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Availability of freshwater fishes at Contai municipality in Purba Medinipur district of West Bengal, India

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Abstract

Water is the home of fishes which may be fresh, brackish and marine. The present study is entirely based on freshwater fishes. Purba Medinipur district has the potentiality for large fresh water resources. In this district, Contai is an important vital area because it is also a coastal based zone. Therefore the present study is very significant. Total of 46 native fish species were identified in this Municipality from the period of July 2021 to June 2022. Here total 46 freshwater fish species were observed under the 07 orders and 20 families.

Keywords: Contai municipality, freshwater fish, availability, status, threat

Introduction

Freshwater is a good resource for fish and other freshwater aquatic faunas. West Bengal, as well as Purba Medinipur district, has the potential for sizeable freshwater resources. The diversity of fish species is influenced by the human, in both positive and negative ways. A total of 46 species belonging to 07 orders and 20 families were recorded in this fish market in different seasons. The present study is an essential for the identification, occurrence, and status of freshwater fishes in this Municipality as well as how much essential to local people. The population in this Municipality is about sixty thousand. In this area various kinds of fishes are observed in different seasons. But this study also indicates that availability of freshwater fishes are not so much in respect of population. The people of Purba Medinipur District catches different kinds of freshwater fishes from different sources and finally reach in Fish Market at Contai Municipality. Due to the human interference, the freshwater ecosystem is continuously degraded. Therefore the availability of different kinds of fishes in the fish market gradually declined. So the present study is an attempt to survey and identify the locally available Freshwater fish species in Contai Municipality, Purba Medinipur.

Methodology

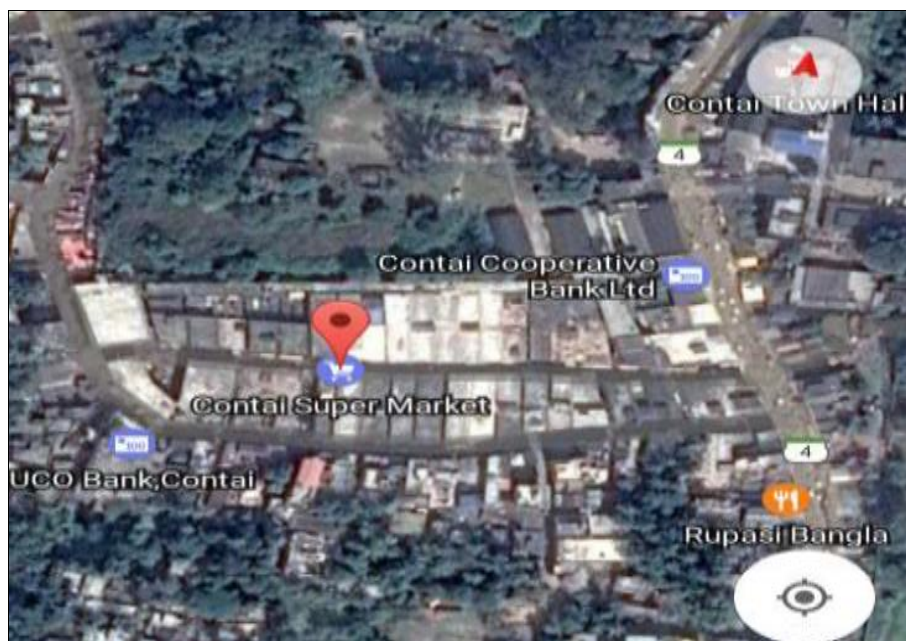
The Main Fish market at Contai surveys were carried out every day in the early morning from 6 am - 9 am and late afternoon from 05:00 - 06:00 pm in summer and rainy seasons and in winter and other seasons it was done during 7 am -9 am every day due to good availability of fish. Fish data were collected every day on the basis of fisherman and also from local people. Average market data were used for this study. Maximum fishes were came from surrounding areas such as Sabajput, Soula, Mukundapur, Aladarput and different ponds from local people, and also from Moyna. They were Surveying the local market as well as discussing with local fishermen to ensure the listing of low abundance or declining in productivity of those species.

Study area

The study area is Contai Supermarket, located in Contai, Purba Medinipur District, WB (Lat. 21.7745⁰ N, Long. 87.7477⁰ E), where freshwater finfish information were collected from the fish seller and fishermen. Data was collected from April 2021 to May 2022. Thus conducting two samplings per day for the last year, total 46 fish samples were collected during this study period.

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Study area

Identification of fish samples

Fish samples are collected from the Contai Supermarket from the fish sellers. Generally the fishermen sort non-target fishes after catching in ponds or rivers. Generally the fishermen used bag net, gill net, cast net for fishing operation. The catches were collected by frozen ice box from the fish market for laboratory study. In the laboratory the fish samples were identified through different methods by Talwar and Jhingran 1991 [9], Datta Munshi, J.S.; Srivastava, M.P, 1988 [2].

Result and Discussion

During the study period, different fin fishes were observed in the contai Supermarket area of the Purba Medinipur district. The result showed that the fish market is rich in fin fish diversity. The fin fish belong to 7 orders and 20 families were recorded. In the present study, 46 fin fishes from different genera and 19 families were recorded.

The member of the order Anguilliformes and Cyprinodontiformes are dominated by single species, but the order Synbranchiformes, Cypriniformes, Perciformes,

Siliuriformes and Osteoglossiformes represents 3,16,13,10, and 2 species respectively.

From the Table-1 the it can be clearly explained that maximum freshwater fishes are include under the LC category where as some are present as NT,EN,DD,VU and NE categories according to IUCN Red list. But as per human population in this Municipality it is clearly said that the availability of freshwater fishes will be gradually declined in near future. From the Table -2 it can be said that Cyprinidae is the largest family among the 20 families and the fishes of these family are found in every month where as fishes of Synbranchidae particularly found in the month of March and April From the Fig 1, it can be said that Order Cypriniformes is the largest Order among all the Orders found in Contai Municipality.

From the Fig 2 Order Cypriniformes was the most dominant constituting 35%, followed by the Order Siliuriformes which includes 22%, Order Perciformes, Synbranchiformes, Osteoglossiformes, Anguilliformes and Cyprinodontiformes comprised 28%, 7%, 4%, 2% and 2% respectively.

Table 1: Explained that maximum freshwater fishes are include under the LC category

Order	Family	Local name	Scientific Name	Characteristic features	IUCN Status
1.Anguilliformes	Anguillidae	Bamas	<i>1.Anguilla bengalensis</i>	1. Body elongate, snake-like. 2. Light brownish dorsally, bellow and sides are yellowish. 3. Head conical. 4. Dark spots on upper surface of body.	NT
2.Synbranchiformes	02.Synbranchidae	Kuche	<i>2.Monopterusuchia</i>	1. Body long, head slightly compressed. 2. Lower jaw longer. 3. Body colour silvery. A silvery lateral band running from head to tail.	LC
	03.Mastacembelidae	Pankal	<i>3.Macrognahtus pancalus</i>	1. Mouth small, snout pointed. 2. Greenish olive along back, beneath yellowish.	LC

		Baan	4. <i>Mastacembelus armatus</i>	<ol style="list-style-type: none"> 1. Mouth small, snout pointed. 2. Dorsal spines commence over middle of pectoral fin. 3. Dark brown on back and flanks, yellowish beneath. 	LC
3.Cypriniformes	04. Cyprinidae	Mola	5. <i>Amblypharyngodon mola</i>	<ol style="list-style-type: none"> 1. Elongated silvery color body with compressed head. 2. Presence of silvery lateral band running from head to tail. 3. Caudal fin deeply forked, caudal lobe pointed. 	NT
		Chela	6. <i>Salmostoma phulo</i>	<ol style="list-style-type: none"> 1. Silvery color Body elongate mouth slightly upward. 2. Dorsal fin inserted just opposite to origin of anal fin 	LC
		Kalbaush	7. <i>Labeo calbasu</i> (Hamilton, 1822)	<ol style="list-style-type: none"> 1. Body colour blackish-green, lighter below. 2. Presence of Two pairs of minutes barbells. 3. Dorsal profile more convex than that of abdomen 	EN
Order	Family	Local name	Scientific Name	Characteristic features	IUCN Status
3.Cypriniformes	04. Cyprinidae	Rui	8. <i>Labeo rohita</i> (Hamilton, 1822)	<ol style="list-style-type: none"> 1. Body moderately elongated body with brownish color on back, whitish-silvery below. 2. Scales with blackish margins and reddish center. 	NT
		Bata	9. <i>Labeo bata</i> (Hamilton, 1822)	<ol style="list-style-type: none"> 1. Body colour darkish or bluish above and silvery below. 2. Fins colour orange. 	EN
		Katal	10. <i>Catla catla catla</i> (Hamilton, 1822)	<ol style="list-style-type: none"> 1. Colour dark grey on back, silvery on abdomen. 2. Head enormously large, mouth wide and upturned. 3. Fins blackish 	NT
		Silver Cap	11. <i>Hypophthalmichthys molitrix</i> (Valenciennes, 1844)	<ol style="list-style-type: none"> 1. Dorsal fin short. 2. Body colour silvery white. 3. Fins are dark coloured 	NT
		Brigade	12. <i>Hypophthalmichthys nobilis</i> (Richardson, 1845)	<ol style="list-style-type: none"> 1. Body colour greyish above, silvery below. 2. Fins brownish. 3. lower jaw slightly protruding. 	DD
3.Cypriniformes	04. Cyprinidae	Tita punti	13. <i>Puntius ticto</i>	<ol style="list-style-type: none"> 1. Two black spots on lateral line. 2. Silvery body color with complete lateral line 	VU
		Gheso Rui	14. <i>Ctenopharyngodon idella</i> (Valenciennes, 1844)	<ol style="list-style-type: none"> 1. Body colour Dark grey color body above, silvery on flanks and belly. 2. Head broad with a short rounded snout. 	NE
			15. <i>Carassius auratus</i> (Linnaeus, 1758)	<ol style="list-style-type: none"> 1. Body colour orange on back, whitish orange below. 2. Broad body with large scales. 	LC
			16. <i>Cyprinus carpio</i> (Linnaeus, 1758)	<ol style="list-style-type: none"> 1. Broad body with large scales and swollen abdomen. 2. Generally orange body color. 	NL
		Mirgyala	17. <i>Cirrhinus mrigala</i> (Hamilton, 1822)	<ol style="list-style-type: none"> 1. Grayish along the back silvery on the sides and below. 2. Colour of pectoral, pelvic and anal fins are orange. 	LC
		Daria	18. <i>Rasbora daniconius</i>	<ol style="list-style-type: none"> 1. Elongated compressed body with wide band at middle. 2. Abdominal portion more covex than dorsal. 	LC
		Jat Punti	19. <i>Puntius sophore</i> (Hamilton-Buchanan, 1822)	<ol style="list-style-type: none"> 1. Presence of red lateral streak primed during breeding season in male. 2. Body fairly deep and compressed. 	LC

		Bata	20. <i>Cirrhinus reba</i> (Hamilton, 1822)	1. Body is silvery in color; scales are darkest at their edges 2. Body is slender; the dorsal profile is slightly more convex than the ventral profile	LC
4.Perciformes	05. Cobitidae	Ruti	21. <i>Lepidocephalus guntea</i>	1. Back dark brown, belly yellowish. 2. Caudal fin cut square with round corner 3. Body elongate, dorsal and central surface nearly parallel	EN
	06. Gobidae	Bele	22. <i>Glossogobius giuris</i>	1. Body with two rows of 4-6 dark blotches. 2. Head pointed, lower jaw slightly longer. 3. Two dorsal fins situated closer. Caudal fin rounded	EN
	07.Nandidae	Bheda	23. <i>Nandus nandus</i>	1. Body color greenish brown. 2. Three vertical stripes on flanks. 3. Rectangular Body 4. slightly, compressed and deep	VU
	08.Pristolepidae	Kala koi	24. <i>Badis badis</i>	1.	EN
		Shoal	25. <i>Channa striatus</i>	1. Body elongate, fairly rounded in cross-section. 2. Scales on head larger. 3. Body colour grey-green on black-green on back in adult, several white or yellowish white vertical stripes on belly.	NT
4.Perciformes	09. Channidae	Lata	26. <i>Channa punctatus</i>	1. Body elongate, fairly rounded in cross-section. 2. Scales on head irregular. 3. Body colour varies with water they reside. 4. Usually grey on dorsal side, lighter beneath.	NT
		Cheng	27. <i>Channa orientalis</i>	1. Body elongate, fairly rounded in cross-section. 2. Mouth large, teeth villiform on jaws. 3. 3. Dorsal side and flanks green, ventral side faint bluish or reddish.	VU
4. Perciformes	10. Osphronemidae	Khalisha	28. <i>Trichogaster fasciata</i>	1. Greenish color with oblique orange or bluish stripes descending downwards and backwards from the back to the anal fin. 2. Vertical fins with alternating dark and pale spots. 3. The anal fin often with a red margin.	LC
	11. Anabantidae	koi	29. <i>Anabas testudineus</i>	1. Lower jaw slightly longer. 2. Scales ctenoid. 3. 3. Back greenish brown, yellowish beneath.	NT
	12.Cichlidae	Telapia Nilotica	30. <i>Oreochromis mossambicus</i> 31. <i>Oreochromis niloticus</i>		VU LC
	13.Ambassidae	Chanda	32. <i>Chanda mama</i>		LC
		Gol Chanda	33. <i>Parambassis ranga</i>		LC
5. Siluriformes	14. Clariidae	Magur	34. <i>Clarias batrachus</i>	1. Body colour brown to blackish. 2. Pectoral spine strong, finely serrated on both edges.	LC
		Thai mangur	35. <i>Clarias gariepinus</i>	1. Body colour brown to blackish. 2. Anterior portion of Head is blunt. 3. Barbells are long.	LC
5. Siluriformes	15. Heteropneustidae	Shingi	36. <i>Heteropneustes fossilis</i>	1. Body elongate, compressed behind, head depressed. 2. Dorsal fin small, pectoral fin with a strong spine serrated internally. 3. Caudal fin rounded, caudal fin.	LC
	16.Pangasiidae	Pungas	37. <i>Pangasius pangasius</i>		LC

	17. Bagridae	Tengra	38. <i>Mystus tengara</i>	<ol style="list-style-type: none"> 1. Dorsal spine long upto head keep out the head. 2. 4-5 longitudinal bands along sides 3. Body color yellow or brown with a dark spot on shoulder. 	LC
		Arr tengra	39. <i>Hemibagrus menoda</i>	<ol style="list-style-type: none"> 1. Head dorso-ventrally flattened with terminal mouth. 2. Adipose fin well developed and caudal fin forked. 3. Body color grayish brown on back and yellowish or dull white beneath. 	LC
5. Siluriformes	18. Siluridae	Rani Tengra	40. <i>Mystus vittatus</i>	<ol style="list-style-type: none"> 1. 4 pairs of barbels, maxillary barbels extending beyond the pelvic fins. 2. A narrow dusky spot often present on the shoulder. 	LC
		Boal	41. <i>Wallago attu</i>	<ol style="list-style-type: none"> 1. Caudal fin is deeply forked. 2. Body colour greyish or yellowish grey in above and whitish in below but the fins grey. 3. Eyes are small. Mouth wide 	VL
		Pabda	42. <i>Ompok bimaculatus</i> (Bloch, 1794)	<ol style="list-style-type: none"> 1. Two pairs of barbels; maxillary barbels reaching pelvic fins or anal fins; mandibular barbels minute. 2. Brown, usually marmorated body with conspicuous round black blotch above pectoral base. 	NT
			43. <i>Ompok pabda</i> (Hamilton, 1822)		NT
6. Osteoglossiformes	19. Notopteridae	Chital	44. <i>Notopterus chitala</i> (Day, 1878)	<ol style="list-style-type: none"> 1. Body is very strongly compressed with a short pre-caudal region. 2. Dorsal fin is short and ventral fin very much reduced or absent. 	NT
		Folui	45. <i>Notopterus notopterus</i> (Pallas, 1769)	<ol style="list-style-type: none"> 1. Colour is silvery dark. 2. Very much elongated anal fin confluent with reduced caudal fin. 	LC
7. Cyprinodontiformes	20. Belonidae	Gangtara	46. <i>Xenentodon cancila</i> (Hamilton-Buchanan, 1822)	<ol style="list-style-type: none"> 1. Elongated body with greatly elongated both jaws and studded with sharp teeth. 2. Body greenish above, white ventrally and laterally silver in color. 	LC

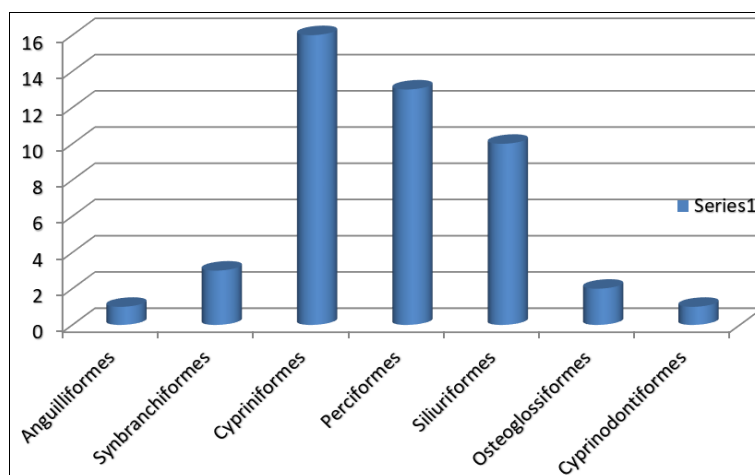


Fig 1: Order Cypriniformes is the largest Order among all the Orders found in Contai Municipality

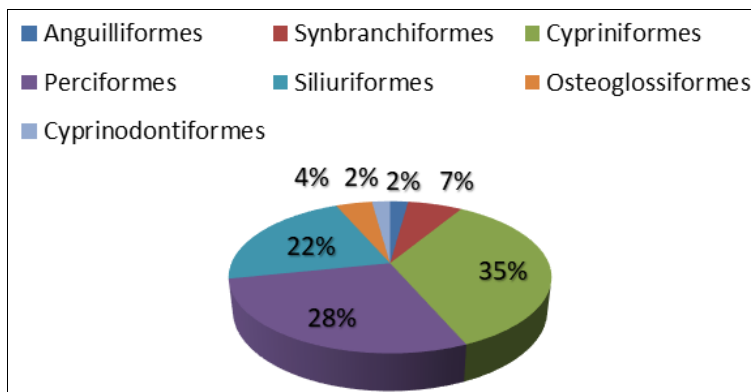
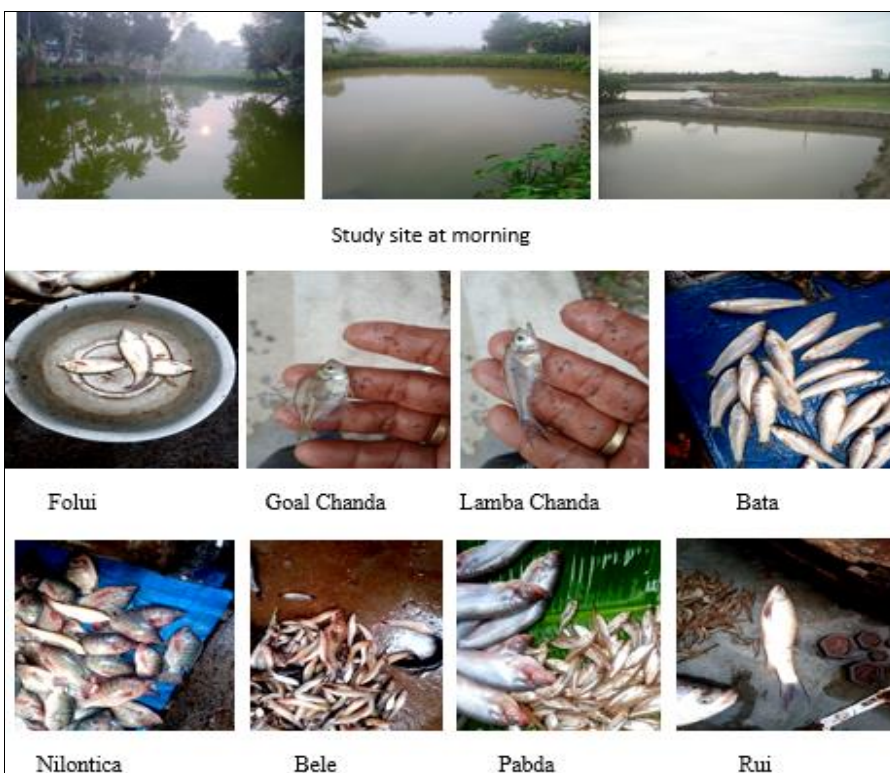


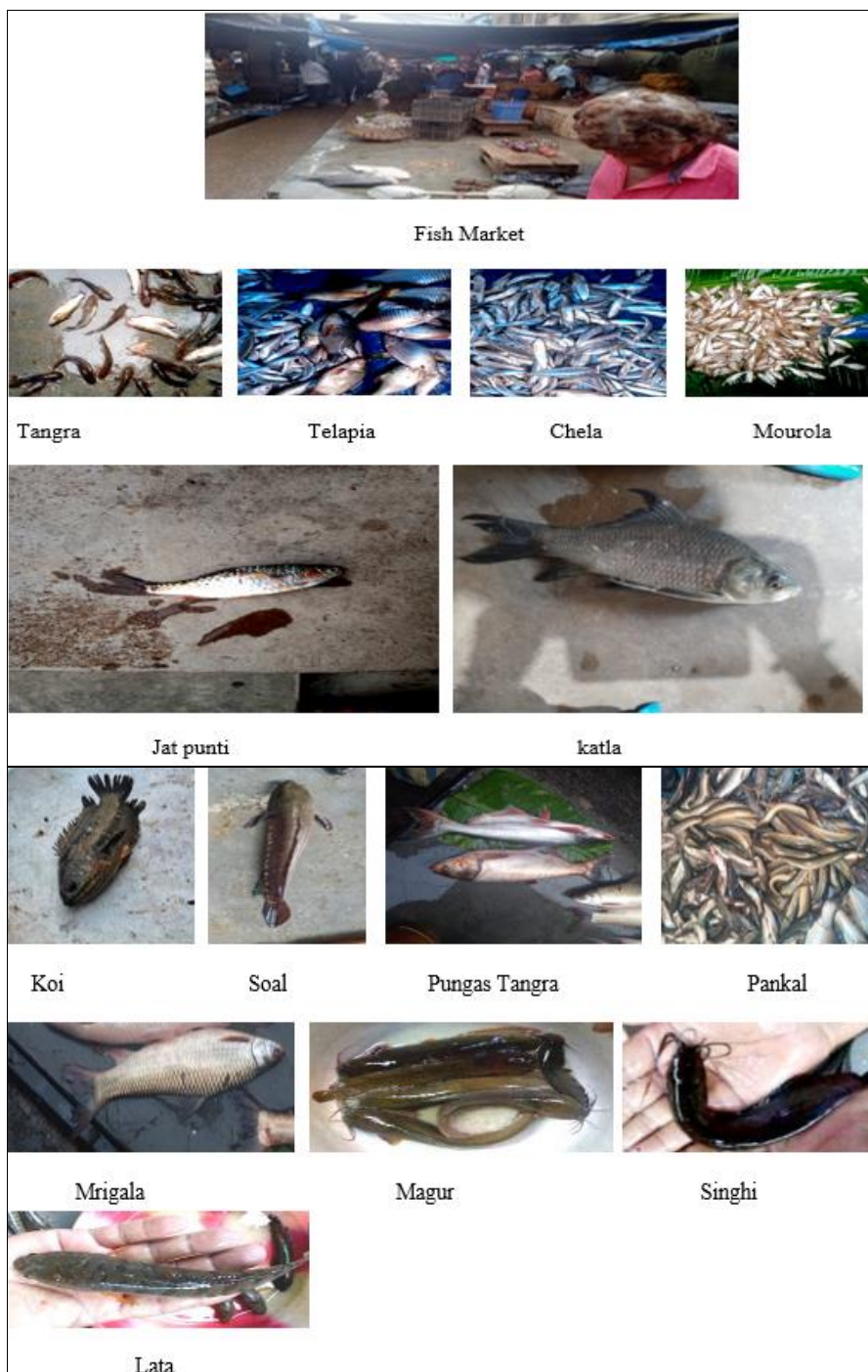
Fig 2: Percentage of different family of fish

Table 2: Availability of freshwater families

Families	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Anguillidae	+	+	+	+	-	-	-	-	-	+	+	-
Synbranchidae	-	-	-	-	-	-	-	-	+	+	-	-
Cyprinidae	+++	++	++	+++	++	+	++	+++	+++	+++	+++	+++
Cobitidae	-	-	-	-	-	-	+	+	+	-	-	-
Gobidae	+	+	+	-	++	++	+	++	++	-	-	+
Nandidae	-	-	-	+	+	-	-	-	-	+	+	-
Pristolepidae	-	-	-	+	+	-	-	-	-	-	-	+
Channidae	+++	++	++	++	++	+	+	+	++	++	++	++
Osphronemidae	+	+	+	+	-	-	-	++	++	+	+	++
Anabantidae	+++	+++	+++	++	++	++	+	+	+	++	++	++
Cichlidae	++	++	++	+++	++	+	++	+++	++	+++	+++	++
Mastacembelidae	+	+	-	+	+	+	-	+	+	+	+	+
Ambassidae	-	-	-	-	+	+	+	+	++	+	+	-
Clariidae	++	++	++	++	++	+	+	+	++	++	++	++
Heteropneustidae	++	++	++	++	++	+	+	++	++	++	++	++
Pangasiidae	+	+	+	+	-	-	-	++	++	+	+	+
Bagridae	++	++	++	++	++	-	-	++	+	+	++	++
Siluridae	++	++	++	-	-	-	+	+	+	-	++	++
Notoptertidae	+	+	+	+	+	+	-	-	+	+	+	+

+ = Rarely observed, ++ = moderately observed, +++ = Highly observed, - = Not found





Photograph: Some photography of fishes and ponds are listed below with common name

Conclusion

The final result confirmed that the appropriate conservation strategy and proper planning must be needed to protect those local fish species. The market-based survey of those species showed a considerable drop in productivity in the last few years for several reasons. Overfishing, unregulated uses of pesticides in agricultural field, uses of antibiotics, natural calamity, irrational fish harvesting along with different anthropogenic activities, environmental pollution as well as manmade pollution are the central cause for aquatic diversity loss which also affect on the fish faunal population. Proper supervision along with sustainable developmental thoughts like harvesting fish population size restriction, and breeding technique development may protect those fish species from the door of extinction.

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