

Seasonal Changes in the Abundance of Prawn Species in Freshwater Environs of Hinthada Township

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Abstract:- A total of five species belonging to two genera of one family were recorded from the depots and market of Hinthada Township during the study period from June 2008 to May 2009. Most of the prawn species were caught throughout the year round in Htay Win Market but *Macrobrachium javanicum* and *Exopalaemon styliferus* was not recorded in Shwe Myint Zu and Phoe Mun fishery depots through the study period. Total catch quantity was 7426.1 kg. In this quantity, *M. lamarrei* was found to be the highest which was followed by *M. idae* and *M. scabriculum*. Highest catch quantity was recorded in September. Total catch number of *Exopalaemon styliferus* was the highest followed by *M. lamarrei* and *M. javanicum*. Total catch number of prawn was the highest in September. Wet season (Jun to September) was observed to the most abundance season for prawn species. Seasonal abundance of the recorded prawn species showed no significant difference ($p>0.05$) with weather parameter (rainfall) although significant difference ($p>0.05$) was observed in the species *E. styliferus* in the year 2008 – 2009.

Keywords:- Seasonal Abundance, Freshwater, Prawn.

I. INTRODUCTION

The Union of Myanmar supports some of the most intact natural habitats and species communities remaining in the Indo-Myanmar Hospot, as well as many endemic and globally threatened species [11]. Not only endemic and threatened species but also other plant and animals including most of crustacean species fall into the nearly threatened level because they are edible and commercially important ones. The prawns and shrimps species include in the class Crustacea of the phylum Arthropoda. Ayeyawady delta area is important for the richness and abundance of inland fisheries resources. Ayeyawady river is split into tributaries and small rivers and flowing into the Adaman Sea. Thus, such river systems are enriched with diverse aquatic species. Study done on prawns from Ayeyawady division were taxonomic account of some prawns from mouth of Pathein river by [2]; systematic and reproductive biology of *Macrobrachium* species found in Ayeyawady Delta by [3]; the prawns caught by Kyar net of Ngaputaw Township by

[7]; the seasonal occurrence of the prawns from Hlaingbone by [8], from Kanywa by [9], from Pathein river by [10], from Daga river by [13] and from Ngathaing Chaung by [14]; species diversity and seasonal occurrence of prawns in a segment of Ngawun river from Ngathaing Chaung to Thabaung by [16].

Ayeyawady delta is the main district with high production of aquatic products. Economically, fish and prawns species are key export species in Myanmar for Foreign Currency. Export quantity increases year after year, to over 30 thousands metric tonnes that representing 105 millions US\$ in 2005-2006; nearly 19 thousands metric tonnes that representing 89 millions US\$ in 2006-2007; approximately 21061.3 metric tonnes with the value of 109.744million US\$ in 2007-2008 [15] and [17]. Ayeyawaddy division comprises 26 townships and Hinthada is one of the townships of Ayeyawady Division. Hinthada is a commercially important township, located at near the centre of Ayeyawady Division. In it's vicinity, there are many sources of prawns supplying the requirements of local people. Local people are catching fish, prawns and shrimps. Among the fishery products, prawns and shrimps are also important for chief source of protein for human diet. Exploited prawns are transported to Yangon for further distribution and consumption. Present research was carried out to seek the catch number, catch quantity, productive value and abundance of prawn species.

II. MATERIALS AND METHODS

The present study was carried out base on a market and two fishery depots, Htay Win Market (at the centre of town), Shwe Myint Zu fishery depot (at Nyangbin Ywa quarter) and Phoe Mun fishery depot (near the railway station) (Plate I). Study period lasted from June 2008 to May 2009. The sample from designated study sites were monthly recorded concerning the fishery data such as catch species, catch number and catch quantity to assess the seasonal changes in the abundance of prawn species in freshwater environs of study area. The morphological characters and measurements of the samples prawn species were recorded and photographed prior to preservation. Identification of recorded prawn species were followed by [5].

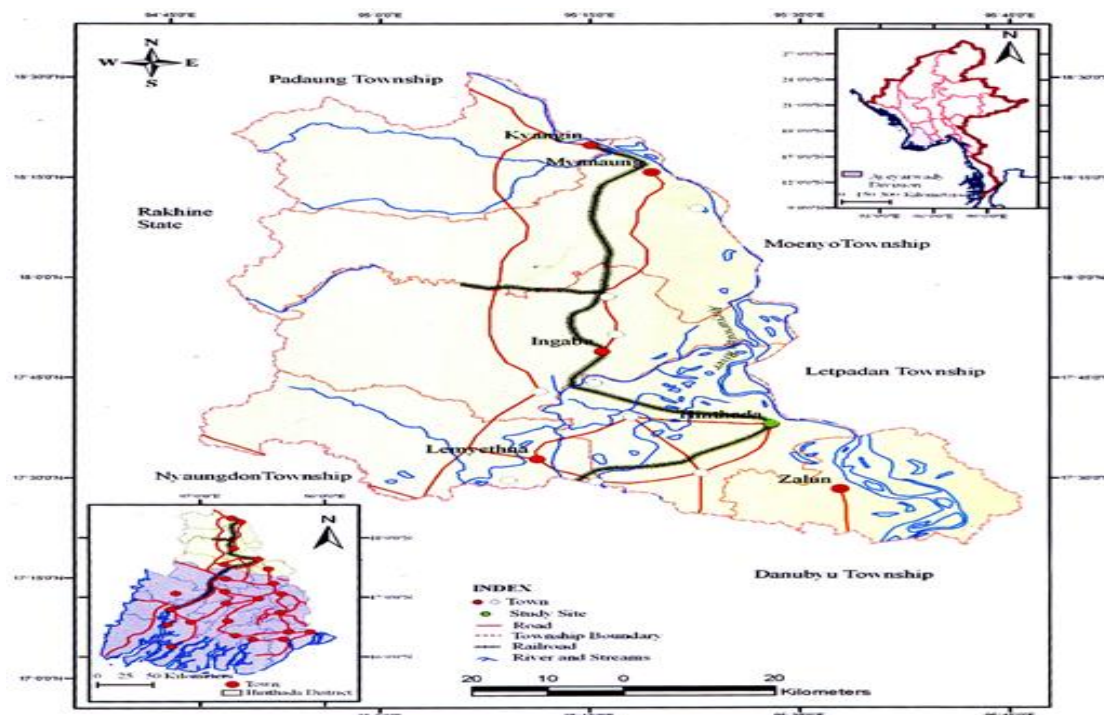


Plate I Map of study area, Hinthada District, Ayeyarwady Division (Modified after Department of Fisheries)

III. RESULTS

A total of five species, *M. idae* (Heller, 1862), *M. javanicum* (Heller, 1862), *M. lamarrei* (Edwards, 1837), *M. scabriculum* (Heller, 1862) and *E. styliferus* (Edwards, 1840), belonging to two genera of one family were recorded from Htay Win market of Hinthada township. *M. idea*, *M. lamarrei* and *M. scabriculum* were recoded from Shwe Myint Zu fishery depot and Phoe Mun fishery depot but *M. javanicum* and *E. styliferus* were not recorded (Plate II). During the study period, most of the recorded prawn species were caught throughout the year round except the species *M. scabriculum*.

Total number of recorded prawns was highest in wet season (84,264) followed by cool season (27,747) and hot season (12,846) in Htay Win Market. Total number of recorded prawns was most abundant in wet season (7,411) followed by cool season (1,018) and hot season (711) in Shwe Myint Zu fishery depot. Total number of recorded prawns was most abundant in wet season (4,963) followed by cool season (555) and hot season (427) in Phoe Mun fishery depot (Fig. 1).

Total quantity of recorded prawns was highest in wet season (784.4 kg) followed by cool season (155.1 kg) and hot season (77.2 kg) in Htay Win Market. Total quantity of recorded prawns was highest in wet season (400.4 kg), the second highest in cool season (49.9 kg) and the lowest in hot season (394.1 kg) in Shwe Myint Zu fishery depot. Total quantity of recorded prawns was highest in wet season (264.2 kg), the second highest in cool season (27.9 kg) and the lowest in hot season (20.8 kg) in Phoe Mun fishery depot (Fig. 2).

Total productive value of prawns was highest in wet season (2,597,526 kyats) followed by cool season (453,868 kyats) and hot season (239,560 kyats) in Htay Win Market. Total productive value of prawns was highest in wet season (1,599,104 kyats), the second highest in cool season (194,804 kyats) and the lowest in hot season (132,866 kyats) in Shwe Myint Zu fishery depot. Total productive value of prawns was highest in wet season (1,036,392 kyats), the second highest in cool season (103230 kyats) and the lowest in hot season (76,136 kyats) in Phoe Mun fishery depot (Fig. 3).

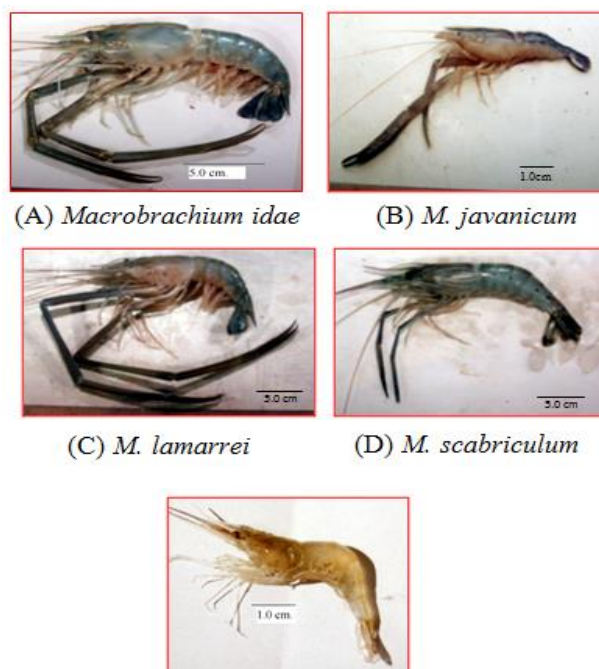


Plate II Recorded prawn species

The total productive values of five prawn species in Htay Win Market (3,290,954 kyats) was highest, Shwe Myint Zu fishery depot (1,926,774 kyats) was second highest and Phoe Mun fishery depot (1,215,758 kyats) was lowest (Fig. 3).

IV. DISCUSSION

A total of five species belonging to two genera of one family were recorded from the depots and market of Hinthada township. Most of the recorded prawn species were caught from June 2008 to May 2009. *M. idae*, *M. javanicum*, *M. lamarrei* and *E. styliiferus* were found to catch throughout the study period and *M. scabriculum* was only caught in six months in Htay Win Market. *M. javanicum* and *E. styliiferus* were not recorded in Shwe Myit Zu and Phoe Mun fishery depots This finding indicates that the *M. scabriculum* was less abundance in fisheries waters except the species *M. idae*, *M. javanicum*, *M. lamarrei* and *E. styliiferus*. According to the catch quantity of recorded prawn species, *M. lamarrei*, *M. idae* and *M. scabriculum* are regarded as the highest productive species.

In accordance with the monthly catch quantity, the month of September, August and June are assumed to be abundance with prawn. On the aspect of total catch number, the population of *E. styliiferus*, *M. lamarrei* and *M. javanicum* are assumed to be abundance in freshwater environs of study area. The results of catch number of prawn species strongly indicated that the month of wet season (Jun to September) are recorded to be abundance with prawn species of *M. lamarrei*, *M. javanicum* and *E. styliiferus* respectively.

Seasonal abundance of the recorded prawn species in catch number and quantity were highest in wet season followed by cool and hot seasons. Thus, the total productive values of wet season were most effective for local people. The population of the recorded prawn species declined year after year. Thus, it can be assumed that the environmental conditions in Hinthada environs indirectly affect the abundance of prawns and also over-exploitation is one of seasons for declination. Seasonal abundance of the recorded prawn species showed no significant difference ($p>0.05$) with weather parameter (rainfall) although significant difference ($p>0.05$) was observed in the species *Exopalaemon styliiferus* in the year (2008 – 2009).

V. CONCLUSION

In three study sites, the total recorded numbers, quantity and productive values were highest in wet season followed by cool season and hot season during the study period. Thus, wet season was the most effective for local fishermen and depot's owners. Seasonal abundance of the recorded prawn species showed significant difference ($p>0.05$) with weather parameter (rainfall) although significant difference ($P<0.05$) was observed in the species *E. styliiferus* in the year 2008-2009.

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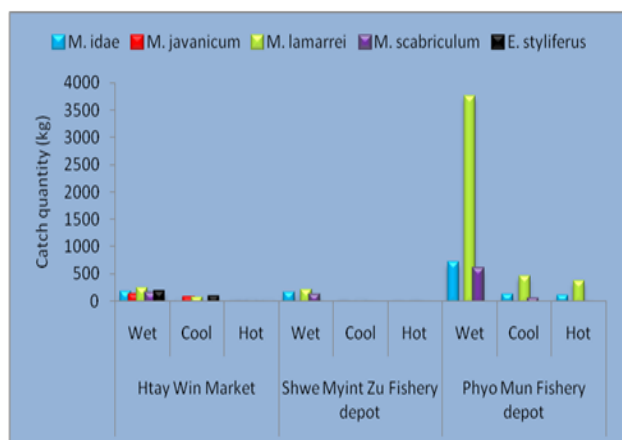


Fig. 1:- Seasonal recorded number of prawn species in different study sites (2008 - 2009)

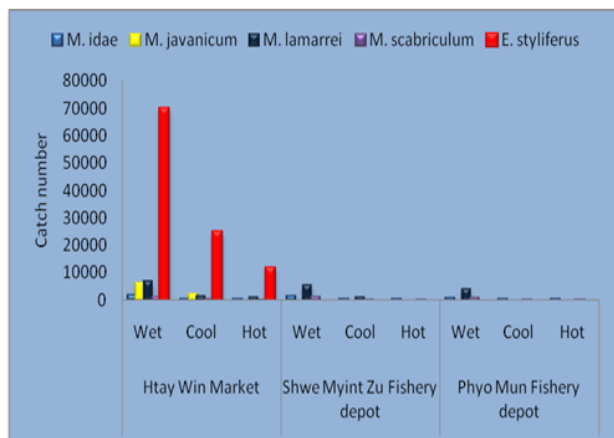


Fig. 2:- Seasonal recorded quantity (kg) of prawn species in different study sites (2008-2009)

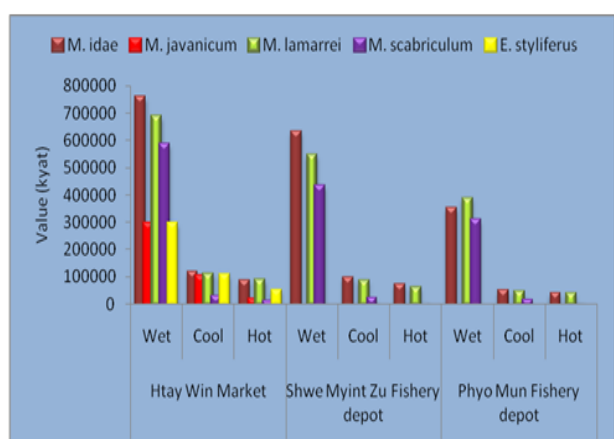


Fig. 3:- Seasonal productive value of prawn species in different study sites (2008-2009)

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