

NOT DISAPPEARED, JUST RARE! STATUS OF THE BRAMBLE SHARK, *ECHINORHINUS BRUCUS* (ELASMOBRANCHII: ECHINORHINIDAE) IN THE SEAS OF TURKEY

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ABSTRACT

Status of the bramble shark, Echinorhinus brucus (Bonnaterre, 1788), in the seas of Turkey has always been a point of debate until early 2000's. With the addition of 7 recent records from the seas of Turkey, which constitutes the 22.5 percent of the historical and contemporary records of the bramble shark from entire Mediterranean Sea, 31 individuals of E. brucus have been recorded from the entire region, and the record no. 7 of the present study is probably the most recently captured bramble shark, to date. Since 5 of the 7 recent records of E. brucus have been reported from the Sea of Marmara, special attention of research should be focused to this small inland sea to figure out whether this species has a localized population in this region or not.

Key words: bramble shark, *Echinorhinus brucus*, Echinorhinidae, status, Turkey, Mediterranean

NON SCOMPARSO, SOLO RARO! STATO DELLO SQUALO RONCO, *ECHINORHINUS BRUCUS* (ELASMOBRANCHII: ECHINORHINIDAE) NEI MARI DELLA TURCHIA

SINTESI

Lo stato dello squalo ronco, Echinorhinus brucus (Bonnaterre, 1788), nei mari della Turchia è sempre stato un punto di discussione, fin dai primi anni 2000. Con l'aggiunta di sette avvistamenti recenti nei mari della Turchia, che rappresentano il 22,5 per cento delle segnalazioni storiche e contemporanee del ronco in tutto il Mediterraneo, il numero di individui di E. brucus registrati in questa regione sale a 31. La segnalazione numero 7 del presente studio è probabilmente la cattura più recente del ronco ad oggi. Visto che 5 delle 7 recenti segnalazioni di E. brucus risalgono al Mar di Marmara, la ricerca dovrebbe prestare particolare attenzione a questo piccolo mare interno, per capire se la specie ha o meno una popolazione localizzata in questa regione.

Parole chiave: squalo ronco, *Echinorhinus brucus*, Echinorhinidae, stato, Turchia, mare Mediterraneo

INTRODUCTION

Bramble shark, *Echinorhinus brucus* (Bonnaterre, 1788), is primarily a deepwater species on the continental slope between depths of 200 and 900 metres (Serena, 2005). At least in one case it has been recorded at depth of 1214 m in the Sea of Marmara (Kabasakal *et al.*, 2005). It is considered to be fairly common in all three oceans (Compagno, 1984; McEachran & Branstetter, 1984), with localized records throughout its global distributional range. Although *E. brucus* is known from the western and central parts of the Mediterranean Sea, it is considered as a rare deep sea shark in the area (Tortonese, 1956; Hemida & Capapé, 2002; Lipej *et al.*, 2004; Serena, 2005). *E. brucus* has been included by De Maddalena & Baensch (2008) in a list of the 13 most endangered species of Mediterranean sharks, needing immediate protection in the area because at risk of total disappearance from these waters.

First reports on the occurrence of the bramble shark in Turkey's waters dated back to Ninni (1923) and Deveciyan (1926). In his monumental book on fishes and fisheries of Turkey's waters, Deveciyan (1926) briefly reported on *E. brucus* (as *Echinorhinus spinosus*), and in contrast to aforementioned authors emphasizing the rarity of the bramble shark in the Mediterranean Sea, Deveciyan (1926) claimed that *E. brucus* was abundant in Turkey's waters and consumed by the people. Following Deveciyan's (1926) work, occurrence of *E. brucus* in Turkey's waters has also been reported by Akşiray (1987); however, this author did not describe precise captures. Furthermore, due to lack of the bramble shark in the fishery records since 1980s, Kabasakal (2002) suggested that the species had probably disappeared from the seas of Turkey. However, recent sightings (Kabasakal *et al.*, 2005) or captures (Kabasakal & Dalyan, 2011) of specimens from the Sea of Marmara showed that *E. brucus* still occurs in the region. In the present article, authors report on three recent captures of *E. brucus* from Turkey's waters and based on available data, discuss the status of the species in the area.

MATERIALS AND METHODS

The present study is part of an extensive research on sharks from Turkey's waters, which has been carried out by Ichthyological Research Society (IRS) since 2000. Data on bramble sharks have been collected from the following sources: (a) scientific literature, (b) daily newspapers and internet sources, as far as such popular sources are concerned, the validity of the recordings has been confirmed by means of direct contact with the fishermen reported in the source, and (c) visiting the fishing ports. For each examined bramble shark, the following data were recorded: total length (TL), weight (W), sex, date and locality, fishing gear and depth. TL is the horizontal line from tip of snout to tip of the upper lobe

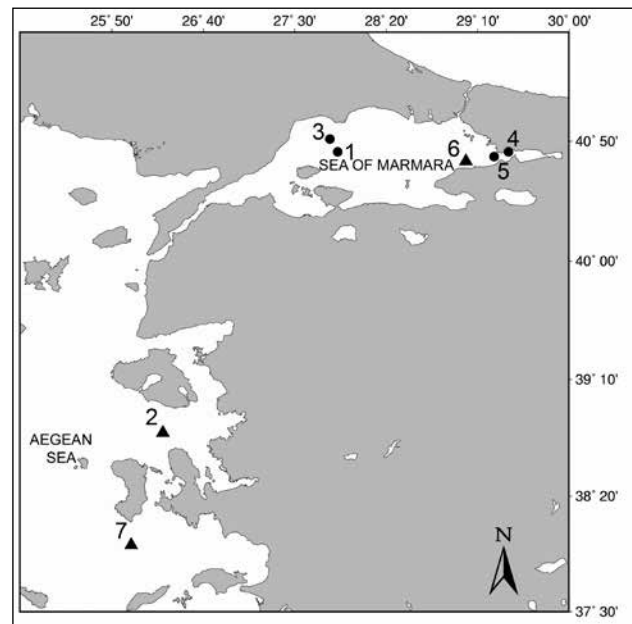


Fig. 1: General view of the study area and the localities of captures of recently recorded bramble sharks from Aegean and Marmara seas. Legend: (●) previously reported specimens, (▲) specimens examined in the present study. Numbers are same as the numbers seen in "No." column in Table 1.

Sl. 1: Prikaz širšega območja in lokalitete, kjer so bili v zadnjem desetletju ujeti bodičasti morski psi v Egejskem in Marmarskem morju. Legenda: (●) predhodno potrjeni primerki, (▲) primerki, obravnavani v pričujočem delu. Številke se ujemajo s številkami iz tabele 1 (stolpec "No.")

of caudal fin, where the caudal fin depressed to body axis (Serena, 2005). Identification and nomenclature of the present specimens are based on Compagno (1984) and Serena (2005). Photographs of the examined bramble sharks, of which the details are described below, are kept in the archives of IRS.

RESULTS AND DISCUSSION

On 13 May 2005, a bramble shark (record no. 2, Fig. 2A, B) was caught by a commercial bottom trawler off the Karaburun coast (Aegean Sea, Fig. 1). Total length of the shark was 230 cm. After being landed at the İzmir fish market, the head was removed and photographed by the second author. Another bramble shark (record no. 6, Fig. 2C) was caught on 19 May 2010 by a commercial gill-netter, 2 km off Yalova coast (Sea of Marmara, Fig. 1) at depth of 300 m. It was a female of 220 cm TL and its mass was 300 kg. The third examined individual was also a female of 200 cm TL and 140 kg in weight (record no. 7, Fig. 2D). It has been caught by a commercial gill-netter off Karaburun coast on January 6, 2013.

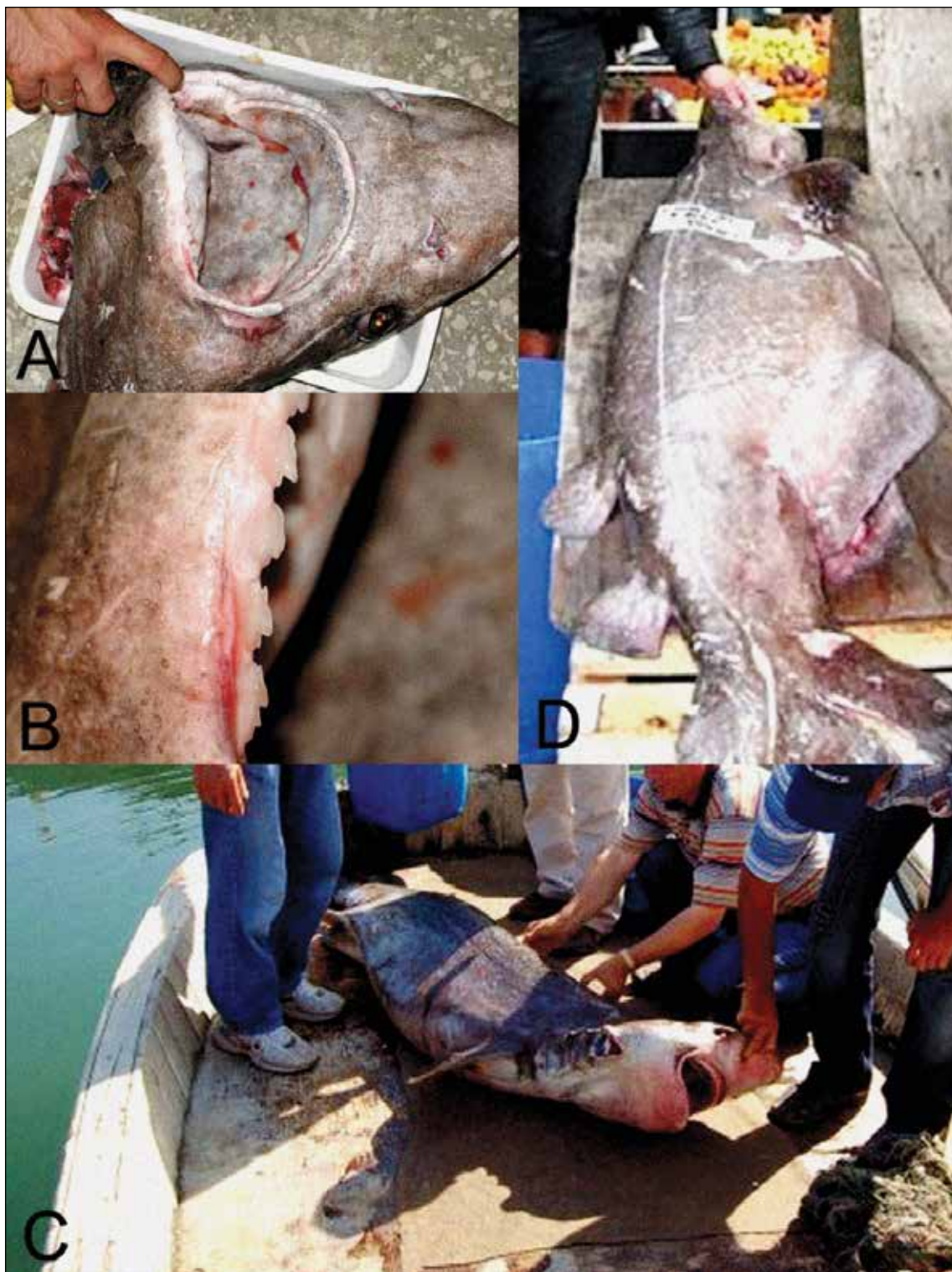


Fig. 2: Specimens of the bramble shark, *Echinorhinus brucus*, recently caught off Turkey's coast. (A) specimen no. 2, (B) close up view of the teeth of specimen no. 2, (C) specimen no. 6, and (D) specimen no. 7, examined in the present study. Specimen numbers are same as the numbers seen in "No." column in Table 1.

Sl. 2: Primerki bodičastih morskih psov, *Echinorhinus brucus*, ki so bili v zadnjem desetletju ujeti ob turških obalah. (A) primerek št. 2, (B) bližinski posnetek zobovja primerka št. 2, (C) primerek št. 6 in (D) primerek št. 7, analiziran v pričujočem delu. Številke primerkov so enake številkam v tabeli 1 (stolpec "No.")

The following description of *E. brucus* is based on above specimens, which are shown in Figures 2A-D: body elongated and rather cylindrical, lateral line beginning at the level of the first gill opening and consisting of a marked furrow flanked on both sides by a cutaneous ridge (Fig. 2D), head flattened above, ending with a broadly rounded snout, eyes are rather circular with a small spiracle behind them, large nostrils with a long and acute nasal valve (Fig. 2A), rather closer to mouth than to the tip of the snout, five pairs of relatively small gill slits, all located anteriorly to pectoral fin origin, first gill slits shorter than the following, no anal fin, dorsal fins located backward, first dorsal fin origin located over pelvic fins; first dorsal fin slightly larger than second (Fig. 2D). Teeth in both jaws exhibiting a pointed medial cusp strongly oblique towards the commissure of the mouth, medial cusp more developed in the medial series (Fig. 2A, B). An inner ridge of two to three smaller cusplets present on the medial teeth (Fig. 2B); one or two commissural cusplets may present on the outer ridge, 26 teeth in the upper jaw and 22 in the lower jaw. Body colour is brownish on the dorsal to blackish on the ridges of the fins, with reddish violet shades, ventral side of the head pale to whitish (Fig. 2C, D). Dermal denticles are whitish. Body covered by numerous, sparse and irregularly distributed dermal denticles (Fig. 2C, D), large, some fused into plates with one or two, even three cusps with 22 cm as diameter of the largest plate, margins not stellate but with slight furrows.

Status of the bramble shark in the seas of Turkey has always been a point of debate until early 2000s. Although, historical records by Ninni (1923) and Deveciyan (1926) pointed out that the species occurred in Turkey's waters, the lack of *E. brucus* in the fishing records during a period from early 1930s to early 2000s, the experts were trying to answer the question, whether the bramble shark is still present in the area. Furthermore, due to the fact that *E. brucus* was not confirmed in contemporary ichthyological surveys carried out in the Sea of Marmara (Kocataş *et al.*, 1993; Meriç, 1995; Karakulak *et al.*, 2000; Bayhan *et al.*, 2006), researchers concluded that the bramble shark had probably disappeared in Marmaric, as well as in Turkey's waters (Kabasakal, 2002).

E. brucus has always been rare in the Mediterranean Sea. According to Hemida & Capapé (2002), who emphasized the rarity of the species in the Mediterranean Sea, the bramble shark should be probably considered as an extinct species in the eastern Mediterranean Sea. During the extensive survey on the deep sea chondrichthyans occurring in the Mediterranean Sea, Sion *et al.* (2004) did not record *E. brucus*, neither from Balearic nor from Ionian seas. In a recent survey on the deep sea ichthyofauna of the eastern Mediterranean Sea, Goren & Galil (2002) fail to record the *E. brucus* in the area, as well. According to Golani *et al.* (2006) and Serena (2005), *E. brucus* is very rare in the eastern Mediterranean. Therefore, recent records of *E. brucus* from Turkey's waters are significant evidences proving the contemporary occurrence of this

species in the eastern Mediterranean, as well.

According to De Maddalena & Zuffa (2003), the first individual of *E. brucus* in the Mediterranean Sea has been recorded off Nice (France) in 1798, while last recorded specimen was found in waters off Annaba coast (Algeria, western Mediterranean Sea) in 2 April 2000. Another individual has also been caught off Nice, but its date of capture not reported by the authors. Based on the data given by De Maddalena & Zuffa (2003), 24 historical and contemporary records of *E. brucus* from western and central Mediterranean Sea have been recorded over a period of 202 years, indicating the rarity of the species and sporadic nature of reports. With the addition of recent records (7) from the seas of Turkey, which constitutes the 22.5 percent of the historical and contemporary records of the bramble shark from entire Mediterranean Sea, 31 individuals of *E. brucus* have been recorded from the entire region, and the record no. 7 of the present study is probably the most recently captured bramble shark, to date. All of the new observations of the present study came from field research, suggesting that such an increase in the number of records over this 11-year period is due to systematic data collection. Because of the hard efforts of systematic research, now, the bramble shark reoccurred in ichthyological lists of Turkey's waters, which are based on recent catch records (e.g. Keskin & Eryılmaz, 2010). The present results show that the paucity of the bramble sharks in the seas of Turkey can be attributed in part to be the cryptic life habits of this species. Contemporary records of the bramble shark in the seas of Turkey since 2002 are summarised in Table 1.

Today, bramble sharks are rarely caught by professional fishermen operating in the study area. They are taken only as bycatch, caught accidentally while fishing other commercial species. However, according to Deveciyan (1926), the bramble shark was caught in high numbers in Turkey's waters during the first quarter of the 20th century, indicating that species distribution overlapped with those of historical Turkey's fisheries. The absence of *E. brucus* in Turkey's fishery during the second half of the 20th century could simply be due to the fact that the stocks might have changed their depth distribution in response to fishing pressure, by shifting in deeper waters. Today, introduction of modern fishing equipments allows Turkey's fishermen to catch fish in deeper zones of the sea, once they could not reached. With the exception of record no. 1, which was sighted by means of an ROV in northern Sea of Marmara (Tab. 1) and record nos. 4 and 5, the remaining 4 bramble sharks (record nos. 2, 3, 6 and 7) have been caught by means of fishing gears deployed in deep water over continental slope. Because of this reason, this assumed depth shift of *E. brucus* stocks seems that it can not provide further protection to this rare shark in its deeper sanctuaries.

E. brucus is one of the 20 large predatory sharks in the Mediterranean Sea, where such large predators declined dramatically over the last two centuries (Ferretti *et al.*,

2008). Among 34 identified shark species from the seas of Turkey (Kabasakal, 2011), *E. brucus* is one of the least known species, due to its cryptic life histories. However, implementation of new research techniques such as remotely operated vehicles, offer us the possibility to study the bramble shark *in situ* without the risk of jeopardizing the survival of this rare species. Since 5 of the 7 recent records of *E. brucus* have been reported from the Sea of Marmara, special attention of research should be focused to this small inland sea to figure out whether this species has a localized population in this region or not?

ACKNOWLEDGEMENTS

We thank to the fishermen from Yalova and İzmir fishing ports, and Dr. Erhan Irmak for their help during the field work to obtain the bramble shark specimens. Special thank goes to wife and son of the first author for their endless love and support. Mr. Mark Taylor, professional diving instructor, photographer and English teacher, for editing. *In memoriam*: Umut Tural – a brilliant colleague and a close friend.

Tab. 1: Recent records of *E. brucus* from Turkey's waters in the period from 2002 to 2013. SM: Sea of Marmara, AE: Aegean Sea.

Tab. 1: Recentni zapisi o pojavljanju vrste *E. brucus* v turških morjih v obdobju med 2002 in 2013. SM: Marmarsko morje, AE: Egejsko morje

No.	Region	TL (cm)	W (kg)	Sex	Date of capture or sighting	Depth of capture or sighting (m)	Type of gear
1	SM	-	-	-	Oct 2002	1214	ROV
2	AE	230	-	-	13 May 2005	200-250	Bottom trawl
3	SM	170	45	♀	9 Dec 2005	600-700	Otter-trawl
4	SM	225	140	♀	20 Nov 2008	100	Gill-net
5	SM	250	175	♀	28 Dec 2009	150	Gill-net
6	SM	220	300	♀	19 May 2010	300	Gill-net
7	AE	200	140	♀	6 Jan 2013	350	Gill-net

STATUS BODIČASTEGA MORSKEGA PSA *ECHINORHINUS BRUCUS* (ELASMOBRANCHII: ECHINORHINIDAE) V TURŠKIH MORJIH: ŠE VEDNO PRISOTEN, ČEPRAV REDEK

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POVZETEK

Status bodičastega morskega psa *Echinorhinus brucus* (Bonnaterre, 1788) v turških morjih je bil že od začetka novega tisočletja predmet razprave. S sedmimi novimi zapisi, ki predstavljajo 22,5 % vseh zgodnjih in sodobnih podatkov o pojavljanju te vrste v Sredozemskem morju, je skupno znanih 31 vseh zapisov za celo območje. Primer št. 3, ki ga predstavljamo v tem prispevku, je do danes najverjetneje najmlajši zapis o pojavljanju te vrste. Ker izvira 5 od 7 recentnih zapisov o bodičastem morskem psu iz Marmarskega morja, bi bilo treba temu majhnemu in zaprtem morju z raziskovalnega vidika posvetiti posebno pozornost, da bi ugotovili, ali prebiva v tem morju izolirana populacija te vrste.

Ključne besede: bodičasti morski pes, *Echinorhinus brucus*, Echinorhinidae, status, Turčija, Sredozemsko morje

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