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Authors: Fischer, M., Tormos, J., Docavo, I., and Pardo, X.

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A NEW SPECIES OF *ANTRUSA* AND THREE NEW SPECIES OF *CHOREBUS* (HYMENOPTERA: BRACONIDAE) FROM THE IBERIAN PENINSULA

M. FISCHER¹, J. TORMOS², I. DOCAVO³ AND X. PARDO⁴

¹Naturhistorisches Museum Wien, Zweite Zoologische Abteilung (Insekten)
Burgring 7, A-1014 Wien, Postfach 417, Austria

²Unidad de Zoología, Facultad de Biología, Universidad de Salamanca, 37071-Salamanca, Spain

³Fundación Entomológica "Torres-Sala", Paseo de la Pechina, 15, 46008-Valencia, Spain

⁴Universitat de València, Institut Cavanilles de Biodiversitat i Biologia Evolutiva,
Apartat Oficial 2085, 46071 València, Spain

ABSTRACT

Antrusa curtitempus, *Chorebus liliputanus*, *C. propediremptum*, and *C. vicinus*, four new species of Dacnusiini from the Iberian Peninsula, are described, illustrated, and compared with allied species. Keys for their discrimination are provided. The taxonomic rehabilitation of the genus *Antrusa* is proposed.

Key Words: new species, *Antrusa*, *Chorebus*, Alysini, Dacnusiini, Braconidae.

RESUMEN

Se describen, e ilustran, cuatro nuevas especies de Dacnusiini de la Península Ibérica: *Antrusa curtitempus*, *Chorebus liliputanus*, *C. propediremptum*, y *C. vicinus*. Se discuten sus afinidades filogenéticas, y se propone la rehabilitación taxonómica del género *Antrusa*.

Translation provided by the authors.

In this work, four species of Dacnusiini (Hymenoptera: Braconidae: Alysini)—*Antrusa curtitempus*, *Chorebus liliputanus*, *C. propediremptum*, and *C. vicinus*—from the Iberian Peninsula, are described as new, illustrated, and compared with allied species. Keys for their discrimination are provided. The genus *Antrusa* Nixon is rehabilitated taxonomically.

The terms for body morphology and wing venation, together with the criteria for collecting biometric data, follow Fischer (1973, 2002) with the two following modifications: (a) mesosoma vs. thorax, and (b) setae vs. hairs. All the material examined is deposited at the Museo del Medio Ambiente (Valencia, Spain). The following abbreviations have been used in the descriptions: a2 = lower vein of B (brachius); B = brachial cell; cq1 = first cubital cross-vein; cu2 = 2nd abscissa of cu (= cubital vein); cu2' = second abscissa of cubital vein of hind wing; cu1b = lower cubital-anal cross vein (3rd discoidal segment); d = discoidal vein; F, F1, F2, etc. = flagellomere (s), flagellomere 1, 2, etc.; Fm, Fp = middle flagellomere (s), penultimate flagellomere; M = medial cell of hind wings; np = parallel vein (nervus parallelus); r' = radiellus (radial vein of hind wing); nr = recurrent vein (nervus recurrens); nr' = recurrent vein of hind wing; nv = nervulus; R = radial cell; r, r1, r2 = radial vein, first, second abscissa of radius; st =

pterostigma; SM' = submedial cell of hind wings; T, T1, T2, T3, T2+3 = tergite (s), first, second, third tergite, second + third tergite.

Genus *Antrusa* Nixon

The genus was described by Nixon (1943). Later, it was sunk into synonymy with *Exotela* Foerster by Griffiths (1964) based on his interpretation of characters in the light of phylogenetic systematics. E. Haeselbarth (Zoologische Staatssammlung, Munich) regarded *Antrusa* Nixon as justified (unpublished notes). The reason for the *Exotela*-dilemma was the fact that the decisive character of *Exotela*, the postfurcal nr, does not apply to all species. Another difficulty is the diagnostic separation from *Dacnusa* Haliday, with which it shares most characters. *Antrusa* can be characterized and delimited from *Exotela*, *Dacnusa* and *Chorebus* Haliday by a combination of the following characters: (a) mandibles three-dentate; (b) nr antefurcal; (c) T1 with medial longitudinal keel; (d) no sexual dimorphism of the pterostigma. The latter character is significant for separation from *Dacnusa*, but cannot be easily applied without having both sexes available. The longitudinal carina of T1 may be helpful. The three-dentate mandibles separate *Antrusa* from *Chorebus*, and the antefurcal nr separates it from *Exotela* in the restricted sense.

Antrusa curtitempus **sp. nov.** (Figs. 1-4)

Female—Body length: 1.5 mm.

Head (Fig. 1): Twice as wide as long, twice as wide as face, 1.33 times as wide as mesoscutum, eyes at least 1.8 times as long as temples, protruding, eyes narrowed behind, eyes and temples rounded in a common bow; toruli in normal position, occiput bayed inwards; upper side with scattered setae on the sides, occiput and in the ocellar area, epicranial suture between ocelli; distance between ocelli greater than ocelli width, distance between an ocellus and eye as long as width of ocellar area. Face 1.5 times as wide as high, only slightly and evenly convex, middle elevation nearly missing (only faintly visible in a certain oblique position), with rather evenly distributed, scattered setae, seta points discernable, edges of eyes only slightly converging below, nearly parallel sided. Clypeus slightly convex, 3 times as wide as high, with few outstanding setae. Tentorial pits round, their diameter as great as the distance from eyes. Labrum triangular, protruding, with inconspicuous setae. Mandible (Fig. 2) slightly longer than wide, lower edge straight, upper edge slightly directed upwards, tooth 1 rounded, tooth 2 pointed and only slightly protruding, tooth 3 broadly rounded, an incision between tooth 2 and 3, outer surface shiny to uneven and a few scattered setae. Antennae 23-segmented, scarcely longer than body, the basal flagellar segments about 2.5 times as long as wide, the following slightly shorter, Fp about 1.5 times as long as wide; the setae as long as the segment width, in lateral view 3 sensillae visible.

Mesosoma: 1.4 times as long as high, upper side convex. Mesoscutum about 1.25 times wider than long, evenly rounded anteriorly, notauli developed on declivity and crenulate, merging into the anteriorly crenulated lateral rim, central lobe and declivity setose, dorsal slit reaching middle of disc. Prescutellar furrow rectangular, with 3 longitudinal ridges. Scutellum triangular. Postaxillae and metascutum glabrous. Propodeum reticulate, with pentagonal area, a longitudinal carina in-

side, with basal carina and costulae. Furrows of sides of pronotum crenulate below. Prescutellar furrow broad, irregularly striated, tapering anteriorly and reaching edge, not reaching middle coxa, prepectal furrow narrow, passing into the crenulate anterior mesopleural furrow, posterior mesopleural furrow simple, epicoxal area of middle coxa with a few scattered setae only. Metapleuron glabrous, uneven, with long scattered setae, delimited from propodeum by an irregular lamella. Hind femur 5 times as long as wide, hind tarsus hardly shorter than hind tibia.

Wings (Fig. 3): st parallel-sided, reaching beyond middle of R, r arising from base of st by a distance as long as r1, the latter slightly longer than the width of st when infolded, distal half of r2 almost straight, R not reaching tip of wing, cu2 developed by a distance greater than cq1 long, nr clearly antefurcal, d slightly longer than nr, nv postfurcal, B about twice as long as wide, closed by vein culb, np arising from middle of B; r' and cu2' indicated only as folds, nr' absent.

Metasoma: T1 (Fig. 4) 1.5 times as long as wide, apically 1.5 times as wide as basally, evenly narrowed towards base, dorsal keels converging and uniting near middle to a longitudinal median keel, the remainder smooth, laterally a lamella which is medially slightly angulated (lateral view), the spiracle outside the lamella. Ovipositor sheath as long as hind basitarsus, reaching slightly beyond tip of metasoma.

Color: Black. Yellow: anellus, labrum, mouth parts, tegulae, wing venation, legs, and parts of the lower side of the metasoma.

Male—Unknown.

Host—Unknown.

Material examined: Holotype: female, SPAIN: Castellón: Alcora, 7-VII-1990. Paratype: SPAIN: Castellón: Alcora, 7-VII-1990, 1 female.

Etymology: The specific name "curtitempus" means "short temple" and refers to the narrowed and shortened part of the head behind the eyes (in dorsal view).

Taxonomic position: The west-Palearctic species may be separated as follows:

1. Head (Fig. 1) behind eyes strongly narrowed; temples about half as long as eyes; eyes and temples rounded in a common curve. Body length: 1.5 mm. Spain *A. curtitempus* **sp. nov.** (female)
—Head behind eyes as wide as at eyes or wider; eyes about as long as temples 2
2. Head behind eyes widened. T2+3 setose all over, T2 weakly sculptured. Scape and pedicel yellow. Antennae 29-32 segmented. Body length: 2.5 mm. England, Germany, Central Russia *A. vaenia* Nixon
—Head at temples not or only slightly wider than at eyes. Setae of T2+3 not distributed over the entire surface; a broad, bare area between T2 and T3. Only T1 sometimes longitudinally striated 3
3. r2 nearly evenly bent 4
—r2 distally bisinuate; tegulae dark 5
4. T1 longitudinally striated, weak points between the striae, shiny. Hind femora 5.5 times as long as wide. Mesoscutum setose only anteriorly, the rest predominantly bare. T2 glabrous, bare. T1 brownish; T2+3 dark brown. Antennae 31-segmented. Body length: 2.2 mm. Central Russia *A. chrysotegula* (Tobias)

- Hind femora 4.5 times as long as wide. Mesoscutum nearly entirely covered with short, fine semi-appressed setae. T2 weakly longitudinally rugose at base. Metasoma yellow, T2 dark brown, T1 black. Antennae 30-segmented. Body length: 2.3 mm. Moldavia *A. chrysogastra* (Tobias)
5. Antennae 23-36-segmented, F up to 28-segmented. Head behind eyes clearly widened. T1 narrow, folds stronger. T2 smooth. Body length: 2.2-2.3 mm. Western Europe; North-West and Central Russia; Azerbaijan *A. melanocera* (Thomson)
- Antennae 28-34-segmented. Head behind eyes not widened. T1 somewhat wider, the folds rather weak. T1 sometimes weakly sculptured. 2.0-2.4 mm. Western Europe; North-, Central and South-West Russia; Azerbaijan; Siberia (Irkutsk) *A. flavicoxa* (Thomson)

Genus *Chorebus* Haliday

Chorebus liliputanus **sp. nov.** (Figs. 5-6)

Male—Body length: 1.2 mm.

Head: Twice as wide as long, 1.4 times as wide as the mesoscutum, 1.9 times as wide as the face, 2.5 times as wide as T1, at eyes as wide as behind them; eyes 1.2 times as long as the temples, toruli not especially prominent, occiput slightly bayed inwards, upper side with very few setae on sides and occiput; ocelli small, distance between them greater than their diameter, epicranial suture not visible. Face 1.33 times as broad as high, setose all over, seta points present, middle elevation only feebly indicated and bare, edges of eyes slightly rounded. Clypeus trapezoidal, 3 times as wide as high. Tentorial pits small. Mandible (Fig. 5) as wide as long, lower edge straight, upper edge only slightly directed upwards, distally only very little broader than at base; tooth 2-pointed, not very prominent, tooth 1 round on tip, an obtuse angle between tooth 1 and tooth 2, tooth 3 and tooth 4 pointed, positioned one behind the other, from tooth 1 and tooth 4 arise keels, which unite to a faint, round carina separating a distal smooth area, from the lower part of the inner surface arise long, bent setae which surpass teeth 3 and 4 and the lower edge; labrum triangular, prominent, setose; maxillary palpi as long as height of head. Antennae as long as body, 22-segmented; F1-F3 about 3 times, Fm 2.5 times, Fp twice as long as wide, the F closely lined up, the numerous setae shorter than the F width, in lateral view 2 sensillae visible.

Mesosoma: 1.3 times as long as high, considerably higher than head, upper side strongly arched. Mesoscutum 1.4 times as wide as long, anteriorly round, notauli on declivity irregularly lamellate, crenulate, reaching lateral edge in right angle, absent on disc; setae on the declivity, along the imaginary course of the notauli, near lateral and posterior rim, seta points developed on declivity. Prescutellar fovea deep, narrow, densely crenulate. Axillae with long white setae. Postaxillae crenulate behind. Metascutum with short central lamella, lateral areas covered with white setae. Propodeum densely covered with dirty white tomentum. Sides of pronotum covered with long, white setae, bare only above. Prepectal furrow narrow, densely crenulate, passing into

the crenulate epicoxal furrow, precoxal furrow densely crenulate, shortened behind. Metapleuron densely covered with white setae, with a central swelling. Hind femora 5 times as long as wide, hind tarsi at most slightly shorter than hind tibia.

Wings (Fig. 6): st mostly parallel-sided, narrowed only towards the end, r arising behind base of st by a distance equal to the length of r1, r2 evenly curved, R ending considerably before tip of wing, nr antefurcal, cu2 scarcely developed, d 1.1 times as long as nr, nv postfurcal, B open distally and below, cu1b absent, a2 mostly absent; r' and cu2' practically absent, nr' absent, SM' half as long as M'.

Metasoma: T1 1.5 times as long as wide, apically straight-lined and narrowed, spiracles on small tubercles, densely rugose, dorsal carina only near base, with dense white tomentum, fewer setae only along middle line. The rest of metasoma oval, depressed, smooth and bare, except for single rows of setae near the hind edges of the T.

Color: Black. Antennae dark including base. Yellow: anellus, mouthparts, the entire legs, tegulae, wing venation and T2+3. Wing membrane hyaline.

Female—Unknown.

Host—Unknown.

Material examined: Holotype: male, SPAIN: Castellón: Burriana, 30-VI-1990. Paratype: SPAIN: Castellón: Burriana, 30-VI-1990, 1 male.

Etymology: The name refers to the very small size of the species.

Taxonomic position: The species is nearest to *Chorebus melanophytobiae* Griffiths, 1968 from which it can be distinguished as follows:

Chorebus melanophytobiae: (a) from tooth 1 of the mandible arises a lamella which runs to the base of the mandible; (b) r2 unevenly bent, distally rather straight; (c) distal part of st wedge-shaped; (d) base of antennae brown. Body length: 1.4-1.6 mm.

Chorebus liliputanus: (a) from tooth 1 and tooth 4 of the mandible (Fig. 5) arise keels, which unite to a faint, round carina separating a distal smooth area; (b) r2 (Fig. 6) evenly curved; (c) st mostly parallel-sided, narrowed only towards the end; (d) base of antennae dark like the remainder. Body length: 1.2 mm.

Remarks: According to the original description of *Chorebus melanophytobiae* (Griffiths 1968a), there are also specimens with the base of the antennae dark, like the remaining F. On the other hand, a contrasting yellow color of the antennal base is often taken as an important specific character. In spite of there being several, although only small, differences between *Chorebus melanophytobiae* and *Chorebus liliputanus*, we do not believe that the two taxa are conspecific.

Chorebus propediremptum **sp. nov.** (Figs. 7-9)

Male—Body length: 1.4 mm.

Head: 1.8 times as wide as long, 1.7 times as wide as face, 1.33 times as wide as mesoscutum; between eyes as broad as between temples, eyes as long as temples, distance of toruli from eyes and between them as great as their diameter, upper side only with very few setae on vertex and occiput and in the ocellar area, ocelli small, the distance between them greater than their diameter; epicranial suture distinct on occiput, fading away between ocelli. Face 1.4 times as broad as high, moderately setose with distinct seta points, edges of eyes very weakly rounded, median elevation very weak. Clypeus trapezoidal, 3 times as wide as high, with some faint, long setae. Tentorial pits as wide as their distance from eyes. Labrum projecting, apically round, with long setae. Mandible (Fig. 7) 1.1 times as long as wide, tooth 2 protruding and pointed, tooth 1 as long as tooth 2 and apically rounded, a right angle between tooth 1 and 2, tooth 3 resembling an intercalar swelling on lower edge of tooth 2, tooth 4 retracted, lower edge slightly bulged downwards, short keels arising from teeth 1 and 4, distal area slightly excavated. Maxillary palpi not longer than the head high. Antennae at most slightly longer than body, 30-segmented, most F equally wide, only the F towards the apex slightly narrower; F1 3 times, F2 2.5 times, F10 2 times, Fp 2 times as long as broad, the F beyond the middle clearly separated from each other, but not very much, the numerous setae shorter than the F width, in lateral view 3 sensillae visible.

Mesosoma: 1.33 times as long as high, upper side very weakly rounded, nearly flat, strongly bent downwards behind. Mesoscutum 1.4 times as broad as long, round on lateral lobes, anteriorly nearly straight, notauli distinct on declivity, crenulate here, passing in a bow into the marginal furrow which is anteriorly crenulate, faintly indicated on disc near to the elongate dorsal fovea, with many setose hollows on declivity, with a row of setae along notauli. Prescutellar fovea deep, crenulate. Axillae with white setae. Postaxillae clearly smooth. Metascutum and propodeum covered with dense, dirty white setae obscuring the surface, spiracles of propodeum on small tubercles. Sides of pronotum without any sculpture,

bare. Precoxal furrow narrow, bisinuate, crenulate, shortened behind, reaching the anterior edge, presternal furrow crenulate, posterior mesopleural furrow simple. Metapleuron with central swelling and radiating setae, covered with dirty white pubescence obscuring the surface. Hind femora 5 times as long as wide, hind tarsi as long as hind tibiae.

Wings: st nearly parallel sided, wedge-shaped in distal third, r arising from base of st by a distance equal to length of r1, r2 unevenly bent, nearly straight distally, R ending considerably before tip of wing, nr antefurcal, d scarcely longer than nr, nv postfurcal throughout its width, B open on distal corner; a2 weak, cu1b absent, np very weak, or indicated only as a fold.

Metasoma: T1 (Fig. 8) 1.5 times as long as wide, parallel sided, narrowed near base, dorsal carinae only near base, surface irregularly and densely net-like rugose, the few white setae not obscuring the surface, the setae longer and more numerous on apical corners.

Color: Black. Yellow: base of antennae as far as F1, mouth parts, all legs, tegulae, wing venation and T2+3. Clypeus brownish. Wing membrane hyaline.

Female—Unknown.

Host—Unknown.

Material examined: Holotype: male, SPAIN: Castellón: Almenara, 5-VII-1990. Paratype: SPAIN: Castellón: Almenara, 25-VII-1990, 1 male.

Etymology: The name indicates that the species stands near *Chorebus diremtus* (Nees von Esenbeck, 1834).

Taxonomic position: The species is, according to Griffiths's key (1968b) and Tobias's key (1986), nearest to *Chorebus flavipes* (Goureau, 1851) or *Chorebus diremtus*. The species can be differentiated from each other as follows:

Chorebus diremtus: Mesosoma about 1.45 times as long as high vs. *Chorebus propediremptum*: Mesosoma 1.33 times as long as high.

Chorebus flavipes: (a) sides of pronotum bare and smooth centrally, with a little fine pubescence mainly below the oblique suture; (b) T1 caudally broadened; (c) mesosoma 1.4 times as long as high. Body length: 1.8 mm vs. *Chorebus propediremptum*: (a) sides of pronotum predominantly shiny, without setae; (b) T1 (Fig. 8) parallel sided; (c) mesosoma 1.33 times as long as high.

Chorebus vicinus **sp. nov.** (Figs. 9-11)

Female—Body length: 1.7 mm.

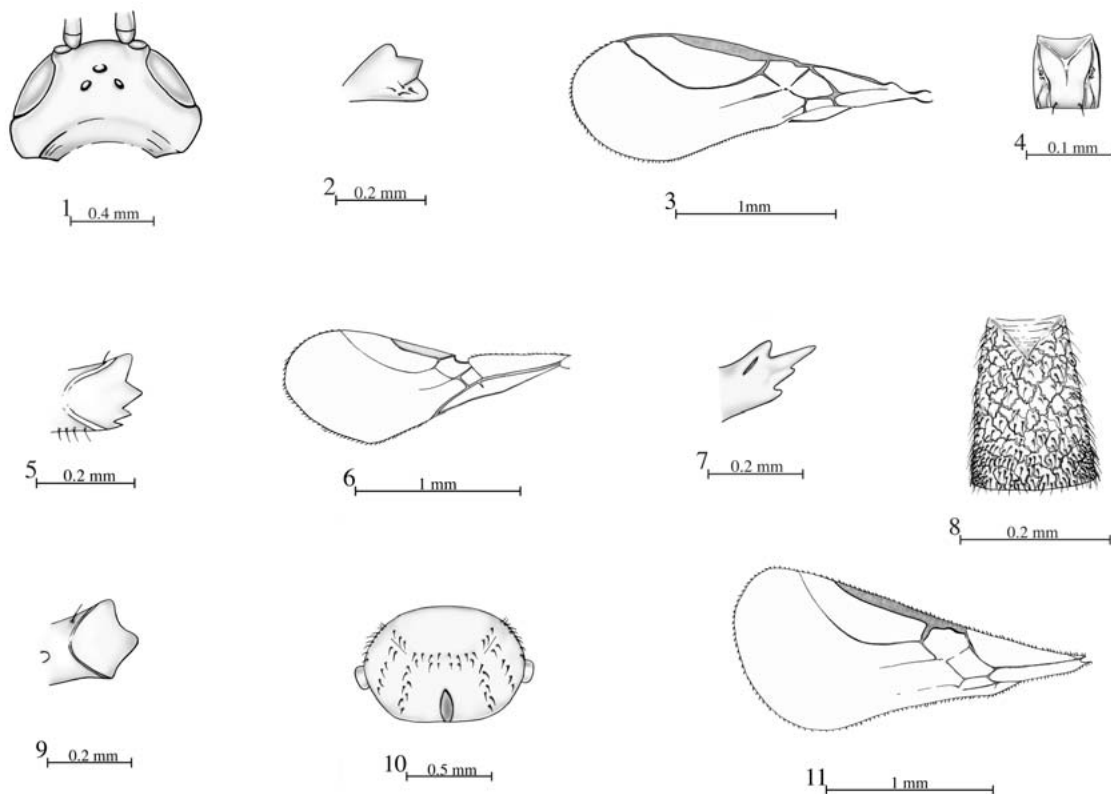
Head: 1.9 times as wide as long, 1.4 times as wide as mesoscutum, 1.7 times as wide as face, 4 times as wide as T1; eyes as long as temples, behind eyes scarcely wider than between eyes. Upper surface with scattered, very fine setae on the sides, the occiput, and in the ocellar area, seta

points not recognizable. Ocelli small, the distance between them greater than their diameter, epicranial furrow very weak. Face 1.2 times as wide as high, with short, white, not very dense setae, only near eyes a few longer, erect setae, seta points very fine, middle elevation scarcely developed, edges of eyes weakly rounded. Clypeus three times as wide as high, glabrous, trapezoidal, slightly standing out from face. Tentorial pits small. Mandibles (Fig. 9) as long as wide, apically only a little wider than at base, 3-dentate, the teeth blunt and of about equal width, edges rounded between teeth, keels arising from teeth 1 and 3, forming a round lamella, which separates a smooth, inward sloping area distally. Labrum broad, prominent. Palpi of the present example damaged. Antennae slightly longer than body, 24-segmented; F1 4 times as long as wide, F2 as long as F1, the following very gradually shorter, Fm about 2.5 times, Fp twice as long as wide; the F clearly separated from each other, the setae shorter than the F width, in lateral view 3 sensillae recognizable.

Mesosoma: 1.33 times as long as high, upper side arched. Mesoscutum wider than long, round

anteriorly, notauli (Fig. 10) only on anterior declivity, upper surface with moderately long, white setae, only areas on side lobes and a small area on the disc bare, seta points especially visible anteriorly, dorsal fovea oval. Prescutellar furrow crenulate at depth. Axillae dirty white, setose. Postaxillae hardly sculptured. Sides of metascutum hidden by white setae. Propodeum densely covered with short white setae hiding the punctate surface, spiracles small. Sides of pronotum bare. Precoxal furrow densely crenulate, shortened behind, reaching the anterior edge of mesopleuron, prepectal furrow narrow, crenulate, passing over to the broader crenulate epicoxal furrow, posterior mesopleural furrow simple. Metapleuron with a rosette of dirty white setae around a central swelling. Hind femora 5 times as long as wide, hind tarsi as long as hind tibiae.

Wings (Fig. 11): st parallel sided, metacarp less than half as long as the distal part of st, r arises from base of st by a distance as long as r1, r2 unevenly curved, R ending long before tip of wing, nr strongly antefurcal, d 1.2 times as long as nr, nv postfurcal throughout its length, B laterally open, culb absent, a2 (lower vein of B) grad-



Figures. 1-4. *Antrusa curtitempus* (female). Fig. 1. Head in dorsal view. Fig. 2. Mandible. Fig. 3. Anterior right wing. Fig. 4. T1: First tergite of metasoma. Figures 5-6. *Chorebus liliputanus* (male). Fig. 5. Mandible. Fig. 6. Anterior right wing. Figures 7-8. *Chorebus propediremptum* (male). Fig. 7. Mandible. Fig. 8. T1. Figures 9-11. *Chorebus vicinus* (female). Fig. 9. Mandible. Fig. 10. Notauli. Fig. 11. Anterior right wing.

ually extinct distally, np not developed; r' and cu2' developed only as folds.

Metasoma: T1 twice as long as wide, sides slightly converging anteriorly, rugose all over, evenly covered with white setae, dorsal lamellae short, spiracles on small tubercles. T2 with few scattered setae on basal half. Ovipositor sheaths hardly projecting beyond the apex of metasoma.

Color: Black. Yellow: anellus, mouth parts, all legs, tegulae, and wing venation. Wing membrane hyaline.

Male—Unknown.

Host—Unknown.

Material examined: Holotype: female, SPAIN: Castellón: Alcora, 17-VII-1990. Paratype: SPAIN: Castellón: Alcora, 19-VII-1990, 1 female.

Etymology: The epithet means “neighbor” to indicate the morphological similarity between *Chorebus vicinus* and *Chorebus transversus* (Nixon, 1954).

Taxonomic position: It runs in the key of Griffiths (1968b) and also in the key of Tobias (1986) to *Chorebus transversus*. The latter also has 3-dentate mandibles. The species are separated from each other by several characters:

Chorebus transversus (male, female): Antennae of female 28-36-segmented, of male 34-36-segmented, base of antennae to F2 yellow-brown, the apical F 2.5 times as long as wide. Mandible longer than wide. Sides of pronotum densely setose below and sculptured. Notauli developed as rugose furrows reaching as far as middle of mesoscutum. Metacarp as long as distal part of st.

Chorebus vicinus (female): Antennae of female 24-segmented, dark including the base. The apical F twice as long as wide. Mandibles (Fig. 9) as long as wide. Sides of pronotum bare. Notauli (Fig. 10) present only on anterior declivity, absent on disc. Metacarp (Fig. 11) about half as long as distal part of st.

Remarks: This species is ascribed to the genus *Chorebus* Haliday in spite of the 3-dentate mandibles, because of the dense, nearly dirty white tomentum of the propodeum and the metapleuron (rosette of radiating setae around a central swelling).

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