Social and economic importance of some fish in Maubin and Pyapon Townships, Ayeyarwady Region

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Abstract

Social and economical importance of some fish was studied in Maubin and Pyapon Townships, Ayeyarwady Region during the study period from October,2018 to March,2019.A total of 29 species from order Perciformes, Clupeiformes, Siluriformes, Carcharhiniformes, Pleuronectiformes, Osteoglossiformes, Cypriniformes and Channiformes were recorded from two townships.The number and kinds of some fish species were recorded and counted monthly from five study sites.The highest number of local consumption and export species were observed in order Perciformes.The highest catch weight was recorded in January,February and followed by October and November. Recording and observing from socio-economic status of fishing families and industry, the education level of the most fishermen of age group between 20-24 years was primary and middle levels.

Keywords : Socio-economic importance, fish, Maubin township, Pyapontownship, Ayeyarwady Region

Introduction

A rich aquatic biodiversity is important for the food resources.Among them, fish is an important resource for human worldwide, such as income, employment and especially as a source of food. Fisheries are a huge global business and provide income for millions of people (Helfman, 2007).Their commercial value has changed over time due to their dependence on market demands of increasing number of regional populations. Such as, demanding on protein sources, fishery trades and medicinal value of some marine fish. So, directly or indirectly, the livelihood of over 500 million people in developing countries depend on fisheries and aquaculture (FAO,2009).

Myanmar is well-known in richness of natural resources including extensive inland water bodies like natural lakes, ponds reservoirs and river system which can provide freshwater, brackish water and marine fish population. An estimate of 120 million people throughout the world depends on fishes for all or part of the income of their livelihood (Pereira, 2000).

Dried salted fish is produced and consumed widely in Southeast Asia although these products are very popular in parts of Africa and Latin America. Salted fish persists until today for reasons of preservation in parts of the world where infrastructures of transport and handling are poor. In Myanmar where consumption is the highest, dried salted fish is also an important source of low cost dietary protein(Poernomo, et *al*., 1992).

In many developing countries, the largest number of fishers, their spouses and families are occupied in coastal fisheries and associated activities.The socio-economic importance of these activities is more difficult to measure, but is undeniable,in terms not only of contribution to production and income but also of food security for the coastal communities(FAO,2002).

Maubin and Pyapon Township are located in Ayeyarwady Delta Region. Freshwater, brackish and marine fish fauna is abundant in delta region.The resident' business is marketing fishery,other local products, hotel and guest-house

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business.Fishery sector is the most important for local people because it provides the socio-economic importance of local fisher families and fishery industry.In fish industry,most fresh and dry fish are traded to various places. These two townships are well developed in the transportation sector and most of marine fish are distributed to various places through fish wholesale.

The present study was conducted with thefollowing objectives;

- to record the economic importance of fish species within five study sites
- to investigate the socio-economic status of fishing households.

Materials and Methods

Study area and Study sites

Pyapon Township was chosen as the study area. It is located in Pyapon District, Ayeyarwady Region. Three fish wholesales were selected for study sites. They are PyaePhyoKyaw fish wholesale (depot) (Site-I), Zizawah fish wholesale (depot) (Site- II) and Ko Shan Lay fish wholesale (depot) (Site-III).These three sites are located in No. (12) Quarter, Pyapontownship. Pyapon Township is located between Latitude: 16° 17′ N and Longitude: 95° 40′ E. MaubinTownship was chosen as the study area. It is also located in Maubin District, Ayeyarwady Region. Two fish wholesales(depots) were selected for study sites. They areYadanar Moe fish wholesale(depot) (Site-I) and AungPyaeSonefish wholesale(depot) (Site- II). Site Iand Site II are located in No.(3) Quarter, Maubin township. Specimens and data were collected from these two fish wholesale(depots).Maubintownship is located between Latitude 16 °26' N and Longitude 95 °43' E.

Study period

The study period lasted from October, 2018 to March, 2019.

Specimen collection and data

Monthly data collection was carried out in each study site within two townships. Specimens were recorded in fresh immediately before discoloured. Scaled photographs were instantly taken to get natural size and colour. Interview surveys were performed by local fishermen and depots to obtain the necessary data such as local name for each species. Besides these datas, economic importance of each species was studied during the study period.

Processing of salted dried fish (Pyapon Township)

Firstly, hard scales of fish were removed manually by means of a scraper. For large and medium sized fish, it was usually to cut off the heads and remove all viscera and sometimes, also vertebral column.And then, fish were washed in water to be clean.Fish were kept in contact with salt solution.The amount of salt used was different in processing. Less salt was used in making little salty dried fish.

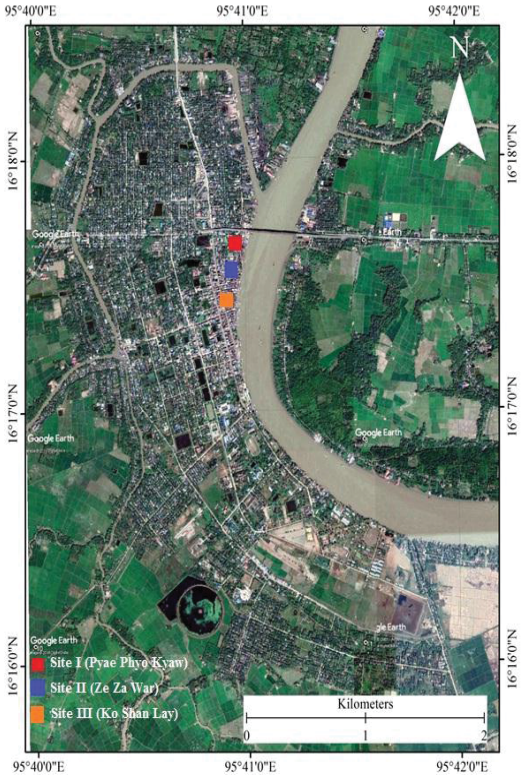
To get little salted fish,0.31 kg of salt dissolved in water is used for, 7.7 kg of fresh fish. To make the salty dried fish ,0.77 kg of salt solution is used for 7.7 kg of fresh fish.Traditionally the fishes are sundried on wooden frames.

Processing of unsalted dried fish (Maubin Township)

It is necessary to build a shelf for the fish drying process. The shelf is built of bamboo. The captured fresh fishes are stored for at least a night or half day. And then, they are dried in sunlight for about 1-2 days as the first time and they are left in dried in sunlight about 2-4 days as the second time. The mouth of the two fishes are linked together. In this way, after 2-4 days, the unsalted dried fishes can be produced.

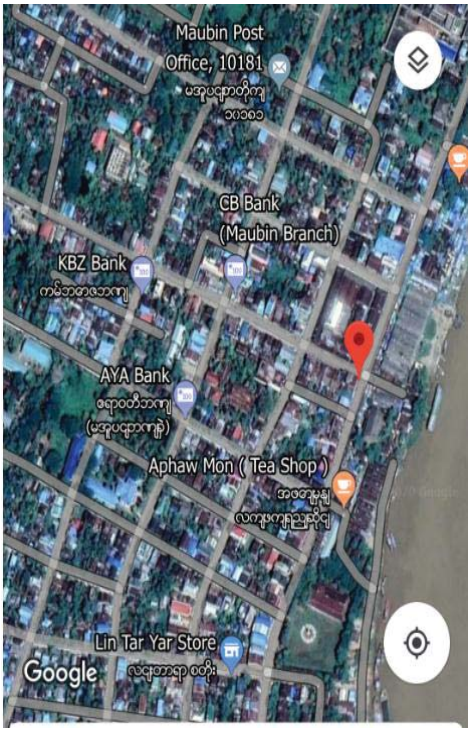
Method of interview survey

Interview surveys were conducted to collect the data for fishery processes and socioeconomic aspects in the study areas.The data collection was made concerning with the livelihood of fisherman families in the study sites using survey format mainly focused on household income and expenditure following the method of Civil Society Organization , Yangon,Myanmar(1997).



Source –Google Earth

Plate 1. Map of theStudy Area (Pyapon Township)



Source –Google Earth

Plate 2.Map of the Study Area (Maubin Township)

:sults

A total of 29 species of some fish belonging to 24 genera of 20 families under seven orders were recorded from five study sites within two townships.

Systematic position of marine fish species

Systematic position of the collected marine fish was according toTalwar and Jhingran (1991).

Species composition

A total of 29 species of some fish belonging to 24 genera of 20 families under seven orders of class Osteichthyes and Elasmobranchii were recorded.The recorded fishes of Order-Clupeiformes, Siluriformes, Perciformes, Carcharhiniformes, Pleuronectiformes, Osteoglossifor-mes and Anabantiformes were recorded.

The highest number of species were found inorder Perciformes among the collected fishes. Each of the order Clupeiformes, Siluriformes and Carcharhiniformes contained the two species and in order Pleuronectiformes only one species was recorded from Pyapon township.

The highest number of species were found in order Siluriformes among the collected fishes.The order Osteoglossiformes and Anabantiformes only one species was recorded from Maubin township.

Table 1 Recorded species of marine fish in study area (Pyapon Township)

Order	Family	Species	Common Name	Local Name
Clupeiformes	Clupeidae	*Tenualosa toli*	Chinese herring	Nga-tha-lauk-yauk-pha/ Pa-mei
	Chirocentridae	*Chirocentrus dorab*	Dorab wolf-herring	Nga-da-lwe
Siluriformes	Ariidae	*Arius maculatus*	Spotted catfish	Si-nga-yaung
		Osteogeniosus militaris	Soldier catfish	Nga-yaung
Perciformes	Lutjanidae	*Lutjanus johnii*	John's snapper	Nga-pa-ni
		Lutjanus sanguineus	Blood-red snapper	Nga-ba-yin/Nga-mark-htin
	Pomacanthidae	*Pomacanthus annularis*	Angel fish/Blue ring angelfish	Nga-leik-Pyar
	Stromateidae	*Pampus argenteus*	White pomfret/Silver pomfret	Nga-moke-phyu
	Serranidae	*Epinephelus sexfasciatus*	Spotted coralgrouper	Kyauk-nga
		Epinephelus bleekeri	Duskytail grouper	Kyauk-nga
	Carangidae	*Parastromateus niger*	Black pomfret	Nga-moke-mei
		Megalaspis cordyla	En-Torpedo scade	Pyi-daw-tha/ Nga-kyi-kan
	Polynemidae	*Eleutheronema tetradactylum*	En-four finger thread fin	Za-yaw-gyi/ Nga-kyaung-tha-bet
	Pomadasyidae	*Pomadasys argyreus*	En-Bluecheek silver grunter	Nga-gone/Nga-kha-yu-ma
	Sciaenidae	*Chrysochir aureus*	Reeve's croaker	Nga-thin-war/Nat-ka-daw
Carcharhiniformes	Carcharhinidae	*Scoliodon sorrakowah*	Sharphead dog shark	Lun-mga-manm
	Sphyrnidae	*Sphyrna lewini*	Scalloped hammerhead shark	Nga-mann-kyai-si Tu-nga-mann
Pleuronectiformes	Cynoglossidae	*Cynoglossus lingua*	long tongue sole	Shar-lay/ Nga-khywe-shar

Table 2 Recorded Species of Freshwater fish in study area (Maubin Township)

Order	Family	Species	Common Name	Local Name
Osteoglossiformes	Notopteridae	*Notopterus notopterus*	Feather-back	Nga-hphe
Siluriformes	Siluridae	*Wallago attu*	Freshwater shark	Nga-baht
		Mystus vittatus	Striped dwarf catfish	Nga-zin-yaing
		Ompok pabo	Sheat fish	Nga-nu-than
	Bagridae	*Mystus beekeri*	Dwarf catfish	Nga-than-chait
		Mystuss eenghala	Catfish	Nga-gyaung
	Schilbeidae	*Silonia childreni*	Butler catfish	Nga-dan
		Silonia silondia	Butter catfish	Nga-myinn
	Heteropneustidae	*Heteropneustes fossilis*	Stinging catfish	Nga-gyee
	Clariidae	*Clarias batrachus*	En-walking catfish	Nga-khoo
Anabantifornes	Channidae	*Channa striatus*	striped snake-head	Nga-yant

Table 3 Socioeconomic interview survey database

Sr No	Name	Education Level	Present Work	Owner/ Employee	Member of Family		Income/Month (Kyats)	Expenditure/ Month(Kyats)
					Male	Female		
1.	Family-1	Middle	Fisherman	small scale	1	2	350000	250000
2.	Family-2	Middle	Fisherman	small scale	1	2	300000	250000
3.	Family-3	Middle	Fisherman	small scale	2	2	400000	300000
4.	Family-4	Primary	Fisherman	small scale	1	2	450000	400000
5.	Family-5	Primary	Fisherman	small scale	1	1	500000	400000
6.	Family-6	Middle	Fisherman	small scale	2	1	600000	400000
7.	Family-7	Middle	Fisherman	small scale	3	2	700000	500000
8.	Family-8	Middle	Fisherman	small scale	3	2	800000	550000
9.	Family-9	Primary	Fisherman	owner/small depot	2	2	1000000	500000
10.	Family-10	Middle	Fishing industry	owner/small depot	3	3	1500000	700000
11.	Family-11	Primary	Fishing /Dried fish industry	owner /depot	2	3	3500000	2500000

Table 4 Economic fish products of some recorded species

Sr No.	Species	Types of fish products							
		Fresh	Salted dried fish	Unsalted dried fish	Salted fish	Fish paste	Hmyin Nga-pi	Fish sauce	Fermented fish
1	*Tenualosa toli*	✓	-	-	✓	-	-	-	-
2	*Chirocentrus dorab*	✓	-	-	-	-	-	-	-
3	*Arius maculatus*	✓	✓	✓	-	-	-	-	-
4	*Osteogeniosus militaris*	✓	✓	✓	✓	-	-	-	-
5	*Lutjanus johnii*	✓	-	-	-	-	-	-	-
6	*Lutjanus sanguineus*	✓	-	-	-	-	-	-	-
7	*Pomacanthus annularis*	✓	-	-	-	-	-	-	-
8	*Pampus argenteus*	✓	-	-	-	-	-	-	-
9	*Epinephelus sexfasciatus*	✓	-	-	-	-	-	-	-
10	*Epinephelus bleekeri*	✓	-	-	-	-	-	-	-
11	*Parastromateus niger*	✓	-	-	-	-	-	-	-
12	*Megalaspis cordyla*	✓	✓	-	-	-	-	-	-
13	*Eleutheronema tetradactylum*	✓	✓	-	-	-	-	-	-
14	*Pomadasys argyreus*	✓	✓	-	-	-	-	-	-
15	*Chrysochir aureus*	✓	✓	-	-	-	-	-	-
16	*Scoliodon sorrakowah*	✓	✓	-	-	-	-	-	-
17	*Sphyrna lewini*	✓	✓	-	-	-	-	-	-
18	*Cynoglossus lingua*	✓	-	✓	-	-	-	-	-
19	*Notopterus notopterus*	✓	-	-	✓	✓	-	✓	✓
20	*Wallago attu*	✓	-	-	-	-	-	-	-
21	*Mystus vittatus*	✓	-	-	-	-	-	-	-
22	*Ompok pabo*	✓	-	-	-	-	-	-	-
23	*Mystus beekeri*	✓	-	-	-	-	-	-	-
24	*Mystus seenghala*	✓	✓	✓	✓	✓	-	-	-
25	*Channa striatus*	✓		✓	✓	✓	-	-	-

(✓) Present
(-) Absent

Social and economic factors of fishery families and fish product industry

Firstly, eleven families were selected for social and economical interview surveys which represented all fishing families in Maubin and Pyapon Townships. Maubin had about 40 fishery families and Pyapon also had nearly 75 fishery families.

Each household normally consists of 1-7 members of family.According to interview survey, thirteen age groups (0 -5, 6-10, 11-15, 16-20, 21-25, 26-30, 31-35,36-40, 41-45,46-50, 51-55, 56-60 and above 60) were categorized in fishing families.The data on sex ratio was approximately 1: 1.

The education level was an important part of the study of socioeconomic structure of households. Most of the fishermen of age group 30 years were recorded as primary and middle levels due to their struggle life for their livelihood.A few families who own the fishing depot were good in economic condition and living standard.Some children of their families could learn primary, middle and high level to university level education.

Fishery activities are the important sectors in the study areas. Household members of the between age 15- 55 in fishing families participated in fishing and fish product industries. Monthly income and expenditure (in Kyats) of fishing activity families were shown in the Table.

Discussion

Social and economical importance of some fish were observed in Maubin and Pyapon Townships, Ayeyarwady Region .

Khaing Khaing Than (2014) observed grouper species of Shwe- Thaung-Yan environs. She recorded 12 species belonging to four genera of grouper fishes family Serranidae under order Perciformes. In the present study, seven species of grouper fishes were recorded. She also observed female reproductive biology ofEpinephelus coioides.

Htay Htay Naing (2010) recorded five species falling under three orders, three families and three genera in two fish depots, Maubin Township, Ayeyarwady Region was recorded in order Perciformes and other orders.

Collected 21 species of Perciform fishes in the environs of Sin-Ma village, Pathein Township.Perciform fishes were highest number of recorded species. It may be assumed that, Chaungtha, Ngwe-Saung and Sin-Ma are parts of Rakhine coast, the number of Perciform fishes were abundant in marine environment by Theint The Mon (2011).

In the present study, eleven species of fish in order Perciformes are the highest number and order Pleuronectiformes are the lowest number of species in Pyapon Township. Among the recorded species, the highest number of species is Chrysochir aureus and the least number of species is Sphyrna lewini.

At the present study, the total species of marine fish at three fish wholesale, Pyapon Township, Ayeyarwady Region are the same.There was no recorded marine fish species found all fish wholesales in Maubin Township. Moreover, the total species of freshwater fish at two fish wholesales from Maubin Township are the same.

The five species of marine fish from Pathein, *Chirocenturs dorab, Osteogeniosus militaris*,*Pampus argenteus,Megalaspis cordyla, Cynoglossus lingua* were found at a fish wholesale in Pathein Township. The price of fresh and fish products in Pathein Township was higher than the fish in Pyapon Township.

The species may be regarded as predominant species,*Pampus argenteus, Parastromateus niger, Scoliodon sorrakowah* and*Sphyrna lewini* were regarded as rare species in July and August. All recorded species at three fish wholesales (depots) were collected by capturing from fisheries workers along the offshore.

Pampus argenteus and *Parastromateus niger* were found in the high classes of value. *Pampus argenteus* sold in the local market as fresh form and priced at 13,350-13,500 kyats per kg while price of *Parastromateus niger* was 8,850-9,200 kyats per kg. It was found that these species were now more popular and attractive export marketing species.

Osteogeniosus militaris was being regarded as the country-wide species in dried form. The price of *Osteogeniosus militaris* in fresh form ranged between 6,50-7,50 kyats per kg and dried formprice was 2,650-2,800 kyats per kg. The average prices of all recorded species were slightly changed in different months.

As a result, all recorded species were generally for the export, local market and consumption for home in fresh or dried fish. For the emphasis on the present finding of fishery surveys, most of the recorded species were regarded as economically important species.

Eleven families were selected for social and economical interview survey, which represented all fishing families within two townships according to interview survey,the education level of most fishermen and fish product industry was primary and middle level due to their struggle life for their livelihood.The highest monthly income was recorded as 3,500,000 kyats (exception of three months) for fishing industry owner.The lowest monthly income was recorded as 350,000 kyats in small scale fishing.

The results of present work not only givesome important information about species occurrence, monthly variation but also economic importance of marine and freshwater fish species to both academic field and fisheries workers. Moreover, the findings of the present surveys would be shared the information about the livelihood of the local communities in chosen study sites and aided in conducting and supporting further extensive research processes.

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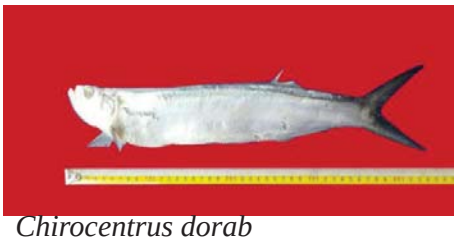
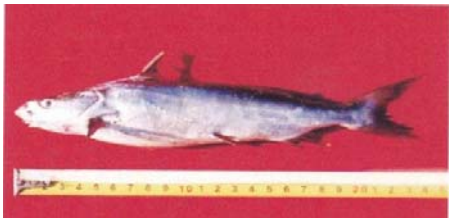
Appendix

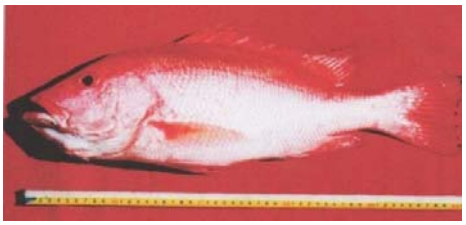
Tenualosa toli



Chirocentrus dorab



Arius maculatus



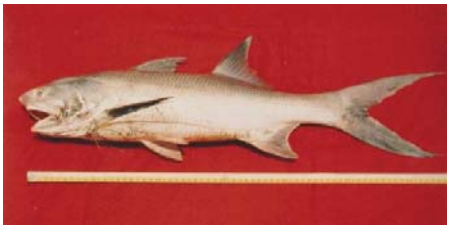
Lutjanus sanguineus

Osteogeniosus militaris

Lutjanus johnii

Pomacanthus annularis

Pampus argenteus



Polynemus indicus

Eleutheronema tetradactylum

Recorded species of some fish from two townships (Study area)