Commagene Journal of Biology

December, 2017; 1 (1): 60-62

Research Article / Araştırma Makalesi

Occurrence of adult female Kitefin shark *Dalatias licha* (Bonnaterre, 1788) in Iskenderun Bay (Eastern Mediterranean, Turkey)

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Received: 27.11.2017 **Accepted:** 14.12.2017 **Available online:** 25.12.2017 **Published:** 29.12.2017

Abstract: A single female specimen of the Kitefin shark *Dalatias licha* (Dalatiidae), 118 cm in total length (TL), was caught by a commercial trammel net at a depth of 40 m on 11th June 2016 off the Çevlik coast (Eastern Mediterranean), Turkey. The present paper was the first confirmation of an adult female specimen of *D. licha* from the Mediterranean coast of Turkey. Measurements of the specimen were given and the geographical distribution of the species in the Mediterranean was documented.

Keywords: Dalatiidae, *Dalatias licha*, Iskenderun bay, Eastern Mediterranean

İskenderun Körfezi'nde (Doğu Akdeniz Bölgesi) Ergin Dişi Uçurtma Yüzgeçli Köpekbalığı, *Dalatias licha*'nın (Bonnaterre, 1788) Varlığı

Özet: Türkiye'nin Çevlik (Doğu Akdeniz) sahillerinden 11 Haziran 2016 tarihinde 118 cm toplam boyunda uçurtma yüzgeçli köpek balığı, *Dalatias licha*'nın tek bir dişi bireyi ticari troll ağı ile 40 m derinlikten avlanmıştır. Sunulan bu makale yetişkin dişi bir birey D. licha'nın Türkiye'nin Akdeniz sahillerinden ilk teyididir. Örneğin ölçümleri yapılarak bu türün Akdeniz'deki coğrafik dağılımı belgelenmiştir.

Anahtar kelimeler: Dalatiidae, *Dalatias licha*, Iskenderun körfezi, Doğu Akdeniz

The Kitefin shark is a deep-water species, benthic to mesopelagic species, and mainly distributed in the western Atlantic, western Indian Ocean, and Pacific Ocean (Compagno 1984, Last and Stevens 1994). However, the range of this species in the Mediterranean appears to be confined to the western and central basins of the Mediterranean (Baino et al 2001). The occurrence of the species in eastern Mediterranean is highly rare and the first report in the area was documented by Akşıray (1987). Then, Papaconstantinou (1988) reported the presence of the kitefin shark in the Aegean Greek waters. Seven years later, Meriç (1995) also reported the species off the Turkish coasts of eastern Mediterranean. Kabasakal and Kabasakal (2002) indicated the presence of the species in northeastern Aegean Sea with the record of five young kitefin shark specimens during breeding season off the northern coast of Gokçeada in 1999. Further reports of the species have been documented several times off the western Mediterranean (Bottaro et al 2003, Bottaro et al 2005, Capape et al 2008) and Levantine coasts (Golani 2004, Saad et al 2004) up to now.

Special importance of this paper is that it represents the first record of an adult female specimen of *D. licha* in Iskenderun Bay (Eastern Mediterranean, Turkey).

A single female specimen of *D. licha* (Figure 1 and Figure 2) was caught off the Çevlik coast (Iskenderun Bay), (36° 07′ N, 35° 54′ E) on 11th June 2016 during commercial fishing with a trawling at a depth of 40 m (Figure 3). All morphometric measurements were made to the nearest 0.01 mm using digital calipers. All measurements and counts, and the morphological description and color are consistent with the descriptions of Compagno (1984) and Kabasakal and Kabasakal (2002).

The kitefin shark, *D. licha,* is moderately sized, short, and blunt-snouted shark with two almost equal-sized dorsal fins; no spines are associated with dorsal fins and the species does not have an anal fin. Small slender-cusped upper teeth and very large lower teeth are distinctively triangular and serrated. First dorsal fin originates behind the rear tips of pectoral fin and its base is closer to the pectoral base than the pelvic fins. Caudal fin with the ventral lobe is not expanded and the tail has a well-developed upper half with a large terminal lobe (Compagno 1984). Color: Body is brown to greyish. The dorsal surface has poorly defined black spots, margins of the fins is translucent, and the tip of the tail is black (Cox and Francis 1997). Distinguishing morphometric characters are given in Table 1 and previous reports of the *D. licha* in the Mediterranean Sea are summarized in Table 2.

Although more common length of this species is 120 cm in total length, the maximum size of kitefin shark has been reported to be 180 cm by Bauchot (1987). The size at birth is approximately 30 cm in total length (Bigelow and Shroeder 1948, Bauchot 1987, Whitehead et al 1984-1986). The length of maturity for males and for females ranges between 77-121 cm and 117-159 cm, respectively (Compagno 1984, Bauchot 1987). The kitefin shark feeds

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mainly on deep-water bony fish. However, its diet also includes skates, other sharks, cephalopods, and crustaceans (Compagno et al 1989).

Table 1: Morphometric measurements (mm) and percentage values (%) of the kitefin shark *D. licha* off the Cevlik coast, Turkey

Measurement	mm	%
Sex	♀	
Total length	1180	-
Head length	250.40	21.22
Head width	116.62	9.88
Eye length	41.16	3.48
Eye height	20.58	1.74
Interorbital space	72.03	6.10
Eye spiracle space	27.44	2.32
Spiracle length	10.29	0.87
Mouth length	85.75	7.26
Mouth width	62.76	5.32
Nostril width	20.58	1.74
Internarial space	34.30	2.90
Anterior nasal flap length	6.86	0.58
Pre-branchial length	202.38	17.15
Pre-spiracular length	113.19	9.59
Pre-orbital length	48.02	4.06
Pre-narial length	24.01	2.03
Pre-oral length	72.03	6.10
Pre-first dorsal length	418.48	35.46
Pre-second dorsal length	706.60	59.88
Pre-pectoral length	257.26	21.80
Pre-pelvic length	638.02	54.06
Pre-caudal length	885.01	75.00
Snout-vent length	706.62	59.88
First dorsal length	109.76	9.30
Second dorsal length	120.05	10.17
Pelvic length	130.34	11.04
Pectoral length	168.08	14.24
Interdorsal space	250.40	21.22
Dorsal-caudal space	123.48	10.46
Pectoral-pelvic space	343.23	29.08
Pelvic caudal space	140.63	11.91
Vent-caudal length	473.37	40.11
Intergill length	54.88	4.65
First gill slit height	17.15	1.45
Second gill slit height	17.56	1.48
Third gill slit height	18.25	1.54
Fourth gill slit height	18.77	1.59
Fifth gill slit height	20.58	1.74
Trunk width	126.91	10.75
Abdomen width	106.33	9.01
Tail width	54.88	4.65
Caudal peduncle width	30.87	2.61

Recently, deep-water fishing activity is commonly performed throughout the northeastern Mediterranean area and the kitefin sharks in the region are caught mainly as bycatch of bottom trawling and deep longline and gillnet fisheries. Slow growth rate, late sexual maturity, and long gestation period in its life span make this species vulnerable (Hoenig and Gruber 1990, Stevens et al 2000). Nevertheless, little information is available on the biology of this species inhabiting Mediterranean waters and it is rarely found in the northeastern Mediterranean.

Conservation status of the kitefin shark, *D. licha* in the Mediterranean Sea is recognized as data deficient "DD" by Abdul Malak et al (2011). However, the species has been globally considered as near threatened "NT" in the Global Red List of the Blasdale et al (2009). Increased deep-water fishing effort is likely to affect kitefin shark populations in the near future. Rapid decline of the species could be related to growing fisheries industry relying on deep-water longline and gill net for several decades. Therefore, there is a need for urgent investigation on the biology of this species in order to determine the conservation strategies for *D. licha* in the Mediterranean Sea.

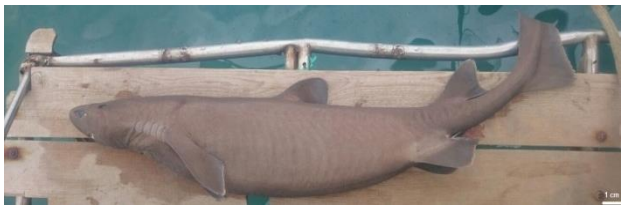

Figure 1: *Dalatias licha* (TL, 118 cm) collected off the Cevlik coast (eastern Mediterranean Sea, Turkey)

Although *D. licha* was reported from the Mediterranean Sea, the northeastern Aegean Sea, and Marmara Sea, this paper also confirms the presence of the species in Iskenderun Bay, Turkey (eastern Mediterranean) with the first reports of an adult female specimen of *D. licha*.

Table 2: Records of *D. licha* in the western and eastern Mediterranean Sea covering 1987-2017 (Sx: Sex, D: Depth, TL: Total Length).

References	Year	Location	N	Sx	D (m)	TL (cm)
Akşıray (1987)	1985	Turkey Seas	1	-	-	150.0
Meriç (1995)	July 1991	Sea of Marmara, Turkey	1	♂	270	34.5
Papaconstantinou (1998)	1998	Greek Seas	1	-	-	-
Kabasakal and Kabasakal (2002)	October 1999	Gökçeada coast, (northeastern Aegean Sea, Turkey	5	♂	380	33.8-47.0
Bottaro et al. (2003)	January 2003	off Genoa (Liguria n Sea)	57	♀ ♂	450-800	35.5-116.4 36.9-955
Bottaro et al. (2005)	January 2003	off Genoa (Liguria n Sea), Italy	1	♂	450-800	90.0
Capape et al. (2008)	1996-2007	Algerian coast	39	♂/♀	200-600	32.0-117.0
	1970-2007	Tunusia n coast	8	♂/♀	200-600	32.0-39.0
This study (2017)	June 2016	Iskenderun Bay, Turkey	1	♀	40	118.0

Figure 2: Head view of *Dalatias licha*

Figure 3: Map showing capture site (o) of *Dalatias licha* in eastern Mediterranean (Iskenderun Bay, Turkey)

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