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Source: Florida Entomologist, 85(1) : 208-215

Published By: Florida Entomological Society

URL: https://doi.org/10.1653/0015-4040(2002)085[0208:TNSOCF]2.0.CO;2

THREE NEW SPECIES OF *CHOREBUS* FROM SPAIN (HYMENOPTERA: BRACONIDAE: ALYSIINAE)

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ABSTRACT

Chorebus affiniformis, *C. dentisignatus* and *C. granulosus*, three species of Dacnusini from Spain, are described as new and are compared with allied species of the genus. Keys for their discrimination are provided.

Key Words: Braconidae, Alysiinae, *Chorebus*, new species

RESUMEN

Se describen tres nuevas especies de Dacnusini de España: *Chorebus affiniformis* n. sp., *C. dentisignatus* n. sp. y *C. granulosus* n. sp. Se discuten sus afinidades filogenéticas, y se construyen claves para su determinación.

The genus *Chorebus* Haliday ranks among the largest and most perplexing of the braconid wasps. In this respect, it can be compared with genera such as *Bracon* F., *Apanteles* s.l., *Aspilota* s.l. (*Aspilota*-group), and *Opius* s.l.

The Alysiinae (jaw-wasps) are characterized by their so-called "exodont" mandibles, which means that the mandibles are turned outwards with a strongly developed abductor muscle which provides them with powerful outward movements. They are parasitoids of cyclorrhaphous Diptera, which develop in puparia from which they escape by means of the "ptilinum", a frontal bubble that breaks the puparium at emergence. Jaw-wasps cannot develop a ptilinum; instead they free themselves by using their exodont mandibles. The latter are comparatively large and strong, in most cases with three teeth in the ground plan, or 4 teeth at the end, and do not cross at rest. Hymenoptera, unlike Diptera, have a firm body wall which is unsuitable for the development of a ptilinum. Otherwise, Diptera have no mandibles suitable for strong mechanical demands.

The subfamily has traditionally been divided into the tribes Alysiini (3-celled jaw-wasps) and Dacnusini (2-celled jaw-wasps). The latter lack the 2 r-m vein. *Chorebus* is the largest genus of Dacnusini. After Griffiths (1968b) this genus is named the *Chorebus*-group, a unit with metasomal tergita 2 and 3 without sculpture and the tergita beginning from the second with one cross row of setae only, in most cases, or with only a few setae distributed over the surface. *Chorebus* can be defined as follows: mandibles with four teeth, or metapleuron with a rosette of setae around a central swelling (see Fig. 4); in most cases both characters appear together. The additional tooth is located between the middle tooth and the original lower tooth (the four-toothed mandibles of other Dacnusini developed the additional tooth in a different position: on the dorsal side of the elongate 2nd tooth). The rosette of setae around a swelling on the metapleuron and the 4-toothed mandibles do not appear together in all species. For this reason *Chorebus* keyed out twice in the Manual of New World genera by Wharton et al. (1997), in couplets 7 and 11. It is also the reason why *C. affiniformis* sp. nov. described in this paper is ascribed to *Chorebus*. Many *Chorebus* species show areas covered with a dense, whitish pubescence, a very rare character among the Braconidae.

The species of *Chorebus* are solitary endoparasitoids of Agromyzidae and Ephydridae. As a consequence, the material collected often contains only a few specimens or a single one of a given new species. Descriptions of new species based on only a few or single specimens is therefore unavoidable. The Agromyzidae is a large family with many species, some of which are widespread and abundant. Therefore, *Chorebus* is also a speciose genus. Undoubtedly, many more species await description. Most species described to date are from the British Isles, Scandinavia and Central Europe. It is to be expected that the Iberian fauna contains many more new species to be described in the future.

A comprehensive taxonomy of this group began when Foerster (1862) proposed a series of genera.

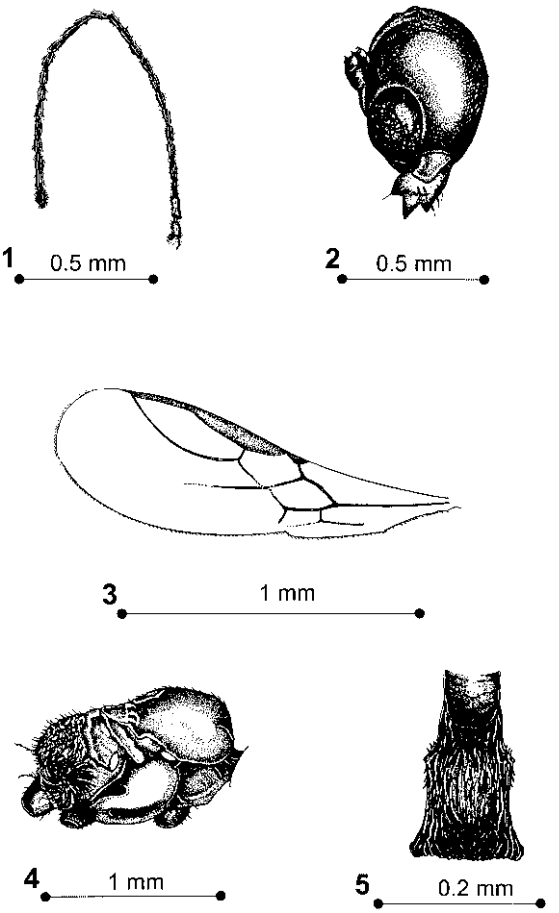
Most of these were suppressed by Marshall (1885, 1887, 1889, 1891, 1894, 1895, 1897), although many were later resurrected. In the 20th century, G. E. J. Nixon was the first to revise the European Dacnusini as a whole, opening a new epoch in research into the Dacnusini. He divided the Dacnusini into a series of new genera. The present *Chorebus* appeared under the generic name *Dacnusa*, while the present *Dacnusa* Haliday was described under the names *Rhizarcha* Foerster and *Pachysema* Foerster. After an initial publication on the British species, Nixon (1937) published a lengthy series of revisions of European Dacnusines (Nixon 1942, 1943, 1944, 1945, 1946, 1948, 1949, 1954).

In an extensive series of papers, G. C. D. Griffiths (1964, 1966a, 1966b, 1967, 1968a, 1968b, 1984) greatly reduced the number of genera by applying Hennig's rules of phylogenetic systematics. Various Russian and Ukrainian authors added more descriptions of new genera and species, thus greatly increasing the list of known European (and Canary Islands) species. Their descriptions were largely based on material reared from agromyzid flies. Agromyzidae have been reared from host plants systematically by several well known dipterists, such as Spencer, Hering, Nowakowski and Groschke. These authors obtained not only the flies, but also their parasitoids; the majority of them were Dacnusini, followed by Opiinae. Griffiths's conclusion was that Dacnusini are monophagous parasitoids while Opiinae are polyphagous, a further reason more to explain the immense diversity of species.

V. I. Tobias (1986) presented an impressive compilation of all Dacnusini of the Palaeartic region in Russian; an English translation appeared in 1995. These are the basic publications for the present studies on the Spanish taxa.

The catalogue of Shenefelt (1974) lists 223 species of *Chorebus* in the world. Most (207 species) have been described from Europe, especially from Scandinavia, the British Isles and Central Europe. Twenty-three species were listed from Spain. Additional species from Spain (Docavo et al. 1994), Russia and other countries have since been described. Recently, the authors of this work have discovered three new species in Spain: *C. affiniformis* sp. nov., *C. dentisignatus* sp. nov. and *C. granulosus* sp. nov., which are described below.

The terms for body morphology and wing venation follow Griffiths (1964) and Wharton (1977, 1986).



Figs. 1-5. *Chorebus affiniformis* sp. nov. (female). Fig. 1. Antenna. Fig. 2. Mandible. Fig. 3. Anterior left wing. Fig. 4. Precoxal sulcus and sulcus of sides of pronotum. Fig. 5. First tergite of metasoma.

Chorebus affiniformis **sp. nov.** (Figs. 1-5)
Female

Head (Fig. 2)—Transverse, 1.3 times wider than long, 1.1 times higher than long; occiput almost bare; vertex without pubescence; base of mandibles with little and scattered pubescence (setae); ocelli very small, not at all protruding, the distance between them 3 times as great as their diameter, the distance between lateral ocellus and eye greater than the ocellar area width; occiput moderately sinuate; eyes in lateral view 1.1 times as long as the temples; temples not swollen behind eyes in dorsal view; eyes slightly converging below; face 1.1 times as wide as high; antennae (Fig. 1) with 27 antennomeres, apical flagellomeres ca. 2.3 times as long as wide, last antennomere with abundant pubescence; mandibles (Fig. 2) 3-toothed, narrow, 2nd tooth being long and pointed, very broad basally, its base approximately half the width of teeth 1-3 together; maxillary palpi short.

Mesosoma (Fig. 4)—1.5 times as long as high, 2.7 times as long as width between tegulae; pronotum bare and shining, with only a few scattered setae on its lower ventral angle, with a deep, broad, oblique groove with numerous cross ridges

(Fig. 4); mesoscutum not very pubescent, with only a few setae on its anterior face, central lobe, and along notauli; midpit of mesoscutum present; notauli very reduced, not extending towards the center of the mesoscutum; scutellar sulcus longitudinal, well differentiated; precoxal sulcus narrow (Fig. 4), finely crenulate; posterior mesopleural furrow smooth; mesopleuron bare, although with a few setae in the zone immediately above coxae; metapleuron and propodeum with moderately dense pubescence, with fine setae permitting visualization of its rugose sculpture; metapleuron pubescence forming a rosette around a central swelling; posterior coxae with setae tending to form a not very dense tuft; posterior femora 4 times as long as broad; posterior tarsus as long as tibae.

Wings (Fig. 3)—Pterostigma narrowing towards the metacarpus, 1.7 times longer than the metacarpus; cell R quite distant from wing apex; 1st radial segment 0.35 the length between its insertion and the parastigma, and about as long as the pterostigma is wide; remainder of radius evenly curved; postero-interior side of pterostigma, with respect to the insertion of the 1st segment of radius, about 1.4 times the length of the antero-interior side; n. rec. antefurcal; 3rd discoidal segment represented only by a shadow, so that cell B is open at its lower distal corner.

Metasoma—First tergite (Fig. 5) 2 times longer than wide apically, with almost parallel sides, with longitudinal stria, almost glabrous, with only a few scattered setae; remaining segments narrowing towards apex; ovipositor sheath setose, fairly robust, extending slightly beyond last tergite in resting position.

Color and size—Head black, mesosoma black, shining, and metasoma black, with the exception of tergita 2 + 3 (3 + 4 of abdomen) which are reddish; face black, clypeus black, with a reddish tonality; labrum, maxillary and labial palpi yellowish-reddish; antennae black, with the first four antennomeres reddish-yellow; center of mandibles reddish-brown; mesopleuron black; setae of metapleuron grayish; legs with anterior and middle coxae orangish, the posterior one dark brown with reddish streaks, femura and tibiae dark orange, telotarsi black; wings with light (very infrequently dark) pterostigma. Body length: 2.35 mm.

Male—Similar to female except as follows: antennae longer, 28 antennomeres; pubescence of mesopleuron, metapleuron and propodeum denser.

Host: unknown.

Material examined [deposited in the Naturhistorisches Museum Wien (holotype) and the Fundación Entomológica "Torres-Sala" (Docavo Collection) (Valencia, Spain) (paratype)]: Holotype: female, SPAIN: Segovia: Balsaín, 30-II-1963 (leg. I. Docavo). Paratype: male, SPAIN: Segovia: Balsaín, 30-II-1963 (leg. I. Docavo).

Etymology: The specific name of this species refers to *C. affinis* (Nees von Esenbeck, 1814), to which it is very similar.

In spite of having 3-dentate mandibles, this species belongs in the genus *Chorebus*. It belongs to the *affinis*-group for the same reasons as *C. dentisignatus* sp. nov. (see below).

This species runs in Griffith's key for the *Chorebus affinis*-group to *C. affinis* (couplet 10; Griffiths 1968 (VI): 116), and in Tobias's keys to *C. affinis* as well (couplet 476 (females), 481 (males); Tobias 1986: 207, 208; 1995 (III): 340-342).

The two species can be distinguished by the following characters:

Tooth 2 of mandibles slender, long, sharply pointed (Fig. 117: 21, Tobias 1995 (III)); first tergite of metasoma as in Fig. 128: 17 (Tobias 1995 (III); sides of pronotum with a smooth but very defined groove; precoxal sulcus long and completely smooth . . . . . *C. affinis* (Nees)

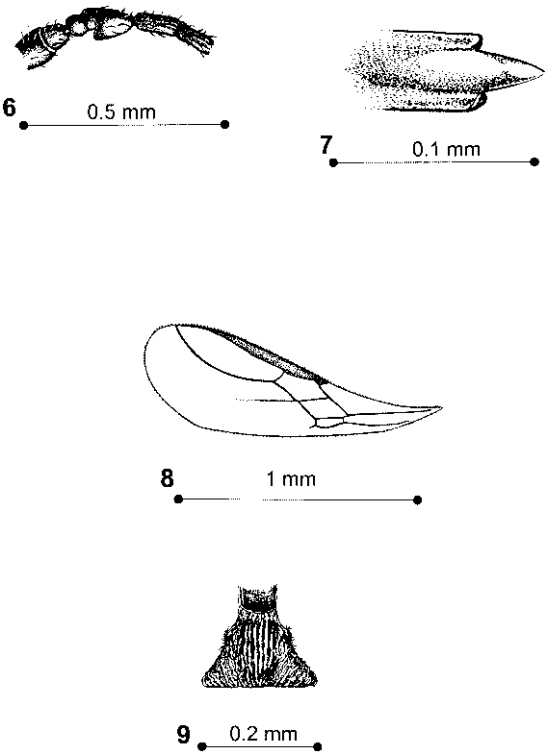
Tooth 2 of mandible very broad basally, its basal width about half the width of teeth 1-3 together, less pointed (Fig. 2); sides of pronotum with a deep, broad, oblique groove with numerous cross ridges (Fig. 4); precoxal sulcus crenulate (Fig. 4); first tergite of metasoma as in Fig. 5 . . . . . *C. affiniformis* sp. nov.

This new species also appears close to *C. nigriscaposus* (Nixon, 1949) and *C. ophthalmicus* (Tobias, 1962), from which it can be distinguished by: A) from *C. ophthalmicus*: 1) mandible with 3 teeth only (Fig. 2); 2) first tergite of metasoma 1.5 times as long as wide, slightly widened towards apex (Fig. 5); 3) shortest distance between eyes slightly greater than width of clypeus. B) from *C. nigriscaposus*: 1) antennomeres: female (27)(Fig. 1), male (28); 2) base of mandibles and mesopleuron more sparsely pubescent (Figs. 2 and 4); 3) pronotum bare and shining, with only a few scattered setae in lower ventral angle, with a deep, broad, oblique groove with numerous cross ridges (Fig. 4); 4) mesoscutum with longitudinal sulcus extending to scutellum, sparingly pubescent, with only a few setae on its anterior face, central lobe, and along notauli (Fig. 4); 5) postero-interior side of pterostigma, with respect to insertion of 1st segment of radius, about 1.4 times the length of antero-interior side (Fig. 3); 6) metapleural and propodeal pubescence less abundant, only the metapleural rosette being formed (Fig. 4); 7) telotarsi black.

Chorebus dentisignatus **sp. nov.** (Figs. 6-9)

Female

Head—Transverse, 1.4 times wider than long, 1.3 times higher than long, intensely punctate,



Figs. 6-9. *C. dentisignatus* sp. nov. (female). Fig. 6. Antenna. Fig. 7. Mandible. Fig. 8. Anterior left wing. Fig. 9. First tergite of metasoma.

with very scarce, short, scattered pubescence, somewhat denser behind mandibles, on the edge of the temples; ocelli very small, not at all protruding, the distance between them twice as great as their diameter, the distance between lateral ocellus and eye as long as the ocellar area is wide; occiput moderately sinuate; eyes in lateral view as long as temples; face 1.2 times as wide as high; antennae (Fig. 6) with 21 antennomeres, with a characteristic ventral prominence, a tooth-shaped bulbous swelling, on the first flagellomere; mandibles (Fig. 7) tridentate, without dense pubescence near its base, with the 2nd tooth long, thinning towards its apex, without denticle on its lower edge; 1st and 3rd teeth small, more or less rounded.

Mesosoma—1.5 times longer than high, 2.5 times longer than wide between the tegulae; pronotum almost glabrous, with only a few setae along anterior oblique suture; mesoscutum densely punctate, with pubescence spreading across entire surface, with a long and narrow central groove ending in a pit; notauli very slightly differentiated, only visible in their initial part; scutellum pubescent; mesopleuron fine and densely granulated, matte, without pubescence; precoxal sulcus smooth; metapleuron with a markedly rugose elevation or swelling, surrounded by a dense and flattened pubescence, without bristly setae at center; propodeum with dense pubescence, amidst which its rugose surface can be appreciated; posterior coxae with a tuft of setae; posterior femora 5 times as long as wide; posterior tarsus 0.9 times the length of the tibia.

Wings (Fig. 8)—Pterostigma narrow, imperceptibly joining the metacarpus; Rs evenly curved; marginal cell almost reaching the apex of wing.

Metasoma—First tergite (Fig. 9) broadened towards its apex, 1.3 times longer than wide, grooved longitudinally, with central ridges more pronounced than lateral ones, almost glabrous, shining, with only a few scattered setae; ovipositor sheaths thick, shorter than the second tarsal segment of the posterior tarsus, approximately of the length of its basitarsus, extending slightly beyond the last tergite in retracted position; metasoma narrowing noticeably from the fourth segment towards the apex.

Color and size—Head with face and clypeus black, with reddish streaks; labrum yellowish-red; antennae yellowish-brown, with scapus, pedicellus and annellus practically yellow, but with a blackish first flagellomere; center of mandibles yellowish-red; maxillary and labial palpi whitish-yellow; mesosoma black, except prothorax, mesoscutum, and mesopleuron, which are reddish; pubescence of the mesopleuron and propodeum grayish-white; legs reddish-brown, with the fifth tarsal segment blackish; metasoma black, although with the border between the first tergite and the second tergite, plus the tergita 2 + 3, with reddish streaks; ovopositor sheath black. Body length: 1.8 mm.

Male: unknown. Host: unknown.

Material examined [deposited in the Naturhistorisches Museum Wien]: Holotype: female, SPAIN: Segovia: Balsaín, 13-VIII-62 (leg. I. Docavo).

Etymology: The specific name of this species refers to the particular morphology of the antennae.

This species belongs to a group of *Chorebus* with only 3-dentate mandibles. The pubescence of the propodeum and the metapleuron, however, indicate that it is a species of *Chorebus* rather than of any other genus. The present concept of *Chorebus* includes all species with either 4-dentate mandibles or the characteristic pubescence on the propodeum and a central swelling on the metapleuron with numerous setae arranged in the form of a rosette around it, or with both characters together (most species).

A tuft of setae on the dorsal surface of the hind coxa is only weakly developed, but the shape of the wing venation (radius evenly curved) and the 3-dentate mandibles refer this species to the species-group formerly constituted by the genus *Gyrocampa* Foerster.

This species runs in [1]Griffith's Key for the *affinis* group to *C. gracilipes* (Thomson, 1895) (couplet 22, Griffiths 1968 (VI): 117). There is a shorter key for the parasitoids of *Cerodontha* Rondani subgenus *Icteromyza*. Also in this key, the species runs to *C. gracilipes*. [2]Tobias's key leads the species to *C. gracilipes* as well (couplet 446, Tobias 1995: 203).

These two species can be separated as follows:

[1]21. Third antennomere of flagellum with a characteristic ventral prominence, forming a well differentiated bulbous swelling in the shape of a tooth (Fig. 6) . . . . . *C. dentisignatus* sp. nov.

Third antennomere with normal morphology 21a

21a Mesoscutum and mesepisternum densely covered with large punctures . . . . . *C. densepunctatus* Burghele

Mesoscutum and mesepisternum not as above, at most the former finely roughened 22

[2]446 (446a) Flagellar antennomeres 1-3 of normal shape. Apical antennomeres of flagellum 2-5 times as long as wide. Tooth 2 of mandibles extremely long and pointed. Some dense pubescence near the base of the mandibles. Sides of pronotum with fine pubescence below the oblique suture. . . . . *C. gracilipes* (Thomson)

446a (447) Flagellar antennomeres 1 and 2 very short, antennomere 3 of extraordinary shape: hardly longer than wide, widely open and with oval edge at base, covering segment 2 dorsally, the lower part of the edge shaped into a blunt tooth; antennomere 2 seems to be inserted into the opening of antennomere 3 (Fig. 6). Apical antennomeres of flagellum only twice as long as wide. Tooth 2 of mandibles long and pointed (Fig. 7). Without dense pubescence near base of mandibles. Sides of pronotum without pubescence . . . . . *C. dentisignatus* sp. nov.

The most striking character is the formation of the flagellar antennomeres 1-3. It is possible that it is merely an example of teratology. However, there are sound reasons against such an opinion: (a) There are many other Braconidae with modified basal flagellar antennomeres (e.g.,*Atanycolus* (Foerster), *Coeloides* Wesmael, *Eustalocerus* Foerster. Also in Alysiinae, there are genera with shortened basal flagellar antennomeres). Outside the braconids there are, for example, the males of Diapriidae with modified 2nd flagellar antennomere. (b) The morphology described could be interpreted in terms of an improvement to the mobility of the antenna. (c) The morphology cannot be readily explained by irregular development during the pupal phase (postembryonic development), for example caused by mechanical insult, because it is regularly developed on both antennae.

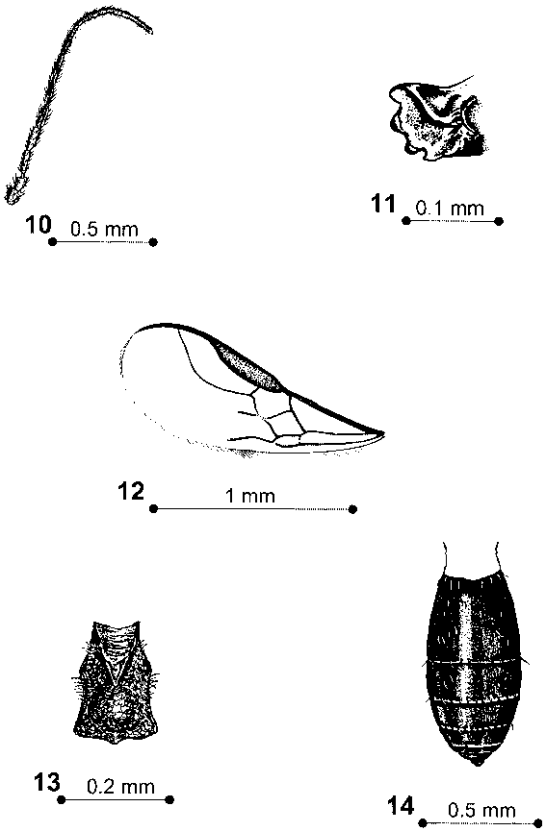
This new species also appears close to *C. densepunctatus* Burghele, 1959 and *C. striola* Stelfox, 1957, from which it can be distinguished, apart from having a tooth-shaped bulbous swelling in the first flagellomere (Fig. 6), by: A) from *C. densepunctatus*: 1) head intensely punctate; 2) the absence of denticle on lower edge of 2nd tooth of mandibles (Fig. 7); 3) mesoscutum and mesopleuron densely punctate; 4) length of ovipositor sheaths, which clearly go beyond the tergite of the last segment of the metasoma, in retracted position; 5) the color or pubescence of: a) head: black, with reddish streaks; without pubescence; b) antennae: yellowish-brown, with the scapus, pedicellus and annellus yellow, but with first flagellomere blackish; c) mesoscutum and mesopleuron reddish; d) legs reddish yellow, with only the fifth tarsal segment blackish; e) metasoma with tergita of the 2 + 3 segment with a reddish tonality, lighter than the rest; B) From *C. striola*: 1) the absence of sculpture on second tergite of metasoma; 2) the distal half of the radius, which is evenly curved (Fig. 8); 3) the edge of the clypeus, which is straight.

Chorebus granulosus **sp. nov.** (Figs. 10-14)

Female

Head—Transverse, 1.7 times wider than long, 1.15 times higher than long; occiput pubescent with long fine setae easily seen on sides; vertex almost without pubescence (bare), with only a few scattered scarcely recognizable setae; base of mandibles with a few scattered setae, difficult to see; ocelli very small, not protruding, the distance between them twice as great as their diameter, the distance between lateral ocellus and eye 1.5 times as long as the ocellar area is wide; occiput very slightly excavated; eyes in lateral view 1.4 times as long as temples; temples not swollen behind eyes in dorsal view; eyes not converging below; face 1.5 times as wide as high; antennae (Fig. 10) short with 23 antennomeres, apical flagellomeres ca. 1.2 times as long as wide; mandibles (Fig. 11) long - length of mandibles/length of head = 1.3, expanded towards their apex, with four strong teeth; maxillary palpi short.

Mesosoma—1.1 times as long as high, 2.0 times as long as width between tegulae; pronotum almost bare, shining, with only a few scattered setae; mesoscutum with short setae completely covering its anterior face and central lobe, but lateral lobes almost bare; midpit of mesoscutum not very differentiated; notauli not extending longitudinally on dorsal surface of the mesoscutum; precoxal sulcus narrow, crenulate



Figs. 10-14. *C. granulosus* sp. nov. (female). Fig. 10. Antenna. Fig. 11. Mandible. Fig. 12. Anterior left wing. Fig. 13. First tergite of metasoma. Fig. 14. Metasoma (except first tergite).

(punctate); posterior mesopleural furrow smooth; mesopleuron smooth, shining; metapleuron with poorly defined swelling, grainy (dotted, pitted), with numerous long setae directed towards coxae, not forming a defined rosette; propodeum densely setose, although with fine setae that allow visualization of rugosities on surface; posterior coxae almost bare, shining, with only a few scattered setae; posterior femora 5 times as long as wide; posterior tarsus as long as hind tibia.

Wings (Fig. 12)—Pterostigma broad, dark, 1.7 times longer than metacarpus; 1st radial segment shorter than length between its point of insertion and parastigma, and about 0.8 times as long as the pterostigma is wide; remainder of radius very weakly sinuate; n. rec. antefurcal; 3rd discoidal segment represented only by a shadow, such that cell B is open at its lower distal corner.

Metasoma—First tergite (Fig. 13) 1.5 times longer than wide apically, strongly grainy (dotted, pitted), with rather inconspicuous fine pubescence accumulating at sides, leaving a less pubescent central zone; tergite 3 (Fig. 14) with fine pubescence, not very visible, distributed almost regularly; tergita 2 + 3 (Fig. 14) completely covered with a well visible fine, dense granulation (shagreened); ovipositor sheath setose, robust, extending only slightly beyond last tergite in resting position.

Color and size—Head, mesosoma and metasoma black; face and clypeus black; labrum yellowish; center of mandibles reddish; maxillary and labial palpi blackish-brown; antennae black; mesopleuron black; legs largely dark brown, above all medial and posterior femura, all coxae being black; wings with darkened pterostigma. Body length: 2.5 mm.

Male: unknown. Host: unknown.

Material examined [deposited in the Fundación Entomológica "Torres-Sala" (Docavo Collection) (Valencia, Spain) (holotype and one paratype), and the Naturhistorisches Museum Wien (one paratype)]: Holotype: female, SPAIN: Valencia: Alcira-Toro, 21-II-1960 (leg. I. Docavo). Paratypes: 2 females, SPAIN: Valencia: Alcira, 21-II-1960 (leg. I. Docavo).

Etymology: The specific name of this species refers to the dense granulation of tergita 2+3 of the metasoma (3+4 of abdomen).

This new species of *Chorebus* is very similar to *C. thusa* (Nixon, 1937) and *C. galii* Griffiths, 1984, from which it differs in the following respects: From *C. thusa*: a) head not swollen behind the eyes; b) pterostigma broader (Fig. 12); cell R less sinuate (Fig. 12); c) first tergite of metasoma slightly widened towards its apex, very grainy (dotted, pitted), with fine pubescence, not very defined, accumulating at sides and leaving a central less pubescent zone (Fig. 13); d) tergite 3 with fine pubescence, although difficult to visualize (Fig. 14); e) tergita 3+4 completely covered by a fine, dense granulation, giving it a granular-rugose aspect, clearly visible (shagreened) (Fig. 14). From *C. galii*: a) first tergite of metasoma grainy (dotted, pitted) without a central keel (Fig. 13); b) tergite 2 of metasoma with some setae on the sides of its base (Fig. 14); c) palpi daker (brown). (a), (c) and (d) are the most characteristic features defining this new species.

This species can be inserted in the keys of [1]Griffiths (couplet 4, 1984: 358-359) and [2]Tobias (couplet 56, 1995 (III): 286) as follows:

[1]4	Antennae with 20-23 segments (antennomeres)	4a
	Antennae with 26-46 segments.	4c
4a	Petiole (first tergite of metasoma) densely pubescent	*C. thusa* (Nixon)

Petiole largely bare 4b

4b Petiole with central keel; tergite 3 without hairs(setae) at sides of base; palpi dark yellow . . . . . *C. galii* Griffiths

Petiole without central keel, grainy (dotted, pitted) (Fig. 13); tergite 3 (2 of metasoma) with some setae on sides of base (Fig. 14); palpi dark brown . . . . . *C. granulosus* sp. nov.

4c Antennae with 39-46 segments. Large species (length about 3 mm) . . . . . *C. phaedra* (Nixon)

Antennae with 28-34 segments. 5

[2]56 (56a)Head behind eyes broadened. First abdominal tergite with dense hairs (setae), distinctly broadened toward apex. Sides of metathorax with slightly rugose tubercles on lower part, uniformly pubescent. Antennae 22-24 segmented (with 22-24 antennomeres). Thorax 1.2-1.4 times as long as high. Body 1.9-2.6 mm . . . . . *C. thusa* (Nixon)

56a (57)Head not swollen behind the eyes. First abdominal tergite not broadened toward apex, very rugose, with barely visible fine pubescence, with a less setose central zone (Fig. 13). Metapleuron not very prominent, grainy (dotted, pitted), with a long pubescence directed towards coxa. Antennae 23 segmented (with 23 antennomeres) (Fig. 10). Thorax barely as long as high. Body 2.5 mm . . . . . *C. granulosus* sp. nov.

Acknowledgments

Financial support for this paper was provided from the Junta de Castilla y León, project SA 18/96, and Fundación Entomológica "Torres-Sala".

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