

AQUATIC RESOURCES AND FISHING METHODS IN KAMRUP DISTRICT OF ASSAM

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The present paper deals with the vast and varied aquatic resources and methods of fishing used in these resources with special reference to Kamrup district of Assam. The data were collected through empirical observations made in riverine resource-River Brahmaputra and lacustrine resources-Dipar and Dighali beels during January 1987 to December 1987. The Dipar beel represents a live beel which is connected through functional channels (river Bharalu & Khanajan) while Dighali beel was taken as an example of a dead beel. A major part of information about these aquatic resources was gathered from records of "Central Inland Fisheries Research Centre" Gauhati, Assam Fisheries Development Corporation Government of Assam. The paper is divided into two sections. Section I introduces the locale of the study with a brief description of vast and varied aquatic resources in Kamrup district of Assam. Section II takes a note of major methods of fishing in these aquatic resources.

I

The locale of study:

Assam, the largest of seven North-Eastern states of the Indian Sub-continent, nestling between the Eastern-Himalayan foot hills and Patkai range. The state consists essentially of the two valleys viz., the Brahmaputra valley on the North and Barak valley in the South. The Kamrup district is situated in Brahmaputra valley.

The mighty Brahmaputra meanders its course through the district cutting it into two parts North and South. The North Kamrup is about twice the size of the South, while the North is, on the whole plain, the South Kamrup is broken up by hills. Again North Kamrup as subjected to revenges of flood but South is relatively free from floods.

Aquatic Resources

The mighty Brahmaputra and its major tributaries, the river Barak, the flood-plain and tectonic lakes locally called beels, the swamps or wetlands

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of education were worked out. The oriented courses were divided into Arts, science and Technical streams and courses were offered, according to the aptitude of students. An Advisory Committee on curriculum development was set up (1970) which has responsibility to revise and evaluate the performance of courses. The total courses were set up in such a way to meet the future need of the society. The total educational machinery of government was made well connected. The teachers of Singapore are considered as civil servants. They take professional training in the Teachers-Training College (1973). Teachers are considered as a tool for the nation-building who have a special prestige and status in the society. After the appointment their promotion and salaries are increased according to their academic skill and performance. The higher education is also controlled.

Durkhiem (1956: 60-90) reveals that historical analysis is essential to understand the educational system which occurred in the relation of total societal system. Through the historical analysis one can understand the system of morality, language, religion and sciences, which are social things and formed the collective nature. The sociological interest is to discover the social facts; in a comparative time span of the varying nature of family pattern, corporation, nation and community. In the same context Parsons T. (1955: 182-214) stressed that education facilitate, specific types of norms in society and is a source of modernity. Education provides the chances of achievement pattern in society and opens the door for professional to share the power, prestige and wealth opportunity. Education also provide the linguistic uniformity which leads the community beyond the ethnic basis and language policy reduces the communicational barriers along the opportunity of upward mobility of an individual in society. The education is a basic source for the extension of the equality of opportunity and citizenship. It strengthens the associational trends, specially through the encouragement of law, medicine and technology which has effect on the stratification and occupational system. This types of academic compliance is transforming the structure of modern Singapore.

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and the tanks and ponds constitute vast and varied fishery resources of the Assam. In this section, we will discuss three typical aquatic resources of Kamrup district of Assam, namely, the River Brahmaputra, the Dipar beel and the Dighali beel on which the present study is concentrated.

The River Brahmaputra

The River Brahmaputra originates from the great glacier lake 'Mansarovar'. After criss-crossing the boundless tracts of the Himalayas the river enters the Assam near Sadiya town and traverses through the valley, before entering Bangladesh. Having an average width of 8 Km. (Verma, 1984), the river rolls down the Assam valley from East to West in oscillating and variable channel. It flows placidly on a gradient of 1 meter per 8.5 Km. (Choudhury, 1978) and lays down during flood the blanket of fine silt that gives the valley its fertility. It receives a heavy rainfall varying 175 cubic meters per second (cms) to 640 cms, the average being of the order of 290 cms (Central Metrological Station, Borjhar, Gauhati).

The river has more than 47 tributaries within the valley, emerging from both North and South banks. Nearly a dozen small and large tributaries meet the River Brahmaputra within the Kamrup district.

The important northern bank tributaries in Kamrup district are the *Puthimari*, *Ragadiya*, *Pohumara*, *Manas*, *Beki* and *Aie*.

The South bank tributaries are few in number and less prone to floods. *River Kollong*, *Digaru* and *Kulsi* are the main tributaries of South bank in Kamrup district.

A total of about 31935 Kg. of fish is estimated to have landed at Uzan Bazar fish landing centre on River Brahmaputra during the period January to December 1987 with an average landing of 2661.25 Kg/month.

Beels

There are about 1392 beels in Assam of which 169 are located in the Kamrup district. According to State Government records (1980) the beels contribute about 93 per cent of the total fish prone water area excluding rivers and their tributaries and about 18 per cent of the total lentic area. According to State Government records these beels are capable of giving an annual fish crop of 70,000 tonnes, while the present production is estimated to be about 10,000 tonnes.

Physiographically, the beels can be grouped into two categories. Those retaining their continuity with the original river/tributary through some narrow channel either throughout the year or atleast during rainy season are termed as *live* beels. The *Dipar beel* of Kamrup district comes under this category. Others which are completely cut off and remain as

isolated bodies of water are known as *dead beel*. Such beels receive water mostly from their catchment area. In Kamrup district *Dighali beel* has been identified as a dead beel.

Dipar beel

This beel is situated about 10 km. South West to Gauhati. In flood level it becomes very large while at live stage it comprises an area of 146.28 has with a gross volume of 16, 10, 540 m³ (Dey, 1981). Technically the beel is an oxbow type riverine lake. It is extended SE-NW axis and is connected to River Brahmaputra by river Bharalu in the North East (acting as provisional inlet) and river Khanajan in the North-West (acting both as inlet and outlet and forms the principal feeding canal) directions. Both the feeding canals are irregularly controlled through sluice gates. In normal conditions the inflow of water to the beel is observed from April through July while outflow starts from August through February. River Khanajan is closed during January and March for fishing.

Dighali beel

This beel lies within Hajo circle of Kamrup district of Assam. It lies about 37 km. West to Gauhati. The beel, now a typical oxbow lake is perhaps the dead course of a mature meandering stream. The catchment area of beel is composed of hills of the Sila-Sundari range (Yadava *et. al.* 1987). The water level shows considerable fluctuations throughout the year due to variation in precipitation. During summers, the beel becomes almost dry leaving the scattered pockets of water. Three pockets of about 15-35 ha namely *Dighali*, *Rowmari* and *Matikola* remain prominent throughout the year.

II

The indigenous fishing methods employed in both the lentic and lotic waters of Kamrup district exhibit vividly in their design as well as *modus operandi*. The perfection encountered in the fishing gears are perhaps the outcome of tradition and possibly the results of long years of trial. Comprehensive account of different gears and methods of fishing in the riverine and lacustrine (beels) waters are very few. The earliest record of traditional fishing gears and their mode of operation in Assam was probably that of (Day, 1877) whose work was based on a survey conducted by F. Buchannan-Hamilton during the period 1807-1813. Subsequently, the fishing gears of inland waters of the state were reported by De (1910), Job and Pantulu (1958), and Joseph and Narayanan (1965). Recently Katal fishing (Yadava *et. al.* 1981) and Banas fishing (Yadava 1986), the two

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important fishing devices have been described besides a description (Bhagowati and Kalita, 1987) outlining the design, mode of operation, seasonal variation and fish catch composition in beels of lower Assam.

The present account embodies a description of the gears in vogue in the river Brahmaputra and two beels Dipar and Dighali in Kamrup district of Assam.

Fishing gears of River Brahmaputra

A large variety of fishing gear and tackle are operated in different stretches of the river for commercial exploitation of fishery resources. The river however presents certain hydrological differences from other rivers of the country which necessitates deployment of specific gear for fish capture in certain cases.

The entire fleet of gears observed in the river are non-mechanised. Based on design and mode of operation the observed gears have been classified into the following major groups; 1-Drag/Seine nets 2-Gill nets 3-Bag nets 4-Purse/clap nets 5-Dip nets 6-Cast nets 7-Trawl nets beside the seasonal use of long lines and traps.

Detail of these gears is shown in table - 1.

Fishing gears of beels

Fishing in the beels is traditional yet interesting. Reliance is more on traps, snares, and lures rather than seining, Gilling & Dragging. Fishing methods keep on changing from month to month, yet a distinct seasonal categorisation can be done. Starting from monsoon only hooks and lines and to some extent dip nets are used. The cat fishes and smaller varieties are normally caught by this method. Post Monsoon witnesses the use of 'Banias' in exploiting the current flowing back to the river, resulting in the catch of spawn and large fishes migrating back to the river. This method was particularly observed in Dipar beel which has a functional link with the river Brahmaputra. The 'Katal' fishing generally starts in Monsoon when the 'Katalas' are installed. The harvesting of 'Katalas' is done during December to February. The use of gill nets and drag nets in beels less infested with aquatic vegetation is also seen in winters. Hand operated triangular nets and traps as indigenous as the community operating them are operated mainly during post monsoon and winters.

Principal gears operated in beels of Kamrup district of Assam are shown in Table 2.

Besides the gears mentioned in above table two very popular indigenous methods are also employed in the beels.

TABLE 1 : PRINCIPAL GEARS OPERATED IN BRAHMAPUTRA RIVER SYSTEM IN KAMRUP DISTRICT.

Type of Gear	Local names	Material used	Main Season of Operation
Drag nets	Berjal, Chellajal, Pahjal, Duttasi, Aretona	Cotton	All seasons
Gill nets	Gullyjal etc. Langjal, Phansijal	Cotton/Sunhemp/ Nylon/Assam silk	All seasons
Bag nets	Kona jal	Cotton/Sunhemp	All seasons
Purse nets	Illisha shanglajal, Karat, Shengla jal	Cotton/Sunhemp	April-September
Dip nets	Khora jal, Kahj-jal	Cotton	November-May
Cast nets	Pahjal, Berhrijal Kavalijal, Regha jal	Cotton/Sunhemp	November-May
Trawl nets	Asrajal, Ottaljal, Pashjal	Cotton	November-May
Hook & Lines	Fery jal, Bachrujal Barshi	Cotton	All seasons

TABLE - 2 PRINCIPAL GEARS OPERATED IN BEELS OF KAMRUP DISTRICT OF ASSAM

Type of Gear	Local names	Material used	Main season of Operation
(A) NETS			
(i) Moving nets	Mohori jal, Ber Jal, Horhori jal, Moi jal,	Cotton	Winters
Drag nets	Panti jal	Cotton	Rainy seasons
Dip nets	Jata jal, Dharma jal, Ghoka jal	Cotton	Winters
Cast nets	Khewali jal	Cotton	Winters
(ii) Stationary nets			
Gill nets	Fansi jal, Puthi, Langi, Kaolilangi Goroilangi	Cotton/Sunhemp/ Nylon/Assam Silk	All seasons
(B) Hooks & lines	Iron & split bamboo hooks	Iron & Bamboo	All seasons
(C) Traps	Polo, Sepa, Dingore, Boldha, Box Sepa, Bhari.	Bamboo	All seasons

(1) **Katal fishing:** Katal fishing also called jeng fishing in upper Assam. *Katal*s are basically lures since the motive behind is to entice fishes in accumulated mass of bushes, weeds and tree stumps for a period of 2-3 months. Katal is set during August to September by dumping tree branches, stumps and bamboo shoors and water hyacinth in the form of a circle. In suitable places with depth varying from 1.5-3 meters the *katal*s are arranged and several *katal*s lie dispersed all over the beel. The fishes make shelters in such *katal*s. During late November to February, the *katal* is encircled by drag nets and bamboo screens. The vegetation and other objects from inside the circle are thrown and the circumference is slowly reduced by dragging the nets and screen inwards. Cast nets are operated simultaneously within the reduced circle. The foot ropes of nets are finally brought together to form a bag and fishes are caught.

Catch composition of *katal*s comprises of medium and large sized major carps, cat fishes leatherbacks and miscellaneous varieties.

(2) **Banas Fishing:** Banas fishing is done during post monsoon i.e. September to November in live beels. The Banas are set barriers erected from bank in the channels connecting beel to riverine source. The channel plays a pivotal role during monsoon, when with the current, adults and juveniles of various species enter the beel for breeding, feeding and temporary migration etc. with the waning monsoon, the current starts receding towards the river and many species undertake their back journey and at this stage Banas fishing commences.

Main findings:- The main findings of the study are as follows:

1. The mighty River Brahmaputra with its more than 47 tributaries forms the major riverine resource in Assam of which nearly a dozen small and large tributaries meet the river Brahmaputra in Kamrup district of Assam.
2. It was found that lacustrine resources the beels are of two types- oxbow and lake like we take into consideration the structure of the beels. But on the basis of physiography of the beels both dead and live beels were found in Kamrup district of Assam.
3. The earliest record of traditional fishing gears and their mode of operation in Assam was probably that of Day (1877). Recently *Katal* fishing Yadava *et al.* 1981) and *Banas* fishing (Yadava and Choudhury 1986) two important devices have been identified.

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