

ON THE OCCURRENCE OF *POMADASYS INCISUS* (HAEMULIDAE) IN THE TURKISH AEGEAN SEA (EASTERN MEDITERRANEAN SEA)

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ABSTRACT

This paper aims to complement and update the data regarding the distribution of rare Pomadasys incisus, specifically by revealing the extension of its distribution in the eastern Mediterranean Sea. On 1 November 2020, a single specimen of P. incisus was captured by an angler on a sandy/rocky bottom at a depth of 3 m in Akyaka, Gökova Bay, in the south-eastern Aegean Sea. This thermophilic fish is still very rare in the eastern Mediterranean Sea (about 142 specimens reported to date). However, it is obvious that populations of P. incisus are gradually expanding towards the northern latitudes of the eastern as well as western Mediterranean basin.

Key words: Bastard grunt, additional record, measurements, Gökova Bay

PRESENZA DI *POMADASYS INCISUS* (HAEMULIDAE) NEL MAR EGEO TURCO (MEDITERRANEO ORIENTALE)

SINTESI

L'articolo mira a completare e aggiornare i dati relativi alla distribuzione del pesce arabo, Pomadasys incisus, riportando l'estensione della distribuzione di questa specie nel Mediterraneo orientale. Il 1° novembre 2020, un singolo esemplare di P. incisus è stato catturato da un pescatore su un fondo sabbioso/roccioso ad una profondità di 3 m, ad Akyaka, nella baia di Gökova, nel Mar Egeo sud-orientale. Questo pesce termofilo è ancora molto raro nel Mediterraneo orientale (circa 142 esemplari segnalati finora). Tuttavia, è ovvio che le popolazioni di P. incisus si stiano gradualmente espandendo verso le latitudini settentrionali del bacino orientale e occidentale del Mediterraneo.

Parole chiave: pesce arabo, ritrovamento aggiuntivo, misurazioni, Baia di Gökova

INTRODUCTION

The bastard grunt, *Pomadasys incisus* (Bowdich, 1825), lives in coastal waters on sandy/muddy bottoms and/or close to rocky habitats as well as in sea meadows at depths of up to 50 m (Golani *et al.*, 2006). Reproduction occurs from July to October (Fehri-Bedoui & Gharbi, 2008).

Pomadasys incisus is distributed in the eastern Atlantic coast from Madeira and Morocco, and mainly in the southern Mediterranean, but has also been reported from Seté, France, and from Italy (Ben-Tuvia & McKay, 1986; Golani *et al.*, 2006; Froese & Pauly, 2020). The species entered the Mediterranean Sea through the Strait of Gibraltar. The prevailing currents, sea warming, and the availability of suitable soft substrate in relatively shallow waters allowed this species to first establish itself in the NW Mediterranean basin (Francour *et al.*, 1994; Bodilis *et al.*, 2013). While *P. incisus* gradually increased its abundance in Malaga, the Catalan coast, Spain, and the Gulf of Lion, France (Serena & Silvestri, 1996; Bodilis *et al.*, 2013; Villegas-Hernandez *et al.*, 2018), it remains rather rare in the north-eastern Mediterranean Sea (Kapiris *et al.*, 2008).

This paper presents a new report of the presence of *P. incisus* in an area of the Aegean Sea in order to supplement the information about its distribution in the eastern Mediterranean Sea.

MATERIAL AND METHODS

On 1 November 2020, a single specimen of *Pomadasys incisus* (Fig. 1) was captured by an angler on a sandy/rocky bottom at a depth of 3 m in Akyaka, Gökova Bay (37°03.01 N - 28°19.11 E, Fig. 2) in the south-eastern Aegean Sea. The bait was bogue (*Boops boops*) flesh. The specimen was fixed in a 6% formaldehyde solution and deposited in the fish collection of Muğla University, Faculty of Fisheries (MUSUM/PIS/108).

RESULTS AND DISCUSSION

The specimen was measured to the nearest millimetre. The morphometric measurements as percentages of total length (TL%) and the meristic counts recorded in the *P. incisus* caught in Gökova Bay, Aegean Sea, are shown in Tab. 1. All the established measurements, counts, proportions, and colour



Fig. 1: *Pomadasys incisus* caught in Gökova Bay, SE Aegean Sea (photo: T. Çoker).

Sl. 1: Primerek vrste *Pomadasys incisus*, ujet v zalivu Gökova, JV Egejsko morje (Foto: T. Çoker).



Fig. 2: Capture location of *Pomadasys incisus* in the Aegean Sea.

Sl. 2: Lokaliteta, kjer je bila ujeta vrsta *Pomadasys incisus* v Egejskem morju.

patterns are in accordance with the descriptions of Ben-Tuvia & McKay (1986), Golani *et al.* (2006), and Froese & Pauly (2020).

Pomadasys incisus is a native species of the eastern Atlantic and Mediterranean Seas. This species entered the Mediterranean Sea through the Gibraltar Strait in the early 19th century. The first report of *P. incisus* from the Italian seas dates to the early 1990s (Bilecenoğlu *et al.*, 2013). The earliest report of the presence of *P. incisus* in the Ionian Sea was given by Kaspiris only in 1970, even though the first records for the Mediterranean waters were confirmed for the Algerian coast by Guichenot as early as 1850 and for Sète, France, by Corus in 1893 (Serena & Silvestri, 1996). After that, *P. incisus* was reported off the Tuscan coast in 1992 (Serena & Silvestri, 1996), and in June 2001, a specimen was caught by gillnet outside Anzio harbour in the central Tyrrhenian Sea (Psomadakis *et al.*, 2006). Lastly, two specimens were recorded off the coast of Avola in Sicily, in the Ionian Sea, in August 2013 (Bilecenoğlu *et al.*, 2013). On the other hand, this species seems abundant in the Gulf of Tunis (Chakroun-Marzouk & Ktari, 1995; Fehri-Bedoui & Gharbi, 2008), and between Malaga, Spain, as pointed out by Serena & Silvestri (1996), the Catalan coast (Villegas-Hernandez *et al.*, 2018), and the Gulf of Lion, France (Bodilis *et al.*, 2013). Recently, on 15 August 2015, a specimen of *P. incisus* was captured off the Pelješac Peninsula in the southern Adriatic Sea (Karachle *et al.*, 2016). This was the first record for the Adriatic Sea. It clearly proves that this thermophilic species has been moving northwards, as it has so far reached the Balearic, Tyrrhenian, Ligurian and Adriatic Seas.

Tab. 1: Morphometric measurements as percentages of total length (TL%) and meristic counts recorded in the *Pomadasys incisus* captured in Gökova Bay, Aegean Sea.

Tab. 1: Morfometrične meritve, izražene kot delež celotne dolžine (TL%), in meristična štetja na primerku vrste *Pomadasys incisus*, ujetega v zalivu Gökova, Egejsko morje.

Measurements	Size (mm)	Proportion (TL%)
Total length (TL)	169	
Fork length (FL)	151	89.3
Standard length (SL)	143	84.6
Maximum body depth	51	30.2
Pectoral fin length	48	28.4
Pre-dorsal fin length	49	29.0
Pre-anal fin length	92	54.4
Pre-pectoral length	50	29.6
Head length	42	24.9
Eye diameter	13	7.7
Preorbitary length	12	7.1
Meristic counts		
Dorsal fin rays	XII+16	
Anal fin rays	III+12	
Pectoral fin rays	17	
Ventral fin rays	I+5	
Weight (g)	71.8	

Tab. 2: Sporadic records of *Pomadasys incisus* in the eastern Mediterranean Sea.**Tab. 2: Sporadični zapisi o pojavljanju vrste *Pomadasys incisus* v vzhodnem Sredozemskem morju.**

Area	Date	n	TL (mm)	Depth (m)	References
Iskenderun Bay, NE Mediterranean	Dec.1994-Nov.1996	3	162-178	15-20	Başusta & Erdem (2000)
Turkey, NE Mediterranean	2001-2003	23	119-190	5-100	Sangun <i>et al.</i> (2007)
Gulf of Antalya, NE Mediterranean	May2005-Apr.2006	23	126-182	10	Beğburs & Kebapçioğlu (2013)
Argolikos Gulf, Aegean Sea	May-Aug.2008	39	?	10-15	Kapiris <i>et al.</i> (2008)
SE Aegean Sea	Dec.2009-Nov.2010	51	121-163	30-325	Bilge <i>et al.</i> (2014)
Morfou Bay, Cyprus	30 Sep.2019	1	?	2	Doumpas <i>et al.</i> (2020)
Limni Beach, Cyprus	20 May 2020	1	130	?	Doumpas <i>et al.</i> (2020)
Gökova Bay, Aegean Sea	01 Nov.2020	1	169	3	This study

In the eastern Mediterranean Sea, *P. incisus* has been reported sporadically, as shown in Table 2. In some previous fish checklists for the Levant Basin *P. incisus* was mentioned by name only, i.e., in reports from Israel (Ben-Tuvia, 1971), the eastern Levant (Golani, 1996), Mersin Bay, the NE Levant, (Gücü & Bingel, 1994), Syria (Saad, 2005), Egypt (Akel & Karachle, 2017), and the Lebanon coast (Bariche & Fricke, 2020).

As it appears, this thermophilic fish is still very rare in the eastern Mediterranean Sea (about 142 specimens have been reported to date). However, it is obvious that populations of *P. incisus* are gradually establishing themselves and expanding into the northern latitudes of the eastern and western Mediterranean Sea (Francour *et al.*, 1994; Serena & Silvestri, 1996; Bodilis *et al.*, 2013; Villegas-Hernandez *et al.*, 2018). According to fishermen in Gökova Bay (SE Aegean Sea), the populations of this fish species have become larger in the recent years. Francour *et al.*, (1994) stated that captures of thermophilic species, including *P. incisus*, have been increasing in

the northern Mediterranean due to global warming. As evidence of the warming of the marine environment, Azzurro (2008) provided a list of thermophilic subtropical fish species that have expanded their distribution range in the Mediterranean, which also includes *P. incisus*.

On the other hand, since *P. incisus* has been acknowledged as an example of latitudinal extension or demographic increase of thermophilic fish in response to the current climate change (Psodomakis *et al.*, 2012), *P. incisus* could be taken as an indicator of changing sea conditions due to global warming. To confirm that, however, further research is necessary which will study the overlap between exotic/thermophilic and endemic fish fauna and their competition, e.g., between salemas and siganids, red mullets and goatfishes.

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O POJAVLJANJU VRSTE *POMADASYS INCISUS* (HAEMULIDAE) V TURŠKEM EGEJSKEM MORJU (VZHODNO SREDOZEMSKO MORJE)

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POVZETEK

Avtorja poročata o novih in dopoljenih podatkih o razširjenosti redke vrste *Pomadasys incisus*, s posebnim ozirom na širjenje njenega areala v vzhodnem Sredozemskem morju. Prvega novembra 2020 je bil na trnek ujet primerek te vrste, na globini 3 m na skalnato-peščinem dnu, na lokaliteti Akyaka v zalivu Gökova v jugovzhodnem Egejskem morju. Ta toploljubna vrsta je še vedno zelo redka v vzhodnem Sredozemskem morju (do sedaj so poročali o 142 primerkih). Kakorkoli že, očitno je, da se vrsta *P. incisus* postopno širi proti severnim geografskim širinam tako vzhodnega kot tudi zahodnega Sredozemskega bazena.

Ključne besede: vrsta prašičevke, novi zapis o pojavljanju, meritve, zaliv Gökova

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