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Aradus (Quilnus) alonsoi, a new Aradidae (Heteroptera) from South Spain

By **J. M. Vela** and **J. E. García-Raso**

Dept. Zoology, Fac. Sciences, Univ. Málaga, Spain

Abstract

A new Aradidae from the South of Spain, *Aradus (Quilnus) alonsoi,* is described. A comparative table is given to separate it from its closely related *Aradus (Quilnus) discedens* Horvath, 1911, from Yugoslavia. Some evolutionary and biogeographical aspects are commented on.

Introduction

The subgenus *Quilnus* Stål, 1873, firstly created to separate *Aradus parvicollis* Stål, 1873, from *Aradus* s. str., included four species in the Mediterranean basin; three of them are European: the formerly quoted, *Aradus mirus* Bergroth, 1894 and *Aradus discedens* Horvath, 1911; and one North-African: *Aradus subsimilis* Horvath, 1911, from Algeria (Stichel, 1957).

Nevertheless Vasarhely (1975) argues that *A. mirus* belongs to the subgenus *Aradus* s. str. and he recognizes in the species of *Quilnus* the shared presence of the following characters: antennae cylindrical, rostrum not reaching prosternum, tergite VIII with a tooth on each side and a tendence to stenopterism in males and to brachypterism in females.

On the other hand, Heiss (1979), on the basis of the original description of *Aradus subsimilis* Horvath, 1911 – unfortunately, the type seems to be lost – considers that this species might be a micropterous form of *Aradus cedri* Puton, 1873, which is not a *Quilnus.*

According to these data only *A. parvicollis,* distributed throughout Crete, Greece, Yugoslavia (Stichel, 1957), Cyprus and Turkey (Heiss, 1979), *A. discedens* from Yugoslavia (Stichel, op. cit.) and *A. alonsoi* n. sp., described below from the South of Spain can be considered as species belonging to the subgenus *Quilnus* from the Mediterranean Basin.

Aradus (Quilnus) alonsoi spec. nov.

Type locality: Sierra de las Nieves, Serranía de Ronda, Málaga, Southern Spain.

Description:

Male (Fig. 1a): Total length 5.8–6.6 mm. With the general features of the subgenus *Quilnus,* stated above from Vasarhely (1975).

Stenopterous. Colour dark-brown. Body granulate, rugose.

Head as long as or slightly longer that width (Lh/Wh = 1.0–1.1); frons with two longitudinal, broad, parallel, deep grooves; vertex with two forwards divergent, smooth, yellowish-brown lines, ending about the hind margin of the eyes. Eyes subpedunculate, very prominent. Antennae thin (Fig. 2a), 1st

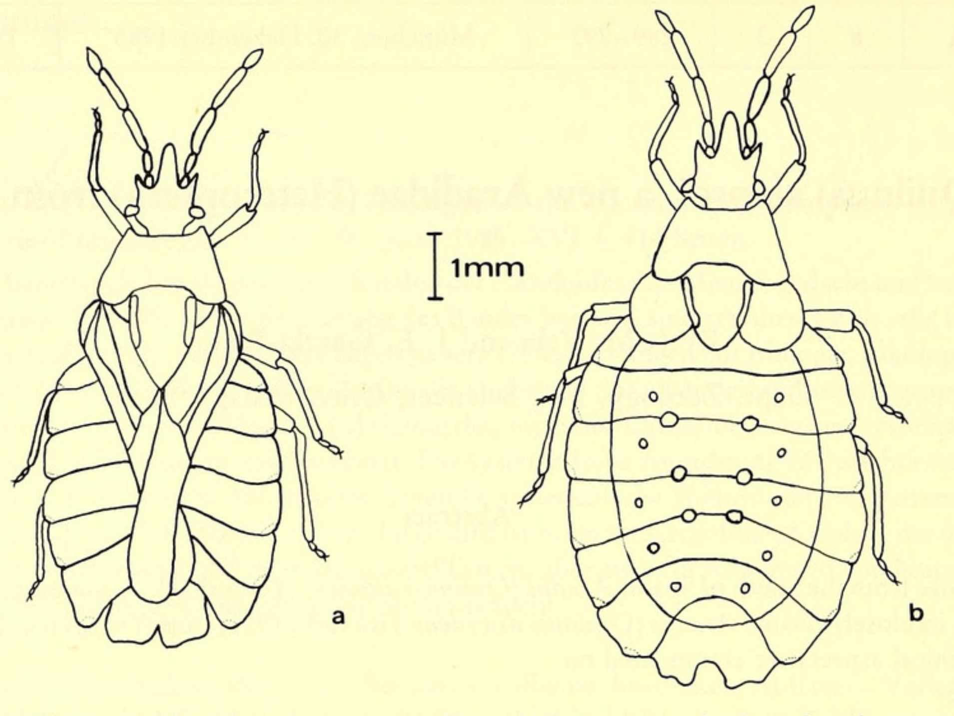

Fig. 1: *Aradus alonsoi* spec. nov. Dorsal view, a. – male, b. – female.

antennomere short, 2nd 2× as long as 1st, 3rd longer than 2nd, and 4th shorter than 3rd (see morphometrical data and affinity).

Pronotum (Fig. 2b) trapeziform, 1.5× as wide as maximum length, fore angles acutely prominent, hind angles rounded; disc with a broad transverse median depression and two longitudinal paramedian keels posterior to it.

Scutellum 1.66× as long as width; two prominent, longitudinal, marginal keels from base to middle.

Coria well developed. Membrane narrow, covering only the pygophore.

Legs paler than body, reddish-brown.

Body widest at middle of abdomen. Paratergite wide with a yellow spot in the external hind angle. Lateral lobes of segment VII with apex rounded, their internal margins straight. Sternite VII and VIII as in Fig. 3a.

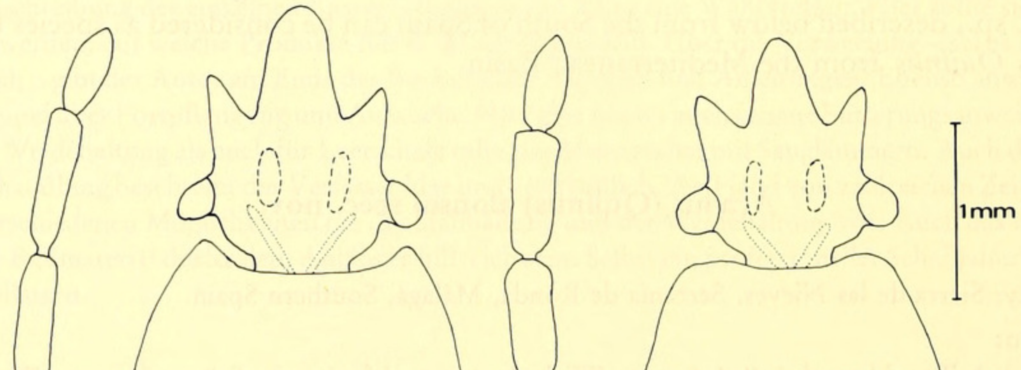

Fig. 2: *A. alonsoi* spec. nov. a. – antennae, b. – dorsal view of head and pronotum. *A. discedens* Hv. c. – antennae, d. – dorsal view of head and pronotum (schematic outline).

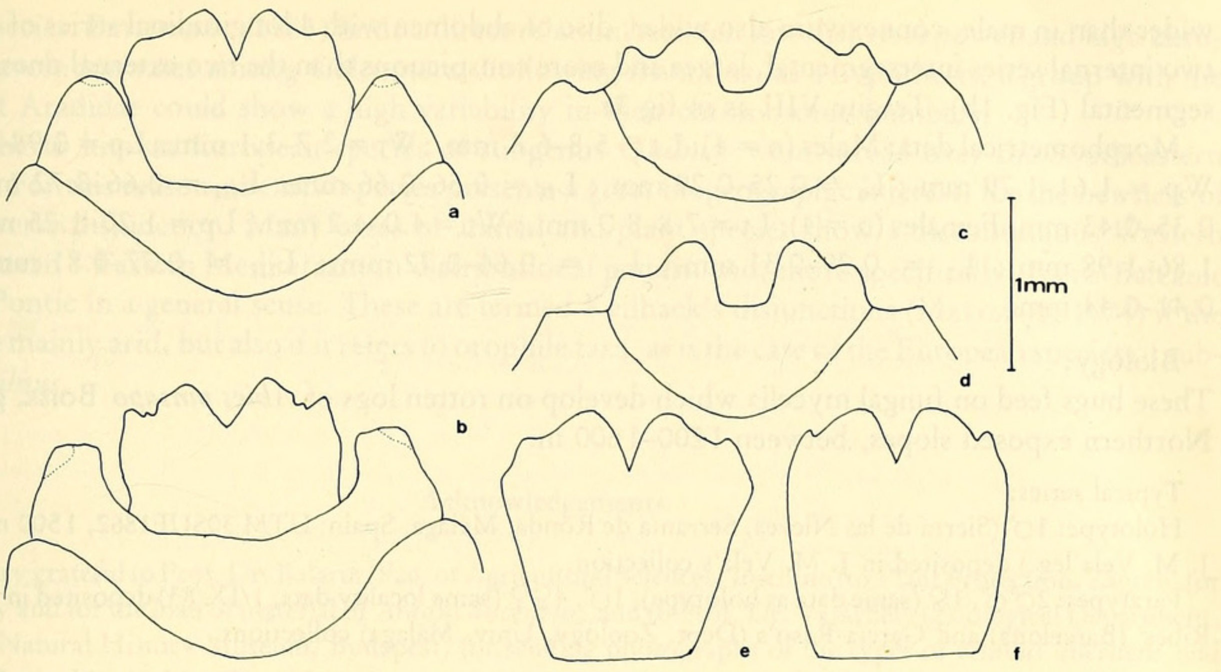

Fig. 3: *A. alonsoi* spec. nov. a. – sternites VII and VIII of the male, e. – sternite VIII of the male, c. – tergite VIII of the female. *A. discedens* Hv. b. – sternites VII and VIII of the male, f. – sternite VIII of the male, d. – tergite VIII of the female (schematic outline).

Genitalia: Pygophore as in fig. 4a. Parandria (Fig. 4b) tuberculated with parallel sides and with apex more or less truncate. Parameres (Fig. 4c) widest at base, very acute at apex. Tergite IX reduced to two short rounded lobes (Fig. 4d).

Female: Length 7.8–8.0 mm. The differential features with regard to those of the male are: Brachypterous. Coria reduced, not reaching level of scutellar apex. Membrane absent. Abdomen comparatively

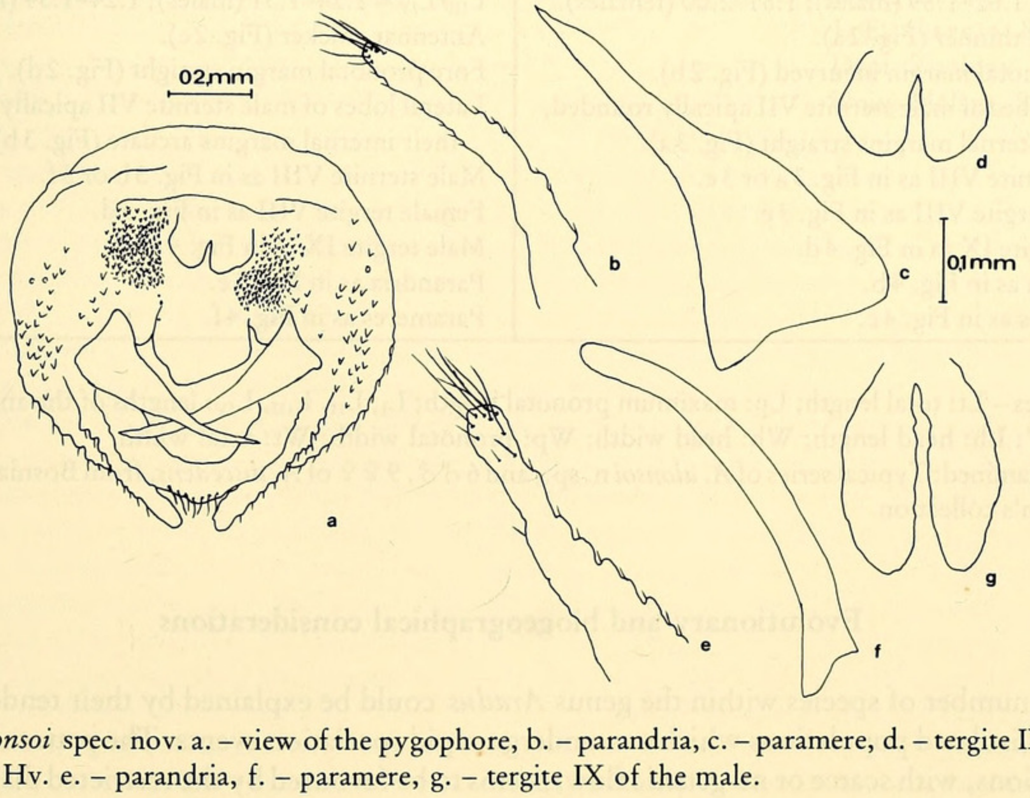

Fig. 4: *A. alonsoi* spec. nov. a. – view of the pygophore, b. – parandria, c. – paramere, d. – tergite IX of the male. *A. discedens* Hv. e. – parandria, f. – paramere, g. – tergite IX of the male.

wider than in male, connexivum also wider; disc of abdomen with 4 longitudinal series of foveae: the two internal series intersegmental, larger and more conspicuous than the two external ones, which are segmental (Fig. 1b). Tergite VIII as in fig 3c.

Morphometrical data: Males (n = 4): Lt = 5.8–6.6 mm.; Wt = 2.7–3.1 mm.; Lp = 0.98–1.13 mm.; Wp = 1.61–1.79 mm.; L_I = 0.25–0.29 mm.; L_{II} = 0.56–0.66 mm.; L_{III} = 0.66–0.72 mm.; L_{IV} = 0.35–0.43 mm. Females (n = 4): Lt = 7.8–8.0 mm.; Wt = 4.0–4.2 mm.; Lp = 1.20–1.25 mm.; Wp = 1.86–1.98 mm.; L_I = 0.29–0.31 mm.; L_{II} = 0.66–0.72 mm.; L_{III} = 0.77–0.81 mm.; L_{IV} = 0.41–0.44 mm.

Biology:
These bugs feed on fungal mycelia which develop on rotten logs of *Abies pinsapo* Boiss., growing on Northern exposed slopes, between 1200–1600 m.

Typical series:
Holotype: 1♂ (Sierra de las Nieves, Serranía de Ronda, Málaga, Spain; UTM 30SUF1862, 1500 m., 23/X/83, J. M. Vela leg.) deposited in J. M. Vela's collection.

Paratypes: 2♂♂, 1♀ (same data as holotype); 1♂, 4♀♀ (same locality data, 1/IX/83) deposited in J. M. Vela's, Ribes' (Barcelona) and García-Raso's (Dept. Zoology, Univ. Málaga) collections.

Etymology: We are very pleased to name this new species after our good friend Dr. M. A. Alonso Zarazaga, for his help and interest in our work.

Affinity:
Aradus (Quilnus) alonsoi spec. nov. is a species closely related to *Aradus (Quilnus) discedens* Horvath, 1911, from Yugoslavia. The morphometrical and morphological differences between both of them are given in the table I.

Table I

Aradus (Quilnus) alonsoi spec. nov.	*Aradus (Quilnus) discedens* Hv.
Lt/Wt = 2.03–2.14 (males); 1.90–1.95 (females).	Lt/Wt = 2.18–2.48 (males); 2.10–2.25 (females).
L_{III}/L_{II} = 1.05–1.18 (males); 1.09–1.32 (females).	L_{III}/L_{II} = 0.97–1.03 (males); 0.98–1.03 (females).
L_{III}/L_{IV} = 1.62–1.89 (males); 1.81–2.00 (females).	L_{III}/L_{IV} = 1.24–1.31 (males); 1.24–1.34 (females).
Antennae thinner (Fig. 2a).	Antennae thicker (Fig. 2c).
Fore pronotal margin incurved (Fig. 2b).	Fore pronotal margin straight (Fig. 2d).
Lateral lobes of male sternite VII apically rounded, their internal margins straight (Fig. 3a).	Lateral lobes of male sternite VII apically truncate, their internal margins arcuate (Fig. 3b).
Male sternite VIII as in Fig. 3a or 3e.	Male sternite VIII as in Fig. 3b or 3f.
Female tergite VIII as in Fig. 3c.	Female tergite VIII as in Fig. 3d.
Male tergite IX as in Fig. 4d.	Male tergite IX as in Fig. 4g.
Parandria as in Fig. 4b.	Parandria as in Fig. 4e.
Parameres as in Fig. 4c.	Parameres as in Fig. 4f.

(Abbreviatures – Lt: total length; Lp: maximum pronotal length; L_I, L_{II}, L_{III}, L_{IV}: lengths of the antennomeres I, II, III and IV; Lh: head length; Wh: head width; Wp: pronotal width; Wt: total width.

Material examined: Typical series of *A. alonsoi* n. sp., and 6 ♂♂, 9 ♀♀ of *A. discedens*, from Bosnia (Yugoslavia), of the Hensch's collection.

Evolutionary and biogeographical considerations

The high number of species within the genus *Aradus* could be explained by their tendence to form reduced and isolated populations which can undergo rapid speciation events. The pattern of small isolate populations, with scarce or no genetic flow, seems to be favoured by the restricted dispersal ability of these species. PETITPIERRE (1983) finds a direct relation between low dispersal power and high chromosomal evolution rates among Coleoptera. Following from this, as a hypothesis, a group with the features of Aradidae could show a high variability in their chromosome numbers.

The hitherto known European species of subgenus *Quilnus* were spread over the Southeastern countries. For this reason, the new species presents a great biogeographic interest, for the newness of this transverse disjunction. Many cases of animal and plant species show a discontinuous Western Mediterranean – Eastern Mediterranean distributional pattern and, more specifically, Ibero-Balcanic or Ibero-Pontic in a general sense. These are termed Keilhack's disjunctions (MARGALEF, 1974) if the species are mainly arid, but also if it refers to orophile taxa, as is the case of the European species of subgenus *Quilnus*.

Acknowledgements

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J. M. Vela,
J. E. García-Raso,
Dept. Zoology, Fac. Sciences,
Univ. Málaga, Spain