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Habitats of harpiosquillid mantis shrimp in Mon coastal water of Myanmar

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Abstract

Habitats of harpiosquillid mantis shrimp were studied along the Mon coastal waters from June 2018 to March 2019. Samples of mantis shrimp belonging to family Harpiosquillidae were collected at four study areas: Kyaikkhami, Setse, Zee phyu thaung and Kabyarwa of Mon coastal waters. Taxonomic description and habitat were based on external morphology and field data collections of 3612 individuals of harpiosquillids. Monthly occurrence of harpiosquillids were presented in study period. The most common occurrence of harpiosquillids were found in December, 2018 (493 individuals) and the least occurrence in June, 2018 (233 individuals), respectively.

Keywords: Habitats, harpiosquillid mantis shrimp, morphology, Mon coastal water

Introduction

Mon State is located between Latitude 15° 10' N and 17° 30' N and Longitude 96° 46' E and 98°15' E with a unique ecosystem. The Gulf of Mottama faced the Bay of Bengal in the East side and the Andaman Sea in the south. This gulf is situated at the mouth of the Sittaung and the Thanlwin Rivers along with the two small rivers, the Gyine and the Attaran. This coastal area is characterized by the fluctuations of seawater flood and fresh water discharge. Most of the study areas are covered by swamps, mangroves and estuary waters. Some areas of Mon State covered with estuarine regions which are characterized by a variable salinity, a temperature range greater than the sea, and turbid water and muddy bottom (Tint Swe, 2011) ^[1]. Being rich in natural fishery resources, not only from marine but also from brackish and freshwater bodies, fish is one of the main animal protein resources in Myanmar, especially in Mon coastal areas. They can be utilized as food in many forms such as dried, salted, smoked, paste, sauce, and fresh state for local needs and also exported to many other countries to earn foreign currency. Fish and fisheries products are one of the most important sources of export earnings. Fish with high protein contents are available with more or less reasonable price, and hence they are of great demand by the local people of Myanmar.

The Thanlwin River mouth is abundant in marine fish especially in marine fauna. In Mon State, Ahlat and Zephyuthaung areas support a rich fishery in varied intensities, consisting of Squilla, Bombay duck, anchovy, sciaenids (croaker) and threadfin. These fishes are purchased by the few processing plants in the village for export, mainly to China and Thailand. Fisheries catches of the study areas include multiple species of fish and crustacean shellfish. These are annually harvested using traditional (bag nets, gill nets fishery) fishing crafts, fishing gears and methods. In particular, bag net fishing for a variety of fishes is the backbone of the fisheries sector in the Mon coastal areas, especially in Mawlamyine, Setse and Kyaikkhami. The gill nets fishing for a variety of fishes are very common in Ahlat, Mawlamyine, Sabelar, Katonepaw, Kyaikkhami and Zephyuthaung areas (Tint Swe, 2011) ^[1].

Catches are evacuated to local markets by middle men in fresh, dried, smoked or salt-dried forms. These marine resources are used for a variety of fish products which are processed by various methods including traditional and advanced modern techniques. A variety of sun-dried, smoked and dehydrated products are popular in tropical countries. In the study areas, exploitation is almost entirely by traditional crafts and gears. From the last two decades, most of the fishing boats were motorized with engines and fishing gears were made of nylon and polyethylene fibers (Sann Aung, 2003) ^[2]. All of the villagers earn their livelihood wholly or partially from marine and estuarine fishing.

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The objects of this study is: 1) to know the morphotaxonomy of mantis shrimps *Harpiosquilla Harpax* (de Haan, 1844) from Mon coastal water.

Materials and Methods

Morphology and species distribution of Harpiosquillid mantis shrimp were studied in Mon coastal water. The study areas were chosen at four stations, namely Kyaikkhami (Lat. 16° 04'N, Long. 97° 33' E), Setse (Lat. 15° 56'N, Long. 97° 37' E), Zephyuthaung (Lat. 15° 12'N, Long. 97° 47' E) and Kabyarwa (Lat. 15° 04'N, Long. 97° 48' E). Sample collections of Harpiosquillid mantis shrimp were conducted on fish landing areas during June 2018 to March 2019. Colour patterns and measurements of the samples were recorded immediately after collections. Also for later studies, specimens were photographed, using digital camera and then preserved in 10% formaldehyde in seawater. The specimens examined were deposited in the Museum of Department of Marine Science, Mawlamyine University (MLM-MS), Mawlamyine. Identification of the samples were followed by Manning, 1998 and Ah Yong, 2001 [6].

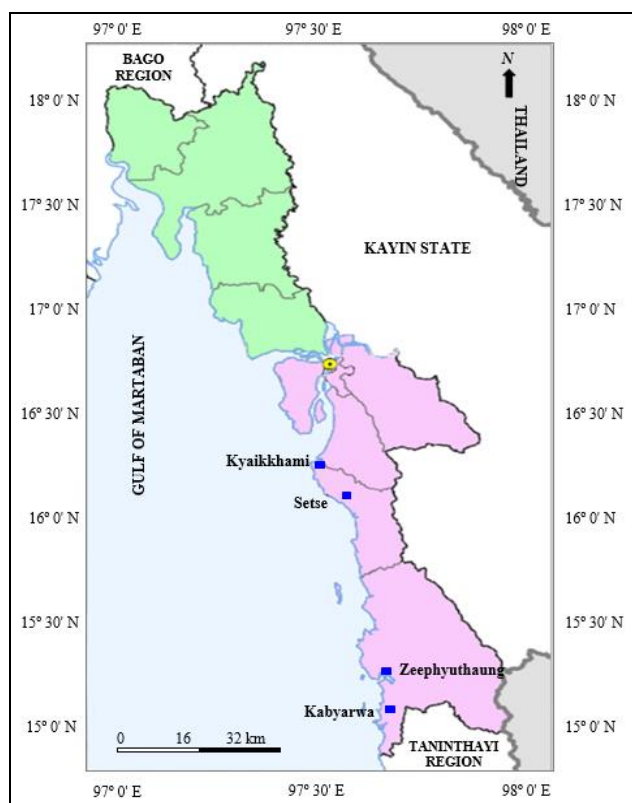


Fig 1: Map showing the collection sites of Harpiosquillid mantis shrimp in Mon coastal water

Results and Discussion

Systematics of *Harpiosquilla harpax* (de Haan, 1844)

- Phylum:** Arthropoda
- Class:** Crustacea Pennant, 1777
- Order:** Stomatopoda Latreille, 1817
- Family:** Harpiosquillidae Manning, 1980 (= Squillidae Latreille, 1802)
- Genus:** *Harpiosquilla* Holthuis, 1964
- Species:** *H. harpax* (de Haan, 1844)
- FAO names:** Harpiosquillid mantis shrimps.
- Common name:** Mantis shrimps.
- Local name:** Ba-gae.

Habitats: *Harpiosquilla harpax* (de Haan, 1844) is burrowers in level bottoms. They use the burrow as a refuge while waiting for prey and they also leave the burrow to hunt prey. Their large raptorial claws are well adapted for capturing fishes. There is no organized fishery for these species which reach markets as by catch.

Utilization: In study areas, locally collected for food and selling at markets but some are exported to foreign countries.



Fig 2: Nature of *Harpiosquilla harpax* (de Haan, 1844)

Harpiosquilla harpax has been clearly defined and described by (de Haan, 1844) who identified this species. The synonym *Squilla raphidea* was described by Fabricius, 1798; *Chloridella raphidea* by Fabricius, 1798; *Squilla harpax* by de Haan, 1849; *Harpiosquilla indica* by Manning, 1969 [7]; *Harpiosquilla malagasiensis* by Manning, 1978 and *Harpiosquilla paradipa* by Ghosh, 1987. These names are all cited in Manning, 1969 [7], 1995 [8], 1998 [4]; Caldwell and Dingle, 1976 [3]; Ah Yong, 1997 [5], 2001 and FAO Species Identification Sheets for Fishery purposes 1998 described the maximum size was 160 cm and minimum size was 100 cm but this research paper found these fishes maximum size was about 50 cm and minimum size was 15 cm, caught by bag nets and artisanal fishing catch.

Table 1: Occurrence of *H. harpax* (de Haan, 1844) in Mon coastal water

Stations	Study period									
	2018							2019		
	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Kyaikkhami	67	53	75	71	109	124	143	105	130	79
Setse	30	44	52	88	94	75	93	76	52	68
Zee phy thaung	56	163	92	77	109	72	107	116	89	85
Kabyarwa	80	60	75	90	112	101	150	140	120	90
Total	233	320	294	326	424	372	493	437	391	322

During the study periods, at each of the collecting place, one or more species might occur at a time and contributed to the fishery while some species were recorded to occur in few

numbers but did not seem to contribute to the fishery. The occurrence of *Harpiosquilla harpax* (de Haan, 1844) found along Mon coastal waters were shown in Table 1. The coastal

waters all along the south–west coast are in a disturbed condition but the Thanlwin river mouth was calm due to the present of Belukyunn which acted as barrier from winds and waves. The fishery was popular and the catch often consists of heavy quantities of fishes, the bulk of which is the mantis shrimp, *Harpiosquilla harpax*. These squillid were caught by three types of fishing boats. In Mon coastal waters, *Harpiosquilla harpax* was characteristically predominant in the fishery throughout the year.

Information regarding the fishery of harpiosquillid mantis shrimps has been collected by visiting the various fish landing centres in Mon coastal waters. The present paper dealt with some aspects of the habitats of *Harpiosquilla harpax*, which were the most important species in as regard to abundance, in the bag net catches at selected landing centres: Kyaikkhami, Setse, Zephyuthaung and Kabyarwa study areas.

Mantis shrimps were highly esteemed food fishes and were mostly consumed in the fresh condition. Occasionally when the catch exceeded the local demand, they were sundried along with other small varieties of fishes like shrimps and prawns. The distribution of *Harpiosquilla harpax* fishery product (cold freeze) were not only for local consumption but also for export to abroad, such as China and Thailand.

In Kyaikkhami, the highest numbers of species is 143 in December and the lowest numbers of species is 53 in July. In Setse, the highest numbers of species is 94 in October and the lowest numbers of species is 30 in June. In Kabyarwa, the highest numbers of species is 150 in December and the lowest numbers of species is 75 in August. In Zee phyu thaung, the highest numbers of species is 163 in July and the lowest numbers of species is 56 in June. According to the monthly data, December is highest and June is lowest species numbers collected. In this study, Kabyarwa is the most species population 1018 individuals and Setse is the lowest species population 672 individuals from June, 2018 to March, 2019.

Conclusion

In the present study, the mantis shrimp *Harpiosquilla harpax* (de Haan, 1844) of marine or estuarine fauna were collected from the Kyaikkhami, Setse, Zee phyu thaung and Kabyarwa coastal waters. Mantis shrimps are mostly dominated and constituted the major components in the catch, occurred all the year round although their highest number varied with the season. The main used fishing gears for the catch of mantis shrimp fishes in Mon coastal waters are drift and bag nets. Anchovy, Bombay duck, croakers, small ribbon fishes and small shrimps are the major fish stocks of the study areas where the artisanal or small scale fishing is developed. Mantis shrimp are commercially important from the local people. Furthermore, it is necessary to support the fishery sector more effectively and beneficially because it is usually required the sustainability of natural resources to improve the development of socioeconomics of the coastal people.

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