

Relationship between Weight and Length of Shrimp/Prawn Species Recorded from U-To Creek, Chaungtha, Pathein Township, Ayeyawady Region

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Abstract:- Prawn and shrimp species were conducted in U-To Creek, Chaungtha, Ayeyawady Region. The study period from 2015 to 2016. A total of 11 species belonging to four genera and three families were recorded in this study period. Among the species recorded, the largest body weight was recorded in *Macrobrachium rosenbergii* and *Penaeus monodon* was of the second largest species. The largest body weight found of *M.rosenbergii* 33.15 ± 3.36 gm and the smallest body weight found of species *Alpheus euphrosyne* 1.42 ± 1.34 gm. The pearson correlation value (r) were 0.520 and 1.000 which showed highly significant correlation between weight and length of collected species.

Keywords:- Prawns And Shrimps, Weight and Length Correlation, Chaungtha.

I. INTRODUCTION

Mangrove habitats are rich in shrimp and prawn resources. Mangrove leaf litter provides an important nutrient base for food webs. Their nutritional value, they support a very valuable, trade export market. Mangrove waters serve as an essential nursery ground for juveniles of many species of prawns and shrimps. The prawns / shrimps are highly associated the mangrove ecosystems [8]. According to [3], the prawns/shrimps include about 33 genera with about 2,500 species, of which less than 300 species are of economic interest throughout the world. Family Palemonidae is vast and diverse. As many as 21 valid genera and around 300 species were recorded from different parts of world. The present study was conducted at U To Creek which is situated on the Rakhine Coastal area of Pathein Township, Ayeyawady Region It is the main fishery ground for the local coastal inhabitant's livelihood. Shrimps and Prawns are caught for local consumption and commercial products either fresh or processed into dried products in study area. The fishery products were transported directly to Yangon and to Pathein. Being of economic importance, the present study has been carried out to deal with the information on the species diversity and the growth rate as the available commercial species. The objectives of present study were to study on the occurrence of prawn and shrimp species in the study area, to examine their growth of different collected shrimps and prawns.

II. MATERIAL AND METHODS

A. Study area and study period

The present study was conducted at U To Creek which is situated on the Rakhine Coastal area of Pathein Township, Ayeyawady Region (Lat $16^{\circ} 56' N$, Long $94^{\circ} 28'E$) from January, 2015 to December, 2016 (Fig 1).

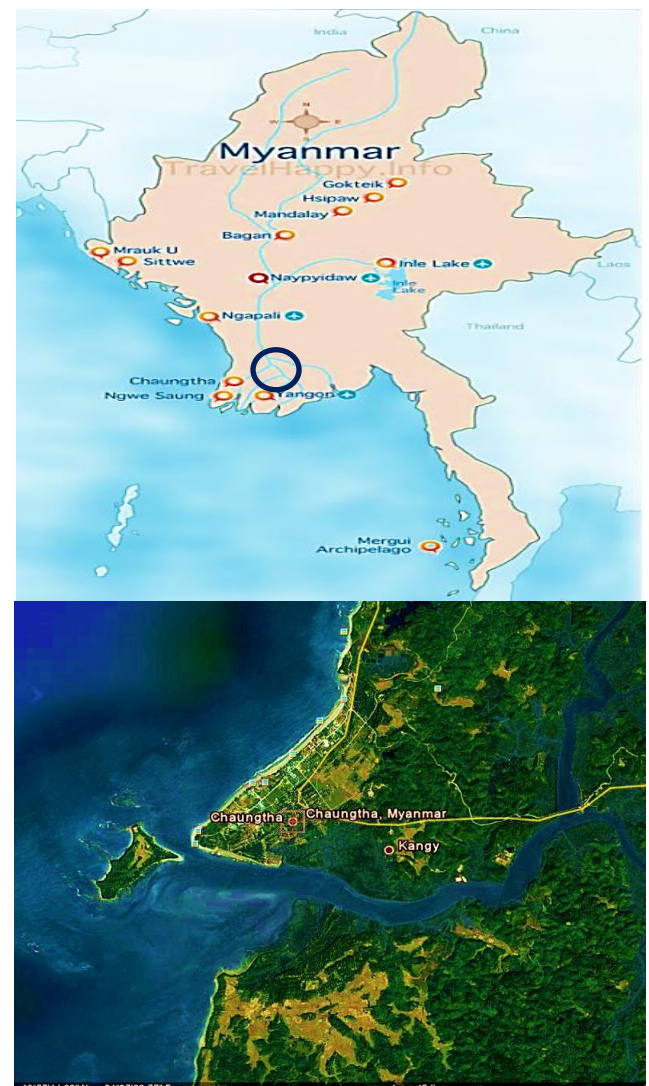


Fig 1:- Location map of the study area
Source : Google earth map

B. Sample and Data Collection

The study was conducted by two months interval visited and collected of 10 individual specimens of each species from fishery depot. The collected specimens were measured of their total weight (nearest 0.01 gm by using the Digital scale / balance) and total length (from the tip of rostrum to the end of telson) of individual specimen and preserved in 10% formalin for later studies.

III. RESULTS AND DISCUSSION

A total of eleven species belonging to three families and four genera were recorded during the study period. There were five species from Family Penaeidae, five species from Family Palaemonidae and one species from Family Alpheidae. The species were *Penaeu merguensis*, *P. canaliculatus*, *P. monodon*, *P. indicus*, *Metapenaeus papuensis*, *Macrobrachium equidens*, *M. idae*, *M. javanicum*, *M. rosenbergii*, *M. malcolmsonii*, and *Alpheus euphrosyne*.

The results of mean body weight and length of collected species were shown in (Table 1). The largest body weight found of *M. rosenbergii* 33.15 ± 3.36 gm and the smallest body weight found of species *Alpheus euphrosyne* 1.42 ± 1.34 gm. The species *M. rosenbergii* was maximum body weight and length in contrast to other species. The second largest body length recorded in species *Penaeu merguensis* (Table I). The largest body length and weight were recorded in *Penaeu monodon* 10.29 ± 2.86 cm and 8.46 ± 5.50 gm in the raining season, *Macrobrachium rosenbergii* 15.03 ± 2.06 cm and 33.15 ± 3.36 gm in the cool season and *Penaeus monodon* 10.48 ± 0.97 cm and 7.7 ± 4.8 gm in the dry season respectively. There was found of seasonal variation of body weight and length among different shrimps/prawns (Table II and III). All species were highly significant correlation of body length and body weight ($p < 0.01$) (Table IV).

The present study shows the occurrence of shrimp/prawn species at U-To Creek, Ayeyawady Division, the relationship of body length and weight. [1] recorded that a total 26 species of *Macrobrachium* in Myanmar water. [6] reported a taxonomic account of some prawns from Ngawun River Mouth of Patheingyi, Ayeyawady Division. A total of 10 species freshwater prawns and 9 species of brackish water prawns were recorded from her study area. In the present record, largest body weight of shrimp and prawn species were *Macrobrachium rosenbergii*, and followed *Penaeu monodon*, *P. merguensis* and *P. indicus*. Whereas the smallest shrimp/prawn species was *Alpheus euphrosyne*. Among them, the species *Macrobrachium malcolmsonii* was more highly significantly correlation with the body length and weight. Jimoh *et al.*, state that the r^2 value range between 0.55 and 0.88 in *Macrobrachium* species. According to [7 and 5] reported that the similar observation were made in other *Macrobrachium* species.

Except the species *Penaeus monodon*, the rest of all species were shown the correlation value (r value > 0.5). The present result was found that the largest of some species such as seasonal differences of sizes of shrimp/prawn on their catchment. The species *Penaeu merguensis* and *Macrobrachium rosenbergii* were caught large-size in cool season. The rest of other species were not different of their size of length between seasons. Moreover, the large body weight of species *Macrobrachium rosenbergii*, *Macrobrachium malcolmsonii*, *Penaeu merguensis* and *Penaeus monodon* were caught mostly in cool season. [3] stated that the more available food and higher temperature, crustacean lead to have higher growth rates in habitats condition. *Macrobrachium rosenbergii* and *Macrobrachium malcolmsonii* were not recorded in the study area during rainy season and dry season.

Sr.no	Species	Body length (cm)		Body weight (gm)	
		Mean	±SD	Mean	±SD
1.	<i>Penaeu merguensis</i>	10.76	1.75	7.99	3.42
2.	<i>P. canaliculatus</i>	7.93	1.52	3.97	2.08
3.	<i>P. monodon</i>	10.38	2.71	9.80	13.85
4.	<i>P. indicus</i>	9.39	1.85	4.03	2.11
5.	<i>Metapenaeus papuensis</i>	6.69	1.74	2.26	1.60
6.	<i>Macrobrachium equidens</i>	6.34	0.86	2.85	1.10
7.	<i>M. idae</i>	7.47	1.54	4.47	2.41
8.	<i>M. javanicum</i>	6.22	1.13	3.53	2.43
9.	<i>M. rosenbergii</i>	15.03	2.06	33.15	3.36
10.	<i>M. malcolmsonii</i>	8.36	5.48	21.65	14.20
11.	<i>Alpheus euphrosyne</i>	4.13	1.46	1.42	1.34

Table 1:- Body length and body weight of different species from study site

Sr. No	Species	Rainy season		Cool season		Dry season	
		Mean	SD	Mean	SD	Mean	SD
1	<i>Penaeu merguensis</i>	5.50	3.14	9.15	2.93	-	-
2	<i>P. canaliculatus</i>	3.46	1.92	4.70	2.12	7.0	3.5
3	<i>P. monodon</i>	8.46	5.50	9.2	8.9	7.7	4.8
4	<i>P.s indicus</i>	2.82	1.34	5.02	2.14	2.6	1.2
5	<i>Metapenaeus papuensis</i>	2.56	1.79	1.66	0.92	3.9	2.0
6	<i>Macrobrachiam equidens</i>	2.73	1.16	2.91	1.09	3.8	1.7
7	<i>M. idae</i>	4.52	2.43	4.38	2.48	3.1	1.8
8	<i>M. javanicum</i>	4.19	2.48	1.71	0.84	3.4	1.4
9	<i>M. rosenbergii</i>	-	-	33.15	3.36	-	-
10	<i>M. malcolmsonii</i>	-	-	8.68	4.85	-	-
11	<i>Alpheus euphrosyne</i>	1.48	1.39	1.32	1.29	1.3	0.6

Table 2:- Seasonal different of mean body weight (gm)

Sr. No	Species	Rainy season		Cool season		Dry season	
		Mean	SD	Mean	SD	Mean	SD
1.	<i>Penaeu merguensis</i>	9.74	1.44	11.24	1.65	-	-
2.	<i>P. canaliculatus</i>	7.75	1.8	8.19	0.95	9.40	2.18
3.	<i>P. monodon</i>	10.29	2.86	10.26	2.58	10.48	0.97
4.	<i>P.s indicus</i>	8.31	1.22	10.28	1.84	8.58	1.45
5.	<i>Metapenaeus papuensis</i>	7.21	1.70	5.68	1.36	7.23	1.77
6.	<i>Macrobrachiam equidens</i>	5.92	0.90	6.52	0.80	6.71	0.89
7.	<i>M. idae</i>	7.47	1.54	7.46	1.60	6.67	1.75
8.	<i>M. javanicum</i>	6.44	1.16	5.62	0.79	6.30	0.68
9.	<i>M. rosenbergii</i>	-	-	15.03	2.06	-	-
10.	<i>M. malcolmsonii</i>	-	-	8.36	5.48	-	-
11.	<i>Alpheus euphrosyne</i>	1.48	1.39	1.32	1.29	1.3	0.6

Table 3:- Seasonal different of mean body length (cm)

Sr.no	Species	Pearson correlation value	
		r	p
1	<i>Penaeu merguensis</i>	0.939	<0.01
2	<i>P. canaliculatus</i>	0.869	<0.01
3	<i>P. monodon</i>	0.520	<0.01
4	<i>P. indicus</i>	0.886	<0.01
5	<i>Macrobrachiam equidens</i>	0.799	<0.01
6	<i>M. idae</i>	0.970	<0.01
7	<i>M. javanicum</i>	0.918	<0.01
8	<i>M. rosenbergii</i>	0.664	<0.01
9	<i>M. malcolmsonii</i>	1.000	<0.01
10	<i>Alpheus euphrosyne</i>	0.922	<0.01
11	<i>Metapenaeus papuensis</i>	0.945	<0.01

Table 4:- Correlation between body length and weight

IV. CONCLUCTION

A total of 11 species belonging to four genera and three families were recorded from U-To Creek, Chaungtha, Pathein Township, Ayeyawady Region. Among the species recorded, the highest body weight was recorded in *Marcrobrachium rosenbergii*, and *Marcrobrachium*

malcolmsonii was of the second largest species. In the present result was clearly shown that the maximum weight and length. They are highly priced and are in high demand in the market. All species were shown the highly significant correlation during the study period.

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