

ON A OCCURRENCE OF *GADELLA MARALDI* (OSTEICHTHYES:
GADIFORMES: MORIDAE) ON THE TUNISIAN COAST
(CENTRAL MEDITERRANEAN SEA)

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ABSTRACT

A specimen of Gadella maraldi (Risso, 1810) measuring 215 mm in total length, 192 mm in standard length and weighing 96.56 g was caught off the northern Tunisian coast. This capture constitutes the second Tunisian record of the species and confirms its occurrence in the area where it was previously considered as doubtful. The specimen is described, including morphological measurements, meristic counts and colour. Due to a lack of records, the real status of the species in Tunisian waters remains questionable.

Key words: description, morphometric measurements, meristic counts, distribution, deep waters

RITROVAMENTO DI *GADELLA MARALDI* (OSTEICHTHYES: GADIFORMES: MORIDAE)
LUNGO LA COSTA TUNISINA (MEDITERRANEO CENTRALE)

SINTESI

Un esemplare di Gadella maraldi (Risso, 1810) di 215 mm di lunghezza totale, 192 mm di lunghezza standard e 96,56 g di peso è stato catturato al largo della costa tunisina settentrionale. Questa cattura costituisce il secondo ritrovamento tunisino della specie e conferma la sua presenza nell'area in cui era precedentemente considerata dubbia. Nell'articolo viene descritto l'esemplare, comprese le misurazioni morfologiche, i conteggi meristici ed il colore. A causa della mancanza di dati, lo stato reale della specie nelle acque tunisine rimane discutibile.

Parole chiave: descrizione, misure morfometriche, conteggi meristici, distribuzione, acque profonde

INTRODUCTION

Gadella maraldi (Risso, 1810) is known in the eastern Atlantic from the Porcupine Bank, an area of the Irish shelf, located approximately 200 kilometres west of Ireland, to the northern continental shelf of Spain and the southern coast of Portugal (Ruiz-Pico et al., 2012). South of the Strait of Gibraltar, the species is reported from Madeira, the Josephine Bank, the Azores, the Great Meteor Bank and the Canary Islands (Bañón et al., 2010).

G. maraldi occurs in the western Mediterranean Basin, specifically, in the Adriatic Sea (Cohen, 1986). Eastward, the species is found in Turkish waters (Kabasakal, 1998), as far as the Levant Basin (Golani, 2005). Following Cohen (1986), it was reported throughout the Maghreb shore with the exclusion of the Tunisian coast. Conversely, it was reported in the latter area by Cohen et al. (1990), probably based on the single record made by Maurin (1962) at the level of Resgui Bank. However, such occurrence of *G. garaldi* remained questionable, due to the fact that no specimen had been available to date for confirmation.

A decade of routine monitoring in Tunisian waters and assistance from local fishermen aware of the fishing grounds have yielded a specimen of *G. maraldi* caught during a commercial trawling survey occurring off the northern Tunisian coast. The present paper provides a short description of the specimen, including morphometric measurements and meristic counts, and some comments about the real status of the species in the area.

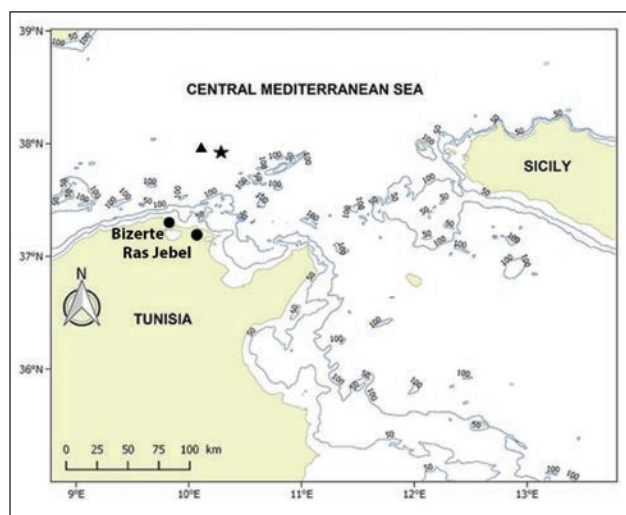


Fig. 1: Map of northern Tunisian waters, with the black triangle indicating the Resgui Bank and the black star indicating the capture site of the present specimen of *Gadella maraldi*.

Sl. 1: Zemljevid vod ob severni Tuniziji s črnim trikotnikom, ki označuje Resgui Bank in črno zvezdico, ki kaže na mesto ulova primerka vrste *Gadella maraldi*.

MATERIAL AND METHODS

On 30 September 2019, a specimen of *G. maraldi* was collected by commercial trawl at a depth of 230 m, off Bizerte, northern Tunisian coast, at 37° 33' 04.72" N and 10° 06' 07.62" E (Fig. 1), on sandy-rocky bottom, together with labrid species, parrot seaperch *Callanthias ruber* (Rafinesque, 1810) and *Phycis phycis* (Linnaeus, 1766). It was measured to the nearest millimetre and weighed to the nearest gram (Fig. 2). The morphometric measurements and meristic counts follow Cohen (1986), Cohen et al. (1990), Kabasakal (1998) and Ruiz-Pico et al. (2012), and are summarized in Table 1. The standard length is abbreviated as SL and total length as TL. The number of gill rakers were counted on the first branchial arch, and the number of vertebrae from a X-ray photograph.

The specimen was fixed in 10% buffered formaldehyde, preserved in 75% ethanol and deposited in the Ichthyological Collection of the Institut Supérieur d'Acquaculture et de Pêche of Bizerte (ISPAB), Tunisia, under catalogue number ISPAB-Gad-mar-01.

RESULTS AND DISCUSSION

The Tunisian specimen of *Gadella maraldi* was identified based on the combination of the following main morphological characters: body elongate, slightly compressed, with a large head (4.3 times in SL), and tapering posteriorly; chin absent, mouth oblique, jaw in a narrow row 2-3 teeth, some teeth larger, pointed and strongly

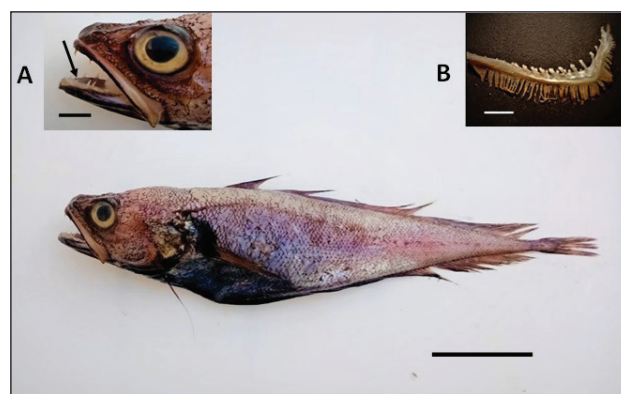


Fig. 2: The specimen of *Gadella maraldi* (Ref. ISPAB-Gad-mar-01) captured in northern Tunisian waters, scale bar = 40 mm. Insert A. Head of the specimen, the arrow pointing at the teeth, scale bar = 10 mm. Insert B. A gill raker of the first branchial arc removed from the same specimen, scale bar = 5 mm.

Sl. 2: Primerek vrste *Gadella maraldi* (Ref. ISPAB-Gad-mar-01) ujet v severno tunizijskih vodah, merilo = 40 mm. Predel A. Glava primerka; puščica označuje zobe, merilo = 10 mm. B. Odstranjen škržni izrastek prvega škržnega loka, merilo = 40 mm.

curved at distal end, none on vomer and palatines; large eye; two dorsal fins, the first slightly higher than the second; anal fin not indented, originating behind the origin of the first dorsal fin; caudal fin rounded at distal end; pectoral fins extending beyond the origin of pelvic fin; filamentous ray of pelvic fin extending slightly beyond the anal fin origin; body covered with small cycloid scales, including the head, except for cheeks and lips; light organ present as a small naked patch on the belly; colour brownish-black, pectoral bluish-black, oral cavity pale.

The general morphology, morphometric measurements, meristic counts and colour are in total agreement with previous descriptions of *G. maraldi* by Maul (1953), Aguiar & Pereira (1982), Cohen (1986), Cohen et al. (1990), Kabasakal (1998) and Ruiz-Pico et al. (2012). Therefore, this capture of *G. maraldi* constitutes the first well-documented record of the species from the Tunisian coast and confirms the occurrence of a species that should be included in the local ichthyofauna. This second record of *G. maraldi* extends the range of the species eastwards, along the Maghreb shore.

The present specimen measured 215 mm TL, 192 mm SL and its total body weight was 96.56 g. Following Cohen (1986) and Cohen et al. (1990), *G. maraldi* grow to a maximum length of 300 mm, and the first sexual maturity occurs at the size of 150 mm TL. The studied specimen was an adult female and some oocytes were observed in the ovaries. *G. maraldi* is a carnivorous species feeding on small benthic invertebrate and teleost species (Kabasakal, 1998), but the stomach of this specimen was empty.

Aguiar & Pereira (1982) noted that *G. maraldi* was locally abundant in the areas where it was reported. Conversely, records of the species were generally based on few specimens, 2-4 maximum, in Kabasakal (1998), Papaconstantinou (1990) and Ruiz-Pico et al. (2012), who considered it very rare. Cohen et al. (1990) noted there was no separate statistics concerning the species, which was probably counted among by-catch in fisheries, and added that it was only sporadically found in fish markets, concluding that the species did not display commercial importance. Additionally, *G. maraldi* inhabits deep-sea waters, which are, in general, poorly exploited by commercial fishing gears. This could explain why only two records were reported from Tunisian waters during a seventy-year research period. That being so, the occurrence of a viable population in the area remains questionable, although such pattern cannot be totally ruled out, as the scarce information prevents any conclusion regarding the real status of the species in the area.

Tab. 1: Absolute and relative biometric and meristic data recorded in the specimen of *Gadella maraldi* (Ref. ISPAB-Gad-mar-01) caught in northern Tunisian waters. Tab. 1: Absolutni in relativni biometrični in meristični podatki, zabeleženi na primerku *Gadella maraldi* (Ref. ISPAB-Gad-mar-01), ki je bil ujet v vodah severne Tunizije.

Reference	ISPAB-Gad-mar-01	
	mm	%SL
Morphometric measurements		
Total length	215	111.98
Standard length (SL)	192	100.00
Pre-anal length	62	32.29
Predorsal fin length	60	31.25
Prepectoral fin length	57	29.69
First dorsal fin length	14	7.07
Second dorsal fin length	103	53.68
Anal fin length	120	62.55
Pectoral fin length	7	3.64
Pelvic fin length	2	1.00
Head length	45	23.51
Eye diameter	13	6.79
Body depth	37	19.46
Preorbital length	13	6.52
Interorbital length	12	5.96
Length of upper jaw	27	13.98
Length of lower jaw	24	12.71
Length of right pelvic fin	18	9.30
Length of left pelvic fin	28	14.33
Meristic counts		
First dorsal fin rays	11	
Second dorsal fin rays	55	
Anal fin rays	60	
Pectoral soft fin rays	24	
Pelvic fin soft rays	7	
Number of scales of the lateral line	96	
Number of scale rows between the dorsal and the lateral line	10	
Number of gill rakers	12	
Number of vertebrae	54	
Total body weight in gram	97.56	

O POJAVLJANJU VRSTE *GADELLA MARALDI* (OSTEICHTHYES: GADIFORMES: MORIDAE) OB TUNIZIJSKI OBALI (OSREDNJE SREDOZEMSKO MORJE)

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POVZETEK

Primerek vrste *Gadella maraldi* (Risso, 1810), ki je meril 215 mm v dolžino in tehtal 96.56 g, je bil ujet ob severni tunizijski obali. Gre za drugi zapis o najdbi te vrste za Tunizijo, ki potrjuje njeno pojavljanje tudi na območju, za katero so pred tem dvomili. Avtorji opisujejo primerek, navajajo morfometrične meritve in meristična štetja ter barvni vzorec. Zaradi pomanjkanja podatkov o tej vrsti je njen dejanski status v tunizijskih vodah še vedno nepojasnen.

Ključne besede: opis, morfometrične meritve, meristična štetja, razširjenost, globokomorsko okolje

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