

STUDY ON THE FISHERY STATUS OF COACH WHIPRAY, *HIMANTURA UARNAK* AT TWO FISH LANDING SITES OF MON STATE

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Abstract

The coach whipray *Himantura uarnak* (Forsskal, 1775) was collected from two fish landing sites namely Zeephyuthaung and Ahlayt coastal areas, Mon State during April 2018 to March 2019. Average highest and lowest landings were 85.5 kg and 11.3 kg in the months of July 2019 and in December 2018 at Zeephyuthaung and the highest volume was 102 kg in April and the lowest was 14.3 in June at Ahlayt respectively. During the study period, *Himantura uarnak* contributed only 338.3 kg in April at Ahlayt followed by 307.6 kg in February at Ahlayt and 307.5 kg in April and 307 kg in July at Zeephyuthaung, and the least is 31.5 kg in June at Ahlayt of the year wise total landing volume of sharks and rays respectively. *H. uarnak* was found in throughout of the year in study period. There is no comprehensive data of fish landing in Mon State.

Keywords: Abundance, coach whipray, CPUE, fish landing sites, *Himantura uarnak*, Mon State

Introduction

In Myanmar, the fishery sector is the second most commercially vital sector after the agriculture sector to fulfill the protein requirements of the people of Myanmar and to provide the food security as well as employment opportunity to a large number of fishery communities and rural dwellers. The total fish stocks of Myanmar are about 1.75 million tones of which 1.05 million tones can be harvested annually. Along the Myanmar coastline, there are 139 fishing grounds. Among them, Mon State has 14 fishing grounds.

The ray fishes spend their entire lives in close contact with the bottom but many others spend most of their life in the water column. They are located on top of the head and can be used to draw water into the gill chambers while the fish is lying motionless on the bottom, waiting to ambush prey or avoiding predators. Their scales are typically found only as a few rows of large denticles on the back, which are sometimes modified into spines. The rays are characterized by ventral gill openings, enlarged pectoral fins that attach to the side of the head, lack of an anal fin, eyes and spiracles located on top of the head and pavement-like teeth. Of the global current chondrichthyan fauna (more than 1200 species), at least 315 species recorded in Southeast Asian Region, which including 174 species of sharks from 8 orders (29 families) and 141 rays from 5 orders (19 families). As for rays, Indonesia also recorded the highest number with 101 species and 17 families followed by Malaysia (82 species; 14 families), Philippines (66 species; 18 families), Thailand (55 species; 12 families), Cambodia (54 species; 14 families), Myanmar (46 species; 11 families), Vietnam (39 species; 12 families) and Brunei Darussalam (35 species; 11 families) (Ahmad et al. 2013).

In the present study, an attempt has been made on the study of distribution of the ray, *Himantura uarnak* in two fish landing sites along the Mon coastal areas included Ahlayt, and Zeephyuthaung. The objectives of the present study are to know the monthly catch rates of the ray, *H. uarnak* populations along the coastline of Mon and to investigate the abundance of the ray, *H. uarnak* in Mon coastal waters.

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Materials and Methods

Fish specimens in this study were collected from Mon coastal waters such as Zeephyuthaung (Lat. 15° 19' N, Long. 97° 78' E), and Ahlayt (Lat. 16° 33' N, Long. 97° 21' E). All specimens were collected from two fish landing sites of Mon coastal areas during April 2018 to March 2019. The map of the study areas were shown in Fig. 1. During the study period, monthly catch rates of this species was also conducted in the fish landing sites. The volumes of total catch, the catch of rays caught by stationary bag net at each sampling site were recorded. Based on each catch data, catch rate or catch per unit of effort (CPUE) was computed by dividing the total weight of this species by the number of fishing days (kg/day). Species composition was estimated from the total weight (kg) of this species sample and expressed in percentage. The catches of rays from inshore and offshore catches of longline and trawl fisheries were provided. In the field, the samples were washed with fresh water and then preserved in 10% formaldehyde solutions. Photographs of the external morphological structure of sharks and rays were taken with a FUJI digital camera. The samples were arranged for analyzing in fresh condition and measured the total length (TL) and disc length (DL) by measuring board in centimeter (cm). The body weight (BW) was measured by the KANEKO balance respectively. To continue other identification, all specimens were carried out to in the laboratory, Department of Marine Science, Mawlamyine University for future study. The classification and identification of collected specimens were adopted from Compagno (1984), Carpenter and Niem (1998) Vol. 2 and 3, Yano *et al.* (2005), Ahmad *et al.* (2014), Ahmad *et al.* (2017) and Ahmad, Lim and U Saw Han Shein (2015).

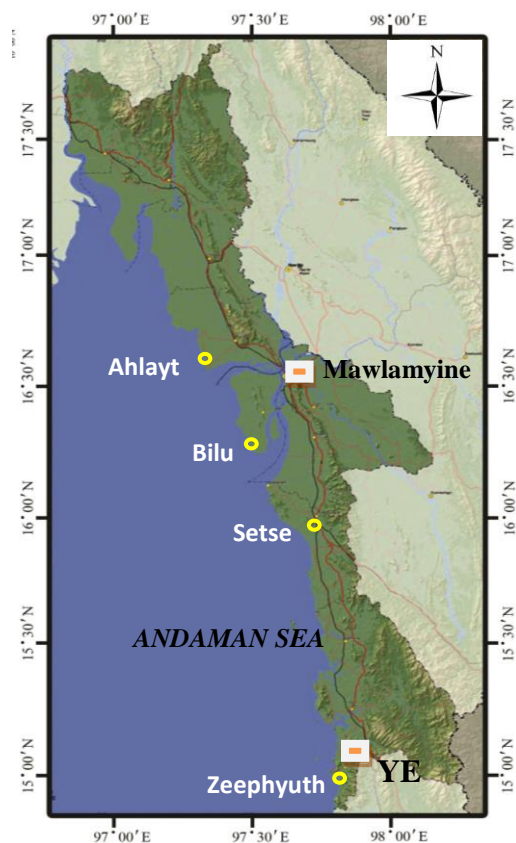


Figure 1 Map showing the sample collection sites of the study areas.

Results and Discussion

Classification of the coach whipray *Himantura uarnak* from Mon Coastal Waters

Phylum Chordata

Class Chondrichthyes

Order Myliobatiformes

Family Dasyatidae

Genus *Himantura*

Species *Himantura uarnak* (Forsskal, 1775)

Family Dasyatidae: The family Dasyatidae includes stingrays, or whiprays and river stingrays, encompassing nine genera and about 70 species. Like other rays, they have enlarged pectoral fins that form a disc. In this family, the disc stretches forward to include the head and ranges from less than 30 cm to over 2 m diameter. Stingrays can be found in all tropical and subtropical seas. River rays form a freshwater subfamily Dasyatidae and live only in freshwater in parts of South America and Africa. Most stingrays are benthic, burying themselves partially under sand or mud in relatively shallowwater. Members of Dasyatidae are viviparous and invest a lot of energy in relatively few young over a lifetime. This reproductive strategy renders them potentially vulnerable to human activity.

Description of the coach whipray *Himantura uarnak* from Mon Coastal Waters

Himantura uarnak (Forsskal, 1775)

(Figure 2 A-B)

Disc rhomboidal and flat; snout broadly triangular, tip distinctly pointed; pectoral fin apex narrowly rounded; anterior margin almost straight. Eyes are rather small and interorbital space broad. Mouth narrow, with 5 papillae on floor; labial furrows weakly developed; lower labial folds and papillae present. Internasal flap skirt-shaped; relatively short and broad, margin with fine fringe; nostrils long, narrow; lower jaw deeply concave near symphysis. Denticles low, flat, heart-shaped in a broad band from interorbit, extending along centre of disc and onto tail density increasing with size; 2 prominent pearl thorns in centre of disc but enlarged thorns absent from midline of tail and dorsal surface of disc largely smooth. The coloration of this species varies substantially with age and locality. Adults generally have a dorsal pattern of numerous closely spaced dark brown spots or reticulations on beige to yellow-brown background, which becomes blackish past the spine with lighter bands on the sides. The underside is pale, without markings.

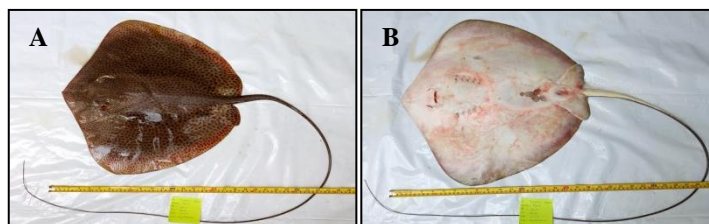


Figure 2 (A- B): The coach whipray *Himantura uarnak*: A) dorsal view and B) ventral view

Habitat and biology: They found in inshore and soft substrates. They found in coral reefs, brackish water and marine. During the day, this species generally in active and spends much time resting motionless on sea floor, sometimes buried in sand. They are viviparous and feed on benthic and neritic organisms, including crabs, shrimps, mantis shrimps, bivalves, gastropods, worms, jellyfish and bony fishes.

Geographical distribution: Malaysia, Myanmar, Indo-Pacific, west to South Africa and the Mediterranean Sea, north to Taiwan.

IUCN Red List Status: Vulnerable (VU) (assessed: 2015)

Abundance of coach whipray *Himantura uarnak* from Mon coastal waters

Table 1 and 2 described the monthly catch weight of ray *Himantura uarnak* in two fish landing sites of Mon State. Total catch (kg), catch of species (kg), catch per unit effort, CPUE (kg/day) and percentage composition of species in total catch (%) were presented in these tables. Catch per unit effort was calculated in terms of catch per days (kg/day).

Monthly catches of *Himantura uarnak* ranged from the minimum of 11.3 kg (December) to the maximum of 85.5 kg (July) in Zeephyuthaung fish landing site with an average catches of 39 kg (Table 1). The catches of this species increased from 43.9 kg in May to 85.5 kg in July. After that the catches decreased to 53.2 kg (August), 18.5 kg (September) and 15 kg (October). The catch rates of September to February are little differed (Figure 3). The range of monthly catches of Ahlayt was from 14.3 kg (June) to 102 kg (April) with an average catches of 29.4 kg (Table 2). The catch weight (102 kg) of April decreased to 14.3 kg in June and then increased to the catch weight of 67.8 kg in September. After that the catch weight decreased to 14.6 kg (November) and then increased to 75.6 kg (February). The catch weights of 102 kg (April), 67.8 kg (September), 75.6 kg (February) and 71.1 kg (March) were the highest catch rate months in Ahlayt as shown in Figure 4.

With regard to monthly catch per unit effort of this species, it ranged from 11.3 kg/day (December) to 85.5 kg/day (July) at Zeephyuthaung and 14.3 kg/day (June) to 102 kg/day (April) at Ahlayt. The average effort was found to be highest at Ahlayt (14.3 kg/day). During the study period, *H. uarnak* contributed only 338.3 kg in April at Ahlayt followed by 307.6 kg in February at Ahlayt and 307.5 kg in April and 307 kg in July at Zeephyuthaung, and the least is 31.5 kg in June at Ahlayt of the year wise total landing volume of sharks and rays respectively.

The percentage composition of *H. uarnak* varied from the minimum of 7.5% (October) to the maximum of 43.4% (August) of the total catch weight an average composition of 22.5% at Zeephyuthaung and from the minimum of 10% (July) to the maximum of 45.4% (June) of the total catch weight an average composition of 25.2% at Ahlayt landing site. *H. uarnak* was found in throughout of the year in study period.

The coach whipray, *Himantura uarnak* fights strongly on hook-and-line and is popular with recreational anglers, who usually release it alive. This species is caught by intensive artisanal and commercial fisheries operating in Southeast Asia and parts of the Indian Ocean, using bottom trawls, gillnets, beach seines and longlines. The meat, skin and cartilage are utilized, though this species is suitable price for human consumption.

Table 1 Monthly catch weight of the ray *Himantura uarnak* of Zeephyuthaung landing site.

Months	Total catch (kg)	Catch of species (kg)	Catch per unit effort (kg/day) of species	Percentage composition of species in total catch (%)
April (2018)	307.5	78.7	15.7	25.6
May	150.5	43.9	8.8	29.3
June	295.6	58.6	11.7	19.8
July	307.0	85.5	17.1	27.9
August	122.5	53.2	10.6	43.4
September	78.3	18.5	3.7	23.6
October	200.0	15.0	3.0	7.5
November	220.8	18.9	3.8	8.6
December	75.0	11.3	2.3	15.0
January	92.2	16.8	3.4	18.2
(2019)				
February	60.0	14.4	2.9	24.0
March	184.5	52.5	10.5	28.5
Average	174.5	39.0	7.8	22.5

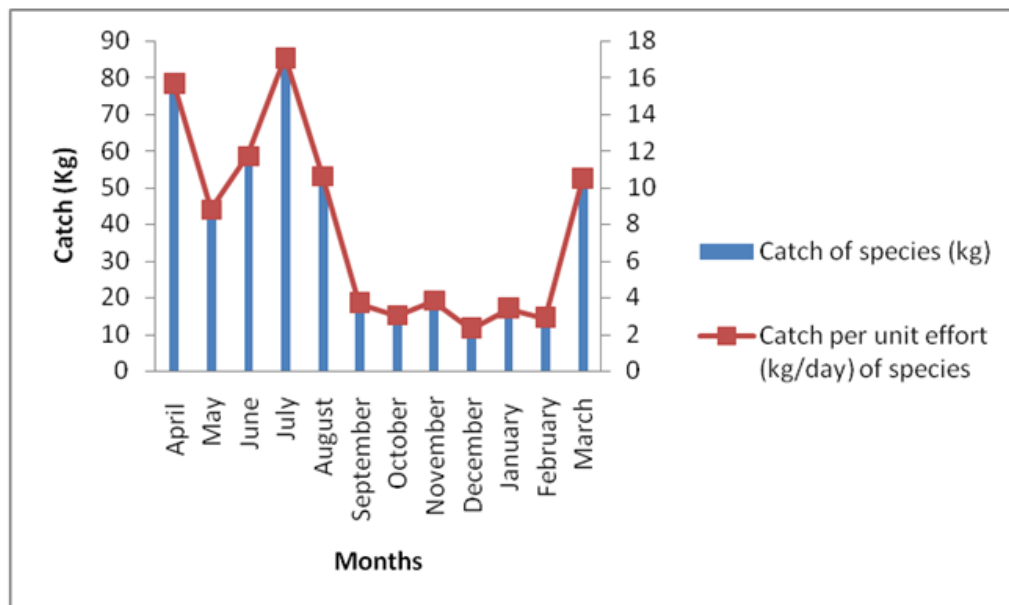
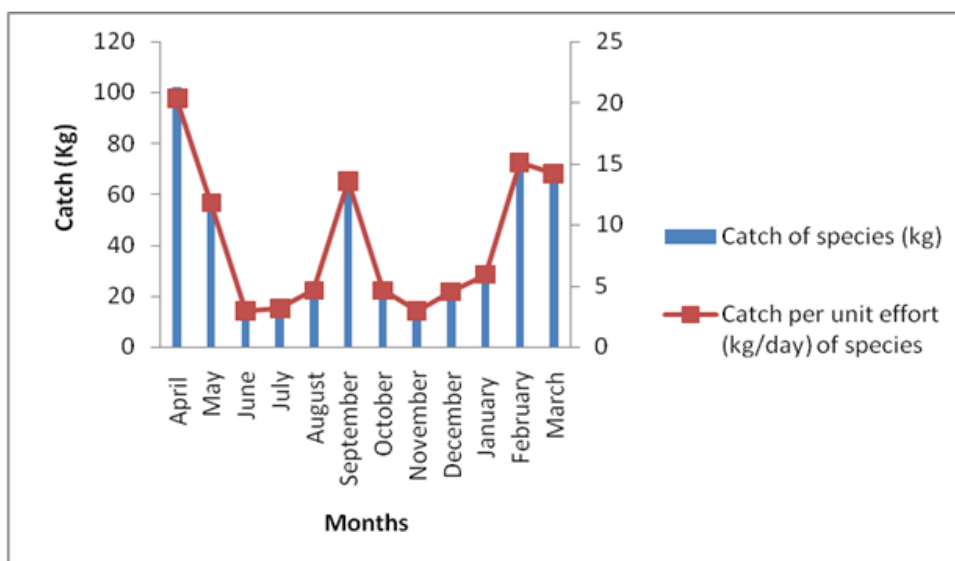


Figure 3 Monthly variations in catch and CPUE of *Himantura uarnak* at Zeephyuthaung fish landing site during April 2018 to March 2019.

Table 2 Monthly catch weight of the ray *Himantura uarnak* species of Ahlayt landing site.

Months	Total catch (kg)	Catch of species (kg)	Catch per unit effort (kg/day) of species	Percentage composition of species in total catch (%)
April (2018)	338.3	102.0	20.4	30.2
May	176.9	59.1	11.8	33.4
June	31.5	14.3	2.9	45.4
July	153.8	15.4	3.1	10.0
August	93.0	23.0	4.6	24.7
September	246.2	67.8	13.6	27.5
October	92.3	23.1	4.6	25.0
November	120.0	14.6	2.9	12.2
December	115.4	22.5	4.5	19.5
January (2019)	152.5	29.4	5.9	19.3
February	307.6	75.6	15.1	24.6
March	228.8	71.1	14.2	31.1
Average	171.3	43.2	8.6	25.2

**Figure 4** Monthly variations in catch and CPUE of *Himantura uarnak* at Ahlayt fish landing site during April 2018 to March 2019.

Conclusion

Mon State in Myanmar is one of the regions for its inland, inshore and offshore fisheries. The major account responsible for the fisheries is the Thanlwin River and its associated estuaries, river mouth and adjacent sea. A significant dilution of seawater by fresh water takes place forming an estuary. The vast stretch of estuary provides excellent conditions for concentration and development of a variety of fish species and their supportive ecosystems. These have been exploited by small-scale fishermen settling along the coastal fishing villages. Fish is an important part of the diet in Myanmar and the main role of the fishery sector which has been as a provider of food. During the study period, the Ahlayt station was more abundant species than Zeephyuthaung station. All species of rays are utilized for human consumption both fresh and salted. The skins of rays are used to produce leathers for purses and bags. There are strong consumers for marine fishes being mainly preferred in the coastal population and land territory. The marine fisheries sector has gradually developed during the late 1980.

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