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Short Communication

First Record of Goldblotch Grouper, *Epinephelus costae* (Steindachner, 1878) (Family: Serranidae) from the Sea of Marmara

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ABSTRACT

Two specimens of *Epinephelus costae* (Steindachner, 1878) have been observed in the rocky littoral zone of the northeastern Sea of Marmara in the early days of October 2024. *E. costae* is recorded for the first time from the Sea of Marmara. The present recording also emphasises that the northward migration of thermophilic Mediterranean species is gradually reaching higher latitudes.

Keywords: *Epinephelus,* coastal, photoidentification, inventory, Türkiye

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INTRODUCTION

The serranid genus *Epinephelus* Bloch, 1793, or commonly known as groupers, is represented by 89 species globally (Parenti & Randall, 2020), of which 10 of them are also occurring in the Mediterranean Sea (Kovačić et al., 2021). One of the Mediterranean species of the genus is *Epinephelus costae* (Steindachner, 1878), of which distribution range also extends from eastern Atlantic from Portugal to Angola including Canary Islands and Cape Verde Islands (Parenti & Randall, 2020; Kovačić et al., 2021). It's maximum standard length can reach to 140 cm and being a protogynous hermaphrodite territorial fish, *E. costae* inhabits mixed bottoms of sea grass meadows and mud between the depths from 10 to 300 m (Heemstra & Randall, 1993; Louisy et al., 2007; Zaidi et al. 2017). It feeds on crustaceans, cephalopods and teleost fishes (Froese & Pauly, 2024). *E. costae* is of some importance to the fisheries of the Mediterranean and west coast of Africa (Heemstra & Randall, 1993) and mainly captured by handliners, longliners, netters and harpooners. It's body colouration can vary depending on the size (Heemstra & Randall, 1993).

Although *E. costae* is an abundant serranid fish along the Turkish Mediterranean coast and rarely occurrs in the Aegean Sea (Bilecenoğlu, 2024), and has not been reported neither from the Sea of Marmara nor from the Black Sea (Artüz & Fricke, 2019; Parenti & Randall, 2020). In the present short communication we report on the first record of *E. costae* from the Sea of Marmara.

MATERIAL AND METHODS

The present specimens of *E. costae* have been reported from the northeastern part of the Sea of Marmara, which defined as geographical subarea (GSA) 28 of the Mediterranean (GFCM, 2018; Figure 1). The nature of sampling of the present study, which was performed either by means of opportunistic photographic record or collaboration with recreational handliners, is a typical example of opportunistic study of marine fauna, which is not the direct result of a scientific field survey (Hiddink et al., 2023). Photographs of the present samples were emailed to the authors for species identification, which are now archived by the first author. Species identification of the present specimens follows Heemstra and Randall (1993) and taxonomic nomenclature follows Parenti and Randall (2020).

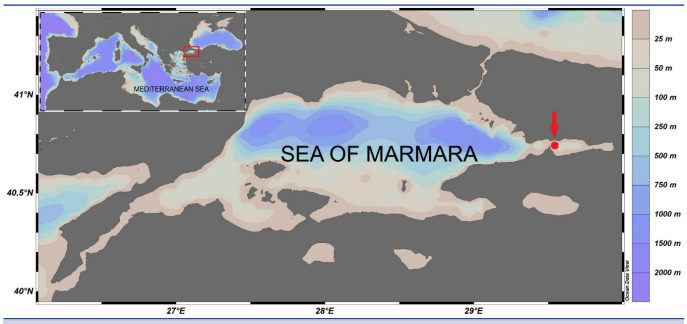


Figure 1. Red rectangle on the map in the small panel depicts the location of the Sea of Marmara (GSA 28) in the Mediterranean basin. Red arrow and solid circle depict the approximate locality of capture of present specimens of *E. costae* in the Sea of Marmara.

RESULTS AND DISCUSSION

On 2 October 2024 a recreational spearfisherman was recorded a short video of specimen 1 of *E. costae* (Figure 2) among rocky substratum densely covered with *Mytilus galloprovincialis* and unidentifed sea urchins, off Dilovası coast at the depths ranging from 10 to 12 m (40°46'1.48"N; 29°33'59.50"E). A few days later specimen 2 (Figure 2) was caught by a recreational handliner almost at the same locality (40.761944°N; 29.516667°E). Based on the descriptive characters (caudal fin truncate to concave; no dark spots or dark bars on body; juveniles with 3 to 5 dark longitudinal stripes on dorsal part of body) given in Heemstra and Randall (1993) both specimens identified as *E. costae*.

In the most recent ichthyological inventory of the Sea of Marmara (Artüz & Fricke, 2019), *E. costae* has not been reported from the region. Therefore, we considered the occurrence of these specimens in the area as the first record of *E. costae* in the Sea of Marmara. According to Artüz and Fricke (2019) the contemporary fish fauna of the Sea of Marmara included 263 species of teleost fishes representing 78 families, and the following 7 species of the family Serranidae have been reported from the region to date: *Anthias anthias* (Linnaeus, 1758), *E. aeneus* (Geoffroy Saint-Hilaire, 1817), *E. fasciatus* (Forsskål, 1775), *E. marginatus* (Lowe, 1834), *Serranus cabrilla* (Linnaeus, 1758), *S. hepatus* (Linnaeus, 1758) and *S. scriba* (Linnaeus, 1758). Thus with the first record of *E. costae* the number of serranids in the Sea of Marmara is apparently increased to 8.

In a previous study on the dispersal of marine teleosts in the Mediterranean Sea, Azzurro et al. (2011) reported that thermophilic fish species have been recorded in the northern Mediterranean with an increasing tendecy, supporting the impact of global warming on their northerly distribution. According to Azzurro et al. (2011) the congeneric *E. marginatus* is one of the Mediterranean fish species of which contributing the northerly distributed thermophilic taxa at a rate of 16.26% in terms of abundance. Based on available data we suggest that northerly dispersal of *E. costae* across the Sea of Marmara may due to global warming, and the occurrence of the congeneric *E. marginatus* in the Black Sea (Yağlıoğlu & Turan, 2021) and several non-native fish species in the Sea of Marmara (Karakulak et al., 2020) support this suggestion.

Last but not least, the sampling methodology of the present study is one of the many examples of surveying regional fish fauna of the Sea of Marmara based on photographic documentation (e.g. Bilecenoğlu, 2019; Kabasakal & Türetken, 2021; Kabasakal et al., 2024). According to Kovačić et al. (2020), in the absence of physical material (captured or stored specimen), photographic documentation of a fish species that allows researchers to positively identify the species is acceptable as confirmed photographic evidence. Therefore, it is also worth mentioning the importance of collaborating with recreational spearfishermen, anglers, handliners, etc. as citizen scientists and encouraging them to take the photo or video footage that may be useful to fill the gaps in local ichthyological inventories.

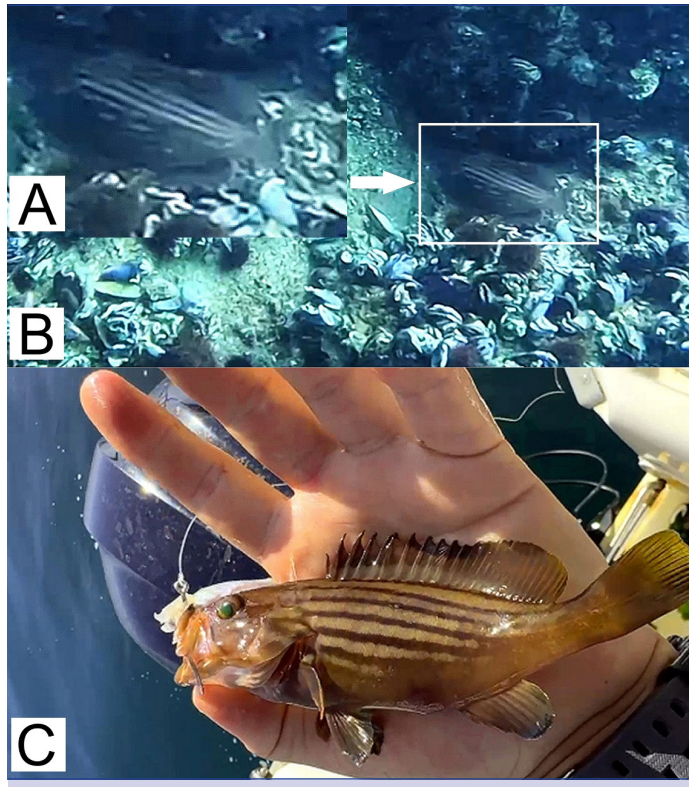


Figure 2. A close up cropped frame of the specimen 1 of *E. costae* (a) captured from the video footage depicting the same specimen in white rectangle, sheltering between the rocks densely covered with Mediterranean mussel, *Mytilus galloprovincialis,* and unidentified sea urchins (b), and specimen 2 (c).

CONCLUSIONS

This study not only records a species for the first time in the Sea of Marmara, but also emphasises that the northward migration of thermophilic Mediterranean species is gradually reaching higher latitudes. It is well known that the environmental conditions in the Sea of Marmara are gradually deteriorating. Serranidae species are mostly benthic, living in the littoral or sublittoral zone, and are particularly solitary as adults (Tortonese, 1986), and it is therefore, the ongoing coastal degradation in the Marmara region is likely to disrupt the territories of *Epinephelus* species.

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Conflict of Interest: The author declares that there is no conflict of interest.

Ethics Committee Approval: Since no experimental animal was used in the submitted study, approval of the ethics committee is not required.

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