

ANNALES

Anali za istrske in mediteranske študije
Annali di Studi istriani e mediterraneei
Annals for Istrian and Mediterranean Studies
Series Historia Naturalis, 31, 2021, 1





ANNALES

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

Series Historia Naturalis, 31, 2021, 1

ISSN 1408-533X
e-ISSN 2591-1783

UDK 5

Letnik 31, leto 2021, številka 1

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

Alessandro Acquavita (IT), Nicola Bettoso (IT), Christian Capapé (FR), Darko Darovec, Dušan Devetak, Jakov Dulčić (HR), Serena Fonda Umani (IT), Andrej Gogala, Daniel Golani (IL), Danijel Ivajnskič, Mitja Kaligarič, Marcelo Kovačič (HR), Andrej Kranjc, Lovrenc Lipej, Vesna Mačič (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 Kužner (angl.)

Prevajalci/Traduttori/Translators:

Martina Orlando-Bonaca (sl./it.)

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

Dušan Podgornik, Lovrenc Lipej

Tisk/Stampa/Print:

Založništvo PADRE d.o.o.

Izdajatelj/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 +386 5 671 2901;
e-mail: annales@mbss.org, **internet:** www.zdjp.si

Redakcija te številke je bila zaključena 30. 06. 2021.

**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); Directory of Open Access Journals (DOAJ).

To delo je objavljeno pod licenco / Quest'opera è distribuita con Licenza / This work is licensed under a Creative Commons BY-NC 4.0.

Navodila avtorjem in vse znanstvene revije in članki so brezplačno dostopni na spletni strani <https://zdjp.si/en/p/annalesshn/>
The submission guidelines and all scientific journals and articles are available free of charge on the website <https://zdjp.si/en/p/annalesshn/>
Le norme redazionali e tutti le riviste scientifiche e gli articoli sono disponibili gratuitamente sul sito <https://zdjp.si/en/p/annalesshn/>

VSEBINA / INDICE GENERALE / CONTENTS 2021(1)

BIOINVAZIJA
BIOINVASIONE
BIOINVASION**Luca CASTRIOTA & Manuela FALAUTANO**

Reviewing the Invasion History of the Blue Crab
Callinectes sapidus (Portunidae) in Sicily (Central
Mediterranean): an Underestimated Alien Species ... 1
Revizija zgodovine invazije modre rakovice
Callinectes sapidus (Portunidae) na Siciliji
(osrednje Sredozemsko morje):
podcenjena tujerodna vrsta

**Alan DEIDUN, Bruno ZAVA, Maria CORSINI-
FOKA, Johann GALDIES, Antonio DI NATALE &
Bruce B. COLLETTE**

First Record of the Flat Needlefish, *Ablennes hians*
(Belonidae) in Central Mediterranean Waters
(Western Ionian Sea) 9
Prvi zapis o pojavljanju ploščate morske igle,
Ablennes hians (Belonidae) v vodah osrednjega
Sredozemskega morja (zahodno Jonsko morje)

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

Occurrence of Reticulated Leatherjacket
Stephanolepis diaspros (Monacanthidae)
in the Central Mediterranean Sea,
and New Record from the Tunisian coast 17
Pojavljanje afriškega kostoroga,
Stephanolepis diaspros (Monacanthidae),
v osrednjem Sredozemskem morju in
prvi podatek za tunizijsko obalo

**Sara AL MABRUK, Ioannis GIOVOS &
Francesco TIRALONGO**

New Record of *Epinephelus areolatus* in the
Mediterranean Sea: First Record from Syria 23
Novi zapis o pojavljanju rdečepikaste kirnje
(*Epinephelus areolatus*) v Sredozemskem
morju: prvi podatki za Sirijo

SREDOZEMSKI MORSKI PSI
SQUALI MEDITERRANEI
MEDITERRANEAN SHARKS**Primo MICARELLI, Francesca Romana REINERO &
Emilio SPERONE**

Notes on a Rare Case of Bluntnose Sixgill Shark
Hexanchus griseus Stranded on the Coast of
Tuscany in the Central Tyrrhenian Sea 31
Zapis o redkem primeru morskega psa
šesteroškrgarja Hexanchus griseus, ki je nasedel
na toskanski obali v osrednjem Tirenskem morju

Alen SOLDÓ

The Occurrence of the Common Angel Shark
Squatina squatina in the Adriatic Sea 37
Pojavljanje navadnega sklata (Squatina squatina)
v Jadranskem morju

**Hakan KABASAKAL, Deniz AYAS &
Deniz ERGÜDEN**

Intentional Stranding of a Blue Shark,
Prionace glauca (Carcharhiniformes:
Carcharhinidae), in Pursuit of Prey 45
Namerno nasedanje sinjega morskega psa,
Prionace glauca (Carcharhiniformes:
Carcharhinidae), med zasledovanjem plena

**Patrick L. JAMBURA, Julia TÜRTSCHER,
Alessandro DE MADDALENA,
Ioannis GIOVOS, Jürgen KRIWET,
Jamila RIZGALLA & Sara A. A. AL MABRUK**

Using Citizen Science to Detect Rare
and Endangered Species: New Records
of the Great White Shark *Carcharodon*
carcharias Off the Libyan Coast 51
Uporaba ljubiteljske znanosti za
pridobivanje podatkov o redki in
ogroženi vrsti: novi podatki
o pojavljanju belega morskega volka
Carcharodon carcharias
ob Libijski obali

IHTIOLOGIJA

ITTIOLOGIA

ICHTHYOLOGY

Sihem RAFRAFI-NOUIRA, Christian REYNAUD & Christian CAPAPÉ

A New Record of *Clinitrachus argentatus* (Osteichthyes: Clinidae) from the Tunisian Coast (Central Mediterranean Sea)..... 63
 Novi zapis o pojavljanju srebrnice *Clinitrachus argentatus* (Osteichthyes: Clinidae) iz tunizijske obale (osrednje Sredozemsko morje)

Mauro CAVALLARO, Giovanni AMMENDOLIA, Ignazio RAO, Alberto VILLARI & Pietro BATTAGLIA

Variazioni pluriennali del fenomeno dello spiaggiamento di specie ittiche nello stretto di Messina, con particolare attenzione alle specie mesopelagiche 69
 Večletne spremembe v nasedanju ribjih vrst v Mesinski ožini s posebnim ozirom na mezopelaške vrste

Sihem RAFRAFI-NOUIRA, Christian REYNAUD & Christian CAPAPÉ

Skeletal and Pughead Deformities in the Saddle Bream *Oblada melanura* (Osteichthyes: Sparidae) from the Tunisian Coast (Central Mediterranean Sea) ... 85
 Deformacije skeleta in glave pri črnorepki, *Oblada melanura* (Osteichthyes: Sparidae) iz tunizijske obale (osrednje Sredozemsko morje)

Murat BILECENOGLU & Seydi Ali DOYUK

Uncommon Thermophilic Fishes from the Marmara and Black Seas 95
 Nenavadne toploljubne ribe iz Marmarskega in Črnega morja

Christian CAPAPÉ, Adib SAAD, Ahmad SOLAIMAN, Issa BARAKAT & Waad SABOUR

First Substantiated Record of Armless Snake Eel *Dalophis imberbis* (Osteichthyes: Ophichthidae) from the Syrian Coast (Eastern Mediterranean Sea) ... 101
 Prvi dokumentiran primer pojavljanja kačaste jegulje, *Dalophis imberbis* (Osteichthyes: Ophichthidae), vzdolž sirske obale (vzhodno Sredozemsko morje)

Khaled RAHMANI, Fatiha KOUDACHE, Amaria Latefa BOUZIANI & Alae Eddine BELMAHI

Length-Weight Relationships and Metric Characters of the Atlantic Horse Mackerel, *Trachurus trachurus* (Perciformes: Carangidae), Caught in Béni-Saf Bay, Western Mediterranean (Algeria) 107
 Odnos med dolžino in maso in metrični znaki navadnega šnjura, *Trachurus trachurus* (Perciformes: Carangidae), ujetega v zalivu Béni-Saf, zahodno Sredozemsko morje (Alžirija)

Tülin ÇOKER & Okan AKYOL

On the Occurrence of *Pomadasy incisus* (Haemulidae) in the Turkish Aegean Sea (Eastern Mediterranean Sea) 123
 O pojavljanju vrste *Pomadasy incisus* (Haemulidae) v turškem Egejskem morju (vzhodno Sredozemsko morje)

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

First Substantiated Record of Opah, *Lampris guttatus* (Osteichthyes: Lamprididae), from the Tunisian Coast (Central Mediterranean Sea)..... 129
 Prvi dokumentiran zapis o pojavljanju svetlice, *Lampris guttatus* (Osteichthyes: Lamprididae), iz tunizijske obale (osrednje Sredozemsko morje)

FLORA

FLORA

FLORA

Claudio BATTELLI & Marcello CATRA

First Report of *Cystoseira aurantia* (Sargassaceae, Fucophyceae) from the Lagoon of Strunjan (Gulf of Trieste, Northern Adriatic) 139
 Prvo poročilo o vrsti *Cystoseira aurantia* (Sargassaceae, Fucophyceae) v strunjski laguni (Tržaški zaliv, severni Jadran)

Amelio PEZZETTA

Le Orchidaceae di Pingente (Buzet)..... 147
 Kukavičevke Buzeta

FAVNA

FAVNA

FAVNA

Ahmet ÖKTENER & Ivan SAZIMA

Caligus minimus (Copepoda: Caligidae) Parasitic on the Gills of a Remora *Echeneis naucrates* Attached to a Seabass *Dicentrarchus labrax* in Köyceğiz-Dalyan Lagoon Lake, Aegean Sea, Turkey 159
Caligus minimus (Copepoda: Caligidae), zajedavec na škrgah prilepa (*Echeneis naucrates*), pritrdjenega na brancina (*Dicentrarchus labrax*) v laguni Köyceğiz-Dalyan v Egejskem morju, Turčija

Kazalo k slikam na ovitku 165

Index to images on the cover 165

received: 2020-12-24

DOI 10.19233/ASHN.2021.05

NOTES ON A RARE CASE OF BLUNTNOSE SIXGILL SHARK *HEXANCHUS GRISEUS* STRANDED ON THE COAST OF TUSCANY IN THE CENTRAL TYRRHENIAN SEA

Primo MICARELLI & Francesca Romana REINERO

Centro Studi Squali – Istituto scientifico Loc. Valpiana Massa Marittima (GR), Italy
e-mail: direzione@centrostudisquali.org

Emilio SPERONE

Dipartimento di Biologia, Ecologia e Scienze della Terra. Università della Calabria (CS), Italy

ABSTRACT

A rare stranding event involving a 297 cm long mature male bluntnose sixgill shark (Hexanchus griseus) occurred on the Tuscan coast in the central Tyrrhenian Sea. The stranded specimen had 6 rows of teeth indicating that it belonged to the H. griseus and not to the Hexanchus nakamurai species, which only has 5. Biometric data on two teeth of the left front region of the lower jaw were collected. The body of the specimen did not show evidence of capture, only a deep cut at the height of the orbital arch suggesting a crash or the ramming of a boat.

Key words: bluntnose sixgill shark, *Hexanchus griseus*, shark stranding, teeth, Mediterranean Sea

NOTE SU UN RARO CASO DI SPIAGGIAMENTO DI CAPOPIATTO *HEXANCHUS GRISEUS* LUNGO LA COSTA TOSCANA NEL MAR TIRRENO CENTRALE

SINTESI

Un raro evento di spiaggiamento che ha coinvolto un capopiatto maschio maturo lungo 297 cm (Hexanchus griseus) si è verificato lungo la costa toscana nel mar Tirreno centrale. L'esemplare spiaggiato presentava 6 file di denti che indicavano l'appartenenza alla specie H. griseus e non alla specie Hexanchus nakamurai, che ne ha solo 5. Sono stati raccolti dati biometrici su due denti della regione anteriore sinistra della mascella inferiore. Il corpo dell'esemplare non mostrava segni di cattura, solo un profondo taglio all'altezza dell'arco orbitale che suggeriva una collisione o lo speronamento di una barca.

Parole chiave: capopiatto, *Hexanchus griseus*, spiaggiamento di squalo, denti, Mediterraneo

INTRODUCTION

The bluntnose sixgill shark *Hexanchus griseus* (Bonnaterre, 1788) is a deepwater, benthic, littoral and semi-pelagic shark (Compagno et al., 2005), listed as near threatened (NT) by the Red List of the International Union for Conservation of Nature (I.U.C.N.) (Finucci et al., 2020). Juveniles may approach the coast in cold water, while adults live in shallow waters close to submarine canyons (Compagno et al., 2005). *H. griseus* is found in the Pacific and Indian Oceans, off the eastern and western Atlantic coasts, and in the Mediterranean Sea (Bass et al., 1975), up to 1875 meters deep (Compagno et al., 2005). The bluntnose sixgill shark makes day and night excursions, moving from a depth of 250 m up to 20 m, near the surface (Andrews et al., 2009). The biology of *H. griseus* in the Mediterranean is poorly known and the little information published focuses mostly on its ichthyological characteristics (Capapé et al., 2003). Cases of hermaphroditism, although rare

in elasmobranchs, seem to be present in bluntnose sixgill shark (Daniel, 1928). The maturity is reached at 309–330 cm of total length (TL) in males and 350–420 cm TL in females, while the maximum size reached is probably 550 cm TL (Compagno et al., 2005). In the present article, authors report an incident of a stranded bluntnose sixgill shark found on the Tuscan coast (central Tyrrhenian Sea) and provide information on the examined specimen. Furthermore, the authors review the occurrence status of *H. griseus* in the Mediterranean Sea in light of available data.

MATERIAL AND METHODS

On 16 March 2016, a bluntnose sixgill shark was found on the beach of Marina di Grosseto in Tuscany (coordinates: 42°43'24.5"N 10°58'19.4"E), Italy (Fig. 1a). This area, located in the northwestern Mediterranean, more precisely, in the central Tyrrhenian Sea, is characterised by a sandy bottom that slowly degrades



Fig. 1: (A) *Hexanchus griseus*; (B) tooth measurement; (C) teeth; (D) MEDLEM report; (E) claspers; (F) damaged eye.
Sl. 1: (A) *Hexanchus griseus*; (B) merjenje zob; (C) zobovje; (D) MEDLEM poročilo; (E) klasperja; (F) poškodovano oko.

before reaching significant depths. The specimen, found in late afternoon, was quickly collected and taken to landfill by the local authorities, thus only allowing for a collection of limited biometric data based on a few samples of teeth, and checking the external condition of the specimen. The shark was measured on the beach and its total length (TL) was recorded as a straight line extending from the tip of the snout to the tip of the upper lobe of the caudal fin, with the latter in the depressed position. This type of measurement represents the maximum length according to Compagno (1984). The available data were entered in the MEDLEM reporting form (Fig. 1d).

RESULTS

The male specimen displayed a pair of calcified claspers and was probably mature (Fig. 1e). Its size was 294 cm TL, it had no external abrasions or signs of capture by fishing gear; the mouth was free and without hooks. At the level of the left eye socket there was a deep horizontal cut and the eye was damaged (Fig. 1f). Six dental rows were observed and the dental formula 20/13 corresponded to that of *H. griseus* according to Last & Stevens (2009). Biometric analyses of two teeth A1 and A2 (Fig. 1c) of the front left region of the lower jaw were performed using a caliper (Fig. 1b). The biometric measurements, taken in mm, are shown in Table 1. The sixgill shark species *H. griseus* (Bonnatere, 1788) and *Hexanchus nakamurai* (Teng, 1962) stand out for the presence of six rows of distinctly comb-shaped teeth in the lower jaw in the former and five rows in the latter species; moreover, *H. griseus* has a short, blunt, broadly rounded snout and a dorsal-caudal distance approximately equal to its dorsal fin base length, while *H. nakamurai* has a relatively longer snout that is more pointed and narrow, and a dorsal-caudal distance that is much longer than the dorsal-fin base length (Ebert et al., 2013). In addition, Adnet (2006) stated that *H. griseus* and *H. nakamurai* are hard to distinguish, especially because of the similarity between the lower teeth of juvenile or sub-adult specimens in both species.

DISCUSSION

A historical survey of Mediterranean reports since 1892 shows that *H. griseus* has been captured in restricted areas of the western basin more commonly than in the eastern one (Capapé et al., 2003). *H. griseus* is included in the I.U.C.N. Red List, and even though its populations are considered stable, they still require careful monitoring; in fact, species with similar life histories, often called 'K-selected' (Camhi et al., 1998), can be affected by deepwater fishery (Walls et al., 2015). Between 1666 and 2014, the MEDLEM (Serena et al., 2014) database for the Mediterranean

Sea recorded occurrences of bluntnose sixgill shark (*H. griseus*) in Maltese waters (20 specimens; GSA 15); in the northern Tyrrhenian Sea (45 specimens; GSA 9); in the southern Adriatic Sea; in the northern Ionian Sea; in the southern waters of Sicily (21 specimens; GSA 18, 19, and 16 respectively); along the coasts of Tunisia (GSA 13 and 14) (Capapé et al., 2003; 2004); and in Turkish waters (24 specimens). The Mediterranean Sea has been divided into 30 geographical sub-areas, called GSAs, by the General Fishery Commission for the Mediterranean - GFCM. Kabasakal (2013) states that 150 specimens of *H. griseus* were caught by commercial fishing vessels in the seas of Turkey between 1967 and 2013, 90 of which were recorded in the Marmara Sea. Based on an analysis of internet-based media reports on rare and large sharks of Turkey, Kabasakal & Bilecenoğlu (2020) indicated that nearly 52 percent (139 out of 268 specimens) of sharks captured between 2006 and 2020 were *H. griseus*. The bluntnose sixgill shark is also regularly captured along the coast of Lebanon (Lteif, 2015) and along the coasts of Calabria (21 specimens; GSA 10 and 19), (Leonetti et al., 2020). Stranding of bluntnose sixgill sharks in the Mediterranean Sea is rare, particularly in consideration of their presence at great depths. Kabasakal (2006) reported a female specimen (450 cm TL) stranded in the Dardanelles Strait on 5 June 1999. Although in the present case it was not possible to collect all the samples needed to provide a more useful contribution to the knowledge of the biology of this species, it was nevertheless possible to establish that the number of rows of teeth equalled 6, which excluded the possibility that the shark could be a *H. nakamurai*, whose maximum TL does not

Tab. 1: Five measurements were collected for each tooth: CH, crown height; RH, root height; TH, total height; BWT, basal width of the tooth; HC, height of the cusp.

Tab. 1: Za vsak zob je bilo opravljenih pet meritev: CH, višina krone; RH, višina korenine; TH, celotna višina; BWT, bazalna širina zoba; HC, višina grbice.

Biometric measurements of the teeth (mm)		
	A1	A2
CH	10.3	9.84
RH	12.3	11.42
TH	19.97	19.49
BWT	28.99	28.06
HC	6.69	6.36

exceed 180 cm. It is important to remember that it is difficult to distinguish between specimens of the two species without precise information on their body size or maturity and only by comparing the teeth. In fact, Adnet (2006) showed that the two recent species of the genus *Hexanchus* have a similar dental development but with a different growth rate: at same tooth width, *H. griseus* retains a “young” morphology compared to that of *H. nakamurai* and the distinction between the two species in relation to dentition is currently limited to the presence, in some individuals, of a vertical median cusp on the symphyseal tooth in *H. nakamurai*, and different dental formulae. The size of the stranded animal and the presence of hard and well-calcified claspers indicated its probable maturity, although its body size was slightly smaller than the minimum size at maturity indicated by Compagno *et al.* (2005), which is 309 cm for males. Observations suggest that *H. griseus* matures at a smaller size in the Mediterranean than elsewhere (Capapé *et al.*, 2004). The examination of the collected teeth confirmed the equation for establishing the size of the animal based on the measurement of the tooth base. As a matter of fact, in large shark species such as *H. griseus*, the length of the body (Total Length according to Compagno, 1984) and the width of the teeth in each row are well correlated ($R =$ from 0.95 to 0.98, $p < 0.001$). A simple linear regression equation expresses the relationship between the width of the lower teeth and the length of the shark’s body, which can be calculated as follows: shark’s length (in cm) = $111 \times \text{tooth’s width (in cm)} + 3.9$ ($R = 0.97$, $p < 0.001$; $N = 243$) (Adnet, 2006). If we were to apply the equation in this instance, it would have been possible to estimate a length of about 325 cm, slightly greater than the measured one, thus confirming the correctness of the proposed equation. With regard to the reasons of the stranding, the absence of apparent damages from fishing tools and the presence of a deep cut at the eye level may suggest the possibility that this male specimen rose to the surface due to various reasons that could have also caused its death by ramming such as, for example, an accident with a boat. Injured sixgill sharks may be at risk for post-release or post-accident disability, or mortality due to long-term pathologic consequences of anthropogenically induced scars (Kabasakal, 2010). Andrews *et al.* (2009) found that in

Puget Sound (USA), sixgill sharks showed consistent diel behavioural patterns throughout the year and inhabited greater depths during the day than during the night, being more active (with greater variation in depth and greater rates of vertical movement) at night. It is interesting to note that, in our case, the stranding occurred in March, right at the beginning of the spring season when, just like in Puget Sound, the movement to the surface of these sharks is more frequent. Seasonally, sixgill sharks occupy deeper habitats in autumn and winter than they do in spring, and are more active in autumn (Andrews *et al.*, 2009). Moreover, in the Mediterranean, little is known about the behaviour of these sharks: Capapé *et al.* (2004) states that *H. griseus* is probably able to live and reproduce in the Mediterranean Sea; however, further observations are needed to confirm that a sustainable bluntnose sixgill shark population has been established here, especially off the Maghrebi coast. Incidental capture of a new-born specimen (60 cm TL) with an unhealed umbilical scar (birthmark) between the pectoral fins suggested the possibility of a nursery ground of *H. griseus* in northern Aegean Sea bathyal grounds (Kabasakal, 2013). Moreover, another possible nursery ground was suggested in the Marmara Sea, where several juveniles (120 to 250 cm TL) were incidentally captured (Kabasakal, 2013). Finally, lack of information on the movements of the specimens along Turkish coasts reveals the necessity of tagging surveys of *H. griseus* in the mentioned region to understand the spatial and bathymetric movement patterns of this species (Kabasakal, 2013). Meager & Sumpton (2016) suggest that an integrated approach of using stranding and bycatch data may provide an indicator of long-term trends for data-limited cetaceans, and that stranding programs can give a faithful representation of the species composition of cetacean assemblages, while standardised bycatch rates can provide a measure of relative abundance. Therefore, in the long term, the stranding of elasmobranchs, however rare and even in the case of animals living in the deep but periodically venturing to surface waters, could provide useful insights for an evaluation of their health status. This information provides a useful contribution to the biometric data available for this species, with particular reference to teeth, and testifies to a rare case of stranding.

ZAPIS O REDKEM PRIMERU MORSKEGA PSA ŠESTEROŠKRGARJA *HEXANCHUS GRISEUS*, KI JE NASEDEL NA TOSKANSKI OBALI V OSREDNJEM TIRENSKEM MORJU

Primo MICARELLI & Francesca Romana REINERO

Centro Studi Squali – Istituto scientifico Loc. Valpiana Massa Marittima (GR), Italy
e-mail: direzione@centrostudisquali.org

Emilio SPERONE

Dipartimento di Biologia, Ecologia e Scienze della Terra. Università della Calabria (CS), Italy

POVZETEK

Avtorji poročajo o redkem primeru, ko je na toskanski obali v osrednjem Tirenskem morju nasedel 297 cm dolg odrasel samec morskega psa šesteroškrjarja (*Hexanchus griseus*). Nasedli primerek je imel 6 nizov zob, po katerih ga je bilo možno razlikovati od sorodne vrste *Hexanchus nakamurai*, ki ima 5 nizov. Avtorji so opravili biometrijo na dveh zobeh levega sprednjega dela. Na telesu morskega psa ni bilo videti znakov ulova, le globoka rana v višini očesnega loka priča o morebitnem trku s plovilom.

Ključne besede: morski pes šesteroškrjar, *Hexanchus griseus*, nasedli morski pes, zobovje, Sredozemsko morje

REFERENCES

- Adnet, S. (2006):** Biometric analysis of the teeth of fossil and Recent hexanchid sharks and its taxonomic implications. *Acta Palaeontologica Polonica*, 51(3), 477-488.
- Andrews, K.S., G.S. Williams, D. Farrer, N. Tolimieri, C.J. Harvey, G. Bargmann & P.S. Levin (2009):** Diel activity patterns of sixgill sharks, *Hexanchus griseus*: the ups and downs of an apex predator. *Animal Behaviour*, 78, 525-536. Doi:10.1016/j.anbehav.2009.05.027.
- Bass, A.J., J.D. Diaubrey & N. Kistnasamy (1975):** Sharks of the East Coast of Southern Africa. III. The Family Carcharhinidae. *Oceanographic Res. Inst. (Durban). Investigational Rep.*, 33, 168 pp.
- Camhi, M., S.L. Fowler, J.A. Musick, A. Bräutigam & S.V. Fordham (1998):** Sharks and their Relatives – Ecology and Conservation. IUCN/SSC Shark Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK. iv + 39 pp.
- Capapé, C., O. Guelorget, J. Barrull, I. Mate, F. Hemida, R. Seridji, J. Bensaci & M.N. Bradai (2003):** Records of the bluntnose sixgill shark, *Hexanchus griseus* (Bonnaterre, 1788) (Chondrichthyes: Hexanchidae) in the Mediterranean Sea: a historical survey. *Annales Ser. Hist. Nat.*, 13(2), 157-166.
- Capapé, C., F. Hemida, O. Guelorget, J. Barrull, I. Mate, J.B. Souissi & M.N. Bradai (2004):** Reproductive biology of the Bluntnose sixgill shark *Hexanchus griseus* (Bonnaterre, 1788) (Chondrichthyes: Hexanchidae) from the Mediterranean Sea: a review. *Acta Adriatica*, 45(1), 95-106.
- Compagno, L.J.V. (1984):** FAO Species Catalogue. Vol 4: Sharks of the world, Part 1 - Hexanchiformes to Lamniformes. FAO Fisheries Synopsis No. 125, 4(1), 1-250.
- Compagno, L.J.V., M. Dando & S. Fowler (2005):** A Field guide to the Sharks of the World. Harper Collins Publishers Ltd., London.
- Daniel, J.F. (1928):** The elasmobranch fishes. 2nd ed., University of California Press, Berkeley, 332 pp.
- Ebert, D.A., W.T. White & H.C. Ho (2013):** Redescription of *Hexanchus nakamurai* Teng 1962, (Chondrichthyes: Hexanchiformes: Hexanchidae), with designation of a neotype. *Zootaxa*, 3752(1), 020-034.
- Finucci, B., A. Barnett, K.K. Bineesh, J. Cheok, C.F. Cotton, K.J. Dharmadi Graham, D.W. Kulka, F.C. Neat, N. Pacoureau, C.L. Rigby, S. Tanaka & T.I. Walker (2020):** *Hexanchus griseus*. The IUCN Red List of Threatened Species 2020: e.T10030A495630. <https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T10030A495630.en>
- Kabasakal, H. (2006):** Distribution and biology of the bluntnose sixgill shark, *Hexanchus griseus* (Bonnaterre, 1788) (Chondrichthyes: Hexanchidae), from Turkish waters. *Annales Ser. Hist. Nat.*, 16, 29-36.
- Kabasakal, H. (2010):** Post-release behavior and anthropogenic injuries of the bluntnose sixgill shark, *Hexanchus griseus* (Bonnaterre, 1788) (Chondrichthyes: Hexanchidae) in Turkish waters. *Annales Ser. Hist. Nat.*, 20: 39-46.
- Kabasakal, H. (2013):** Bluntnose Sixgill Shark, *Hexanchus griseus* (Chondrichthyes: Hexanchidae), caught by commercial fishing vessels in the seas of Turkey between 1967 and 2013. *Annales Ser. Hist. Nat.*, 23, 33-48.
- Kabasakal, H. & M. Bilecenoglu (2020):** Shark infested internet: an analysis of internet-based media reports on rare and large sharks of Turkey. *FishTaxa*, 16, 8-18.
- Last, P.R & J.D. Stevens (2009):** Sharks and Rays of Australia. CSIRO Publishing, Collingwood, Vic.
- Leonetti, F., G. Giglio, A. Leone, F. Coppola, C. Romano, M. Bottaro, F. Reinerio, C. Milazzo, P. Micarelli, S. Tripepi & E Sperone (2020):** An updated checklist of chondrichthyans of Calabria (Central Mediterranean, southern Italy), with emphasis on rare species. *Mediterranean Marine Science*, 21(3), 794-807. doi:<https://doi.org/10.12681/mms.23321>.
- Lteif, M. (2015):** Biology, distribution and diversity of cartilaginous fish species along the Lebanese coast, eastern Mediterranean. Thesis, Ecology, environment. Université de Perpignan, 286 pp.
- Meager, J.J. & W.D. Sumpton (2015):** Bycatch and strandings programs as ecological indicators for data-limited cetaceans. *Ecological Indicators*, 60, 987-995. Elsevier. <https://doi.org/10.1016/j.ecolind.2015.08.052>
- Serena, F., C. Mancusi & M. Barone (2014):** Mediterranean Large elasmobranch Monitoring. Protocollo di acquisizione dati. Sharklife program. Rome. 130 pp.
- Walls, R., A. Soldo, M. Bariche, E. Buscher, S.F. Cook & L.J.V. Compagno (2015):** *Hexanchus griseus*. The IUCN Red List of Threatened Species 2015: e.T10030A48939463. Downloaded on 11 December 2020.