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# FIRST RECORDS OF VELVET BELLY LANTERN SHARK *ETMOPTERUS SPINAX* (CHONDRICHTHYES: ETMOPTERIDAE) FROM THE SYRIAN COAST (EASTERN MEDITERRANEAN)

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## *ABSTRACT*

*This paper reports the first records of velvet belly lantern shark* Etmopterus spinax *(Linnaeus, 1758) from the Syrian coast. They are related to three juvenile females measuring 298.6 mm, 306.3 mm and 317.1 mm in total length, respectively, and weighing 102.3 g, 110.4 g and 106.6 g, respectively. The specimens are described and commented with respect to other records from the local area and the Mediterranean Sea.*

**Key words:** Etmopteridae, *Etmopterus spinax*, deep sea shark, Eastern Mediterranean

# PRIMI RITROVAMENTI DI MORETTO *ETMOPTERUS SPINAX* (CHONDRICHTHYES: ETMOPTERIDAE) LUNGO LA COSTA SIRIANA (MEDITERRANEO ORIENTALE)

## *SINTESI*

*L'articolo riporta i primi ritrovamenti del sagrì nero o moretto* Etmopterus spinax *(Linnaeus, 1758) lungo la costa siriana. Si tratta di tre giovani femmine, rispettivamente di 298,6 mm, 306,3 mm e 317,1 mm di lunghezza totale, e 102,3 g, 110,4 g e 106,6 g di peso. Gli autori forniscono una descrizione degli individui e ne discutono la presenza su scala locale e più ampia del Mediterraneo.*

**Parole chiave:** Etmopteridae, *Etmopterus spinax*, squalo abissale, Mediterraneo orientale

## INTRODUCTION

Velvet belly lantern shark *Etmopterus spinax* (Linnaeus, 1758) is a small-sized common shark, well-known in the eastern Atlantic from Iceland and Norway to Portugal (Quéro *et al*., 2003). To the south of the Strait of Gibraltar, the species is reported off Morocco (Lloris & Rucabado, 1998), Mauritania (Maurin & Bonnet, 1970), Senegal (Cadenat & Blache, 1981), Guinea Bissau (Sanches, 1991), the Azores (Santos *et al*., 1997), Madeira (Sanches, 1986) and the Cape Verde Islands (Menezes *et al*., 2004), as well as in southern Africa (Compagno, 1984).

*E. spinax* is known to be more commonly caught in the western Mediterranean Basin (Capapé, 1989; Capapé *et al*., 2000); mainly off the Tunisian and Sicilian coasts (Capapé *et al*., 2001; Porcu, 2014). Lipej & Dulcic (2010) noted its occurrence in the Adriatic Sea; eastwards, the species is reported in the Aegean Sea (Papaconstantinou, 2014), in Turkish waters (Bilecenoglu *et al*., 2014), off the Egyptian coast (Farrag, 2016), and in the Levant Basin (Golani, 2005). Conversely, the species is not recorded off the Lebanese coast (Mouneimne, 1979). However, investigations conducted nearby, on the Syrian coast, have allowed the collection of three specimens, the records of which form the subject of the present paper and are here described and commented on with respect to their distribution in this new capture area, as well as in the Mediterranean Sea.

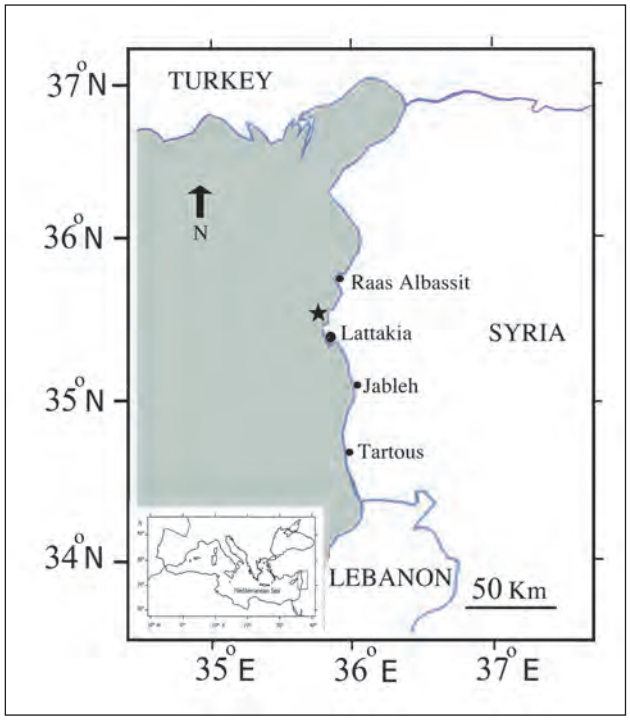



***Fig. 1: Map of the Mediterranean showing Syria and map of the Syrian coast indicating the capture site of*** *Etmopterus spinax* ***(black star).***
***Sl. 1: Zemljevid Sredozemskega morja in sirske obale z označbo lokalitete, kjer so bili ujeti primerki žametnega trneža*** *Etmopterus spinax* ***(črna zvezdica).***

## MATERIAL AND METHODS

Information on the capture of *E. spinax* was provided by local fishermen aware of the fishing grounds. The researchers engage the help of the local communities, referring to it as local ecological knowledge (*sensu* Anadòn *et al*., 2009), in order to spread and heighten the awareness in fisheries research. The description of the specimens in the present paper follows the protocol recommended by Bello *et al*. (2014) for first records.

On 19 August 2017, three specimens of *E. spinax* (Linnaeus, 1758) were caught in Syrian marine waters during a trawl trip from the city of Lattakia southwards as far as the city of Jableh (between 35° 31´ N, 35° 39´ E and 35° 16´ N, 35° 49´ E), at a depth of about 375 m, on sandy and muddy bottoms (Fig. 1). All measurements were carried out using digital caliper and recorded to the nearest 0.1 millimetre, the weights to the nearest 0.1 gram. The three specimens were preserved in 10% buffered formalin and deposited in the Ichthyological Collection of the Laboratory of Marine Sciences, Faculty of Agriculture, Tishreen University, Syria, under catalogue numbers M.S.L. 2316, 2317 and 2318, respectively (Fig. 2).

## RESULTS AND DISCUSSION

All specimens were identified as *E. spinax* through a combination of the following characteristics: body robust with a fairly long tail, snout moderately long, broad and flattened, both dorsal fins bearing stout, grooved spines at the front, with the second fin much longer than the first and curved; mouth with thin, smooth lips; upper teeth small with a narrow central cusp and two pairs of lateral cusplets; lower teeth larger with a strongly slanted, blade-like cusp at the top and interlocking bases (Fig. 3); five pairs of tiny gill slits, comparable in size to spiracles; first dorsal fin originating behind short and rounded pectoral fins; second dorsal fin larger than the first and originating behind the pelvic fins; anal fin absent; tail slender, leading to a long caudal fin with a small lower lobe and a



***Fig. 2: An*** *Etmopterus spinax* ***captured off the Syrian coast (specimen Ref. 2316); scale bar 50 mm.***
***Sl. 2: Primerek žametnega trneža*** *Etmopterus spinax* ***(kataloška številka Ref. 2316); merilo 50 mm.***



***Fig. 3: Ventral surface of the head of*** *Etmopterus spinax* ***(specimen Ref. 2316), showing teeth on the upper and lower jaws, and a dermal denticle; scale bar 10 mm.***
***Sl. 3: Spodnja polovica glave primerka vrste*** *Etmopterus spinax* ***(kataloška številka Ref. 2316). Vidijo se zobje v zgornji in spodnji čeljusti ter kožni dentikli; merilo 10 mm.***

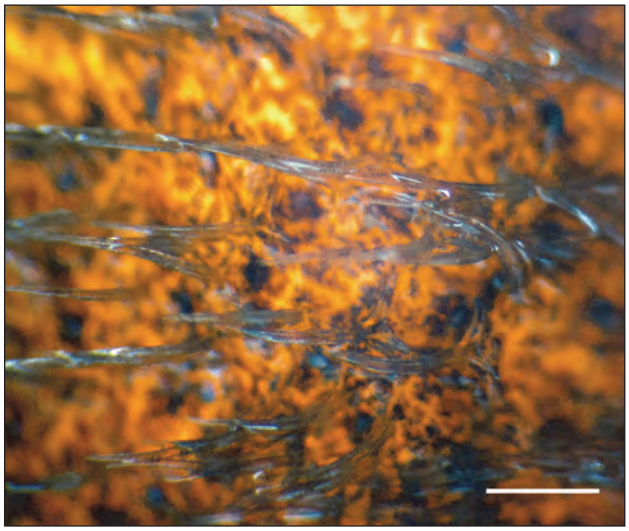


***Fig. 4: Dermal denticles removed from*** *Etmopterus spinax* ***(specimen Ref. 2317); scale bar 0.2 mm.***
***Sl. 4: Kožni dentikli vrste*** *Etmopterus spinax* ***(kataloška številka Ref. 2317); merilo 0,2 mm.***

low upper lobe with a prominent ventral notch near the tip; dermal denticles thin with hooked tips, occurring in an irregular pattern and well separated from one another (Fig. 4); coloration brown above, abruptly transitioning to black below; black markings on flanks above and behind the pelvic fins, and along the caudal fin.

The morphology, measurements, counts and colour are in total agreement with previous descriptions of *E. spinax* by Tortonese (1956), Cadenat & Blache (1981), Compagno (1984) and Mc Eachran & Branstetter (1984). The three captures of *E. spinax* that constitute the first records of the species from the Syrian coast have increased the number of elasmobranch reported to date in the region to a total of 43. Following Mc Eachran & Branstetter (1984), a second species belonging to the genus *Etmopterus* Rafinesque, 1810 is believed to occur in the Mediterranean Sea, namely the smooth lantern shark *E. pusillus* (Lowe, 1839), which can be easily distinguished from *E spinax* by crater-shaped dermal denticles without the medial spine and flanks without the conspicuous black markings.

Previous studies on the reproductive biology of *E. spinax* showed it to be a viviparous aplacental species with a gestation period not exceeding one year. Sexual maturity is reached at similar sizes as in specimens from the areas off the British Isles (Hickling, 1963) and the Tunisian coast (Capapé, *et al*., 2001), in each area the males mature at a smaller size than the females, at 350 mm and 380 mm, respectively, with 460 mm as the maximum size recorded for both sexes. However, Compagno (1984) observed that the maximum size for this species was 600 mm. The three specimens presented in this study were females, measuring 298.6 mm, 306.3 mm and 317.1 mm in TL, respectively, and weighing 102.3 g, 110.4 g and 106.6 g, respectively. The dissection of the abdominal cavities of all three specimens revealed whitish and undeveloped ovaries, thread-like oviducts and inconspicuous oviducal glands – patterns characteristics of juvenile females (Hickling, 1963; Capapé *et al*., 2001). This could mean they did not reach the size at first sexual maturity, which in females from different Mediterranean marine regions ranges between 340 and 380 mm (Porcu *et al*., 2014). Conversely, in specimens from the Atlantic, southern Portugal (Coelho & Erzini, 2008), the first sexual maturity is reached at a smaller size. Therefore, further records are needed before determining the size at first sexual maturity for *E. spinax* from the Syrian coast. The stomachs of the three Syrian specimens were empty; however, Capapé *et al*. (2003) and Fanelli *et al*. (2009) noted that small specimens from Tunisian waters and western Mediterranean fed on crustaceans and cephalopods, while larger specimens fed on small teleost species, as corroborated by ontogenetic changes caused by such a diet.

*E. spinax* is reported in both Mediterranean Basins in waters ranging between 150-200 m and 400 m, and probably deeper (Quignard & Capapé, 1971), as it has been recorded at depths as low as 2,200 m in the Ionian Sea (Sion *et al*, 2004). Due to economic and technical reasons, deep-sea waters are rather poorly exploited by commercial vessels; also, this species is not of interest to fishermen and is generally discarded at sea when caught. Such patterns are observed throughout the Mediterranean Sea, including the Syrian coast. This could explain why *E. spinax* had not been captured here before and why the records of these three specimens constitute only the first report of the species from this area.

***Tab. 1: Morphometric measurements (in mm) with percentages of total length (%TL) recorded for the three specimens of*** Etmopterus spinax ***captured off the Syrian coast.***
***Tab. 1: Morfometrične meritve (v mm) in njihov delež glede na celotno dolžino telesa (%TL), opravljene na treh primerkih vrste*** *Etmopterus spinax,* ***ujetih ob obali Sirije.***

| **References** | **2316 M.S.L.** | | **2317 M.S.L.** | | **2318 M.S.L.** | |
|---|---|---|---|---|---|---|
| Morphometric measurements | mm | TL% | mm | TL% | mm | TL% |
| Total length | 317.1 | 100.0 | 298.6 | 100.0 | 306.3 | 100.0 |
| standard length | 251.2 | 79.2 | 236.1 | 79.1 | 242.1 | 79.0 |
| Head length | 71.5 | 22.5 | 66.8 | 22.4 | 68.3 | 22.3 |
| Prespiracular length | 38.9 | 12.3 | 36.9 | 12.4 | 37.9 | 12.4 |
| Spiracle length | 5.2 | 1.6 | 4.7 | 1.6 | 5.1 | 1.7 |
| Preorbital length | 25.9 | 8.2 | 24.6 | 8.2 | 25.3 | 8.3 |
| Eye length | 19.2 | 6.1 | 18.1 | 6.1 | 18.5 | 6.0 |
| Prenarial length | 6.4 | 2.0 | 6.1 | 2.0 | 6.3 | 2.1 |
| Preoral length | 31.7 | 10.0 | 29.9 | 10.0 | 30.2 | 9.9 |
| Nostril width | 9.4 | 3.0 | 9.1 | 3.0 | 8.6 | 2.8 |
| Mouth width | 28.9 | 9.1 | 27.4 | 9.2 | 28.4 | 9.3 |
| Pre-first dorsal-fin length | 104.3 | 32.9 | 98.3 | 32.9 | 101.6 | 33.2 |
| First dorsal-fin length | 27.7 | 8.7 | 26.2 | 8.8 | 37.6 | 12.3 |
| First dorsal-fin base | 11.2 | 3.5 | 10.7 | 3.6 | 10.8 | 3.5 |
| First dorsal-fin height | 12.6 | 4.0 | 11.9 | 4.0 | 12.1 | 4.0 |
| First dorsal fin spine length | 16.1 | 5.1 | 15.1 | 5.1 | 15.2 | 5.0 |
| Pre-second dorsal-fin length | 193.6 | 61.1 | 182.6 | 61.2 | 189.3 | 61.8 |
| Second dorsal-fin length | 36.4 | 11.5 | 34.1 | 11.4 | 36.2 | 11.8 |
| Second dorsal-fin base | 22.4 | 7.1 | 21.3 | 7.1 | 22.4 | 7.3 |
| Second dorsal-fin height | 20.2 | 6.4 | 19.3 | 6.5 | 20.1 | 6.6 |
| Second dorsal fin spine length | 19.4 | 6.1 | 18.2 | 6.1 | 19.1 | 6.2 |
| Prepectoral-fin length | 77.1 | 24.3 | 72.8 | 24.4 | 74.6 | 24.4 |
| Pectoral-fin base | 19.2 | 6.1 | 18.3 | 6.1 | 18.3 | 6.0 |
| Pectoral-fin length | 27.6 | 8.7 | 26.3 | 8.8 | 26.3 | 8.6 |
| Prepelvic-fin length | 166.2 | 52.4 | 156.8 | 52.5 | 161.8 | 52.8 |
| Pelvic-fin length | 37.1 | 11.7 | 35.1 | 11.8 | 24.9 | 8.1 |
| Pelvic-fin base | 25.5 | 8.0 | 23.9 | 8.0 | 23.8 | 7.8 |
| Precaudal-fin length | 251.2 | 79.2 | 236.8 | 79.3 | 243.8 | 79.6 |
| Dorsal caudal-fin margin | 66.1 | 20.8 | 62.2 | 20.8 | 34.5 | 11.3 |
| Preventral caudal-fin margin | 29.7 | 9.4 | 28.3 | 9.5 | 29.2 | 9.5 |
| Upper postventral caudal-fin margin | 47.3 | 14.9 | 44.3 | 14.8 | 46.4 | 15.1 |
| Tooth rows on upper jaw | 25 | | 25 | | 25 | |
| Tooth rows on lower jaw | 25 | | 25 | | 25 | |
| Total weight (g) | 106.6 | | 102.3 | | 110.4 | |

# PRVI ZAPIS O POJAVLJANJU ŽAMETNEGA TRNEŽA *ETMOPTERUS SPINAX* (CHONDRICHTHYES: ETMOPTERIDAE) IZ SIRSKIH VODA (VZHODNI MEDITERAN)

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*POVZETEK*

*Avtorja poročata o prvih podatkih o pojavljanju žametnega trneža* Etmopterus spinax *(Linnaeus, 1758) iz sirskih voda. Nanaša se na ulov treh samic, ki so merile 298,6 mm, 306,3 mm in 317,1 mm v dolžino in tehtale 102,3 g, 110,4 g in 106,6 g. Avtorja te primerke opisujeta in razpravljata o pojavljanju vrste v lokalnem in širšem sredozemskem merilu.*

**Ključne besede:** Etmopteridae, *Etmopterus spinax*, globokomorski morski pes, vzhodno Sredozemsko morje

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