

First record of *Gonostoma elongatum* Günther, 1878 (Osteichthyes: Gonostomatidae) in the North-Western Mediterranean

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The first record of *Gonostoma elongatum* Günther, 1878 (Osteichthyes: Gonostomatidae) in the North-Western Mediterranean (South West of Majorca Island) is reported. It is a deep mesopelagic fish, with a circumglobal distribution, tropical and subtropical. It occurs in the Atlantic, Pacific and Indo-Pacific between 500 to 1200 m. Morphometric and meristic characteristics are given.

Keywords: *Gonostomatidae*, *Gonostoma elongatum*, *Mediterranean*, *Balearic Sea*.

PRIMERA CITA DE *Gonostoma elongatum* GÜNTHER, 1878 (OSTEICHTHYES: GONOSTOMATIDAE) EN EL NORDOEST DE LA MEDITERRÀNIA. Hom dona la primera cita de *Gonostoma elongatum* Günther, 1878 (Osteichthyes: Gonostomatidae) en la Mediterrània Nord Occidental (Sudoest de Mallorca). Es tracta d'una espècie mesopelàgica d'aigües profundes de distribució circumglobal, tropical i subtropical. Es troba al Atlàntic, Pacífic i Indo-Pacífic a profunditats d'entre 500 i 1200 m. Es donen les principals característiques morfològiques.

Paraules clau: *Gonostomatidae*, *Gonostoma elongatum*, *Mediterrani*, *Mar Balear*.

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Introduction

Gonostomatidae are represented in the Northeast Atlantic by 5 genus (*Bonapartia*, *Diplophos*, *Cyclothone*, *Gonostoma* and *Margrethia*) (Badcock, 1984). Only 3 species of this family have been reported up

to now in the Mediterranean Sea, two of the genus *Cyclothone* (*C. braueri* Jespersen & Taning, 1926 and *C. pygmaea* Jespersen & Taning, 1926) and one of the genus *Gonostoma* (*G. denudatum* Rafinesque,

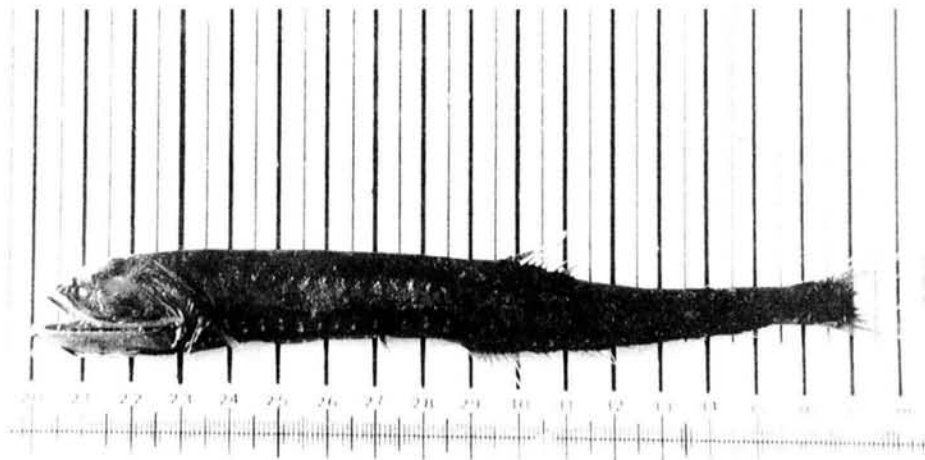


Fig. 1. Specimen of *Gonostoma elongatum* caught in Majorcan waters (Balearic Islands, north-western Mediterranean Sea).

Fig. 1. *Gonostoma elongatum* capturat a aigües de Mallorca (Illes Balears, nordoest de la mar Mediterrània).

1810) (Tortonese, 1970; Badcock, 1984). A specimen of *G. elongatum* Günther, 1878, captured in the Balearic Islands area, is described in this paper. This record of *G. elongatum* may be considered as the first documented case in the Mediterranean Sea.

G. elongatum is a circumglobal, tropical and subtropical species. It occurs in the Atlantic, Pacific, Indo-Pacific and in the Arabian Sea. In the Eastern Atlantic is found from off Eastern Greenland, Iceland, and Spain south to the Gulf of Guinea, being more common south of 40°N. It is a deep mesopelagic fish (500 - 1200 m), occasionally deeper by day and showing size stratification with depth (younger specimens shallower). This species is a strong diel migrator, at about 50 - 400 m by night (Badcock, 1984).

G. elongatum is a protandric hermaphrodite -male to 178 mm and female to 275 mm SL (Badcock, 1984) - breeding throughout the year (peaking in spring and summer) and females probably once a lifetime (Lancraft *et al.*, 1988).

Material and methods

Within the framework of the EU Project *Analysis of the Mediterranean (including North Africa) Deep Shrimps fishery, evolution, catches, efforts and economics* a sampling program on board commercial trawlers operating on slope fishing grounds was carried out. On 15th December 1998 one specimen of *G. elongatum* (Fig. 1) was fished at about 26 nautical miles off the western coast of Mallorca Island (Western Mediterranean). The haul was performed between 446-658 m depth, about co-ordinates 39° 03' 83"N - 02° 37' 01"E (Fig. 2).

The specimen was frozen for its transport. Once at laboratory, it was identified following the dichotomic keys included in Whitehead *et al.* (1984). Available descriptions of Gonostomatidae species were extensively revised: Blache *et al.*, 1970; Tortonese, 1970; Badcock, 1984; Ahlstrom *et al.*, 1984; Scott & Scott, 1988 and Copeland, 1991. After the analysis, it

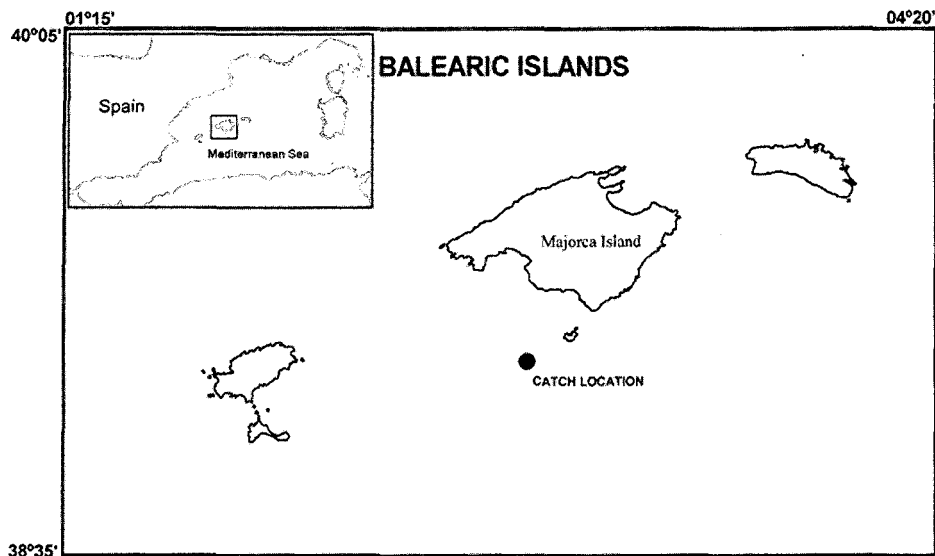


Fig. 2. Record of *Gonostoma elongatum*, 446-646 m.

Fig. 2. Situació del punt de la pesca de *Gonostoma elongatum*, a 446-646 m de profunditat.

was fixed in 10% formaldehyde during 24h and finally preserved in 4% formaldehyde, being deposited in the *Centre Oceanogràfic de Balears* collection with the number C.O.B. 002/1998. The morphometric characters were measured to the nearest 0.1 mm and the total weight to the nearest 0.1 g.

Results and discussion

Morphometric and meristic characters for the specimen are presented in Table 1.

This specimen measures 171 mm of standard length and weighs 17,3 g. Prepectoral length is 35 mm and preventral length 68,75 mm. Colour: dark, flanks thinly silvered.

The number of gillrakers is 19, coinciding with the most common number indicated in Badcock (1984) for *G. elongatum*, whereas *G. denudatum* and *G. atlanticum* present 18 or less, and *G.*

bathyphillum has more than 23. The analysed specimen presents a small adipose fin (preadipose length 135,95 mm), which is absent in *G. atlanticum*. The dorsal fin is located slightly behind midpoint of body (predorsal length 95 mm).

Number of dorsal finrays is 14, pectoral finrays are 12; pelvic finrays 8 and anal finrays 32. These values are included within the ranks proposed by Badcock (1984) for *G. elongatum*. The number of dorsal finrays is higher in *G. atlanticum*. This species presents also a lower number of pectoral finrays. Regarding the anal finrays, their maximum number is lower than 31 in all the North-Eastern Atlantic and Mediterranean species of this genus, with the exception of *G. elongatum*, which presents between 29 and 32.

The number of each kind of photophores are (in brackets are indicated the ranks corresponding to *G. elongatum*, according to Badcock (1984)): ORB 1 (1),

Tabla 1. Morphometric and meristic data of the *Gonostoma elongatum* specimen found.
Table 1. Dades morfològiques i merístiques de l'espècimen capturat de Gonostoma elongatum.

Morphometric characters	mm	%SL
Total length	185	
Standard length (SL)	171	
Head length	33,49	19,6
Jaw length	29,54	
Eye diameter	3,8	
Preorbital length (upper jaw)	6,17	
Base dorsal fin	18,68	10,9
Base anal fin	64	37,4
Base adipose fin	6,07	3,6
Predorsal length	95	55,6
Prepectoral length	35	20,5
Preventral length	68,75	40,2
Preanal length	90,1	52,7
Preadipose length	135,95	79,5
Pectoral fin length	15,9	9,3
Pelvic fin length	14,64	8,6
Caudal peduncle depth	8,48	
Body width (anus)	18,52	
Weight (g)	17,3	
Dorsal fin rays	14	12-15
Anal fin rays	32	29-32
Pectoral fin rays	12	12
Ventral fin rays	8	8
Gill-rakers	19	18-21
Photophores:		
ORB	1	1
OP	3	3
BR	9	9
IV	5 + 10	5 + 10
VAV	6	4 - 6
AC	21	21 - 23
OA	13	13

OP 3 (3), BR 9 (9), IV 5 + 10 (5 + 10) - unlike *G. denudatum* that presents 6 + 10, VAV 6 (4-6), AC 21 (21-23) - unlike *G. denudatum* that presents 20 - OA 13 (13).

The described specimen has 1 supra-caudal and 2 infra-caudal glands, as *G. elongatum* and *G. denudatum*, whereas *G.*

atlanticum and *G. bathyphillum* present only 1 infracaudal.

In conclusion, it can be stated that the described specimen belongs to the species *G. elongatum*, being the first time that this species is cited in Mediterranean Sea.

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