Received: 9 July 2021 | Accepted: 20 October 2021

DOI: 10.1111/jfb.14932

JOURNAL OF FISH BIOLOGY fsbi

BRIEF COMMUNICATION

# Contemporary records of the rare and critically endangered angular rough shark, *Oxynotus centrina* (Linnaeus, 1758), from the eastern Adriatic Sea

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**Funding information**
Foundation Ensemble; National Geographic Society, Grant/Award Number: WW-179ER-17; Rufford Foundation, Grant/Award Number: 28584-B

## Abstract

The angular rough shark, *Oxynotus centrina* (Linnaeus, 1758), is a poorly known and rare bathydemersal shark inhabiting continental shelves and upper slopes with a significant lack of data and rarely published records in the Adriatic Sea in this century. In this paper, we present 20 new occurrences recorded from May 2015 to September 2021, of which 19 are in Croatian and one in Montenegrin territorial waters. Records of juveniles, subadults and adults are reported. Higher number of records off the Kornati archipelago in the central Adriatic Sea suggest that this area is of particular importance for this species. Furthermore, habitats in the Southern Adriatic might have lower density. Due to the nonsystematic research and nonprobabilistic data collection, it is difficult to establish whether the greater number of records in the continental shelf is just an ostensible phenomenon.

**KEYWORDS**
Adriatic Sea, bycatch, deep sea, rough shark

Sharks, skates and rays are the most endangered group of marine fishes in the Mediterranean Sea (Dulvy *et al*., 2014, 2016) due to direct and indirect threats from various human activities (Coll *et al*., 2012, 2014; Gajić *et al*., 2020; Malak *et al*., 2011) and almost half of the marine diversity in the Mediterranean is considered as threatened (Gajić, 2020; Malak *et al*., 2011). Despite that, there is a significant lack of data on the deep-sea species across the Mediterranean basin, including the Adriatic Sea.

The decline of sharks in the world oceans and especially in the Mediterranean Sea is an issue of growing concern. According to Ferretti *et al*. (2008), overexploitation led to severe declines of large pelagic predatory sharks in the Mediterranean Sea, with certain species being reduced to more than 99% of their historical abundances. In addition, recent study by Colloca *et al*. (2017) revealed a grim picture of the state of the fish stocks in the Mediterranean, with 90% of assessed commercial stocks being out of safe biological limits. These authors also emphasized the urgency of development of a more effective management regime for Mediterranean fisheries.

The angular rough shark is a poorly know bathydemersal shark that is sporadically encountered on continental shelves and the upper slopes of the eastern Atlantic, usually above coralligenous and muddy bottoms (Compagno, 1984). It is present throughout the Mediterranean Sea along the entire coast from the Straits of Gibraltar to Israel, including the Adriatic Sea, but absent from the Black Sea (Ebert & Stehmann, 2013; Lipej *et al*., 2004). It is reported from shallow waters of around 30 m to the upper slopes up to 777 m (Kabasakal, 2009, 2015; Mytilineou *et al*., 2005). According to Compagno (1984), adults can reach a maximum length of 150 cm, but specimens longer than 80 cm are rarely reported in the Mediterranean (Compagno, 1984; Dragičević *et al*., 2009; Gajić, 2020). It is a suction feeder which

  