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A new species of *Synisoma* (Isopoda: Valvifera: Idoteidae) from the Strait of Gibraltar and the Alborán Sea (Spain, western Mediterranean).

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Abstract: *Synisoma raquelae* sp. nov. (Isopoda: Valvifera: Idoteidae), is described from the Strait of Gibraltar and the Alborán Sea (western Mediterranean). The new species can be distinguished from all others species of the genus, with the exception of *S. bellonae*, by the fusion of the flagellar articles of the antenna. *S. raquelae* is best distinguishable from *S. bellonae* through the lack of the large cephalic mid-dorsal process; both species also differ in the morphology of pleotelson and pereopods.

Résumé : *Une nouvelle espèce de* Synisoma *(Isopoda: Valvifera: Idoteidae) du Détroit de Gibraltar et de la mer d'Alboran (Espagne, Méditerranée occidentale).*
Synisoma raquelae sp. nov. (Isopoda : Valvifera : Idoteidae) est décrite de la Mer d'Alboran et du détroit de Gibraltar (Méditerranée occidentale). Cette nouvelle espèce se distingue des autres espèces du genre (sauf *S. bellonae*) par la fusion des articles du flagelle de l'antenne. Cependant *S. raquelae* se différencie de *S. bellonae* surtout par l'absence du tubercule céphalique médio-dorsal, mais aussi par la morphologie du pléotelson et des péréiopodes.

Keywords : *Synisoma*, Idoteidae, Isopoda, Mediterranean Sea.

Introduction

The genus *Synisoma* Collinge, 1917 is currently represented in the Mediterranean and north-eastern Atlantic by nine species: *S. acuminatum* (Leach, 1815), *S. appendiculatum* (Risso, 1816), *S. bellonae* Daguerre de Hureaux, 1968, *S. capito* (Rathke, 1837), *S. carinatum* (Lucas, 1849), *S. lancifer* (Dollfus, 1894), *S. mediterraneum* Rezig, 1989, *S. nadejda* Rezig, 1989 and *S. spinosum* Amar, 1957. Two additional species are known from the Pacific, *S. pacificum* Nunomura, 1974 from Japan and *S. wetzerae* Ormsby, 1991 from California.

This report is the first of a series of contributions dealing with the marine isopod fauna of Spain, as result of the examination of collections of the oceanographic expedition "FAUNA I" along the south coasts of the Iberian Peninsula (see Templado et al., 1993) and describes a new species of the genus *Synisoma*. The new species differs from these species in several respects, and is therefore considered new to science. Type material is deposited in the collections of the Museo Nacional de Ciencias Naturales (MNCN), Madrid, Spain.

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Systematics

Synisoma Collinge, 1917

Stenosoma Leach, 1815; Dollfus, 1894. *Leptosoma* Risso, 1816; Rathke, 1837. *Idotea* Lucas, 1849 (in part). *Synisoma* Collinge, 1917; Amar, 1957; Daguerre de Hureaux, 1968; Nunomura, 1974; Prunus & Pantoustier, 1976; Rezig, 1989; Ormsby, 1991.

Remarks

Numerous diagnoses have been given for the genus *Synisoma* Collinge, 1917: Monod (1923); Menzies & Miller (1972); Naylor (1972); Prunus & Pantoustier (1976); Brusca (1983); Rezig (1989). All diagnoses are consistent in that two characters distinguished *Synisoma* from the others Idoteidae genera: the pleon lacks distinct somites (= pleomers) and the maxillipedal palp is composed of 4 articles. Other characters used in these diagnoses (e.g. arrangement of the coxal plates, number of flagellar articles in antenna, number of pleonal sutures) show a considerable degree of intrageneric variation.

Synisoma raquelae sp. nov. (Figs 1-3)

Material examined. All specimens were caught with the beam trawl described in Templado et al. (1993). Holotype: ♂ 8 mm (MNCN 20.04/3891) from Station 22, Plácer de las Bóvedas (36°25.20'-36°26.00'N, 5°00.80'-4°59.80'W), 30 m depth, 13 July 1989, bottom: coralligenous biocenosis. Paratypes: 4 ♂ 8-10 mm (MNCN 20.04/3891), 1 ♀ 8 mm (MNCN 20.04/3891) from Station 22, same data than holotype. 1 ♀ ovigerous, 9 mm (MNCN 20.04/3892) from Station 33, Alborán Island (35°55.95'-35°55.73'N, 3°01.56'-03°03.10'W), 34-44 m depth, 15 July 1989, bottom: kelps on rocks. Additional material: 1♂, 4♀, 5 postmanca, 3 manca from Station 22, same data than holotype. 4♂, 2♀, 2 postmanca, 2 manca from Station 61, Tarifa (36°01.07'-36°01.21'N, 5°40.04'-5°39.30'W), 39-44 m depth, 21 July 1989, bottom: rock.1♂, 2 manca from Station 60, Tarifa (36°03.33'-36°03.29'N, 5°41.23'-5°42.10'W), 12-16 m depth, 21 July 1989, bottom: sand, rock, photophilic algae. 3 ♂ from Station 23, Plácer de las Bóvedas (36°24.05'-36°25.62'N, 5°00.99'-5°01.47'W), 30-32 m depth, 13 July 1989, bottom: coralligenous biocenosis.

Description of male (Figs 1-3)

Body elongate, with lateral margins parallel, more than 5.5 times as long as wide (Figs 1A, 1B). Length: 6-10 mm. Colour: Pale yellow in alcohol. Cephalon 1.5 times as wide as long, deeply immersed in pereonite I, dorsal boss prominent in lateral view, and shallow posterior groove; eyes dark, round; supra-antennal line straight, anterolateral angles acute.

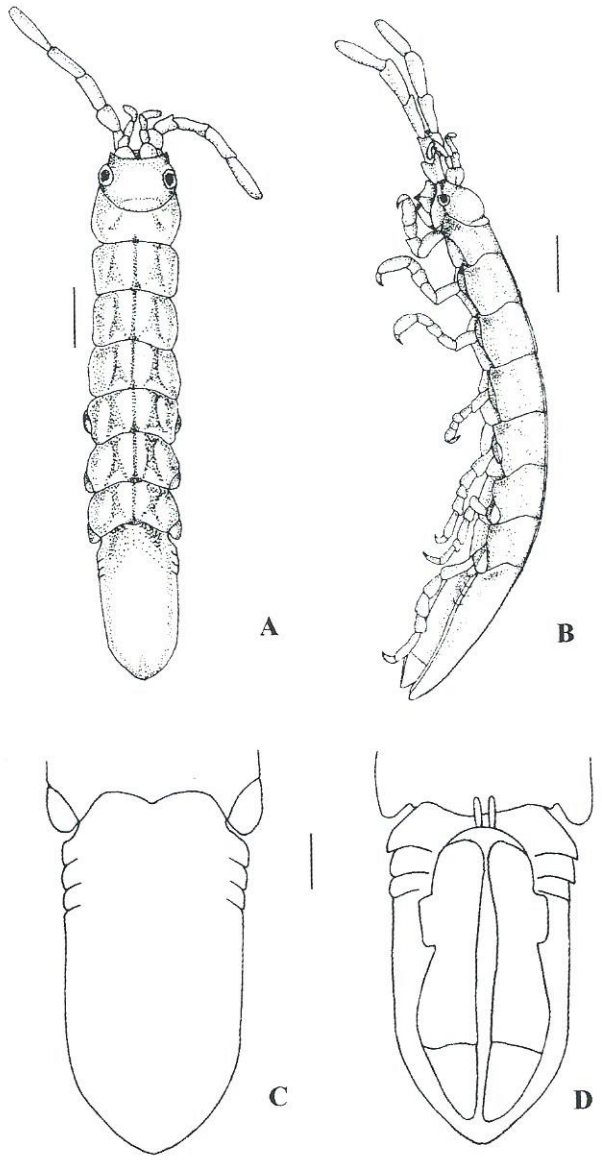

Figure 1. *Synisoma raquelae*, sp. nov., ♂ (holotype) (A) dorsal view; (B) lateral view; (C) pleotelson, dorsal view; (D) pleotelson, ventral view. Scale bars: A, B= 1 mm ; C, D= 500 µm.

Figure 1. *Synisoma raquelae*, sp. nov., ♂ (holotype) : (A) vue dorsale ; (B) vue latérale ; (C) pléotelson, vue dorsale ; (D) pléotelson, vue ventrale. Échelles : A, B = 1 mm ; C, D = 500 µm.

Antennule (Fig. 2A): peduncle of article 1 ovoid, article 2 short, article 3 as long as article 1; flagellum perpendicular to peduncle, longer than article 1, bearing a series of 8-9 pairs of aesthetascs and single aesthetasc at distal end, and a simple seta. Antenna (Fig. 2B): peduncle of article 1 very reduced, articles 2-3 short, articles 4 and 5 subequal in length; flagellum reduced to a single clavate article, with 6-8 rows of simple setae, and one minute vestigial apical article bearing a brush of short setae. Right mandible incisor (Fig. 2C) 3 to 4-teethed; weakly developed lacinia mobilis;

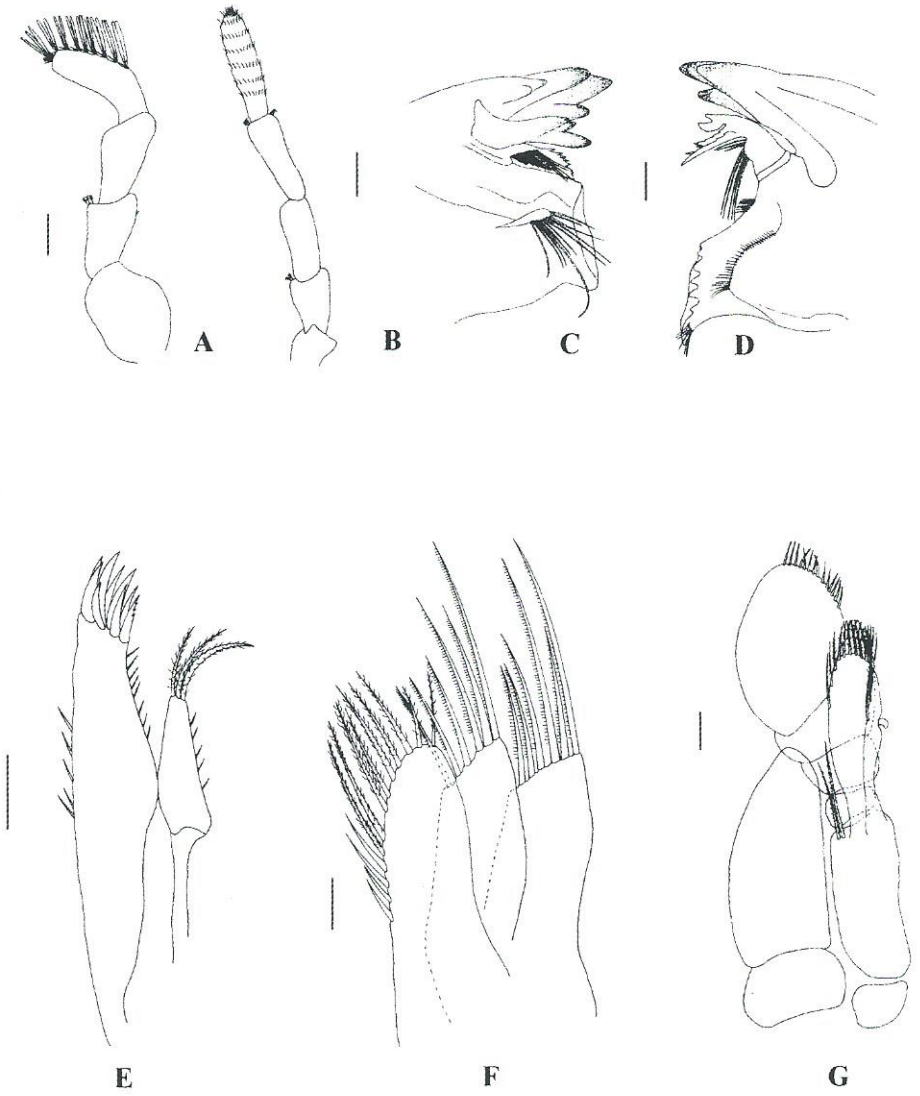

Figure 2. *Synisoma raquelae,* sp. nov., ♂ (paratype): (A) antennula; (B) antenna; (C) right mandible; (D) left mandible; (E) maxillule; (F) maxilla; (G) maxilliped. Scale bars: A= 160 µm ; B= 400 µm; C, D, F, G= 40 µm; E= 100 µm.

Figure 2. *Synisoma raquelae,* sp. nov., ♂ (paratype) : (A) antennule ; (B) antenne ; (C) mandibule droite ; (D) mandibule gauche ; (E) maxillule ; (F) maxille ; (G) maxillipède. Échelles : A = 160 µm ; B = 400 µm ; C, D, F, G = 40 µm ; E = 100 µm.

spine row with a series of basally united spiniform process and discrete spines; molar process large with 3-5 short and wide teeth and simple setae. Left mandible (Fig. 2D) with incisor 5 to 6-teethed; prominent 3-teethed lacinia mobilis, spine row present; molar process without tooth but with simple setae. Maxillule (Fig. 2E): inner lobe with 3 distal circumplumose spines; outer lobe with 8 stout spines and 1-2 serrate spines. Maxilla (Fig. 2F): trilobate, endopod with 8 circumplumose spines and 4 simple spines, inner and outer lobes of exopod with 6 pectinate spines each. Maxilliped (Fig. 2G): palp 4-articulate; endite with one coupling hook, and 6 - 7 long circumplumose spines.

Pereonites with weak dorsal carina. Coxal plates present on II-VII, on V-VII visible dorsally. Pereopods I-VII ambulatory, terminating in a biungulate dactyl. Pereopod I (Fig. 3A) with serrate spines on inner surface of propodus, and weak setation on ventral margin. Pereopods II-VII subsimilar, without serrate spines but with weak setation on ventral margin (Figs 3B, 3C).

Pleotelson (*sensu* Brusca, 1984) (Figs 1C, 1D) 2 times longer than wide, about 1/3.5 of total body length. All segments of the pleon are fused, with three pairs of small, partial, anterolateral sutures. Pleopods 1-2 with plumose marginal setae on rami (Figs 3E, 3F); peduncle with 4-5

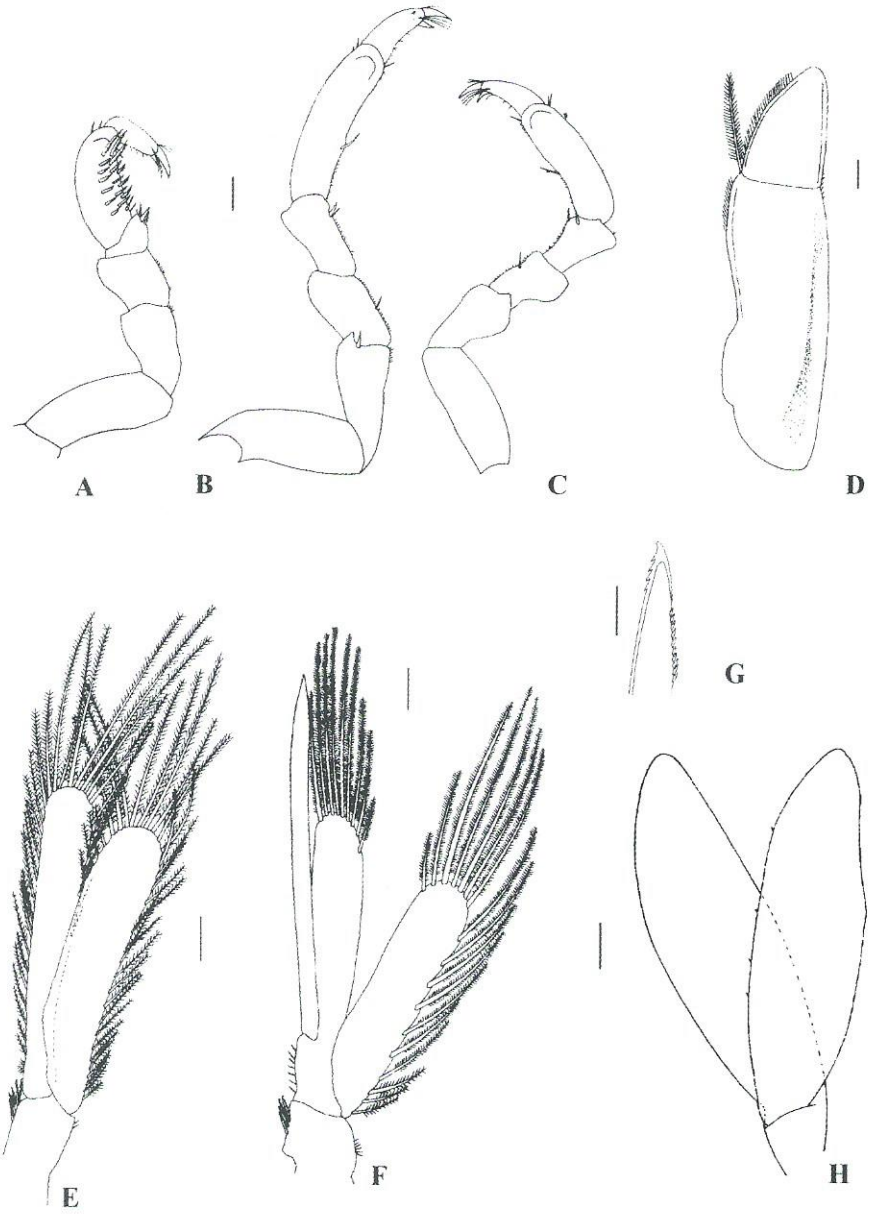

Figure 3. *Synisoma raquelae,* sp. nov., ♂ (paratype): (A) pereopod 1; (B) pereopod 4; (C) pereopod 7; (D) uropod; (E) pleopod I; (F) pleopod II; (G) detail of apex of appendix masculina; (H) pleopod V. Scale bars: A-F, H= 160 µm; G= 20 µm.

Figure 3. *Synisoma raquelae,* sp. nov., ♂ (paratype) : (A) péréiopode 1 ; (B) péréiopode 4 ; (C) péréiopode 7; (D) uropode ; (E) pléopode I ; (F) pléopode II ; (G) extrémité de l'appareil copulateur ; (H) pléopode V. Échelles : A-F, H = 160 µm ; G = 20 µm.

serrate setae on inner margin and simple setae on outer margin. Pleopod 2 with appendix masculina sub-basal in position verging on mid-way along endopod, extending beyond endopod by about half its length, apex inner margin serrated (Fig. 3G), outer margin with 10 spines. Pleopods 3-5 larger than 1-2, with a few simple setae along the inner margin of the endopod (Fig. 3H). Uropod (Fig. 3D): uniramous, with single, large, plumose seta on lateral distal angle of peduncle.

Description of ovigerous female (9 mm)

Cephalon and pereon same as described for the adult male, except for pereonites III-IV, wider than in adult male; oostegites present on sternites 2-5; antennule flagellum with a series of 4 pairs of aesthetascs and one single at the distal end.

Etymology. The epithet honours Raquel González, in appreciation of her friendship.

Remarks. As new species have been described, the

diagnosis of the genus *Synisoma* became less precise, due to differences in the morphology among some of the species. Some characters used, such as the number or pleonal sutures or number of flagellar articles in antenna, show intrageneric variations. For instance, the number of pairs of pleonal sutures is none in *S. acuminatum*, *S. lancifer, S. pacificum* and *S. wetzerae*, one in *S. appendiculatum* and *S. spinosum*, and three in *S. bellonae, S. capito, S. carinatum, S. mediterraneum, S. nadejda* and *S. raquelae* sp. nov. The genus was originally described as having a multiarticulate antennal flagellum (Collinge 1917: 750) and this character is also referred to by subsequent authors (e. g. Monod, 1923; Brusca, 1983, 1984); nevertheless, the fusion of the flagellar articles of the antenna occurs in *S. bellonae* and *S. raquelae* sp. nov. This character, together with the remarkable presence of pleonal sutures, led Daguerre de Hureaux (1968) to subdivide the genus, creating the subgenus *Gantesia* to enclose *S. bellonae* and the subgenus *Synisoma* for all the other species. Because of the differences in the pleonal and antennal morphologies of the *Synisoma* species, we see no reason to accept this proposal; our approach was followed by, among others, Prunus & Pantoustier (1976) and Rezig (1989).

As mentioned above, *S. raquelae* sp. nov. can be distinguished from all others species of the genus, with the exception of *S. bellonae,* by the fusion of the flagellar articles of the antenna. Nonetheless, there is a number of differences that clearly separates those two species, and a new species is established for the Spanish specimens. *S. raquelae* is smaller and has a more slim body shape than *S. bellonae,* and lacks the large cephalic mid-dorsal process. The pleotelson of *S. bellonae* is wider, with a dorsal carina, and the first anterolateral suture is very large. Whereas all the pereopods of *S. bellonae* were described as similar among them (Daguerre de Hureaux, 1968: 93), the PI propodus of *S. raquelae* is wider and has serrate spines, that are also present in other *Synisoma* species (Rezig, 1989).

The genus *Synisoma* has an exclusively northern hemisphere distribution, in the north Pacific, in the north-eastern Atlantic and in the Mediterranean. Observing this extreme disjunct distribution, Brusca (1984) postulated that the ancestor of this genus was a member of the Tethyan fauna, at least marginally, while the extant descendants have been pushed northward to the subtropical and warm-temperate portions of their former range. Except for the two Pacific species, *S. pacificum* and *S. wetzerae*, all the remaining species of the genus appear to occur in the Mediterranean, but some authors (Monod, 1925; Amar, 1957; Rezig, 1989) considered the records of *S. acuminatum* and *S. lancifer* from this sea as dubious, regarding them as Atlantic. The only other north-eastern Atlantic species, *S. bellonae,* has also been collected in the Mediterranean by Castelló (1986). However, a remarkable point is the high number of Mediterranean endemic species, including *S. appendiculatum, S. capito, S. carinatum, S. mediterraneum, S. nadejda, S. spinosum* and the new species, *S. raquelae.*

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