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RARE BUT PRESENT: STATUS OF BASKING SHARK, *CETORHINUS MAXIMUS* (GUNNERUS, 1765) IN EASTERN MEDITERRANEAN

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ABSTRACT

Extremely low number of records off Turkish coast from 1950's to date confirmed the rarity of Cetorhinus maximus *in Turkish waters. A specific scientific monitoring program accompanied by zooplankton surveys should be implemented as soon as possible to figure out the seasonal movements of* C. maximus *in the mentioned region to answer the question whether the occurrence of basking sharks in Turkish waters exhibits a seasonality and site fidelity or not?*

Key words: basking shark, *Cetorhinus maximus*, Turkey, eastern Mediterranean, coastal netting, site fidelity

RARO MA PRESENTE: LO STATO DELLO SQUALO ELEFANTE, *CETORHINUS MAXIMUS* (GUNNERUS, 1765), NEL MEDITERRANEO ORIENTALE

SINTESI

Un numero estremamente basso di segnalazioni al largo della costa turca dal 1950 fino ad oggi ha confermato la rarità di Cetorhinus maximus *nelle acque della Turchia. Gli autori auspicano che un programma specifico di monitoraggio scientifico, accompagnato da indagini del zooplancton, venga attuato al più presto al fine di capire i movimenti stagionali di* C. maximus *nella regione studiata. Con tali dati si potrebbe verificare se le segnalazioni di squali elefante nelle acque turche presentano o non presentano una stagionalità e una fedeltà al sito.*

Parole chiave: squalo elefante, *Cetorhinus maximus*, Turchia, Mediterraneo orientale, reticolato costiero, fedeltà al sito

INTRODUCTION

The presence of basking shark, *Cetorhinus maximus* (Gunnerus, 1765), in the Mediterranean basin has been recorded since 1795 (Mancusi *et al*., 2005). In a recent survey on the presence of *C. maximus* in the Mediterranean Sea, Mancusi *et al*. (2005) collected 535 records of basking shark, from 1795 to 2002, mostly in the western and central regions of the Mediterranean area. Mancusi *et al*. (2005) and Serena (2005) also emphasized the scarcity of basking shark presence in the eastern Mediterranean. The occurrence of *C. maximus* in the Levantine basin has also been noted by Golani *et al*. (2006).

Although the first documented record of *C. maximus* off Turkish coast has been reported by Kıdeyş (1997), based on incidental captures of two individuals in May 1995, a recent survey revealed that historical occurrence of this species in the mentioned region dates back to 1950's (Kabasakal, 2004). Recent catches and sightings of basking sharks along Aegean and Mediterranean coasts of Turkey allow the author to suggest that *C. maximus* is rare in the study area, as it has been previously supposed (Kabasakal, 2002, 2004, 2009; Kabasakal & Kabasakal, 2004).

Since current knowledge on the occurrence of basking shark in eastern Mediterranean has remarkable gaps, every individual record from the area is valuable to complete the big picture. In the present article, a brief discussion on the occurrence of *C. maximus* in Levantine basin is provided in the light of available data.

MATERIAL AND METHODS

Data on basking 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 basking shark, the following data were recorded: total length (TL), weight (W), sex, date and locality, fishing gear and depth. Photographs of the examined basking sharks, of which the details are given below, are kept in the archives of Ichthyological Research Society (IRS). Pdf copies of internet sources are available on request for inspection.

RESULTS AND DISCUSSION

Basking shark is one of the well-documented lamniform sharks in the Mediterranean Sea, of which the majority of records have been reported from western and central regions of the entire basin since late 18th century (Mancusi *et al*., 2005). Being the second largest fish occurring in the oceans, this charismatic gentle giant has always been a subject of research, as well as an unfortunate target of fishery (Compagno, 1984). Despite

Fig. 1: Basking shark, ca. 1000 cm TL (sp no. 11 in Table 1), caught off Küçükkuyu coast in Edremit Bay, northeastern Aegean Sea. Details of this specimen are given in Kabasakal (2009).
Sl. 1: Morski pes orjak, dolžine pribl. 1000 cm (primerek št. 11 iz tabele 1), ulovljen blizu Küçükkuyujske obale v Edremitskem zalivu v severovzhodnem delu Egejskega morja. Podrobnosti o tem primerku so navedene v publikaciji Kabasakal (2009).

its well-documented western and central Mediterranean records (Soldo & Jardas, 2002; Capapé *et al*., 2003; Mancusi *et al*., 2005), the scarcity of *C. maximus* records from Levantine basin creates a hole of uncertainties in the distributional map of this species in the entire Mediterranean region.

Historically, basking shark occurrence in the Aegean Sea has been documented since late 1940s, based on specimens caught off Cyclades, Chios, Lesvos and Dodecanese islands (Belloc, 1948, in Papakonstantinou, 1988). Following this pioneering record, on 16 May 1997, a large individual of *C. maximus* (TL ca. 800 cm) has been sighted by a swordfish harpooner off southern coast off Gökçeada Island in northeastern Aegean Sea (Kabasakal & Kabasakal, 2004). Recently, a large basking shark of ca. 1000 cm TL, was entangled in stationery nets set only 2 miles off Küçükkuyu coast in Edremit Bay, northeastern Aegean Sea (Fig. 1; Kabasakal, 2009). This basking shark, caught on 2 January 2009, was considered as the largest well-documented *C. maximus* individual recorded in the Mediterranean to date. Finally, two basking sharks, both over 700 cm and weighing roughly 2000 kg, have been incidentally captured by net fishermen off the coast south of Athens, Greece (Shark Alliance, 2009). One of the two basking sharks has been caught on 9 March 2009 and the other one just five days later, according to press release by Shark Alliance given on 19 March 2009. These two basking sharks incidentally captured in waters off Athens coast are probably the most recent records of *C. maximus* from Aegean Sea to date.

Historical records of basking sharks from the Bay of İskenderun date back to 1950s (Kabasakal, 2004). Ben-Tuvia (1971) reported on two young basking sharks accidentally caught off Akko coast, (Israel), one of them was entangled in a gill-net set at a depth of 3 m. Following Ben-Tuvia's (1971) report, another basking shark was accidentally captured in the Bay of Antalya in 1987 by stationary nets set very close to the shore (Kabasakal, 2004). Subsequent to 1987 record of basking shark in Bay of Antalya, further records of *C. maximus* have been reported along Turkish Mediterranean coast (Kıdeyş, 1997; Kabasakal, 2002, 2013). Recently, Ali *et al*. (2012) reported on the capture of a basking shark off the Syrian coast. It was entangled in a gill-net, spread from the beach to 150 m in the sea, at a depth of approximately 10 m, off Raas Albassit, on 20-21 April 2012 (Ali *et al*., 2012). Finally, on 12 May 2013, a 400 cm long basking shark was caught off Famagusta harbour (Cyprus, eastern Mediterranean Sea), according to report published on LGC News website, dated 13 May 2013 (LGC News, 2013). Famagusta incidence is probably the most recent eastern Mediterranean record of *C. maximus* to date. Available historical and contemporary records of *C. maximus* from Aegean Sea and eastern Mediterranean are summarised in Table 1 and plotted on the map in Figure 2.

All of basking sharks recorded off Turkish coast, as well as some individuals recorded off Syrian and Israeli coasts, have been caught in shallow coastal waters by stationary- or gill-netters. According to Mancusi *et al*. (2005), most of the occurrences of *C. maximus* in Mediterranean are reported off the coastal areas of the western and central sectors of the entire basin, where this species is often caught incidentally by trammel nets. Since the basking sharks are seem to be philopatric and may show the tendency to return seasonally to the same coastal feeding locations (Mancusi *et al*., 2005), coastal netting is a serious threat endangering the survival of *C. maximus* throughout its Mediterranean distribution. Capapé *et al*. (2003) noted that specimens of basking sharks from the Maghrebin coastal waters were caught at depths of max. 30 m. Incidental capture of young basking sharks by coastal netters off Piran (Gulf of Trieste, northern Adriatic) were recorded by Lipej *et al*. (2000). Fifteen percent of the total 323 incidental catches of *C. maximus* came from trammel nets, a kind of stationary net (Mancusi *et al*., 2005).

The relation between the occurrence of basking sharks and zooplankton abundance has been suggested previously by Sims & Merrett (1997). According to them, basking sharks can forage actively to locate more productive zooplankton patches. Since few records of *C. maximus* in the eastern Mediterranean area correspond to small coastal zones, where the chlorophyll concentration is a little bit higher (*e.g.* coast of Turkey), assu-

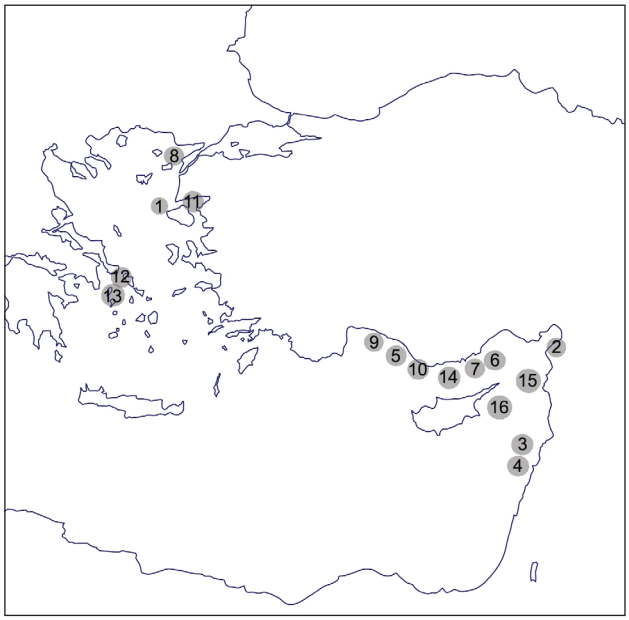

Fig. 2: Approximate localities of historical and contemporary records of** C. maximus **from Aegean Sea and eastern Mediterranean; circled numbers are same as the numbers seen in the No column of Table 1.
Sl. 2: Približne lokacije zgodovinskih in sodobnih zapisov o vrsti** C. maximus **v Egejskem morju in vzhodnem Sredozemlju; obkrožene številke ustrezajo številkam v prvem stolpcu Tabele 1

med relation between the basking shark presence and zooplankton abundance (Sims & Merrett, 1997) can provide an explanation on the occurrence of *C. maximus* off Turkish coast. Recent surveys showed that abundance of larger copepods, one of the main prey group in the diet of basking sharks (Sims & Merrett, 1997), increased remarkably in winter and spring months around Gökçeada and Bozcaada islands, as well as in the Bay of Edremit (Tarkan, 2000), where Aegean records of *C. maximus* have been recorded during the same period of year (Table 1). In Bay of Mersin, where some of the Mediterranean records of *C. maximus* off Turkish coast were reported, annual average zooplankton biomass in coastal waters was about nine times higher than in open waters (Zenginer & Beşiktepe, 2007).

In Turkish waters, basking shark is considered to be a rare and occasional species (Akşıray, 1987). Extremly low number of records off Turkish coast from 1950's to date (9 specimens; table 1) supposed to confirm the rarity of *C. maximus* in Turkish waters; however, the scarcity of information on incidental captures and sightings of basking sharks in the seas of Turkey can be explained by the lack of a dedicated specific scientific monitoring in this area, which was also suggested to explain the probable reason of poor information on *C. maximus* records from eastern Mediterranean by Mancusi *et al*. (2005). Since the records of basking sharks in Turkish waters concentrate in certain areas (Bay of Edremit and periphery, northeastern Aegean Sea; bays of Antalya, Mersin and İskenderun, eastern Mediterranean Sea), a specific scientific monitoring program accompanied by zooplankton surveys should be implemented as soon as possible to figure out the seasonal movements of *C. maximus* off Turkish coast to answer the question whether the occurrence of basking sharks in the mentioned region exhibits a seasonality and site fidelity or not? Such a survey is necessary before implementing precautions against coastal netting in certain marine areas to prevent the basking shark mortality in Turkish waters.

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Tab. 1: Historical and contemporary records of** C. maximus **from Aegean Sea and eastern Mediterranean. AE: Aegean Sea; EM: Eastern Mediterranean; TR: Turkey; GR: Greece; SR: Syria; IL: Israel; CY: Cyprus.
Tab. 1: Zgodovinski in sodobni zapisi o vrsti** C. maximus **v Egejskem morju in vzhodnem Sredozemlju. EM: Egejsko morje; VS: vzhodno Sredozemlje; TR: Turčija; GR: Grčija; SR: Sirija; IL: Izrael; CY: Ciper

No	Date	Region	TL (cm)	W (kg)	Depth (m)	Fishing gear	Reference
1	1940's	AE-GR	-	-	-	-	Belloc (1948, in Papakonstantinou, 1988)
2	1950's	EM-TR	-	-	-	-	Kabasakal (2004)
3	11 Jan 1965	EM-IL	267	-	3	Gill-net	Ben-Tuvia (1971)
4	7 Mar 1965	EM-IL	259	-	-	-	Ben-Tuvia (1971)
5	1987	EM-TR	400	800	-	Stationary net	Kabasakal (2004)
6	May 1995	EM-TR	470	-	-	Stationary net	Kıdeyş (1997)
7	May 1995	EM-TR	-	-	-	Stationary net	Kıdeyş (1997)
8	16 May 1997	AE-TR	ca. 800	-	-	Sighting	Kabasakal & Kabasakal (2004)
9	Dec 2001	EM-TR	600	-	-	Gill-net	Kabasakal (2002)
10	30 Dec 2006	EM-TR	300	-	-	Stationary net	Kabasakal (2013)
11	2 Jan 2009	AE-TR	ca. 1000	ca. 2000	-	Stationary net	Kabasakal (2009)
12	9 Mar 2009	AE-GR	>700	ca. 2000	-	Net, type unknown	Shark Alliance (2009)
13	14 Mar 2009	AE-GR	>700	ca. 2000	-	Net, type unknown	Shark Alliance (2009)
14	7 Apr 2012	EM-TR	236	70	1.5	Gill-net	Kabasakal (2013)
15	20-21 Apr 2012	EM-SR	690	ca. 2500	10	Gill-net	Ali *et al*. (2012)
16	12 May 2013	EM-CY	400	-	-	Net, type unknown	LGC News (2013)

REDEK, TODA PRISOTEN: STATUS MORSKEGA PSA ORJAKA *CETORHINUS MAXIMUS* (GÜNNERUS, 1765) V VZHODNEM SREDOZEMLJU

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POVZETEK

*Izjemno majhno število zapisov o pojavljanju morskega psa orjaka (*Cetorhinus maximus*) ob turški obali od 50. let prejšnjega stoletja do danes potrjuje njegovo redkost v turških vodah. Čim prej bi bilo treba izvesti poseben program znanstvenega monitoringa s spremljajočimi raziskavami o zooplanktonu, da bi ugotovili sezonsko gibanje te vrste morskega psa na omenjenem območju in odgovorili na vprašanje, ali pojavljanje vrste* C. maximus *v turških vodah izkazuje sezonskost in filopatrijo ali ne.*

Ključne besede: morski pes orjak, *Cetorhinus maximus*, Turčija, vzhodno Sredozemlje, nameščanje priobalnih mrež, filopatrija

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