

# After four decades—Occurrence of the daggertooth pike conger, *Muraenesox cinereus* (Actinopterygii: Anguilliformes: Muraenesocidae), in the Mediterranean Sea

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## Abstract

In October 2020, a single specimen of the daggertooth pike conger, *Muraenesox cinereus* (Forsskål, 1775), was caught by longline at a depth of 120 m, from the Mediterranean coast of Turkey. This species has been recorded from the Mediterranean for the second time after approximately four decades. This new finding shows that the distribution of the species has expanded.

## Keywords

Muraenesocidae, Lessepsian fish, Levantine Sea, migration, alien fishes

## Introduction

The Mediterranean Sea is the sea most affected by alien species, in terms of the high rate of introduction and the number of established populations (Bonanno and Bonaca-Orlando 2019). In particular, the Levantine Sea is intensively targeted by the fishes passing through the Suez Canal. Until now, more than one hundred Lessepsian fish species have crossed into the Mediterranean (Seyhan et al. 2017). While some species, such as *Siganus rivulatus* Forsskål et Niebuhr, 1775 and *Lagocephalus sceleratus* (Gmelin, 1789), have established in the Mediterranean ecosystem which is evident from their reproductive success (Sala et al. 2011; Khalaf et al 2014), some species have been recorded only once—*Chanos chanos* (Forsskål, 1775), *Diplogrammus randalli* Fricke, 1983 (see Ozvarol and Gokoğlu 2012; Seyhan et al. 2017).

The daggertooth pike conger, *Muraenesox cinereus* (Forsskål, 1775), which represents the order Anguilliformes

and the family Muraenesocidae, is widely distributed in the Indo-west Pacific Ocean and the Red Sea. Globally, the family Muraenesocidae is represented by 6 genera and 15 species. In the Mediterranean there are two species: *Cynoponticus ferox* Costa, 1846 and *Muraenesox cinereus* (see Froese and Pauly 2020). *Muraenesox cinereus* inhabits the bathypelagic-benthic region at depths down to 800 m. Its feeds mainly on small fishes and crustaceans and reaches a maximum length of 220 cm (Masuda et al. 1984; An et al. 2012). The daggertooth pike conger has importance as a fishing resource of the Far East, and it is also usually caught by small trawlers and longline fishing (Watari et al. 2014).

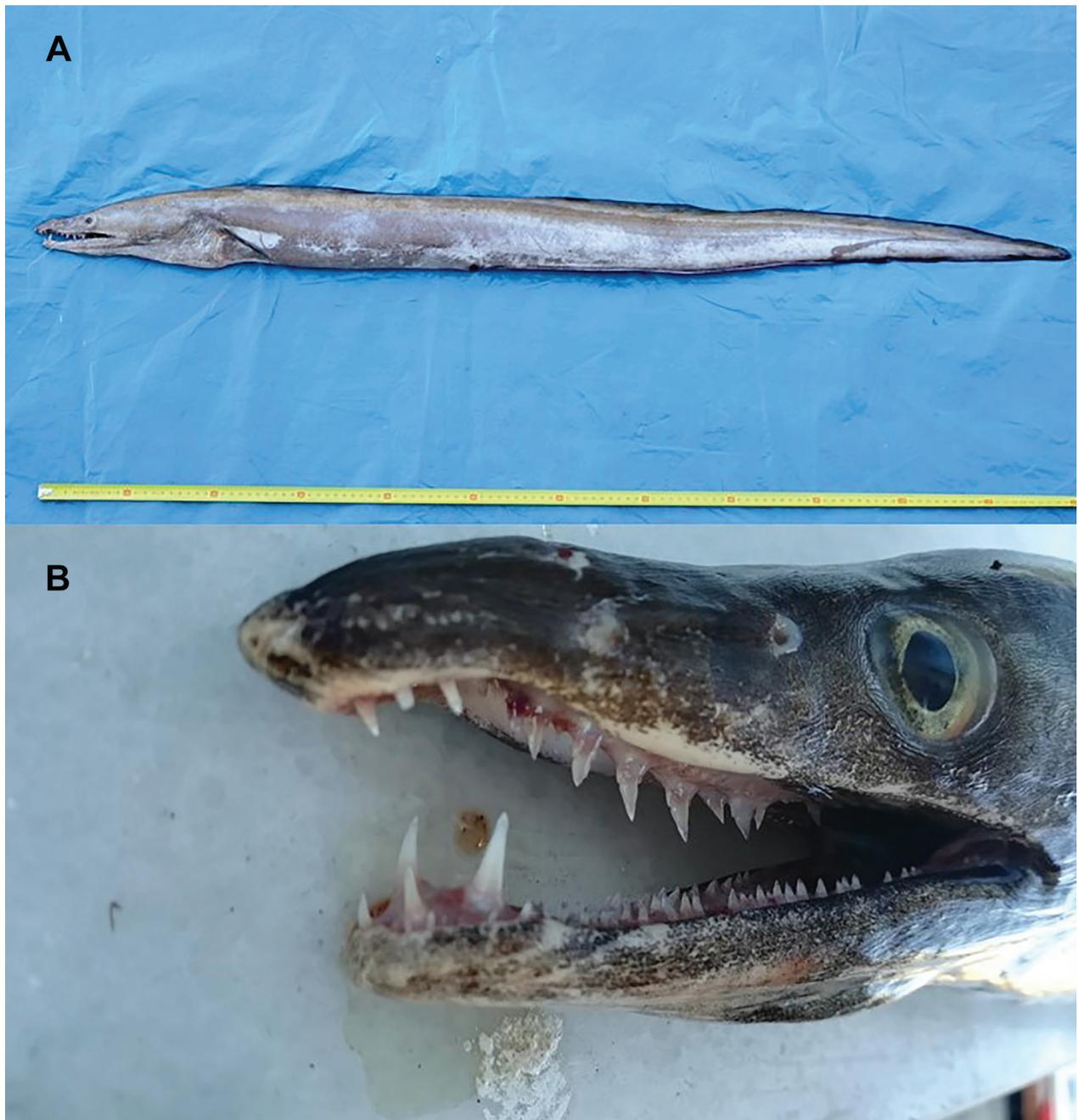
*Muraenesox cinereus* was recorded for the first time in the Mediterranean Sea in 1982 (Golani and Ben-Tuvia 1982) and had never been observed ever since. This study reports that *M. cinereus* was recorded from the Mediterranean Sea after a long time, and its distribution in the Levantine Sea has expanded.

## Materials and methods

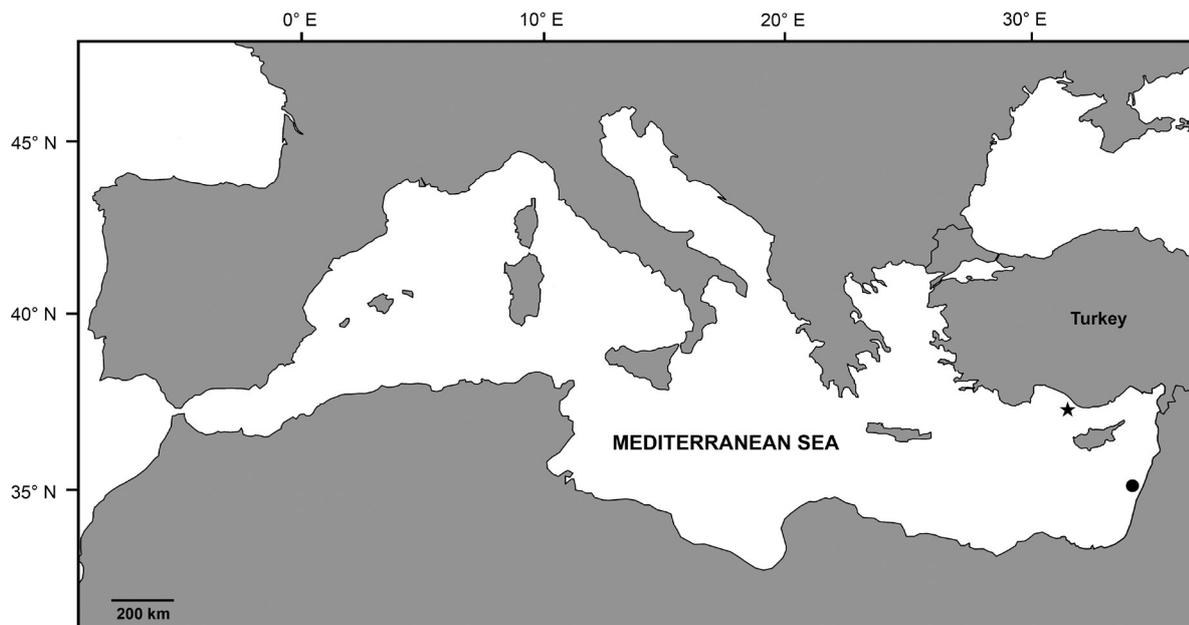
On 8 October 2020, a specimen (Fig. 1) of *M. cinereus* was caught by longline at a depth of 120 m, from the southern coast of Turkey (Gazipaşa; 36°22'30"N, 32°08'95"E) (Fig. 2). The specimen was identified according to Golani and Ben-Tuvia (1982) and Bauchot and Saldanha (1986). All morphometric measurements and meristic counts were following Golani and Ben-Tuvia (1982) together with the dental formula. After photographing, the specimen was fixed in 4% formaldehyde and deposited in the Fish Collection Centre of İzmir Kâtip Çelebi University where it was received the catalog number (IKC. PIS.1261).

## Results and discussion

The obtained specimen of *M. cinereus* was 124.7 cm long (TL) (Fig. 1A) and weighed 2923 g. Its morphometric measurements and meristic counts are given in Table 1. The fresh coloration of the body was grey, the ventral side lighter, the margin of fins black, body elongated and laterally compressed, dorsal-fin origin in front of pectoral-fin base, the anal fin length is almost 70% of the dorsal fin length, the upper jaw extending downwards covering the tip of the lower jaw, large and elliptic eyes, scales were absent, visible lateral line pores, sharp and well-developed teeth with a row of enlarged teeth on the vomer, maxillary teeth with several rows extend inward on the



**Figure 1.** *Muraenesox cinereus* (124.7 cm TL) whole view (A); A closeup of the head with teeth (B).



**Figure 2.** Sampling area of *Muraenesox cinereus* in this study (asterisk) off Gazipaşa/Turkey and the first record of this species in Mediterranean in 1982 in Jaffa/Israel (circle).

**Table 1.** Morphometric measurements and meristic counts of *Muraenesox cinereus* caught of eastern Mediterranean Sea.

Metrics	[cm]	[%HL]
Total length	124.7	
Preorbital length	6.3	28.3
Eye diameter	2.1	9.4
Prenostril length	4.7	21.1
Interorbital length	3	13.5
Gill height	3.5	15.7
Mouth length	9.5	42.6
	[cm]	[%TL]
Head length	22.3	17.9
Predorsal length	19.6	15.7
Prepectoral length	22.9	18.4
Preanal length	52.3	41.9
Pectoral fin length	7.3	5.9
Meristics	Count	
Dorsal fin rays	269	
Pectoral fin rays	14	
Anal fin rays	190	
Lateral line pores	146	
Before anus lateral line pores	40	
Before anus dorsal fin rays	62	
Premaxillary teeth (right)	2	
Premaxillary teeth (left)	4	
Vomerine teeth	12	
Dentary teeth (right)	44 + 3	
Dentary teeth (left)	39 + 2	

eye level. Blache and Tortonese (1968) stated that *C. ferox* and *M. cinereus* could be differentiated by the shape

of vomer teeth. The examined specimen had a dagger-like vomerine tooth shape (Fig. 1B).

Until now, this fish had been seen only once in the Mediterranean (Golani and Ben-Tuvia 1982). It had not been observed in almost four-decades. Similarly, *Rhynchoconger trewavasae* Ben-Tuvia, 1993 and *Gymnothorax reticularis* Bloch, 1795 were recorded only once in the Mediterranean in 1993 and 2012, respectively (Ben-Tuvia 1993; Stern and Goren 2013). The reasons for the rarity of these species in the Mediterranean may be listed as having cryptobenthic lifestyle, preferring deep-water habitats, and being released back to the sea by fishermen even if they were caught.

It is clear that alien species negatively change the structure and function of the Mediterranean ecosystem by affecting native species and critical habitats. Among the Mediterranean countries, Turkey is one of the most affected by Lessepsian bioinvasion (Galil et al. 2018; Irmak and Özden 2020).

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