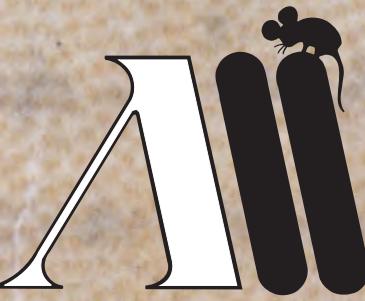


ANNALES



*Anali za istrske in mediteranske študije
Annali di Studi istriani e mediterranei
Annals for Istrian and Mediterranean Studies
Series Historia Naturalis, 28, 2018, 2*



UDK 5

ISSN 1408-533X (Print)
ISSN 2591-1783 (Online)



ANNALES

**Anali za istrske in mediteranske študije
Annali di Studi istriani e mediterranei
Annals for Istrian and Mediterranean Studies**

Series Historia Naturalis, 28, 2018, 2

KOPER 2018

**UREDNIŠKI ODBOR/
COMITATO DI REDAZIONE/
BOARD OF EDITORS:**

Nicola Bettoso (IT), Christian Capapé (FR), Darko Darovec, Dušan Devetak, Jakov Dulčić (HR), Serena Fonda Umani (IT), Andrej Gogala, Daniel Golani (IL), Danijel Ivajnšič, Mitja Kaligarič, Marcelo Kovačič (HR), Andrej Kranjc, Lovrenc Lipej, Vesna Mačić (ME), Alenka Malej, Patricija Mozetič, Martina Orlando-Bonaca, Michael Stachowitsch (AT), Tom Turk, Al Vrezec

**Glavni urednik/Redattore capo/
Editor in chief:**

Darko Darovec

**Odgovorni urednik naravoslovja/
Redattore responsabile per le scienze
naturali/Natural Science Editor:**

Lovrenc Lipej

Urednica/Redattrice/Editor:

Martina Orlando-Bonaca

Lektor/Supervisione/Language editor:

Polona Šergon (sl.), Petra Berlot (angl.)

Prevajalci/Traduttori/Translators:

Martina Orlando-Bonaca (sl./it.)

**Oblikovalec/Progetto grafico/
Graphic design:**

Dušan Podgornik, Lovrenc Lipej

Prelom/Composizione/Typesetting:

Grafis trade d.o.o.

Tisk/Stampa/Print:

Grafis trade d.o.o.

Izdajatelja/Editori/Published by:

Zgodovinsko društvo za južno Primorsko - Koper / Società storica del Litorale - Capodistria®

Inštitut IRRIS za raziskave, razvoj in strategije družbe, kulture in okolja / Institute IRRIS for Research, Development and Strategies of Society, Culture and Environment / Istituto IRRIS di ricerca, sviluppo e strategie della società, cultura e ambiente®

**Sedež uredništva/Sede della redazione/
Address of Editorial Board:**

Nacionalni inštitut za biologijo, Morska biološka postaja Piran / Istituto nazionale di biologia, Stazione di biologia marina di Pirano / National Institute of Biology, Marine Biology Station Piran SI-6330 Piran / Pirano, Fornače/Fornace 41, tel.: +386 5 671 2900, fax 671 2901;
e-mail: annales@mbss.org, **internet:** www.zdjp.si

Redakcija te številke je bila zaključena 14. 12. 2018.

**Sofinancirajo/Supporto finanziario/
Financially supported by:**

Javna agencija za raziskovalno dejavnost Republike Slovenije (ARRS), Luka Koper in Mestna občina Koper

Annales - Series Historia Naturalis izhaja dvakrat letno.

Naklada/Tiratura/Circulation: 300 izvodov/copie/copies

Revija Annales, Series Historia Naturalis je vključena v naslednje podatkovne baze / La rivista Annales, series Historia Naturalis è inserita nei seguenti data base / Articles appearing in this journal are abstracted and indexed in: BIOSIS-Zoological Record (UK); Aquatic Sciences and Fisheries Abstracts (ASFA); Elsevier B.V.: SCOPUS (NL).

Vsi članki so v barvni verziji prosti dostopni na spletni strani: <http://zdjp.si/p/annalesshn/>
All articles are freely available in color via website: <http://zdjp.si/en/p/annalesshn/>

VSEBINA / INDICE GENERALE / CONTENTS

SREDOZEMSKI MORSKI PSI
SQUALI MEDITERRANEI
MEDITERRANEAN SHARKS**Hakan KABASAKAL, Erdi BAYRI & EYLÜL ATAÇ**

- Recent records of the great white shark,
Carcharodon carcharias (Linnaeus, 1758)
(Chondrichthyes: Lamnidae), in Turkish
waters (eastern Mediterranean) 93
Recentni podatki o belem morsklem volku,
Carcharodon carcharias (Linnaeus, 1758)
(Chondrichthyes: Lamnidae), v turških vodah
(vzhodno Sredozemlje)

**Christian CAPAPÉ, Sihem RAFRAFI-NOUIRA,
Khadija OUNIFI-BEN AMOR & Mohamed
Mourad BEN AMOR**

- Additional records of sandbar shark,
Carcharhinus plumbeus (Chondrichthyes:
Carcharhinidae) from the northern Tunisian
coast (central Mediterranean Sea) 99
Novi zapisi o pojavljanju sivega morskega psa,
Carcharhinus plumbeus (Chondrichthyes:
Carcharhinidae) na severni tunizijski obali
(osrednje Sredozemsko morje)

RECENTNE SPREMENBE V SREDOZEMSKI
BIODIVERZITETI
CAMBIAMENTI RECENTI NELLA
BIODIVERSITÀ MEDITERRANEA
RECENT CHANGES IN MEDITERRANEAN
BIODIVERSITY**Christian CAPAPÉ, Jeanne ZAOUALI,
Khadija OUNIFI-BEN AMOR & Mohamed
Mourad BEN AMOR**

- First record of Red sea goatfish *Parupeneus
forsskali* (Osteichthyes: Mullidae) from
Tunisian waters (central Mediterranean sea) 107
Prvi zapis o pojavljanju bradača vrste
Parupeneus forsskali (Osteichthyes: Mullidae)
iz tunizijskih voda (osrednje Sredozemsko morje)

Thodoros E. KAMPOURIS & Ioannis E. BATJAKAS

- The northernmost record of the thermophilic
Mediterranean parrotfish *Spurisoma cretense*
(Linnaeus, 1758) (Perciformes, Scaridae)
in the eastern Mediterranean Sea
(northwestern Aegean Sea) 111
Najsevernejši zapis o pojavljanju topoljubne
morske papige *Spurisoma cretense*
(Linnaeus, 1758) (Perciformes, Scaridae)
v vzhodnem Sredozemskem morju
(severo Zahodno Egejsko morje)

IHTIOLOGIJA
ITTOLOGIA
ICHTHYOLOGY**İlker AYDIN & Okan AKYOL**

- Occurrence of pearl fish, *Carapus acus*
(Osteichthyes: Carapidae) in Çeşme, Izmir
(Aegean Sea, Turkey) 119
Pojavljanje strmorinca, *Carapus acus*
(Osteichthyes: Carapidae) v predelu Çeşme,
Izmir (Egejsko morje, Turčija)

**Mohamed Mourad BEN AMOR, Khadija
OUNIFI-BEN AMOR & Christian CAPAPÉ**

- Additional records and extension of the
range of blackfish, *Centrolophus niger*
(Osteichthyes: Centrolophidae) from the
Tunisian coast (central Mediterranean Sea) 123
Novi zapis o pojavljanju črnuha, *Centrolophus
niger* (Osteichthyes: Centrolophidae)
iz tunizijske obale (osrednje Sredozemsko morje)

Lovrenc LIPEJ, Domen TRKOV & Borut MAVRIČ

- Occurrence of ribbon fish (*Trachipterus
trachypterus*) in Slovenian waters
(northern Adriatic Sea) 129
Pojavljanje kosice (*Trachipterus trachypterus*)
v slovenskem morju (severni Jadran)

FLORA
FLORA
FLORA**Nina REUTOVA, Petimat DZHAMBETOVA & Sereikbay ABILEV**

- Species of wild flora as indicators of environmental genotoxicity 137
Rastlinske vrste kot indikatorji okoljske genotoksičnosti

Amelio PEZZETTA

- Le Orchidaceae del Comune di Pisino (Pazin, Croazia) 147
Kukavičevke pazinske občine (Pazin, Hrvaška)

FAVNA
FAUNA
FAUNA**Ana FORTIČ & Borut MAVRIČ**

- First record of the bryozoan *Tricellaria inopinata* (d'Hondt and Occhipinti-Ambrogi, 1985) from the Slovenian sea 155
Prvi zapis o pojavljanju mahovnjaka Tricellaria inopinata (d'Hondt and Occhipinti-Ambrogi, 1985) iz slovenskega morja

Olga Valentinovna GRISHAEVA & Kulyash Baizukevna KALIEVA

- Macrozoobenthos of arid watercourses of Kazakhstan: the Ilek River case 161
Makrozoobentos aridnih vodnih teles v Kazahstanu: primer reke Ilek

MISCELLANEA

Matjaž URŠIČ, Matija KRIŽNAR & Pavel JAMNIK

- Pregled pleistocenske favne in analiza ugrizov na kosteh v jamah Bele vode nad Gorenjo Trebušo in Smoganicu nad Mostom na Soči 173
Review of Pleistocene fauna and the analysis of bone bite marks in the caves Bele vode near Gorenja Trebuša and Smogаница near Most na Soči

OCENE IN POROČILA
RECENSIONI E RELAZIONI
REVIEWS AND REPORTS**Lovrenc LIPEJ & Martina ORLANDO-BONACA**

- Book review: La biologia marina a Trieste e nell'Alto Adriatico 193

IN MEMORIAM

- In memory of Mark Hines (1950-2018)
(Jadran Faganeli) 201
 Navodila avtorjem 203
Istruzioni per gli autori 205
Instruction to Authors 207

- Kazalo k slikam na ovitku 210
Index to images on the cover 210

original scientific article
received: 2018-09-12

DOI 10.19233/ASHN.2018.10

RECENT RECORDS OF THE GREAT WHITE SHARK, *CARCHARODON CARCHARIAS* (LINNAEUS, 1758) (CHONDRICHTHYES: LAMNIDAE), IN TURKISH WATERS (EASTERN MEDITERRANEAN)

Hakan KABASAKAL & Erdi BAYRI

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

Eylül ATAÇ

Ege University, Fisheries Faculty, İzmir, Turkey

ABSTRACT

*Between January 2016 and April 2018, 3 juvenile great white sharks, *Carcharodon carcharias* (Linnaeus, 1758), were incidentally captured in the coastal waters of the Turkish Aegean Sea. Journeys of young-of-the-year (YOY) and juvenile specimens can increase the risk of their encountering fishing gears if the specimens head for regions where the fishery of the great whites is not banned. An understanding of the geographic range and knowledge of the vertical distribution of the YOY and juvenile great whites are therefore necessary to implement a management plan for great white populations in Turkish waters and to reduce the incidental fishing mortality of this vulnerable top predator.*

Key words: Great white shark, *Carcharodon carcharias*, conservation, nursery, distribution

RECENTI RITROVAMENTI DEL GRANDE SQUALO BIANCO, *CARCHARODON CARCHARIAS* (LINNAEUS, 1758) (CHONDRICHTHYES: LAMNIDAE), IN ACQUE TURCHE (MEDITERRANEO ORIENTALE)

SINTESI

*Nel periodo tra gennaio 2016 e aprile 2018, 3 giovani esemplari del grande squalo bianco, *Carcharodon carcharias* (Linnaeus, 1758), sono stati catturati accidentalmente nelle acque costiere del mar Egeo turco. Gli spostamenti degli esemplari che non hanno ancora raggiunto il primo anno di età (YOY) e degli stadi giovanili possono aumentare il rischio di incontrare attrezzi da pesca, se gli esemplari si dirigono verso regioni in cui la pesca dei grandi squali bianchi non è vietata. Una comprensione dell'estensione geografica e la conoscenza della distribuzione verticale degli esemplari YOY e degli stadi giovanili della specie sono quindi necessarie per attuare un piano di gestione per le popolazioni del grande squalo bianco nelle acque turche e per ridurre la mortalità causata dalla pesca accidentale di questo vulnerabile predatore.*

Parole chiave: grande squalo bianco, *Carcharodon carcharias*, conservazione, area di riproduzione, distribuzione

INTRODUCTION

The great white shark, *Carcharodon carcharias* (Linnaeus, 1758), has been known in Turkish waters since the Middle Ages (Bellonii, 1553; Kabasakal, 2014). In the 16th-century manuscript, Bellonii (1553) reported a great white shark caught off the İzmir coast (central Aegean Sea). Besides this historical anecdotal record, the majority of data on the occurrence of *C. carcharias* in Turkish waters have been gathered since the 1880s (Kabasakal, 2014, 2016). In a recent review on the historical and contemporary dispersal of the great white shark in Turkish waters, Kabasakal (2016) concluded that 54 specimens were recorded in the mentioned region between 1881 and 2014.

Since *C. carcharias* is a mythic species with the status of endangered large shark in the Mediterranean Sea (Cavanagh & Gibson, 2007), each capture constitutes an ichthyological event of which the world of ichthyology deserves to be informed. In the present article, the authors report on the recent captures of the great white shark in the Aegean Sea, off the Turkish coast,



Fig. 1: *Carcharodon carcharias*, captured on January 2, 2016, in the Bay of Edremit. (Photo: IRS archives).

Sl. 1: Primerek belega morskega volka, ki je bil ulovljen 2. januarja 2016 v edremitskem zalivu (Foto: arhiv IRS).

which are considered valuable data for the general understanding of the eastern Mediterranean distribution of *C. carcharias*.

MATERIAL AND METHODS

Since the great white shark is an endangered species and protected in certain parts of the Mediterranean Sea (Cavanagh & Gibson, 2007; Serena, 2005), the selection of an appropriate sample for the present study was an instance of typical opportunistic research, consisting in dead animal sampling (Jessup, 2003). A regular screening of social media, local newspapers – both printed and internet based – and recreational fishing websites provided the authors with information on the present incidental captures of great white sharks. All three cases were verified by interviewing fishermen and were considered as confirmed if a properly shot photo of the specimen accompanied the record. For the three specimens, the following data were collected: total length

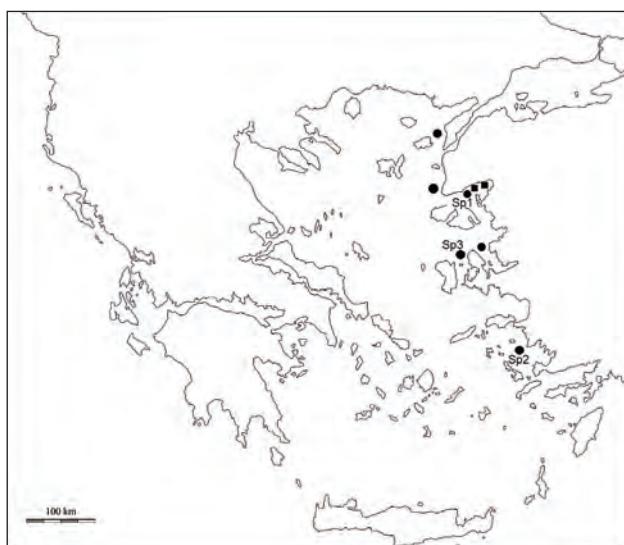


Fig. 2: Capture localities of new-born (■) and juvenile (●) specimens of *Carcharodon carcharias* incidentally captured in Turkish Aegean waters, from previous studies and the present research. Sp. 1: specimen from the present study captured on January 2, 2016, in the Bay of Edremit; Sp. 2: specimen from the present study captured on June 4, 2017, off the Didim coast; and Sp. 3: specimen from the present study captured on April 14, 2018, off the İzmir coast.

Sl. 2: Lokalitete, kjer so bili v turškem delu Egejskega morja naključno ujeti novorojenec (n) in mladostni primerek (l) belega morskega volka na podlagi podatkov iz predhodnih raziskav in iz pričajoče študije. Sp. 1: primerek iz pričajoče študije, ujet 2. januarja 2016 v zalivu Edremit; Sp. 2: primerek iz pričajoče študije, ujet 4. junija 2017 ob didimski obali; in Sp. 3: primerek iz pričajoče študije, ujet 14. aprila 2018, ob obali Izmirja.

(TL) to the nearest cm, weight (W) to the nearest gram, sex, gear and capture depth. The photographs of the present specimens, referenced with dates of capture and fishing localities, are preserved in the digital archives of the Ichthyological Research Society (IRS).

RESULTS AND DISCUSSION

On January 2, 2016, a female great white shark (Sp. 1; Fig. 1) got entangled in a coastal stationary net in the Bay of Edremit (northeastern Aegean Sea; Fig. 2). The total length of the shark was 175 cm. The dried head, jaws and caudal fin of the specimen are preserved by local fishermen in Altınoluk province. A male great white shark (Sp. 2; Fig. 3), measuring 200 cm in total length and weighing 60 kg, was captured by a commercial purse-seiner off the Didim coast (central Aegean Sea; Fig. 2) on June 4, 2017. On April 14, 2018, a female great white shark (Sp. 3; Fig. 4), was captured by a coastal stationary-netter, off the İzmir coast (central Aegean Sea; Fig. 2), and the total length of the specimen was 180 cm. After being displayed at the fishmonger's for a few days, specimens 2 and 3 were discarded, and

no body parts were preserved to be available for further inspection.

Based on previous records ($n = 54$; Kabasakal, 2016) and the results of the present study, 57 specimens of *C. carcharias* were recorded in Turkish waters from the 1880s to date. In a recent inventory study, De Maddalena & Heim (2012) provided the details of 596 great white sharks recorded in the entire Mediterranean Sea and adjacent waters. Following Boldroccchi *et al.* (2017), who recently reviewed the distribution, ecology and status of great white sharks in the Mediterranean Sea, at least 629 great white sharks were recorded in the mentioned region between 476 and 2015. Therefore, the 57 specimens of *C. carcharias* recorded in Turkish waters represent 9% of all Mediterranean records of the great white shark. Based on the available data, it is safe to presume that the great white shark is a regular seasonal visitor of Turkish waters, and that a possible breeding and nursery ground is located in the central-northern Aegean Sea (Kabasakal 2014, 2016).

Specimens of the great white sharks examined in the present research were juveniles and incidentally captured in coastal waters. Along the Aegean coast of Turkey, coastal fishery possibly puts a threatening pressure on the survival of young great white sharks, which was also suggested by previous studies (Kabasakal & Gedikoğlu, 2008; Kabasakal & Kabasakal, 2015; Kabasakal *et al.*, 2009) and confirmed by the results of the present study.

Referring to the map depicted on Figure 2, capture localities of young-of-the-year (YOY) and juvenile great white sharks extend over a wide area from northern to southern parts of the Aegean Sea. Although the juvenile specimens were captured over the entire region, YOY specimens were only captured in the waters of the Bay of Edremit (Fig. 2). Therefore, based on the data on the occurrence of YOY and juvenile great white sharks in Turkish waters (Kabasakal, 2014, 2016; results of the present study), the Bay of Edremit can be considered as a breeding ground of *C. carcharias*, where pregnant females give birth to pups between late spring and midsummer, then the juveniles move to a wider nursery region that extends along almost the entire Turkish coast of the Aegean Sea (Fig. 2). Based on the captures of pregnant females with developing or near-term embryos, and juvenile specimens, Saidi *et al.* (2005) and Rafrafi-Nouira *et al.* (2015) suggest that central Mediterranean off the Tunisian coast could be considered as a possible nursery area for *C. carcharias*, as well. In a previous study focused on the movements, behaviour and habitat preferences of juvenile specimens of *C. carcharias* in the eastern Pacific, Weng *et al.* (2007) reported that YOY great white sharks can travel over 700 km in a few months. Weng *et al.* (2007) suggest that journeys of YOY and juvenile specimens can increase the risk of them encountering fishing gears if the specimens head for regions where the fishery of the great whites is not banned. To conclude, an un-



Fig. 3: *Carcharodon carcharias*, captured on June 4, 2017, off the Didim coast. (Photo: IRS archives).

Sl. 3: Primerek belega morskega volka, ki je bil ulovljen 4. junija 2017 ob didimski obali (Foto: arhiv IRS).



Fig. 4: *Carcharodon carcharias*, captured on April 14, 2018, off the Izmir coast. (Photo: IRS archives).

Sl. 4: Primerek belega morskega volka, ki je bil ulovljen 14. aprila 2018 ob izmirski obali (Foto: arhiv IRS).

derstanding of the geographic range and knowledge of the vertical distribution of the YOY and juvenile great whites are necessary to implement a management plan for great white populations in Turkish waters and to reduce the incidental fishing mortality of this vulnerable top predator.

ACKNOWLEDGEMENTS

Authors wish to thank the fishermen, who kindly provided support in the field surveys of great white shark research, carried out by Ichthyological Research Society (İstanbul) since 2000. The first author extends special thanks to his wife, Özgür, and his son, Derin, for their endless love and patience.

RECENTNI PODATKI O BELEM MORSKLEM VOLKU, *CARCHARODON CARCHARIAS*
(LINNAEUS, 1758) (CHONDRICHTHYES: LAMNIDAE), V TURŠKIH VODAH
(VZHODNO SREDOZEMLJE)

Hakan KABASAKAL & Erdi BAYRI

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

Eylül ATAÇ

Ege University, Fisheries Faculty, İzmir, Turkey

POVZETEK

Med januarjem 2016 in aprilom 2018 so bili v ribiške mreže v obalnih vodah turškega dela Egejskega morja naključno ujeti trije primerki belega morskega volka, *Carcharodon carcharias* (Linnaeus, 1758). Potovanja enoletnih mladičev in mladostnih primerkov v okolja, kjer ni prepovedi lova na belega morskega volka, je zaradi ribolova zelo tvegano. Razumevanje areala in navpične razširjenosti enoletnih in mladostnih morskih volkov je zato nujno za vzpostavitev akcijskega plana za populacije morskih volkov v turških vodah in za zmanjšanje naključnega ulova tega ogroženega plenilca na vrhu prehranjevalne verige.

Ključne besede: veliki beli morski volk, *Carcharodon carcharias*, ohranjanje, vzrejno območje, razširjenost

REFERENCES

- Bellonii, P. (1553):** De aquatilibus, Librio duo. Cum eiconibus ad viuam ipforum effigiem, quoad eius fieri potuit, expreffis. Paris: Cum priuilegio Regis.
- Boldroccchi, G., J. Kiszka, S. Purkis, T. Storai, L. Zinzula & D. Burkholder (2017):** Distribution, ecology, and status of the white shark, *Carcharodon carcharias*, in the Mediterranean Sea. Rev. Fish. Biol. Fisheries. DOI: 10.1007/s11160-017-9470-5.
- Cavanagh, R.D. & C. Gibson (2007):** Overview of the conservation status of cartilaginous fishes (Chondrichthyans) in the Mediterranean Sea. IUCN, Gland, Switzerland and Malaga, Spain, 42 pp.
- De Maddalena, A. & W. Heim (2012):** Mediterranean great white sharks: a comprehensive study including all recorded sightings. Jefferson, McFarland, 242 pp.
- Jessup, D.A. (2003):** Opportunistic research and sampling combined with fish and wildlife management actions or crisis response. ILAR Journal, 44, 277-285.
- Kabasakal, H. (2008):** Two recent records of the great white sharks, *Carcharodon carcharias* (Linnaeus, 1758) (Chondrichthyes: Lamnidae), caught in Turkey's waters. Annales, Ser. Hist. Nat., 18, 11-16.
- Kabasakal, H. (2014):** The status of the great white shark (*Carcharodon carcharias*) in Turkey's waters. Mar. Biodivers. Rec., 7, doi:10.1017/S1755267214000980.
- Kabasakal, H. (2015):** Occurrence of the shortfin mako shark, *Isurus oxyrinchus* Rafinesque, 1810, off Turkey's coast. Marine Biodiversity Records 8, e134, doi:10.1017/S1755267215001104.
- Kabasakal, H. (2016):** Historical dispersal of the great white shark, *Carcharodon carcharias*, and bluefin tuna, *Thunnus thynnus*, in Turkish waters: Decline of a predator in response to the loss of its prey. Annales, Ser. Hist. Nat., 26, 213-220.
- Kabasakal, H. & S.Ö. Gedikoğlu (2008):** Two newborn great white sharks, *Carcharodon carcharias* (Linnaeus, 1758) (Lamniformes; Lamnidae) from Turkey's waters of the north Aegean Sea. Acta Adriat., 49, 125-135.
- Kabasakal, H. & Ö. Kabasakal (2015):** Recent record of the great white shark, *Carcharodon carcharias* (Linnaeus, 1758), from central Aegean Sea off Turkey's coast. Annales, Ser. Hist. Nat., 25, 11-14.
- Kabasakal, H., A. Yarmaz & S.Ö. Gedikoğlu (2009):** Two juvenile great white sharks, *Carcharodon carcharias* (Linnaeus, 1758) (Chondrichthyes; Lamnidae), caught in the northeastern Aegean Sea. Annales, Ser. Hist. Nat., 19, 127-134.
- Rafrati-Nouira, S., O. El Kamel-Moutalibi, C. Reynaud, M. Boumaïza & C. Capapé (2015):** Additional and unusual captures of elasmobranch species from the northern coast of Tunisia (central Mediterranean). J. Ichthyol., 55, 836-848.
- Säidi, B., M.N. Bradaï, A. Bouaïn, O. Guélorget & C. Capapé (2005):** Capture of a pregnant female white shark *Carcharodon carcharias* (Lamnidae) in the Gulf of Gabès (southern Tunisia, central Mediterranean) with comments on oophagy in sharks. Cybium, 29, 303-307.
- Serena, F. (2005):** Field identification guide to the sharks and rays of the Mediterranean and Black Seas. FAO species identification guide for fishery purposes. Rome: FAO, 97 pp.
- Weng, K.C., J.B. O'Sullivan, C.G. Lowe, C.E. Winkler, H. Dewar & B.A. Block (2007):** Movements, behavior and habitat preferences of juvenile white sharks *Carcharodon carcharias* in the eastern Pacific. Mar. Ecol. Proc. Ser., 338, 211-224.