

On the occurrence of the longfin mako, *Isurus paucus* (Chondrichthyes: Isuridae) off the Algerian coast (southwestern Mediterranean)

Farid HEMIDA^{1*} and Christian CAPAPÉ²

¹*Laboratoire Halieutique, Institut des Sciences de la Nature, Université des Sciences et Techniques Houari Boumedienne, B.P. 32, El Alia, 16111 Bab Ezzouar, Alger, Algeria*

**Corresponding author, e-mail: hemidafarid@yahoo.fr*

²*Laboratoire d'Ichtyologie, Université Montpellier II, Sciences et Techniques du Languedoc, 34095 Montpellier, cedex 5, France*

*The authors describe in this paper one male and one female longfin makos *Isurus paucus* Guitart Manday, 1966 caught off Béni-Saf, city located on the Algerian coast, close to the Moroccan border. These captures confirm the occurrence of the species in the Algerian waters and in the Mediterranean.*

Key words: Chondrichthyes, Isuridae, *Isurus paucus*, Algerian coast, Mediterranean

INTRODUCTION

Two species of the genus *Isurus* Rafinesque 1810 are known: the shortfin mako *Isurus oxyrinchus* Rafinesque, 1810 and the longfin mako *Isurus paucus* Guitart Manday, 1966. *I. oxyrinchus* presents a worldwide distribution, reported in temperate and tropical waters of Atlantic, Pacific and Indian Oceans. *I. oxyrinchus* is reported in eastern Atlantic from British Isles, Scandinavia, and southward to South Africa; it is also known throughout the Mediterranean (COMPAGNO, 1984; QUÉRO, 1984).

According to CADENAT & BLACHE (1981), *I. paucus* presumably occurs off the western African coast and COMPAGNO (1984) reported that it

is known off Guinea, Ghana and the Cape Verde Islands. MORENO & MORÓN (1992) confirmed the occurrence of *I. paucus* in the area and south the Iberian Peninsula coast, close to the Strait of Gibraltar. QUEIROZ *et al.* (2006) found two specimens north-west of the Azores.

I. paucus occurs in the Mediterranean according to FERGUSSON (1994) and MORENO (1995). In contrast, NOTABARTOLO DI SCIARRA & BIANCHI (1998) considered this occurrence as doubtful in the area. Additionally, QUIGNARD & TOMASINI (2000) did not report *I. paucus* among the chondrichthyan species found in the Mediterranean.

Two *I. paucus* were captured off the coast of Algeria; main characteristics are described and the captures are commented in this paper.

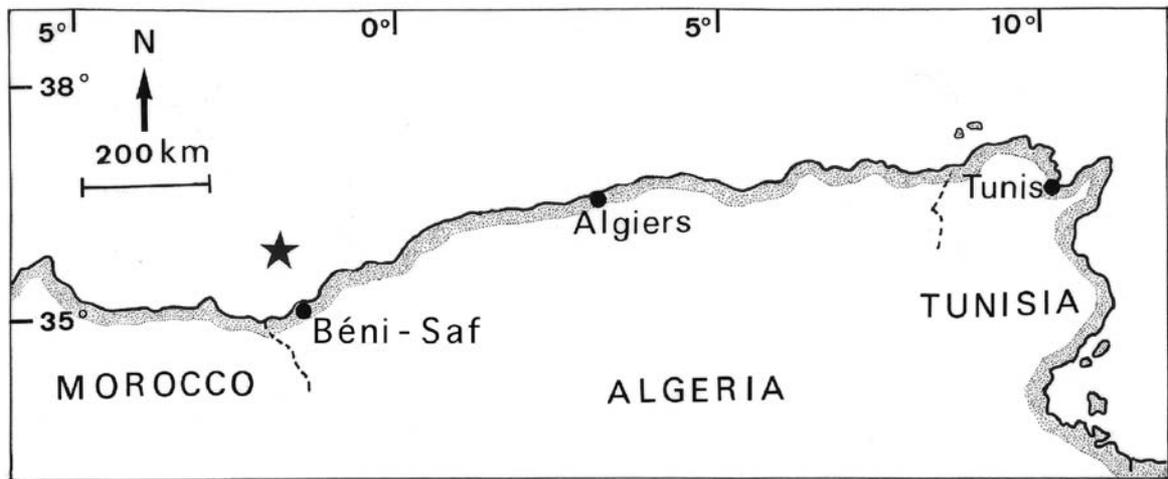


Fig. 1. Map of the Mediterranean Maghreb coast showing the location (black star) where the male and the female *Isurus paucus* were caught off Beni-Saf

MATERIAL AND METHODS

Two longfin makos, one male and one female, were collected, on 17 October 2001, at Algiers fishmarket. According to information provided by fishermen, both specimens were captured on 16 October 2001, off Béni-Saf, city located on the western area of the Algerian coast, 400 km west from Algiers and 60 km east from the Moroccan border (Fig. 1). They were caught by longlines targeting swordfishes at depth between 30 and 80 m, with the close related species, *I. oxyrinchus*. All the observed specimens of both species were eviscerated by fishermen as soon as landed on the boat deck.

The body is elongated, fusiform and rather cylindrical. The head is large ending with a broadly pointed but not acute snout (Fig. 2).

The eyes are circular with behind them a small spiracle. The nostrils are rather large with a long and triangular nasal valve. They are rather close to the mouth than the end of the snout. The mouth is large and rather rounded in front. The labial furrows do not encircle the mouth and are restricted to its corners. The gill-slits are slightly oblique and arranged in front of the pectoral fin origin.

The first dorsal fin is large and rounded at its tip, originating behind the pectoral fins. The second dorsal fin and the anal fin are relatively small. The latter fin originates at the level of

rear tip of the former. The pelvic fins are small and begin behind the first dorsal fin. The pectoral fins are large, as long as the head. They are slightly falcate and brown tipped. The caudal fin is strongly arcuated, with a long lower lobe. The caudal peduncle presents a prominent keel on each side extending towards the caudal fin.

The body colour is blue, rather blackish on the ridges of the fins. The belly is whitish while the ventral surface of the pectoral fins exhibit dark blotches. The ventral surface of the snout and the mouth is dusky.

The teeth in each jaw present a single pointed medial cusp slightly oblique towards the commissure of the mouth. The ridges of this



Fig. 2. Ventral surface of the head showing the snout and the mouth (photo F. Hemida)

Table 1. Measurements made on the male and the female *Isurus paucus*, caught off Beni-Saf (Algerian coast)

Measurements	Male	Female
Total length	280	162
Distance between snout and first dorsal fin	105	60
Distance between snout and second dorsal fin	202	104
First dorsal fin height	33	18
Pectoral fin length	51	-
Clasper length	39	-

cusps are without cusplets or serrations. The cusp is more developed in the medial series. The tip of the cusp is not reversed.

Twenty-six teeth were counted in each jaw for both specimens. The dental formula is 13-0-13.

The dried jaws of the male specimen are conserved in the Ichthyological Collection of the 'Laboratoire d'Ecologie et Environnement, Equipe Halieutique, Université Houari Boumedienne' of Algiers, Algeria, the catalogue number is S/02/2001.

Measurements made to the nearest cm are included in Table I.

Biological observations provided by GARRICK (1967) and by BASS *et al.* (1975), suggest that the male was adult and the female was juvenile.

DISCUSSION

Measurements, counts and morphology of the observed *I. paucus* are in agreement with GUITART MANDAY (1966), GARRICK, 1967, BASS *et al.* (1975), SPRINGER (1978), COMPAGNO (1984),

SCHWARTZ (1984) and LAST & STEVENS (1994). These recent records confirm the occurrence of the species off the coast of Algeria and in the Mediterranean, in agreement with MORENO's finding (1995).

However, the status of the longfin mako in the Mediterranean Sea remains unclear, and these records do not constitute sufficient data in order to state the species has become a permanent resident off the Algerian coast and in the Mediterranean. FERGUSON & COMPAGNO (2000) converged to similar conclusions concerning the status of the dusky shark, *Carcharhinus obscurus*, in the Mediterranean. They cannot "assess if a proportion of these animals remain essentially resident once having passed into the Mediterranean". Nevertheless, these captures of *I. paucus* confirm that the Mediterranean is intrusion of new immigrant sharks originating from the eastern Atlantic. Similar findings were reported for sharks from the Algerian coast (HEMIDA *et al.*, 2002), eastward for the Italian seas (PASTORE & TORTONESE, 1983; CELONA, 2000).

REFERENCES

- BASS, A.J., J.D. D'AUBREY & N. KISTNASAMY. 1975. Sharks of the east coast of southern Africa. IV. The families Odontaspidae, Scapanorhynchidae, Isuridae, Cethorhynchidae, Alopiidae, Orectolobidae and Rhinodontidae. IV. The families Carcharhinidae (excluding *Mustelus* and *Carcharhinus*) and Sphyrnidae. Invest. Rep. Oceanogr. Res. Inst., Durban, 39: 1-102.
- CADENAT, J. & J. BLACHE. 1981. Requins de Méditerranée et d'Atlantique (plus particulièrement de la côte occidentale d'Afrique) (Sharks from the Mediterranean and Atlantic (especially from the western coast of Africa)). Faune Trop., ORSTOM, 21: 1-330.
- CELONA, A. 2000. First record of a tiger shark *Galeocerdo cuvier* (Peron & Lesueur, 1822)

- in the Italian waters. *Annales, Ser. hist. nat.*, 10(2000), 2(21): 207-210.
- COMPAGNO, L.V.J. 1984. FAO species catalogue. Vol 4. Sharks of the world. An annotated and illustrated catalogue of shark species known to date. Part 1. Hexanchiformes to Lamniformes. FAO Fish. Synop., (125), 4(1): 1-249.
- FERGUSON, I.K. 1994. Check-list of shark species frequenting the Mediterranean sea. Proc. 2nd European Shark and Ray Workshop. In: Fowler S.L. & R.C. Earl (Editors). Joint Nature and Conservancy Council (JNCC), Peterborough (England), pp 49-51.
- FERGUSON, I.K. & L.V.J. COMPAGNO. 2000. Distributional note on the dusky shark, *Carcharhinus obscurus*, from the Mediterranean sea, with a first record from the Maltese Islands. Proc. 3rd Europ. Elasm. Assoc. Meet. Boulogne-sur-Mer, 1999. In: Séret & J.Y. Sire (Editors). Soc. Fr. Ichtyol. & IRD, Paris, pp. 57-65.
- GARRICK, J.A.F. 1967. Revision of sharks of genus *Isurus* with description of a new species (Galeoidea, Lamnidae). Proc. U. S. Natl. Mus., 118(3537): 663-690.
- GUITART MANDAY, D. 1966. Nuevo nombre para una especie de tiburón del género *Isurus* (Elasmobranchii: Isuridae) de aguas cubanas (New name for a shark species of the genus *Isurus* (Elasmobranchii: Isuridae) from Cuban waters). *Poeyana, (A)* (15): 1-9.
- HEMIDA, F., R. SERIDJI, N. LABIDI, J. BENSACI & C. CAPAPÉ. 2002. New data on *Carcharhinus* spp (Chondrichthyes: Carcharhinidae) from off the Algerian coast (southern Mediterranean). *Acta Adriat.*, 43(2): 83-93.
- LAST, P.R. & J.D. STEVENS. 1994. Sharks and Rays of Australia. CSIRO Publications, Melbourne, 513 pp.
- MORENO, J.M. 1995. Guía de los tiburones de aguas ibéricas, Atlántico Nororiental y Mediterráneo (Guide of sharks from Iberian waters, north-eastern Atlantic and Mediterranean). Piramide edit., Madrid, 310 pp.
- MORENO, J.A. & J. MORON. 1992. Comparative study of the genus *Isurus* (Rafinesque, 1810), and description of form ('Marrajo Criollo') apparently endemic to the Azores. *Aust. J. Mar. Freshw. Res.*, 43: 109-122.
- NOTABARTOLO DI SCIARA, G. & I. BIANCHI. 1998. Guida degli Squali e delle Razze del Mediterraneo (Guide of sharks and rays from the Mediterranean). Franco Muzzio, Padova, 338 pp.
- PASTORE, M. & E. TORTONESE. 1983. Prima segnalazione in Mediterraneo dello squalo *Rhizoprionodon acutus* (Rüppell) (First record in the Mediterranean of the shark *Rhizoprionodon acutus* (Rüppell)). *Thalassia Salentina*, 14: 11-15.
- QUEIROZ, N., S. ARAÚJO, P.A. RIBEIRO, P. TARROSO, R. XAVIER & A.M. SANTOS. 2006. A first record of longfin mako, *Isurus paucus*, in the mid-north Atlantic. JMBA2, Biodiversity Records, published online.
- QUÉRO, J.C. 1984. Lamnidae. Fishes of the North-western Atlantic and the Mediterranean. Vol. I. In: J.P. Whitehead, M.L. Bauchot, J.C. Hureau, J. Nielsen & E. Tortonese (Editors). UNESCO, Paris, pp. 83-88.
- QUIGNARD, J.P. & J.A. TOMASINI. 2000. Mediterranean fish biodiversity. *Biol. Mar. Medit.*, 7(3): 1-66.
- SCHWARTZ F.J., 1984. Sharks, Sawfish, Skates and Rays of the Carolinas. Special publication, Institution of Marine Sciences, Morehead City, 101 pp.
- SPRINGER, S. 1978. Lamnidae. FAO species identification sheets for fishery purposes. Western central Atlantic. Fishing area 31 Vol. V. Bony Fishes, Serranidae (in part) to Zeidae, Sharks, Batoid Fishes. In: Fischer W. (Editor). Var. pags., FAO Rome.

Received: 10 July 2007

Accepted: 30 September 2008

O pojavi dugoperajne psine mako, *Isurus paucus* (Chondrichthyes: Isuridae) kod Alžirske obale (južnoistočni Mediteran)

Farid HEMIDA^{1*} i Christian CAPAPÉ²

¹Laboratorij za ribarstvo, Institut prirodnih znanosti, Sveučilište znanosti i tehnike Houari Boumedienne, B.P. 32, El Alia, 16111 Bab Ezzouar, Alger, Alžir

*Kontakt adresa, e-mail: hemidafarid@yahoo.fr

²Laboratorij za Ihtiologiju, Sveučilište u Montpellier-u II, Znanosti i tehnika Languedoc-a, 34095 Montpellier, cedex 5, Francuska
e-mail: capape@univ-montp2.fr

SAŽETAK

Autori opisuju u ovom radu primjerak mužjaka i ženke dugoperajne psine mako, *Isurus paucus* Guitart Manday, 1966 uhvaćene kod Béni-Saf, grada na alžirskoj obali u blizini granice s Marokom. Ovaj ulov potvrđuje pojavu vrste u alžirskim vodama i u Mediteranu.

Ključne riječi: Chondrichthyes, Isuridae, *Isurus paucus*, alžirska obala, Mediteran