

UNICORN LEATHERJACKET FILEFISH, *ALUTERUS MONOCEROS* (ACTINOPTERYGII: TETRAODONTIFORMES: MONACANTHIDAE): FIRST RECORD OFF THE TUNISIAN COAST AND CONFIRMED OCCURRENCE IN THE MEDITERRANEAN SEA

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Abstract. Investigations conducted off the northern Tunisian coast (central Mediterranean) allowed the authors to collect a male of the unicorn leatherjacket filefish, *Aluterus monoceros* (L.). The specimen is described in this note, including morphometric measurements and meristic counts. This finding constitutes the first record of *A. monoceros* off the Tunisian coast and the second record for the Mediterranean Sea. The occurrence of this species in the area and the Mediterranean Sea is discussed and commented.

Keywords: Actinopterygii, Osteichthyes, Monacanthidae, *Aluterus monoceros*, first record, Tunisian coast, Mediterranean

The unicorn leatherjacket filefish, *Aluterus monoceros* (L.), is a widespread species, known from the western Indian Ocean, the eastern Pacific, and the both sides of the Atlantic (De La Cruz-Agüero et al. 2007). Two specimens were recorded from the eastern Atlantic—the first one from the Bay of Biscay (Quéro and Laborde 1996, Quéro et al. 2003) and the other from the southern Iberian Peninsula—off Chipiona, close to Cádiz (Galeote et al. 1998). South of the Gibraltar Strait—on the western African coast—*A. monoceros* is rare (Harmelin-Vivien and Quéro 1990), whereas much more southward—in South African waters—it has been reported as rather abundant (Smith and Heemstra 1986).

This first Mediterranean record of the unicorn leatherjacket filefish was reported by Guallart and Vicent (2009). It was an adult male, captured on 28 March 2000, with harpoon gun at a depth of 4 m, in the waters surrounding Chafarinas Islands, a small archipelago located in south-western Mediterranean. Guallart and Vicent (2009) suggested an Atlantic origin of the specimen, due to the proximity to the Strait of Gibraltar. Since this capture, no new record of *A. monoceros* was reported to date in the Mediterranean Sea.

Investigations conducted during the last decade in the Tunisian waters allowed us to collect a specimen of *A. monoceros* in the area. The Tunisian specimen was captured on 30 December 2010 by a trammel net, approximately at a depth of 45 m, on rocky coralligenous bottom, between the Islands Zembra and Zembretta (lat 37°06'38"N, long 10°50'49"E) (Fig. 1), concomitantly with several greater amberjacks, *Seriola dumerilii* (Risso, 1810). Soon after the capture, the fresh specimen was identified, photographed, measured to the nearest millimetre, and weighed to the nearest decigram (Fig. 2). Morphometric measurements, percentages of standard length (%SL) and meristic counts were carried out following Berry and Vogele (1961), Quéro and Laborde (1996), Galeote et al. (1996), De La Cruz-Agüero et al. (2007) and Guallart and Vicent (2009) (Table 1). The specimen is preserved in 10% buffered formalin in the Ichthyological Collection of the Institut National Agronomique of Tunisia, Tunis, receiving the catalogue number: Alu-mon.01.

The Tunisian *A. monoceros* measured 528 mm (total length) and weighed 1683.4 g, its eviscerated mass was 1527.9 g and the liver mass, 83.4 g. The gonads weighed 3.3 g, they were thread-like and portions of fresh tissue

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were immediately examined under an optical microscope, showing that the specimen was an adult male in resting phase. The gut contained remains of completely digested food, and remains of unidentifiable mollusc species.

The specimen was identified as follows: body slightly high and compressed, 2.67 times in standard length. First dorsal fin with single spine, long and feeble, second spine not visible. Pre-dorsal length, 1.77 and 2.07 times in standard length and total length, respectively. Anal fin opposite to second dorsal fin and similar in shape. Small round pectoral fin. Pelvic fin absent. Caudal fin slightly emarginated, its length 1.50 times in head length. Upper head profile rather straight. Ventral head profile anteriorly concave becoming convex. Small eye at upper part of head. Slit-like gill opening in front of pectoral fin base. Smooth leathery skin. Body greyish, with spots slightly darker. Fins greyish with yellow touch.

General morphology, colour, morphometric measurements with percentages of standard length and meristic counts are in agreement with previous descriptions of *A. monoceros* from other regions (Berry and La Voegelé 1961, Al-Baharna 1986, Quéro and Laborde 1996, Galeote et al. 1996, De La Cruz-Agüero et al. 2007, Guallart and Vicent 2009) (Table 1) and confirm the occurrence of the species in Tunisian waters. Additionally, this finding constitutes the first record of the species in the area, and hence it could be included in the Tunisian ichthyofauna (Bradai et al. 2004), and the second Mediterranean record.

A. monoceros is the second species belonging to the family Monacanthidae found off the Tunisian coast, the first one being a Lessepsian migrant, the reticulated leatherjack, *Stephanolepis diaspros* Fraser-Brüner, 1940, which is at present successfully established throughout the area (Ben Amor and Capapé 2008). *S. diaspros* can be distinguished from its confamilial species in the Tunisian waters, by the first ray in the second dorsal fin which is often filamentous, the body depth 1.8–2.0 times in standard length, and the rough shagreen-like skin composed of very small scales with delicate spinules, caudal peduncle of the male consists of a series of horny patches in several rows.

A. monoceros and *S. diaspros* inhabit same bottoms and feed on same preys with probable overlaps in ecological

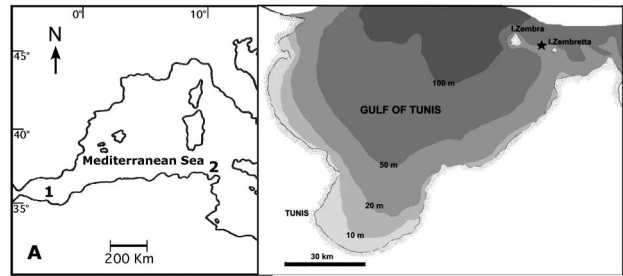


Fig. 1. Maps of western Mediterranean Sea showing the two capture sites of *Aluterus monoceros*: 1) Off Chafarinas Islands, small archipelago close to the Moroccan coast (Guallart and Vicent 2009); 2) In the Gulf of Tunis, northern Tunisia (this study: capture site (black star) between Islands Zembra and Zembretta)

niches and diet (Gomez-Canchong et al. 2004, Lopez-Peralta and Arcila 2002). Consequently, an interspecific competition pressure between both species could not be excluded, preventing a successful establishment of *A. monoceros* in its new area, especially in southern areas where *S. diaspros* is at present considered as both frequent and abundant (Zouari-Ktari et al. 2008), conversely rare records were reported northward (Ben Amor and Capapé 2008).

This second record of *A. monoceros* in a region located approximately 1500 km from the Strait of Gibraltar constitutes the easternmost extension range of the species in the Mediterranean Sea. It shows that *A. monoceros* is prone to large migrations which explains its worldwide distribution. The specimen described in the present paper most probably originated from the eastern Atlantic, entering through the Strait of Gibraltar. Although, *A. monoceros* occurs in the Indian Ocean, a migration through Suez Canal remains improbable. No specimen was found in the eastern Mediterranean (Golani et al. 2006), where *S. diaspros* was successfully established several decades ago (Quignard and Tomasini 2000, Golani et al. 2002).

Salameh et al. (2009) note that most of migrant species originating from eastern Atlantic remain rare or are considered as vagrant in their new habitat. In contrast, Ben Raïs Lasram and Mouillot (2009) note that fish species originating from the Atlantic have the same prob-



Fig. 2. *Aluterus monoceros* captured in the Gulf of Tunis (ref. No. Alu-mon.01), scale bar = 100 mm

Table 1

Morphometric measurements, and meristic counts of *Aluterus monoceros* from northern Tunisian coast compared with data from published sources

	Present study		Berry and Voegelé 1961		Quéro and Laborde 1996		Galeote et al. 1996		De la Cruz- -Agüero et al. 2006		Gallart and Vicent 2009	
	mm	% SL	mm	% SL	mm	% SL	mm	% SL	mm	% SL	mm	% SL
Measurements	mm	% SL	mm	% SL	mm	% SL	mm	% SL	mm	% SL	mm	% SL
Total length	528	—	—	—	515	—	457	—	549	—	471	—
Standard length	452	100.00	53–545	—	450	100.00	391	—	505	100.00	384	100.00
Head length	127	28.10	—	26.6–34.7	—	26.7	—	28.6	138	27.33	116	30.21
Interorbital space	45	9.96	—	—	—	—	—	—	41	8.12	—	—
Eye diameter	22	4.87	—	3.8–4.2	—	4.7	—	4.6	22	4.36	19	4.95
Eye to spine	32	7.08	—	7.0–8.6	—	6.8	—	6.1	—	—	30	7.81
Snout length	119	26.33	—	23.4–27.5	—	24.0	—	25.3	125	24.75	106	27.60
Internarinal space	41	9.07	—	—	—	—	—	—	32	6.34	—	—
Caudal fin height	33	7.30	—	—	—	—	—	—	—	—	—	—
Caudal fin length	85	17.70	—	18.0–26.6	—	16.7	—	16.3	—	—	70	18.23
Caudal peduncle length	59	13.05	—	—	—	—	—	—	83	16.44	48	12.50
Caudal peduncle height	34	7.52	—	—	—	—	—	—	36	7.13	32	8.33
Snout to vent	248	54.87	—	—	—	—	—	—	—	—	—	—
Pectoral fin length	43	9.51	—	—	—	—	—	—	141	27.92	—	—
Pectoral fin base	19	4.20	—	—	—	—	—	—	—	—	—	—
Dorsal fin length	159	35.18	—	—	—	—	—	—	162	32.08	—	—
Anal fin length	165	36.50	—	—	—	—	—	—	167	33.07	—	—
Anal fin base	161	35.62	—	—	—	—	—	—	—	—	—	—
Body height	169	37.39	—	34.5–43.8	—	35.0	—	34.5	172	34.06	149	38.80
Body depth	53	11.73	—	—	—	—	—	—	—	—	—	—
Pre-pectoral length	117	25.88	—	—	—	—	—	—	123	24.36	—	—
Pre-dorsal length	255	56.42	—	—	—	—	—	—	128	25.35	—	—
Pre-anal length	262	57.96	—	—	—	—	—	—	—	—	—	—
Inter-dorsal fins space	132	29.20	—	—	—	—	—	—	—	—	—	—
Counts												
First dorsal fin spines	I		II		II		II		I			
Second dorsal fin rays	45		46–50		49		46		49		47	
Anal fin soft rays	47		47–52		51		49		48		51	
Pectoral fin soft rays	14		14		14		14		14		14	
Teeth on upper jaw	6								6			
Teeth on low jaw	4								4			

SL = standard length.

ability to be recorded in the Mediterranean as Lessepsian fishes, and the warmer conditions of this sea increase the establishment of Atlantic species from southern latitudes. Additionally, Ben Raïs Lasram and Mouillot (2009) suggested that the Mediterranean is increasingly becoming a catch site for southern species.

In agreement with Ben Raïs Lasram and Mouillot's opinion (2009), some teleost species from the eastern Atlantic, are, at present, successfully established in the Mediterranean.

So, the blunthead puffer, *Sphoeroides pachygaster* (Müller et Troschel, 1848), first recorded in the Mediterranean near Mallorca (Oliver 1981), a decade after reached the Levant Basin (Golani 1996), and to date a substantial population is definitively established in Tunisian marine waters (Chérif et al. 2010). Additionally, the bluespotted seabass (or African hind), *Cephalopholis taeniops* (Valenciennes, 1828), known off the western Africa coast, was first recorded in the Mediterranean by Ben-

Abdallah et al. (2007) in the Gulf of Syrte; the species was recently found 1800 km eastward, in the Levant Basin by Salameh et al. (2009), who note the presence of several specimens over a period of nine years suggesting that *C. taeniops* has established a sustainable population in its new region.

This new capture of *A. monoceros* constituted a considerable extension of its previously known distribution within the Mediterranean. However, this new finding in this sea suggests that the species has found in the area favourable environmental conditions to reproduce (Francour et al. 1994). However, no sufficient data are available to state that a substantial population exists, at present, in the south-western Mediterranean.

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