Some Fish Species and Fishing Gears Utilized in Kyudaw 'Inn', Hinthada Township

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Abstract

Kyudaw 'Inn' in Hinthada Township was chosen as the study area, since the fishes of this 'Inn' had not been studied by previous workers. The study area is located between 17°36' N and 95°21'E which is situated in the Southwest of Hinthada Township. The study period lasted from December 2011 to March 2012. A total of 23 species, 20 genera, 14 families and five orders were identified. Eight kinds of fishing gear utilized by the fishing community in Kyudaw 'Inn' were categorized.

Key words: Species, Genera, Families, Orders, Fishing gear

Introduction

Fish and fish products are a major source of protein and comparatively much favourable than other food sources. Fish cooked in various manners is included as a dish in the daily diet. Fish is eaten fresh or preserved variously into dried fish and fish-paste.

The Ayeyarwady Region is abundant with the numerous 'Inn', creeks and rivers. It is well known for its freshwater fish fauna and the fish supply is mainly from the 'Inn'.

During the monsoon, some low lying plains are flooded with the rain water as well as the rise of river water. With the retreat of the flood water in the post monsoon period, huge expanses of water covering these lowlands are formed and each of them is known as 'Inn'.

Rice, the staple food in our country, is chiefly grown by the farmers. The main occupation of the people is paddy cultivators, however, some take up full time or part time jobs in the 'Inn' fishery. Thus, the main source of income is from paddy while the second largest income is from the freshwater 'Inn' fishery.

Fishing gears used in inland fisheries are traditionally developed from small scale fishing activities. The most widely used gears include stationary pot, stow net, lift net, gill net, line net, bamboo trap, and cast net. These fishing gears are quite selective and sample to use. Practically, Inland fisheries can fish all the year round but the amount of caught may vary from season to season.

The present study was conducted at Kyudaw 'Inn' located in Hinthada Township. The present work was undertaken on the fishing community within the selected study area with the following objectives;

- to record the fish species in the study area,
- to record the types of fishing gears employed by the fishing community.

Materials and Methods

Study area

The study area, Kyudaw 'Inn' is located between 17˚36' N and 95˚21' E which is situated in the Southwest of Hinthada (Figure 1). It is associated with Pein 'Inn' in the East

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which enters into the Da Ga River and joins the Ayeyarwady River near Pathein. The area of the Kyudaw 'Inn' is approximately 0.1699 sq. km with a maximum depth up to 2.7 meters during monsoon. The water level was recorded to be above 1.2 meters in the study period.

Study period

The study period lasted from December, 2011 to March, 2012.

Fish sample collection

Fish specimens were collected from the fishermen in Kyudaw 'Inn'. Scaled photographs were taken soon after catch to obtain the natural size and colour and labelled with local name before preserving them in 10% formalin for detailed identification. The total weight of fish from each catch with respective fishing gears was noted.

Identification of fish species

Identification of fish species was followed after by Yasuhiko (1974), Jayaram (1981), Talwar and Jhingran (1991), Rainboth (1996), Ferraris Jr. (1997), and Musikasinthorn (1998).

Recording of utilized fishing gears and methods

The fishing gears and methods utilized in the study area were recorded together with target fish species and identified according to Brandt (1984) and FAO (1990).

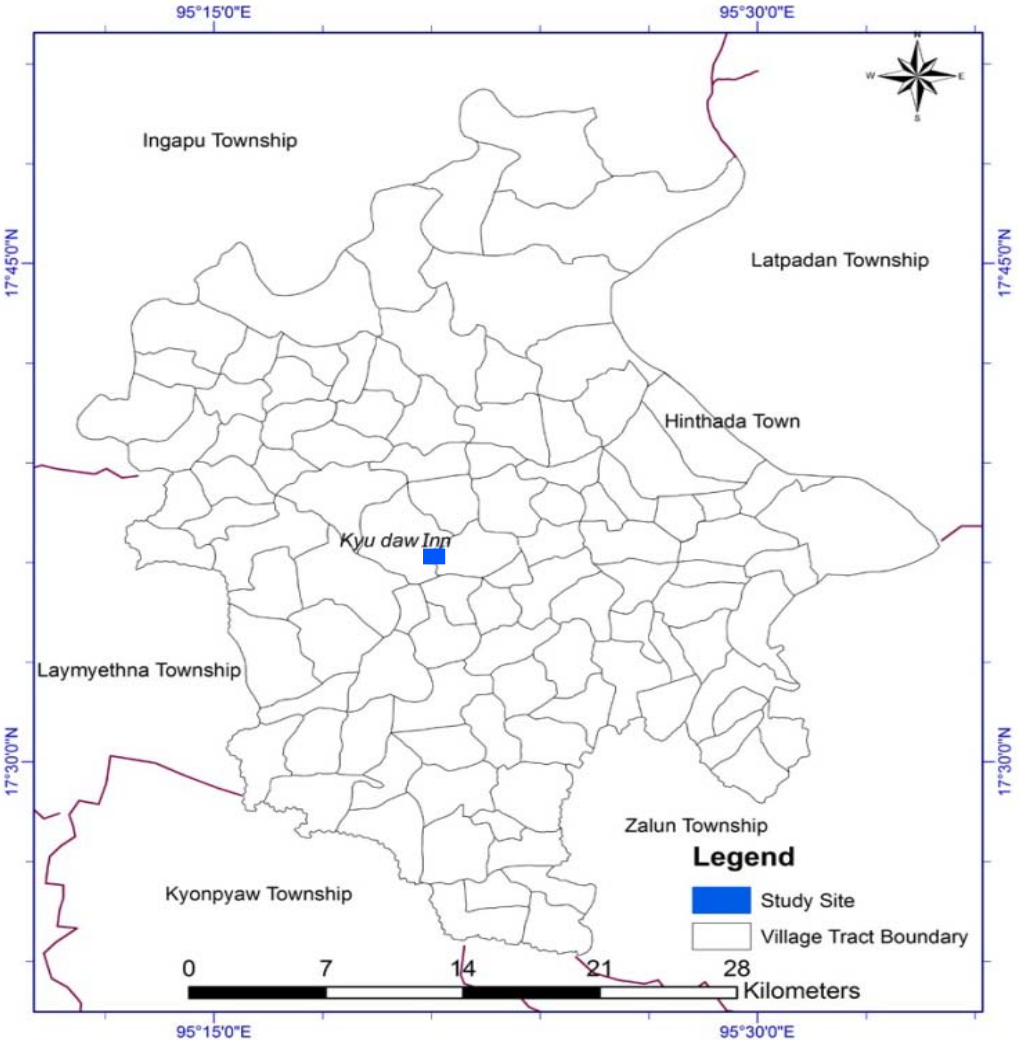


Figure (1) Map of study area

(Source: Geography Department of Hinthada University)

Results

Fish species recorded in the study area

Twenty-three species belonging to 20 genera and 14 families of five orders were recorded from the study area (Plates I and II).

Phylum - Chordata
Class - Osteichthyes
Subclass - Actinopterygii
Order - Cypriniformes
Family - Cyprinidae
Subfamily - Cyprininae
Genus - *Labeo* Cuvier, 1817
Species - *L. rohita* (Hamilton - Buchanan, 1822)
Common name - Rohu
Local name - Nga-myit-chin, Nga-myat-san-nee

Genus - *Puntius* Hamilton - Buchanan, 1822
Species - *P. sophore* (Hamilton - Buchanan, 1822)
Common name - Spotfin swamp barb
Local name - Nga-khone-ma

Subfamily - Rasborinae
Genus - *Amblypharyngodon* Bleeker, 1860
Species - *A. mola* (Hamilton - Buchanan, 1822)
Common name - Mola carplet, Pale carplet
Local name - Nga-beh-phyu
Genus - *Esomus* Swainson, 1839
Species - *E. ahli* Hora & Mukerji, 1928
Common name - Burmese barb
Local name - Nga-daung-zin, Nga-maw-tawt

Family - Cobitidae
Subfamily - Cobitinae
Genus - *Lepidocephalus* Bleeker, 1859
Species - *L. berdmorei* (Blyth, 1861)
Common name - Burmese loach
Local name - Nga-tha-lĕ-doh

Order - Siluriformes
Family - Bagridae
Genus - *Mystus* Scopoli, 1777
Species - *M. bleekeri* (Day, 1877)
Common name - Day's mystus
Local name - Nga-zin-yaing

Family - Clariidae
Genus - *Clarias* Scopoli, 1777
Species - *C. batrachus* (L'In'aeus, 1758)
Common name - Mugur catfish
Local name - Nga-khu

Family	-	Heteropneustidae
Genus	-	*Heteropneustes* Muller, 1840
Species	-	*H. fossilis* (Bloch, 1794)
Common name	-	Stinging catfish
Local name	-	Nga-gyee
Order	-	Cyprinodontiformes
Suborder	-	Exocoetoidei
Family	-	Belonidae
Genus	-	*Xenentod* ın, 1911
Species	-	*X. cancila* (Hamilton - Buchanan, 1822)
Common name	-	Freshwater garfish
Local name	-	Nga-phoung-yo
Suborder	-	Cyprinodontoidei
Family	-	Aplocheilidae
Genus	-	*Aplocheilus* Mc Clelland, 1839
Species	-	*A. panchax* (Hamilton - Buchanan, 1822)
Common name	-	Panchax m'In'ow, Blue panchax
Local name	-	Nga-hteike-kwat
Order	-	Synbranchiformes
Family	-	Synbranchidae
Genus	-	*Ophisternon* Mc Clelland, 1845
Species	-	*O. bengalense* Mc Clelland, 1845
Common name	-	Pygmy eel, Bengal mudeel
Local name	-	Nga-shint-pa-nee
Order	-	Perciformes
Suborder	-	Percoidei
Family	-	Ambassidae
Genus	-	*Pseudambassis* Bleeker, 1874
Species	-	*P. ranga* (Hamilton - Buchanan, 1822)
Common name	-	Indian glassy fish
Local name	-	Nga-zin-zat
Family	-	Nandidae
Subfamily	-	Pristolepidinae
Genus	-	*Pristolepis* Jerdon, 1848
Species	-	*P. fasciata* (Bleeker, 1851)
Common name	-	Catopra
Local name	-	Nga-phee-ma
Subfamily	-	Badinae
Genus	-	*Badis* Bleeker, 1853
Species	-	*B. badis* (Hamilton - Buchanan, 1822)
Common name	-	Badis, Dwarf chamelonfish
Local name	-	Nga-mee-loung

Suborder	-	Anabantoidei
Family	-	Anabantidae
Genus	-	*Anabas* Cuvier & Cloquet, 1816
Species	-	*A. testudineus* (Bloch, 1795)
Common name	-	Climbing perch
Local name	-	Nga-byay-ma
Family	-	Belontiidae
Subfamily	-	Macropodinae
Genus	-	*Trichopsis*
Species	-	*T. vittata* (Cuvier, 1831)
Common name	-	Croaking gourami
Local name	-	Nga-bay-kya
Subfamily	-	Trichogasterinae
Genus	-	*Colisa* Cuvier, 1831
Species	-	*C. labiosus* (Day, 1876)
Common name	-	Thick-lipped gourami
Local name	-	Nga-phyin-tha-let
Genus	-	*Trichogaster* Schneider, 1801
Species	-	*T. pectoralis* (Regan, 1909)
Common name	-	Snakeskin gourami
Local name	-	Gourami
Suborder	-	Channoidei
Family	-	Channidae
Genus	-	*Channa* Scopoli, 1777
Species	-	*C. gachua* (Hamilton, 1822)
Common name	-	Asiatic snakehead
Local name	-	Nga-yant-goung-toe
Species	-	*C. panaw* Musikasinthorn, 1998
Common name	-	Panaw snakehead
Local name	-	Nga-panaw
Species	-	*C. striatus* (Bloch, 1793)
Common name	-	Striped or Banded snakehead
Local name	-	Nga-yant
Suborder	-	Mastacembeloidei
Family	-	Mastacembelidae
Genus	-	*Macrognathus* Lacepede, 1800
Species	-	*M. aral* (Bloch & Schneider, 1801)
Common name	-	One- stripe spinyeel
Local name	-	Nga-mway-doh-pyoung
Species	-	*Macrognathus zebrinus* Blyth, 1859
Common name	-	Burmese spinyeel
Local name	-	Nga-mway-doh-kyan sit

(A) *Labeo rohita*

(B) *Puntius sophore*

(C) *Amblypharyngodon mola*

(D) *Esomus ahli*

(E) *Lepidocephalus berdmorei*

(F) *Mystus bleekeri*

(G) *Clarias batrachus*

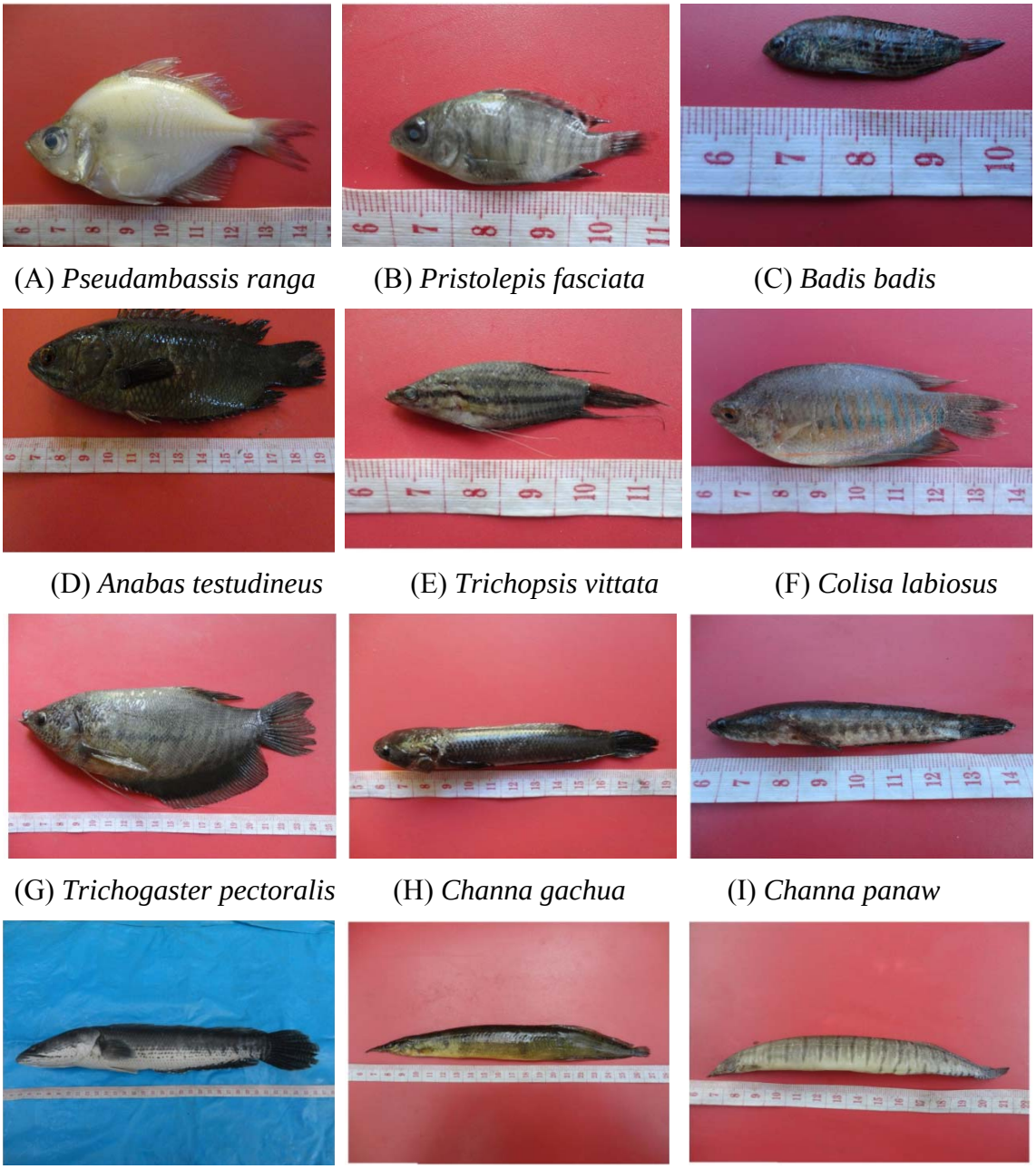
(H) *Heteropneustes fossilis*

(I) *Xenentodon cancila*

(J) *Aplocheilus panchax*

(K) *Ophisternon bengalense*

Plate (I) Recorded fish species of the Order Cypriniformes (A-E), Siluriformes (F-H), Cyprinodontiformes(I-J), Synbranchiformes (K)



(A) *Pseudambassis ranga* (B) *Pristolepis fasciata* (C) *Badis badis*

(D) *Anabas testudineus* (E) *Trichopsis vittata* (F) *Colisa labiosus*

(G) *Trichogaster pectoralis* (H) *Channa gachua* (I) *Channa panaw*

(J) *Channa striatus* (K) *Macrognathus aral* (L) *Macrognathus zebrinus*

Plate (II) Recorded fish species of the Order Perciformes

Fishing gears utilized in the study area

Eight types of fishing gear were categorized into 6 groups. They are gillnets, lines with hooks, traps, seine nets, hiding places and miscellaneous ones (Table 1, Plate III).

Fishermen use selective gears depending on season, current and depth of water. Types of fishing gear in association with selected fish species were as shown in table 2.

Table (1) Categorized fishing gears utilized in the study area

Sr. No	Type	Local name	Size of fish caught
1	Gillnets		
A	Set gillnets	Tar-paik	Depending on mesh size
2	Lines (with hooks)		
A	Hooks and lines	Kyo-tann	Large, medium
B	Rod and line	Nga-kai	Large (30-50)cm
3	Traps		
A	Eel traps	Paing	Not selected
B	Bamboo traps	Hmyone-seik	Small (4-10) cm, medium
4	Seine nets		
A	Double stick nets	Swe-paik	Not selected
5	Hiding places		
A	Muddy pot traps	Nga-kywin	Medium, small
6	Miscellaneous		
A	Bush-bundle baskets	Chone-yet-thet	Small

Table (2) Types of fishing gear in association with selected fish species

Sr. No	Fish species	Types of fishing gear							
		Gill-net	Hook and line	Rod and line	Eel trap	Bam-boo trap	Double stick net	Muddy pot trap	Bush bundle basket
1.	*Labeo rohita*	✓							
2.	*Puntius sophore*								
3.	*Amblypharyngodon mola*								
4.	*Esomus ahli*								
5.	*Lepidocephalus berdmorei*								
6.	*Mystus bleekeri*								
7.	*Clarias batrachus*								
8.	*Heteropneustes fossilis*								
9.	*Xenentodon cancila*								
10.	*Aplocheilus panchax*								
11.	*Ophisternon bengalense*								✓
12.	*Pseudambassis ranga*								
13.	*Pristolepis fasciata*								
14.	*Badis badis*								
15.	*Anabas testudineus*								
16.	*Trichopsis vittata*								
17.	*Colisa labiosus*								✓
18.	*Trichogaster pectoralis*								
19.	*Channa gachua*								✓
20.	*C. panaw*								✓
21.	*C. striatus*								
22.	*Macrognathus aral*								
23.	*M. zebrinus*								
	Total	13	4	5	1	10	18	2	5

(A) Gillnets

(B) Operation of gillnets

(C) Hooks with various sizes

(D) Operation of rod and line

(E) Eel trap

(F) Operation of eel trap

(G) Bamboo trap

(H) Double-stick net

(I) Muddy pot trap

(J) Operation of muddy pot trap

(K) Bush-bundle basket

(L) Operation of bush-bundle basket

Plate (III) Fishing gears utilized in the study area

Discussion

Kyudaw 'Inn' is the crucial water sources for livestock and agriculture. Small scale fishing is conducted in the 'Inn' to facilitate the livelihood of local communities.

Twenty-three species were recorded in Kyudaw 'Inn' during the study period. No previous report on fish species of Kyudaw 'Inn' is available. However, the locals and fishermen informed that more than 23 species existed in this area all the year round. It has been found that the largest number of species belong to the Order Perciformes. The largest amount of fish yield and the various types of fish species were recorded in December.

All the recorded species in this work are more or less similar to those of the previously studied 'Inn' in Hinthada Township. Shwe Sin (2008) recorded the fish species of different 'Inn' of Hinthada Township. The species of the three 'Inn' near Kyudaw 'Inn' were comparatively studied with those of Kyudaw 'Inn'. Thirty-two species of Talokhtaw 'Inn', 25 species of Atepyet 'Inn' and 26 species of Datthamyaung 'Inn' were described.

Thirteen species of Kyudaw 'Inn', *Labeo rohita*, *Amblypharyngodon mola*, *Mystus bleekeri*, *Clarias batrachus*, *Heteropneustes fossilis*, *Pseudambassis ranga*, *Badis badis*, *Trichogaster pectoralis*, *Channa gachua*, *C.panaw*, *C.striatus*, *Macrognathus aral* and *M.zebrinus* are similar to those of the three 'Inn's.

Notopterus notopterus, *N.chitala*, *Puntius chola*, *P.sarana*, *P.dorsalis*, *P.sewelli*, *Osteobrama belangeri*, *O.cotio*, *Catla catla*, *Ompok bimaculatus*, *O.pabo*, *Wallago attu*, *Channa marulius* and *Tetraodon cutcutia* were commonly found in those 'Inn's, but not in Kyudaw 'Inn'.

Ten species recorded in Kyudaw 'Inn', *Puntius sophore*, *Esomus ahli*, *Lepidocephalus berdmorei*, *Xenentodon cancila*, *Aplocheilus panchax*, *Ophisternon bengalense*, *Pristolepis fasciata*, *Anabas testudineus*, *Trichopsis vittata* and *Colisa labiosus* are not found in those 'Inn'.

In Kyudaw 'Inn', out of 23 species 5 kinds of fish species, *Ophisternon bengalense*, *Anabas testudineus*, *Colisa labiosus*, *Channa panw and C. striatus* were mostly abundant during the study period.

A total of 8 types of fishing gear belonging to 6 groups were recorded from the study area. The fishermen mainly use the traditional gear and selected fishing gear depend on fish size and seasonal changes. The main fishing gears employed in the study area are gillnet, eel trap and bamboo trap.

Gillnets are most widely used for obtaining large amount of fish yield throughout the survey period. Eel trap is selectively used to catch *Ophisternon bengalense*. Various types of fish species are caught by double stick net, but it is used only in the period of low water level.

During the study period 7 types of gear are commonly used for catching *Channa gachua*. *Labeo rohita*, *Amblypharyngodon mola*, *Lepidocephalus berdmorei*, *Mystus bleekeri*, *Xenentodon cancila*, *Aplocheilus panchax* and *Pristolepis fasciata* are caught by only one type of fishing gear.

Nant Thin Thin Kywe (2009) recorded 13 types of fishing gear observed in Hinthada District. The only two types, hook and line, and horizontal cylinder bamboo trap utilized in Kyudaw 'Inn' are similar to those of the recorded former gears. Eel trap, double stick net, muddy pot trap, and bush-bundle basket are not found in the types of gear mentioned in the Hinthada District. Fishing gears used in the study area are for only small scale fishing. The types of fishing gear observed in the Hinthada District could be economically used in fishing activities.

Besides supplying food, small scale fishery also provides employment for a large group of mainly poor people. In the study area, farming is the main commercial job and fishing seems to be for the income of daily requirements.

The fisheries sector is very important in Myanmar's economy, as fish constitute a major source of animal protein in the diet of the people. It also provides income generation to government and especially to the family economy of the rural dwellers.

The present study could not be claimed to be complete but the recorded data in this work would surely enrich the information on fish fauna and fishing gears of Myanmar.

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References

Brandt, A.V. (1984) *Fish catching methods of the world. Fishing*. News Books Ltd. England. 415 pp.

Food and Agriculture Organization (FAO) (1990) Definition and classification of fishing gear categories. *FAO fisheries technical paper*. Rome. 88 pp.

Ferraris Jr., C. J. (1997) *Identification guide to the commercial inland fishes of central Myanmar*. Food and Agriculture Organization of the United Nations. Myanmar: 58 pp.

Jayaram, K. C. (1981) *The freshwater fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka*. Zoological survey of India. Calcutta: 475 pp.

Musikasinthorn, P. (1998) *Channa panaw*, a new channid fish from the Irrawaddy and Sittaung River basins, Myanmar. *Ichthyological Research* 45 (4): 355-362.

Nant Thin Thin Kywe (2009) *Assessment on structure and performance of traditionally used fishing gears in Ayeyarwady Division*, PhD Thesis, Zoology Department, University of Yangon.

Rainboth, W. J. (1996) *Fishes of the Cambodian Mekong*. Food and Agriculture Organization of the united Nations, Rome: 265 pp.

Shwe Sin (2008) *Seasonal fluctuations in some freshwater fishes of Hinthada Township*, PhD Thesis, Zoology Department, University of Yangon.

Talwar, P.K. and A. G., Jhingran, (1991) *Inland fishes of India and adjacent countries* Vol. **I** & **II**. Oxford and TBH Publishing Co. Pvt Ltd., New Delhi: 1158 pp.

Yasuhiko, T. (1974) *Fishes of the Lao Mekong basin*. United States consultants, INC.: 232 pp.