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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 emvironments (Bauchot, 1986), and in the Adriatic Sea where the species is considered as very rare (Dulciç *et al*., 2005). *O. serpens* extended its distribution eastward and was recorded in Turkish waters (Ulas 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 (Bradaï, 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 sea grass 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 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).

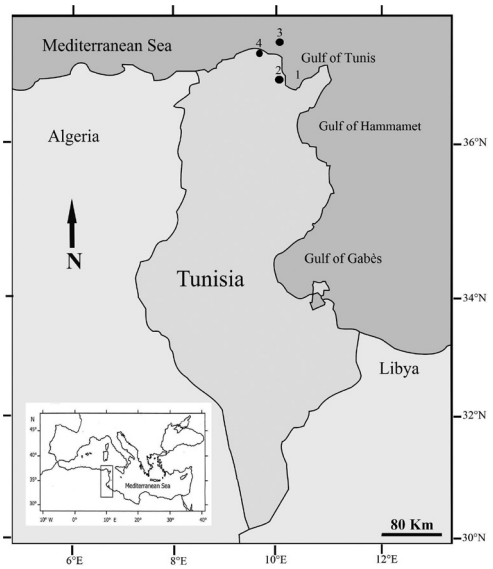

Fig. 1. Map of Tunisia indicating the capture sites of *Ophisurus serpens* in the Tunisian waters. 1: Gulf of Tunis (Lubet and Azouz, 1969). 2: Tunis Southern Lagoon (Ben Amor *et al.*, 2009). 3: Cani Rocks (Rafrafi-Nouira *et al.*, 2015). 4: Lagoon of Bizerte (this study).

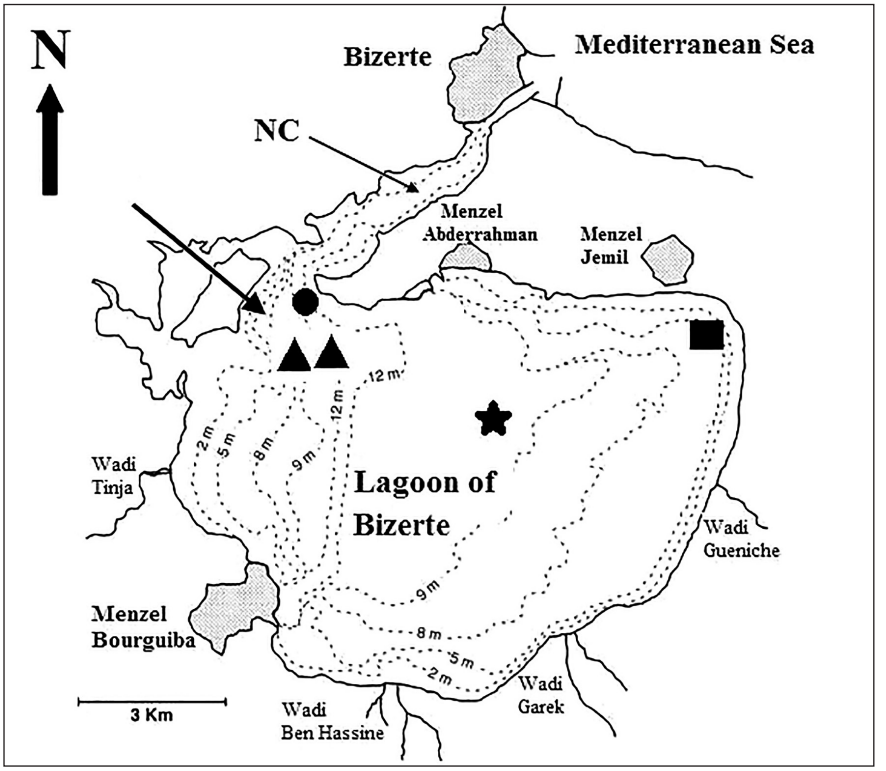

Fig. 2. Lagoon of Bizerte indicating the unusual captures of fishes in the area, (NC: navigation canal). Black circle: *Stephanolepis diaspros* (Bdioui, *et al*. 2002). Black square: *Upeneus pori* (Azzouz *et al*., 2010). Black triangles: *Pteromylaeus bovinus* (El Kamel *et al*., 2010). Black star: *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.

Reference	INSTM-OPHI-serpens	
Morphometric characters (mm)	mm	%TL
Total length (TL)	1890	100
Preanal length (LPA)	730	38.6
Predorsal length (LPD)	225	11.9
Prepectoral length (LPP)	160	8.5
Dorsal fin length (LD)	1670	88.4
Anal fin length (La)	1190	63
Pectoral fin length (Lp)	36	1.9
Body depth (H)	35	1.9
Head length (C)	149	7.9
Eye diameter (O)	10	0.5
Preorbital length (PO)	46	2.4
Interorbital length (Io)	12	0.6
Length of lower jaw	92	4.9
Counts		
Number of pores in *linea lateralis*	201	
Pectoral fin soft rays	15	
Lateral line (prepectoral)	9	
Lateral line (preanal)	72	
Weights (gram)		
Total weight	1095.9	

Tab. 1. Morphometric measurements (millimetres) with percentages of total length (%TL), meristic counts, and total body weight (grams) recorded in *Ophisurus serpens* (INSTM-OPHI-serpens) collected from the lagoon of Bizerte (Tunisia).

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 Tighe (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 (Bdioui, *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 (Bradai *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 congrids, 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

Al Hassan, L.A.J., El Silini O.A., 1999 - Check-list of bony fishes collected from the Mediterranean coast of Bengazi, Libya. *Revista de Biologia Marina y Oceanografía*, **34** (2): 291-301.

Anadón J.D., Giménez A., Ballestar R., Pérez I., 2009 - Evaluation of local ecological knowledge as a method for collecting extensive data on animal abundance. *Conservation Biology*, **23** (3): 617-625.

Azzouz K., Mansour S., Boumaïza M., Capapé C., 2010 - Occurrence of the Por's goatfish *Upeneus pori* (Osteichthyes: Mullidae) in the Lagoon of Bizerte (northern Tunisia, central Mediterranean). *Annales, series Historia naturalis*, **20** (1): 29-32.

Azzurro E., Moschelle P., Maynou F., 2011 - Tracking signals of change in Mediterranean fish diversity based on local ecological knowledge. *Plos ONE*, **6**: e24885. doi: 101371/JOURNAL. PONE.0024885.

Bauchot M.L., 1986 - Ophichthidae (including Echelidae). *In*: Whitehead P.J.P., Bauchot M.-L., Hureau J.-C., Nielsen J. and Tortonese E. (eds.) *Fishes of the north-eastern Atlantic and the Mediterranean*, UNESCO, Paris, vol. II, 577-585.

Ben Amor M.M., Ben Souissi J., Ben Salem M., Capapé C., 2009 - Confirmed occurrence of the longjaw snake eel, *Ophisurus serpens* (Osteichthyes: Ophichthidae) in Tunisian waters (Central Mediterranean). *Pan-American Journal of Aquatic Sciences*, **4** (3): 251-254.

Bdioui M., Gharssallah H., Ben Naceur L., M'Rabet R., 2004 - Première mention du poisson-bourse *Stephanolepsis diaspros* (Fraser-Brünner, 1940) dans la lagune de Bizerte. *Bulletin de l'Institut National des Sciences et Techologies de la Mer de Salammbô*, **31**: 119-121.

Bradaï M.N., 2000 - Diversité du peuplement ichtyque et contribution à la connaissance des sparidés du golfe de Gabès. Thesis, University of Sfax, Tunisia. 600 pp.

Bradai M.N., Quignard J.-P., Bouain A., Jarboui O., Ouannes-Ghorbel A., Ben Abdallah L., Zaouali J., Ben Salem S., 2004 - Ichtyofaune autochtone et exotique des côtes tunisiennes: Recensement et biogéographie. *Cybium*, **28**: 315-328.

Ben Souissi, J., Mejri H., Zaouali J., El Abed A., Ben Salem M., Guélorget O., Capapé C., 2005 - Teleost species recorded in Tunis Southern Lagoon after its environmental restoration (northern Tunisia, central Mediterranean). *Annales, series Historia Naturalis*, **15** (2): 157-164.

Dieuzeide R., Novella M., Roland J., 1954 - Catalogue des poissons des côtes algériennes, Volume I. *Bulletin de la Station d'Aquiculture et de Pêche de Castiglione,* nouvelle série 6, volume II, ostéoptérygiens: 1-258.

Dulciç, J., Matic-Skoko S., Kraljejiç M., 2005 - New record of serpent eel *Ophisurus serpens* (Linnaeus, 1758) (Ophichthidae) in the Adriatic waters with a review of recent Adriatic records. *Annales, series Historia Naturalis*, **15** (2): 181-184.

El Kamel· O., Mnasri N., Ben Souissi J., Boumaïza M., Ben Amor M.M., Capapé C., 2009 - In-

ventory of elasmobranch species caught in the Lagoon of Bizerte (north-eastern Tunisia, central Mediterranean). *Pan-American Journal of Aquatic Sciences,* **4** (4): 383-412.

El Kamel O., Mnasri, N., Boumaïza M., Ben Amor M.M., Reynaud C., Capapé C., 2010 - Additional records of the bull ray *Pteromylaeus bovinus* (Chondrichtyes: Myliobatidae), in the Lagoon of Bizerte (northern Tunisia, central Mediterranean). *Annales, series Historia naturalis*, **20** (2): 169-174.

El Sayed R.S., 1994 - *Check-list of Egyptian Mediterranean fishes*. Institute of Oceanography and Fisheries, Alexandria, Egypt: ix + 77 pp.

Golani D., 2005 - Check-list of the Mediterranean Fishes of Israel. *Zootaxa* (947): 1-200.

Koç H.T., Erdogan Z., 2015 - Confirmed Occurence of the Longjaw Snake Eel, *Ophisurus serpens* (Osteichthyes: Ophichthidae) in Edremit Bay (Northern Aegean Sea), Turkey. *Turkish Journal of Fisheries and Aquatic Sciences*, **15** (2): 371-374.

Lubet P., Azzouz A., 1969 - Étude des fonds chalutables du golfe de Tunis. *Bulletin de l'Institut d'Océanographie et de Pêche de Salammbô,* **1** (3): 87-111.

Mejri H., Ben Souissi J., Zaouali J., El Abed A., Guélorget O., Capapé C., 2004 - On the recent occurrence of elasmobranch species in a perimediterranean lagoon: the Tunis Southern Lagoon (Northern Tunisia). *Annales, series Historia Naturalis*, **14** (2): 143-158.

Ounifi-Ben Amor K., Rafrafi-Nouira S., El Kamel-Moutalibi O., Ben Amor M.M., 2016 - Westernmost occurrence of the dusky spinefoot *Siganus luridus* (Osteichthyes, Siganidae) along North African coasts. *Arxius de Miscellània Zoològica,* **14**: 99-107.

Ounifi-Ben Amor K., Ben Souissi J., Capapé C., Ben Amor M.M., 2016 - Unusual record of bluemouth rockfish *Helicolenus dactylopterus* (Osteichthyes: Scorpaenidae) in Tunis Southern Lagoon (northern Tunisia, Central Mediterranean). *Journal of Ichthyol*ogy, **56** (4): 620-624.

Ounifi-Ben Amor K., Ben Amor M.M., Ben Souissi J., Capapé C., 2016 - Unusual records of tripletail *Lobotes surinamensis* (Osteichthyes: Lobotidae) from the Tunis Southern Lagoon (north-eastern Tunisia, central Mediterranean). *Annales, series Historia Naturalis*, **26**(1): 13-18.

Quignard J.-P., Zaouali J. 1980. Les lagunes périméditerranéennes. Bibliographie icthyologique annotée. Première partie: les étangs français de Canet à Thau. *Bulletin de l'Office national des Pêches de Tunisie*, **4** (2): 293-360.

Rafrafi-Nouira S., Reynaud C., Boumaïza M., El Kamel-Moutalibi O., Capapé C., 2015 - Unusual captures of teleost species from the northern coast of Tunisia (central Mediterranean). *Journal of Ichthyol*ogy, **55** (3): 337-345.

Shakman E., Kinzelbach R., 2007 - Commercial fishery and fish species composition in coastal waters of Libya. *Rostocker Meereskundliche Beiträge*, **18**: 65-80.

Tighe K., 2015. *Ophisurus serpens*. The IUCN Red List of Threatened Species 2015: e.T194986A2371964.<http://dx.doi.org/10.2305/IUCN.UK.20154.RLTS.T194986A2371964.e.Downloaded on 27 September 2017.

Tortonese E., 1970 - *Osteichthyes (Pesci ossei). Parte prima*. Calderini, Bologna, 564 pp.

Ulas A., Akyol O., 2015- Occurence of the serpent eel, *Ophisurus serpens* (Linneaus, 1758) (Osteichtyes: Ophichthidae), close to the Bay of Izmir (Aegean Sea, Turkey). *Turkish Journal of Zoology,* **39**: 191-193.

Zaouali J., 1974 - *Les peuplements dans les biocœnoses lagunaires tunisiennes. Etude de la biologie de l'espèce pionnière* Cerastoderma glaucum *Poiret*. Thesis, University of Caen, France. 344 pp.