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- SHORT COMMUNICATION-

New Record of *Carcharhinus brevipinna* (Müller & Henle, 1839) from Mersin Bay, the Northeastern Mediterranean

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Abstract

In this study, it was aimed to present the morphometric and meristic data of *Carcharhinus brevipinna* (Müller & Henle, 1839) which caught from Mersin Bay (coordinate: 36°13'44.8"N34° 01'42.1"E, 36°14'28.2"N 34°02'19.6"E) in February 2019. The total length of this shark specimen, which caught from a depth of 20 m, is 115 cm, and its weight is 11.5 kg. Morphometric measurements of the individual made, its photographs were taken and given the catalog number (MEUFC-19-11-104) and recorded in the Museum of the Systematic, Faculty of Fisheries, Mersin University.

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Introduction

Carcharhinus brevipinna belongs to the Carcharhinidae family of Carcharhiniformes. De Maddalena & Della Rovene (2005) have stated that there are twelve species of *Carcharhinus* "*C. altimus, C. brachyurus, C. brevipinna, C falciformis, C. limbatus, C. obscurus, C. plumbeus, C. acarenatus, C. longimanus, C. melanopterus, C. signatus*, and *C. amboinensis*" in the Mediterranean Sea. However, the presence of eight species of Carcharhinus in the Mediterranean reported by Notarbartolo di Sciara and Bianchi (1998) and Serena (2005). Even though *C. melanopterus* and *C. longimanus* are recorded in the Mediterranean (Tortonese, 1951; Fergusson, 1994; Barrull & Mate, 2002), there is no evidence to prove the existence of these species. Some researchers argue that the presence of these species in the Mediterranean is questionable (Garrick, 1982; Fergusson, 1994; Golani et al., 2002; Moreno, 2004; Serena, 2005). *C. acarenatus* was

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reported to be the synonym of *C. brachyurus* (Serena, 2005). There were errors in taxonomic identification between *C. brevipinna* and *C. limbatus*. By investigations, morphological differences of both species determined, and mistakes in the definition were corrected (Branstetter, 1982).

Since sharks are difficult to sample, studies on their populations are quite limited. Studies have shown that *C. plumbeus* has a wide distribution from the Northern Mediterranean to the Southern Mediterranean, from Algeria to the Aegean Sea and has been caught by the nets of professional fishermen (Hemida & Labidi, 2001a, 2001b). *C. brevipinna*, *C. brachyurus*, *C. limbatus*, and *C. obscurus* from the East and West Mediterranean Sea, *C. altimus*, and *C. falciformis* were recorded from the Western Mediterranean (Golani et al., 2002). *C. brevipinna* was observed and photographed in 1998 during an amateur diving in Gökova Special Environmental Protection Area (Filiz & Kabasakal, 2015). *C. falciformis* has been reported as only irregular in the Western Mediterranean, as limited from the Alboran Sea, Algeria, Southern Spain, and the Eastern Atlantic (Barrull & Mate, 2002; Hemida et al., 2002; Moreno, 2004).

While *C. brevipinna* offspring live near the shore, adults live in groups near the coast. (Castro, 1993; Carlson & Brusher, 1999; Thorpe et al., 2004; White & Potter, 2004; Reid et al., 2011). For this reason, it has been reported that the fishing pressure in the coastal waters can easily affect them. Although it has been listed as a threatened species by the IUCN (Burgess, 2009), the studies indicate that there is no change in the stocks of the species (Carlson et al., 2012). It has been stated that the knowledge of the stock density of coastal sharks, including *C. brevipinna*, was insufficient (Carlson et al., 2009). While the presence of *C. brevipinna* in the Mediterranean is suggested to be caused by the connection of the Mediterranean to Atlantic, the species also included in the list of Lessepsian species of the Mediterranean Sea (Ben-Truvia, 1985).

C. brevipinna mostly feeds with shark, rays, skates, cephalopods, and crustaceans (Allen & Cliff, 2000). The maximum total length of the species reported in the literature is 300 cm (Sanches, 1991), and the maximum weight is 87.9 kg (IGFA, 2001).

In this study, the record of a juvenile specimen of *C. brevipinna*, caught at a depth of 20 m in the Mersin Bay in February 2019, is recorded. Morphometric and meristic measurements of the species were made to contribute to the ichthyological records of this study.

Material and Methods

A female juvenile sample of *C. brevipinna* was caught in an 80-mm trammel net during commercial fishing around 5 am, at a depth of 20 m from the Taşucu coast in the Gulf of Mersin, (coordinates: 36°13'44.8"N, 34° 01'42.1"E and 36°14'28.2"N, 34°02'19.6"E) in February 2019. The site of the capture of *C. brevipinna* is shown in Figure 1. The information given in Compagno (1984) was used to identify the species. Sioueiros (1990)'s morphometric measurements were revised, and the measurements of the specimen made its photographs taken, and catalog number (MEUFC-19-11-104) given. The juvenile *C. brevipinna* specimen was preserved in 4% formaldehyde and was deposited in the Museum of the Systematic, Faculty of Fisheries, Mersin University (Figure 2).

Figure 1. Sampling point of *C. brevipinna*

Figure 2. The juvenile specimen of the *C. brevipinna* (Photo: Deniz AYAS)

Results

In the study, one juvenile specimen of *C. brevipinna* caught as a by-catch in Mersin Bay. Some morphometric measurements of the captured sample were determined (Table 1). According to the reported maximum length in the literature, it is determined that the individual was a juvenile. Some morphometric characters reported in the literature used in the identification of the species. The first dorsal fin located behind the pectoral fin. The first dorsal fin is perpendicular to the body, and the end is round. The height of the first dorsal fin is 10.6 cm, and the snout to the eye is 11.8 cm. The interspace between the first and second dorsal fin base/first dorsal-fin base length was determined to be 2.3. The eye diameter is 1.8 cm. The height of the first gill is 3.8 cm. The eye diameter is

56% of the first gill. The width of the spiracle was 0.3 cm, and its ratio to the eye diameter was 16.6%.

Table 1. Some morphometric measurements (cm) of *C. brevipinna*

Total length	115
Fork length	91
Standard length	82
Head length	22
Eye diameter	1.8
Preorbital length	10.3
Postorbital length	15.7
İnterorbital distance	13.3
Spiracle length	1.4
Spiracle width	0.3
Distance between spiracle	7.1
Mouth width	10.9
Snout to mouth	9.3
Snout to eye	11.8
Snout to first gill-slit	14
Snout to first dorsal	31
Snout to pelvic	52
Snout to spiracle	6
Predorsal length	37
First Dorsal-fin base length	11
First Dorsal-fin height	10.6
First dorsal fin width	0.8
Second Dorsal-fin base length	4.2
Second dorsal fin width	0.08
Interspace between first and second dorsal fin base	25
Second dorsal to upper caudal	7.8
Pectoral length	20.2
Pelvic-fin base length	6.2
Pre-pelvic length	58
Anal-fin base length	4.5
Pelvic to anal	9.3
Anal to lower caudal	6
Caudal peduncle length	58
Peduncle depth	4.7
Upper caudal legend	32.8
Lower caudal legend	15
Body depth	16
Body width	13
Total tooth row in upper/lower jaws	1/2
Total teeth in upper/lower jaws	32-35/31-34

Discussion

In this study, the total length of the caught female individual measured as 115 cm. According to size information given in Compagno (1984), the specimen is a juvenile.

The similarity of *C. brevipinna* with *C. limbatus* caused taxonomic errors. However, as a result of the studies conducted with both species, morphometric differences between these two species determined, and taxonomic errors corrected (Branstetter, 1982). The most compelling character that separates *C. brevipinna* from *C. limbatus* is the position of the dorsal fin and the pectoral fin. The first dorsal fin of *C. brevipinna* located on the posterior of the pectoral fin. The first dorsal fin of *C. limbatus* situated in the anterior or near anterior of the pectoral fin (Branstetter, 1982). In this study, the first dorsal fin of the specimen located behind the pectoral fin. The other distinctive character is a relative difference in the dorsal fin height. The first dorsal fin height was found to be equal to the snout to eye distance in *C. brevipinna* and longer in *C. limbatus* (Casey, 1964; Schwartz and Burgess, 1975). In the sample, the first dorsal fin height and the snout to eye distance are equal. Another character was the comparison of the gap between the two dorsal fins with the length of the first dorsal fin. In *C. brevipinna*, the distance between the two dorsal fins was found to be 2.2 times more than the first dorsal fin height and less in *C. limbatus* (Bass et al., 1973; Compagno, 1978).This ratio in our sample was determined to be 2.3. Dorsal fin shape is also distinctive in these species. The first dorsal fin posterior part of *C. brevipinna* is perpendicular to the body axis, and the end is round, while in *C. limbatus* the first dorsal fin is slightly sickle in the posterior (Branstetter, 1982). In this case, the first dorsal fin is perpendicular to the body axis, and the posterior part is quite round (Figure 2).

Another characteristic feature is the eye diameter. The eye diameter of *C. brevipinna* is smaller than *C. limbatus.* The diameter eye of the specimen in this study is 1.8 cm. The eye diameter of *C. brevipinna* was less than 25% of the length of the first gill, and it was found to be more than 33% in *C. limbatus* (Bigelow and Schroeder 1948; Casey, 1964; Schwartz and Burgess, 1975). This sample, which caught from Mersin Bay, was found to be compatible with the definition of the species in the reference literature.

The species belonging to the Carcharhinidae family are circumglobal. *C. brevipinna* found in the Northeastern Mediterranean cartilaginous fish list reported from the Turkish coast (Turan et al., 2018). However, no specific studies conducted in this region relating to *C. brevipinna*. For this reason, the morphometrics given in this study will contribute to the ichthyological records.

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