

## SHORT COMMUNICATION

### **The first record of bigeyed sixgill shark, *Hexanchus nakamurai* Teng, 1962 in Albanian waters**

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#### **Abstract**

Bigeyed sixgill shark (*Hexanchus nakamurai*) is a deepwater cow shark species, native but rare in the Mediterranean Sea. The species commonly is misidentified as its congeneric *Hexanchus griseus*, a much more abundant species in the basin, creating confusion on the actual distribution and abundance of *H. nakamurai* in the Mediterranean Sea. In this work, we present the first confirmed record of the bigeyed sixgill shark in the Albanian Sea. The individual was captured off the coast of Himara by a professional fisherman and identified *in situ* by two researchers.

**Keywords:** Bigeyed sixgill shark, Albanian coast, Ionian Sea, Mediterranean Sea

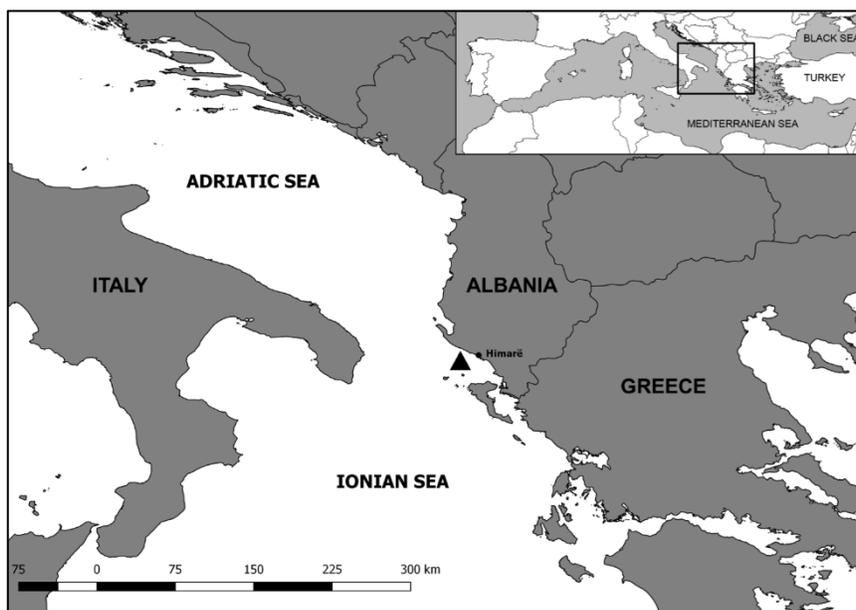
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Bigeyed sixgill shark (*Hexanchus nakamurai* Teng, 1962) is one of the deepwater shark species that exhibits a patchy distribution in warm temperate and tropical waters in the Northeast Atlantic, Eastern Central Atlantic and Mediterranean Sea. Specifically, for the Mediterranean Sea, the species is considered extremely rare (Soldo 2016), compared to the congeneric *H. griseus*, and thought to be restricted to small areas in the western part (Ebert 1990). *H. nakamurai* is a moderately large species (up to 180 cm in total length), inhabiting the continental and insular shelves and slopes at depths between 90-621 m, usually near the bottom, but occasionally closer to the surface (Ebert 1990; Ebert and Stehmann 2013). Is an ovoviviparous elasmobranch species producing 13-26 pups per litter that measure 40-45 cm in total length at birth (Whitehead *et al.* 1984; Ebert 1990; Compagno *et al.* 2005; Ebert and Stehmann 2013). The species is considered an important apex predator in coastal and deep-water ecosystems (Barnett *et al.* 2012) although its habitant range is limited.

Only few confirmed records of *H. nakamurai* have been reported for the Mediterranean Sea. One specimen was reported from the eastern part of the Aegean Sea in 2001 (Megalofonou *et al.* 2005; Damalas and Megalofonou 2012), and another three were reported from the southern and western part (Andaloro *et al.* 2012; Mancusi *et al.* 2014; Serena *et al.* 2014). Other records were reported from Italy (though it is questionable: Amori *et al.* 1993), France (Compagno and Niem 1998) and Greece (Papaconstantinou 2014) or found as the specimens in the Mediterranean collections of museums (Tortonese 1985; Sanda and Maddalena 2003). However, the species has never been reported from Albania. Hereby we present the first record of bigeyed sixgill shark from the Albanian sea.

On 19 October 2017, an individual of *H. nakamurai* was landed in the port of Himara, South Albania (Figures 1 and 2) by a professional fishing vessel. It was accidentally captured in a set gill net, near Himara (40.042534° N, 19.563128° W), at a depth of 550 m (Figure 1). The total length (TL), standard length (SL) and weight (W) of the specimen were 230 cm, 175 cm, and 85 kg, respectively. Based on Ebert (1990), and Ebert and Stehmann (2013) the maximum size of *H. nakamurai* on record is ~180 cm TL, but this individual was at least 50 cm bigger than the maximum size recorded previously.



**Figure 1.** The location of the *H. nakamurai* specimen was caught off Himarë (triangle)

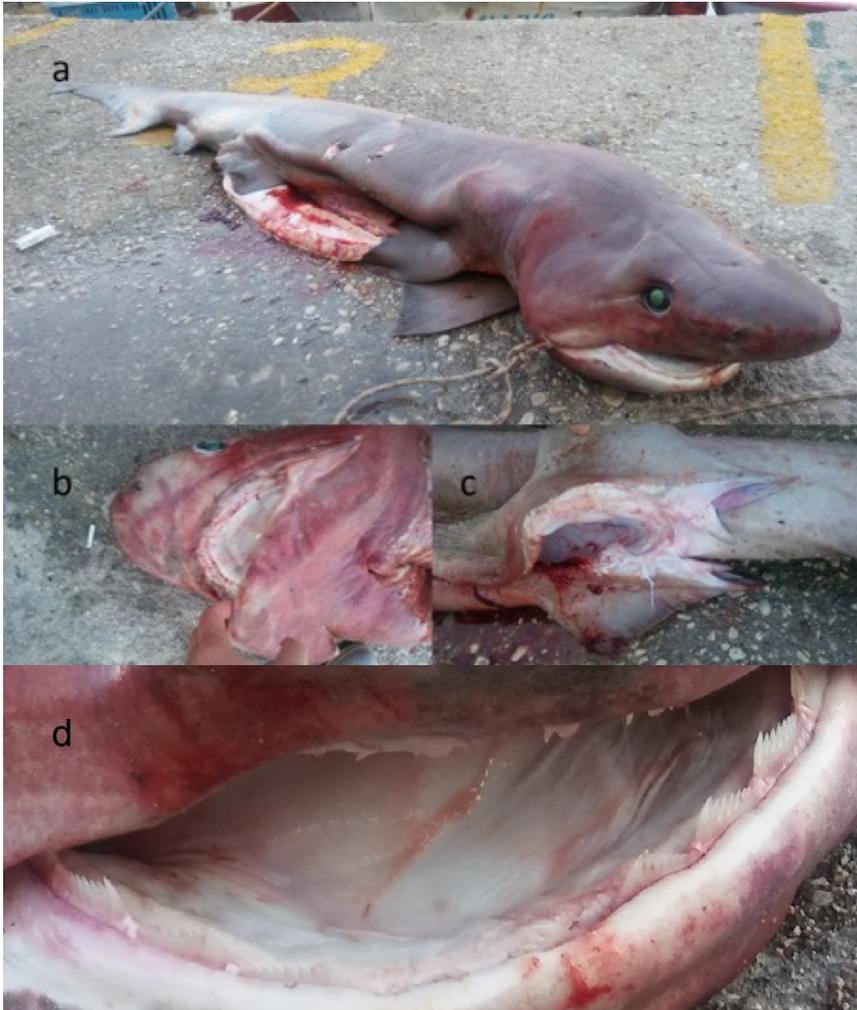
Due to the uncommon dimensions of the reported specimen, the common criterion for separating *H. nakamurai* from *H. griseus*, namely “the dorsal fin to

be separated from the upper caudal lobe by a distance much larger than the length of the dorsal fin base” could not apply. Additionally, this is a criterion used to separate individuals of different species and of comparable dimensions and not for single specimens. Another characteristic to identify the species are the teeth rows and the teeth morphology. *H. nakamurai* has 5 rows with teeth of distinctive morphology while *H. griseus* has 6 rows. Further, based on the work of Ebert *et al.* (2013) the lower jaw has one central medial tooth, with a strong medial cusp flanked by three to five cusplets on either side; single cusp variably high or short depending on sex and maturity; larger comb-shaped anterolaterals with a single cusp followed by six to ten cusplets on either side of apical length; cusp is variably high or short depending on sex and maturity. All these characteristics were observed in the present specimen. Consequently, we identified the species as *H. nakamurai* from the teeth (Figure 2d).

This record represents the largest registered individual of *H. nakamurai* so far. The sexual appendixes (Figure 2c) revealed that it was a male specimen and based on Ebert and Stehmann (2013) observations (size at maturity is 142-178 cm TL for males and 123-157 cm TL for females), this was probably a mature male. After the measurements, the finding was reported to the Museum of Floria and the specimen was sold and transferred at the Fishing Center Orikum, Vlora (Albania).

Misidentification between the bluntnose sixgill shark (*H. griseus*) and the bigeyed sixgill shark (*H. nakamurai*) is very common, resulting in confusion about the species' distributional range in the Mediterranean Sea (Ebert *et al.* 2009) while is highly possible the species to be more common than currently known (Ebert and Stehmann 2013). Due to the lack of data, *H. nakamurai* cannot be listed beyond Data Deficient in the Mediterranean and European assessment of the IUCN Red List of Threatened Species (Ebert *et al.* 2009; Soldo 2016). For the same reason, no species-specific conservation measures are in place and the species is not included in the list of deepwater sharks protected by European Union Zero Total Allowable Catch limitations (Soldo 2016) or any other convention and agreements for the Mediterranean Sea, although its life characteristics suggest that it might be vulnerable to overexploitation.

It is still questionable whether *H. nakamurai* is a common species in the Albanian sea and the adjacent waters due to the lack of robust data collection and monitoring scheme in the country, which potentially leads to the underestimation of this species. Therefore, it is of imperative value, trained scientists, with identification capabilities, to regularly monitor the landings of all reported *H. griseus* captures for producing robust datasets and set the basis for understanding the actual abundance and distribution of the bigeyed sixgill shark in the Albanian sea.



**Figure 2.** *H. nakamurai* landed at the port of Himara, Albania. (a) the specimen landed, (b) head and jaws, (c) sexual appendixes, (d) close-up picture of jaws and teeth.

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