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Traditional gears used for capturing and preservation of fish by *Mishing* community of northern bank of the Brahmaputra River, Assam, India

Narendra Nath Dutta[1], Sabita Borah[2] and Debojit Baruah[3*]

[1]*Department of Life Sciences, Singhania University, Rajasthan 333515, India*
[2]*Department of Zoology;* [3]*Department of Botany, Lakhimpur Girls' College, North Lakhimpur 787031, Assam, India*

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Abstract

A survey of two district of north bank of the mighty Brahmaputra drainage system conducted among the *Mishing* community to record the traditional fishing gears used in wetland fishing. Among the recorded 32 gears the most common are *Kawai Langi* (gill nets), *Tongi Jal* (lift nets), *Jakai, Borchalani, Juluki* (bamboo traps) and *Danari Barashi* (fishing line). The community has adapted two distinct fish preservation technique namely '*Perup hukati*' (dried and smoked small fish) and *Numsing hukati* (powder of dried and smoked fish).

Key words: Assam; fish; fishing gears; preservation; traditional.

Introduction

Assam is a land of many tribes, cultures and religions. A total of 12 different Scheduled Tribe communities namely Boro, Mishing, Mikir, Rabha Kachari, Lalung, Dimasa, Deori, Mech, Hajong, Tia Phake and Khamti inhabit Assam. Among the tribals, Boro represents nearly half of the total tribal population of the state (40.9%). Mishing (17.8%), Mikir (10.7%), Rabha (8.4%), Kachari (i.e. Sonowal Kachari) (7.1%), and Lalung (5.2%) are the other major tribal groups each having 5% or above of total tribal population. Along with Boro they constitute 90%tribal population of the state. In addition, Dimasa constitutes 3.4% and Deori 1.2% of the total tribal population of the state. The rest of the Scheduled Tribes are very small in their population size.[1] The population of Mishing in Assam is estimated to be 1,257,596.[2] Mostly they are based on riverine areas like Lakhimpur, Dibrugarh, Sibsagar, Jorhat and Sonitpur.[3]

Corresponding author: D. Baruah
Phone: +91-9435388754
E-mail: debojitbaruah@rediffmail.com

Materials and Methods

The present study was done during 2010-

2011 in 10 villages of Lakhimpur and Dhemaji districts. Geographically Lakhimpur and Dhemaji districts situated between the 93° 42' E and 94° 20' E longitudes and 26° 48' N and 27° 53' N latitudes 94° 12' E and 95° 41' E longitudes and 27° 05' N and 27° 57' N latitudes respectivey under *Mishing* Autonomous Council, Assam. The information was gathered through survey and discussions with community people to know the details of fishing gears, their mechanism and procedure of employing. Sketch of all the gears were prepared during the survey. The traditional system of fish preservation was acquired from Bordoibum billmukkh area.

RESULTS

During the period of study several forms of fishing gears were recorded which included diverse forms of fishing nets, bamboo traps, harpoons, hooks and lines fabricated themselves with their inherent traditional knowledge a used by the communities to catch the fishes in relation to various factors such as physiography of the water body, nature of fish stock etc. Different fishing gears, their structure, mode of operation, type of fish trapped etc. are depicted in Table 1 and sketch of their morphometry/ physical structure are given in the Figures 1-5.

Mishing community of the locality has adapted two distinct traditional fish preservation techniques which not only preserved the fish flesh but also the taste and nutritive values. The gutted fishes were placed on '*Perup'* (a rectangular, approximately 1.5 m^2 bamboo made sieve having 100 meshes). The *Perup* was placed over the '*Merum'* (fire source) at a distance of 1.5-2 ft by hanging from the roof of the thatched house.

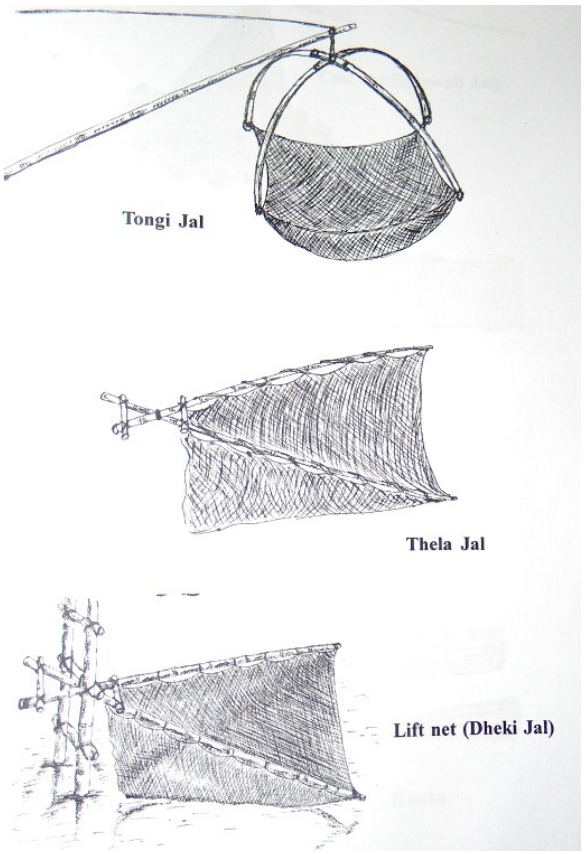


Figure 1. Fishing gears (lift nets).

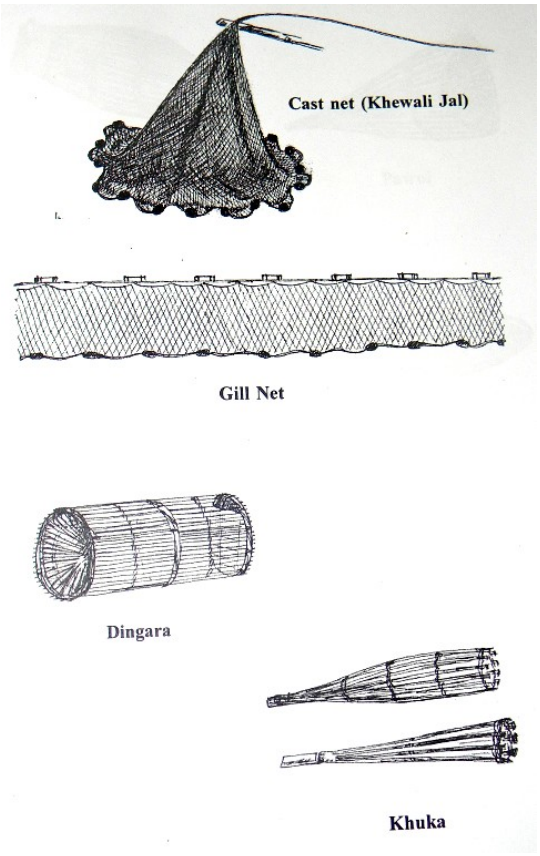


Figure 2. Fishing gears (nets and bamboo traps).

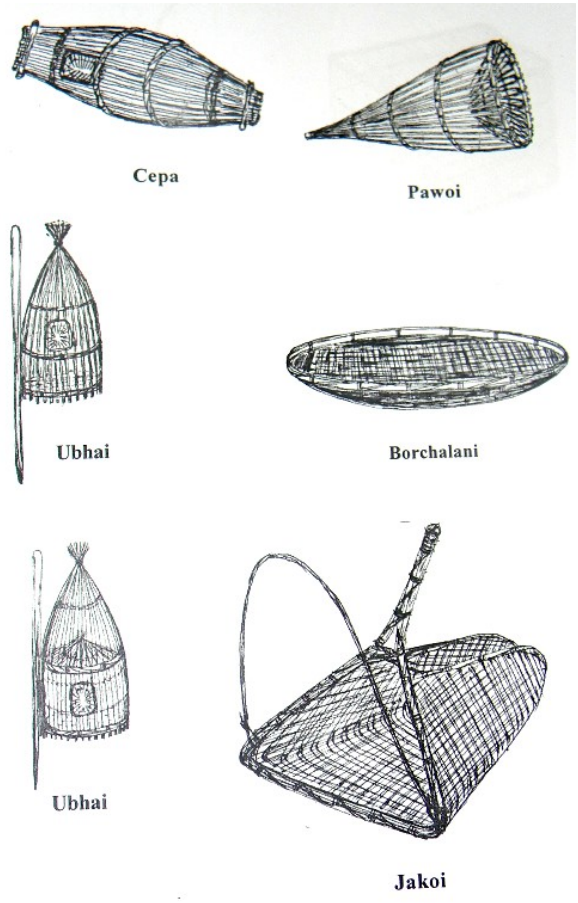


Figure 3. Fishing gears (bamboo traps).

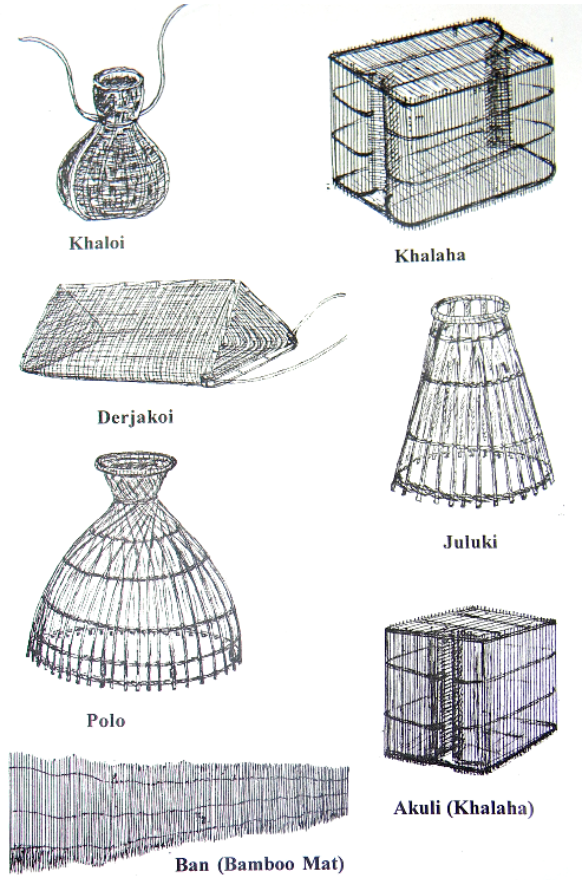
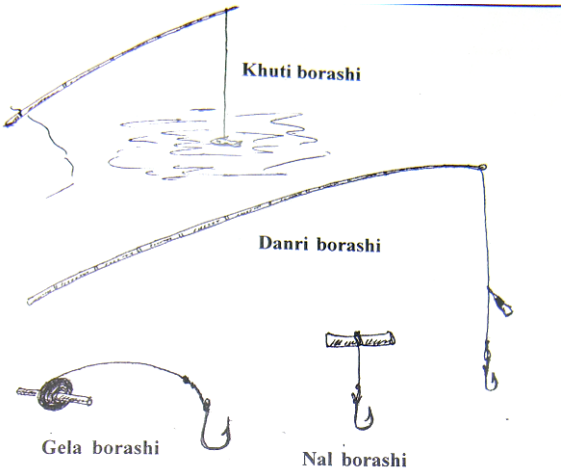


Figure 4. Fishing gears (bamboo traps, cover pot, *bana* etc.).



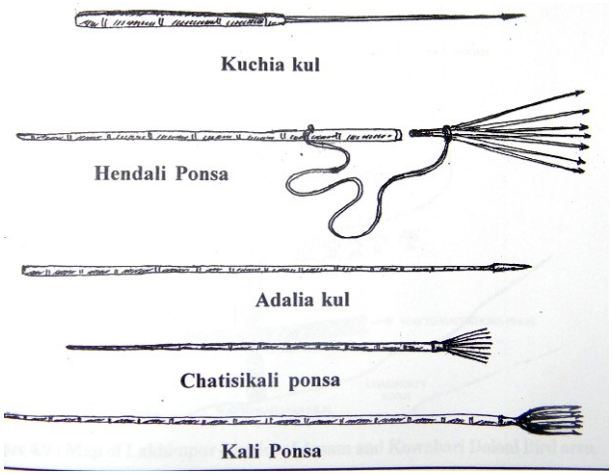


Figure 5. Fishing gears (harpoons and lines).

Table 1. List of fishing gears used by the local communities of the area.

Fishing gears	Local types	Size (m)		Mesh size (cm)	Place of operation	Fishes caught
		L	W			
i	ii	iii	iv	v	vi	vii
I. Fixed Net/Stationary nets						
A. Gill Nets / *Fanchi Jal*	1. *Kawai Langi*	40-100	1	1.5-3.5	Shallow areas of the buffer zone.	*Clarias* sp., *Anabas* sp., *Colisa* sp. etc.
	2. *Puthi Langi*	20-80	0.5	1.0-1.5	Shallow areas of buffer zone and crop fields.	*Puntius* sp. and other small sized fishes.
	3. Current *Jal*	15-60	0.8-1.5	5.5-7.0	*Tengagarh Jan* and *Nadi Suti.*	Several fast moving species.
	4. *Rou Langi*	30-60	1-2	5.5-9.0	Different parts of the wetland.	Rohu, Mirika etc.
B. Lift Nets	5. *Dheki Jal*	10-12		1-1.5	Different open parts of the wetland.	-do-
	6. *Tongi Jal*	1.5		1-5	Shallow areas of the buffer zone.	Small sized fishes.
i	**ii**	**iii**	**iv**	**v**	**vi**	**vii**
	7. *Bor Jal*	15-20		1-1.5	Open deep channels of the wetland.	Almost all small to big sized fishes.
II. Moving Nets						
	8. *Ghaila Jal*	70-100	2-3	2.5-4	Different open parts of the wetland.	*Wallago* sp., *Channa* sp., *Labeo* sp. etc.
	9. *Athua Jal*	10-20	1-2	0.1-0.6	Open parts of the wetland	All fishes.
C. Cast Nets	10. *Khewali Jal*	2.5 (radius)		0.5-2	Shallow areas of the buffer zone.	Different small and medium sized fishes.
III. Bamboo traps/ others						
Type	**Gear**	**Standard size**			**Place of operation**	**Fishes caught**
i	**ii**	**iii**			**iv**	**v**
Trap type (cylindrical)	11. *Dingara/ cepa*	0.5 to 1 long			Generally shallow open parts of the wetland with the help of *Bana*.	All small sized fishes like-Murrels, Carps etc.
Box type	12. *Khalaha*	1 to 1.5 long			-do-	-do-
Mouth opened trap	13. *Khuka*	1 and above (long)			Placed in fast moving down water channels.	All small sized fishes
Large trap (cylindrical)	14. *Pawoi*	2.5-3 long			Deep channels of core zone.	Big fishes-like *Wallago* sp., *Mystus* sp., etc.
i	**ii**	**iii**			**iv**	**v**
Vertically placed trap	15. *Ubhati/Ubhai*	0.5 1 long			Placed in shallow water by using bait.	*Channa* sp., *Clarias* sp., *Anabas* sp. etc.
-do-	16. *Akulia*	0.5-1 long			-do-	Fry & fingerlings of fishes.

Triangular mouth open placed item	17. *Derjakoi*	2-3 long	Placed in shallow water using branches of trees and mustard oil cake.	Most of the species.
Placed item	18. *Jakoi*	0.5 1 long	Used in community fishing.	Small and medium sized fishes.
Mat item	19. *Bana*	Size-variable	Shallow and deep water for covering an area.	All fishes.
Bowl shaped item	20. *Barchalani*	-do-	Upper surface of the water bodies	Small sized fishes.
Cover pot	21. *Polo*	0.7-1 height	Used in community fishing.	Large sized fishes.
-do-	22. *Juluki*	-do-	Used in the night fishing in the shallow water zone.	Small sized fishes.
Collecting pot	23. *Khaloi*	Size-variable	Used for keeping the fishes after caught.	Small sized fishes.

IV. Harpoons / Ponsa

Type	Specification
24. *Chatisikali ponsa*	Made from iron cords of umbrella. More than 10 iron hooks attached to a bamboo stick. Used to catch small sized fishes.
25. *Kali* / Multiple	Few iron hooks attached to a long bamboo stick.
26. *Adalia kul*	One long iron hook attached to a long bamboo stick. Generally used for capturing of big sized fishes.
27. *Hendali ponsa*	Three or more numbers of iron hooks attached to a stick. But it will become free when fish caught.
28. *Kuchia kul*	One pair of iron hooks used for capturing of *Monopterus cuchia.*

V. Fishing lines / *Borashi*

29. *Khuti borashi*	Iron hook with a living bait attached to a line and bamboo stick. Placed in the shallow area of the water.
30. *Gela borashi*	Iron hook with spoiled bait attached to a long line and placed in deep water.
31. *Danri borashi*	Iron hook with bait attached to a line & bamboo stick. The line having a float.
32. *Nal borashi*	Iron hook with a bait and a small line. By using a float placed in shallow water for over nigh.

After drying the fishes were transferred into a '*Khaloi'* (a bamboo pot) and kept above the *Merum.* The second technique was preparation of '*Namsing*'. Generally the small sized fishes like *Puntius* sp., *Colisa* sp. etc. were used to prepare *Numsing.* The gutted fishes were scattered on a '*Borchalani*' (a big sized bamboo sieve) and again kept it over the *Perup*. The *Perup* was placed over the *Merum.* Soon after completion of drying, the fishes were mixed with some leaves and twigs of medicinal plant like-wild arum (*Colocasia esculentum*) and have grinded on '*Kiper*' (a grinding device made of wood). That grinded mixture was kept on '*Atung*' i.e. one side open hollow bamboo cylinder and the mouth sealed with cloth or mud. The grinded mixture inside the *Atung* was termed as *Numsing.*

Discussion

Traditionally the *Mishing* community loves hunting and fishing, but today group hunting is

Figure 5. Community fishing of Mishing tribes.

almost extinct while community fishing has lost much of its original character. However, individual as well as community fishing is done with much merriment. Selection of fishing methods and gear are influenced by various factors such as physiography of the water body, nature of fish stock, characteristics of the material from which gear are fabricated and standard of living[4] Therefore, variation in application of gear can be observed in different rivers, which have characteristic of their own due to unique nature of the water resources of the region. The success of these fishing techniques depends on various factors like selection of site, time, efficiency of materials used and availability of fish, etc.[5, 6]

Fishing with traditional gears is eco-friendly in comparison to the destructive fishing like chemical poisoning, dynamiting, electro-fishing, use of small mesh-sized nets etc., which has imbalanced the aquatic biota damaging not only the water environment but also fishes and their prey-bases and ultimately the aquatic food chain. Therefore, to exploit the fishery resources, new eco-friendly fishing method is utmost urgent. So, in this respect priority should be given to the indigenous traditional knowledge. Because, traditionally, local communities worldwide are extremely knowledgeable about natural resources on which they are so immediately dependent. Unfortunately, much of this wealth of knowledge is today becoming lost as traditional cultures become eroded. Traditional knowledge can play very useful role in rescuing disappearing knowledge and returning it to local communities. So, traditional knowledge should be conserved as a part of living cultural ecological system, helping to maintain a sense of pride in local cultural knowledge and practices and reinforcing link between communities and environment, so essential for conservation. Being inhabitant in and around the water bodies they largely depend upon the natural wealth of their habited not only for their basic need but also for amenities of life. But, now fact is that they are largely secluded from urban culture in both the districts. Due to this, their inherent traditional knowledge is going to be vulnerable.

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