

## First substantiated record of leopard whipray, *Himantura leoparda* (Myliobatoidei: Dasyatidae) from the Syrian coast (Eastern Mediterranean Sea)

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### Abstract

The capture of leopard whipray, *Himantura leoparda* Manjaji-Matsumoto & Last, 2008 from the Syrian coast is reported in the present paper. This capture constitutes the first record for the Syrian coast and the third for the Mediterranean Sea. The Syrian specimen measured 2955 mm in total length (TL), 1310 mm disc width (DW), and weighed 54 kg for total body weight. It was a pregnant female carrying 5 developing embryos expelled from the female on the landing site. The specimen is described and comments on the distribution and the real status of this species in the area are provided.

**Keywords:** Morphometrics, Pregnancy, Embryos, Distribution, Lessepsian migrant.

**Zoobank:** urn:lsid:zoobank.org:pub:65FFD07B-891E-4C68-AEF1-06A87872B66E

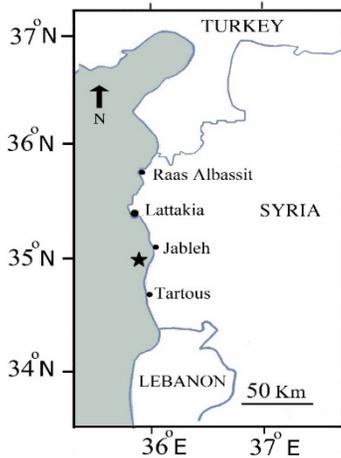
**Citation:** Saad A., Basha N.A., Tufahha A., Barakat I., Capapé C. 2021. First substantiated record of leopard whipray, *Himantura leoparda* (Myliobatoidei: Dasyatidae) from the Syrian coast (Eastern Mediterranean Sea). FishTaxa 19: 5-8.

### Introduction

Of the 31 species belonging to the genus *Himantura* Müller & Henle, 1837 (Myers et al. 2021), only 2 species are recorded to date in the Mediterranean Sea: the honeycomb stingray, *H. uarnak* (Forsskål, 1775) and the leopard whipray, *H. leoparda* Manjaji-Matsumoto & Last, 2008. *Himantura uarnak* is widely distributed in the Indo-Pacific, off south-eastern Africa, in the Red Sea, and the eastern part of the Mediterranean. This species is a recent immigrant from the Red Sea (*sensu* Golani et al. 2017), reported from the Turkish waters (Ben-Tuvia 1966, Başusta et al. 1988), the Egyptian coast (El Sayed et al. 2017) and the Levant Basin (Mouneimne 1977; Golani 2005), including the Syrian coast (Ali et al. 2010). *Himantura leoparda* is widely distributed in the tropical Indo-Pacific region from South Africa, eastern India and Sri-Lanka, throughout southern India, including the Philippines, southern Japan, Taiwan, New Guinea and northern Australia from Coral Bay to Cape York Peninsula (Manjaji-Matsumoto and Last 2008). Similarly, to its close relative species, *H. uarnak*, *H. leoparda* entered through Suez Canal into the Mediterranean Sea where it was recorded for the first time off the Turkish coast (Yucel et al. 2017). Furtherly, a second record occurred from the coast of Lebanon (Bariche et al. 2020). Through routine monitoring regularly conducted off the Syrian coast, and supported by local and experienced fishermen aware of fishing grounds, a specimen of *H. leoparda* was recorded for the first time in Syrian coastal waters. The purpose of this paper is to present this specimen and comment on the species distribution in the area and the Mediterranean Sea.

### Material and Methods

On 20 November 2020, a specimen of *H. leoparda* was caught by longline at, a depth of 110-120 m, on sandy bottom at about 1.5 nautical miles off the beach of Jable city, located on the Syrian coast by 35°22'34"N-35°59'56"E (Fig. 1). Some measurements to the nearest mm and total body weight to the nearest kilogram were recorded. The specimen was rapidly cut into slices and sold by fishermen to costumers.



**Figure 1.** Map of the Syrian coast indicating (black star) the capture site of *Himantura leoparda* (off Jableh City).



**Figure 2.** Specimen of *Himantura leoparda* captured off Jableh City, Syrian coast, and landed in a fishing site.

## Results and Discussion

The present specimen was identified as *H. leoparda* via the combination of main morphological characters: disc rhomboidal much broader in adult than in embryos, anterior margins of disc double convex, angular margin rounded, snout displaying an apical lobe, eyes and nostrils moderately large, mouth slightly arched with four papillae on floor, disc entirely smooth in embryos, heart-shaped scapular denticles developed in adult, smaller denticles along disc midline to tail base, outer margin of pectoral more or covered with spaced denticle, tail exhibiting a sting and covered by small denticles rather abundant at its base. Disc covered with large thick dark brown irregular rings often incomplete dorsally, central area of each ring yellowish, leopard-like rings, spots and rings largest over middle of disc, increasing posteriorly, decreasing towards disc margins, tail with dark spots similar in size of those in disc, covered with dark bands posteriorly to sting, ventral surface of disc and tail uniformly beige. This description is in total accordance with Manjaji-Matsumoto and Last (2008) and, therefore, *H. leoparda* should be included nowadays in the Syrian ichthyofauna. The Syrian specimen measured 2955 mm in total length (TL), 1310 mm disc width (DW), and weighed 54 kg for total body weight (Table 1, Fig. 2). It was a pregnant female carrying 5 developing embryos which were expelled from the female on the landing site. Each embryo measured 120 mm in total length, the weight of one embryo was 250 g according to the fishermen. However, he added to be not sure that other embryos fell into the sea after mother's capture and handling on board.

*Himantura leoparda* is closely related to *H. uarnak*, both species having a similar disc shape and the dorsal disc pattern includes spots, reticulations and oelli in adults (Manjaji-Matsumoto and Last 2008). Conversely, *H. leoparda* differs from *H. uarnak* by its squamation, at level of the mid-scapular area, additionally, the former displays leopard-like marking on the dorsal surface of large specimens (Manjaji-Matsumoto and Last 2008), while white spots are present on dorsal surface in the latter. Yucel et al. (2018) identified that *H. leoparda* is different from *H. uarnka* based on DNA barcoding. Additionally, Manjaji-Matsumoto and Last (2008) noted that size at birth (ca 200 mm DW) is smaller in *H. leoparda* than in *H. uarnak* (ca 260 mm DW). It is not the case for new-born from Turkey which reached 261 mm DW at birth (Table 1). Latitudinal differences in size at birth frequently occurred in elasmobranch species (Mellinger 1989). On the other hand, females from the Indo-Pacific attain at least 1105 mm DW (Manjaji-Matsumoto and Last 2008), while females from the eastern Mediterranean reached larger sizes (see Table 1). Larger females give birth to more and larger embryos, such patterns are generally the rule in viviparous elasmobranch species (Mellinger 1989). Additionally, it is probable that as other dasyatid and myliobatid species (Capapé and Zaouali 1995; Capapé et al. 2008), *H. leoparda*

**Table 1.** Morphometric measurements, total body weight and litter size of *Himantura leoparda* captured off Jableh City, Syrian coast, and comparison with the same parameters recorded from the specimen from the Turkish waters.

Authors	This study		Yucel et al. (2017)	
	Female	Pup	Female	Pup
Parameters				
Sex	Female	Female	Female	Female
Disc width (mm)	1310	120	1352	261
Disc length (mm)	1205	-	1212	272
Total length (mm)	2955	-	3002	991
Tail length (mm)	1750	-	1773	751
Disc thickness (mm)	1720	-	1750	32
Length pelvic fin (mm)	210	-	203	55
Litter size	> 5 (?)		7	
Total body weight (kg)	54	0.250	55	0.772

develops a trophonemata during gestation, and could be defined as histotrophic species *sensu* Hamlett et al. (2005). The mode of reproduction of *H. leoparda* and a low litter size (Table 1) indicate that the species displays *K*-selected parameters and appears to be endangered. The captures of pregnant females show that *H. leoparda* finds in its new areas favourable environmental conditions to develop and reproduce. However, only three captures of the species are reported to date and further records are needed to assess its real status of this recent Lessepsian migrant in the Mediterranean. In addition, an interspecific competition pressure cannot be totally ruled out between *H. leoparda* with species developing similar ways of life. The best instances are its close relative species *H. uarnak*, and other large dasyatid species such as the roundfail stingray, *Taeniurops grabata* (Geoffroy Saint-Hilaire, 1817) occurring in the area (Ali et al. 2013). Consequently, a recruitment supported by migrations from the Red Sea through Suez Canal remains one of the best parameters which could enhance the successful establishment of a viable population of *H. leoparda* in the region.

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