

RECORDS ANALYSIS OF THE BASKING SHARK *CETORHINUS MAXIMUS* (CHONDRICHTHYES: LAMNIFORMES: LAMNIDAE) IN TUNISIAN COAST (CENTRAL MEDITERRANEAN SEA)

Samira ENAJJAR^{1*}, B. SAIDI² and M.N. BRADAI¹

1-Institut National des Sciences et Technologies de la Mer, Laboratoire de biodiversité marine B.P. 1035 Sfax 3018.

2-Faculté des Sciences de Gafsa, Ahmed Zarroug, 2112 Gafsa.

*enajjarsamira@yahoo.fr

ملخص

متابعة ظهور القرش المتشمس على طول السواحل التونسية : أفضت المتابعات التي أجريت على السواحل التونسية في إطار دراسة تنوع الأسماك الغضروفية منذ عام 1996 مع البيانات البليوغرافية عن مشاهدة خمسة عشر فرد من القرش المتشمس *Cetorhinus maximus* تم صيدها عرضيا في أعماق ضحلة بالشباك (بنوعها المبطن والمسرّح). 78 % من العينات هي من الذكور. لا تمثل القروش البالغة جنسيا سوى 20 %.

الكلمات المفتاحية: القرش المتشمس، الأسماك الغضروفية، السواحل التونسية

RESUME

Record du requin pèlerin *Cetorhinus maximus* (Chondrichthyens : Lamniforme : Lamnidae) sur les côtes tunisiennes (Méditerranée centrale) : Des investigations menées sur les côtes tunisiennes pour l'étude de la diversité des élamobranches à partir de 1996 ainsi qu'une analyse bibliographique ont révélé la signalisation de quinze spécimens du requin pèlerin.

Tous les individus sont pêchés accidentellement à des faibles profondeurs. Les filets maillants et trémails sont les engins responsables de la majorité de ces captures. 78% des captures sont des mâles. Les spécimens matures (LT>7m) ne représentent que 20% des prises.

Mots clés : Record, requin pèlerin, côtes tunisiennes

ABSTRACT

Investigations carried out along the Tunisian coasts for the study of the elasmobranch diversity since 1996 as well as bibliographic data revealed the record of fifteen basking shark.

All individuals are caught accidentally at shallow depths. Gillnets and trammel nets are the gears responsible for most of these catches. 78% of the catches are males. Mature specimens (LT> 7m) represent only 20% of the total.

Key words: Records, the Basking shark, Tunisian coast

INTRODUCTION

The basking shark *Cetorhinus maximus* (Gunnerus, 1765), the second largest fish occurring in the oceans (Quero, 1984), is a migratory and widely distributed but never being an abundant species. It is a coastal-pelagic shark found from boreal to warm temperate waters of all seas including Mediterranean Sea (Campagno, 1984). The basking shark is a very large filter-feeding pelagic species named for its habit of "Basking" on the surface in good weather conditions, usually singly.

This fascinate shark has always subject of monitoring and record in the entire Mediterranean since the late 18th century (Mancusi et al., 2005). Most records were from the Western and central basin (Serena et Barone, 2018).

Like most shark, the basking shark is extremely sensitive. Their population has undergone a remarkable decrease because of bycatch and over exploitation in some area in the world (Bonfil, 1994). Considering this situation, the species is classified as endangered in the Mediterranean Sea in the IUCN red

list (International Union for the Conservation of Nature) (Dulvy et al., 2016).

We report in this work data on the occurrence of the basking shark in Tunisian coasts. The distribution of the species in the area was also provided. These records allow us to complete and assess the real status of the species in the region.

MATERIALS AND METHODS

The study was based on data collected by the biodiversity laboratory of the National Institute of Science and Technology of the Sea (INSTM) along Tunisian coast since 1996 and on published information on the issue.

Species was identified following the guidelines reported by Fischer et al., (1987). The total length (TL) in millimeter following Compagno (1984) and the sex were reported whenever possible. Fishing gear, area and capture date were also added.

RESULT AND DISCUSSIONS

Fifteen basking sharks have been recorded in Tunisian coasts since 1964 (Table I, Figure 1).

Cetorhinus maximus was observed for the first time in the area in 1964 (Chakroun, 1966). A monitoring made by the biodiversity laboratory in the aim to register the elasmobranchs biodiversity in Tunisia since 1996 showed that the basking shark was rarely observed. In fact, Bradai *et al.* (2002) indicated that the species was taken three times in Gulf of Gabès, two in the central part of the country and five in the northern coast. Capapé *et al.* (2003) provided additional unpublished data. Two basking shark was

respectively caught in Monastir (central Tunisia) and in Ras Fatras (Northern Tunisia) in 1981.

Recent investigation in Gulf of Gabès reveals the observation of two stranded specimens. The first was a female of 242 cm TL and 34.2 kg TW examined in Gabès in February 2007 and the second was an adult specimen found at Cheikh Yahia beach in Ajim Djerba in February 2016 (Figure 2).

The last specimen observed was a male caught accidentally in Cap Negro in Northern Tunisia (GSA 12) (Figure 3) by a polyvalent vessel small scale (<to 6 m length) using gill nets on 21 may 2019. Fishermen's released the species but it couldn't pick up the road and ended by stranding and dying. It was a mature shark measuring 580 cm total length (LT)

Tableau I: Historical and recent records of the *Cetorhrnus maximus* off the Tunisian shore.

Record	Date	Sex	Total length (mm)	Depth (m)	Fishing gear	Area	References
1	1964	M	-	-	-	Tunis Gulf	Chakroun (1966)
2	1965	M	-	-	-	Tunis Gulf	Chakroun (1966)
3	1974	M	5340	30	Pelagic trawl	Kuriat Island	Capapé <i>et al.</i> , (1975)
4	1979	M	6000	-	-	Tunis Gulf	Najai (1980)
5	1980	M	2700	-	-	Tunis Gulf	Najai (1980)
6	1981	F	6270	10	Pelagic trawl	Monastir	Capapé <i>et al.</i> , (2003)
7	1981	M	3500	5	Gill nets	Gulf of Tunis	Capapé <i>et al.</i> , (2003)
8	1992	F	7100	12	Gill nets	Skhira	Bradai et Ghorbel (1992)
9	1998	M	7150	-	Gill nets	Ras Jebel	Rais Baccar (1998)
10	1999	M	7370	3	Gill nets	Sidi Msarra	Bradai <i>et al.</i> , 2002
11	2000	M	-	-	-	Salakta	Bradai <i>et al.</i> , 2002
12	2001	M	4250	-	Purse seine	Gulf of Gabès	Bradai <i>et al.</i> , 2002
13	2007	F	2420	Stranded	-	Gabès	Present Study
14	2016	-	-	Stranded	-	Djerba	Present Study
15	2019	M	5800	10	Gill nets	Cap Negro	Present Study

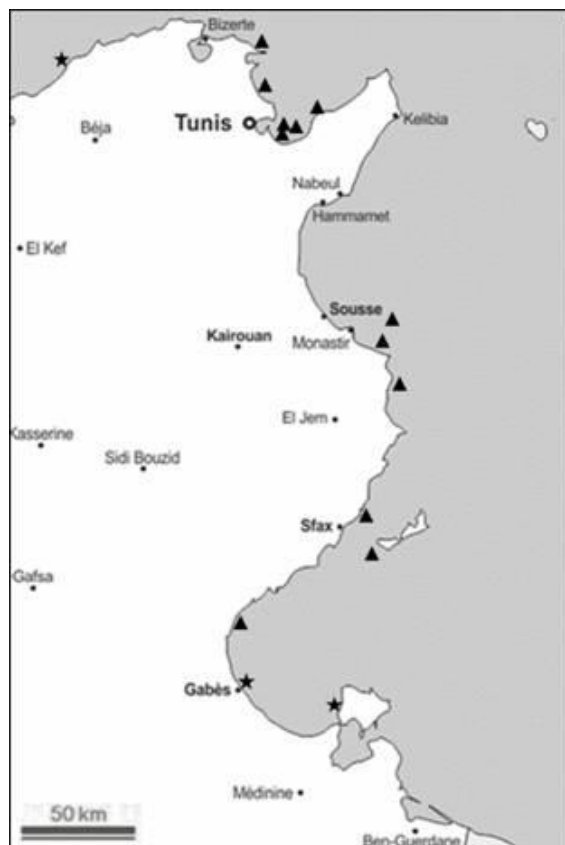


Figure 1: Record of the basking shark *Cetorhinus maximus* in Tunisian water.
 ★ Newsignalizations; ▲ Documented signalizations



Figure 2: Stranded Basking sharks in Gulf of Gabès.



Figure 3 : Basking shark recorded from Cap Nigro (May, 2019)

and weighting about 1000 kg total weight (TW).

All specimens have been caught accidentally in shallow coastal waters essentially by trammel and gill nets. According to Mancusi *et al.*, (2005), most the occurrences of *C. maximus* in the Mediterranean Sea are also reported off the coastal areas in the entire basin and were often caught incidentally by trammel nets. Coastal netting is a serious threat endangering the survival of the basking shark throughout its distribution in the area.

Among captures, ten have occurred in winter and spring. These observations can be correlated with the seasonal abundance of zooplankton in the area, since, the basking shark is a copepod feeder (Sims *et al.*, 2003 and Soldo *et al.*, 2008) showing an extensive horizontal and vertical migration in relation to availability and displacement of its zooplanktonic food species (Francis & Duffy 2002). Zarrad *et al.*, (2004), mentioned that the Copepod abundance in Tunis Gulf were maximum between January and April.

The sex was specified for 14 individuals. Among them 78.5 % were males. Basking shark sizes recorded from Tunisian coast vary between 125 and 715 cm TL. Adult specimens (about 7 m TL) don't exceed 20% of reported shark.

The basking shark is an endangered species, either in the Mediterranean Sea and all over the world, in the IUCN red list (Dulvy *et al.*, 2016). It was listed in Appendixes I and II of the Convention of Migratory Species (CMS), Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and under the Annex II of the SPA/BD Protocol (Specially Protected Areas and

Biological Diversity in the Mediterranean) of the Barcelona Convention. Seen this alarming status, It's important to continue reporting finding of rare and threatened shark species in order to increase our Knowledge and improve the conservation of these species.

CONCLUSION

This study's intention was to make available new knowledge on an endangered large shark species, inhabiting the Mediterranean Sea. The data suggest that the basking shark is an occasional visitor isolated on the Tunisian coasts, or that their population is collapsed. Moreover, a significant decrease in large shark species to their lowest level was evident in recent years. Considering the poorly known distribution and abundance status of this large shark along Tunisian coasts, it is often impossible to design and implement appropriate conservation evaluations and site-specific measures. Only the release of living individuals can be adopted as a conservation measure.

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