

OCCURRENCE OF A LARGE BIGEYE THRESHER SHARK, *ALOPIAS SUPERCILIOSUS* (LAMNIFORMES: ALOPIIDAE), IN THE NORTHEASTERN LEVANTINE SEA (ISKENDERUN BAY, EASTERN MEDITERRANEAN SEA, TURKEY)

Deniz ERGÜDEN, Mahmut İĞDE & Cemal TURAN

İskenderun Technical University, Marine Sciences and Technology Faculty, Marine Sciences Department, İskenderun, Hatay, Turkey
e-mail: deniz.erguden@iste.edu.tr

Deniz AYAS

Faculty of Fisheries, Mersin University Yenişehir Campus, 33160, Mersin, Turkey

Hakan KABASAKAL

Ichthyological Research Society, Tantavi mahallesi, Menteşoğlu caddesi, İdil apartmanı, No: 30, D: 4, 34764 Ümraniye, İstanbul, Turkey
e-mail: kabasakal.hakan@gmail.com

ABSTRACT

On 9 April 2019, a single female specimen of Alopias superciliosus Lowe, 1841 was incidentally captured by a commercial purse seiner at an approximate depth of 20 m, off the coast of Çevlik, İskenderun Bay, Turkey. The present specimen is the largest to be captured in northeastern Levantine Sea to date, and one of the largest specimens, approaching the alleged 500 cm maximum TL, caught in the entire Mediterranean Sea. While the congeneric thresher shark, A. vulpinus, is now listed as protected species in the Turkish Marine Fisheries Act, a similar conservation status for the protection of A. superciliosus is urgently needed.

Key words: thresher shark, Alopiidae, coast of Cevlik, Levantine Sea, conservation, bycatch

PRESENZA DI SQUALO VOLPE OCCHIONE, *ALOPIAS SUPERCILIOSUS* (LAMNIFORMES: ALOPIIDAE), NEL MAR LEVANTINO NORD-ORIENTALE (BAIA DI ISKENDERUN, MEDITERRANEO ORIENTALE, TURCHIA)

SINTESI

Il 9 aprile 2019, una femmina di squalo volpe occhione, Alopias superciliosus Lowe, 1841, è stata accidentalmente catturata da una rete a circuizione commerciale, a una profondità di circa 20 m, al largo della costa di Çevlik, nella baia di İskenderun, in Turchia. L'esemplare è il più grande ad essere stato catturato nel Mar Levantino nord-orientale fino ad oggi. Si tratta inoltre di uno degli esemplari più grandi, avvicinandosi al presunto limite massimo di 500 cm, catturato in tutto il mare Mediterraneo. Mentre lo squalo volpe, A. vulpinus, è ora considerato specie protetta dalla legge turca sulla pesca marittima, è urgentemente necessario uno stato di conservazione simile per la protezione di A. superciliosus.

Parole chiave: squalo volpe occhione, Alopiidae, costa di Cevlik, Mar Levantino, conservazione, catture accidentali

INTRODUCTION

The bigeye thresher shark, *Alopias superciliosus* Lowe, 1841, is one of the three species in the family Alopiidae, which is distributed worldwide in all temperate and tropical oceans (Ebert *et al.*, 2013). Despite its occurrence in the epipelagic and mesopelagic zones of open oceans, *A. superciliosus* is a common inhabitant of coastal waters over continental shelves, with seldom occurrence in shallow inshore waters (Froese & Pauly, 2020).

The first record of the bigeye thresher shark in the Mediterranean was reported from Italian waters, during observations in the fishing centres of Mazara del Vallo (Trapani, Sicily) (Cigala-Fulgosi, 1983), and was followed by a few dozen further records from elsewhere within the species' distribution range, which extends from the west to the east of the Mediterranean, including the Marmara Sea, which were summarised by Lanteri *et al.* (2017). *A. superciliosus* was recorded for the first time in Turkish waters by Mater (2005) in the Bay of Gökova.

This article reports on the capture of a large female of *A. superciliosus* in the Bay of İskenderun, north-eastern Levantine waters, and presents morphometric measurements of the examined specimen.

MATERIAL AND METHODS

On 9 April 2019, a single female specimen of *A. superciliosus* was incidentally captured by a commercial purse seiner at an approximate depth of 20 m, off the coast of Çevlik, İskenderun Bay, Turkey (location: 35° 57' 14" N, 35° 54' 30" E; Fig. 1). The specimen was photographed (Figs. 2, 3 and 4), and morphometric measurements (in cm) and weight (in grams) were recorded on site. Morphometric measurements were based on Compagno (2001), and measured to the nearest millimetre. Identification of the examined species follows Compagno (2001) and Serena (2005), and taxonomic nomenclature follows Froese & Pauly (2020).

RESULTS AND DISCUSSION

The total length (TL) of the examined bigeye thresher shark (Figs. 2, 3 and 4) was 472 cm, and its weight 400 kg. The morphometric measurements of the examined female are provided in Table 1, together with morphometric data extracted from several articles on *A. superciliosus*. Based on the following descriptive features that coincided with those proposed in Compagno (2001) and Serena (2005), the



Fig. 1: Map depicting the approximate site of capture (*) of the examined *A. superciliosus*.

Sl. 1: Zemljevid obravnavanega območja s približno oznako lokalitete (*), kjer je bil analiziran primerek vrste *A. superciliosus* ujet.

Tab. 1: Comparison of selected morphometric measurements of the *A. superciliosus* specimen examined in this study with those of other reported specimens from the Mediterranean Sea. Values provided in parentheses are the percentages that selected morphometric measurement take up of TL. *Since Lanteri et al. (2017) base their record on the collected head and pectoral fins of the examined specimen, the TL value is not provided. W Med: western Mediterranean; NW Med: northwestern Mediterranean; SE Med: southeastern Mediterranean; NE Med: northeastern Mediterranean; N/A: not available.

Tab. 1: Primerjava izbranih morfometričnih meritev na pregledanem primerku vrste *A. superciliosus* v tej raziskavi s podatki, pridobljenimi iz drugih raziskav v Sredozemskem morju. Vrednosti v oklepaju so deleži izbranih morfometričnih meritev glede na celotno dolžino telesa. *Ker so Lanteri in sod. (2017) zbrali le glavo in prsne plavuti pregledanega primerka, dolžina telesa ni navedena. W Med: zahodno Sredozemlje; NW Med: severozahodno Sredozemlje; SE Med: jugovzhodno Sredozemlje; NE Med: severovzhodno Sredozemlje; N/A: ni podatka.

	This study	Kabasakal et al. (2011)	Kabasakal (2017)	Ayas et al. (2020)	Corsini-Foka & Sioulas (2009)	Lanteri et al. (2017)*	Farrag (2017)
Locality	Iskenderun Bay (SE Med. Turkey)	Fethiye Coast (Aegean Sea, Turkey)	Antalya Bay (W Med. Turkey)	Mersin Bay (NE Med. Turkey)	Dodecanese waters (Aegean Sea, Greece)	Ligurian Sea (NW Med. Italy)	Egyptian coast of Med. Sea, Egypt
Sex	Female	Female	Female	Female	Male	Female	N/A
Measurements	Value (cm) (% of TL)	Value (cm) (% of TL)	Value (cm) (% of TL)	Value (cm) (% of TL)	Value (cm) (% of TL)	Value (cm)	Value (cm) (% of TL)
Total Length (TL)	472.0	450.0	342.4	240.0	310.0	N/A	180.0
First dorsal fin length	40.0	41.0 (9.1%)	-	17.9 (7.4%)	27.0 (8.7%)	-	-
First dorsal fin base length	32.0 (6.8%)	32.0 (7.1%)	-	13.6 (5.6%)	21.0 (6.8%)	-	-
Pectoral fin length	83.0 (17.5%)	82.0 (18.2%)	-	51.5 (21.4%)	62 (20.0%)	25.4	35 (19.4%)
Pectoral fin base length	40.0 (8.5%)	30.0 (6.7%)	-	20.1 (8.4%)	21 (6.8%)		-
Ventral fin length	37.0 (7.8%)	39.0 (8.7%)	-	20.6 (8.6%)	26.0 (8.4%)	-	-
Ventral fin base length	30.0 (6.4%)	30.0 (6.7%)	-	15.4 (6.4%)	21.0 (6.8%)	-	-
Distance between dorsal fin origin and ventral fin origin	-	-	-	17.8 (7.4%)	23.0 (7.4%)	-	-
Distance between pectoral fin origin and ventral fin origin	204 (43.2%)	-	-	68.9 (28.7%)	77.0 (24.8%)	-	-
Predorsal length	-	128.0 (28.4%)	-	87.7 (36.5%)	94.0 (30.3%)	-	57.0 (31.6%)
Preventral length	-	165.0 (36.7%)	-	105.3 (43.9%)	118.0 (38.1%)	-	70.0 (38.9%)
Prepectoral length	-	55.0 (12.2%)	38.6 (11.2%)	43.7 (18.2%)	45.0 (14.5%)	-	29.0 (16.1%)
Preanal length	-	-	-	-	-	41.7	89.0 (49.4%)
Precaudal fin length	-	-	240.5 (70.2%)	-	-	-	-
Prebranchial length	-	-	34.6 (10.1%)	-	-	-	-
Preorbital length	-	-	14.7 (4.2%)	-	-	31.6	9.0 (5.0%)
Preoral length	-	-	15.1 (4.4%)	-	-	11.0	-
Interorbital space	-	-	9.4 (2.7%)	-	-	12.3	7.0 (3.9%)
Eye length	-	-	6.9 (2.01%)	-	-	7.4	4.5 (0.95%)
Eye height	-	-	5.1 (1.4%)	-	-	4.7	-
Mouth width	20.0 (4.2%)	-	-	-	-	7.4	-
Pectoral fin anterior margin	-	-	46.4 (13.5%)	-	-	10.4	-
Tail length	240.0 (50.5%)	217.0 (48.2%)	-	103.8 (43.3%)	143.0 (46.1%)	54.4	84.0 (17.8%)



Fig. 2: Female *A. superciliosus* (472 cm in TL), captured off the coast of Çevlik, northeastern Levantine Sea (Photo: D. Ergüden archive).

Sl. 2: Samica vrste *A. superciliosus* (472 cm v dolžino telesa), ujeta ob obali Čevlika, severovzhodno Levantinsko morje (Foto: D. Ergüden arhiv).

examined specimen was identified as *A. superciliosus*: cylindrical body, massive before the first dorsal fin; snout moderately long and bulbous; head with deep grooves extending along either sides from behind the eyes to the areas above the gill openings; eyes large and reaching the dorsal surface of head; interorbital space nearly flat; first dorsal midbase closer to the pelvic fin base than to the pectoral fin bases; pectoral fins falcate with broad apices; upper surface of the body brownish to dark grey, growing lighter in colour ventrally.

The story of *A. superciliosus* in the Mediterranean Sea dates to the early 1980s, when Cigala-Fulgosi (1983) recorded the species in the region for the first time. However, the discovery of taxidermied specimens caught in Dodecanese waters (southeastern Aegean Sea) in the 1950s suggests that *A. superciliosus* had been present in the Mediterranean Sea some thirty years earlier than the first published report on its occurrence was made (Corsini-Foka & Sioulas, 2009). Following Cigala-Fulgosi's (1983) report, several captures of bigeye thresher shark were reported from different parts of the Mediterranean Sea. These include Pescara, Italy (Cugini & De Maddalena, 2003), waters around Toulon (Capape, 1977), the Catalan littoral (Barrull et al., 1999), eastern Sardinia (Vacchi & Serena, 2000), and the Ligurian Sea (Lanteri et al., 2017). In the eastern Mediterranean region, sporadic records of *A. superciliosus* were reported from the Turkish Mediterranean and Aegean coasts (Mater, 2005; Kabasakal et al., 2011; Gökoğlu et al., 2017; Kabasakal, 2017; Ayas et al., 2020), as well as from the Sea of Marmara (Kabasakal & Karhan, 2008), Egyptian waters (Farrag, 2017), Israel, off the Ashod coast (Golani, 1996), Dodecanese waters, the SE Aegean Sea (Corsini-Foka & Sioulas, 2008), and from Cyprus waters (Kleitou et al., 2017). Lanteri et al. (2017) compiled a full list of 40 Mediterranean records of *A. superciliosus* with some data on the captured specimens and relevant references. With the addition of the specimens reported by Kabasakal (2017), Ayas et al. (2020), and the one recorded in the present study, the total number of records of *A. superciliosus* from the Mediterranean and Turkey increased to 43 and 15, respectively, with the latter number representing almost 35 % of all records reported in the Mediterranean to date. Although recent data suggest that the distribution of *A. superciliosus* in the Mediterranean is extending from the western part of the region to the Levantine Sea in the east and the Marmara Sea in the northernmost part, this shark species is still considered rare in the Mediterranean (Serena, 2005; Lanteri et al., 2017), and the small sample of 43 recorded specimens from the 1950s to date seems to validate this view. An overview of *A. superciliosus* records from Turkish waters is presented in Table 2.

While the maximum total length reported for *A. superciliosus* is 484 cm (Ebert & Stehmann, 2013), Lanteri et al. (2017) provide records on specimens that reach 500 cm. The specimen presented in our article is the largest ever caught in the northeastern Levantine Sea to date. It is also one of the largest specimens, approaching the alleged 500 cm maximum TL, that have ever been caught in the entire Mediterranean Sea. According to Ebert and Stehmann (2013), females mature between 332 and 356 cm TL; thus, the present specimen is considered a mature female.

Tab. 2: An overview of the records of *A. superciliosus* from Turkish waters. GN: gill net; SN: shrimp net; PS: purse seine; TN: trammel net; SN: stationary net; BT: bottom trawl; LL: longline; PSL: pelagic swordfish longline.

Tab. 2: Pregled zapisov o pojavljanju vrste *A. superciliosus* v turških vodah. GN: zabodna mreža; SN: mreža za kozice; PS: zaporna plavarica; TN: trislojna mreža; SN: stoječa mreža; BT: pridnena povlečna mreža; LL: parangal; PSL: parangal za mečarice.

No	Authors	Date	Depth (m)	Locality	Region	Gear	Sex	Length (cm, TL)	Weight (Kg)
1	Clo et al. (2008)	April 2005	-	Marmaris	SE Aegean Sea	GN	-	350	160
2	Mater (2005)	23 May 2005	12	Gökova	SE Aegean Sea	SN	-	350	150
3	Kabasakal & Karhan (2008)	25 February 2007	-	Silivri	Marmara Sea	PS	-	450	-
4	Kabasakal et al. (2011)	28 February 2011	110	Fethiye	SE Aegean Sea	TN	♀	430	300
5	Kabasakal et al. (2011)	2 July 2011	-	Silivri	Marmara Sea	PS	♀	250	65
6	Lanteri et al. (2017)	25 February 2013	-	-	Marmara Sea	-	-	370	250
7	Lanteri et al. (2017)	13 March 2013	-	Yeşilköy	Marmara Sea	-	-	200	110
8	Lanteri et al. (2017)	15 July 2013	-	Yediburunlar	SE Aegean Sea	-	-	500	95
9	Lanteri et al. (2017)	15 April 2015	-	Antalya	Mediterranean Sea	-	-	-	-
10	Kabasakal et al. (2011)	21 May 2016	100	Sivrice	NE Aegean Sea	SN	♀	400	-
11-12	Gökoglu et al. (2017)	March, April and July 2015	600-700	Antalya	Mediterranean Sea	BT, LL	♀♂	180-299	15.5-65
13	Kabasakal (2017)	22 December 2016	-	Antalya Bay	Mediterranean Sea	PSLL	♀	342.4	-
14	Ayas et al. (2020)	02 January 2020	25	Taşucu	Mediterranean Sea	TN	♀	240	48
15	Present specimen	09 April 2019	20	Keldağ, Çevlik Coast	Mediterranean Sea	PS	♀	472	400



Fig. 3: Front (A) and lateral (B) views of the examined *A. superciliosus* (Photo: D. Ergüden archive).

Sl. 3: Pogled od spredaj (A) in od strani (B) pregledanega primerka vrste *A. superciliosus* (Foto: D. Ergüden arhiv).



Fig. 4: Dentition on the upper and lower jaws of the examined *A. superciliosus* (Photo: D. Ergüden archive).

Sl. 4: Zobovje na spodnji in spodnji čeljustnici pri pregledanem primerku vrste *A. superciliosus* (Foto: D. Ergüden arhiv).

In the Mediterranean Sea, the bigeye thresher shark is considered occasional bycatch affected by interaction with pelagic fishing gear, as well as bottom trawls, longlines and entangling nets (Serena, 2005; Bariche, 2012). The previous IUCN category – “data deficient” – for *A. superciliosus* was recently changed to “endangered” for the Mediterranean Sea, and “vulnerable” worldwide (Otero *et al.*, 2019). *A. superciliosus* is a typical *k*-selected species, with the maximum litter size ranging from 2 to 4 embryos (Bariche, 2012). While

the congeneric thresher shark, *A. vulpinus* is now listed as a protected species in the Turkish Marine Fisheries Act (Öztürk, 2018), a similar conservation status for the protection of *A. superciliosus* is urgently needed.

ACKNOWLEDGEMENTS

Authors thank the fishermen who kindly permitted the taking of photographs and recording of the measurements of the specimen described in the article.

POJAVLJANJE VELIKE VELIKOOKE MORSKE LISICE, *ALOPIAS SUPERCILIOSUS*
(LAMNIFORMES: ALOPIIDAE), V SEVEROVZHODNEM LEVANTSKEM MORJU
(ZALIV ISKENDERUN, VZHODNI MEDITERAN, TURČIJA)

Deniz ERGÜDEN, Mahmut İĞDE & Cemal TURAN

İskenderun Technical University, Marine Sciences and Technology Faculty, Marine Sciences Department, İskenderun, Hatay, Turkey
e-mail: deniz.erguden@iste.edu.tr

Deniz AYAS

Faculty of Fisheries, Mersin University Yenişehir Campus, 33160, Mersin, Turkey

Hakan KABASAKAL

Ichthyological Research Society, Tantavi mahallesi, Menteşoğlu caddesi, İdil apartmanı, No: 30, D: 4, 34764 Ümraniye, İstanbul, Turkey
e-mail: kabasakal.hakan@gmail.com

POVZETEK

Devetega aprila 2019 so ujeli samico velikooke morske lisice *Alopias superciliosus* Lowe, 1841 v zaporno plavarico, na globini približno 20 m ob Çevliku v zalivu İskenderun Bay, v Turčiji. Gre za doslej največji primerek te vrste v severovzhodnem Levantskem morju in nasploh v Sredozemskem morju, saj je meril okoli 500 cm v dolžino. Njena sorodnica iz istega rodu, navadna morska lisica, *A. vulpinus*, je danes v turškem morskem ribolovnem aktu zavarovana vrsta, zato je nujno čimprej urediti podoben ohranitveni status tudi za vrsto *A. superciliosus*.

Ključne besede: morska lisica, Alopiidae, obala pri Cevliku, Levantsko morje, ohranjanje, prilov

REFERENCES

- Ayas, D., H.D. Akbora & B.A. Çiçek (2020): Occurrence of the young thresher shark *Alopias superciliosus* Lowe, 1841 (Lamniformes: Alopiidae) in the Northeastern Mediterranean Sea. *Comm. J. Biol.*, 4, 28-31.
- Bariche, M. (2012): Field Identification Guide to the Living Marine Resources of the Eastern and Southern Mediterranean. *FAO Species Identification Guide for Fishery Purposes*. Rome, FAO, 610 pp.
- Barrull, J, I. Mate & M. Bueno (1999): Observaciones de tiburones (chondrichthyes Euselachii) en aguas de Cataluna (Mediterraneo No), con algunos aspectos generales de su ecología. *Sci. Gerund.*, 24, 127-151.
- Capape, C. (1977): Liste commentee des selaciens de la region de Toulon (de la ciutat a saint-Tropez). *Bull. Mus. Hist. Nature, Marseille*, 37, 5-9.
- Clo, S., R. Bonfil & E. de Sabata (2008): Additional records of the bigeye thresher shark, *Alopias superciliosus*, from the central and eastern Mediterranean Sea. *JMBA2- Biodiversity Records* 6168. <http://www.mba.ac.uk/jmba2biodiversityrecords.php>.
- Cigala-Fulgosi, F. (1983): First record of *Alopias superciliosus* (Lowe, 1840) in the Mediterranean, with notes on some fossil species of the genus *Alopias*. *Ann. Mus. Civ. Stor. Nat. Genova*, 84, 211-229.
- Compagno, L.J.V. (2001): Sharks of the world. An annotated and illustrated catalogue of shark species known to date. Vol. 2. Bullhead, mackerel and carpet sharks (Heterodontiformes, Lamniformes and Orectolobiformes). *FAO Spec. Cat. Fish. Purp.* 1(2): 269 p. FAO, Rome.
- Corsini-Foka, M. & A. Sioulas (2009): On two old specimens of *Alopias superciliosus* (Chondrichthyes: Alopiidae) from the Aegean waters. *Mar. Biodiversity Rec.*, 2: e72.
- Cugini, G. & A. De Maddalena (2003): Sharks captured off Pescara (Italy, western Adriatic Sea). *Annales Ser. His. Nat.*, 13, 201-208.
- Ebert, D.A., S. Fowler & L. J. V. Compagno (2013): *Sharks of the World. A Fully Illustrated Guide*. Wild Nature Press, Plymouth, United Kingdom.
- Ebert, D.A. & M. Stehmann (2013): Sharks, batoids and chimaeras of the North Atlantic. *FAO Species Catalogue for Fishery Purposes*. No. 7. FAO, Rome, 523 pp.
- Farrag, M.M.S. (2017): New record of the bigeye thresher shark, *Alopias superciliosus* Lowe, 1841 (Family: Alopiidae) from the eastern Mediterranean Sea, Egypt. *Int. J. Fish. Aquat. Stud.*, 5, 316-318.

Froese, R. & D. Pauly (2020): *Alopias superciliosus* Lowe, 1841 Bigeye thresher. Retrieved from <https://www.fishbase.se/summary/Alopiassuperciliosus.html>.

Golani, D. (1996): The marine ichthyofauna of the eastern Levant – history, inventory, and characterization. Israel J. Zool., 42, 15-55.

Gökoğlu, M., S. Teker & D. Julian (2017): First report of thresher sharks (Alopiidae) in the Gulf of Antalya. Iran. J. Fish. Sci., 16, 1108–1113.

Kabasakal, H. & S.Ü. Karhan (2008): On the occurrence of the bigeyethresher shark, *Alopias superciliosus* (Chondrichthyes: Alopiidae), in Turkish waters. Mar. Biodivers. Rec., 1, e69. <https://doi.org/10.1017/s1755267207007452>.

Kabasakal, H., C. Dalyan & A. Yurtsever (2011): Additional records of the Bigeye thresher shark *Alopias superciliosus* (Lowe, 1839) (Chondrichthyes: Lamniformes: Alopiidae) from Turkish waters. Annales Ser. Hist. Nat., 21, 143-148.

Kabasakal, H. (2017): Notes on historical and contemporary catches of lamniform sharks in Turkish waters. Annales Ser. Hist. Nat., 27, 51-58.

Kabasakal, H., S.Ü. Karhan & S. Sakıman (2017): Review of the distribution of large sharks in the seas of Turkey (Eastern Mediterranean). Cah. Biol. Mar., 58, 219-228. <https://doi.org/10.21411/CBM.A.96D9F948>.

Kleitou, P.C., C.I. Antoniou, I. Giovos & D. Kletou (2017): How accurately are we describing the longline bycatch? The case of the 'rare' shark *Alopias superciliosus* in eastern Mediterranean. Int. J. Fish. Aquat. Stud., 5, 375-378.

Lanteri, L., L. Castellano & F. Garibaldi (2017): New record of *Alopias superciliosus* Lowe, 1841 in the North-Western Mediterranean and annotated review of the Mediterranean records. Acta Adriat., 58, 313-324.

Mater, S. (2005): Denizlerimizde yeni bir köpekbalığı: *Alopias superciliosus* (Lowe, 1841). Aquaculture 1, 10: (in Turkish).

Otero, M., F. Serena, V. Gerovasileiou, M. Barone, M. Bo, J.M. Arcos, A. Vulcano, & J. Xavier (2019): Identification guide of vulnerable species incidentally caught in Mediterranean fisheries. IUCN, Malaga, Spain, 204 pp.

Öztürk, B. (2018): National action plan for the conservation of cartilaginous fishes in the Turkish water of the eastern Mediterranean Sea. J. Black Sea/ Medit. Environ., 24, 91-96.

Serena, F. (2005): Field identification guide to the sharks and rays of the Mediterranean and Black Sea. FAO Species Identification Guide for Fishery Purposes. Rome: FAO. 97.

Vacchi, M. & F. Serena (2000): On a large specimen of bigeye thresher shark *Alopias superciliosus* (Lowe, 1839) (Chondrichthyes: Alopiidae) stranded in Tavolara Island (Eastern Sardinia, Mediterranean). Séret, B. and Sire, J.-Y. (eds). Proceedings of the 3rd European Elasmobranch Association Meeting, Boulogne-sur-47 Mer (France), 1999. Soc. Fr. Ichtyol and IRD Paris, 3, p. 84.