Thalassia Salentina
Thalassia Sal. 46 (2024), 33-42
ISSN 0563-3745, e-ISSN 1591-0725
DOI 10.1285/i15910725v46p33
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ABNORMAL HONEYCOMB STINGRAYS *HIMANTURA UARNAK* (DASYATIDAE) FROM THE SYRIAN COAST (EASTERN MEDITERRANEAN SEA)

SUMMARY

The authors report in the present paper from the Syrian coast the captures of two specimens of the honeycomb stingray, *Himantura uarnak* (Forskål, 1775) displaying a morphological abnormality. Both specimens exhibited pectoral non-adherent to the head. They are female specimens, and one of them was a large specimen, an adult female measuring 1485 mm in disc width (DW) and 3130 in total length (TL), its total body weight (TBW) reached 150 kg, probably the largest and heaviest honeycomb stingray known to date. The second specimen was a juvenile female. The abnormality herein described is the most widespread in batoid species. This kind of abnormality is due to the fact that the pectoral fins failed to fuse during the embryonic development. This abnormality has a genetic origin but according to authors, it could be also the result of other factors, mainly environmental such as the role of pollutants.

INTRODUCTION

The honeycomb stingray, *Himantura uarnak* (Forskål, 1775) displays a wide distribution in the Indo-Pacific from the Red Sea, eastern Africa to northern Australia and the Philippines(Golani *et al*., 2021). The species has recently expanded into the Mediterranean Sea through the Suez Canal and has been first recorded in the Levant Basin by Ben-Tuvia (1955). Other records occurred in the eastern Mediterranean Sea, from Türkiye (Ben-Tuvia, 1966; Başusta *et al*., 1998), Lebanon (Mouneimne, 1977) and Egypt (El Sayed *et al*., 2017).

The reproductive biology of *Himantura uarnak* is poorly known to date. Başusta and Başusta (2023) reported from the Turkish marine waters, the cap-

ture of a pregnant female carrying two near term embryos and noted that the parturition probably occurs in the area at the end of March or in the early April. *H. uarnak* is probably an aplacental viviparous elasmobranch as it is the case for other dasyatid species (Mellinger, 1989).

In addition, some captures of the species were reported from the Syrian coast (Ali et al., 2010, 2013), at least 10 specimens and among them two abnormal specimens were found. Both abnormal specimens are described in the present paper together with some comments about the causes of this type of abnormality.

MATERIALS AND METHODS

The first abnormal specimen has been caught on 24 April 2008, using a pelagic longline, on soft bottom at a depth of about 5-10 m, 25 km south-west offTartous, by 35° 53′ N and 35° 53′ E (Fig. 1).

The second specimen has been captured on 4 September 2016, using a metal hook line, on soft bottom at a depth of 10 m, off Al-Hamidiie, located 20 km south to Tartous City, by 34° 42¢ N and 35° 56¢ E (Fig. 1).

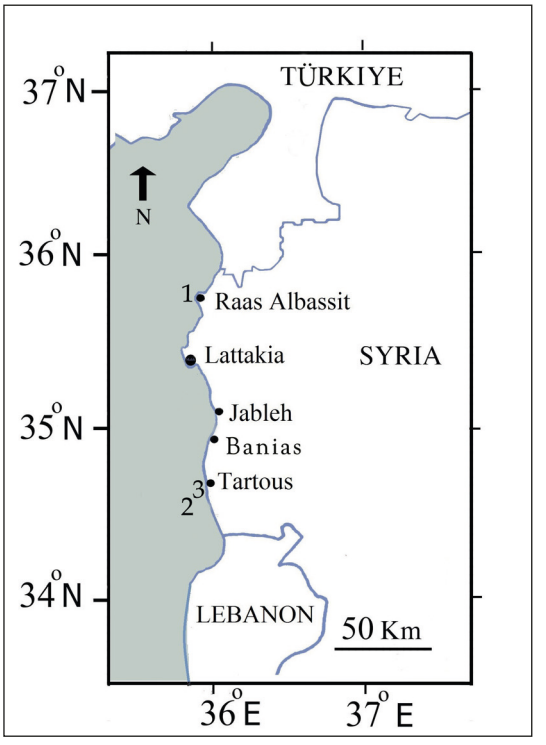

Fig. 1 - Map of the Syrian coast indicating the capture sites of *Himantura uarnak*. **1**. Normal male captured, on 23 April 2012. **2.** Abnormal adult female captured on 24 April 2008, **3**. Abnormal juvenile female captured on 4 September 2016.

The present specimens were measured to the nearest millimetre using digital calliper and weighed for total body to the nearest kilogram on commercial scales by fish market traders. The measurements carried out are summarized in Tab. 1.

Tab. 1 - *Data concerning the two abnormal specimens of Himantura uarnak captured from the Syrian coast.*

Specimen	**1**		**2**	
Sex	Female		Female	
Date of capture	On 24 April 2008		On 4 September 2016	
Morphometric measurements	mm	% DW	mm	% DW
Total length	3130	210.7	-	-
Disc width	1485	100.0	802	100.0
Disc length	1352	91.0	696	86.8
Snout tip to maximum disc width	-	-	253	31.5
Pre-orbital length	240	16.2	159	19.8
Interorbital width	-	-	106	13.2
Interspiracular width	-	-	136	17.0
Spiracle width	-	-	25	3.1
Spiracle length	-	-	44	5.5
First gill slit length	-	-	27	3.4
Second gill slit length	-	-	29	3.6
Third gill slit length	-	-	27	3.4
Fourth gill slit length	-	-	23	2.9
Fifth gill slit length	-	-	19	2.4.
Width between first gill slits	-	-	156	19.5
Width between fifth gill slits	-	-	94	11.7
Snout tip to first gill slit	-	-	265	33.0
Snout tip to fifth gill slit	-	-	365	45.5
Snout tip to vent	-	-	660	82.3
Tail base width	-	-	38	4.8
Tail base depth	-	-	32	4.0
Total body weight (kg)	150		16	

RESULTS AND DISCUSSION

All specimens were identified as *Himnatura uarnak* with the help of field guides and ichthyological fauna (Ben-Tuvia, 1966; Mc Eachran and Capapé, 1984; Başusta *et al.*, 1998, Last et *al.*, 2016; Golani *et al.*, 2021), as follows: disc almost rhomboid, broader than long, snout short obtusely triangular, anterior margins slightly concave, hind margins convex, mouth with 5 fleshy papillae, spiracles closely posterior to eyes, tail long about three times length of disc, without membraneous folds or ridges on top, upper surface with a median serie of flattened tubercles, colour of upper surface brownish to yellowish with numerous dark spots, bars or reticulations, making a bright pattern (Fig. 2).

The normal specimen herein presented (see Fig. 2) was caught on 23 April 2012, using a pelagic longline, on sandy -rocky bottom, at a depth of about 20-30 m. The capture occurred at 12 km, off site fishing of Raas Albassit by and 35° 53′ N and 35° 39′ E. This norml specimen was a male, measuring 840 mm DW and weighing 16 kg TBW.

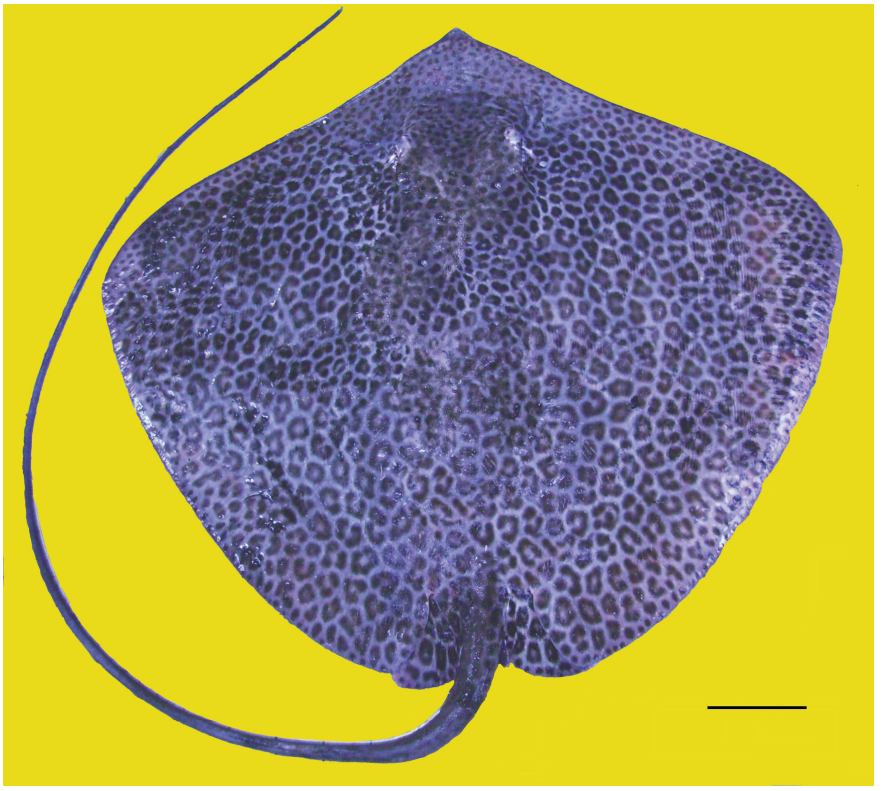

Fig. 2 - Normal male of *Himantura uarnak* captured on 23 April 2012. Scale bar = 100 mm.

The first abnormal specimen was an adult female measuring 1485 mm in disc width (DW) and 3130 in total length (TL), its total body weight (TBW) reached 150 kg. This specimen was previously reported by Ali *et al.* (2010), but in the present paper a photography of the specimen is added and more details are provided concerning its abnormality. It clearly appears that the pectoral fins are separated from the rostrum by wide notches (Fig. 3). The

Fig. 3 - Abnormal adult female of *Himantura uarnak* captured on 24 April 2008. Scale bar = 200 mm.

internal margins of the rostrum and the pectoral fins did not display unhealed scars and are coloured just like the whole specimen. The second specimen was a juvenile female which measured 802 mm DW and weighed 16 kg TBW. It displayed a large curved space at the anterior margin of the disc, due to a lack of rostrum, the margin space did not reveal the presence of a scar and is also pigmented, similarly to the whole specimen. On the other side, the tail has been cut by the fishermen to avoid injury caused by the sting during handling (Fig. 4).

Lack of scars and normal pigmentation suggest that the notches observed in the first specimen and the curve of the second specimen are not injuries. They are the consequence of an inter and/or intraspecific pressure, or damages that occured during poor handling of specimen captures. According

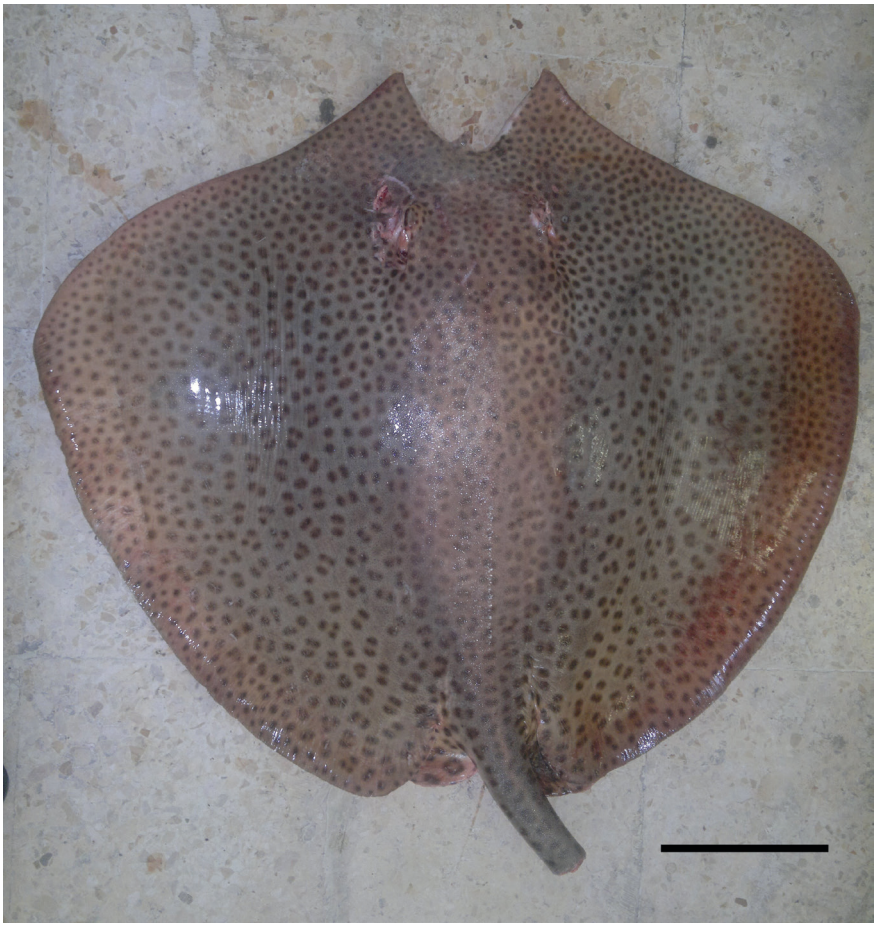

Fig. 4 - *Abnormal juvenile female of Himantura uarnak captured on 4 September 2016. Scale bar* = 150 mm.

to Bigelow and Schroeder (1953), such abnomalities occur when the pectoral fins fail to fuse together in front of the head in early stages of embryonic development. In addition, Thorson *et al*. (1983) described embryonic development in two freshwater stingrays *Potamotrygon constelleata* (Vaillant, 1880) and *P. motoro* (Müller and Henle, 1841) and noted that in early embryos the stingray pectoral fins are previously separated, known as «shark stage» (*sensu* Rosa *et al*., 1996), resembling a shark embryo. Progressively the pectoral fuse in medium embryos and form a complete disc in near term embryos.

The pectoral fins non-adherent to the head is the kind of abnormality the most widespread in batoid species off the western Atlantic according to Ribeiro-Prado *et al*. (2008) and Ehemann *et al*. (2022). This abnormality appears to

be rather rare from off the eastern Atlantic where a single case was recorded in the striped panray *Zanobatos schoenleinii* (Müller and Henlé, 1841) by Capapé *et al*. (2022). In addition, this abnormality was recorded in Mediterranean specimens of the marbled electric ray *Torpedo marmorata* Risso, 1810 from the Adriatic Sea (Valle, 1931; Jardas and Homen, 1977), the common torpedo *Torpedo torpedo* (Linnaeus, 1758) from the Lagoon of Bizerte located in northern Tunisia (Mnasri *et al*., 2010) and a rough ray *Raja radula* Delaroche, 1807 captured in the Gulf of Tunis (Capapé and Pantoustier, 1975).

However, the origin of this abnormality remains obscure and speculative, genetic disorders are considered as the main widespread cause in the ichthyological literature. However, other patterns cannot be totally ruled out such as unfavourable envitonmental conditions, the best instance being a large exposure to pollutants (Ribeiro-Prado *et al*., 2008), affecting batoid species which live burried in bottoms and are directly contamined by high values of heavy metal concentrations (Tommasi, 1985). The abnormalities observed in *Z. schoenleinii* from the coast of Senegal are more abundant at present than previously and are the consequence of a pollution increasing in the shallow coastal waters the country (Capapé *et al*., 2022). The role of a poor nutrition of the mother in viviparous species, together with infection by parasits, bacteries or viruses could be taken into consideration according to Ehemann *et al*. (2022) who noted also that the global warming of waters and disorders in the water column affecting elasmobranch viviparous species cannot be totally ruled out. In addition, abnormalities recorded in batoid species do not affect the development of this specimens (Capapé *et al*., 2022). The fist abnormal specimen described inthe present paper is probably the largest and the heaviest *H. uarnak* known to date.

Ribeiro-Prado et al. (2008) and Ehemann et al. (2022) noted that the cases of abnormalities concerning the pectoral fins not adherent to the head are relatively the most abundant in batoid species probably because it starts in the early stages of he embryonic development. Globally, the records of the abnormalities in batoids remains rather rare, it is known the captures of elasmobranch species decrease since several years. On the other hand, the specimens displaying an abnormality have not an economical value and are soon after captures are discarded at sea by fishermen and also they does not attract the attention of scientific researchers. However, in total agreement with Ribeiro-Prado et al. (2008) and Ehemann et al. (2022), the observations herein presented and in their papers need to implemented to provide the base of future studies regarding this poorly explored research.

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