OCCURRENCE AND ABUNDANCE OF SOME CRAB FAUNA IN MANAUNG ISLAND, MANAUNG TOWNSHIP, RAKHINE STATE

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ABSTRACT

The study on the occurrence and abundance of some crab from Manaung Island in Rakhine State has been made. The main study sites were from the eastern, western and northern shore of Manaung Island. The study period were conducted from May to July 2016. The research was based mainly on field studies and involved interview with fishermen and crab merchants. The total of seven species of crabs belonging to six Genera,four Families of Order Decapoda were observed.Each species has been identified, classified, measured and recorded. Among them, four species, *Scylla serrata* , *Portunus pelagicus*, *Portunus sanguinolentus* and *Charybdis cruciata* are abundant and commercially important, of which the first species is most abundant and earn a good income for the locals. The rest of the species can be consumed and are available in the local markets.

Keywords: Occurrence, Abundance, Manaung Island , Crab fauna.

INTRODUCTION

Myanmar supports a diversity of marine and fresh water ecosystems and then is endowed with natural resources including rich and various aquatic fauna and flora due to her diversified and most favorable climate, topography and habitats in the region.(Department of fishries/Myanmar, 2008)

Of all the crustacean, one of the best known and most intensity studied group is some crab species of the Infraorder Brachyuran belonging to the Order Decapoda. The most diverse group of crustaceas alive today. They have been found at abyssal ocean depths down to 6,000 meters, and up to 2,000 meters above sea level on mountains. They are dominant in many estuarine habitats where salinity and temperatures can fluctuate dramatically daily. (Ng, Guinot Davie,2008)

To have a complete picture of the crab fauna, the writer takes the opportunity to collect more varieties from Manaung Island, identify them and present species from Rakhine State. Also the abundancy, the habitats and biology of the crabs need to be informed for the applied field in the mass production of the required species.

Therefore, the main objective of this study was

- to record the occurrence and abundancy of crab fauna in the coastal area of Manaung Island.

- to study the commercial value of crab fauna within the study area.

MATERIALS AND METHODS

Study Area

The study area was located in coastal area of Manaung Island, and the main study sites were from the eastern, western and northern shore of it. The island is situated latitude between 18° 40' and 18° 56' North and longitude between 93° 31' and 93° 50' East (Figure-1). Manaung Island, on the Rakhine Coast, is situated adjacent to the west of Myanmar.=

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Study period

The study period lasted from May to July 2016.

Collection of Data

The specimens were collected from fishermen , crab merchants and fishing sites. The number of crabs belonging to different species were recorded, measured, classified and identified up to species level using the taxonomic Keys of Ng,et.al 1998, Martin and Davis (2001). The identified species were recorded by taking colored photographs. Local names of the studied species were informed by the local fishermen and crab merchants.

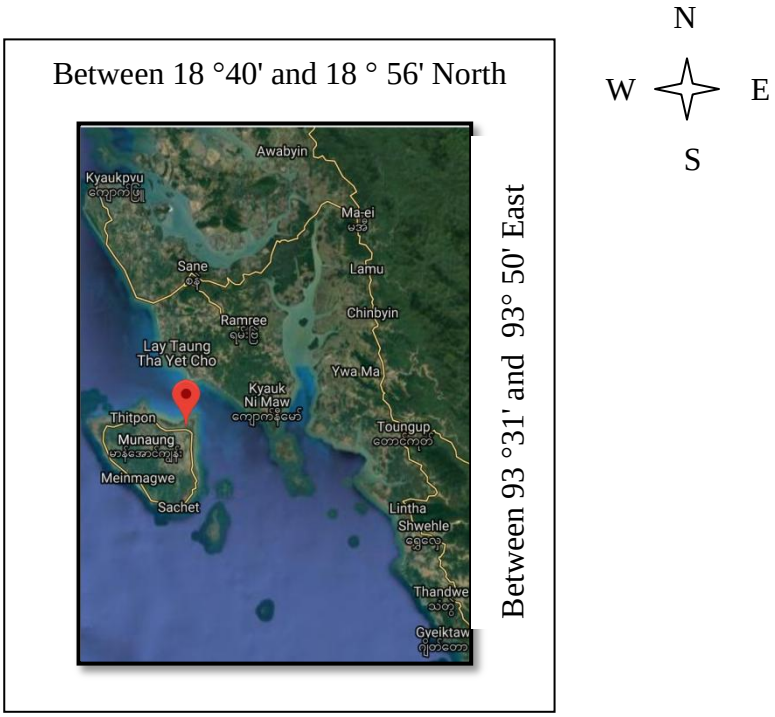

Figure-1 Map of the study area (Source from Google Earth., 2018)

RESULTS

Occurrence of recorded crab species in the study site

A total of seven species belonging to six genera, four families of order Decapoda were recorded in Manaung Island, Manaung Township, Rakhine State.(Table-1) Accoring to Martin and Davis (2001), the crabs are classified.

During the study period, when the precentage of species composition was evaluated, it was found that the family Portunidae topped the rank with 57.1 % and family Dromiidae, Calappidae and Xanthidae respectively were recorded with 14.3 % .(Figure-2)

Table-1 Recorded crab species in the stuyd site

Sr No.	Order		Species	Common name	Vernacular name (Manaung Island)
1	Decapoda	Dromiidae	*Dromia dormia*	Sleepy sponge crab, Common sponge crab	Kati-par-kyauk-ka-nan
2		Calappidae	*Calappa philargius*	Box crab, Burrowing crab, Spectacled box crab	Kyauk-ka-nan
3		Portunidae	*Scylla serrata*	Mud crab, Mangrove crab, Serrated swimming crab, Giant mud crab, Edible mud crab	Ka-nan-gaung
4			*Portunus pelagicus*	Blue swimming crab, Blue crab, Flower crab, Blue manna crab, Sand crab	Ge-phar
5			*P. sanguinolentus*	Three spot swimming crab, Red-spotted swimming crab, Blood-spotted swimming crab	Wa-thone-lon-ka-nan
6			*Charybdis cruciata*	Mask crab, Coral crab	Pinle-ka-nan-kyar
7		Xanthidae	*Atergatis integerrimus*	Edible crab	Goke-ni

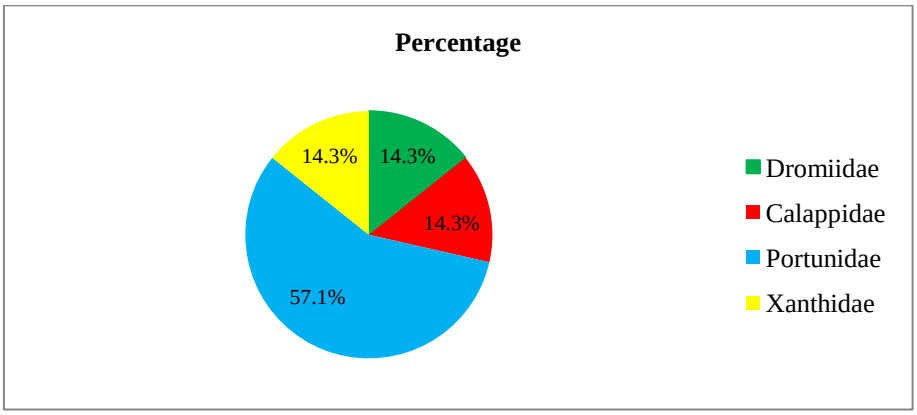

Figure-2 Species Composition of crab species in different families

(1)*Dromia dormia*

(2) *Calappa philarguis*

(3) *Scylla serrata*

(4) *Portunus pelagicus*

(5) *Portunus sanguinolentus*

(6) *Charybdis cruciata*

(7) *Atergatis integerrimus*

Plate-1 Recorded crab species in study area

Description of the studied species

(1)*Dromia dormia*

Number of specimens : One male specimen

Length of carapace - 12 cm (Male)

The carapace is convex, pentagonal, broader than long. There are four unequal spines on the antero-lateral borders of carapace, the third of which is very small and close to the second. The first spine much larger. The first and second spines have many hairs. Frontal grooves is shallow.

Chelipeds are equal and massive, outer face of palm inflated, inner superior margin with four tubercles. Chelipeds are generally much stouter than the legs and have many hairs. A pair of forelegs is shorter than a pair of hind legs. In the tips of legs are a sharp claw.

Carapace, chelipeds and legs are grayish yellow or grayish dirty white. The tips of the thumbs and fingers of the chelipeds are white. Abdomen of the crab is grayish yellow.

It inhabits in rocky regions of shallow waters where in fine grain sands are mixed with muddy slit.

(2)*Calappa philargius*

Number of Specimens: One female specimen.

Length of carapace - 9 cm (Female)

The extreme length of the carapace is two-thirds of the extreme breadth. Carapace nearly smooth, except for a few lumps anteriorly and a few scattered granules posteriorly. The antero-lateral borders are beaded and finely festooned. Its posterior border is also beaded. There is a large tooth in the middle of the posterior border, and the tooth bounding that border on either side is more salient. The endostomial septum has its anterior border strongly convex and projecting.

The two anterior lobes have a spine each. The upper surface of the palm of chelipeds is nearly smooth. The crest of palm is deeply seven-toothed.

Carapace is light brown. The finger and thumb of chelipeds pale yellow and their tips white. The legs has brown and white lines.

It inhabits in the waters of muddy sand shore and rocky outcrops shore.

(3)*Scylla serrata*

Number of Specimens: Fifty male and forty-five female specimens.

Length of carapace - 8.5 cm (Male); 7 cm (Female)

There are nine sharp teeth of about equal size on the antero-lateral borders of carapace. The flagellum stands in the orbital hiatus. Carapace is a little oval in shape, its upper surface smooth and convex. The transverse ridges are oblique from the last spine of the antero-lateral border to branchial region. Front cut into four lobes or blunt teeth of about equal size and is prominent.

Chelipeds almost twice the length of the carapace in the adult male, but shorter than this in female and young male. Arm with three spines on the anterior border and two spines on the posterior border. Inner angle of wrist is a strong spine, and outer angle of wrist is one or two teeth. Legs unarmed. Abdomen of male broadly triangular.

Carapace and all appendages are dark olive green with lighter circular spots. Chelipeds are yellowship green or dark brown in the dorsal and they are reddish yellow or reddish brown. The legs are reddish dark brown.

It inhabits muddy bottom in brackish water along the coast and mudbank in estuaries and mangrove swamps. They are prefer muddy bottom and seagrass beds.

(4)*Portunu spelagicus*

Number of Specimens: thirty male and twenty female specimens.

Length of carapace - 6.4 cm (Male); 7 cm (Female)

There are nine teeth on the antoro-lateral borders of carapace, of which the first spine is much the largest. The most external spine is 2 to 4 times larger than the precedent. There are four triangular teeth in the front. Posterior angles of carapace rounded. Carapace is broad, little convex. Two transverse lines is on the gastric and one is either branchial region. The rostrum lies in the between two antennae.

Chelipeds are more elongate in males than in females. The chelipeds are nearly 2.5times the length of the carapace. The hands of the chelipeds are a little unequal in size. Hand as massive as the arm. The arm has three large spines on the anterior (inner) border and one at the far end of the posterior border. The wrist has three spinules. Legs are smooth and are laterally flattened to varying degrees in last 2 segments of last pair paddle-like.

Carapace is bluish or purplish green with the extensive irregular faint white spots. Chelipeds is bluish green with faint white spots. Tips of chelae and tips of legs is purple.

It inhabits in the waters along sandy shores, in tidal pools of rocky shores and in sand-muddy depths of shallow waters.

(5)*Portunus sanguinolentus*

Number of Specimens: forty-seven male and forty-five female specimens.

Length of carapace - 6 cm (Male); 5.5 cm (Female)

Carapace is very broad, little convex. There are nine teeth on antero-lateral borders of carapace, of which the first lateral spine is much the longest and largest. The first lateral spine is about four times as long as any of the others. Carapace is three brown spots in posterior half, persisting quite long in preserved specimens; surface finely granulated anteriorly, smooth posteriorly. Front with four triangular teeth, outer pair broader and very slightly more prominent than inner ones. Posterior angles of carapace are rounded.

Cheliped merus with postero-distal border smooth, anterior border with 3-4 sharp spines; carpus with inner and outer spines; lower surface of plan smooth. The hand is the most massive segment. Posterior border of swimming leg without spines or spinules. Swimming legs are flattened and claws are long.

Carapace is dark yellowish green conspicuously marked posteriorly on the branchial region by three brown spots ringed with white.

It inhabits sandy to muddy substarates. It is commonly seen in waters along sandy beach or in tidal pools of the rocky shores.

(6)*Charybdis cruciata*

Number of Specimens: Twenty-nine male and twenty-three female specimens.

Length of carapace - 7 cm (Male); 7 cm (Female)

Carapace is glabrous, about two-third as long as broad, slightly convex. In the carapace, there are transverse lines on protogastsic and mesogastric regions, epibrachial line interrupted at the cervical groove and in its middle. The antero-lateral borders are out into six spines of about equal size including the outer orbital angles, of which the first is truncated and notched or bifid. Front with six subequal triangular distally rounded teeth.

The chlipeds are nearly 2.5 times the length of the carapace and except for definitely placed costae and spines are sharp and smooth. The hands are a little unequal in size. Cheliped marus with three spines on anterior border, posterior border smooth. Palm with 2-3 spines on upper border.Merus of swimming leg with a posterior subdistal spine.

Carapace is orange brown with a large yellowish white cross. The dorsal of chelipeds is yellowish brown with white patches and the ventral of chelipeds is white with brown patches, the tips are pink and light brown. Legs are faint yellow with the white patches.

It inhabits rocks, stones, and sandy muddy substratum.

(7)*Atergatis integerrimus*

Number of Specimens: One male and one female specimen.

Length of carapace - 3.8 cm (Male); 5.8 cm (Female)

The anterior third or half of carapace surface irregularly and rather distantly pitted, especially near the front and antero-lateral borders. The edges of antero-lateral borders are sharp and crest like, and form a ridge at the lateral epibranchial angle. The front which is little prominent, meets the antero-lateral border at a wide but very distinct angle. Orbits are very small. Their width is much less than a third the width of the front.

Chelipeds are equal. The upper edge of the merus is sharply crested. The upper edges of the thumb and finger are more bluntly crested.The outer surface of the legs is hardly pitted.

Carapace is brick red with whitish pits. Chelipeds and legs are brick red with the pits. Fingers and thumbs are black with whitish tips and teeth.

It was found among loose rocks of rocky shore at the low tide level. The crabs inhabit coral reefs, sandy or rocky bottoms.

Table-2 Recorded number of crab species under taxonomic status categories

(May to July, 2016)

Sr.No	**Number of Order**	**Number of Family**	**Number of Species**	**Number of Specimen**
1	Decapoda	Dromiidae	*Dromia dormia*	1
2		Calappidae	*Calappa philargius*	1
3		Portunidae	*Scylla serrata*	95
4			*Portunus pelagicus*	50
5			*P. sanguinolentus*	92
6			*Charybdis cruciata*	52
7		Xanthidae	*Atergatis integerrimus*	2
Total	**1**	**4**	**7**	**293**

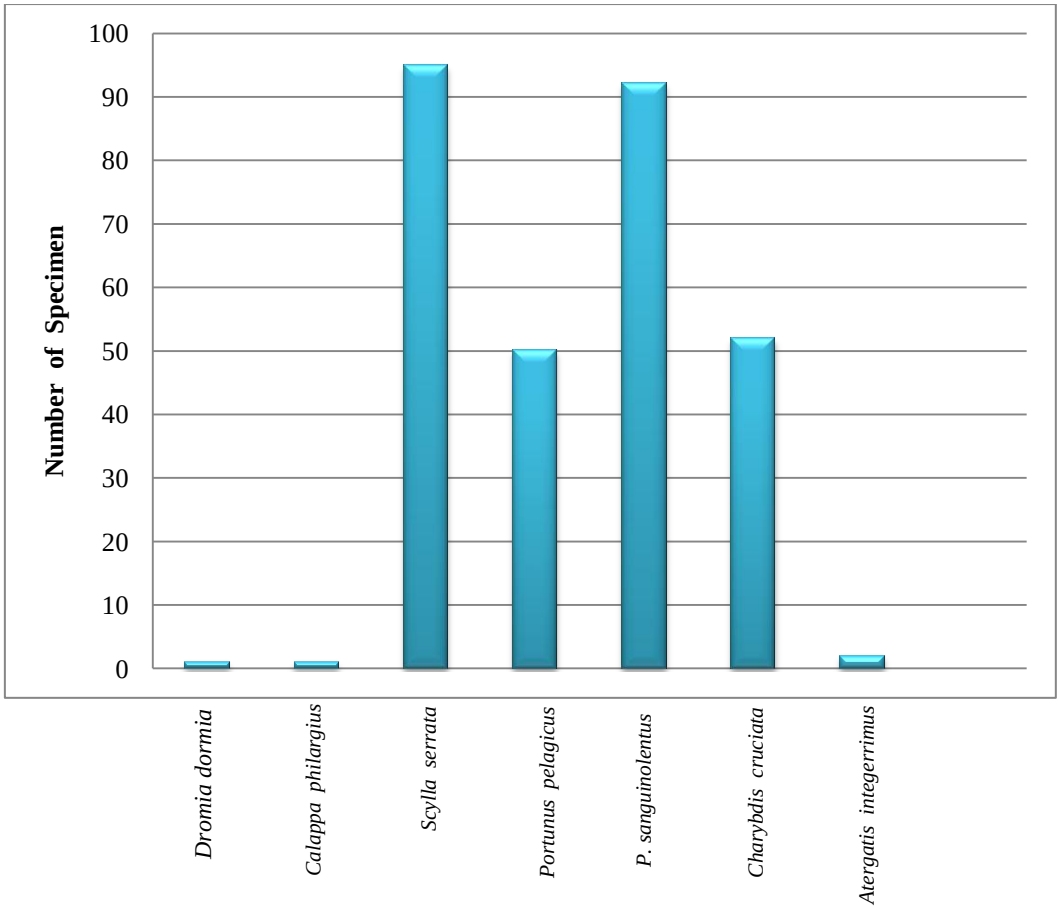

Figure-3 Number of recorded crab species in the study site.

According to the recorded crab species, the total of 293 specimens of recorded crab species were recorded in the study site. (Table-2). Among the recorded crab species, the highest number of specimen was observed *Scylla serrata* species in the study site. The lowest mumber of specimen was observed *Dromia dormia*, *Calappa philargius* and *Atergatis integerrimus* species. So *Scylla serrata* is the most abundant species in the study area.

(Figure-3)

DISCUSSION

The present work was commenced from May to July 2016. Manaung Island situated in the west coast of Rakhine State has the beautiful, broad shores on its western and northern side not being disturbed by many locals and tourists. During low tides, the beautiful organisms with various coloration can be seen moving busily about looking for food and shelter. Among these the crabs are most distinct due to their bright coloration of different shades. The writer very much interested to have the knowledge on the number of species present on this island. This would contribute in the academic field, to the locals and to fishery purposes as to their distribution, habit and habitats, abundancy biodiversity and conservation.

In the present study, a total of seven species, six genera and four families of edible crab fauna under order Decapoda were recorded in shore area of Manaung Island . In this work, the family Dromiidae (1 species), family Calpppidae (1 species), family Portunidae

(4 species) and family Xanthidae (1 species) were identified and described. During the study period, the species composition of recorded crab species was found to be the highest percentage under the family Portunidae (57.1%) in the present study.According to the information from locals though some crab species are rare, some species can be available. The genus *Dromia* consists of one species namely *Dromia dormia* which is rare species. The genus *Calappa* comprises one Species namely *Calpppa philargius* which is rare during raing months. the genus *Scylla* consists of one species namely *Scylla serrata* which is of commercial importance and is of great demand for local as well as export markets. These crabs are culture in mangrove swamps to marketable size. The genus *Portunus* comprises two species namely *Portunus pelagicus* and *Portunus sanguinolentus* are also of commercial importance, could be collected on sandy beach. The genus *Charybdis* consists of one species namely *Charybdis cruciata* which is economic important. The genus *Atergatis* consists of on species namely *Atergatis integerrimus* is rare (Table-3).

The crabs are a good source of food to marine life as well as to man a good protein source. Most marine crabs are cultured economically as sea food in world wide. It is also suggested here that *Scylla sp*. could be culture up to marketable size in mangrove swamps. Crabs of economic importance need application of hatchery operation for quality seed productions which are to be culture for consumption locally as well as for export.

Table-3 Abundance, Rarity and economic importance of studied crab fauna

(May to July,2016)

Abundant Species	**Rare Species**	**Economic important Species**
Scylla serrrata	*Dromia dormia*	*Scylla serrata*
Portunus pelagicus	*Calappa philargius*	*Portunus pelagicus*
Portunus sanguinolentus	*Atergatis integerrimus*	*Portunus sanguinolentus*
Charybdis cruciata		*Charybdis cruciata*

CONCLUSION

The results of this research indicate that there is a diverse marine crab species in shores of Manaung Island, Rakhine State. In present study, seven species were classified , identified and recorded .Of these four species belonging to Family Portunidae are abundant, of commercial importance and are usually consumed by locals as seafood.The abundance and diversity of crab species could be varied depend on particular habitats and natural food sources. It is suggested that future research workers need to inverstigate on more species for the academic purpose and biodiversity of the species. The present study gives some information on crab species in Manaung Island, Rakhine State and it would support partial of fulfillment for information dealing with crab fauna of Myanmar.

ACKNOWLEDGEMENTS

I would like to express gratitude to Dr. Myint Swe, Principal of Taunggoke Degree College , for his kind permission to write this research paper.I also wish to express my greatest thanks to Professor Dr. Khin Myint Zin, Porfessor and Head, Department of Zoology, Taunggoke Degree College, for her experience, guidance and advice in this paper.

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