

Ecological Survey Report: Fish

Annex D-3

CHAPTER 1

DIVERSITY OF ICHTHYOLOGY FAUNA

1.1 Introduction

The project area of Myanmar International Thilawa Terminal located in the Thanlwin and Kyauk-Tan Townships is near to the Mottama gulf area. Hence it is in the tidal zone of the ocean. The rivers, streams and creeks in that area are daily and seasonally exposed to tidal effect. The water source existed in the project area is good habitats of a variety of fishes, and provide the divers fish species.

The fish fauna from Thilawa International Port Project area is divided into inland fresh fishes and brackish fishes and marine fishes according to the habitat preference.

1.2 Collection of specimens and identified fish species

The fauna team explored into four villages,(Alunswut village, Thilawa old village, Thet KeKwin village, YayTaKhar village, BayPauk village), and three chaungs (Shwe Pyauk chaung, Plalanchaung, HmawWun chaung), for fish survey. The fish specimen and data were collected from the local fishermen just after come back from fishing. During the survey along the streams or chaungs, fish specimens couldn't available. All fishermen conducted fishing only in Yangon river. This survey time is not monsoon season, the fish population and species diversity decreased.

The fish were classified according to Fishes of India by Day (1978), The freshwater Fishes of India by Jayaram (1981), Inland fishes of India and Adjacent Countries by Talwar and Jhingran (1991), and Fishes of The Cambodian Mekong by FAO Species Identification Field Guide for Fishery Purposes (1996).

1.3 Morphometric and distinguishing characters

Two morphometric characters, total length and standard length of all collected fishes were examined. Fin count, mouth types, caudal type, barbell types, lateral line, scale type, were studied (Table 1.3).

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1.4 Species composition

A total of 30 species including 29 genera, 26 families under 12 orders were collected from TLW project area. Nine families of Order Perciformes content the highest species numbers. Second highest number of species was recorded in the order Cypriniformes. Two families of Order Synbranchiformes, Macruriformes included the two species. In the remaining orders, one species was examined each (Table 1.1).

1.5 Habitat preference of fish species (Freshwater fish, Brackish water fish & marine fish)

In the survey, 13 freshwater fishes, 21 brackish water fishes and 2 marine fishes. Total of collected species number is 30 only. Some species can live in both habitat types, fresh water and marine water types (eg. the members of order Mugiliformes); fresh water and brackish water (eg. the members of order Symbranchiformes); fresh water and marine water) All freshwater fish species were collected from the inland ponds, the two marine fish species were collected from Hmawwun Chaung while the remaining brackish water fish species were from Yangon River (Table 1.2).

According to the survey site and fish species, the sixth site is highest in species (20 species) and the second is recorded in site 5 (10 species) and the second is recorded in site 5 (10 species) which is followed by the site 4 (7 species), site 1 and 3 (5 species) and then site 2 (2 species). Maximum population was investigated in the sixth site (20 individuals) and the second was the fifth site (10 individuals) and the least numbers of fish was observed in site 2 (2 individuals) (Table 1.4).

1.6 Observed frequency and relative abundance

Highest number of species was collected from study site 6 (HmawWun Stream), which was followed by study site 2 (Phalan Stream). Relative number of individuals was highest in site 6 (Hmaw Wun Stream) and second highest was in site 5 (Hpalan Stream).

Among six survey sites, number of survey sites observed for each species was assumed as observed frequency. Four species of *Pomadasys angyreus*, *Johnius belangerii*, *Mystus gulio*, and *Polynemous paradiseus* were

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recorded as the highest observed frequency that means these species were found in all study sites (Table 1.4). This table represents abundance of the fish species.

1.7 Bio-physical characters of the river and Main floodplain

Although water parameter was not measured, the water colour was reddish and highly turbid, water transparency is very poor, and we can assess definitely that the planktons, which is natural food for fishes and the fundamental of food change in the water ecosystem, the planktons could not survive in the water condition. Water quality is not suitable for the proper growth and reproduction.

1.8 Discussion of fishery in Yangon River and Hmaw Wun Chaung

Fishermen from local villages were fishing for the food and income. They caught fish mainly in Rangon rivers and Hmaw Wun stream. They used Trammel net (NgaDan Pike), Drift Gill Net (NhaThaLauk Pike), Pike-Kun, and Sane Net (Kyar Pa Sat net). The latter is highly affective, which is very small mesh size (4.0 to 8 mm). all small fish can be caught from this type. Some fishermen are foraging into the mouth of Bay of Bengal.

Although fishing in the Yangon River is protected from Fishery Department according to the legislation, local peoples of villages near the river usually fishing by local fishing gears, such as sane fishing gear, hand fish net. Poverty is the main cause of the fishing

1.9 Potential Impact and Mitigation measure

The quality of all water source were very poor, highly turbidity mainly due to silt and clay. This may be land cover changes in the watershed or catchment area of those streams and rivers. Mesh size of the nets they used are also too small to escape for the adult, mature, spawning fishes. They also use the smaller mesh size to catch the smaller fish, otherwise, they have to very difficult to catch the fish even for their own food.

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Table 1.1 Recorded fish species from TLW project area

Order Family	Species	Common name	Local name	Habit
1. Perciformes				
Haemulidae	1. <i>Pomadasys angyreus</i>	Silver grunter	Nga gone	BF
Sciaenidae	2. <i>Johnius belangerii</i>	Belangeri croaker	Nga poke thin	BF
Silaginidae	3. <i>Sillaginopsis panijus</i>	Gangetic sillago	Nga pul we	BF
Channidae	4. <i>Channa striatus</i>	Snake head	Nga yant	BF FF
Anabantidae	5. <i>Anabas testudineus</i>	Climbing perch	Nga pyay ma	FF
Latidae	6. <i>Lates calcarifer</i>	Giant seabass	Kakatid	FF
Osphronemidae	7. <i>Trichogaster fasciata</i>	Giant gouami	Ngaphyin thalet	FF
Trichuridae	8. <i>Trichiurus sarvala</i>	Small ribbon fish	Nga ta gon	BF
Gobiidae	9. <i>Glossogobius giuris</i>	Gobby	Nga pyat hmwae ni	BF
2. Cypriniformes				
Aeridae	10. <i>Osteogeneiosus militaris</i>	Giant river cat fish	Nga yaung	BF
Bagridae	11. <i>Mystus seenghala</i>	Giant river cat fish	Nga gaung	BF
	12. <i>Mystu gulio</i>	Long whiskered	Nga zin yaing	BF FF
Clupeidae	13. <i>Tenualosa ilisha</i>	River shad	Ngatha lauk	BF FF
Cyprinidae	14. <i>Puntius chola</i>	Barbus	Na khone ma	FF
	15. <i>Labeo rohita</i>	Rohu	Nga myit chin	FF
	16. <i>Amblypharyngodon mola</i>	Long fin silver boddy	Nga byae	FF BF
Heteropneustidae	17. <i>Heteropneustes fossilis</i>	Stinging catfish	Nga gyee	FF
3. Pleuronectiformes				
Pleuronectidae	18. <i>Cynoglossus puncticeps</i>	Speckled tongue sole	Nga khwae shar	BF

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Table 1.1 Recorded fish species from TLW project area (Contd.)

Order	Family	Species	Common	Habit
4. Clupeiformes Clupeidae	19. <i>Illiaha megaloptera</i>	Big eye ilisha	Nga zin pyar	BF
5. Siluriformes Claridae	20. <i>Calrias batrach</i>	Walking cat fish	Nga khu	FF
Siluidae	21. <i>Wallago attu</i>	Fresh water shark	Nga bat	FF
6. Batrachoidiformes Batrahoididae	22. <i>Batrachus grunniens</i>	Toad fish	Nga oak phar	MF BF
7. Synbranchiformes Synbranchidae	23. <i>Synbranchus bengalensis</i>	Bengal mud eel	Nga shint ni	BF FF
Sciaenidae	24. <i>Johnius coitor</i>	Coitor croaker	Kyaut nga poke thin	BF
8. Anguilliformes Muraenesocidae	25. <i>Congresox talabon</i>	Conger eel	Nga shwe or hinbaw pauk	BF
9. Macruriformes Engraulididae	26. <i>Coilia dussumierri</i>	Gold spotted grenadier	Nga mee tan thwe	FF BF
	27. <i>Setipinna wheeleri</i>	Burma hair fin anehoby	Nga pyar	BF
10. Aulopiformes Harpadontidae	28. <i>Harpadon nehereus</i>	Bon bay duck	Nga nhat	BF
11. Mugiliformes Mugilidae	29. <i>Mugil corsula</i>	Grey mullet	Kat ba luu	MF BF
12. Polynemiformes Polynemidae	30. <i>Polynemus paradiseus</i>	Paradise thread fin	Nga pone narr	BF

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MF, Marine fish; BF, Brackish water fish; FF, Freshwater fish

Table 1. 2 Species composition of fishes from the project area of TLW

Order	Family	Genus	Species	Habit		
				FF	BF	MF
1. Perciformes	9	9	9	4	6	-
2. Cypriniformes	5	7	8	5	4	-
3. Pleuronectiformes	1	1	1	-	1	-
4. Clupeiformes	1	1	1	-	1	-
5. Siluriformes	2	2	2	2	-	-
6. Batrachoidiformes	1	1	1	-	1	1
7. Synbranchiformes	2	2	2	1	2	-
8. Anguilliformes	1	1	1	-	1	-
9. Macruriformes	1	2	2	1	2	-
10. Aulopiformes	1	1	1	-	1	-
11. Mugiliformes	1	1	1	-	1	1
12. Polynemiformes	1	1	1	-	1	-
Total	26	29	30	13	21	2

FF, Freshwater fish; BF, Brackish water fish; MF, Marine fish;

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Table 1.3 Distinguishing characters of observed of fish species

Species	TL (cm)	Std. L (cm)	Mouth type	Caudal type	Scale type	Barble
1. <i>Pomadasys angyreus</i>	20	17	subterminal	forked	cycloid	absent
2. <i>Johnius belangerii</i>	30	25	inferior	pointed	cycloid	absent
3. <i>Sillaginopsis panijus</i>	25	20	subterminal	pointed	moderate	absent
4. <i>Channa striatus</i>	25	20	terminal	rounded	cycloid or ctenoid	absent
5. <i>Anabas testudineus</i>	13	10.5	terminal	rounded	cycloid or ctenoid	absent
6. <i>Lates calcarifer</i>	30	22	superior	rounded	ctenoid	absent
7. <i>Trichogaster fasciata</i>	7.5	6.5	protrusible	truncate	ctenoid	absent
8. <i>Trichiurus sarvala</i>	15	15	protrusible	tapering at point	absent	absent
9. <i>Glossogobius giuris</i>	10	7.5	terminal	rounded	ctenoid	absent
10. <i>Osteogeneiosus militaris</i>	20	17	subterminal	forked	thin skin	3 pairs
11. <i>Mystus seenghala</i>	35	30	terminal	deeply forked	absent	1 pair
12. <i>Mystu gulio</i>	11.9	10	terminal	forked	small scales	4 pairs
13. <i>Tenualosa ilisha</i>	32.5	27.5	subterminal	moderate forked	moderate	absent
14. <i>Puntius chola</i>	7	6.2	terminal	forked	moderate	absent
15. <i>Labeo rohita</i>	45.5	40	subterminal	-	moderate	absent
16. <i>Amblyphary ngodon mola</i>	14	11	terminal	pointed	moderate	absent
17. <i>Heteropneustes fossilis</i>	15	13	inferior	pointed	no scales	4 pairs
18. <i>Cynoglossus puncticeps</i>	7	6	terminal	forked	ctenoid	absent
19. <i>Illiaha megaloptera</i>	20	15	terminal	rounded	moderate	absent
20. <i>Calrias batrach</i>	30	25	protrusible	forked	absent	4 pairs
21. <i>Wallago attu</i>	7	6	large	Rounded	skin	2 pairs

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Table 1.3 Distinguishing characters of observed of fish species (Contd.)

Species	TL (cm)	Std. L (cm)	Mouth type	Caudal type	Scale type	Barble
22. <i>Batrachus grunniens</i>	11.5	11	large	pointed	smooth skin	absent
23. <i>Symbranchus bengalensis</i>	16	13	inferior	rhomboid	absent	absent
24. <i>Johnius coitor</i>	52	52	terminal	pointed	cycloid	absent
25. <i>Congresox talabon</i>	8	7	protrusible	pointed	no scales	absent
26. <i>Coilia dussumierri</i>	21	19	wide inferior	truncated	small scales	absent
27. <i>Setipinna wheeleri</i>	21	18	superior wide	forked	moderate	absent
28. <i>Harpadon nehereus</i>	7	7	protrusible	emerginate	no scale	absent
29. <i>Mugil corsula</i>	17.3	15	inferior	forked	cycloid	absent
30. <i>Polynemus paradiseus</i>	20	14	terminal	rounded	small scales	7 filame nt rays

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Table 1. 4. Observed frequency of fish species from TLW project area

Species	Study sites						Total	Freq.
	I	II	III	IV	V	VI		
1. <i>Pomadasys angyreus</i>	2	1	5	4	3	2	17	6
2. <i>Johnius belangerii</i>	5	1	4	7	10	1	28	6
3. <i>Sillaginopsis panijus</i>	1	1	-	-	-	2	4	3
4. <i>Channa striatus</i>	1	3	2	-	-	-	6	3
5. <i>Anabas testudineus</i>	2	3	-	-	-	-	5	2
6. <i>Lates calcarifer</i>	1	1	-	-	-	-	2	2
7. <i>Trichogaster fasciata</i>	-	2	-	-	-	-	2	1
8. <i>Trichiurus sarvala</i>	-	-	-	-	-	2	2	1
9. <i>Glossogobius giuris</i>	-	-	-	-	-	2	2	1
10. <i>Osteogeneiosus militaris</i>	4	-	5	3	4	5	21	5
11. <i>Mystus seenghala</i>	2	-	2	1	2	1	8	5
12. <i>Mystu gulio</i>	2	1	3	4	5	1	16	6
13. <i>Tenuialosa ilisha</i>	-	-	3	1	-	-	4	2
14. <i>Puntius chola</i>	-	2	-	-	-	-	2	1
15. <i>Labeo rohita</i>	-	1	-	-	-	-	1	1
16. <i>Amblyphary ngodon mola</i>	-	1	-	-	-	-	1	1
17. <i>Heteropneustes fossilis</i>	-	-	-	-	-	1	1	1
18. <i>Cynoglossus puncticeps</i>	4	-	3	1	5	2	15	5
19. <i>Illiaha megaloptera</i>	2	-	2	1	1	1	7	5
20. <i>Calrias batrach</i>	-	2	-	-	-	-	2	1
21. <i>Wallago attu</i>	-	1	-	-	-	-	1	1
22. <i>Batrachus grunniens</i>	-	-	-	-	-	1	1	1
23. <i>Symbranchus bengalensis</i>	-	-	-	-	-	1	1	1
24. <i>Johnius coitor</i>	-	-	-	2	-	2	4	2

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Table 1. 4. Observed frequency of fish species from TLW project area (Contd.)

Species	Study sites						Total	Freq.
	I	II	III	IV	V	VI		
25. <i>Congresox talabon</i>	-	-	-	-	-	1	1	1
26. <i>Coilia dussumierri</i>	-	1	-	-	-	2	3	2
27. <i>Setipinna wheeleri</i>	2	-	1	2	1	1	7	5
28. <i>Harpadon nehereus</i>	-	-	-	-	1	2	3	2
29. <i>Mugil corsula</i>	-	-	1	-	-	20	21	2
30. <i>Polynemus paradiseus</i>	2	1	2	4	3	1	13	6
Total number of species	13	16	12	11	10	20	30	
Total number of individuals	30	23	33	30	35	51	202	

1. Alunswut village; 2. Thilawa old village; 3. Bay Pauk stream;
4. Shwe Pyauk stream; 5. Hpa lan stream; 6. Hmaw Wun stream

Table 5.

Frequency	Number of species	
1	11	
2	8	
3	2	
4	-	
5	5	
6	4	

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1.10 References

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A. *Johnius coitor*



B. *Pomadasys angyreus*



C. *Puntius chola*



D. *Harpadon nehereus*



E. *Setipinna wheeleri*



F. *Cynoglossus puncticeps*



G. *Anabas testudineus*



H. *Amblypharyngodon mola*

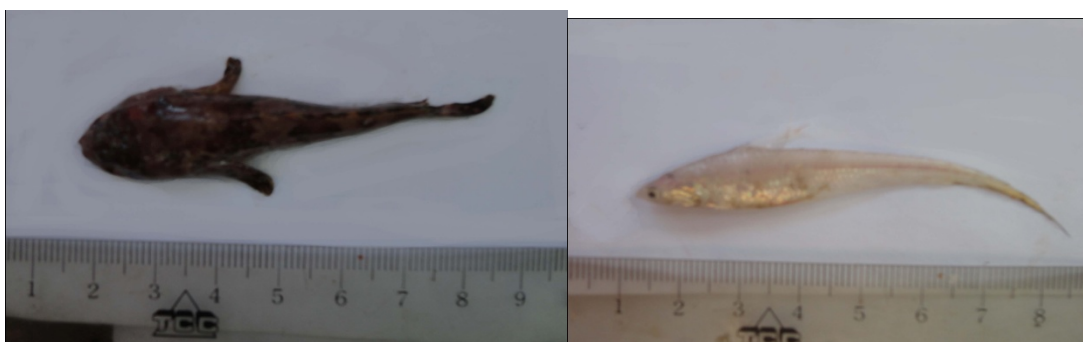
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Plate 1. Fish fauna collected from the area of Thilawa Project



A. *Osteogeneiosus militaris*

B. *Johnius belangerii*



C. *Batrachus grunniens*

D. *Coilia dussumierri*



E. *Sillaginopsis panijus*

F. *Trichiurus sarvala*



G. *Symbranchus bengalensis*

H. *Mystus senngghala*

Plate 1. Fish fauna collected from the area of Thilawa Project

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A. Portable Cast Net

