

**STATUS OF VULNERABLE LEOPARD WHIP RAY (*HIMANTURA UNDULATA*)
AT TWO LANDING CENTRES OF CHITTAGONG AND COX'S BAZAR,
BANGLADESH**

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Abstract: Landing of vulnerable ray species, Leopard whip ray, *Himantura undulata* (Bleeker, 1852) was recorded from two fish landing centers of Bangladesh Fisheries Development Corporation. The highest landing volume was recorded 0.420 mt in March 2010 and the lowest 0.112 mt in August 2011. Average highest and lowest landings were 52.5 kg and 2.88 kg in the months of November 2012 and in March 2009 respectively. During 2009-2010 *H. undulata* contributed only 0.560 MT (0.33 %) followed by 2010-2011, 2011-2012 and 2012-2013 period were 0.893 MT (0.28%), 0.882 MT (0.23%) and 0.434MT (0.12%) of the year wise total landing volume of sharks and rays respectively. Month wise maximum and minimum recorded numbers of landed *H. undulata* were 59 and 4 in the month of November, 2012 and July, 2009 respectively. The highest and lowest percentage contributions were 2.54% and 0.28% in July, 2009 and March, 2013 respectively.

Key words: Landing, whip ray, fish harbour BFDC

INTRODUCTION

The shark and rays fishery in Bangladesh is largely artisanal. They are harvested as target species mainly by modified gill net, hooks and lines with other commercially important species. Rays are captured only as by catch in hooks and lines and some times exploited by trammel net and set bag net (Roy *et al.* 2007). Only 80-100 numbers of mechanized boats are engaged in commercial fishing for sharks and rays at Cox's Bazar and Chittagong marine water at the east and western part of the Bay of Bengal in Bangladesh. A large numbers of small size juveniles or new born sharks and rays are caught by shrimp and fish trawlers, which were not recorded or reported due to small size and low market value and discarded mainly as a trash fish (Roy *et al.* 2007).

Rays are caught and sold at a reasonable price where rays appear predominantly in the shallower strata up to 50 m depth (NDA-Malaysia 2006). In Bangladesh rays are not homogeneously distributed over the whole oceanic area but mainly found in two fishing zones, one is near Elephant point and the other in the center of the Middle ground area (near Mohipur) Distribution by

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depth strata rays 10-20m-899, 20-50m-71, 50-80m-08, 80-100m-2, Av.10-100m-214 numbers (Lamboeuf 1987).

In Bangladesh, there are only a few small shark fisheries processing plants in the form of cottage industry operate mostly by fisher flocks due to the irregular supply of shark and ray species (Roy *et al.* 2007). Rays are mostly consumed as a fresh meat, although some are processed as salted fish or dried form for utilization. During 2011-12 the total marine fish production was 578,620 MT of which shark fishery contributed only 0.80% (4205 MT) (DoF 2011-2012).

The Leopard whip ray- *Himantura undulata* (Bleeker,1852) is a species of sting ray of the family Dasyatidae, found widely in the shallow waters near the shore, close to land than breaking waves. Found in Indo-pacific region from the Bay of Bengal towards Northern Australian sea. Absent from western Indian Ocean. The species attain 140 cm (disc width); size at birth is 20 cm DW (White *et al.* 2006) across and has a diamond-shaped disc with rounded corners and a projecting, pointed snout. Its tail is long and whip like without fin folds. Adults have a striking dorsal color pattern consisting of large, dark brown rings and reticulations declined by thin yellow lines, while juveniles have a pattern of large dark spots. Mating season occurs in the winter. Most rays are viviparous, bearing live young in "litters" of five to ten (White *et al.* 2006). The multi species coastal fisheries, at both artisanal and commercial levels, comprise of 56 species of sharks and rays (Day 1969) and Roy *et al.* (2011) recorded 35 species of sharks & rays (11 shark and 24 ray species) in the marine territory of Bay of Bengal.

Though *H. undulata* is a vulnerable species by the IUCN red list (IUCN 2009) and it's economically important for its meat and skin in the abroad and local market and presently it is exploited commercially. So the study was under taken to know the present status of this species in Bangladesh.

MATERIAL AND METHODS

The study was conducted from July, 2009 to June, 2013 in two shark and ray fish landing centers at BFDC Fish harbour, Cox's Bazar and Fishery ghat fish landing center, Chittagong. These sampling centers were selected in order to cover a wide range of the most landing centers, retail and whole sale markets, target and incidental catches of the species, from the Bay of Bengal of Bangladesh region. Month wise total landing data, total numbers were recorded both at landing stations and interview of boat owners of commercial fishing vessels. The data were collected in new-moon, full-moon, first quarter, last

quarter and other days of the moon month from the landing centers. Sampling days were 8 in each month of the year.

RESULTS AND DISCUSSION

Species description and distribution: During July, 2009 to June, 2013 recorded total numbers of *H. undulata* were 158 and their total landing weight was 2.769 mt. from the selected these landing centers was found. In this study recorded highest length and weight of Leopard whip ray were 110 cm (DW) and 55.0 kg respectively and just born small size of *H. undulata* was recorded in 22 cm (DW) and its weight was 170 gm; where mother's body weight was 0.132 kg and DW 110 cm in the month of March, 2010, which is nearly similar to the report on White *et al.* 2006. The very rare ray's species were *H. undulata* contributed 1.54% and 2.17%, which found in the month of July, 2009 and March, 2010 respectively (Roy *et al.* 2011). The abundance of *H. undulata* was very rare in the sampling period and found only in 12 months out of 60 months of the study periods; contributed less than 3.0 % of the total month wise catch of sharks and rays, which is related on report Roy *et al.* 2011. It was observe that, in immature stage of *H. undulata* was seen many black spot to the dorsal view of the whole body and in virtual side dark line present to the anterior lobe and in mature stage reticulate dark brown rings present in the dorsal side of the body (Fig. 2). Findings from the study period on external characters of *H. undulata* (Fig. 2) are related to the published report.

Total landing: In the year 2009-2010 total 172.266 mt of sharks and rays were recorded, among them *H. undulata* contributed only 0.33 % (0.560 mt). During 2010-11 total landing of *H. undulata* was recorded 0.893 mt (0.28%), where landing volume of total sharks and rays was 314.367 mt. During 2011-12 *H. undulata* contributed 0.23% (0.882 mt) of the total landed (382.670 mt) shark and ray species. During 2012-2013 total landing of sharks and rays was 362.406 mt, of which landing of *H. undulata* was 0.434 mt or 0.12% (Table 1).

Total Numbers: Month wise total numbers of *H. undulata* were recorded. During July, 2009 to June, 2010, total 12 numbers were landed followed by 27, 45 and 74 numbers during 2010-11, 2011-12 and 2012-13 respectively (Table 1).

Percentage contribution: Month wise percentage contribution by weight of *H. undulata* was analyzed; during July, 2009 to June, 2010 percentage composition was 2.54 in the month of July, 2009 and 2.17 in March, 2010. In July, 2010 to June, 2011 period percentage contribution was 1.15 in November, 2010 followed by 0.91 and 1.80 were in the month of January, 2011 and May, 2011 respectively. During July, 2011 to June, 2012 was 2.35% in the month of

July, 2011 followed by 0.63%, 0.84%, 1.76% were in August, 2011, April, 2012 and May, 2012 respectively. In July, 2012 to June, 2013 percentage contribution was 0.41, 0.28 and 0.59 in the month of November, 2012, March, 2013 and May, 2013 respectively in the month wise total landing of sharks and rays (Table1).

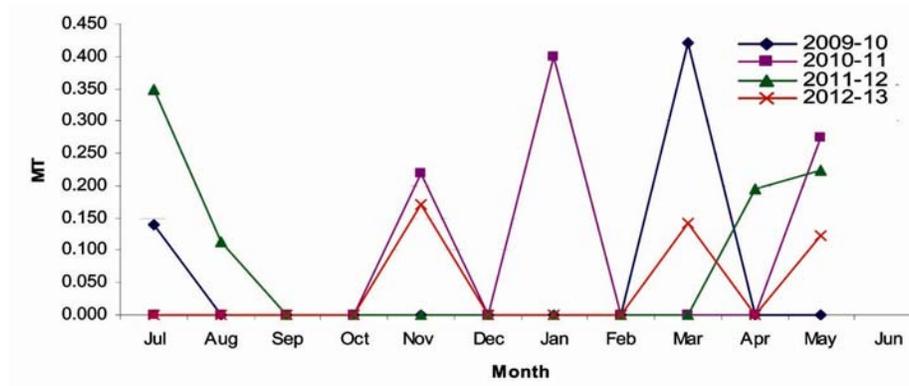


Fig. 1. Month and yearwise total landing (MT) of *H. undulata*.

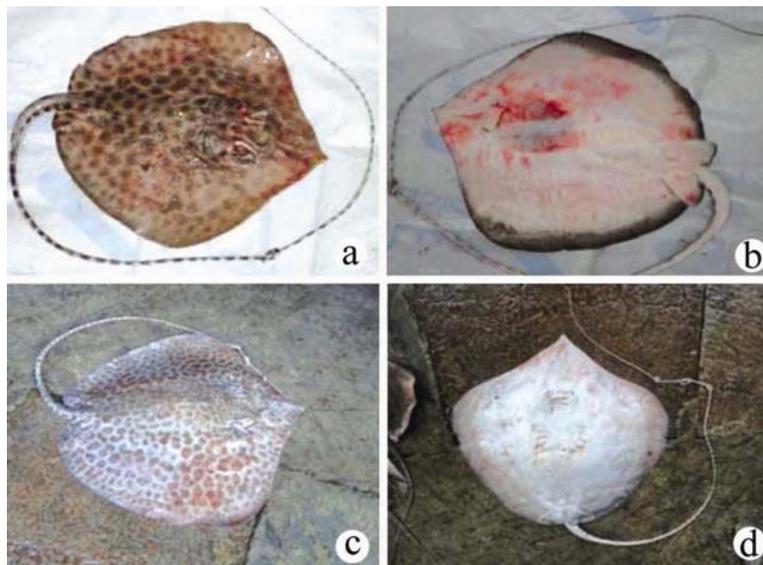


Plate 2. Immature and Mature stages of *Himantura undulata*. (a) Immature stage of *H. undulata* (Dorsal view), (b) Ventral view, (c) Mature stage of *H. undulata* (Dorsal view), (d) Ventral view.

Rays contributed approximately 1% (22,204.80 tons) in the total marine landing in India, most of them are sting ray. The following sting ray species are available in Parangipettai coast, Tamil Nadu, India -*Dasatis sephen*, *D.*

imbricata, *D. benneti*, *D. jenkinsi*, *Himantura walga*, *H. uarnak*, *H. bleekeri*, *H. undulata*, *H. gerradi*, *Mobula diabolus*, *Aetabatus narinari*, *A. flagellum*, but *H. undulata* are rare in position in the same coast (Rojesh *et al.* 2010), which is related this study report.

Table 1. Total landing, Percentage contribution and Total number of *H. undulata*

Month	July, 09 - June, 10				July, 10 - June, 11			
	TL (MT)	HU(MT)	%	TN	TL(MT)	HU(MT)	%	TN
July	172.266 MT	0.140	2.54	4	314.367 MT	-	-	-
August		-	-	-		-	-	-
September		-	-	-		-	-	-
October		-	-	-		-	-	-
November		-	-	-		0.218	1.15	6
December		-	-	-		-	-	-
January		-	-	-		0.400	0.91	8
February		-	-	-		-	-	-
March		0.420	2.17	8		-	-	-
April		-	-	-		-	-	-
May		-	-	-		0.275	1.80	13
June		-	-	-		-	-	-

Table contd (righ side).

Month	July, 11- June, 12				July, 12- June, 13			
	TL (MT)	HU(MT)	%	TN	TL(MT)	HU(MT)	%	TN
July	382.670 MT	0.350	2.35	10	362.406 MT	-	-	-
August		0.112	0.63	14		-	-	-
September		-	-	-		-	-	-
October		-	-	-		-	-	-
November		-	-	-		0.170	0.41	59
December		-	-	-		-	-	-
January		-	-	-		-	-	-
February		-	-	-		-	-	-
March		-	-	-		0.141	0.28	5
April		0.195	0.84	12		-	-	-
May		0.225	1.76	9		0.123	0.59	10
June		-	-	-		-	-	-

TL= Year wise Total landing of shark & rays; HU =Total landing of *H. undulata*; TN= Total number; %= Percentage contribution.

Utilization: Small sized of sharks and rays are used for producing fish meal and fertilizer if markets of human consumption are not available (Compagno, 1984). In Bangladesh, small sized and less weight of *H. undulata* used as dried form for human consumption, fish meal for fish culture pond and even used in poultry industry as feed (Compagno 1984). The flesh of *H. undulata* in the local market are consumed by non-Muslim people; tails are used locally as whip for decoration, bones as in village medicine and cosmetics industry and dorsal part

of skin export as dried condition to China, Korea, Hong Kong, Singapore, UAE and Dubai to make bags, money bags and shoes.

It has been observed that, during 2009-2010 total landed numbers and average weight of *H. undulata* were 12 numbers & 46.66 kg in each followed by 27 and 33.07 kg, 45 and 19.60 kg and 74 and 5.86 kg in the year 2010-11, 2011-12 and 2012-13, respectively. Thus the total number of *H. undulata* was gradually increased but average landing weight was gradually decreased. So it is clear that, in before exploitation of Leopard whip ray were large in size and weight, but now days is captured as small in size and weight. For the fishing pressure, it is now in vulnerable position stated at IUCN (2009) red data book.

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