Record of some Marine Crabs(Crustacea: Decapoda) from San Hlan coastal beach, Launglon District,Tanintharyi Region

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Abstract

The present work aims to describe the current status of the marine water crab species along San Hlan seashore of Launglon Township, Tanintharyi Region. The study period lasted from January 2018 to July 2018.Monthly visit was conducted and distribution of crabs was recorded from this seashore. Crabs were collected by aid of local crab hunters from these study area. A total of 32 crab species belonging to 14 families of order Decapoda were recorded from San Hlan coastal areas. In all of the 32 crab species,20 species were found in marine and mangrove area four species in sand area, seven species in mudflat area and only one species found in crevices of rock area. The recorded of 19 species were caught by beach seine net and 12 species were carried out by hand collection. Only one species *Scylla serrata* was collected by crab trab. Five species, *Calappa bilineata,Matuta victor,Scylla serrata,Portunus pelagicus* and *Portunus xantusii* were economically important,some were exported to neighbouring countries. Among them the mud crab(Scylla serrata) is a high demand item in export market.

Keywords : Marine water crab, San Hlan seashore, distribution, marine & Mangrove area

Introduction

Crabs belong to the Order Decapoda, which is classified into 2 main groups, brachyuran crabs and anomuran crabs. Most species of Brachyura, or "true crabs," can easily be separated from the "false crabs" belonging to the infraorder Anomura crabs always have only three pairs of walking legs clearly visible, while the fourth pairs is very small (Wisesponpand,2011). At present, there are approximately (25,000) species of crustaceans in the world (Friese and Okutani, 1973). The crabs depend directly on mangrove areas for survival by feeding on leaves and litter. The crabs have a significant role in detritus formation, nutrient recycling and dynamics of the ecosystem, together with numerous annelids and nematodes living in the sediment. The digging behavior by crabs enhances aeration and facilitates drainage of mangrove soils.-Salinities found in the mangrove (Khan and Ravichandran, 2007)

Generally, crabs were determined to male and female by their abdominally segment shapes. 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's abdomen becomes rounded and can be easily pulled out from the body often the final molt (Enrlish Wilson, 1991). At the present study, an attempt has been made on the study of some crabs from San-Hlan coastal area. The crab samples were collected from water area, sand area ,muddy-silty sand area, sand and rock area of San-Hlan coastal area. The objectives of the present study are:

-to examine habitat preference of crab species
-to analyse the collected methods of the San-Hlan area
-to categorize edible and inedible crab species
-to investigate the species composition

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Materials and methods

Study area and study period

Coastal area of San-Hlan village located in the Launglon District, Tanintharyi Region was designated as study area 13˙56′19.353″N and 98˙4′33.494″E. (Plate 1). The study period lasted from January 2018 to July, 2018.

Study methods

The specimens from inter-tidal zones, mangrove area and rocky area of San-Hlan seashore were collected. Once a month survey to study site and recorded the individual number of crab species. Hand picking method was used for sampling from four areas. Habitats of collected crab species and the specimens caught by different fishing gears were noted. The intended utilization of the marine crab (i.e. discarded, consumed and on sold)were determined by interviewing with the fishermen. Collected crabs were sexed and carapace length(C.L) and carapace width (C.W) were measured to the nearest millimeter by using digital caliper. Habitats of collected crab species were noted and the species caught by different fishing gears were also noted (Plate 2).

Preservation and identification of the specimen

Collected specimens were preserved in 10 percent formalin for later examination, identification of the specimen. The crabs were identified to species level in accordance with Alcock (1900),Chhapger (1956)and Wisespongp and (2011).(Plate-3)

Plate - 1 Map of the study area (Source : Google Earth 2019)

Results and Discussions

A total of 32 crab species under 21 genera of 14 families under two infraorders, Brachyura and Anomura were recorded from the present study area.

(Table 1).Chhpgar (1956) recorded that 35 species, in 27 genera as occurring from Myanmar coastal waters. According to habitat preference, four habitat types, water habitat type, sandy habitat type, muddy-silty sand habitat type and rock areas habitat type were classified. Among them 20 crabs species from water type, four species from sand type, seven species from muddy-silty sand and only one species from rock area were collected.(Table 2, Fig.1).

In the present study, three collection methods, Beach seine net, the Crab trap and by hand were applied. In the habitats, the crabs caught by the beach seine net are in deep sea. The species caught by the crab trap is inhabited in mangrove swamp area. The species that caught by hand was found in the sand beach of the tidal zone. Total of 19 species of the crabs were collected by beach seine net,12 species by hand and one species (*Scylla serrata*) was collected by crab trap (Table 3, Fig.2) This species was exported species. The highest catch weight of this species was examined during the cool season while lower catch weight was in hot season, no collection was practiced during the rainy season. During cool season, approximately 2-3Kg of catch out was collected by each fisherman. Twelve species was recorded by hand collection method from sand beach muddy area and mangrove forest. Myint Myint Aye (1995)recorded that some species were also obtained from the taing-htaung-kyar nets of Pyin-ka-yaing .Some specimens were also obtained from the fish catch of the beach seine drag nets from along the beaches of both west and east banks of the Pathein River mouth. Then the specimens were collected mainly by hand. During low tide, the most of the crabs were on or under rocks of the intertidal zone. On overturning an exposed rock, the crabs which had taken refuge under it can be easily caught. Some of them are fleet and dart out on being exposed to take refuge again under or between nearby rocks or crevices.

Among the size or these species the ranges of carapace length and width were 0.20-90.00mm and 0.01-80.00mm respectively. The largest size in carapace length was *Portunus armatus* and the second largest species was *Scylla serrata* (Table 4, Fig. 3). In the present study, 23 species of edible crabs were examined although the remaining of species were not edible (Table 5, Fig.4). Field (1995) stated that the large edible swimming crab *Scylla serrata* inhabits the muddy bottom of mangrove estuaries, as well as coastal brackish water. During study period, highest individual number was (n=5744),in January and lowest individual number was (n=1403) in July. The highest species number was (n=32) ,in January and lowest was(n=28),in May, June ,July because fishermen were fishing in January to April and September to December. In study period, the most dominant species was *Portunus sanguinolenatus* (n=2) and the lowest species was *Lambrus prensor* (n=1977) in water area (Table 6).

Marine crab is one of the indicator species of coastal area along marine beach. They live in deep water, marsh swamp area of mangrove forest. Their ecological role is manipulating micronutrients of soil they deposited. Crabs species carried by the waves from deep sea are economically important and exported to the nearby countries. Among them ,five species Calappa bilineata,Matuta victor,Scylla serrata,Portunus pelagicus and Portunus xantusii were economically important, some crabs are exported to neighboring countries such as China and Thailand.

Table 1 Systematic position of some crabs from San-Hlan coastal area, Tanintharyi Region

Infraorder	Family	Genus	Species	Common name	Local name
Brachyura	Leucosiidae	*Euclosia*	*E.unidentata* (De Hann,1841)	Crab	Ganan
	Calappidae	*Calappa*	*C.bilineata* Ng, Lai and Aungtonya, 2002	Box crab	Ganan- phon-gyi
			C.clypeata Borradaile, 1903	Box crab	Ganan –phon gyi
	Matutidae	*Matuta*	*M.lunaris* (Forskal, 1755)	Spotted moon crab	Leik- Ganan
			M. victor (Fabricius, 1781)	Spotted moon crab	Leik- Ganan
	Majidae	*Leptomithrax*	*L.stewnocostulatus*(H.Milne Edwards,1851)	Ribbed spider crab	Ganan
	Epialtidae	*Libinia*	*L.emarginata* Leach, 1815	Spider crab	Ganan
	Parthenopidae	*Lambrus*	*L.validus* De Haan, 1839	Crab	Ganan-pay-tan
			L.prensor(Herbst, 1796)	Crab	
	Portunidae	*Scylla*	*S.serrata* (Forskal, 1775)	Mud crab	Ganan – me
		Portunus	*P.pelagicus*(Linnaeus, 1766)	Blue swimming crab	Ganan- sayay
			P.sanguinolentus(Herbst, 1796)	Blue crab	Wa- thone-lon- ganan
			P.armatus (A. Miline Edwards, 1861)	Blue crab	Ganan- sayay
			P.xantusii (Stimpson, 1860)	Xan swimming crab	Thit- tone- ganan
		Charybdis	*C.cruciata* (Herbst, 1794)	Swimming crab	Ganan- nyo
			C.natator (Herbst, 1794)	Swimming crab	Ganan- nyo
		Thalamita	*T.crenata* Ruppell, 1830	Swimming crab	Gannan
		Podophthalmus	*P. vigil* (Fabricius,1798)	Swimming crab	Ganan
		Arenaeus	*A. cribrarius* (Lamarck, 1818)	Swimming crab	Ganan
	Xanthoidae	*Liagore*	*L.rubromaculata* (De Haan, 1835)	Crab	Ganan
	Grapsidae	Grapsus	G.albolineatus Lamarck, 1818	Sally light foot crab	Ganan- lat-phat
	Sesarmidae	*Aratus*	*A.pisonii* H.MilneEwards, 1837	Mangrove tree crab	Ganan
	Dotillidae	*Dotilla*	*D.myctirocides* (H.Milne Ewardsm 1852)	Solider crab	Ganan ball lone
		Scopimera	*S.globosa* (De Haan, 1835)	Sand bubbler crab	Ganan phyu
	Ocypodidae	*Gelasimus*	*G.annulipes* (H.Milne Edwards, 1835)	Fiddler crab	De Kyin Ganan
			*G.formosensis*Rathbun, 1921	Fiddler crab	De Kyin Ganan
			G.crassipes S.I Smith, 1848	Fiddler crab	De Kyin Ganan
			*G.jocelynae*P.K.L.Ng (2010)	Fiddler crab	De Kyin Ganan
			G.acutus (Stimpson, 1858)	Fiddler crab	De Kyin Ganan
Anomura	Porcellanidae	*Petrolisthes*	*P.cinctipes* (Randall, 1839)	Porcelain crab	Kyauk Ganan
	Diogenidae	*Dardanus*	*D.megistos* (Herbst, 1804)	Hermit crab	Win Ka Syut
		Clibanarius	*C.vittatus* Bosc 1802	Hermit crab	Win Ka Syut

Table 2 Habitats utilization of crab species from San-Hlan coastal area

Species	Water	Sand	Muddy-silty sand	Rock
Euclosia unidentata	√			
Calappa bilineata	√			
Calappa clypeata	√			
Matuta lunaris		√		
Matuta victor		√		
Leptomithrax sternocostulatus	√			
Libinia emarginata	√			
Lambrus validus	√			
Lambrus prensor	√			
Scylla serrata			√	
Portunus pelagicus	√			
Portunus sanguinolentus	√			
Portunus armatus	√			
Portunus xantusii	√			
Charybdis cruciata	√			
Charybdis natator	√			
Thalamita crenata	√			
Podophthalmus vigil	√			
Arenaeus cribrarius	√			
Liagore rubromaculata	√			
Grapsus albolineatus				√
Aratus pisonii			√	
Dotilla myctiroides		√		
Scopimera globosa		√		
Gelasimus annulipes			√	
Gelasimus formonsensis			√	
Gelasimus crassipes			√	
Gelasimus jocelynae			√	
Gelasimus acuta			√	
Petrolisthes cinctipes	√			
Dardanus megistos	√			
Clibanarius vittatus	√			

Table 3 Collected method for the crab species from San-Hlan coastal area

Species	Beach Seine	Crab Trap	By hand
Euclosia unidentata	√		
Calappa bilineata	√		
Calappa clypeata	√		
Matuta lunaris	√		
Matuta victor	√		
Leptomithrax sternocostulatus	√		
Libinia emarginata	√		
Lambrus validus	√		
Lambrus prensor	√		
Scylla serrata		√	
Portunus pelagicus	√		
Portunus sanguinolenatus	√		
Portunus armatus	√		
Portunus xantusii	√		
Charybdis cruciata	√		
Charybdis natator	√		
Thalamita crenata	√		
Podophthalmus vigil	√		
Arenaeus cribrarius	√		
Liagore rubromaculata	√		
Grapsus albilineatus			√
Aratus pisonii			√
Dotilla myctirocides			√
Scopimera globosa			√
Gelasimus annulipes			√
Gelasimus formosensis			√
Gelasimus crassipes			√
Gelasimus jocelynae			√
Gelasimus acutus			√
Petrolisthes cinctipes			√
Dardanus megistos			√
Clibanarius vittatus			√

Table 4 Size variation of recorded crab species (mm)

Species	Carapace Length (mm)	Carapace Width (mm)
Euclosia unidentata	31.09	36.70
Calappa bilineata	83.10	61.51
Calappa clypeata	34.14	31.00
Matuta lunaris	39.00	36.00
Matuta victor	63.00	34.00
Leptomithrax sternocostulatus	6.00	9.00
Libinia emarginata	50.36	52.64
Lambrus validus	31.00	28.00
Lambrus prensor	25.00	28.00
Scylla serrata	90.00	135
Portunus pelagicus	58.00	133
Portunus sanguinolenatus	58.00	104
Portunus armatus	57.00	137
Portunus xantusii	66.54	41.43
Charybdis cruciata	55.00	80.00
Charybdis natator	57.00	130
Thalamita crenata	35.00	24.00
Podophthalmus vigil	30.00	20.00
Arenaeus cribrarius	50.00	35.00
Liagore rubromaculatus	24.57	18.24
Grapsus albolineatus	39.00	43.00
Aratus pisonii	2.30	2.00
Dotilla myctirocides	1.12	2.30
Scopimera globosa	7.53	6.66
Gelasimus annulipes	5.61	2.05
Gelasimus formosensis	4.94	1.11
Gelasimus crassipes	3.41	1.59
Gelasimus jocelynae	5.60	2.00
Gelasimus acutus	11.56	8.34
Petrolisthes cinctipes	10.51	10.11
Dardanus megistos	0.40	0.50
Clibanarius vittatus	0.20	0.30

Table 5 Edible and inedible of crab species from all study sites

Species	Edible	Non edible
Euclosia unidentata		√
Calappa bilineata	√	
Calappa clypeata	√	
Matuta lunaris	√	
Matuta victor	√	
Leptomithrax sternocostulatus		√
Libinia emarginata		√
Lambrus validus	√	
Lambrus prensor	√	
Scylla serrate	√	
Portunus pelagicus	√	
Portunus sanguinolentus	√	
Portunus armatus	√	
Portunus xantusii	√	
Charybdis cruciata	√	
Charybdis natator	√	
Thalamita crenata		√
Podophthalmus vigil		√
Arenaeus cribrarius	√	
Liagore rubromaculata		√
Grapsus albolineatus	√	
Aratus pisonii	√	
Dotilla myctiroides	√	
Scopimera globosa	√	
Gelasimus annulipes	√	
Gelasimus formonsensis	√	
Gelasimus crassipes	√	
Gelasimus jocelynae	√	
Gelasimus acutus	√	
Petrolisthes cinctipes		√
Dardanus megistos		√
Clibanarius vittatus		√

Table 6 Monthly collected numbers of crabs from the study area

No	Species Name	Jan	Feb	March	April	May	June	July	Total
1	*Euclosia unidentata*	30	25	13	11	8	6	1	94
2	*Calappa bilineata*	150	230	101	93	70	20	11	675
3	*Calappa clypeata*	114	120	97	85	62	14	13	505
4	*Matuta lunaris*	82	72	61	70	41	17	12	355
5	*Matuta victor*	86	80	71	58	53	18	15	381
6	*Leptomithrax sternocostulatus*	2	1	1	0	0	0	0	4
7	*Libinia emarginata*	1	1	0	1	0	0	0	3
8	*Lambrus validus*	3	2	2	0	0	0	0	7
9	*Lambrus prensor*	1	0	0	1	0	0	0	2
10	*Scylla serrata*	250	303	270	190	89	212	118	1432
11	*Portunus pelagicus*	352	409	303	300	210	13	19	1606
12	*Portunus sanguinolenatus*	430	450	407	360	300	23	7	1977
13	*Portunus armatus*	243	200	130	140	91	4	15	823
14	*Portunus xantusii*	344	340	180	122	107	90	64	1247
15	*Charybdis cruciata*	141	123	108	100	104	78	58	712
16	*Charybdis natator*	129	94	58	43	35	61	49	469
17	*Thalamita crenata*	51	35	31	30	18	22	17	204
18	*Podophthalmus vigil*	54	51	50	47	36	31	20	289
19	*Arenaeus cribrarius*	10	8	3	5	4	5	1	36
20	*Liagore rubromaculatus*	5	3	2	3	1	2	1	17
21	*Grapsus albolineatus*	415	420	340	230	204	20	29	1658
22	*Aratus pisonii*	20	17	10	11	3	4	2	67
23	*Dotilla myctirocides*	23	19	13	8	5	4	3	75
24	*Scopimera globosa*	16	13	8	9	5	8	9	68
25	*Gelasimus annulipes*	450	460	440	390	430	84	90	2344
26	*Gelasimus formosensis*	410	420	430	420	301	92	83	2156
27	*Gelasimus crassipes*	422	470	330	390	213	53	79	1957
28	*Gelasimus jocelynae*	330	317	307	310	187	158	167	1776
29	*Gelasimus acutus*	489	337	320	278	213	16	150	1803
30	*Petrolisthes cinctipes*	3	5	2	3	2	4	4	23
31	*Dardanus megistos*	370	362	305	307	212	173	175	1904
32	*Clibanarius vittatus*	318	330	327	301	201	188	191	1856
	Total individual number	5744	5717	4720	4316	3205	1420	1403	26525
	Total Species	32	31	30	30	28	28	28	32

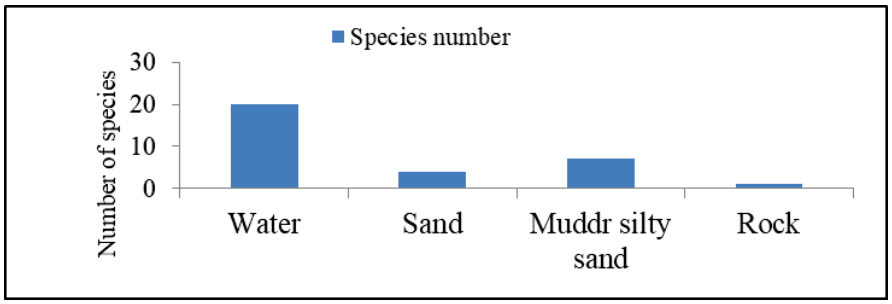


Figure 1 Collected crab species from different habitat types

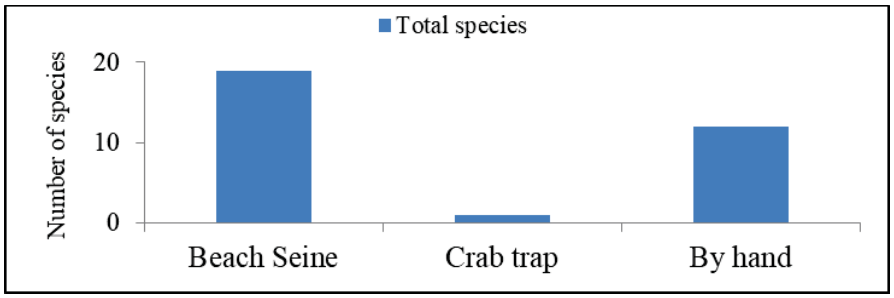


Figure 2 Collected crab species by different collection methods

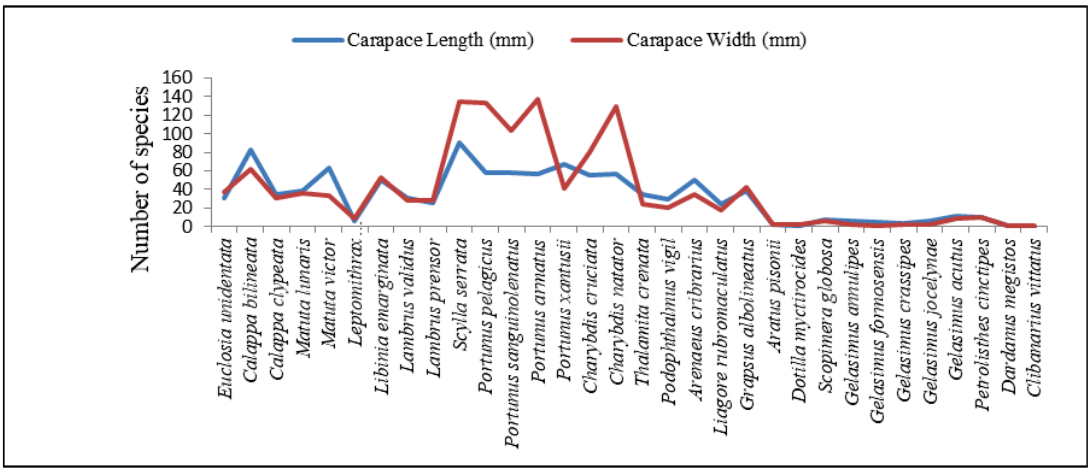


Figure 3 Comparison of carapace length and width of the collected crab species

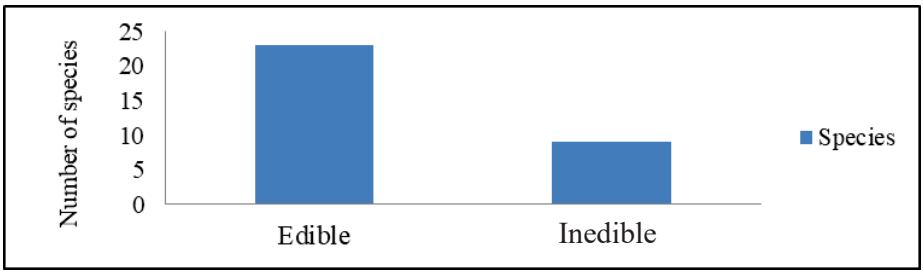
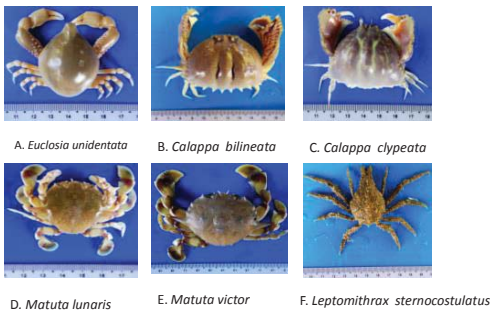


Figure 4 Monthly collected numbers of crabs from the study area



A. *Euclosia unidentata* B. *Calappa bilineata* C. *Calappa clypeata*

D. *Matuta lunaris* E. *Matuta victor* F. *Leptomithrax sternocostulatus*

Plate.3, Recorded species

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G. *Libinia emarginata* H. *Lambrus validus* I. *Lambrus prensor*

J. *Scylla serrata* K. *Portunus pelagicus* L. *Portunus sanguinolentus*

Plate 3 Continued

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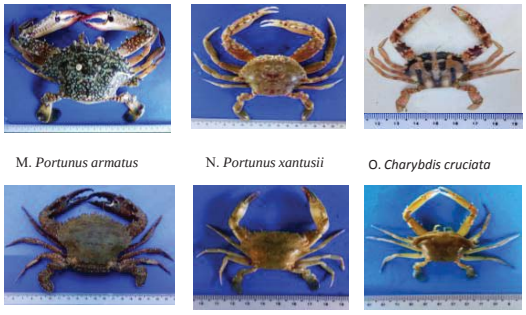

M. *Portunus armatus* N. *Portunus xantusii* O. *Charybdis cruciata*

P. *Charybdis natator* Q. *Thalamita crenata* R. *Podophthalmus vigil*

Plate 3 Continued

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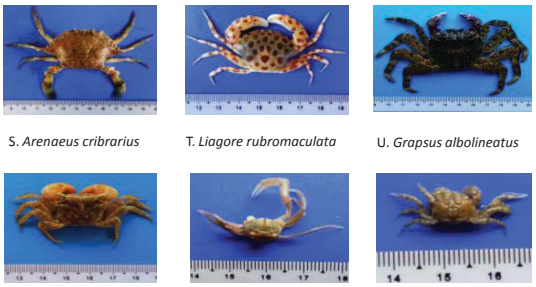

S. *Arenaeus cribrarius* T. *Liagore rubromaculata* U. *Grapsus albolineatus*

V. *Aratus pisonii* W. *Dotilla myctirocides* X. *Scopimera globosa*

Plate 3 Continued

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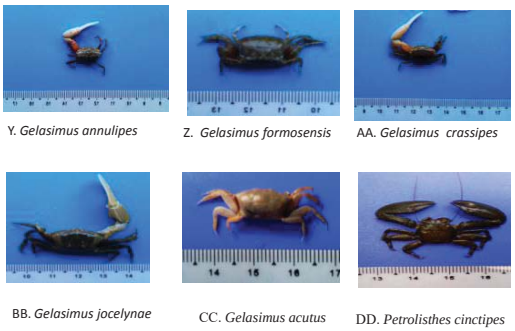

Y. *Gelasimus annulipes* Z. *Gelasimus formosensis* AA. *Gelasimus crassipes*

BB. *Gelasimus jocelynae* CC. *Gelasimus acutus* DD. *Petrolisthes cinctipes*

Plate 3 Continued

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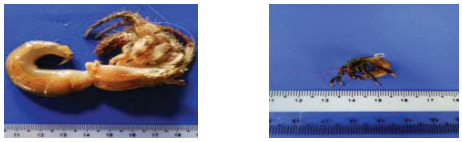

EE. *Dardanus megistos* FF. *Clibanarius vittatus*

Plate 3 Continued

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Plate 2 Recorded crab species from San-Hlan coastal area

Conclusion

The marine crab fauna from study sites of San-Hlan area were not found previously. Most of the crab species were discarded in this area. Therefore, biological study and utilization of crab fauna in improved understanding by local fishermen regarding the importance of marine water crabs in the ecosystem are essential. The present finding could be useful for the further establishment of

suitable plants to maintain marine crab population by limiting the size and number of crabs harvested.

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