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The occurrence of *Zu cristatus* (Family: Trachipteridae), in the Northeastern Mediterranean, Türkiye

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ABSTRACT

On April 16, 2024, a scalloped ribbonfish *Zu cristatus* specimen with a standard length of 615 mm and a weight of 337.4 g was caught by a commercial trawler off Erdemli in the Gulf of Mersin (Northeastern Mediterranean, Türkiye) from 620-690 m depth range. The present paper reports the presence and is the first confirmation of *Z. cristatus* from the Gulf of Mersin, Türkiye (Northeastern Mediterranean). All measurements, counts, and color descriptions of *Z. cristatus* agree with previous descriptions. This record is a rare occurrence of the specimen of *Z. cristatus* on the Mediterranean coast of Türkiye. In addition, the detailed morphological measurements of *Z. cristatus* were given for the first time on the Turkish coast.

Keywords: Lampriformes, scalloped ribbonfish, deep-waters, Mersin Bay, Mediterranean Sea

1. INTRODUCTION

To date, two species of the family Trachipteridae have been reported from the Mediterranean Sea in shallow waters. These species are known as the Mediterranean dealfish *Trachipterus trachypterus* (Gmelin, 1789), and the scalloped ribbonfish *Zu cristatus* (Bonelli, 1819). The scalloped ribbonfish *Z. cristatus* belongs to the genus *Zu* and it is a meso-bathypelagic and cosmopolitan species distributed in the Mediterranean, Atlantic, Indian, and Pacific Oceans (Mundy, 2005). The species was first described in 1920 (Bonelli, 1920) as *Trachipterus cristatus*. The currently accepted and valid name of the species is *Z. cristatus*.

In the Adriatic and Mediterranean waters, *Z. cristatus* occurrence has been reported at different depths, from shallow waters in the Adriatic Sea Dulčić, (2002), Dulčić et al., (2014), Ionian Sea Mytilineou et al., (2013), Albano et al., (2022), Ligurian Sea Bonelli, (1820), Gavagnin, (1976), Fischer et al., (1987), Bottaro et al., (2005), Garibaldi, (2015), Tyrrhenian Sea Bianco et al., (2006), Psomadakis et al., (2006), Psomadakis et al., (2007), Zenetos et al., (2015), Falsone et al., (2017), Tiralongo et al., (2019), Tiralongo et al., (2020), Stipa et al., (2022), Sardina Cau, (1980), Balearic Sea García-Barcelona et al., (2014), the Iberian Sea Ibanez and Gallego, (1974), the western

Mediterranean between the coasts of Spain and Algeria Quignard and Tomasini, (2000), Catalonia Roig and Demestre, (1982) and in the Gulf of Tunis (Tunisia) Postel, (1955), Bradai and ElOuaer, (2012), the eastern Mediterranean in Israel Golani et al., (2023), Greece Papaconstantinou, (1998), Kaminas et al., (2021) and Turkey (Akyol and Tosunoğlu, 2023; Erguden et al., 2023).

In Turkish marine waters, *Z. cristatus* was first recorded in the Mediterranean Sea Akyüz and Artüz, (1957) and then in the Aegean Sea (Geldiay, 1969). Recently, this species has been reported from Saros Bay (northern Aegean Sea) by Akyol and Tosunoğlu, (2023) and from the Gulf of Antalya (Antalya and Finike coasts, eastern Mediterranean Sea) by (Çağıltay et al., 2023; Erguden et al., 2023). Although *Z. cristatus* Bilecenoğlu et al., (2002), Fricke et al., (2007) has been reported in Turkish checklists in Turkish marine waters, no record of this species has been reported from the northeastern Mediterranean coast of Turkey. Our present report is the first record of *Z. cristatus* in the Gulf of Mersin (Northeastern Mediterranean).

2. MATERIAL AND METHODS

A single specimen of *Z. cristatus* was caught by a commercial trawler on April 16, 2024, off Erdemli, Mersin Gulf in international waters (Coordinates: 36°04'202"N 34°31'597"E, 36°02'39.7"N 34°47'31.0" E) in the 620-690 m depth range (Figure 1). After the scalloped ribbonfish sample was taken from the commercial trawler where it was caught, it was taken to the Museum of Marine Life at Mersin University, where the species was identified and measured. The morphometric measurements of the specimen were made using a digital caliper and the weight was measured using a digital weight scale. All measurements and counts, as well as the morphological description and color, are consistent with the descriptions of (Bauchot, 1987; Olney, 1999). The specimen was registered at the Mersin University Marine Life Museum with catalog number MEUFC-24-11-148 and preserved in neutral formalin (Figure 2).

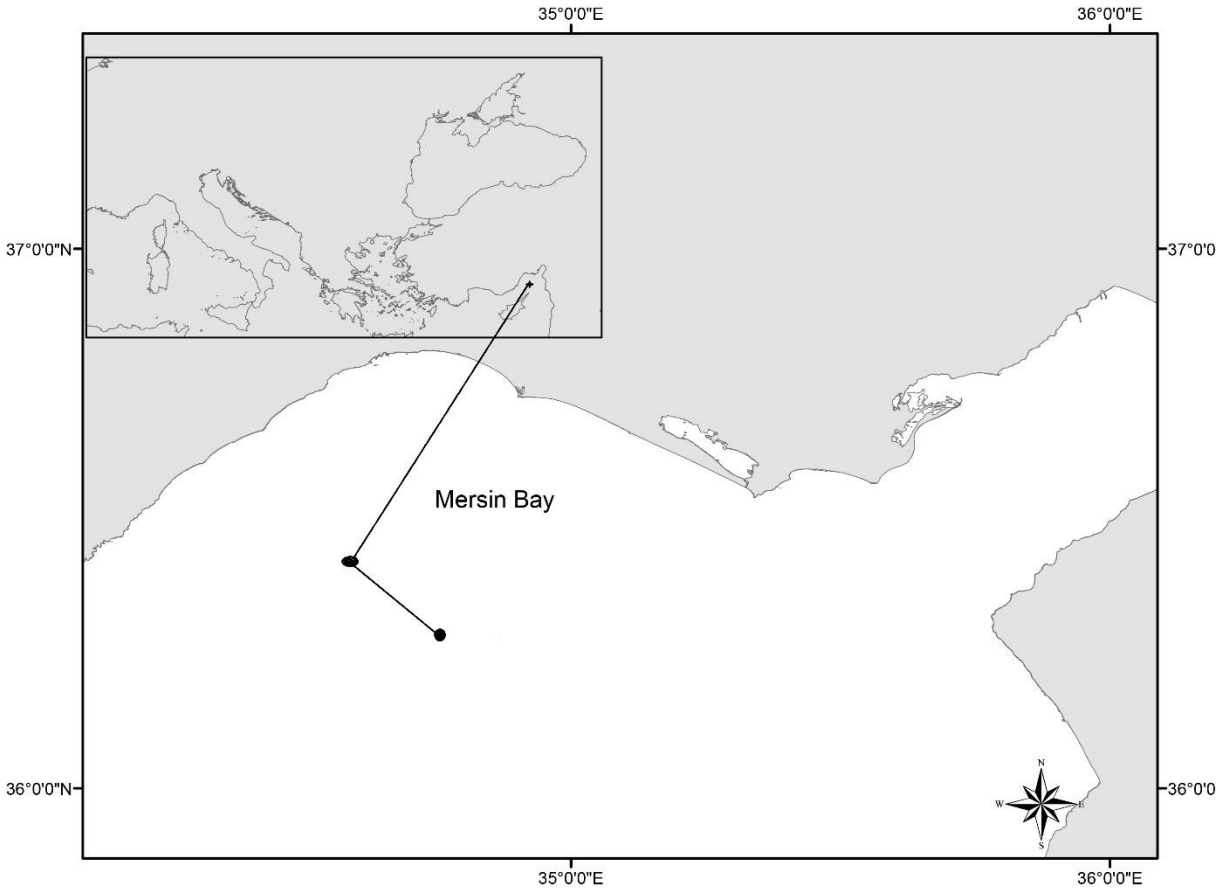

Figure 1 Map showing the fishing area of scalloped ribbonfish *Zu cristatus* in international waters off the Gulf of Mersin

Figure 2 The specimen of the scalloped ribbonfish *Zu cristatus* was captured (615 mm, SL) from the Gulf of Mersin, Türkiye

3. RESULTS

The main diagnostic characters and morphometric measurements of the captured specimen of *Z. cristatus* are given in centimeters: The specimen had a total length of 615 mm and a total weight of 337.4 g. The body is dorsoventrally compressed. The eye is large. The mouth is small and terminal, the first dorsal fin is highly elongated, the anal fin is absent, and paired pectoral and pelvic fins are present. In juveniles, the body is silvery, with approximately six vertical bars on the dorsal part of the body and four on the ventral part. Dark spots are on the body or fins. The dorsal fin has 120 rays and the pectoral fin has ten rays. The caudal fin rays could not be counted because our the tail sample was broken off was broken off during netting. Some morphometric measurements of the *Z. cristatus* specimen are given in (Table 1).

Table 1 Morphometric measurements of *Z. cristatus* in the North-Eastern Mediterranean

Metric	Value (mm)	% (SL)
Standard length	615	100
Head length	106	17.24
Pre-orbital length	36	5.85
Post-orbital length	41	6.67
Eye diameter	32	5.20
Operculum height	88	14.31
Upper jaw length	44	7.16
Lower jaw length	62	10.08
Pre-pectoral length	94	15.29
Pectoral fin length	43	6.99

Width of pectoral fin base	8	1.30
Maximum height of dorsal fin	48	7.81
Maximum height of the body	119	19.35
Total weight (g)	337.4	-
Meristic		
Lateral line scales	100	-
Pectoral fin rays	11	-
Dorsal fin spines	6	-
Upper jaw teeth	17	-
Lower jaw teeth	12	-
Palatine teeth	4	-
Vomerine teeth	3	-
Gill rakers total	10	-
Gill rakers epibranchial	2	-
Gill rakers ceratobranchial	8	-

4. DISCUSSION

In the Mediterranean, data on the biology and ecology of *Z. cristatus* are very limited. The scalloped ribbonfish *Z. cristatus* is an offshore fish with a maximum size of 118 cm SL (Heemstra and Kannemeyer, 1986). It feeds on pelagic crustaceans, small fish, and squid. Eggs are free-floating, large, and reddish. Juveniles typically swim at the surface, trailing elongated dorsal and pelvic fin rays that give them the appearance of a jellyfish. Juveniles specimens are characterized by a ribbon-shaped body, a short head, and a narrow mouth with a distinctly protruding upper jaw (Heemstra and Kannemeyer, 1986; Olney et al., 1993). *Z. cristatus* is distributed in tropical and temperate waters. This species is rarely recorded, especially in commercial trawls, and it is generally considered to be circumglobal in the epipelagic and mesopelagic zones from zero to 0-950 m depth (Fricke et al., 2011).

However, *Z. cristaus* is rarely found in the eastern Mediterranean. This species is mostly highly abundant in the central part of the Mediterranean Sea basin (Albano et al., 2022). In our study, the fish were caught in the deep waters of Mersin Gulf at approximately 690 m. Çağıltay et al., (2023) reported this species from shallower waters at 450 m in Antalya Bay. Akyol and Tosunoglu, (2023) reported an adult specimen of *Z. cristatus* caught at a depth of 600 m in Saros Bay (northern Aegean Sea, Turkey). Quigley and Henderson, (2014), reported that *Z. cristatus* that adults are commonly found at depths of 150-800 m, while juveniles prefer shallower waters. Golani et al., (2023) reported finding juveniles of this species near the surface in the eastern Mediterranean.

The young individual reported in this study was caught in deeper water than reported in the literature. In the present study, the occurrence a specimen of *Z. cristatus* was accidentally caught during commercial bottom trawling in Mersin Gulf. At the same time, this report represents the fourth occurrence of *Z. cristatus* on the Levantine Sea coast of Turkey. In addition, morphological measurements of *Z. cristatus* were reported for the first time in Turkish waters in this study. Although *Z. cristatus* has been classified as Least Concern (LC) on the IUCN Red List. This species remains Data Deficient (DD) in Turkey Fricke et al., (2007), this finding is significant as it contributes to our understanding of the distributional role of the species in the region.

5. CONCLUSION

We report the first substantiated record of *Z. cristatus* from the Gulf of Mersin (Northeastern Mediterranean coast, Türkiye). Although there is no evidence from past and present catch records that the species has established a permanent population along the northeastern Mediterranean coast, the fact that the individual reported in this study is a juvenile *Z. cristatus* provides important evidence for the permanent presence of the species in the northeastern Mediterranean. In addition, new records of the availability of scalloped ribbonfish along the Levantine coast indicate the successful existence of this species in recent years.

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Authors' Contribution

DE: Writing - original draft, methodology, writing - review and editing

SAE: Editing, final check control, validation

DA: Conceptualization, Investigation, sampling, visualization, original draft, writing - review and editing, validation

Ethical Approval

The Animal ethical guidelines are followed in the study for species observation & identification.

Informed consent

Not applicable.

Conflicts of interests:

The authors declare that there are no conflicts of interests.

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Data and materials availability

All data associated with this study are present in the paper.

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