

## Species Occurrence and Abundance of some Crabs from Chaungtha Environs, Patheingyi Township, Ayeyarwady Region

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### Abstract

The species occurrence, composition and habitat utilization of crabs were recorded in three study sites; sandy site, rocky site and fish drying shelves situated in Chaungtha Coastal Area, Patheingyi Township of Ayeyarwady Region. A total of 17 species of 12 genera belonging to seven families of order Decapoda were identified during the study period. Among the crab species, the highest species occurred in family portunidae with eight species (47%) and the least species occurred in family dorippidae, leucosiidae, parthenodidae and calappidae with only one species (6%). The highest species of crab were observed in fish drying shelves (eight species, 57%) and the second highest species of crab (six species, 22%) were collected in rocky habitat. The least species of crab (three species, 21%) were recorded in sandy habitat.

**Keywords:** crab, sandy, rocky and fish drying shelves

### Introduction

Crabs, especially members of the order Decapoda (shrimp, crabs, lobster, etc) are ecologically and economically important, this interest has prompted scientific studies in many areas, including reproduction. There are now approximately 25,000 species of crustaceans in the world (Friese and Okutani, 1973). Crabs are classified into two main groups, brachyuran crabs and anomuran crabs. Worldwide, 4428 and 1270 species of brachyuran and anomuran crabs, respectively were recorded by Warner (1969). According to Sternberg and Cumberlidge (2001), there are about 4,500 known species of crabs. They are found in all of the world's oceans; there are also many freshwater and terrestrial crabs, particularly in tropical regions. About 850 species of crabs are freshwater or semi terrestrial species and remaining are found in the world's entire ocean.

Crabs are found in very diverse habitats, some on rocky, muddy and sandy sea bottoms, where they dig burrows, some are pelagic, having one or all pairs of legs modified into paddles for swimming. A few live in abyssal regions, others migrating through brackish water in the fresh waterspring, lakes, rivers or pools. Other crabs also inhabit moist jungles. They are found in all of the world's oceans. In tropical regions, crabs live in fresh water and on land. Tropical and subtropical region have more number of more species compared to temperate and cold region (Fransomo *et al.*, 1996; Bosci, 2000a).

Crabs play an important ecological role in maintaining the abundance in aquatic ecosystem, especially by scavenging predating and hunting aquatic organism. So as a prey and predator they have potential influence on the behavior, distribution and abundance of their own as well as neighboring communities (Trussel and Nicklin, 2002).

Generally crabs are determined to male and female by their abdominal segment shapes. Male crabs can be distinguished from females the shape of the abdomen. The male has a T-shaped abdomen that is held tightly against the body until maturity when it becomes somewhat free. The immature female has a triangular-shaped abdomen that is tightly sealed against the body. Mature female crabs are confused with male or female. In this case, some

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persons determined them male, but other as female. The mature female's abdomen becomes rounded and then it can be easily pulled away from the body after the final molt.

In the northwestern part of Pathein Township in Ayeyarwady Region of Myanmar, facing the deep blue sea, Bay of Bengal, Chaungtha beach is situated. Fishery and plenty coconut trees are the livelihood of the locals. Another livelihood is trapping the crabs by fish-catch trawl and old system. Now, some companies were fattening the crabs with local farming and exported to foreign countries, mainly China. It becomes a good income economic livelihood. Chaungtha beach hotels and restaurants serve crab dish as delicacy. The present study was conducted with following objectives;

- to identify the crab species along Chaungtha environs
- to observe the abundance of crab species in the study site

## Material and Methods

### Study site and study period

Chaungtha coastal area with 35.2 kilometers to the North West of Pathein Township, Ayeyarwady Region was chosen as the study area. Chaungtha village is located on the coastal area of Pathein Township. It is situated at latitude 16°57' North and longitude 94°26' East. Study period lasted from October 2019 to March 2020 ( Fig. 1).

### Data collection

Specimens were collected by using time base method (two times in a day). Field surveys were collected twice a day. All crabs were recorded immediately after collection. Then specimens were preserved in 10% formalin for identification.



Figure (1) Map of the study area (Source - Geography Department, Pathein University)



Plate (1) Crabs collection from the study area



Plate (2) Apparatus used for catching of crabs

### Identification

The crabs were identified to species level in according to Alcock (1895-1900), Sakai (1965), Sakai (1976), Raymond and Holthuis (1981), Quddusi B.Kazmi (1984), Carpenter and Niem (1998) and Carpenter (2002). Then specimens were preserved in 10 percent formalin for identification.

### Results

A total of 17 species of 12 genera of seven families under order Decapoda of class Crustacea were recorded. The study area of crabs include under seven family of dorippidae, leucosiidae, parthenodidae, calappidae, portunidae, xanthidae and grapsidae.

The family portunidae included the highest number of eight species (*Scylla serrata*, *Portunus sanguinolentus*, *P. Pelagicus*, *Charybdis cruciata*, *C. Acuata*, *C. Merguiensis*, *C.annulata*, *C.natator*) among the collected crabs. The second highest number of three species (*Liomera bella*, *Xantho impressus*, *Menippe granulose*) was observed in the family xanthidae. The third highest species was recorded in the family grapsidae, followed by the two species (*Varuna litterata* and *Sesarma biden*). The least number of one species (*Dorippe astuta*, *Arcania undecimpinosa*, *Parthenope longimana*, *Matuta lunaris*) was recorded in the family of dorippidae, leucosiidae, parthenodidae and calappidae (Table 1 and Fig. 2).

Species composition of family portunidae was the largest (47%) followed by family xanthidae (17%) families and grapsidae (12%) while that of families dorippidae, leucosiidae, parthenodidae, calappidae, were the smallest (5% each) (Table 2 and Fig. 3).

Table (1) Recorded crab species found in the study area

No	Order	Family	Species	Common Name	Local Name
1	Decapoda	Dorippidae	<i>Dorippe astuta</i>	Spider crab	Pin ku ganann
2		Leucosiidae	<i>Arcania undecimpinosa</i>	Purse crab	Ganann
3		Parthenodidae	<i>Parthenope longimana</i>	Elbow crab	Ganann
4		Calappidae	<i>Matuta lunaris</i>	Moon crab	Leik ganann
5		Portunidae	<i>Scylla serrata</i>	Serrated swimming crab	Sar ganann
6			<i>Portunus sanguinolentus</i>	Three spot Swimming crab	Wa thone lone
7			<i>P. pelagicus</i>	Blue swimming crab	Ganann ser yae
8			<i>Charybdis cruciata</i>	Mask crab	Mye-bon-ganunn
9			<i>C. acuata</i>	Mask crab	Ganann
10			<i>C. merguiensis</i>	Mask crab	Ganann
11			<i>C.annulata</i>	Mask crab	Ganann
12			<i>C.natator</i>	Mask crab	Ganann
13		Xanthidae	<i>Liomera bella</i>	Red rock crab	Kyauk ganann
14			<i>Xantho impressus</i>	Rock crab	Kyauk ganann
15			<i>Menippe granulosa</i>	Stone crab	Seik kaung
16		Grapsidae	<i>Varuna litterata</i>	Paddler crab	Phaung se ganann
17			<i>Sesarma biden</i>	Mangrove crab	Myauk chee sar

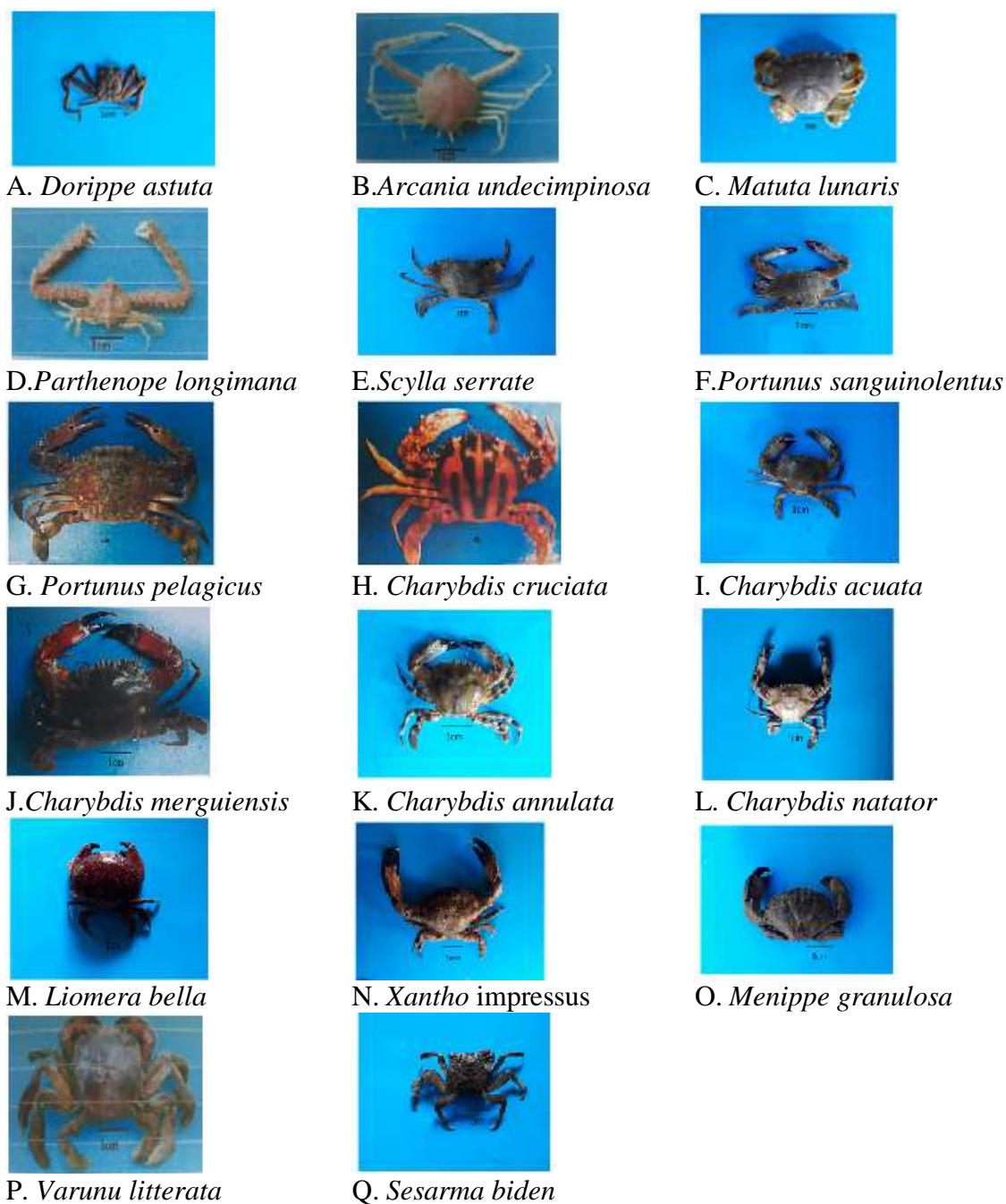


Figure (2) Recorded crabs species along Chaungtha environs

Table (2) Species composition percentage of crabs along the Chaungtha environs

Order	Family	Genus	Species	Percentage
Decapoda	Dorippidae	1	1	6%
	Leucosiidae	1	1	6%
	Parthenodidae	1	1	6%
	Calappidae	1	1	6%
	Portunidae	3	8	47%
	Xanthidae	3	3	17%
	Grapsidae	2	2	12%
Total	7	12	17	100%

### Habitat utilization of crabs

Three habitat types such as sandy site, rocky site and fish drying shelves site were recorded. The highest number of crabs was observed in fish drying shelves which was followed by rocky and sandy site, the least number (Table 3).

In sandy site, a total of three species, 49 individuals and 21% were recorded. The highest number of species *Matuta lunaris* (26 individuals) were observed for family Calappidae. In rocky site, a total of six species were recorded. The highest numbers of species *Xantho impressus* (16 individuals) were observed for family Xanthidae. In fish drying shelves site, a total of eight species, 137 individuals and 57% were recorded. The highest number of species, *Portunus sanguinolentus* (51 individuals) and the second highest species *Scylla serrata* (24 individuals) were recorded for the family Portunidae. The least number of species and individuals (*Dorippe astuta*, 4 individuals) were observed for family Dorippidae (Table 4 and Fig. 4).

Table (3) Habitat utilization of crabs Chaungtha environs

Sr.No	Species	Sandy	Rocky	Fish drying shelves
1	Number of species	3(21%)	6 (22%)	8 (57%)
2	Number of individual	49	53	137

Table (4) Habitat utilization of crabs the study area

No	Order	Family	Species	Sandy	Rocky	Fish drying shelves	
1	Decapoda	Dorippidae	<i>Dorippe astuta</i>	0	0	4	
2			Leucosiidae	<i>Arcania</i>	0	0	12
				<i>undecimpinosa</i>			
3		Parthenodidae	<i>Parthenope</i>	0	0	19	
			<i>longimana</i>				
4		Calappidae	<i>Matuta lunaris</i>	26	0	0	
5			Portunidae	<i>Scylla serrata</i>	0	0	24
6		<i>Portunus</i>		0	0	51	
7		<i>sanguinolentus</i>		0	0	6	
8		<i>P. pelagicus</i>		0	0	15	
9		<i>Charybdis</i>		0	10	0	
10		<i>cruciata</i>		0	9	0	
11		<i>C. acuata</i>		0	7	0	
12		<i>C. merguensis</i>		0	0	6	
13		Xanthidae	<i>C.natator</i>	0	0	0	
14			<i>Liomera bella</i>	0	4	0	
15			<i>Xantho impressus</i>	0	16	0	
16	Grapsidae	<i>Menippe</i>	0	7	0		
17		<i>granulosa</i>	11	0	0		
		<i>Varuna litterata</i>	12	0	0		
		<i>Sesarma biden</i>	49	53	137		

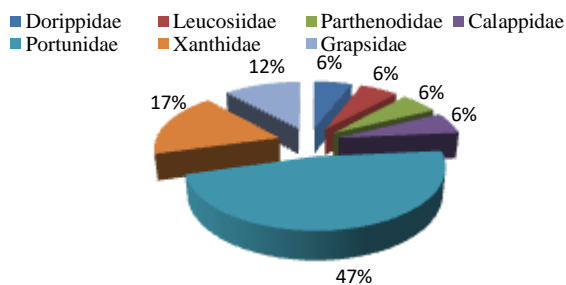


Figure (3) Species composition of crabs by percentage

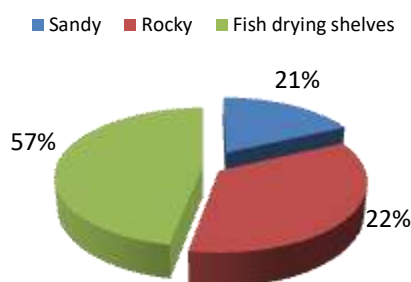


Figure (4) Percentage of habitat utilization of crabs Chaungtha environs

### Discussion and Conclusion

The species occurrence and abundance of some crab Chaungtha environs, Patheingyi Township, Ayeyarwady Region were studied during the period of October 2019 to March 2020. Chaungtha beach is part of the Rakhine Coast in Ayeyarwady Region and its various environmental conditions such as sandy beach, rocky foreshore, sandy mud flats, marches and mangrove swamps support good natural habitat for marine crabs. Sandy, rocky and fish drying shelves sites were designated as study sites along chaungtha environs. In present study, a total of 17 species of 12 genera belonging to seven families under order Decapoda were recorded.

The crab species of the study area together with their occurrence from Chaungtha Coastal Area were recorded by San San Lwin (1986), Khin Mar Wai (1995), Myint Myint Aye (2013), Thida Soe (2014). The occurrence of crab species which are high or low family level depends on the study area.

San San Lwin (1986) observed the taxonomy of marine crab from Chaungtha coastal area, and 40 species belonging to 25 genera of seven families were recorded. Family Xanthidae was the most diverse group in her study sites. It was not agreed with the present study. Khin Mar Wai (1995) recorded 51 species of marine crabs from Gwa area of Rakhine Coast. In her observation, the higher number of species was recorded for family Portunidae. In present study, family Portunidae had the highest number of species and percent. It agreed with the finding of the present study.

Myint Myint Aye (2013) recorded the occurrence of crab species in mangrove area of U To creek, Chaungtha. A total of 24 species belonging to seven families of order Decapoda were recorded. She investigated occurrence, abundance, sex distribution and diversity of crab species from three study sites of U To creek. In the present study, the highest number of

species and percent was recorded in family Portunidae. It may be assumed that the number of family Portunidae is abundant in natural environment. The 11 species namely *Dorippe astuta*, *Matuta lunaris*, *Scylla serrata*, *Portunus sanguinolentus*, *P. Pelagicus*, *Charybdis cruciata*, *C. Acuata*, *C. Merguensis*, *Menippe granulosa*, *Varuna litterata* and *Sesarma biden* of present study are similar but other species different from her species.

Thida Soe (2014) conducted occurrence, seasonal abundance and diversity of crab species. She recorded 66 species of 40 genera belonging to 14 families under order Decapoda were recorded from Chaungtha coastal area. *Dorippe astuta* was recorded from this study and the remaining species were similar to her species.

In the present study, the maximum number of crab species was observed for the family Portunidae. Kumaralingam *et al.*, 2012 described the family portunidae were the most highest diverse in species number. Maximum crab species and percentage were observed in family portunidae (Varadharan.D *et al.*, 2013). Kollimali Sakthivel and Antony Fernando, 2012 also described that the family portunidae and leucosiidae are the most diverse families in Mudasal odai and Nagapattinam coast of south east India.

Among the recorded species, *Scylla serrata* and *Portunus pelagicus* are commercial species in the study period. Interest in the aquaculture of these species have been high due to the demand and price for them, high protein content and rapid growth rates in captivity. Human disturbances along the beach may interfere with the development of ghost crab *Ocypoda ceratophthalma*. So educational talk concerning conservation of crabs and their natural habitat should be given to the local people and fishermen for the sustainability of crabs species along Chaungtha coastal area.

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