Economic Importance of Fishes in Hinthada Township, Ayeyawady Region

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Abstract

A total of 41 fish species belonging to 28 genera, 18 families and 7 orders were collected from fishing villages and the Htay Win Market in Hinthada. Hinthada Township lies on the bank of Ayeyawady River. During the study period from February 2013 to August 2014, fish species including freshwater fish were studied and identified systematically. The economic checklist on the importance of fish species and preservation methods of species were briefly presented. Fish species of Order Cyprimiformes, Siluriformes and Perciformes predominated whereas Osteoglossiformes, Clupeiformes, Cyprinodontiformes, and Tetradontiformes with the lowest composition. The main fishing gears utilized are netting enclosure, plain drag and plain fixed net.

Key words: Fish species, economic importance, Hinthada, Ayeyawady Region.

Introduction

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 fish populations. An estimate of 120 million people throughout the world depends on fishes for all or part of the income of their livelihood (Pereira, 2000).

Geographically, Myanmar has a long coast line and has many rivers and streams. And hence freshwater products like fishes and prawns are abundant. Fishes and prawns are not only important items of food for Myanmar people, they are also important for economic development of local people. Most of coastal inhabitants engage in fishery, fish and shrimp farming is more popular and becomes a good earning for the export market.

Fish could be eaten in various ways such as fresh or preserved. The flesh of a fish is made up of 62 to 80 percent water 16 to 23 percent protein, and greater or lesser amount of fat. The flesh of a fish contains relatively a large amount of vitamins. The flesh of fish is a highly perishable commodity. Modern development in the technique “deep-freezing” helps largely overcome the difficulties of transporting fresh fish and its storage for moderately, protracted periods.

As Hinthada Township is touching the Ayeyawady River, fishes and prawns are plentiful in nature. Therefore people of the Hinthada Township are engaged in producing dried fish, salting Yay-cho fish paste, fish sauce, pickled fish, parsun.

There are many villages engaging in production of fish in Hinthada Township. Fishing gears used in river system are traditionally developed fishing activities. The fishing gears are quite selective and sample to use (Ammonymous, 2007).

According to Fishbase (2010) a total of 31800 fish species were recorded in the world while 727 species were lasted in the checklist of Myanmar.

The present study was made in Hinthada Township, Ayeyawady Region. The research work was undertaken on the catch number of fish species in Hinthada Township with the following objective.

- to record the fish species in Hinthada Township

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- to study the fishing gears employed by the fishing community
- to study the preservation of fresh water fishes are found in various method.

Materials and Methods

Study area

The study area was chosen in the Hinthda Township, Ayeyawady Region. Hinthada is located in latitude 17° 39.173′ N and longitude 95° 27.088′ E, lies on the bank of Ayeyawady River (Figure 1). Area of the Hinthada Township in Hinthada District is 984.24 sq. km. The climate is characterized by tropical monsoon.

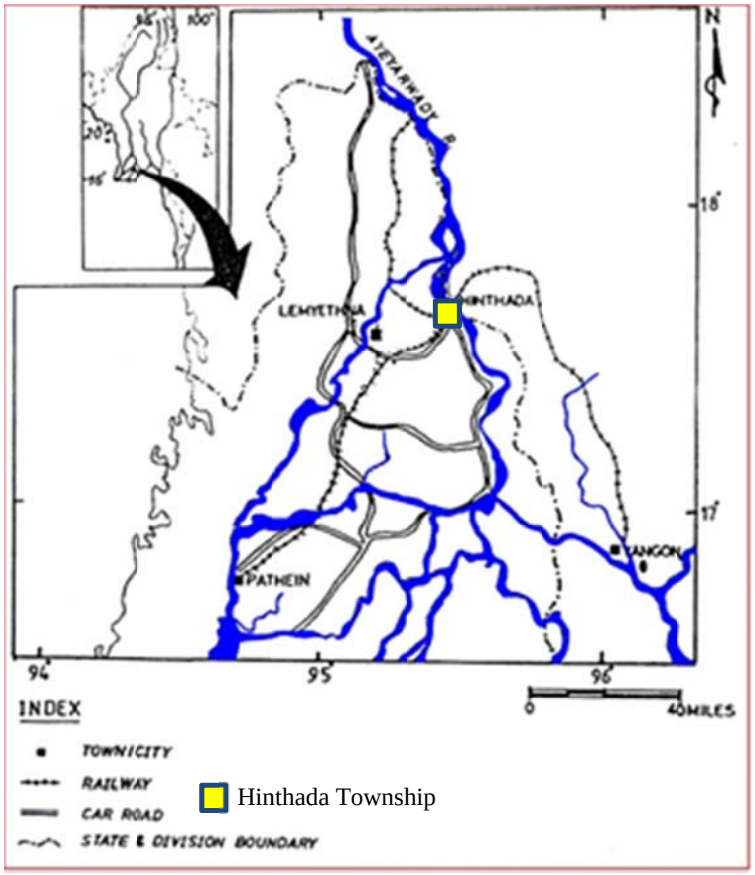

Figure (1) Location map of the study area
(Source: Department of Geology, Hinthada University)

Study period

Fish specimens were collected from , February 2013 to August 2014.

Collection of specimens

Fish specimens were collected from fishermen and Htay Win Market in Hinthada.

Identification

Identification was followed after by Jayaram (1981), Talwar and Jhingran (1991), Ferraris (1997).

Processing

Preservation of fresh water fishes are found in various methods. They are described below.

(a) Dried fish (b) Salting (c) Making of Yay-cho fish paste (d) Making of pickled fish (e) Making of fish meal (f) Making of fish sauce and (g) Making of parsun.

(a) Dried fish

Dried fishes are made from Nga-yant, Nga-gyi, Nga-bat, Nga-nu-than, Nga-than-chik, Nga-tha-lae-htoe, Nga-mwe-htoe, Nga-phe-oung, Nga-phaung-yoe, Nga-zin-yaing, Ka-tha-boe, Nga-pyay-ma, Nga-zin-lone, Nga-zin-zu.

The method of drying: the large fishes are cut off the head, moved away intestine, removed scales and washed properly. The fishes are cut horizontally and salted and kept for an overnight. The ratio of salt to be put is 1/6 to 1/4 to the weight of the fish. A bit of potassium nitrate is put to have a good colour. If the fish is small, wash fish properly; let the water drain off and then the fish is salted for an overnight. Then the fish is put in the sun to dry. When lightly salted dried fish is required it can be washed gain before drying in the sun. Trellises are used for drying. One viss (1.5 Kg) of raw fish can get 25 to 30 ticals (0.38 to 0.46 Kg) of dried fish.

(b) Salting

Salted fishes are made from Nga-myin-yin, Nga-gyin, Nga-myint-chin, Nga-net-pya, Nga-phe-aung, Nga-khu, Nga-yant.

The best way for the large fish and to get rotten is to make salted fish. The method of making salted fish to cut off the head, remove the scales. Cut the stomach and remove the intestines wash the fish and let the water salt drain off with the liquid comes out from the fish. Therefore it needs plenty of salt so as to lost longer.

(c) Making of Yay-cho-fish paste

Yay-cho fish paste is made from fishes like Nga-phyin-thalet, Nga-pyay-ma, Nga-yant, Nga-pa-naw, Small Nga-kyu, Nga-kone-ma, Nga-zin-lone, Nga-zin-su, Nga-zin-yine, Nga-nat-pya, etc.

Yay-cho fish paste is mostly produced from caught in lake and swamp. The method of making Yay-cho-fish paste (Ngapi) is to remove the scales from the small fish, cut off heads, remove intestines wash and let water drain off. Then mix with salt 1/3 the weight of the fish and spread in the sun. And then the fish are pounded. An appropriate of broken rice is cooked and mixed to a viss (1.5 Kg) of Yay-cho fish paste or Yay-cho Ngapi. Mix them thoroughly and put it into a container for one year.

One hundred viss (150 kg) of raw fish can produce 40 viss (60 Kg) of Yay-cho fish paste (Yay-cho-ngapi).

(d) Making of pickled fish

Fingerlings of Nga-gyin (Nga-than) and other small fishes like Nga-bae-phyu, Nga-khone-ma, etc. are used in making pickled-fish. The scales heads and intestines are removed and wash properly. After draining off water, cooked rice and a bit of salt are mixed with the fish and keep pressed for 3 or 4 days in a container. It becomes pickled fish. If more salt is added it takes more times to make pickle. If less salt is added the fish become rotten. The amount of salt needed to be added is a little bit more than when you put salt in your curry.

In this same way prawns can also be made into pickled prawns. Large Nga-gyin and Nga-than can be make pickled fish cutting them in small pieces.

(e) Making of fish meal

When making dried fish, fish heads become waste matter. If these heads are systematically treated animal feeds can be obtained. Fish heads, bones, intestines are to be boiled in hot water for 10 to 15 minutes to remove fat. After then it can be dried in the sun or can be dried on the fire. Then it is grinded to become fish meal. Small fish caught by the large fishing boats can also be made fish meal. Fish meals are used as animal feeds in animal husbandry.

Fishes, like, Nga-tha-le-doe, Nga-bae, Nga-bae-phyu, etc; are used in producing fish meal.

(f) Making of fish sauce

Fish sauce is collected by product of Yay-cho-napi while Yay-cho-napi are spread in the trellis, liquid drained from it. The liquid is collected in an earthen jar and is kept in the sun for about 3 days and in filtered with a thin gunny bag.

The prawns are boiled in salt water and the boiled water is filtered through a filter cloth or gunny bat and is kept in the sun for about (7) days. Fish sauce obtained in this way is a good quality sauce.

(g) Making of parsun

To make 'parsun' five ticals (77 g) of fish (Nga-daung-zin) is needed. As the Nga-daung-zins have gall bladder in them, they have to be removed by using a thorn or by squeezing them out. Then, they have to be mixed with salt without putting water and rinsed it. This action has to be repeated two times. After that, the fish has to be drained off by pressing it with hand. A lot of salt must be added to it to make it salty; and then mixed thoroughly. It must be put in an airtight bottle for about a month and a half months. Some people put it in the sun. One week before having it, about two ticals (31 g) of broken rice must be roasted and mixed with the fish in the bottle (parsun) to make it taste sour. When it becomes sour, it is ready to be eaten.

Parsun can be made with raw fishes like Nga-daung-zin, Nga-phyu-lay and small prawns. Fifty ticals (770 g) of raw fish can produce one bottle. (the size of a purified water bottle).

Results

Fish species recorded in the study area

A total of 41 species under 31 genera and 18 families belonging to seven orders of freshwater fish were recorded from the study area during the study period (Table 1, Figures 2 & 3).

Table (1) Percentage of recorded fish species composition by orders and families

Sr No.	Order	Family	Genus	No. of species	Percentage	
					Order	Family
1.	Osteoglossiformes	Notopteridae	1	1	2.43	2.43
2.	Clupeiformes	Clupeidae	1	1	2.43	24.43
3.	Cypriniformes	Cyprinidae	6	9	21.95	21.95
4.	Siluriformes	Bagridae	3	6	34.14	14.63
5.		Siluridae	2	2		4.87
6.		Schibeidae	4	4		9.75
7.	Cyprinodontiformes	Belonidae	1	1	2.43	2.43
8.	Perciformes	Ambassidae	2	2	34.14	4.87
9.		Mugilidae	1	1		2.43
10.		Gobiidae	1	1		2.43
11.		Channidae	1	3		7.31
12.		Mastacembelidae	1	4		9.75
13.		Tetraodontidae	2	1		2.43
14.		Charidae	1	1		2.43
15.		Heteropneustidae	1	1		2.43
16.		Cobitidae	1	1		2.43
17.		Cichlidae	1	1	2.43	2.43
18.	Tetradontiformes	Anabantidae	1	1		2.43
		Total	31	41	100	100

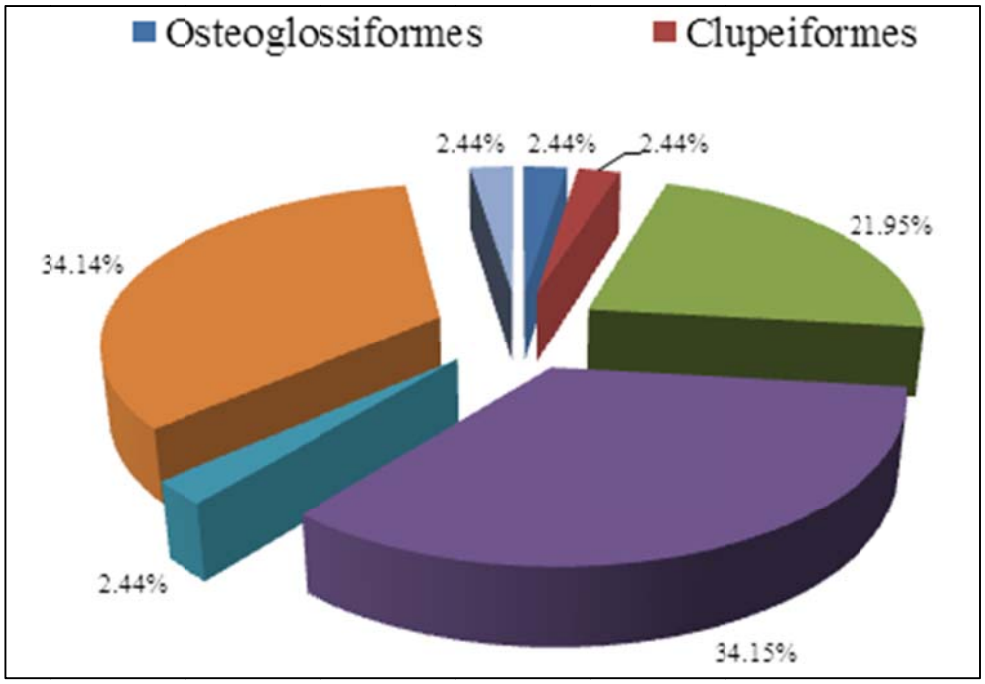

Figure (2) Percentage of recorded fish species composition by orders

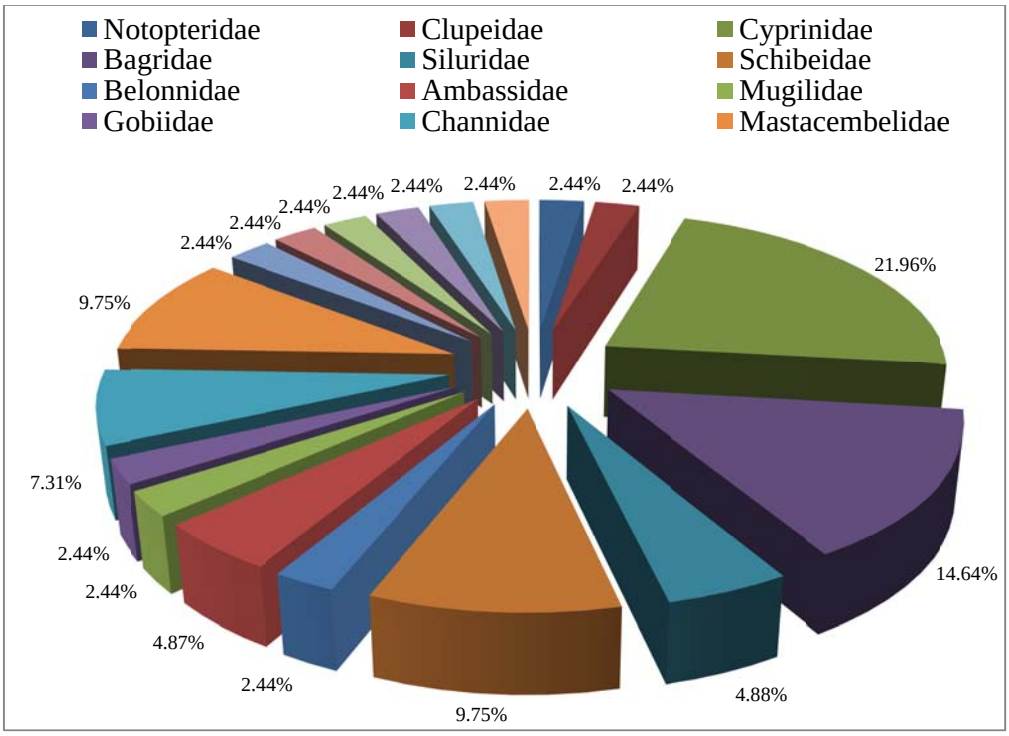

Figure (3) Percentage of recorded fish species composition by Families

Discussion

A total of the 41 species of economic importance of fishes recorded from the Htay Win Marketing and Ayeyawady River of Hinthada Township (Table 2). The study period was during August 2013 to August 2014.

Ayeyawady is one of the longest rivers in Myanmar. The wetland of Ayeyawady River is highly productive and therefore plays an important role in the ecology of the river system. Inland fishery is significant for Myanmar in terms of providing food security and employments to a large numbers of fish rural dwellers (FAO, 2003).

According to Khin War War (1997), 65 species were recorded in Ayeyawady River between Chauk and Singu Township and also 47 species were recorded in Thayet (segment of Ayeyawady River).

In the present study, the highest percentages of fish species were recorded from Order Sluriformes and Perciformes.

Pwint Thu Aye (2011) stated that *N. notopterus* and *O. belangeri* were good production rate with high demand along the Mone Creek, Magway Region. The habitat changes, human consumption and many other factors may be attributed to the species variation.

The live hood of fishermen depends much on climatic conditions. The rate of south-west and north-east wind blow is very important for these fishermen. When the south-west and north-east wind blow hard the fishes and prawns take to deeper waters. During the monsoon months from April to July, shore fisheries operations cease and fishing is continued during August to March. The fishermen can work to preserve of fishes during August to March.

Table (2) Checklist of economic importance of fish species

Sr. No.	Scientific name	Common name	Local name	Economic importance
1	*Notopterus notopterus*	Crey feather back	Nga-phe	Market fresh
2	*Tenualosa ilisha*	Hilsa	Nga-tha-lauk	Market fresh and salted
3	*Catla catla*	Catla	Nga-thaing-gaung-pwa	Market fresh
4	*C. marigal*	Carp marigal	Nga-gin	Market fresh
5	*Labeo rohita*	Rohu	Nga-myint-chin	Market fresh and dried
6	*L calbasu*	Calbasu	Nga-net-pya	Market fresh and dried
7	*Osteobrama belangeri*	Carplet	Nga-phe-aung	Market fresh and salted
8	*Salmostoma sardinella*	Flying barb	Yin-boung-za	Market fresh
9	*Puntius amphibious*	Scarlet-banded barb	Nga-khone-ma	Market fresh and pickled
10	*Rasbora buchamani*	Common rasbora	Nga-daung-zin	Market fresh and parsun
11	*O. cotio*	Peninsular osteobrama	Nga-lay-daung	Market fresh
12	*Mystus vittatus*	Striped-dwarf-catfish	Nga-zin-yaing	Market fresh, dried and smoke
13	*M microphthamus*	Catfish	Nga-ike	Market fresh
14	*Aorichthys seenghala*	Giant river	Nga-gyaung	Market fresh
15	*M cavasius*	Gangetic mystus	Nga-zin-kywe	Market fresh, dried and smoked
16	*Rita rita*	Rita	Nga-htway	Market fresh
17	*M. peguensis*	Sittang mystus	Nga-dan	Market fresh
18	*Ompok bimaculatus*	Butter catfish	Nga-nu-than	Market fresh, dried and smoked
19	*Wallago attu*	Freshwater shark	Nga-butt	Market fresh
20	*Clupisoma prateri*	Burmese garu	Nga-myin-oak-pha	Market fresh
21	*Eutropuchthyes vacha*	Batchiva vacha	Nga-ka-laung	Market fresh
22	*Silonia silondia*	Silondia vacha	Nga-myin-yin	Market fresh
23	*Pseudotropius acuterostris*	Indian potasi	Nga-than-ckake	Market fresh
24	*Clarias batrachus*	Magur	Nga-ku	Market fresh and salted
25	*Heteropneustus fossilis*	Stinging catfish	Nga-gyee	Market fresh, dried and salted
26	*Zenentodon cancila*	Freshwater garfish	Nga-phaung-yo	Market fresh
27	*Psudambassis ranga*	Glass fish	Nga-zin-zup	Market fresh
28	*P baculis*	Himal glassy perchlet	Nga-zin-zat	Market fresh
29	*Rhinomugil corsula*	Mellet	Nga-zin-lone	Market fresh
30	*Glossogobius giuris*	Bar-eyed-goby	Ka-tha-bore	Market fresh
31	*Chenna striatus*	Striped-snake-head	Nga-yant	Market fresh and dried
32	*C. punetatus*	Spotted-snake-head	Nga-pa-naw (or) Nga-yant-thin-ohn	Market fresh and dried
33	*C. orientalis*	Asiatic-snake-head	Nga-yant-gaung-to	Market fresh and dried
34	*Macrognathus zebrinus*	Spiny eel	Nga-mawy-doe-kyuan-sit	Market fresh and dried
35	*M. aculeatus*	Lesser spined eel	Nga-mway-doe-pyaung-chaw	Market fresh and dried
36	*Mastacembelus dayi*	Day's spinyeel	Nga-mway-doe	Market fresh and dried
37	*M. armatus*	Tire-track-spinyeel	Nga-mway-na-gar	Market fresh and dried
38	*Tetraodon cutcutia*	Blow-fish	Nga-pu-tin	Market fresh
39	*Lepedocephalichthys berdorei*	Burmese loach	Nga-tha-lae-doe	Market fresh and dried
40	*Oriochromis* sp.	Mozambique cichlid	Tilapia	Market fresh
41	*Anabas testudineus*	Climbing perck	Nga-pyay-ma	Market fresh

The air bladders of globe fish and porcupine can be used in beverages and in manufacturing Indian ink. From these air bladders use as glue to re-join broken vase etc. the current market value of air bladder of Ka-tha-hmyin is up to Ks. 200000.

The study area is therefore the suitable habitat of the fish species and leading to income and food for local people.

Conclusion

The collection of the fish sample was conducted from February 2013 to August 2014. A total of 41 species, 33 genera and 80 families of seven orders were recorded during the study period. Distinguished characters together with fin formula of recorded fish species were given. In the present study, the highest percentages of fish species were recorded from Order Siluriformes and Perciformes. The economic checklist on importance of fish species and methods of the preservation of fish species were briefly presented.

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References

Anonymous (2007) (DOF) Fishing gears and methods of introduction in rural of Myanmar (internet). (cited 2007 Noverber 8). Available from *http://map.seafdec.org/monograpg...Myanmar/Marine. php.Cached.*

FAO (2003) *Myanmar Aquaculture and Inland fisheries*. Food and Agriculture organization of United Nations and Network of Aquaculture Center in Asia-Pacific (NACA).

Ferraris Jr., C. J. (1997) *Identification guide to the commercial inland fish of central Myanmar*. Food and Agriculture Organization.

Fishbase (2010) Species by countries family: fishes of Myanmar (internet). (cited 10 December 2010). 37pp. Available from: *http://www.fishwise.co.za*.

Jayaram, K. C. (1981) The freshwater fishes of India, Pakistan, Bangladesh Burma and Srilinka. *Zoological survey of India*, Calacutta.

Khin War War (1997) *Systematic study on the Ichthyo fauna of Ayeyawady River between Chauk and Singu Township*. M.Sc. Thesis, Department of Zoology, University of Yangon.

Pereira, G. (2000) Women in fisheries in Latin America. Accessible at *http://www.Iied.org/docs/sarllsust*, 25 January 2005.

Pwint Thu Aye (2011) *Spatial changes of fish species diversity along Mone Creek , Magaway Region in relation to hydroelectric dams*. Ph.D Thesis, Department of Zoology, University of Yangon.

Talwar, P.K. and Jhingran, A. G. (1991) *Inland fishes of India and Adjacent Countries*. Vol. I & II. Oxford & IBH Publishing Co PVT. Ltd. New Delhi, Bombay, Calacutta.