First record of *Echinoderes dujardinii* Claparède, 1863 (Kinorhyncha, Cyclorhagida) in Iberian Peninsula coastal waters

Primera cita de *Echinoderes dujardinii* Claparède, 1863 (Kinorhyncha, Cyclorhagida) en aguas costeras de la Península Ibérica

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Recibido el 19 de noviembre de 2010. Aceptado el 10 de diciembre de 2010.

ISSN: 1130-4251 (2011), vol. 22, 179-184

Echinoderes Claparède, 1863 is the most common and diverse kynorhynch genus and includes 65 valid species up to now (Sørensen & Pardos, 2008). Six species of this genus are known from the Spanish waters: *Echinoderes dujardinii* Claparède, 1863 from Mallorca and Canary Islands, and *E. cantabricus* Pardos *et al*., 1998 and *E. hispanicus* Pardos *et al*., 1998, *E. isabellae* GªOrdóñez *et al*., 2007, *E. neospinosus* GªOrdóñez *et al*., 2007 and *E. parrai* GªOrdóñez *et al*., 2007 from North Spain (Higgins, 1977; GªOrdóñez *et al*., 2007). Species of *Echinoderes* are mostly known from mud, but they may also live in sandy sediments, in shell gravel or on algae (Sørensen & Pardos, 2008).

In the Mediterranean, apart from *Echinoderes dujardinii,* other species of this genus have been recorded: *Echinoderes capitatus* (Zelinka, 1928), *E. citrinus* Zelinka, 1928, *E. druxi* d'Hondt, 1973, *E. ferrugineus* Zelinka, 1928, *E. gerardi* Higgins, 1978, *E. riedli* Higgins, 1966 and *E. setigera* Greef, 1869.

Twenty individuals of *E. dujardinii* (Fig. 1) were collected by scuba diving at 5-8 meters depth in a locality near Almuñécar (Granada, Spain): Punta del Vapor (3º43'41.474W; 36º43'27.127N) in March 25th 2009. For this purpose, fragments of the alga *Stypocaulon scoparium* (Linnaeus) Kützing were collected, preserved with 70% ethanol and transported to the laboratory. Kinorhynchs were sorted out under a stereomicroscope and again preserved in 70% ethanol. Some individuals were mounted in glycerine for light microscopy. For scanning electron microscopy (SEM) specimens were dehydrated in a graded ethanol series, transferred to acetone, critical point dried, sputter-coated with gold and observed with a JEOL JSM-5800 microscope at 13 kV.

Measurements of 14 individuals were obtained using both a light microscope at 400x and SEM. Registered measures were length of all the segments (LS), maximum segment width (MSW), last segment width (LSW) and total length (TL) (Table I). Also presence, length and location of spines

Fig. 1.—Light micrographs of *Echinoderes dujardinii* in dorsal view with the introvert and mouth cone extended.
Fig. 1.—Fotografía a microscopía óptica de *Echinoderes dujardinii* en visión dorsal con el introverto y el cono bucal extendidos.

Table I.— Measurements (μm) for adults of *Echinoderes dujardinii* collected in the studied site. Tabla I.—Medidas (μm) de los adultos de *Echinoderes dujardinii* colectados en el lugar de estudio.

Individual	TL	MaxSW	LSW	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
1	302.5	92.5	70.0	25.0	25.0	20.0	20.0	22.5	27.5	30.0	35.0	35.0	32.5	30.0
2	275.0	85.0	55.0	22.5	17.5	17.5	15.0	20.0	22.5	27.5	30.0	35.0	42.5	25.0
3	332.5	70.0	25.0	25.0	22.5	22.5	25.0	32.5	35.0	37.5	42.5	37.5	25.0	27.5
4	322.5	87.5	62.5	32.5	22.5	22.5	22.5	25.0	27.5	35.0	42.5	40.0	27.5	25.0
5	342.5	62.5	30.0	30.0	25.0	25.0	27.5	30.0	35.0	35.0	37.5	37.5	35.0	25.0
6	297.5	75.0	55.0	25.0	20.0	22.5	22.5	27.5	27.5	35.0	37.5	35.0	25.0	20.0
7	340.0	92.5	47.5	30.0	27.5	30.0	30.0	27.5	32.5	32.5	35.0	37.5	37.5	20.0
8	322.5	82.5	30.0	30.0	27.5	27.5	27.5	27.5	27.5	35.0	32.5	35.0	30.0	22.5
9	332.5	67.5	32.5	25.0	25.0	25.0	22.5	27.5	30.0	37.5	37.5	37.5	37.5	27.5
10	370.0	65.0	32.5	30.0	30.0	30.0	27.5	37.5	37.5	37.5	32.5	37.5	40.0	30.0
11	310.0	65.0	25.0	32.5	25.0	27.5	25.0	30.0	27.5	30.0	35.0	30.0	27.5	20.0
12	322.5	67.5	30.0	30.0	22.5	22.5	25.0	30.0	32.5	37.5	32.5	30.0	32.5	27.5
13	297.5	87.5	62.5	35.0	25.0	20.0	20.0	20.0	22.5	27.5	27.5	32.5	37.5	30.0
14	357.5	72.5	32.5	32.5	27.5	25.0	30.0	32.5	35.0	35.0	37.5	40.0	32.5	30.0
Mean	323.2	76.6	42.1	28.9	24.5	24.1	24.3	27.9	30.0	33.8	35.4	35.7	33.0	25.7
SD	25.5	10.9	15.9	3.8	3.3	3.7	4.2	4.9	4.7	3.6	4.3	3.2	5.6	3.9

and tubules were noted as follows: VLT: ventrolateral tubule; MDS: middorsal spine; LVT: lateroventral tubule; LVS: lateroventral spine; and LTS: lateral terminal spine (Table II).

Although *E. dujardinii* was redescribed by Higgins (1977), no SEM images were available up to now. In this note some of them are provided (Figs. 2-4). It is particularly interesting the W-shape of the 10th segment in ventral view, not previously figured neither in the original description (Claparède, 1863) nor in the redescription (Higgins, 1977).

In the studied area, this species has been collected in shallow waters on the alga *Stypocaulon scoparium,* within a community of photophilous algae of calm waters. The epibiont accompanying invertebrate community was mainly composed by small Crustacea (particularly Peracarida) and Polychaeta. Other algae in the same area, as *Asparagopsis* spp. and *Corallina* spp., were also checked searching for kinorhynchs, but no specimens were found. The temperature in the study area ranges from 14 ºC to 25 ºC along the year.

Table II.—Measurements (µm) and location of the spines and tubules in *Echinoderes dujardinii* collected in the studied site.
Tabla II.—Medidas (µm) y localización de las espinas y túbulos en los *Echinoderes dujardinii* colectados en el lugar de estudio.

	Number	Specimen 1	Specimen 2	Specimen 3	Specimen 4	Specimen 6	Mean
VLT4	3		16.6; 17.3	13.2		14.3	15.4
MDS6	1				11.4		11.4
MDS7	1				11.9		11.9
LVT7	4	13.9	16.0; 16.0	16.2		18.1	16.0
MDS8	1				13.3		13.3
LVS8	4	11.6	13.0; 14.0	14.4		15.7	13.7
MDS9	1				12.3		12.3
LVS9	3	13.9	14.3; 14.0			17.6	14.9
MDS10	2			16.4	12.3		14.4
LVS10	3	14.9	14.3; 15.0			23.8	17.0
LVT10	3	15.8	17.3			21.4	18.1
LVS11	2		14.0;13.6		16.6		13.8
LTS	3	121.6	100.0	140.3		112.0	118.5

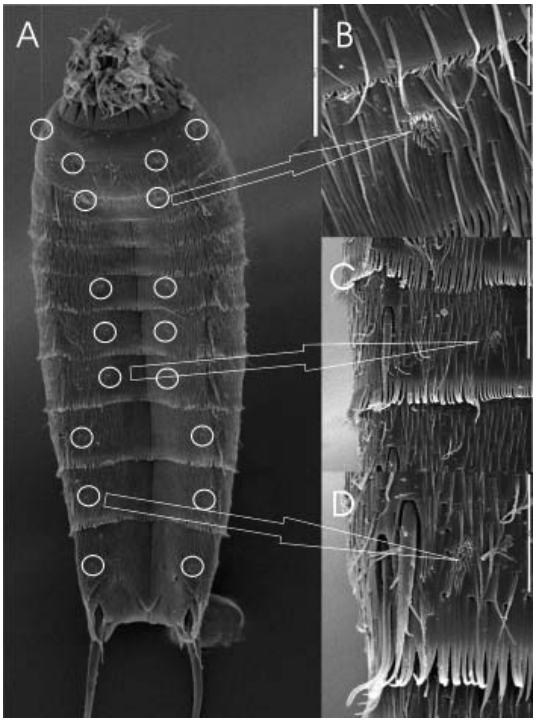

Fig. 2.—SEM micrographs of *Echinoderes dujardinii* in ventral view. Sensory spots are marked by circles. A: general view; B, C & D: details of sensory spots in several body segments.
Fig. 2.—Fotografía a SEM de *Echinoderes dujardinii* en visión ventral. Los puntos sensoriales están señalados por círculos. A: visión general; B, C & D: detalles de los puntos sensoriales en varios segmentos del cuerpo.

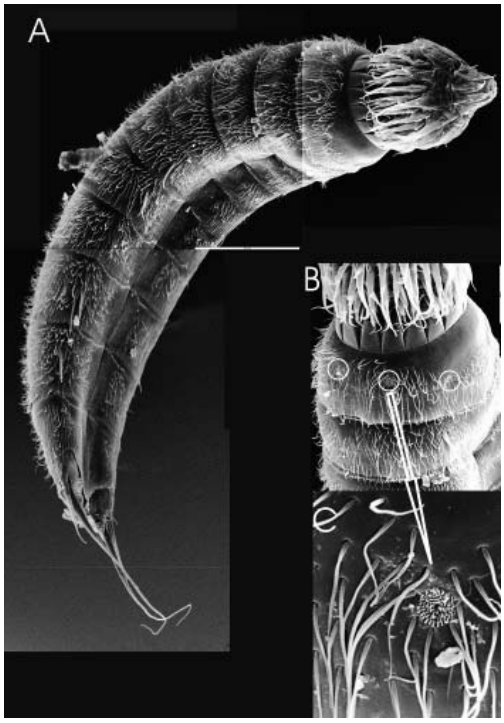

Fig. 3.—SEM micrographs of *Echinoderes dujardinii* in ventro-lateral view. Sensory spots are marked by circles. A: general view; B & C: details of sensory spots in segment 3.
Fig. 3.—Fotografía a SEM de *Echinoderes dujardinii* en visión ventral-lateral. Los puntos sensoriales están señalados por círculos. A: visión general; B & C: detalles de los puntos sensoriales en el segmento 3.

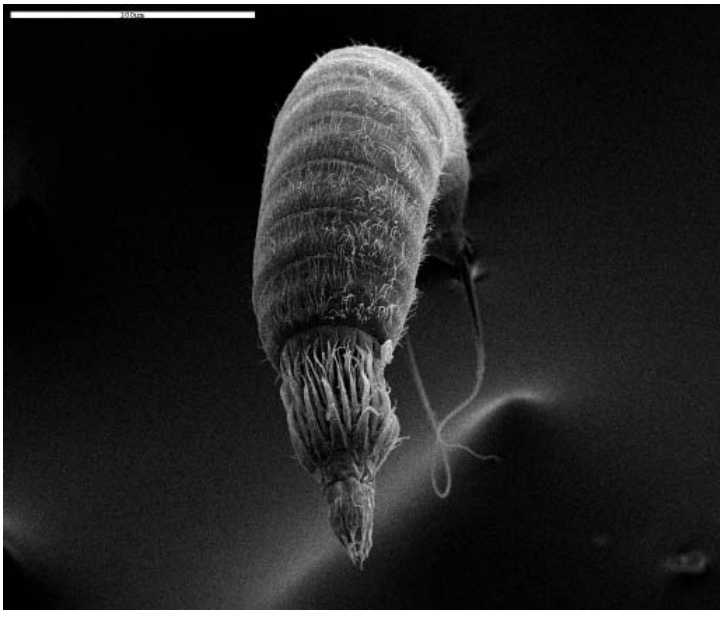

Fig. 4.—SEM micrographs of the anterior region of *Echinoderes dujardinii* in dorsal view.
Fig. 4.—Fotografía a SEM de la región anterior de *Echinoderes dujardinii* en visión dorsal.

ACKNOWLEDGEMENTS

We are very grateful to our colleague and friend Dr. Fernando Pardos (Universidad Complutense de Madrid) for his valuable help. This research was supported by the project CGL2009-08928 from the "Ministerio de Ciencia e Innovación" (Spain).

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