UNUSUAL RECORD OF LONGJAW SNAKE EEL, *OPHISURUS SERPENS* (OSTEICHTHYES: OPHICHTHIDAE) IN TUNISIAN WATERS (CENTRAL MEDITERRANEAN)

**SUMMARY**

The present paper represents an additional and unusual record of the long jaw snake eel, *Ophisurus serpens* (Osteichthyes: Ophichthidae) in the Lagoon of Bizerte, a brackish area located in northern Tunisia. The specimen measured 1890 mm in total length and weighed 1096 g, it is described in the present paper including morphometric measurements and meristic counts. This specimen is the third well-documented record of *O. serpens* in the area, and the second in a peri-Mediterranean lagoon. This unusual capture is commented and discussed, and the use of the local ecological knowledge allows to assess the status of *O. serpens* in the area, where further records are needed prior to conclude about a successful establishment.

**INTRODUCTION**

The long jaw snake eel, *Ophisurus serpens* (Linnaeus, 1758), is a cosmopolitan species that occurs in western Indian Ocean, western Pacific and eastern Atlantic (Bauchot, 1986). TIGHE (2015) noted that it was previously though that this taxon includes two separate species with widely disjunct distributions - one in the Atlantic/Mediterranean Sea and the other in the west Pacific, adding that *O. serpens* is only present in the Eastern Atlantic Ocean and the Mediterranean Sea.

*Ophisurus serpens* is known in western and central Mediterranean marine environments (Bauchot, 1986), and in the Adriatic Sea where the species is considered as very rare (Dušič et al., 2005). *O. serpens* extended its distribution eastward and was recorded in Turkish waters (Ulars and Akyol, 2015; Koç and Erdogan, 2015).
Ophisurus serpens was first reported in the Gulf of Tunis by Lubet and Azouz (1969), but no specimen was available for confirmation (Bradai, 2000). Conversely, two well-documented captures of the species were provided by Ben Amor et al. (2009) from Tunis Southern Lagoon and Rafrafi-Nouira et al. (2015) from Cani Rocks, both areas located in northern Tunisia (Fig. 1). Information on catches of Ophisurus serpens was due to the help of local communities or local ecological research (Anadón et al., 2009; Azzurro et al., 2011); similarly, in the wake of a collaboration with fishermen aware of fishing grounds, a third specimen was collected in Tunisian waters. This specimen is described in the present paper, together with some comments on its capture and its distribution in the area and the Mediterranean Sea.

MATERIAL AND METHODS

The specimen was captured on 10 July 2017 in the Lagoon of Bizerte by dragnet at a depth of 10 m (Fig. 1 and 2), on seagrass beds together with ascidians and some juvenile gilthead sea breams Sparus aurata Linnaeus, 1758. Measurements to the nearest millimetre, counts and weight to the nearest gram were carried out on the fresh specimen and summarized in Table 1. The specimen was preserved in 5% buffered formalin and deposited in the Ichthyological Collection of the Institut National des Sciences et Technologies de la Mer de Salammbô (Tunisia), receiving the catalogue number INSTM-OPHI-serpens (Fig. 3).

Fig. 1. Map of Tunisia indicating the capture sites of Ophisurus serpens in the Tunisian waters. 1: Gulf of Tunis (Lubet and Azouz, 1969). 2: Tunis Southern Lagoon (Ben Amor et al., 2009). 3: Cani Rocks (Rafrafi-Nouira et al., 2015). 4: Lagoon of Bizerte (this study).
Fig. 2. Lagoon of Bizerte indicating the unusual captures of fishes in the area, (NC: navigation canal). Black circle: *Stephanolepis diaspros* (BDIOUI, et al. 2002). Black square: *Upeneus pori* (AZZOUZ et al., 2010). Black triangles: *Pteromylaeus bovinus* (EL KAMEL et al., 2010). Black star: *Siganus luridus* (OUNIFI-BEN AMOR et al., 2016a). Arrow: *Ophisurus serpens* (this study).

Fig. 3. *Ophisurus serpens* collected from the Lagoon of Bizerte (Tunisia, INSTM-OPHI-serpens), with scale bar = 40 mm.
RESULTS AND DISCUSSION

The specimen was identified as *Ophisurus serpens* following the combination of main morphological characters: elongate and cylindrical body, anus in anterior half of the body, snout long and slender, jaws elongate and extending posteriorly beyond the eye; dorsal, anal and pectoral fins well-developed, head obtuse and slender, teeth in one-two series in jaws, canines in front, teeth on one row on vomer, enlarged anteriorly; colour reddish-brown dorsally, snout ochres, dorsal and anal fins edged with grey, lateral pore brownish, belly yellowish.

Description, measurements and percentages in total length (TL), recorded
in this new Tunisian specimen of *O. serpens* are in agreement with Tortonese (1970), Bauchot (1986), Dulciç et al. (2005), Ben Amor et al. (2009), Ulas and Akyol (2015) and Koç and Erdogan (2015). With special regard to size, Bauchot (1986) reported 2400 mm as maximum TL for *O. serpens*. Specimens recorded by Dulciç et al. (2005) from the Adriatic Sea had 2000 mm, 2100 mm and 2130 mm TL, respectively. The present specimen, reaching 1890 mm TL, is the largest *O. serpens* recorded to date in the Tunisian waters. Bauchot (1986) noted that the number of pores counted in the lateral line of *O. serpens* ranged between 199 and 215. Additionally, this number seems to increase in relation with TL, in 10 specimens originating from different marine areas such counts ranged between 149 and 206, and size between 333 and 2130 mm TL.

Following Teghe (2015), *Ophisurus serpens* inhabits the continental shelf on sandy or muddy bottoms, occurring in estuaries in juvenile phase, and it lives buried in the sediment with only its head exposed (Dulciç et al., 2005). It is a marine, brackish, reef-associated and benthic species living to depths to 300 m (Dulciç et al., 2005). The present specimen captured in the Lagoon of Bizerte constitutes the second record of the species in a peri-Mediterranean lagoon (sensu Quignard and Zaouali, 1980), as the first record occurred in Tunis Southern Lagoon (Ben Amor et al., 2009).

Tunis Southern Lagoon and Bizerte Lagoon are known to have a favorable biological environment and therefore noticeably enhance occurrence and abundance of fish species (Zaouali, 1974; Mejri et al., 2004; Ben Souissi et al., 2005; El Kamel et al., 2009, 2010). Among these latter, top predators such as *O. serpens* and elasmobranch species are the best instances (Ben Amor et al., 2009; El Kamel et al., 2010). Both lagoons are restricted and protected areas where some species take refuge and such pattern could explain unusual records such as Lessepsian migrants (Bdouri, et al. 2002; Azzouz et al., 2010; Ouniﬁ-Ben Amor et al., 2016a) and other teleost species typically occurring in deep waters (Ouniﬁ-Ben Amor et al., 2016b) or rarely found in these areas (Ouniﬁ-Ben Amor et al., 2016,c).

*Ophisurus serpens* is considered as a rare species throughout the Tunisian waters (Bradaï et al., 2004) as well as in the whole Mediterranean Sea (Bauchot, 1986). Off the Algerian coast *O. serpens* was formerly reported as common by Dieuzeide et al., (1954), however, although investigations were regularly conducted since 1996 to date in the area, no record was reported (Hemida, personal communication). *O. serpens* is currently unknown along the coast of Libya (Al Hassan and El Silini, 1999; Shakman and Kinzelbach, 2007), off the Mediterranean coast of Egypt (El Sayed, 1994) and in the eastern Levant Basin (Golani, 2005). According to Tunisian fishermen the species has no commercial value and has probably been misidentiﬁed with congriids, or ﬁshes having similar morphology. Our recent investigations throughout the
Tunisian coast and brackish areas allow us to completely share such opinion. Therefore further records are needed prior to state that a population is successfully established in the area and other regions of the Mediterranean Sea.

REFERENCES


EL KAMEL O., MNASRI N., BEN SOUISSI J., BOUMAÏZA M., BEN AMOR M.M., CAPAPÉ C., 2009 - In-


