

## NEW RECORD AND SOME MORPHOLOGICAL DATA OF THE BASKING SHARK, *CETORHINUS MAXIMUS* (GUNNERUS, 1765), IN THE EASTERN ADRIATIC

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### ABSTRACT

On March 23<sup>rd</sup> 1999, a Basking Shark, *Cetorhinus maximus* (Gunnerus, 1765), was caught in gillnet and found by fishermen near Osobljava harbour on the Pelješac peninsula. The paper gives some morphological and meristic data and general information about the species and its occurrence in the Adriatic.

**Key words:** Basking Shark, *Cetorhinus maximus*, Eastern Adriatic

### INTRODUCTION

The Basking Shark, *Cetorhinus maximus* (Gunnerus, 1765), is a coastal-pelagic shark found in boreal to warm temperate waters of the continental and insular shelves, occurring well offshore and often very close to land, enters enclosed bays (Compagno, 1984).

It has 5 extremely long gill slits that virtually encircle the whole head. The snout is pointed, with huge sub-terminal mouth. Nostrils are widely separated from mouth. Colour is grayish-brown to slaty gray, or nearly black above (Bigelow & Schroeder, 1948), belly similar or lighter, often with light patches or bands on belly and under snout (Quero, 1984). Size of males is to 9 m, females to 9.8 m with reported maximum of 15.2 m (Compagno, 1984; Quero, 1984; Fischer *et al.*, 1987). The Basking Shark is the second largest shark, after the Whale Shark, *Rhinodon typus*, and it can reach a weight of 8000 kg (Bini, 1967). It is ovoviviparous (Compagno, 1984; Quero, 1984) and it reaches sexual maturity at the age of 3-4 years (Fischer *et al.*, 1987). Juveniles below 3 m long are extremely rare, but there are records of free-living individuals about 170 cm long (Bigelow & Schroeder, 1948; Compagno, 1984).

The diet of the Basking Shark consists wholly of

small planktonic organisms, which it sifts out of water by means of its gill rakers (Bigelow & Schroeder, 1948). It is capable of filtering over 2000 tons of water per hour assuming constant cruising speed of about 2 knots (Compagno, 1984). The Basking Shark is often seen at or near the surface, singly, in pairs, triads or in schools up to a hundred or more individuals, basking with dorsal fins out of water or even with bellies upward, or moving slowly forward or in short arcs with their mouths open like hoops while feeding. Surface basking in this shark is thought to be correlated with surface concentrations of food plankton and also with courtship and mating (Compagno, 1984). It is not considered as dangerous for humans, except if attacked.

### MATERIAL AND METHODS

The Basking Shark was found by fishermen near Osobljava harbour on the Pelješac peninsula in the southeastern Adriatic on 23<sup>rd</sup> March 1999 (Fig. 1). It was caught in common gillnet. The specimen was preserved and easily identified according to Jardas (1996). Morphometric characteristics were measured to the nearest cm (Fig. 2). Weight was measured by a heavy balance.

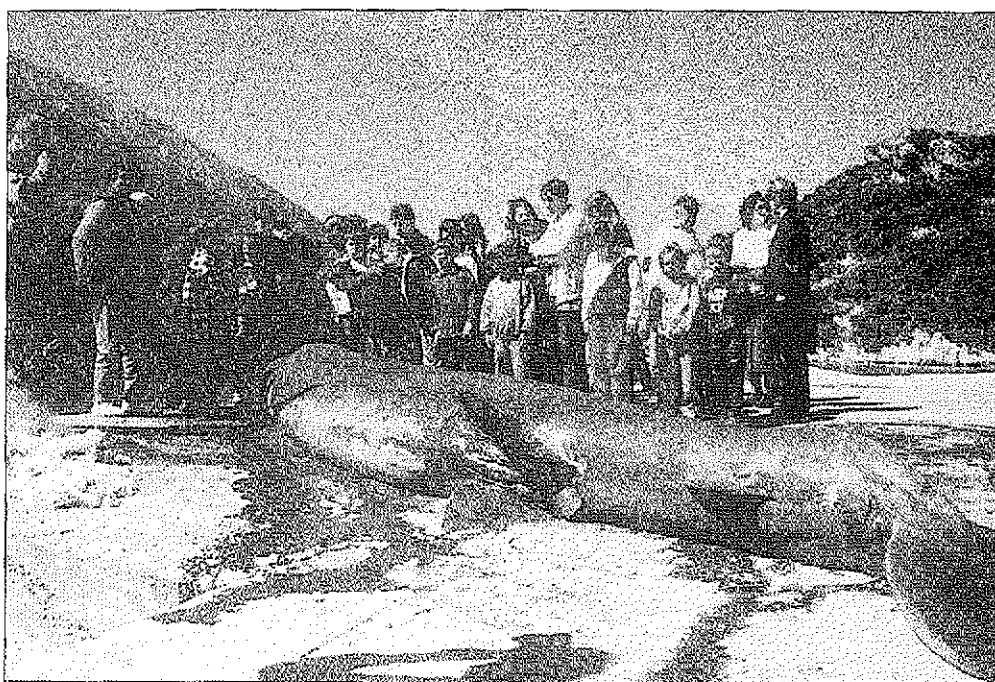


Fig. 1: The Basking Shark caught in gillnet near the Osobljava harbour on the Pelješac peninsula.  
 Sl. 1: Morski pes orjak, ujet v mrežo škrgarico v bližini pristanišča Osobljava na polotoku Pelješcu.

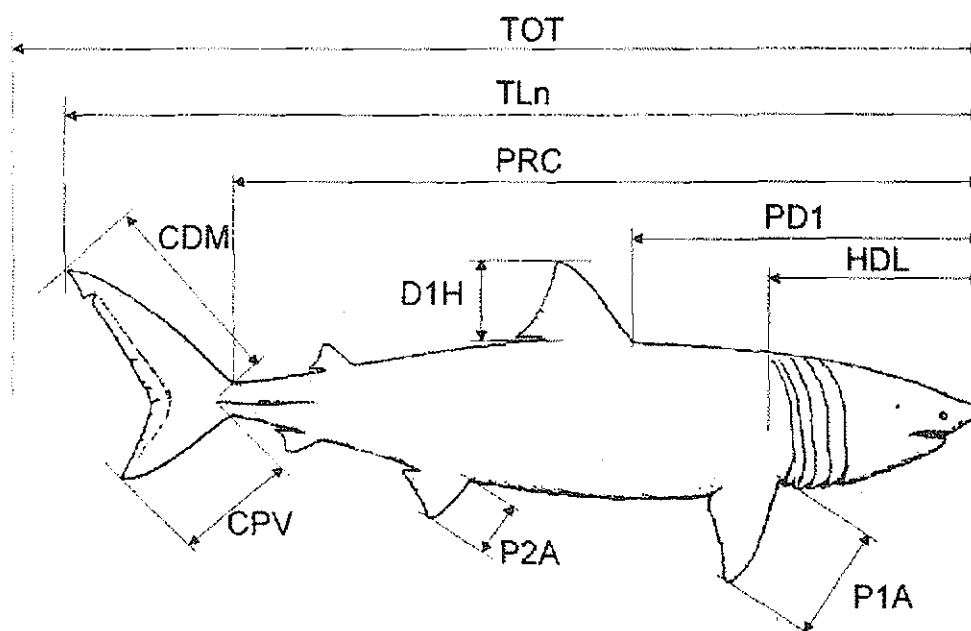


Fig. 2: The main morphometric characteristics of the Basking Shark: TOT - Total length; TLn - Total length with caudal fork in normal position; PRC - Precaudal length; PD1 - Pre-first dorsal length; HDL - Head length; CDM - Dorsal caudal margin; D1H - First dorsal length; CPV - Preventral caudal margin; P1A - Pectoral anterior margin; P2A - Pelvic anterior margin.

Sl. 2: Glavne morfometrične karakteristike morskega psa orjaka: TOT - celotna dolžina; TLn - celotna dolžina z repno vilico v normalnem položaju; PRC - dolžina brez repa; PD1 - dolžina do prve hrbtne plavuti; HDL - dolžina glave; CDM - dolžina roba zg. repne krpe; D1H - dolžina prve hrbtne plavuti; CPV - dolžina roba sp. repne krpe; P1A - dolžina prsne plavuti; P2A - dolžina trebušne plavuti.

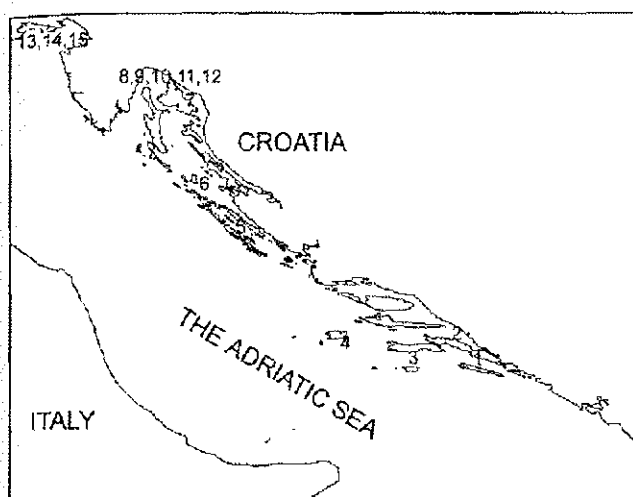


Fig. 3: Records of the Basking Shark with known position in the Eastern Adriatic: 1 - new record from the vicinity of Osobljava harbour; 2 - Ston; 3 - Korčula; 4 - Vis; 5 - Ugljan; 6 - Molat; 7 - Peškera; 8 - Kraljevica; 9 - Bakarac; 10 - Opatija; 11, 12 - Ičići; 13, 14, 15 - Gulf of Trieste.

Sl. 3: Zapisi o morskemu psu orjaku z znanimi najdišči v vzhodnem Jadranu: 1 - nov zapis iz bližine pristanišča Osobljava, 2 - Ston; 3 - Korčula; 4 - Vis; 5 - Ugljan; 6 - Molat; 7 - Peškera; 8 - Kraljevica; 9 - Bakarac; 10 - Patina; 11, 12 - Ičići; 13, 14, 15 - Tržaški zaliv.

## RESULTS AND DISCUSSION

The Basking Shark is a relatively rare but constant species (Fig. 3) in The Adriatic (Tortonose, 1956; Bini, 1967; Milišić, 1994; Jardas, 1996). The very first record about this species was apparently made by Naccari (1822). During the 19<sup>th</sup> century, two more records were made, i.e. by Carrara (1846) and Brusina (1888). Hirtz (1909) reported about catching a Basking Shark near the island of Vis, while Valle reported on a specimen in 1922, but stated no place of this catch. Next records were made in 1931 near Bakarac and in 1934 near Kraljevica, while in 1937 a 3.5 m long specimen was caught in the waters of Korčula (Milišić, 1994). The specimen caught near Kraljevica was the largest, for it was 7.62 m long and weighed 2,400 kg (Jardas, 1996). Crnković (1957) and Milišić (1994) reported on a 4.70 m long specimen caught near Peškera in 1954. From 1968 there is a record of a specimen caught near Ston (2.5 m long), from 1981 of a 5.5 m long specimen caught near the island of Molat, and from 1985 of a 6.47 m long individual caught near Patina (Milišić, 1994). Bošnjak and Lipej (1992) reported about a Basking Shark from the Gulf of Trieste; in the same area a record was also made by Perco (1993). Two additional observations were made near Ičići in 1981 and 1991 by Kovačić (1993). The last report comes from Dulčić (1997), i.e. about a 7 m long

and 2,000 kg heavy specimen caught by two fishermen near the island of Ugljan.

The main morphometric characteristics of the caught specimen are given in table 1. Weight of the specimen was approximately 2,500 kg and it was a female.

Tab. 1: The main morphometric characteristics of the caught female specimen.

Tab. 1: Glavne morfometrične značilnosti ulovljene samice morskega psa orjaka.

TOT - Total length	722 cm
TLn - Total length with caudal fork in normal position	687 cm
PRC - Precaudal length	586 cm
PD1 - Pre-first dorsal length	261 cm
HDL - Head length	165 cm
CDM - Dorsal caudal margin	135 cm
D1H - First dorsal length	72 cm
CPV - Preventral caudal margin	95 cm
P1A - Pectoral anterior margin	27 cm
P2A - Pelvic anterior margin	29 cm



Fig. 4: Teeth of the Basking Shark in the lower jaw.  
Sl. 4: Zobje morskega psa orjaka v spodnji čeljusti.

Teeth in both jaws are similar and minute (Fig. 4). Height of the teeth in the smaller specimens is 3 mm, and about 6 mm in longer specimens (Bigelow & Schroeder, 1948). There are 4 to 7 functional series with 100 or more teeth in each row on each side of the jaw. Dieuzeide *et al.* (1953) are reporting 2,700 teeth for an 8.75 m long specimen. Teeth toward the center of the mouth are low and triangular, but those along the sides are conical, slightly recurved. They are somewhat compressed laterally, with a ridge on each side and with basal part striated. At the center of the upper jaw there is a wide space with only scattered teeth, which is not the case in the lower jaw (Soldo, 1996).

Two 2.5 m and 3.5 m long specimens are juveniles, if their lengths were reported correctly. Therefore, the following question was raised: Does the Basking Shark breed in the Eastern Adriatic? The Basking Shark is a highly migratory species (Compagno, 1984) and according to Bigelow & Schroeder (1948) it seems certain that young are produced throughout their entire range, for

small ones have been reported both from the north (Ireland, Norway) and from the south (Mediterranean). Existing records of the Basking Shark are only for individuals, so breeding can not be confirmed, but if we take into consideration that different sizes of the Basking Shark

have been reported throughout the Eastern Adriatic and that gestation period is 3.5 years (Compagno, 1984), the answer can be that the Basking Shark breeds somewhere out of the Adriatic but that it is possible that occasionally it brings forth its young in the waters of the Adriatic.

## NOV ZAPIS IN NEKAJ MORFOLOŠKIH PODATKOV O PSU ORJAKU *CETORHINUS MAXIMUS* (GÜNNERUS, 1765) IZ VZHODNEGA JADRANA

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### POVZETEK

Dne 23. marca 1999 so ribiči v bližini pristanišča Osobljava na polotoku Pelješac našli v mrežo škrgarico ujetega morskoga psa orjaka *Cetorhinus maximus* (Günnerus, 1765). V članku je navedenih nekaj morfoloških in merističnih podatkov o vrsti in o njenem pojavljanju v Jadranu.

**Ključne besede:** morski pes orjak, *Cetorhinus maximus*, vzhodni Jadran

### REFERENCES

- Bigelow, H. B. & W. C. Schroeder (1948): Fishes of the Western North Atlantic, No. 1, Part 1, Memoir of Sears Foundation for marine research, 546 pp.
- Bini, G. (1967): *Leptocardi, Ciclostomi, Selaci*, Atlante dei Pesci delle coste Italiane, vol. I. Mondo Sommerso (ed.), 206 pp.
- Bošnjak, D. & L. Lipej (1992): Morski psi po svetu in pri nas. *Proteus*, 55(1): 4-9.
- Brusina, S. (1888): Morski psi Sredozemnog i Crljenog mora. *Glasnik Hrv. Nar. Dr.*, III. (4-5), 167-230.
- Carrara, F. (1836): *La Dalmazia descritta*. Zadar.
- Compagno, L.J.V. (1984): Sharks of the World. FAO species catalogue, Vol. IV, Part 1, FAO, Rome, 250 pp.
- Crnković, D. (1957): Tunere i njihove neobične lovine. *Morsko ribarstvo*, 1.
- Dieuzeide, R., M. Novella & J. Roland (1953): *Squalus, Raies, Chimere*, catalogue des Poissons des Cotes Algeriennes. Gouvernment general de L'Algerie, Alger, 9-135.
- Dulčić, J. (1997): Novi nalaz psine goleme, *Cetorhinus maximus* (Günnerus, 1765) u istočnom Jadranu. *Falco*, 12, 43-44.
- Fischer, W., M. Schneider & M. L. Bauchot (1987): *Vertebres, Mediterranee et Mer Noire*, Vol. II, FAO ECCE, Rome, 763-1529.
- Hirtz, M. (1909): *Selache maxima* Cuvier. Rijetka vrsta morskog psa ulovljena pod Visom. *Smotra dalmatinska*, XXII, 53 pp.
- Jardas, I. (1996): *Jadranska ihtiofauna*. Školska knjiga, Zagreb, 533 pp.
- Kovačić, M. (1993): Golema psina - neopasni div. *Priroda*, 83(1), 18.
- Laevastu, T. (1965): *Manual of Methods in Fisheries Biology*. FAO, Fasc. 9, Rome.
- Milišić, N. (1994): Sva riba Jadranskog mora. NIVA, Split, 463 pp.
- Naccari, F. L. (1822): "Prodromus" (ex primo volumine *Diarii Phys. Chem. Hist. nat. quod. Ticini evulgatum est*, anno 1827, Ticini regii, 1-23).
- Perco, F. (1993): Osservazione di Squalo elefante (*Cetorhinus maximus*) nel Golfo di Trieste. *Fauna*, 3, 135-136.
- Quero, J. - C. (1984): *Cetorhinidae*. Fishes of the North-eastern Atlantic and the Mediterranean. Whitehead, P.J.P., M. L. Bauchot, J. C. Hureau, J. Nielsen & E. Tortonese (eds.), Vol. I, UNESCO, Paris, 510 pp.
- Soldo, A. (1996): Karakteristike zubi i zubala hrskavičnih riba (Chondrichthyes) podrazreda Elasmobranchii. Diplomski rad, Sveučilište u Splitu, 68 pp.
- Tortonese, E. (1956): *Leptocardia, Ciclostomata, Selachii*. *Fauna d'Italia*, Calderini (ed.), Vol. II, Bologna, 334 pp.
- Valle, A. (1922): *La Selache maxima* Gunn. nel mare Adriatico. XXVIII Congr. Soc. pesca, Trieste.