two new species of Braconidae from Spain, of which one belongs to an undescribed genus. The new genus is brachypterous and has been collected from a rabbit latrine. It is assigned provisonally to the tribe Brachistini Foerster, 1862 (Braconidae: Helconinae). The biology is unknown but Brachistini are endoparasitoids of coleopterous larvae.

The genus *Polemochartus* Schulz, 1911 (Braconidae: Alysiinae) is a small Palaearctic genus with few species known (Maetô, 1983). The genus is characterised by having the tarsal claws comparatively large and spatulate (= apical half of inner side with lamella: fig. 13), the clypeus at least laterally narrow and more or less protruding, medially frequently concave or depressed (figs 14, 21, 22), vein 1-M of hind wing 0.3-0.4 times vein M+CU1, the mandible comparatively slender, with 3 teeth, and a dorsal flange on the second tooth (fig. 17). Species of *Polemochartus* are well known to parasitise *Lipara* species (Diptera: Chloropidae) which cause galls on *Phragmites australis* (Cav.).

The aberrant *Eremita perepetshaenkoi* Kasparyan, 1995 (Ichneumonidae: Neorhacodinae) has been described from Turkmenistan, and recently reported by Notton & Shaw (1998) from Zaragoza province, Spain. In this paper it is reported also from Central Spain (province of Ciudad Real).

For recognition of the subfamilies Helconinae and Alysiinae, see van Achterberg (1990a, 1993, 1997), for keys to the Palaearctic genera of Helconinae-Brachistini, see van Achterberg (1990b) and Tobias, 1986 (translation 1995), for the Alysiinae, see Fischer (1995), and for the genus *Eremita* see Kasparyan (1995) and Notton & Shaw (1998). For the terminology used in this paper, see van Achterberg (1988).

Braconidae Nees, 1812
***Cuniculobracon* gen. nov.**
(figs 1-11)

Type species: *Cuniculobracon verdui* spec. nov.

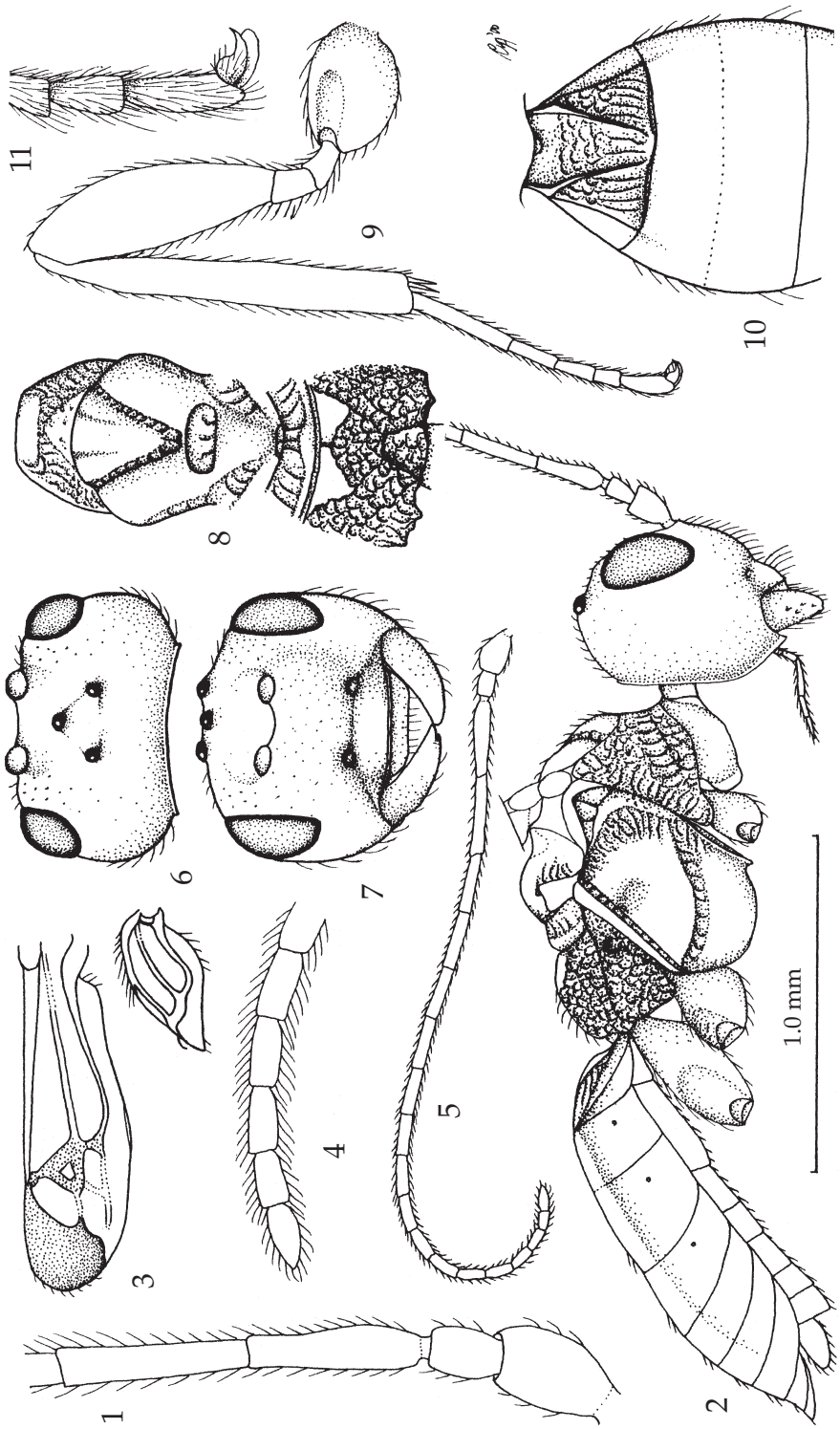
Etymology.— From "cuniculos" (Latin for "rabbit") and the generic name *Bracon* Fabricius, 1804, because it is a braconid reared from a rabbit latrine. Gender: masculine.

Diagnosis.— Antenna rather short (figs 2, 5), with about 20 segments, its third segment 0.9 times fourth segment, punctate-granulate and widened subbasally (fig. 1); scapus ovoid, largely smooth; labial plap reduced, 2-segmented and not protruding beyond buccal cavity (fig. 2), and maxillary palp with 5 segments; occipital carina distinctly joining hypostomal carina above base of mandible; occipital carina complete, medium-sized and dorsally subhorizontal; eyes glabrous and not emarginate at inner side (fig. 7); head robust (figs 2, 6, 7); frons flat or nearly so, without median groove (fig. 7); clypeus largely flat, smooth, except for some punctures, its ventral margin distinctly differentiated but narrow (fig. 7); epistomal suture deep; labrum flat and its apical half distinctly punctate and setose; hypoclypeal depression absent (but labrum distinctly exposed (fig. 7)); occipital flange medium-sized (fig. 2); malar suture absent; malar space longer than width of base of mandible; mandible not or hardly twisted and with two teeth; pronope absent; lateral carina of mesoscutum complete, medium-sized; posterior flange of propleuron medium-sized and only posteriorly present (fig. 2); anterior subalar depression distinctly crenulate; prepectal carina complete and reaching anterior margin of mesopleuron (fig. 2); precoxal sulcus distinctly impressed, complete (fig. 2); pleural sulcus distinctly crenulate; notauli completely impressed, deep and crenulate (fig. 8); scutellar sulcus deep and wide, weakly carinate (fig. 8); scutellum distinctly convex (fig. 2) and with small medio-posterior depression (fig. 8); median carina of propodeum almost absent (fig. 8); propodeal tubercle absent; brachypterous: fore wing almost reaching apex of first tergite and with 4 closed cells, with rounded and largely strongly sclerotized apex (fig. 3) and its dorsal surface convex; subbasal cell of fore wing distinctly widened apically and vein M+CU1 largely sclerotised (fig. 3); hind wing with 2 similarly sized closed cells and one hamulus (fig. 3); tarsal claws moderately robust and without lobe (fig. 11); tibiae compressed and sculptured; first metasomal tergite robust, dstinctly widened apically (fig. 10), with dorsal carina complete and basally flat; dorsope and laterope absent; third tergite 1.5 times as long as second tergite medially (fig. 2); second epipleuron rather sclerotised (nearly as strong as notum); second tergite without lateral crease; second and following tergites smooth.

Biology.— Unknown.

Distribution.— Palaearctic (Spain).

Note.— Belongs to the helconoid Braconidae (e.g. the presence of the medio-posterior depression of the scutellum, the complete prepectal carina and the setose, largely flat clypeus). Considering the shape of the first tergite and the crenulate anterior subalar depression and the absence of a distinct dorsope the new genus fits best near the genus *Eubazus* Nees, 1814. It is the first brachypterous species of the tribe Brachistini Foerster, 1862. It differs from all other Brachistini by the shortened labial palp with 2 segments, the compartively small eyes and large temples, and the subbasally widened third antennal segment.



Figs 1-11, *Cuniculobracon verdui* gen. nov. & spec. nov., ♂, holotype. 1, base of antenna; 2, habitus, lateral aspect; 3, wings; 4, apex of antenna; 5, antenna; 6, head, dorsal aspect; 7, head, frontal aspect; 8, mesosoma, dorsal aspect; 9, hind leg; 10, first-third metasomal tergites, dorsal aspect; 11, inner hind claw. 1, 4, 11: 2.5 × scale-line; 2, 3, 5-10: 1.0 ×.

Cuniculobracon verdui spec. nov.
(figs 1-11)

Material.— Holotype, ♂ (RMNH), "**Spain**: Murcia, Jumilla, Sierra [de la] Pedrera, 29.xii.1995, from rabbit latrine [at border of sandy path], J.R. Verdú, RMNH'00". Paratype: 1 ♂ (Falcó collection), topotypic, 6.xii.2000, from rabbit latrine in vineyard, J.V. Falcó.

Holotype, ♂, length of body 2.7 mm, of fore wing 0.95 mm.

Head.— Antennal segments 20, third segment 0.9 times as long as fourth segment, length of third, fourth and penultimate segments 4.3, 4.7 and 1.5 times their width, respectively (figs 1, 4); scapus short, subtruncate apically (fig. 1); length of maxillary palp 0.5 times height of head, with 5 segments; labial palp 2-segmented; frons smooth and glabrous medially, laterally weakly convex and with some punctures (fig. 6); OOL:diameter of posterior ocellus:POL = 17:5:20; length of eye in dorsal view 0.6 times temple (fig. 6), temples subparallel-sided behind eyes (fig. 6); face evenly convex, largely smooth except some punctures; anterior tentorial pits medium-sized (fig. 7); clypeus largely smooth, except some punctures; length of malar space 1.3 times basal width of mandible; mandible robust, its outer tooth longer than inner tooth.

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum reticulate-rugose (fig. 2); propleuron convex; postpectal carina absent; precoxal sulcus weakly and sparsely crenulate (fig. 2); remainder of mesopleuron smooth; metapleuron coarsely reticulate; mesosternal suture rather shallow, but widely and coarsely crenulate; notauli deep, rather wide and crenulate (fig. 8); mesoscutual lobes sparsely setose, smooth, medio-anteriorly with pair of shallow grooves (fig. 8); scutellar sulcus weakly crenulate (fig. 8); scutellum smooth; surface of propodeum largely coarsely-reticulate (fig. 8).

Wings.— Fore wing: membrane setose; first discal cell minute, with veins strongly widened (fig. 3). Hind wing: acute apically, 1r-m widened.

Legs.— Hind coxa smooth (fig. 9); tarsal claws rather robust, setose (fig. 11); fore tarsus as long as fore tibia; length of fore spur 0.5 times fore basitarsus; length of femur, tibia and basitarsus of hind leg 3.6, 9.8 and 6.7 times their width, respectively; outer and inner hind tibial spurs 0.25 and 0.30 times hind basitarsus, respectively; ventral row of setae of hind basitarsus present.

Metasoma.— Length of first tergite 0.7 times its apical width (fig. 10), its surface rugose medially and striate posteriorly; second tergite smooth.

Colour.— Black; clypeus, mandible, palpi, legs, apical third of fore wing and veins dark brown; remander of veins yellowish; antenna blackish-brown; wing membrane subhyaline, but somewhat yellowish.

Biology.— Unknown; probably a parasitoid of a coleopterous host associated with rabbit dung. Under the latrine larvae of Lepidoptera, Neuroptera, Diptera and Coleoptera were present, of the latter mainly larvae of Aphodiidae. The holotype was walking on a substrate of a mixture of pellets and sand below the upper layer of separate pellets.

The Sierra de la Pedrera is a mountainous area neat the city of Jumilla (province of Murcia). The predominant vegetation is the meso-mediterranean brushwood consisting mainly of *Pistacea lentiscus* Linnaeus, *Rhamnus lycioides* Linnaeus and *Quercus*

coccifera Linnaeus, and perennial grassland with "esparto" (= *Stipa tenacissima* Linnaeus) and "lastron" (= *Brachypodium retusum* (Pers.)). The remainder consists of reforested areas with pine trees (*Pinus halepensis* Miller) and vineyards.

***Polemochartus* Schulz, 1911**

(figs 12-23)

Michelena Saval et al. (1995), Wharton (in Wharton et al., 1997) and Belokobylskij & Tobias (1998) include several genera (among them the genus *Polemochartus,* but not *Eucoelinidea* Tobias, 1979) in the genus *Coelinius* Nees, 1818. This is unjustified considering the differences among the included genera having a compressed metasoma (in the female sex), a short ovipositor and a sculptured second tergite. However, at least the first two character-states are related to the way of ovipositing. Oviposition takes place between the leaf-sheaths of grasses and the compressed metasoma is used to reach the host. The best derived character-state to charaterize *Polemochartus* is the large and spatulate tarsal claws (Maetô, 1983; fig. 13), which is absent in all other genera or subgenera.

Key to West Palaearctic species of the genus *Polemochartus* Schulz

1. Vein r of fore wing issued behind middle of pterostigma; face short, sharp-angularly protruding; antennal sockets near middle level of eyes; antenna of ♀ distinctly shorter than body and with about 30 segments; third tergite smooth and second tergite only basally sculptured; first tergite about twice as long as its apical width; (subgenus *Neopolemon* Perepechayenko, 1999); Caucasus ..... ***P. breviventris*** (Telenga, 1935)
- Vein r of fore wing issued near middle of pterostigma (fig. 12); face longer, not sharp-angularly protruding (fig. 14); antennal sockets above middle level of eyes; antenna of ♀ about as long body and with about 50 segments; third and second tergites more or less sculptured; first tergite less than twice as long as its apical width (fig. 23); (subgenus *Polemochartus* Schulz, 1911) 2
2. Length of mesosoma 2.2-2.4 times its height; inner side of apex of hind tibia yellowish; head cubical; vein 3-SR+SR1 of fore wing hardly sinuate; clypeus straight medio-ventrally, not depressed; Europe ..... ***P. aboletus*** Papp, 1992
- Length of mesosoma 1.7-1.9 times its height; inner side of apex of hind tibia blackish or dark brown; head usually less cubical (fig. 16; except of *P. melas*); vein 3-SR+SR1 of fore wing often distinctly sinuate (fig. 12); clypeus variable medio-ventrally, sometimes depressed 3
3. Head subcubical and temples subparallel behind eyes; length of fore wing 3.6-4.3 mm; vein m-cu of hind wing absent; vein m-cu of fore wing subinterstitial or shortly antefurcal; notauli largely absent on mesoscutal disc, not reaching medio-posterior groove; hind tibia largely dark brown; clypeus thin medially, not depressed; antenna with 50-55 segments; NW & C Europe, ?Japan ..... ***P. melas*** (Giraud, 1863)
- Head distinctly transverse, temples bulging behind eyes (fig. 16); length of fore wing 4.8-6.3 mm; vein m-cu of hind wing at least shortly present anteriorly

(fig. 12); vein m-cu of fore wing distinctly antefurcal (fig. 12); notauli largely present on mesoscutal disc, reaching medio-posterior groove (or if largely absent, reaching posterior rim of mesoscutum); colour of hind tibia variable; clypeus usually thick medially, and frequently concave medially (fig. 21); antenna with 51-68 segments 4

4. Hind tibia nearly completely dark brown or blackish; mandible black; clypeus wide and flattened medio-ventrally by strong medial depression (fig. 22); palpi and vein r of fore wing (rather) dark brown; Iberian Peninsula .... ***P. ibericus*** spec. nov.

Note.— Melanistic *P. nipponensis* Maetô, 1983, from Japan may have blackish mandible and hind tibia, but has also the second and third metasomal tergites black, the coxae and femora dark brown or blackish, the medio-posterior groove of mesoscutum obsolescent, the palpi pale yellowish, the clypeus narrow and if depressed medially far less widened medially, and vein m-cu of hind wing subinterstitial and short.

- Hind tibia largely yellowish-brown, infuscate only apically; mandible dark reddish-brown; clypeus often truncate medio-ventrally, if depressed then convex and comparatively narrow medio-ventrally; palpi and vein r of fore wing yellowish or brown, rarely infuscate; Europe, Caucasus ..... ***P. liparae*** (Giraud, 1863)

Note.— Michelena Saval et al. (1995) report this species as "*Coelinius liparae* (Giraud, 1863)" from Spain (Comunidad Valenciana), but this needs reconfirmation; it may belong to *P. ibericus* spec. nov.

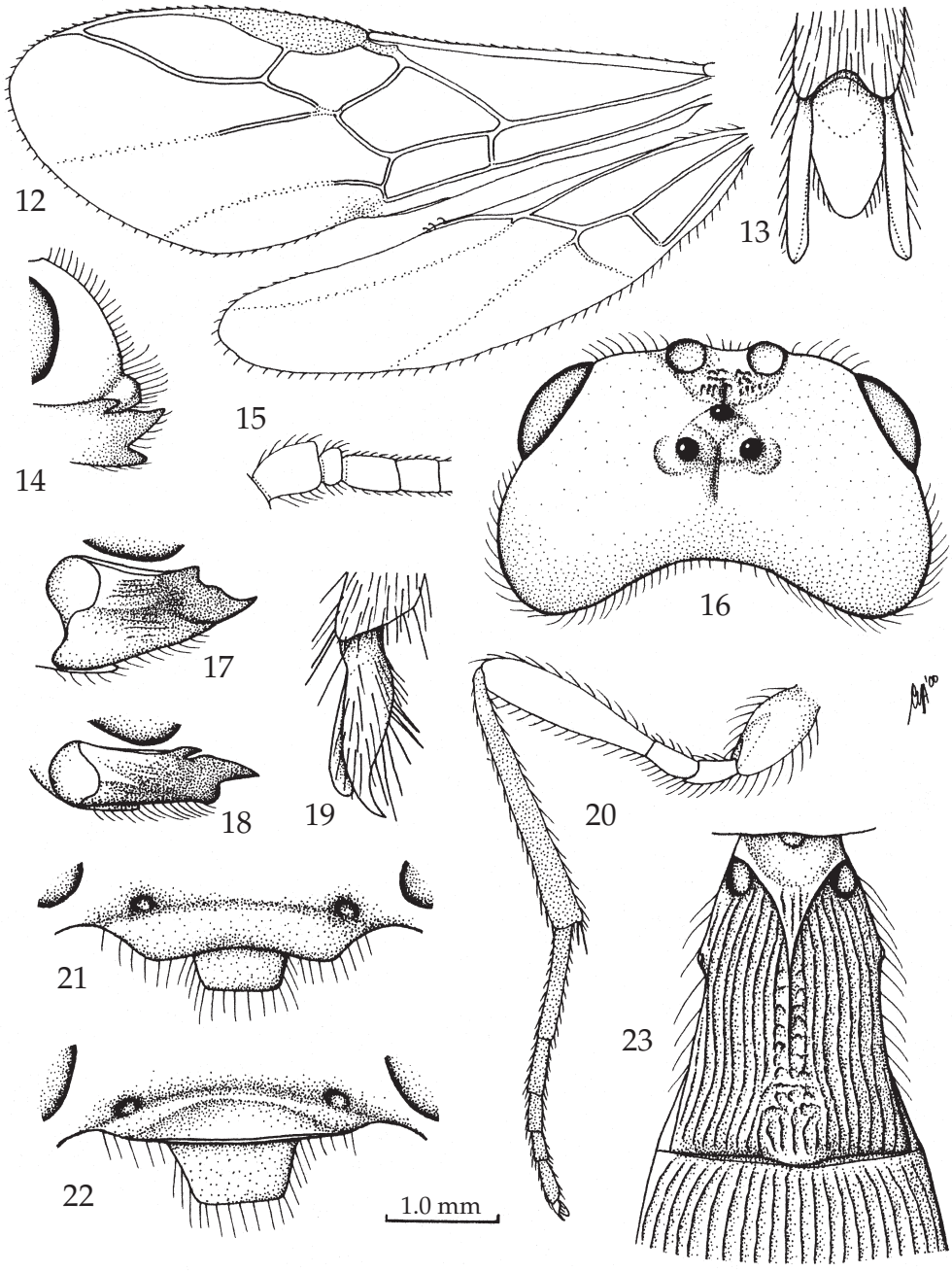
Polemochartus ibericus spec. nov.
(figs 12-23)

Material.— Holotype, ♂ (RMNH), "**Spain**: Castilla-La Maucha, Ciudad Real, Ruidera, Laguna Colgada, 1.vi.2000, V. Falcó, RMNH'00".

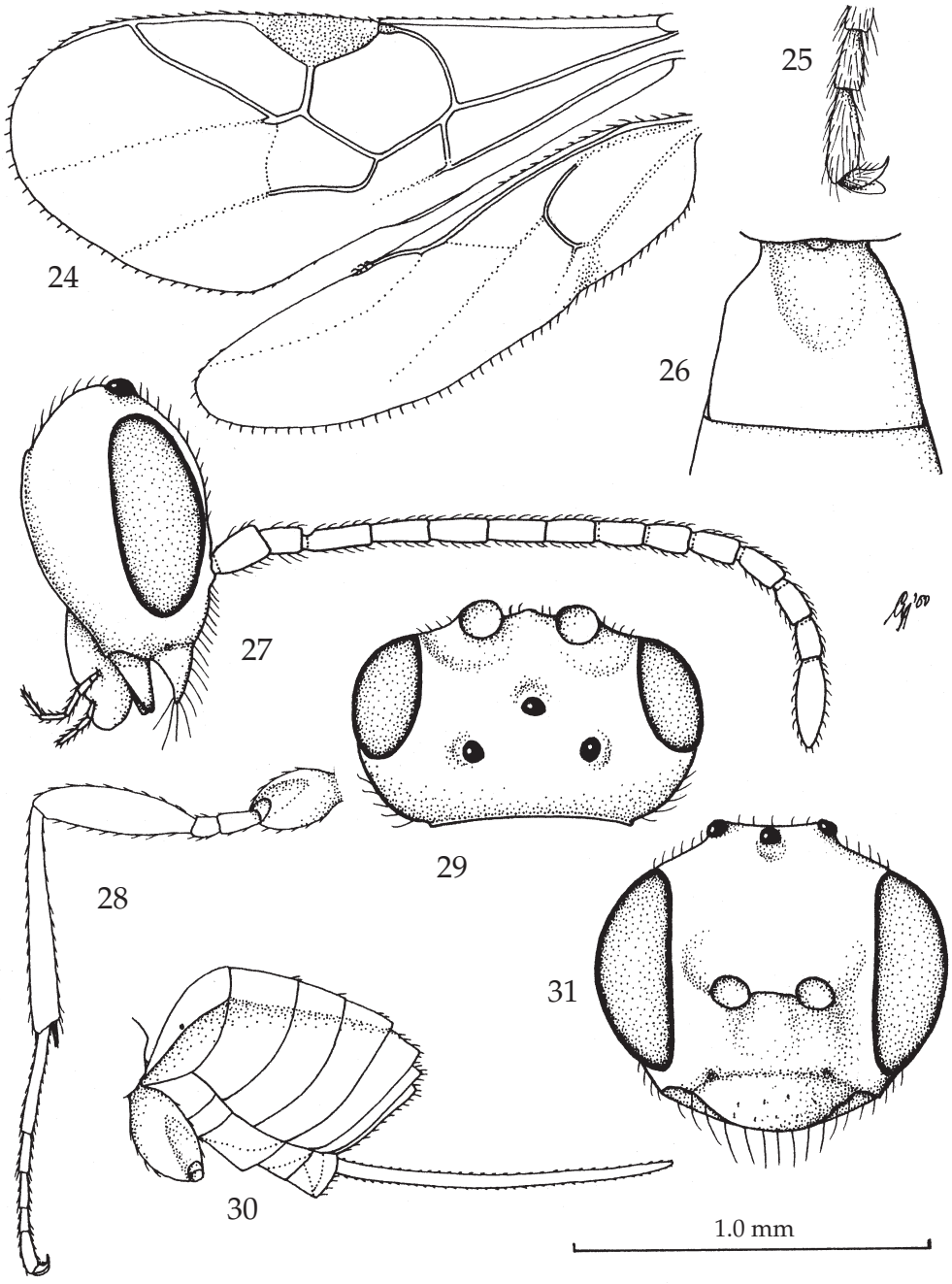
Holotype, ♂, length of body 9.2 mm, of fore wing 6.3 mm.

Head.— Antennal segments 68, most segments subquadrate and with long and dense setosity, third segment 1.5 times as long as fourth segment, length of third, fourth and penultimate segments 1.9, 1.3 and 1.2 times their width, respectively (fig. 15); length of maxillary palp 0.8 times height of head, with 6 segments; labial palp 4-segmented; frons behind antennal sockets concave and with fine rugosity, with groove in front of anterior ocellus, laterally convex and punctulate (fig. 16); OOL:diameter of posterior ocellus:POL = 18:5:8; length of eye in dorsal view 0.7 times temple (fig. 16), temples widened behind eyes (fig. 16); face unevenly convex, rather densely punctate; clypeus rather finely punctate and in lateral view hardly protruding beyond level of face (fig. 14), thick medially and strongly depressed medially (figs 21, 22); length of malar space 0.1 times basal width of mandible; mandible 2.1 times as long as its maximum width basally, narrowed apicad, hardly widened medio-dorsally, with 3 teeth, with small lobe dorsally on second tooth (figs 17, 18).

Mesosoma.— Length of mesosoma 1.8 times its height; pronope large and narrowly elliptical; side of pronotum coarsely and densely punctate, but medio-ventrally largely smooth and with some crenulae medio-anteriorly; epicnemial area widely crenulate anteriorly; precoxal sulcus complete, rather narrow and finely and densely crenulate, remainder of mesopleuron punctulate; pleural sulcus widely crenulate ventrally and indistinctly crenulate dorsally; metapleuron very coarsely reticulate-rugose, except antero-ventrally; mesosternal sulcus entirely narrowly crenulate;



Figs 12-23, *Polemochartus ibericus* spec. nov., ♂, holotype. 12, wings; 13, hind claws, dorsal aspect; 14, clypeus and face, lateral aspect; 15, basal segments of antenna; 16, head, dorsal aspect; 17, mandible, full sight on first tooth; 18, mandible, full sight on third tooth; 19, outer fore claw; 20, hind leg; 21, clypeus, dorsal aspect; 22, clypeus, antero-ventral aspect; 23, first metasomal tergite, dorsal aspect. 12, 20: 1 × scale-line; 13, 19: 6.8 ×; 14-18, 21-23: 2.0 ×.



Figs 24-31, *Eremita perepetshaenkoi* Kasparyan, ♀, Spain, Ruidera. 24, wings; 25, outer hind claw; 26, first metasomal tergite, dorsal aspect; 27, head and antenna, lateral aspect; 28, hind leg; 29, head, dorsal aspect; 30, metasoma, lateral aspect; 31, head, frontal aspect. 24, 28, 30: 1 × scale-line; 25-27, 29, 31: 1.6 ×.

notauli complete and shallowly impressed, largely smooth and narrow; mesoscutum setose, punctulate, medio-posteriorly with medium-sized narrow groove, about 3 times as long as width of scutellar sulcus; scutellar sulcus deep and with 5 carinae; scutellum distinctly convex and largely smooth, except for some punctulation; surface of propodeum coarsely vermiculate reticulate-rugose, its median carina rather short, and without discernable medial areola.

Wings.— Fore wing: 1-SR medium-sized, widened (fig. 12); r:3-SR+SR1:2-SR = 6:36:12; r submedially emitted from pterostigma; 1-SR+M slightly sinuate; SR1 distinctly sinuate (fig. 12); cu-a postfurcal, subvertical and rather long (fig. 12); 1-CU1:2-CU1 = 1:10. Hind wing: cu-a long and vertical; M+CU:1-M = 22:10; m-cu distinctly postfurcal (fig. 12).

Legs.— Tarsal claws rather slender and slightly curved (fig. 19); length of fore tibial spur 0.45 times fore basitarsus; length of femur, tibia and basitarsus of hind leg 4.3, 9.8 and 6.8 times their width, respectively; length of hind tibial spurs 0.25 and 0.35 times hind basitarsus.

Metasoma.— Length of first tergite 1.4 times its apical width, its surface coarsely mainly sublongitudinally vermiculate-rugose (fig. 23), its dorsal carinae united anteriorly and up to basal 0.7 of tergite; glymma wide and smooth, dorsope deep and large (figh. 23); second tergite rather coarsely sublongitudinally rugose basally and more finely so posteriorly; second metasomal suture smooth and nearly straight; basal half of third tergite finely longitudinally rugose; remainder of metasoma smooth and depressed; tergites with dense and short setosity; second and base of third tergites with sharp lateral crease; sternites not visible, covered by epipleura.

Colour.— Black; palpi, pterostigma, parastigma and veins (including vein r of fore wing, but vein 1-SR+M yellowish-brown); base of hind tibia somewhat brownish; remainder of hind tibia and tarsus dark brown; fore and middle tarsi yellowish brown, with telotarsi weakly infuscate; remainder of legs, second and third tergites (and somewhat fourth tergite) reddish-brown; mandible black; wing membrane weakly infuscate; setae of body pale yellowish.

Notes.— The Colgada Lake is the largest of 15 lakes of the Lagunas de Ruidera (province of Ciudad Real) near the upper section of the Guadiana river. The left side of the lake has an extensive reedbed, dominated by *Phagmites australis* (Cav.), and is bordered by black poplar (*Populus nigra* Linnaeus).

Ichneumonidae Latreille, 1802
Neorhacodinae Hedicke, 1922
***Eremita* Kasparyan, 1995**
Eremita perepetshaenkoi Kasparyan, 1995
(figs 24-31)

Eremita perepetshaenkoi Kasparyan, 1995: 672, figs 7-11; Notton & Shaw, 1998: 212, figs 3, 11-16.

Material.— ♀ (RMNH), "**Spain**: Castilla-La Maucha, Ciudad Real, Ruidera, Laguna Colgada, 1.vi.2000, V. Falcó, RMNH'00".

Notes.— Originally described from Turkmenistan (Kopet-Dag) but recently a series was reported from Spain (Los Monegros, Zaragoza Prov.) by Notton & Shaw

(1998). Ruidera (Cuidad Real Prov.) is the second locality in Spain and in Europe, where this species has been collected. Vein cu-a of fore wing is less far postfurcal (fig. 24) than in the holotype, but most probably this is interspecific variation.

Acknowledgements and abbreviations

The authors wish to express their gratitude to Dr M.R. Shaw (Edinburgh) for his critical remarks. RMNH stands for Nationaal Natuurhistorisch Museum, Leiden.

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