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## PRESENCE OF ATYPICAL CHARACTERISTICS IN A SPECIMEN OF SMALL-SPOTTED CATSHARK *SCYLIORHINUS CANICULA* (LINNAEUS, 1758) CAUGHT IN THE MEDITERRANEAN

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### ABSTRACT

Authors describe some morphological deformities of first dorsal and caudal fins in an specimen of a small-spotted catshark, *Scyliorhinus canicula*, caught on December 1<sup>st</sup> 2000 in Catalan waters (NW Mediterranean), and discuss its biological efficiency.

**Key words:** *Scyliorhinus canicula*, atypical characteristics, dorsal fin, caudal fin, Mediterranean Sea

## PRESENZA DI CARATTERI ATIPICI IN UN ESEMPLARE DI GATTUCCIO MINORE *SCYLIORHINUS CANICULA* (LINNAEUS, 1758) IN ACQUE MEDITERRANEE

### SINTESI

Gli autori descrivono alcune deformità morfologiche della prima pinna dorsale e della pinna caudale di un esemplare di gattuccio minore, *Scyliorhinus canicula*, pescato il Dicembre 2000 in acque Catalane (Mediterraneo Nord-Occidentale), e discutono circa l'efficienza biologica dell'individuo.

**Parole chiave:** *Scyliorhinus canicula*, caratteri atipici, pinna dorsale, pinna caudale, Mare Mediterraneo

## INTRODUCTION

Small-spotted catshark *Scyliorhinus canicula* (Linnaeus, 1758) is an abundant temperate bottom-dwelling catshark of the Eastern North Atlantic, from Norway and British Isles to the Mediterranean and Senegal (Compagno, 1984b).

In the Mediterranean Sea, these sharks are found on soft grounds of sand or mud from shore to depths of about 560 m (Capapé, 1974; Bini, 1967; Lloris, 1977; Allué, 1985; D'Onghia *et al.*, 1995; Barrull *et al.*, 1999). They are usually caught by trawlers (Barrull & Mate, 1996).

The current study of the ecology of the small-spotted catshark has allowed us to observe more than 1500 specimens, males and females, young and adults. In one of them several morphological abnormalities were discovered.

Morphological, anatomical, and colouring abnormalities are relatively rare in sharks. The ichthyological literature refers to some cases from different marine regions and cited by various authors, such as Punnett (1901, 1902), Lozano Cabo (1945), Arthur (1950), Menon (1957), Cadenat (1960), Fuller (1961), Clark (1964), Bensam (1965), Barkhshi & Saxena (1966), King (1966), McKenzie (1970), Abe (1972), Nakaya (1973), Capapé & Zahnd (1974), Capapé & Pantoustier (1975), Quero (1978), Capapé *et al.* (1979), Taniuchi & Yanagisawa (1987), and Heupel *et al.* (1999). In this report we discuss the capture of a small-spotted catshark *Scyliorhinus canicula* in the waters of the Catalan Sea. Some abnormalities in the first dorsal fin and in caudal fin were noted in this particular specimen.

## MATERIAL AND METHODS

A female small-spotted catshark *Scyliorhinus canicula* (Linnaeus, 1758) (Fig. 1) was caught in Catalonia's continental slope waters on December 1<sup>st</sup> 2000 by "Maireta II", a fishing vessel based in the port of Barcelona (Spain). The specimen was caught with a trawler net, at a depth of 200 m, on the fishing ground known as "La Serola", at a geographical position of 41° 15' N - 2°



Fig. 1: Small-spotted catshark *Scyliorhinus canicula*, caught on December 1<sup>st</sup> 2000 in coastal waters off Barcelona. (Photo: J. Barrull & I. Mate)

Sl. 1: Mala morska mačka *Scyliorhinus canicula*, ujeta 1. decembra 2000 v obrežnih vodah nedaleč od Barcelone. (Foto: J. Barrull & I. Mate)

23' E and 41° 11' N - 2° 20' E. The specimen was identified according to Compagno (1984b). The morphometric measurements were made following Compagno (1984a). It was preserved in 70% ethyl alcohol and deposited in the Ichthyological Collection of the Zoology Museum of Barcelona, with catalogue number MZB-2000-1312. The small-spotted catshark was examined for parasites. Stomach was dissected and the contents identified. The reproductive tract was examined to determine maturity according to Moreno & Hoyos (1982).

Tab. 1: Proportional dimensions (% TOT) of small-spotted catshark, *Scyliorhinus canicula*, caught off Barcelona.

Tab. 1: Proporcionalne mere (% celotne iztegnjene dolžine) male morske mačke *Scyliorhinus canicula*, ujeta v bližini Barcelone.

		MZB-2000-1312
SEX		F
TOTAL LENGTH (mm)	TOT	435
PRECAUDAL LENGTH	PRC	78.6
PRE-FIRST DORSAL LENGTH	PD1	50.6
PRE-SECOND DORSAL LENGTH	PD2	67.6
FIRST DORSAL LENGTH	D1L	7.1
SECOND DORSAL LENGTH	D2L	4.4
FIRST DORSAL BASE	D1B	4.4
SECOND DORSAL BASE	D2B	4.4
FIRST DORSAL INNER MARGIN	D1I	-
SECOND DORSAL INNER MARGIN	D2I	2.7
FIRST DORSAL HEIGHT	D1H	-
SECOND DORSAL HEIGHT	D2H	3.2
DORSAL CAUDAL MARGIN	CDM	21.4
PREVENTRAL CAUDAL MARGIN	CPV	7.8
TERMINAL CAUDAL LOBE	CTL	7.6
PREPECTORAL LENGTH	PPI	16.1
PECTORAL ANTERIOR MARGIN	PIA	14.0
PECTORAL POSTERIOR MARGIN	PIP	9.2
PECTORAL BASE	PIB	4.6
PECTORAL INNER MARGIN	PII	6.9
PREPELVIC LENGTH	PP2	40.2
PELVIC LENGTH	P2L	11.3
PELVIC ANTERIOR MARGIN	P2A	5.7
PREANAL LENGTH	PAL	59.8
ANAL LENGTH	ANL	14.0
ANAL BASE	ANB	12.2
ANAL INNER MARGIN	ANI	1.8
ANAL HEIGHT	ANH	3.2
MOUTH WIDTH	MOW	7.1
PREORAL LENGTH	POR	3.9
NOSTRIL WIDTH	NOW	1.6
INTERNARIAL SPACE	INW	4.4
PRENARIAL LENGTH	PRN	4.4
PRESPIRACULAR LENGTH	PSP	8.5
PREORBITAL LENGTH	POB	4.6
EYE LENGTH	EYL	3.4
EYE HEIGHT	EYH	1.8
INTERGILL LENGTH	ING	6.0
FIRST GILL SLIT HEIGHT	GS1	2.7
FIFTH GILL SLIT HEIGHT	GS5	1.1

## RESULTS AND DISCUSSION

The female small-spotted catshark *Scyliorhinus canicula* measured 435 mm in total length and weighed 292 g. The main morphometric data of the specimen are presented in Table 1. The female was an adult, with intense vitellogenesis, the ovary containing a clutch of maturing

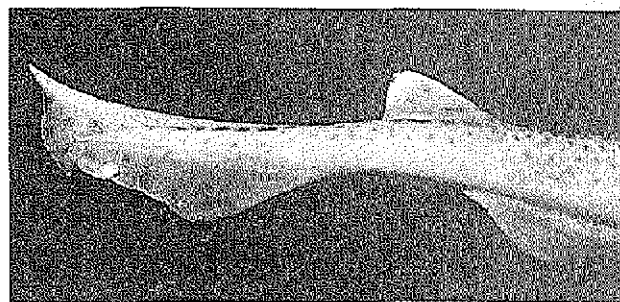
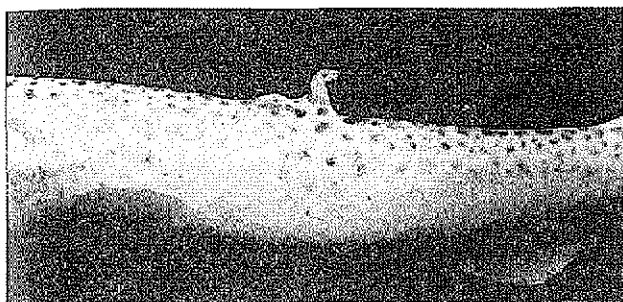


Fig. 2: Detail of the catshark's deformed first dorsal fin. (Photo: J. Barrull & I. Mate)

Sl. 2: Detajl mačkine deformirane prve hrbtnne plavuti. (Foto: J. Barrull & I. Mate)

Fig. 3: Detail of the deformed caudal lobe. (Photo: J. Barrull & I. Mate)

Sl. 3: Detajl mačkine deformirane repne krpice. (Foto: J. Barrull & I. Mate)

oocytes. No external parasites were found. Internal stomach parasitic nematodes of species *Proleptus obtusus* Dujardin, 1845 were found. The examination of the stomach content revealed only fragments of bony fish.

Its body marks and diagnostic features presented no particular differences from that observed in other adults of this species, except for the first dorsal (Fig. 2) and caudal fins (Fig. 3).

The first dorsal fin was only a vestige and the terminal lobe of the caudal fin was not differentiated. The authors considered the possibility that these abnormalities could be due to genetic mutation, or because of a bite made by a congener or some other predator. After a detailed examination of both fins it seemed there were marks of shark bites similar to those found in other works (López et al., 1996). Therefore, the abnormalities could be a result of a genetic factor.

It is possible that these abnormalities could decrease the biological efficiency of the animal due to the absence of the two important elements for its self-propulsion and stability. However, the examination of the digestive and reproductive tracts seemed to confirm that the characteristics described about the first dorsal fin and the tail have not deprived the animal to achieve a considerable

size and sexual maturity. Probably, the second dorsal fin with a regular dimension and placed near the caudal fin acted as a substitutive stabilising element. Moreover, this second dorsal fin and the lower caudal lobe acted as propellers to the preys capture and so let the animal grow normally as indicated by the necropsy.

The abnormalities in sharks are relatively rare. We have detected very few cases of malformations after examining thousands of individuals of different species all over the Catalan Sea.

Although these differences have, *a priori*, a limited interest for the biological and systematic knowledge of the species, they can offer some additional genetic and embryological data, and about the individuals' biological efficiency.

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## POSEBNOSTI, UGOTOVLJENE PRI MALI MORSKI MAČKI *SCYLIIORHINUS CANICULA* (LINNAEUS, 1758), UJETI V SREDOZEMSKEM MORJU

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#### POVZETEK

Mala morska mačka *Scyliorhinus canicula* (Linnaeus, 1758) je pogosta prebivalka pridnenih zmerno toplih voda v vzhodnem Severnem Atlantiku. Dne 1. decembra 2000 je bila samica te vrste ujeta z vlečno mrežo v globini 200 metrov v vodah katalonskega celinskega pobočja. Njena telesna znamenja in diagnostične značilnosti se niso bistveno razlikovale od tistih pri drugih odraslih primerkih te vrste, razen njena prva hrbtna in repna plavut. Prva je bila

močno okrnela, medtem ko se repna krpica sploh ni razvila. Avtorji so mnenja, da bi ti deformaciji, ki sicer nista zmanjševali biološke učinkovitosti vrste, lahko bili posledica genetske mutacije.

**Ključne besede:** *Scyliorhinus canicula*, netipične značilnosti, hrbtna plavut, repna plavut, Sredozemsko morje

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