

# ANNALES

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*Annali di Studi istriani e mediterranee*  
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# CAPTURE OF A JUVENILE SHARPNOSE SEVENGILL SHARK, *HEPTRANCHIAS PERLO* (BONNATERRE, 1788), FROM THE TURKISH COAST (EASTERN MEDITERRANEAN SEA) WITH UPDATED RECORDS FROM MEDITERRANEAN WATERS

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## ABSTRACT

*In June 2024, an immature male specimen of *Heptranchias perlo* (Bonnaterre, 1788) was caught by a commercial trawl boat off Tasucu (Silifke, Turkey) at a depth of 520 m. This represents a new juvenile record of the species in Turkish waters (eastern Mediterranean). This record is important for monitoring the sharpnose sevengill shark in Turkey and may contribute to improving regional sustainable fisheries policies, such as establishing a Shark Conservation Management Plan for the area. Furthermore, it enhances our understanding of shark species distribution and may help identify potential nursery areas in the region. The study also provides detailed historical and current records of newborn and juvenile sharpnose sevengill sharks in the region and the broader Mediterranean.*

**Key words:** juvenile shark, Hexanchidae, Tasucu coast, Turkey, Levantine Sea

# CATTURA DI UN GIOVANE SQUALO MANZO, *HEPTRANCHIAS PERLO* (BONNATERRE, 1788), LUNGO LA COSTA TURCA (MEDITERRANEO ORIENTALE) CON SEGNALAZIONI AGGIORNATE PER IL MEDITERRANEO

## SINTESI

*Nel giugno 2024, un esemplare maschio immaturo di *Heptranchias perlo* (Bonnaterre, 1788) è stato catturato da una barca commerciale a strascico al largo di Tasucu (Silifke, Turchia) a una profondità di 520 m. Questo rappresenta un nuovo dato per un giovanile della specie nelle acque turche (Mediterraneo orientale). Questa cattura è importante per il monitoraggio dello squalo manzo in Turchia e può contribuire a migliorare le politiche regionali di pesca sostenibile, come l'istituzione di un piano di gestione della conservazione degli squali nell'area. Inoltre, migliora la nostra comprensione della distribuzione delle specie di squali e può aiutare a identificare potenziali aree di riproduzione nella regione. Lo studio fornisce anche una dettagliata documentazione storica e attuale dei neonati e degli stadi giovanili di squalo manzo nella regione e nel Mediterraneo in generale.*

**Parole chiave:** giovane squalo, Hexanchidae, Costa di Tasucu, Turchia, Mar Levantino

## INTRODUCTION

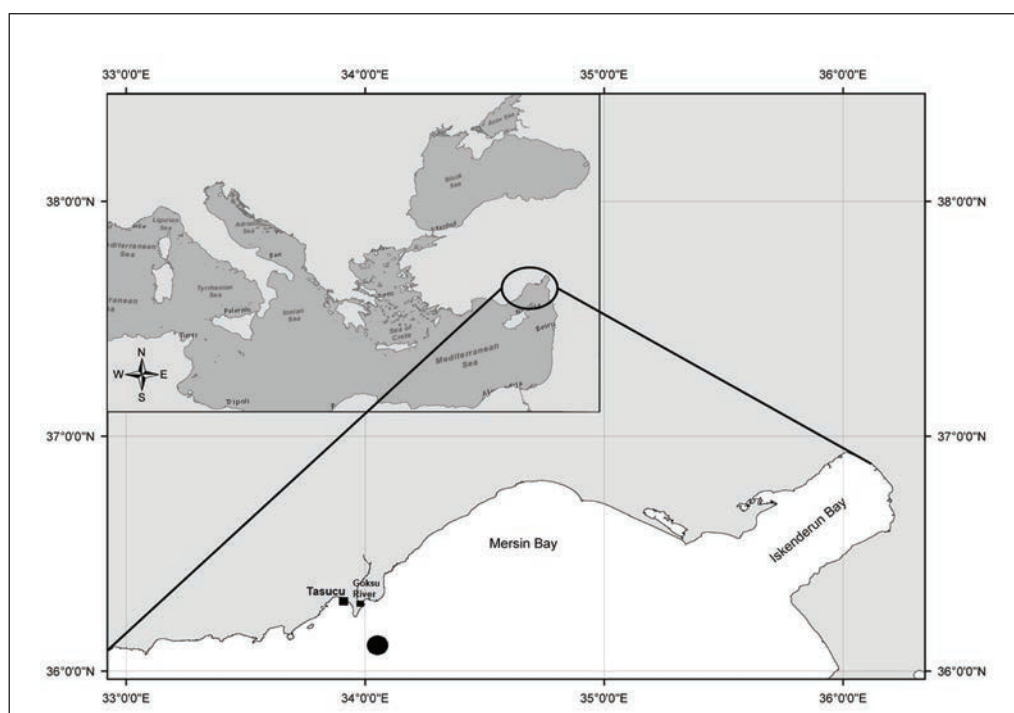
In the Mediterranean, the genus *Hepttranchias* is represented by a single species, the sharpnose sevengill shark *Hepttranchias perlo* (Bonnaterre, 1788), a small deep-water shark belonging to the family Hexanchidae (IUCN, 2024).

Sharpnose sevengill sharks are a circumglobal species found in tropical and temperate oceans, excluding the northeastern Pacific (Compagno & Niem, 1998). Their distribution extends from the western and eastern Atlantic, including the Mediterranean, to the Indian Ocean and western Pacific (Ebert *et al.*, 2013). In the Mediterranean waters of Turkey, they are considered to be rare (Ergüden & Bayhan, 2015).

The sharpnose sevengill shark, *H. perlo*, is a bathydemersal species typically found on the outer continental and insular shelves and upper slopes at depths of 100 to 400 m, though it occasionally ventures into shallower inshore waters or descends to depths of up to 1000 m (Compagno & Niem, 1998; Last & Stevens, 1994; Froese & Pauly, 2024), but mostly found at 27–720 m (Ebert *et al.*, 2013; Weigmann, 2016). It feeds on small sharks and rays, small bony fish, shrimps, crabs, lobsters, squid, and cuttlefish (Capapé, 1980; Compagno *et al.*, 1989; Henderson & Williams, 2001; Barnett *et al.*, 2012).

In the Mediterranean, *H. perlo* has been recorded at various depths and in different regions (Capapé, 1980; Boeseman, 1984; Serena, 2005), including the Adriatic Sea (Lipej & Dulčić, 2010; Dragičević & Isajlović, 2020; Lipej & Mavrič, 2022a, 2022b), Sicilian waters (central Mediterranean) (De Maddalena *et al.*, 2002), the Balearic Sea (western Mediterranean) (Guallart *et al.*, 2019a,b), Algerian waters (Ordines *et al.*, 2011), Tunisian waters (El Kamel-Moutalibi *et al.*, 2014; Rafrafi-Nouira *et al.*, 2015; Capapé *et al.*, 2018), waters off Sardinia (Marongiu *et al.*, 2017; Mulas *et al.*, 2021), Strait of Sicily (De Maddalena *et al.*, 2002; Scacco *et al.*, 2010), Gulf of Gabès (Bradai *et al.*, 2002), Maltese waters (Schembri *et al.*, 2003), eastern Mediterranean (Golani 2005), off Cyprus (Guallart *et al.*, 2019a), the Ionian Sea (Mytilineou *et al.*, 2005), Greek waters (Damalas & Megalofonou, 2012; Papaconstantinou, 2014; Karachle *et al.*, 2020), Turkish waters (Akşiray, 1987; Filiz & Mater, 2002; Öziç & Yilmaz, 2006; İşmen *et al.*, 2007, 2009; Kabasakal & Ince, 2008; Güven *et al.*, 2012; Eronat & Özyaydın 2014; Ergüden & Bayhan, 2015; Başusta, 2016), and Syrian waters (Alkusaairy & Saad, 2018).

In Turkey, *H. perlo* was first recorded in Mediterranean waters (Akyüz, 1957). While its range has evidently expanded since, as the species has been documented in the Turkish waters of both the Aegean



**Fig. 1:** Map showing the capture site (•) of the sharpnose sevengill shark, *Hepttranchias perlo* (Bonnaterre, 1788), in the eastern Mediterranean.

**Sl. 1:** Zemljevid obravnavanega območja z označeno lokaliteto ulova (•) morskega psa sedmeroškrjarja, *Hepttranchias perlo* (Bonnaterre, 1788), v vzhodnem Sredozemskem morju.



**Fig. 2: General view of the male *Heptranchias perlo* from the Tasucu coast.**

**Sl. 2: Splošni pogled na samca vrste *Heptranchias perlo* z obale Tasucu.**

**Tab 1: Morphometric measurements of the juvenile specimen of *H. perlo* collected from the Tasucu coast, Turkey, compared with previous records of neonate and juvenile specimens from the Mediterranean Sea.**

**Tab 1: Morfometrične meritve juvenilnega osebka vrste *H. perlo*, ujetega na obali Tasucu v Turčiji, v primerjavi s prejšnjimi zapisi o pojavljanju novorskotenih in nedoraslih osebkov iz Sredozemskega morja.**

| Reference                 | This study            | Başusta (2006)                                          | El Kamel-Moutalibi <i>et al.</i> (2014) | Capape <i>et al.</i> (2018)   | Gullard <i>et al.</i> (2019a)                  | Gullard <i>et al.</i> (2019b)                   |
|---------------------------|-----------------------|---------------------------------------------------------|-----------------------------------------|-------------------------------|------------------------------------------------|-------------------------------------------------|
| Locality                  | Tasucu coast, Türkiye | International waters of the North-eastern Mediterranean | Tunisian waters                         | Tunisian waters (off Bizerte) | Balearic Sea, western Mediterranean Sea, Spain | Ibiza Channel, western Mediterranean Sea, Spain |
| Morphometric measurements | Value (cm)            |                                                         |                                         |                               |                                                |                                                 |
| Sex                       | Male                  | -                                                       | Female-Male                             | Male-Female                   | Female                                         | Female                                          |
| Specimen (N)              | 1                     | 2                                                       | 2                                       | 2                             | 1                                              | 1                                               |
| Total length              | 50.2                  | 32.5-32.3                                               | 79.0-70.0                               | 72.0-70.0                     | 79.6                                           | 64.3                                            |
| Fork length               | 37.5                  | 25.5-25.3                                               | 61.0-55.4                               | 55.0-55.0                     | -                                              | -                                               |
| Head length               | 10.1                  | 6.8-6.7                                                 | 16.8-14.7                               | 14.5-14.2                     | 15.2                                           | 12.9                                            |
| Eye weight                | 1.9                   | 1.5-1.5                                                 | 2.6-2.5                                 | 3.1-3.0                       | 2.8                                            | 2.3                                             |
| Eye height                | 0.9                   | 0.7-0.7                                                 | 1.5-1.3                                 | 1.8-1.8                       | -                                              | -                                               |
| Pre-nasal length          | 1.5                   | -                                                       | 2.2-1.6                                 | 2.0-2.0                       | -                                              | 1.3                                             |
| Interorbital space        | 2.7                   | -                                                       | -                                       | -                             | -                                              | -                                               |
| Internarial space         | 1.9                   | -                                                       | -                                       | 2.0-2.0                       | -                                              | 1.9                                             |
| Clasper length            | 1.0                   | -                                                       | -                                       | -                             | 2.5                                            | -                                               |
| Pre-narial length         | 2.2                   | -                                                       | -                                       | -                             | 1.5                                            | 1.3                                             |
| Pre-orbital length        | 2.8                   | 1.7-1.6                                                 | -                                       | -                             | 4.3                                            | 3.5                                             |
| Pre-branchial length      | 6.4                   | 5.6-5.5                                                 | 13.0-11.5                               | 3.6-3.5                       | 10.5                                           | 9.9                                             |
| Pre-dorsal length         | 23.4                  | 15.4-15.3                                               | 38.0-35.4                               | 35.6-35.0                     | 39.0                                           | 31.3                                            |
| Pre-pelvic length         | 10.0                  | -                                                       | 32.0-28.5                               | 29.4-29.4                     | 32.5                                           | 25.9                                            |
| Pre-pectoral length       | 19.3                  | -                                                       | 17.0-14.7                               | 14.9-14.5                     | 14.6                                           | 12.8                                            |
| Pre-anal length           | 26.4                  | 13.3-13.0                                               | 42.5-38.8                               | 38.4-38.0                     | 43.1                                           | 35.0                                            |
| Pre-caudal length         | 33.8                  | 22.0-21.0                                               | 55.0-49.2                               | 49.5-49.0                     | 54.7                                           | 44.1                                            |
| Weight (g)                | 328.3                 | 106.9-101.7                                             | 1280-1000                               | 1130-1092                     | 1590                                           | -                                               |

**Tab. 2: Confirmed records of neonate and juvenile specimens of *H. perlo* from the Mediterranean Sea covering the period 1980–2024. N: Number of samples.****Tab. 2: Potrjeni podatki o novokotenih in mladostnih primerkih vrste *H. perlo* iz Sredozemskega morja za obdobje 1980–2024. N: Število vzorcev.**

| References                              | Record Date                   | N       | Sex              | Location                                                                       | Sampling Gear       | Depth (m)  | Length, TL (cm)         | Weight (g)            |
|-----------------------------------------|-------------------------------|---------|------------------|--------------------------------------------------------------------------------|---------------------|------------|-------------------------|-----------------------|
| Capapé (1980)                           | 1980                          | 68      | Male             | Tunisian waters                                                                | Trawl               | 36-32      | 118.0-30.0              | -                     |
|                                         |                               | 52      | Female           |                                                                                |                     | 40-12      | 139.0                   | -                     |
| Bradai <i>et al.</i> (2002)             | 4 February 1991               | 1       | Male             | Gulf of Gabes, Tunisia                                                         | -                   | Surface 80 | 39.0                    | 138                   |
|                                         | 19 February 2001              | 2       | Female           |                                                                                |                     |            | 98.0-69.5               | 4000-688              |
|                                         | 1-2/2001                      | 2       | Male             | Gulf of Gabes, Tunisia                                                         | -                   | -          | 75.0-75.0               | 1259-1252             |
|                                         | 1-2/2001<br>1 March 2002      | 3<br>2  | Female<br>Female |                                                                                |                     |            | 98.0-69.5<br>100.0-94.0 | 4000-828<br>2300      |
| De Maddalena <i>et al.</i> (2002)       | 26 July 2000                  | 1       | Male             | Ganzirri, Mesina Strait, Italy<br>Linosa and Porto Empedocle<br>Catania, Italy | -                   | 70         | 85.0                    | 1610                  |
|                                         | June 2000                     | 5       | -                |                                                                                | -                   | 200        | 80.0-70.0               | -                     |
|                                         | 21 December 1989              | 1       | -                |                                                                                | -                   | -          | 95.0                    | 4000                  |
| Megalofonou <i>et al.</i> (2005)        | 1998-2001                     | 1       | -                | Greek Seas                                                                     | Longline            |            | 104.0                   | -                     |
| İşmen <i>et al.</i> (2007)              | February 2005-<br>April 2006  | 14      | -                | Saroz Bay (NE Aegean Sea, Türkiye)                                             | Trawl               | 28-370     | 105.0-68.6              | 3388-920              |
| İşmen <i>et al.</i> (2009)              | March 2005-June<br>2008       | 5<br>13 | Female<br>Male   | Saroz Bay (NE Aegean Sea, Türkiye)                                             | Trawl               | 5-500      | 84-68.6<br>105.0-69.2   | 1960-920<br>3388-1170 |
| Kabasakal & Ince (2008)                 | 15 September 2008             | 1       | Female           | Kömür Cape, Saroz Bay<br>(NE Aegean Sea, Türkiye)                              | Stranded individual | -          | 85.0                    | 1700                  |
| Damalas & Megalofonou (2012)            | 1998-2001                     | 1       | -                | Antikithyra strait, Greece                                                     | -                   | 382        | 104.0                   | -                     |
| Güven <i>et al.</i> (2012)              | October<br>2009-December 2010 | 11      | -                | Antalya Bay, Türkiye                                                           | Trawl               | 200-800    | 105.3-31.1              | 3560-80.2             |
| Eronat & Özyayın (2014)                 | 2008-2009                     | 1       | Female           | Izmir Bay and Sığacık Bay<br>(Central Mediterranean), Türkiye                  | Trawl               | -          | 99.6                    | 4382                  |
| El Kamel-Moutalibi <i>et al.</i> (2014) | 21 May 2014                   | 1<br>1  | Male<br>Female   | Eskerik Bank, off the northern<br>Tunisian coast, Tunisia                      | Trawl               | 150-300    | 70.0<br>79.0            | 1000<br>1280          |
|                                         | 01 April 2007-15 July<br>2007 | 1<br>1  | Male<br>Female   | Tunisian waters, Tunisia                                                       | -                   | -          | 81.0<br>110.0           | 3000<br>5000          |
| Lteif (2015)                            | 01-08/2013                    | 1       | -                | South Lebanese coasts, Lebanon                                                 | Trawl               | 0-300      | 115.0                   | 6000                  |
| Rafrafi-Nouira <i>et al.</i> (2015)     | 25 September 2009             | 1       | Female           | Cani Rocks, Tunisia                                                            | Trawl               | 56         | 99.0                    | -                     |
| Başusta (2016)                          | 4 May 2015                    | 1<br>1  | Male<br>Female   | NE Mediterranean, Türkiye                                                      | Trawl               | 360-400    | 32.5<br>32.3            | 101.8<br>106.9        |
| Capapé <i>et al.</i> (2018)             | 24 November 2015              | 2       | Female           | Island of Zembra, (NE Gulf of Tunis)                                           | Trawl               | 150        | 112.0-72.0              | 2255-1150             |
|                                         |                               | 2       | Male             |                                                                                |                     | 150        | 84.0-74.0               | 1735-1300             |
| Capapé <i>et al.</i> (2018)             | 02 August 2018                | 1<br>1  | Male<br>Female   | Tunisian waters, off Bizerte, (NW<br>Gulf of Tunis)                            | Longline            | 130-140    | 72.0<br>70.0            | 1130<br>1092          |
| Ergüden & Bayhan (2018)                 | 27 June 2014                  | 1       | Male             | off Erdemli (Mersin Bay), Türkiye                                              | Trawl               | 601        | 105.0                   | 3600                  |
| Alkusaury & Saad (2018)                 | November<br>2014-October 2016 | 2<br>2  | Male<br>Female   | Syrian coasts (Eastern<br>Mediterranean), Syria                                | Trawl               | -          | 117-27<br>124-20        | -<br>-                |
| Gullard <i>et al.</i> (2019a)           | 24 February 2018              | 1       | Female           | Balearic Sea, western Mediterranean<br>Sea, Spain                              | Trawl               | 650        | 79.6                    | 1590                  |
| Gullard <i>et al.</i> (2019b)           | 26 June 2019                  | 1       | Female           | Ibiza Channel, western<br>Mediterranean Sea, Spain                             | Trawl               | -          | 64.3                    | -                     |
| Lipej & Mavrič (2022b)                  | 21 December 2021              | 1       | Female           | Gulf of Trieste                                                                | Trammel net         | 20         | 72.8                    | 1010                  |
| This study                              | 28 June 2024                  | 1       | Male             | Tasucu coast<br>Eastern Mediterranean, Türkiye                                 | Trawl               | 520        | 50.2                    | 328.3                 |

and Mediterranean Seas (Akşiray, 1987; Bilecenoglu *et al.*, 2014), it should be noted that the species is only rarely observed by local fishermen along the Tasucu coast (Silifke, Turkey) when incidentally caught in fishing nets during trawl or bottom long-line operations. This paper presents a record of this species on the Levantine coast reporting the capture of a male juvenile.

#### MATERIAL AND METHODS

On 26 June 2024, a male specimen of sharpnose sevengill shark, *H. perlo*, was incidentally caught in a bottom trawl net at a depth of 520 m, off Tasucu, Silifke (36°12'435'' N, 34°18'246'' E) (Fig. 1). The specimen was photographed and taken to the laboratory for identification. All measurements, counts, morphological descriptions, and colors conform to species descriptions provided by Compagno (1984) and Golani *et al.* (2006). The morphometric measurements of the specimen recorded to the nearest

0.1 mm were taken using a caliper (Fig. 2 and Fig. 3). The specimen is deposited in the Museum of the Faculty of Fisheries, Çukurova University, under catalog number CSFM-PIS/24-37.

#### RESULTS AND DISCUSSION

The juvenile sharpnose sevengill shark, a male, measured 50.2 cm total length (TL) and weighed 328.3 g. Its morphometric measurements are presented in Table 1 and compared with previous Mediterranean records of the species (Başusta, 2006). *H. perlo* has a slender body with a long caudal peduncle. The head is pointed and narrowed, with large eyes (Fig. 3). It has seven pairs of long gill slits and a single dorsal fin, which is small and originates above the inner margins of the pelvic fins. The anal fin is also small, its height about half that of the dorsal fin. The pectoral fins are moderately small and broad, with narrowly rounded tips and a slightly concave hind margin. The caudal fin is heterocercal, featuring a long



**Fig. 3: Head, eyes, jaw teeth, and seven gill slits of *Heptranchias perlo*.**

**Sl. 3: Glava, oči, zobje v čeljusti in sedem škržnih rež primerka vrste *Heptranchias perlo*.**

upper lobe with a distinct sub-terminal notch and a short lower lobe (Compagno, 1984). The upper jaw teeth feature narrow oblique cusp and small lateral cusplets. Lower jaw teeth are comb-like (Last & Stevens, 1994). The body is brownish to grey above and paler below, the tips of the dorsal and anal fins dark in juvenile specimens. The large eyes are fluorescent green in live specimens (Bass *et al.*, 1998; Last & Stevens, 1994).

The maximum total length of *H. perlo* recorded to date is 137 cm in males and 140 cm in females (Compagno, 1984), but the species commonly reaches 100 cm in total length (Sanches, 1991). Males mature at 75 to 85 cm TL, females at 90 to 105 cm TL. Reproduction is aplacental ovoviviparous (Breder & Rosen, 1966), with females producing litters of 6–20 individuals (Compagno, 1994). According to Ebert *et al.* (2013), the size at birth is estimated to be 26–30 cm TL. Capapé (1980) reported that in Tunisian waters the size at birth is 30 cm TL and the approximate weight 60 g.

Başusta (2016) suggested that some shark species may utilize the northeastern Mediterranean region as mating, breeding, and nursery grounds. Castro (1993) noted that the designation of an area as a breeding and nursery ground for a particular elasmobranch species is based on the presence of neonates, small juveniles, and gravid females in the respective area. Thus, the capture of this juvenile individual appears to support Başusta's findings. Additionally, fishermen interviewed for this study reported occasionally encountering adult individuals of this shark species, as well as egg casings, in the region (personal observation).

As mentioned above, the immature male specimen in this study measured 50.2 cm total length and weighed 328.3 g. Başusta (2016) reported two neonate *H. perlo* specimens, measuring 32.5 and 32.3 cm TL, respectively, from northeastern Mediterranean waters of Turkey. Our specimen was captured well outside the location reported by Başusta (2016) and was larger and heavier. This is the third case of a small juvenile sharpnose sevengill shark recorded in Turkish eastern Mediterranean waters, occurring approximately eight years after the second. However, our specimen is still smaller than the individ-

uals previously documented by other authors (De Maddalena *et al.*, 2002; İşmen *et al.* (2007; 2009; Kabasakal & Ince, 2008; Damalas & Megalofonou, 2012; Eronat & Özaydın, 2014; El Kamel-Moutalibi *et al.*, 2014; Lteif, 2015; Rafrafi-Nouira *et al.*, 2015; Capapé *et al.*, 2018; Gullard *et al.*, 2019a; Gullard *et al.*, 2019b) as shown in Table 2, where the other Mediterranean Sea records of newborn and small juveniles *H. perlo* are compared with the results of the present study.

The juvenile male sharpnose sevengill shark reported in this study was observed in deep water (>500 m) during a trawl survey and accidentally caught at 520 m, which is consistent with the depth ranges stated in previous literature (Ebert *et al.*, 2013; Weigmann, 2016) and previous reports (Tab. 2).

Although *H. perlo* has no commercial importance and is not specifically targeted, it can be caught as bycatch in deep-water fisheries throughout its range. It is, albeit infrequently, reported as incidental catch in commercial demersal trawl, longline, and gillnet fisheries (IUCN, 2024).

In 2019, the sharpnose sevengill shark was globally assigned a status of near threatened (NT) under criteria A2bd of the IUCN Red List (Finucci *et al.*, 2020), in the Mediterranean, however, it is considered a data deficient (DD) species (Dulvy *et al.*, 2016; Otero *et al.*, 2019).

Currently, there are no species-specific conservation measures in place for the sharpnose sevengill shark in the Mediterranean, as more information is needed regarding its population size and habitat status. Therefore, further research on rare shark species and their distribution in the eastern Mediterranean should be encouraged and supported.

## CONCLUSIONS

This record of a juvenile *H. perlo* can serve as an important tool for monitoring shark species. Furthermore, our findings could contribute to improving regional fisheries policies, such as establishing a Shark Conservation Management Plan for the area. They will also enhance our understanding of shark diversity and the identification of potential nursery grounds.

# ULOV MLADOSTNEGA PRIMERKA MORSKEGA PSA SEDMEROŠKRGARJA, *HEPTRANCHIAS PERLO* (BONNATERRE, 1788), IZ TURŠKIH VODA (VZHODNO SREDOZEMSKO MORJE) Z POSODOBLJENIM SEZNAMOM ZAPISOV O POJAVLJANJU V SREDOZEMSKEM MORJU

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## POVZETEK

*Junija 2024 so s komercialno vlečno mrežo pri Tasucuju (Silifke, Turčija) na globini 520 m ujeli nezrelega samca morskega psa sedmeroškrgarja *Heptranchias perlo* (Bonnaterre, 1788). Gre za nov primer o pojavljanju mladostnega primerka vrste v turških vodah (vzhodno Sredozemsko morje). Ta zapis o pojavljanju je pomemben za spremljanje morskega psa sedmeroškrgarja v Turčiji in lahko prispeva k izboljšanju regionalnih trajnostnih ribiških politik, kot je vzpostavitev načrta upravljanja za ohranitev morskih psov za to območje. Poleg tega izboljšuje naše razumevanje o razširjenosti vrst morskih psov in lahko pomaga prepoznati potencialne jaslice v regiji. Študija ponuja tudi podrobne zgodovinske in trenutne zapise o pojavljanju novoskotenih in mladih primerkov morskih psov sedmeroškrgarjev v regiji in širšem Sredozemlju.*

**Ključne besede:** mladostni primerek morskega psa, Hexanchidae, obala Tasucu, Turčija, Levantsko morje

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