

Fresh Water Air Breathing Fishes at Contai Super Market, Contai, Purba Medinipur, West Bengal

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ABSTRACT

The present work done on Air Breathing Fish Diversity at Contai Municipality. A total of 8 genera, 5 orders & 6 families were recorded. Out of 6 Families, Cobitidae & Heteropneustidae were very rarely observed.

Key words: Air Breathing Fish, Air Breathing Organ, Threats.

Introduction: There are several adaptations for breathing among fishes. Fish blood serve as a gas carrier. Majority of the teleostean fishes have well developed gills for respiration which are very efficient organs for gaseous exchange. But some tropical fishes have evolved special structures called Accessory air breathing organ. This organ has evolved in a large no. of different fish fishes primarily to the limited abundance of oxygen in water. Compared to air, water may hold from 32-42 times less oxygen & in addition it is far more energy consuming to extract it from water. This is because of the viscosity and density of water in comparison to air, making it harder to pass it across the gills. Carter(1931), Hora (1933), Anon & Das(1940) have given a detailed account of the structure and mechanism of accessory respiratory organs in a no. of fishes. In this respect the present work is mainly based on different air breathing fishes from Contai Fish Market, according to their availability. Generally the work is done on Shinghi, koi, magur, chang, foloi, lata, shoal, ruti fishes and during this work it is focused that nowadays the availability of these fishes are gradually declined from the Contai Municipality due to several causes.

Methodology-

Study site-

Kanthi is a small town, situated near the coastal area of Purba Medinipur district the distance from Kolkata to Kanthi is 150 km. The latitude and longitude of study site is 21°50' N and 87°04' E.



Sampling:

The author was collected different air breathing fish species from the Kanthi municipality area particularly from Super Market. The collection done particularly from the month of **December,2016 to Nov,2017**,for one year and finally dissect out air breathing organ from those fishes.

Result:-**Different Air breathing Fishes****1. *Clarias batrachus* (Order-Siluriformes, Family-Clariidae)**

Local name- Magur

Identifying Characters:-

1. Body elongate, head depressed, tail compressed
2. Upper jaw slightly longer than lower.
3. Pectoral spine strong, finely serrated on both edges.
4. Caudal fin rounded, dorsal and anal fins long, no spine on dorsal fin.
5. Body colour brown to blackish.

IUCN Status- Not Threatened.**2. *Heteropneustes fossilis* (Order-Siluriformes Family-Heteropneustidae)**

Local name- Shingi

Identifying Characters:-

1. Body elongate, compressed behind, head depressed.
2. Mouth small, four pairs of barbels present.
3. Dorsal fin small, pectoral fin with a strong spine serrated internally.
4. Caudal fin rounded, separated by a distinct notch from caudal fin.

IUCN Status- Not Threatened.**3. *Channa striatus* (Order-Perciformes [Channiformes], Family-Channidae)**

Local name- Shoal

Identifying Characters:-

1. Body elongate, fairly rounded in cross-section.
2. Mouth large, lower jaw slightly longer than the lower.
3. Scales on head larger.
4. Body colour grey-green on black-green on back in adult, several white or yellowish white vertical stripes on belly.
5. Caudal fin rounded.

IUCN Status- Not Threatened.**4. *Channa punctatus* (Order-Perciformes [Channiformes] Family-Channidae)**

Local name- Lata

Identifying Characters:-

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.
5. 8-9 vertical dark bands on body.
6. Caudal fin rounded.

IUCN Status-Not Threatened.

5. *Notopterus notopterus* (Order-Clupeiformes, Family-Notopteridae)

Local name- Foloji

Identifying characters:-

1. Body compressed, dorsal profile slightly convex.
2. Dorsal fin short without any bony ray.
3. Dorsal fin situated nearer to snout tip than the caudal.
4. Caudal confluent with anal fin.
5. Brown on the back, silvery on belly.

IUCN Status- Vulnerable.

6. *Anabas testudineus* (Order-Perciformes, Family-Anabantidae)

Local name- Koi

Identifying Characters:-

1. Lower jaw slightly longer.
2. Scales ctenoid.
3. Two lateral line, lower commencing below the end of upper.
4. Base of soft dorsal fin, pectoral fin, soft anal fin and caudal fin are covered by scales.
5. Back greenish brown, yellowish beneath.
6. Often with four vertical bands on flanks, a dark spot at the base.

IUCN Status:- Not Threatened.

7. *Lepidocephalus guntea* (Order-Cypriniformes, Family-Cobitidae)

Local name- Ruti

Identifying Characters-

1. Body elongate, dorsal and ventral profile parallel.
2. Scales very small.
3. Back dark brown, belly yellowish.
4. A series of dark blotches present below and above of this band.

IUCN Status:- Threatened.

8. *Channa orientalis* (Order-Perciformes [Channiformes], Family-Channidae)

Local name- Cheng

Identifying Characters-

1. Body elongate, fairly rounded in cross-section.
2. Mouth large, teeth villiform on jaws.
3. Dorsal side and flanks green, ventral side faint bluish or reddish.
4. Caudal fin rounded.

IUCN Status:- Vulnerable

Photo copy of different Air Breathing Fishes



1. *Clarias batrachus*



2. *Heteropneustes fossilis*



3. *Channa striatus*



4. *Channa punctatus*








5. *Notopterus notopterus*




6. *Anabas testudineus*

Different Air breathing organs : Table- 1

Common name	Scientific name	Air breathing organ	Description	Air breathing organ
Magur	<i>Clarias batrachus</i>	1.Arborescent organ 2.Diverticulum of branchial cavity	These are tree-like structures found in special chambers developed above the gills.They arise from the upper ends of the second and fourth Gill arches. The anterior one developed from the second Gill arch is small, while the posterior one developed from the fourth Gill arch is large.	
Shingi	<i>Heteropneustes fossilis</i>	1. Diverticulum of branchial cavity 2. Pneumatic Sacs	They are a pair of pulmonary sacs present in the fresh water <i>Heteropneustes fossilis</i> . Each of these sacs arises from the dorsal side of the branchial chamber behind the gills and passes backwards through the body piercing the muscles on its side and extending as far back as the caudal region.	
Koi	<i>Anabas testudineus</i>	Labyrinthine organ	These organs are found in special chambers developed above the gills and are formed by highly folded shelf like plates situated above the gills.	

Common name	Scientific name	Air breathing organ	Description	Air breathing organ
S N A K E H E A D E D F I S H	<i>Channa punctatus</i>	Pharyngeal pouches	These pouches are situated in the pharyngeal region above the gills arches and extending backwards as far as the pharyngeal cleft. The inner lining of these pouches give out processes which are highly vascular. In adult condition the lining is thrown open into a number of ridges and grooves thus increasing the respiratory area.	
	<i>Channa striatus</i>	Pharyngeal pouches	These pouches are situated in the pharyngeal region above the gills arches and extending backwards as far as the pharyngeal cleft. The inner lining of these pouches give out processes which are highly vascular. In adult condition the lining is thrown open into a number of ridges and grooves thus increasing the respiratory area.	
	<i>Channa orientalis</i>	Pharyngeal pouches	These pouches are situated in the pharyngeal region above the gills arches and extending backwards as far as the pharyngeal cleft. The inner lining of these pouches give out processes which are highly vascular. In adult condition the lining is thrown open into a number of ridges and grooves thus increasing the respiratory area.	No image

Common name	Scientific name	Air breathing organ	Description	Air breathing organ
Foloi	<i>Notopterus notopterus</i>	Air bladder	In notopterus the swim bladder becomes more complex and acts as a lung. The posterior tip of swim bladder is enlarged which is called caudal extension. The blood capillaries that cover a single epithelium layer helps in the gaseous exchange between the blood and the air of the swim bladder	
Ruti	<i>Lepidocephalus guntea</i>	Intenstine	This fish takes in a gulp of air through the mouth and passes it on to the intestine, which is in the form of a simple straight tube. The air admitted into the intestine, is retained there for some time to enable gaseous exchange.	No image

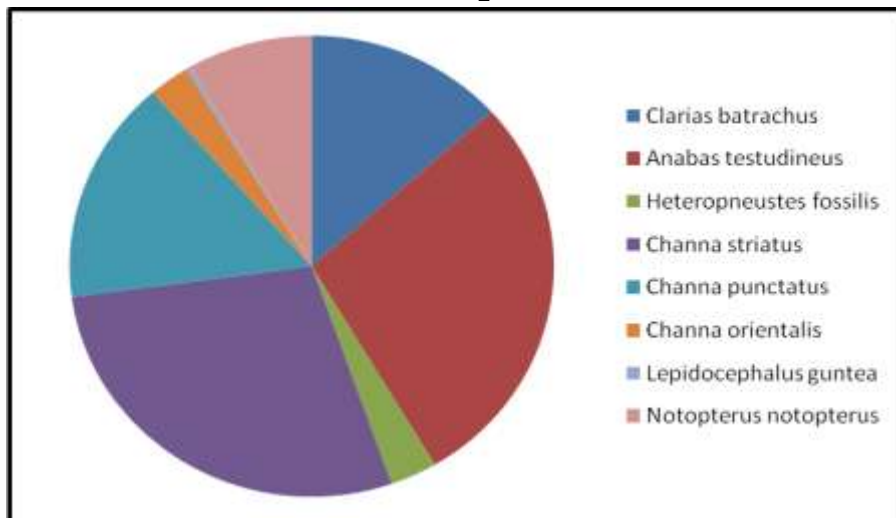
Observation:-

Table- 2

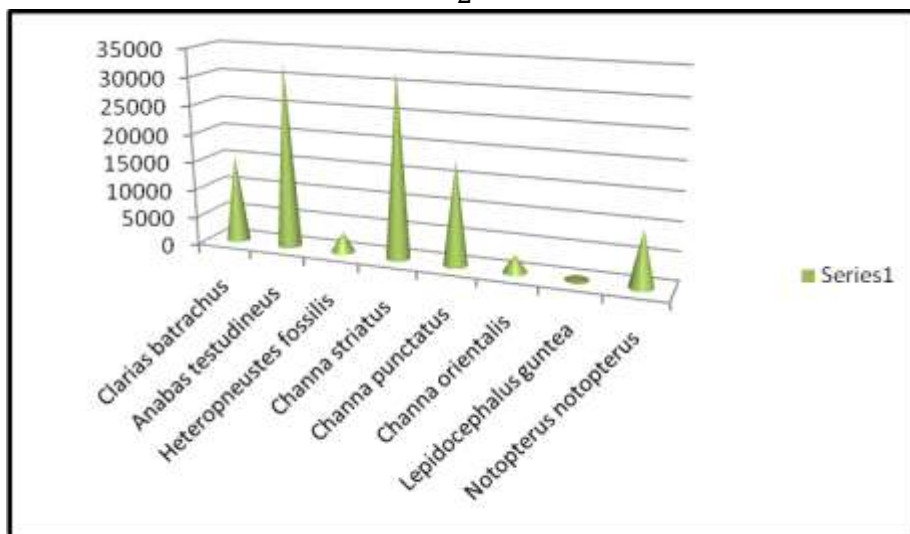
Year -2016 -17	No. Observed							
	<i>Clarias batrachus</i>	<i>Anabas testudineus</i>	<i>Heteropneustes fossilis</i>	<i>Channa striatus</i>	<i>Channa punctatus</i>	<i>Channa orientalis</i>	<i>Lepidocephalus guntea</i>	<i>Notopterus notopterus</i>
Dec,2016	1500	2500	500	4500	3800	1050	50	1450
Jan,2017	1800	2200	200	3800	3500	650	40	1200
Feb,2017	1600	1850	150	2500	3200	421	-	1100
Mar,2017	1200	3000	210	4210	2100	325	105	850
Apr,2017	1300	4500	200	2950	2000	310	45	630
May,2017	1800	5100	350	4320	1050	235	50	435
Jun,2017	1100	2000	410	2000	850	-	35	1100
July,2017	1000	2800	380	1850	230	-	-	800
Aug,2017	800	4000	350	1300	530	-	-	350
Sep,2017	1100	3350	500	1650	450	105	-	750
Oct,2017	1000	1200	160	1250	310	50	15	210
Nov,2017	1200	1500	210	2310	180	-	10	820
Total	15400	34000	3620	32640	18200	3146	350	9695

Graphical Representation

1



2



Discussion-

During the period from December 2016 to Nov 2017 for one year various types of fresh water Air breathing fishes were observed in Contai Super Market. During study period 5 orders of air breathing fishes were observed but their no. were vary day by day which is note down in the table 2, andfrom that table it is said that no. of Ruti fishes are very much low & it is now included as threatened taxa. Further it is note that Desi Koi fishes,shoal & Lata fishes were more in number than Ruti Fish. Among the 5 orders family Heteropneustidae, Cobitidae were not

found daily in Contai Super Market but other fishes of family Channidae, Notopteridae & Claridae were found daily. The air breathing fishes and their accessory respiratory organs shows that these fishes belongs to different groups ,and the different species live in a variety of habitats. The organs utilized by them for breathing atmospheric air also are of diverse nature. They may be the gills, the chambers associated with the aquatic respiratory passage, or special accessory respiratory organs developed in a association with aquatic breathing organs or the respiratory passage. A few forms also utilize

for breathing organs such as skin and intestine the primary function of which is other than respiration. From survey it is said that as per population density in Contai Municipality, the supply of these air breathing fishes are not sufficient.

Threats-

Now a days in Contai Municipality the proper habitat of air breathing fishes is gradually declined due to excessive human interference in the agricultural field. Agricultural land gradually converted by terrestrial land. Therefore ponds, wet land etc gradually destroyed. So, no of these fishes are gradually declined and not available to fish market. In this respect their cost value gradually rises today & the normal people can't consume these fishes. Further it is noted that different types of fertilizers, pesticides in the agricultural field also used which influence on the production of those fishes indirectly. So, now a days a proper restoration programme should be taken immediately.

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