

A LEUCISTIC WHITE SHARK, *CARCHARODON CARCHARIAS*
(LAMNIFORMES: LAMNIDAE), FROM THE NORTHERN AEGEAN SEA,
TURKEY

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ABSTRACT

On 14 June 2020, a leucistic white shark, *Carcharodon carcharias* (Linnaeus, 1758), was sighted by two recreational fishermen in the waters of Saros Bay, off the coast of Enez. The eyes of the individual were dark pigmented. The apex of the sighted white shark was narrowly rounded and a broad unpigmented white area was seen extending from the base of the first dorsal fin to the belly. A whitish patch, covering a large part of the apex of the first dorsal fin was also present. As no case of leucism in white sharks has ever been registered before, this sighting represents the first report of leucism in white sharks.

Key words: white shark, leucism, abnormality, pattern, Aegean Sea

SQUALO BIANCO LEUCISTICO, *CARCHARODON CARCHARIAS* (LAMNIFORMES:
LAMNIDAE), NEL MAR EGEO SETTENTRIONALE, TURCHIA

SINTESI

Il 14 giugno 2020, uno squalo bianco leucistico, *Carcharodon carcharias* (Linnaeus, 1758), è stato avvistato da due pescatori ricreativi nelle acque della baia di Saros, al largo della costa di Enez. Gli occhi dell'esemplare erano pigmentati di scuro. L'apice dello squalo bianco avvistato era strettamente arrotondato e si vedeva un'ampia area bianca non pigmentata che si estendeva dalla base della prima pinna dorsale al ventre. Era presente anche una macchia biancastra, che ricopriva gran parte dell'apice della prima pinna dorsale. Poiché nessun caso di leucismo negli squali bianchi è mai stato registrato prima, questo avvistamento rappresenta il primo rapporto di leucismo negli squali bianchi.

Parole chiave: squalo bianco, leucismo, anomalia, modello, mar Egeo

INTRODUCTION

Leucism, a genetic disorder reported in mammals, reptiles, amphibians, teleosteans, and, since recently, in elasmobranchs, is associated with abnormal skin pigmentation (Bruckner & Coward, 2018). This term is suggested as a more apt description of previously reported colour aberrations in elasmobranchs (Clark, 2002). True albinos lack all dark body pigments and are devoid of eye coloration; leucism differs from true albinism in that it is characterized by a diminished or no body coloration, and darkly pigmented eyes (Clark, 2002; Veena *et al.*, 2011). Although, Smale & Heemstra (1997; cited in Clark, 2002) reported true albinism in *Carcharodon carcharias* (Linnaeus, 1758), no case of leucism in white sharks has been reported previously. In the present article, the author reports on the first record of leucism in *C. carcharias*, based on a video footage recorded off the coast of Enez, in the northern Aegean Sea, Turkey.

MATERIAL AND METHODS

The sighting of a leucistic white shark, *C. carcharias*, was recorded by a boatman, Mr. Yunus Saç, and the video shot was posted on the websites of several local or national news portals, such as the 15 June 2020 issues of the internet news portals Hudut (Hudut, 2020), Milliyet (Milliyet, 2020) and Haber7 (Haber7, 2020). The web addresses of the surveyed news portals, in which the video footage and relevant the information on the present sighting of the leucistic white shark were made available, are given as electronic supplementary material in the references. The definition of leucism is based on Clark (2002). Species identification and taxonomic nomenclature follow Ebert and Stehmann (2013) and Otero *et al.* (2019). The captured images of the sighting are kept in the archive of the author and available on request for further inspection.

RESULTS AND DISCUSSION

On 14 June 2020, a leucistic white shark (Fig. 1), *C. carcharias*, was sighted by recreational fishermen, Mr. Yunus Saç and Mr. Aslan Cihan, while they were fishing in the waters of Saros Bay, off the coast of Enez (Fig. 2). According to the testimony of the fishermen, the water depth where the leucistic white shark occurred was 15 m, and the approximate locality of occurrence was nearly 2 km offshore. The length of the shark estimated to be 2 m; based on the length categories proposed by Boldrocchi *et al.* (2017; >1.75–3.0 m TL juvenile) it can thus be considered juvenile. A stout spindle-shaped body with a conical snout, a large erect first dorsal fin and minute second dorsal fin; strong keels on caudal peduncle; and large

gill-slits revealed that the specimen was a white shark. The observed descriptive characters are parallel with the field marks given by Ebert and Stehmann (2013) and Otero *et al.* (2019). Since the available images show the white shark only from above and it was not possible to observe the pelvic region of the specimen, its sex remains unknown. The eyes of the shark were dark pigmented. The apex of the sighted white shark was narrowly rounded and a broad unpigmented white area was seen extending from the base of the first dorsal fin to the belly (Fig. 1). A whitish patch, covering a large part of the apex of the first dorsal fin was also present (Fig. 1).

In the De Maddalena and Heim book (2012), the authors present a very detailed description of the coloration of *C. carcharias*: “The dorsal coloration ranges from deep blue to lead grey to brownish gray to almost black along the back and is a little lighter along the sides. The coloration abruptly changes to snow white on the undersides, with no color pattern. An irregular boundary separates the dorsal dark coloration from the ventral white coloration (...) The dark dorsal coloration partially extends to the pelvic region by forming irregular patches. Newborn white sharks have a coloration that is very similar to that of the adults.” The unpigmented white area of the observed individual is in contrast with the description by De Maddalena and Heim (2012). Since one of the main distinctions between leucism and true albinism is the red or pinkish coloration of the eyes in albinos, and dark pigmented eyes in leucistic animals (Clark, 2002; van Grouw, 2006), the sighted specimen was considered as a ‘leucistic’ white shark, since it exhibited dark pigmented eyes (Fig. 1b). Despite a single case of albinism reported in *C. carcharias* (Smale & Heemstra, 1997; cited in Clark, 2002), no confirmed case of albinism in white sharks has been reported in the Mediterranean (De Maddalena & Heim, 2012). Furthermore, no case of leucism in white sharks has been reported, either. Thus, the present sighting is the first case of leucism in white sharks reported to date. So far, only 5 cases of leucism in elasmobranchs have been reported, of which only one was originally reported as albinism (see Clarke, 2002, for relevant references and species). According to Gervais *et al.* (2016), atypical pigmentation in animals has been related to genetic alterations in melanin production, inbreeding within isolated populations, environmental stress associated with areas of high human activity, and exposure to elevated temperatures. Since Mediterranean white sharks are considered as belonging to an isolated ‘sink’ population with little or no contemporary immigration from the closer Atlantic (Gubili *et al.*, 2010), the sighting of the present leucistic white shark can provide further evidence highlighting the genetic vulnerability of *C. carcharias* in the Mediterranean Sea.

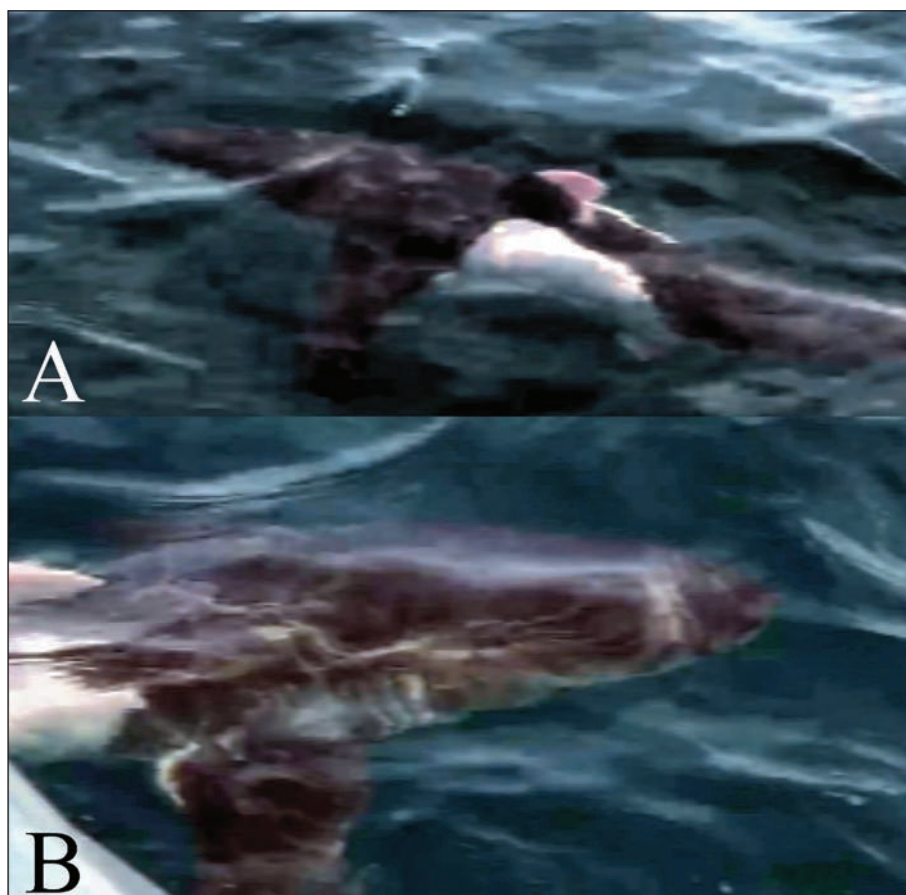


Fig. 1: Images captured from the video footage of the leucistic white shark (ca. 2 m of TL) sighted in the waters of Saros Bay, Turkey; lateral view (A) and head view (B) of the specimen (Photo: H. Kabasakal archive).

Sl. 1: Fotografija iz video posnetka o beličnem primerku belega morskega volka (pribl. 2 m telesne dolžine), opaženega v turških vodah zaliva Saros; bočna stran (A) in sprednji del (B) primerka (Foto: arhiv H. Kabasakala).



Fig. 2: Approximate sighting locality (*) of the leucistic white shark in the northern Aegean Sea, Turkey.
Sl. 2: Približna lokacija lokalitete, kjer je bil opažen belični beli morski volk v severnem Egejskem morju, Turčija.

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BELIČNI PRIMEREK BELEGA MORSKEGA VOLKA, *CARCHARODON CARCHARIAS* (LAMNIFORMES: LAMNIDAE), IZ SEVERNEGA EGEJSKEGA MORJA, TURČIJA

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POVZETEK

Štirinajstega junija 2020 sta rekreativna ribiča opazovala belični primerek belega morskega volka, *Carcharodon carcharias* (Linnaeus, 1758) v vodah zaliva Saros ob obali Eneza. Oči so bile temno pigmentirane. Apeks belega morskega volka je bil ozko zaokrožen, viden pa je bil bel, nepigmentiran predel, ki se je raztezal od korena prve hrbtnje plavuti do trebuha. Poleg tega je belkasta lisa pokrivala večji del vrha prve hrbtnje plavuti. Ker doslej ni bilo zabeleženih primerov beličnosti pri belem morskem volku, predstavlja to opazovanje prvi zapis o tem pojavu.

Ključne besede: beli morski volk, beličnost, anomalije, vzorec, Egejsko morje

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