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FIRST CONFIRMED RECORD OF WEDGE SOLE *DICOLOGLOSSA CUNEATA* (SOLEIDAE) FROM THE TUNISIAN COAST (CENTRAL MEDITERRANEAN)

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ABSTRACT

*This paper reports the first record of two specimens of wedge sole *Dicologlossa cuneata* (Moreau, 1881) from the Tunisian coast. This record confirms the occurrence of the species off the Maghreb shore, but do not suggest a successful establishment of a viable population in this region. Its rarity in Tunisian waters is probably due to the fact that, locally, the species has no economic value.*

Key words: morphometric measurements, meristic counts, distribution, Maghreb shore, central Mediterranean Sea

PRIMO RITROVAMENTO CONFERMATO DI SOGLIOLA CUNEATA *DICOLOGLOSSA CUNEATA* (SOLEIDAE) LUNGO LA COSTA TUNISINA (MEDITERRANEO CENTRALE)

SINTESI

*L'articolo riporta il primo ritrovamento di due esemplari della sogliola cuneata *Dicologlossa cuneata* (Moreau, 1881) lungo la costa tunisina. Il ritrovamento conferma la presenza della specie al largo della costa di Maghreb, ma non indica un avvenuto insediamento di una popolazione vitale nell'area. La rarità della specie in acque tunisine è probabilmente dovuta al fatto che, localmente, la specie non ha alcun valore economico.*

Parole chiave: misurazioni morfometriche, conte meristiche, distribuzione, costa di Maghreb, mare Mediterraneo centrale

INTRODUCTION

The wedge sole *Dicologlossa cuneata* (Moreau, 1881) is reported in the eastern Atlantic, from the Bay of Biscay (Lagardère, 1980), and continuously southwards to the coast of South Africa (Smith & Heemstra, 1986). It is a well-known fish species in the Mediterranean Sea (Quéro *et al.*, 1986) and as one of the main target species off the Spanish coast (Jiménez *et al.*, 1998; García-Isarch *et al.*, 2006). It is currently vulnerable to depletion from overfishing in this area (Munroe & Nielsen, 2010). Quéro *et al.* (1986), however, did not report the occurrence of *D. cuneata* in the Mediterranean coast of France or in Italian marine waters.

Dicologlossa cuneata is also known in the eastern Mediterranean, from Greece (Papaconstantinou, 2014) to Turkey (Bilecenoglu *et al.*, 2014), and has recently reached as far as the Levantine Basin (Ali *et al.*, 2015). *D. cuneata* occurs in southern Mediterranean regions, such as the Maghreb shore from Morocco (Lloris & Rucabado, 1998) to Algeria, where it appears to be a common catch (Rousset & Marinaro, 1983; Boufersaoui & Bedda, 2011). Conversely, the species is not recorded off the Tunisian coast (Bradaï, 2000; Bradaï *et al.*, 2004). The surveys regularly conducted throughout the latter area offered us the opportunity to collect two specimens of *D. cuneata*, which are the subject of the present paper. Following Bello *et al.* (2014), the purpose of the paper is therefore to describe both records of *D. cuneata*, as well as commenting on and discussing the species occurrence in the area concerned and in the wider Mediterranean.

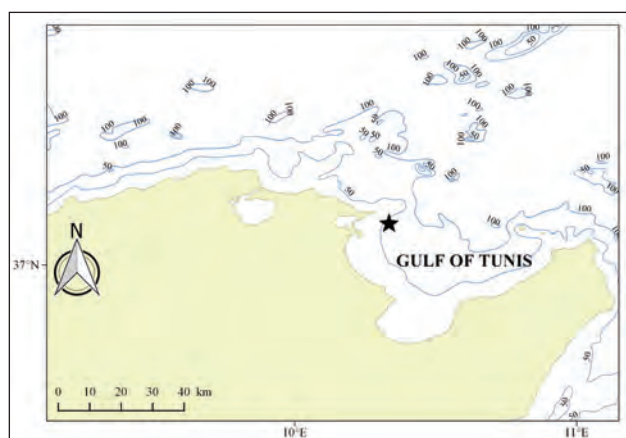


Fig. 1: Map of the north-eastern coast of Tunisia showing the Gulf of Tunis and the capture site of the two specimens of *Dicologlossa cuneata* (marked by the black star).

Sl. 1: Zemljevid severovzhodne obale Tunizije s tuniškim zalivom in lokaliteto, kjer sta bila ujeta dva primerka vrste *Dicologlossa cuneata* (označena s črno zvezdico).

MATERIAL AND METHODS

On 4th December 2016, two specimens of *Dicologlossa cuneata* were caught by 16-mm mesh trawl nets on sandy-muddy bottoms, at a depth of approximately 50 m, in the north-western area of the Gulf of Tunis at 37°11' N and 10°21' E (Fig. 1). Both specimens were measured to the nearest millimetre and weighed to the nearest gram. The biometric examination of the specimens followed the methodologies by Quéro *et al.* (2003), Louisy (2002), Bello *et al.* (2014) and Ali *et al.* (2015). The weight, morphometric measurements, and meristic counts were summarized in Table 1. The morphometric measurements were provided in absolute values [mm], as well as relative values, expressed as percentages of total length (TL) and standard length (SL). The specimens were preserved in 10% buffered formalin and deposited in the Ichthyological Collection of the Institut des Sciences et Technologies de la Mer de La Goulette (Tunisia) under catalogue numbers INSTM Dic-cun 01 and INSTM Dic-cun 02 (Fig. 2A). The first specimen was photographed using X-rays to allow the counting of the vertebrae (Fig. 2B).

RESULTS AND DISCUSSION

Both specimens were identified as *Dicologlossa cuneata* by the following combination of characters:

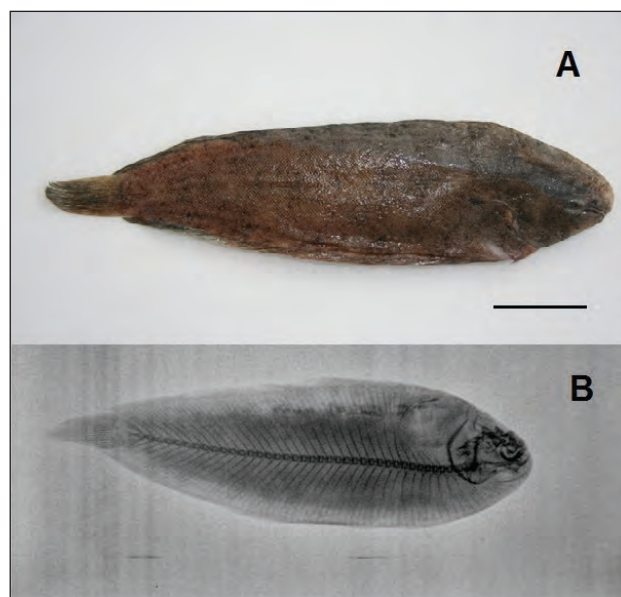


Fig. 2: A. *Dicologlossa cuneata*, specimen INSTM Dic-cun 01, caught in the Gulf of Tunis, scale bar = 20 mm. B. X-ray photograph of the same specimen.

Sl. 2: A. Primerek vrste *Dicologlossa cuneata*, INSTM Dic-cun 01, ujet v tuniškem zalivu. Merilo = 20 mm. B. Rentgenska fotografija primerka.

Tab. 1: Absolute and relative biometric data recorded in the two specimens of *Dicologlossa cuneata* caught in the Gulf of Tunis.**Tab. 1: Absolutni in relativni biometrični podatki za primerka vrste *Dicologlossa cuneata*, ujetih v tunizijskih vodah.**

Specimen reference	INSTM Dic-cun 01			INSTM Dic-cun 02		
	mm	TL%	SL%	mm	TL%	SL%
Morphometric measurements						
Total length	173.0	100.0	113.8	164.0	100.0	116.3
Standard length	152.0	87.9	100.0	141.0	86.0	100.0
Body depth	52.3	30.2	34.4	51.0	31.1	36.2
Interorbital space	7.2	4.2	4.7	7.2	4.4	5.1
Pre-pelvic length	29.1	16.8	19.2	30.2	18.4	21.4
Pre-anal length	49.5	28.6	28.6	48.2	29.4	34.2
Dorsal fin length	151.0	87.3	99.3	126.0	76.8	89.4
Dorsal fin base	146.0	84.4	96.1	121.0	73.8	85.8
Dorsal fin height	9.1	5.3	6.0	8.9	5.4	6.3
Anal fin length	125.6	72.6	82.6	114.0	69.5	80.9
Anal fin base	124.0	71.7	81.6	107.0	65.2	75.9
Anal fin height	9.0	5.2	5.9	8.7	5.3	6.2
Meristic counts						
Dorsal fin soft rays		81			82	
Pelvic fin soft rays E/B		7/7			7/7	
Anal fin soft rays		67			67	
Pectoral fin soft rays E/B		7/7			7/7	
Lateral line scales E/B		131/127			131/127	
Supratemporal lateral line scales E/B		0/23			0/23	
Caudal fin soft rays		16			16	
Total vertebrae		44			-	
Total weight (gram)		36.7			103.0	

body oval, tapering backward, snout prominent and rounded, ctenoid scales on the eyed side, cycloid scales on the blindside, mouth curved, lateral line with 125 scales on the eyed side, supra-temporal branch of lateral line forming an angular S-shape (Fig. 3A), pectoral fin on the eyed side with 8 soft rays, somewhat shorter on the blind side with 7 soft rays, dorsal fin with 81-82 soft rays and anal fin with 67 soft rays, both fins joined to the caudal fin, anterior nostril on the blind side not enlarged (Fig. 3B). Brown on the eyed side with a dark blotch on pectoral fin, blind side whitish.

The morphology, colour, morphometric measurements and meristic counts observed in the two specimens were in total agreement with Quéro *et al.* (1986, 2003), Louisy (2002) and Ali *et al.* (2015), and therefore confirmed the presence of *Dicologlossa cuneata* in Tunisian waters, thus increasing the number of fish species

previously reported in this area (Ben Amor *et al.*, 2016; Bradaï *et al.*, 2004; Ounifi-Ben Amor *et al.*, 2016). Also, since Munroe & Nielsen (2010) did not include the Tunisian waters among the native regions of *D. cuneata*, the present findings constitute the first confirmed records of *D. cuneata* in Tunisian waters.

D. cuneata is reported continually throughout the eastern coast of the Atlantic, from the Bay of Biscay to southern Africa, where it appears as rather abundant, especially in areas surrounding the Strait of Gibraltar, such as south-western Spain (Jiménez *et al.*, 1998; García-Isarch *et al.*, 2006). The species is unknown in northern Mediterranean areas (Quéro *et al.*, 1986), but frequently captured in areas of the southern Mediterranean, such as the Maghreb shore, both Moroccan (Lloris & Rucabado, 1998) and Algerian coasts (Rousset & Marinero, 1983). The species has migrated toward eastern Mediterranean

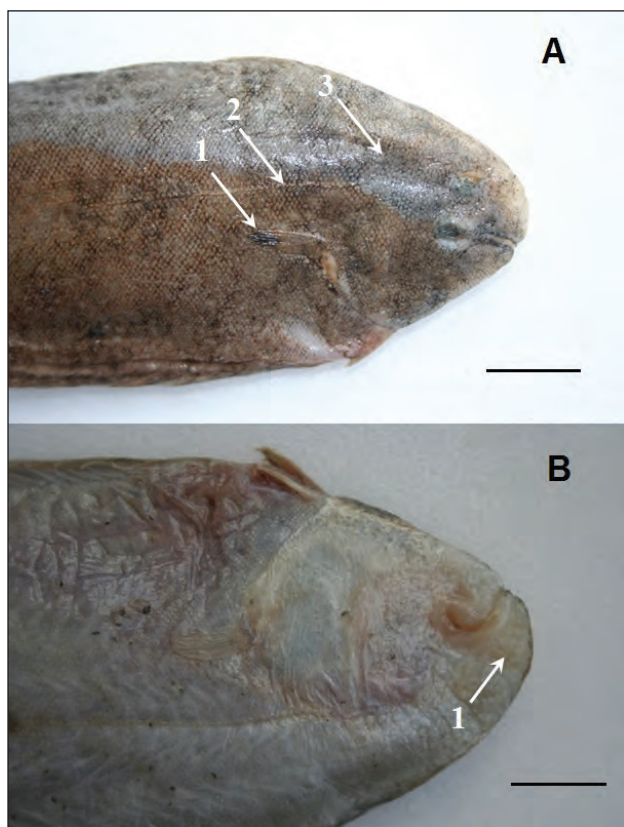


Fig. 3: *Dicologlossa cuneata*, specimen INSTM Dic-cun 01. A: Eyed side with arrows indicating black notch on pectoral fin (1), lateral line (2), supra-temporal branch of lateral line forming an angular S-shape (3), scale bar = 20 mm. B: Blind side with arrow indicating anterior nostril (1), scale bar = 20 mm.

Sl. 3: Primerek vrste *Dicologlossa cuneata*, INSTM Dic-cun 01. A: Okata stran telesa. Puščica označuje zajedo (1), pobočnico (2), supra-temporalni del pobočnice v obliki ukrivljene črke S (3), merilo = 20 mm. B: Slepa stran telesa s puščico, ki označuje sprednjo nosnico. (1), merilo = 20 mm.

areas, presently as far as the Levantine Basin (Ali *et al.*, 2015). The hypotheses of the eastern Atlantic as the source of the Mediterranean *D. cuneata*, and of the species being a Herculean migrant (*sensu* Quignard & Tomasini, 2000) still await confirmation, but cannot be ruled out completely. The scarcity of *D. cuneata* records in Tunisian waters can probably be ascribed to the fact that the species is not as targeted as its cognate species, the common sole *Solea vulgaris* (Quensel, 1806). Recent information given by experienced fishermen could indicate that *D. cuneata* is growing more abundant in the Tunisian fish market, but for that possibility to be taken into serious consideration, the presence of a viable population in the area needs to be supported by further data.

PRVI ZABELEŽEN PRIMER POJAVLJANJA MORSKEGA LISTA VRSTE *DICOLOGLOSSA CUNEATA* (SOLEIDAE) IZ TUNIZIJSKE OBALE (OSREDNJE SREDOZEMSKO MORJE)

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POVZETEK

*Avtorji poročajo o prvem zapisu o pojavljanju vrste morskega lista *Dicologlossa cuneata* (Moreau, 1881), ujetega ob tunizijski obali. Ta zapis dokazuje, da se vrsta pojavlja v vodah vzdolž magrebske obale, čeprav za zdaj ni možno sklepati o naselitvi viabilne populacije v regiji. Verjetno je potrebno redkost te vrste pripisati dejstvu, da nima ekonomskega pomena.*

Ključne besede: morfometrične meritve, meristična štetja, razširjenost, magrebska obala, vzhodno Sredozemsko morje

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