Indian Journal of Traditional Knowledge, 3(2): 192-197, (2004).

Indigenous technical knowledge on pond construction and maintenance, fish seed transportation, and fish health management in Assam hills

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Abstract

Most of the inhabitants of the Hills Zone of Assam survive on their traditional knowledge base. These people are bound by traditions and are relatively untouched by modem scientific knowledge on aquaculture and allied sector. An attempt has been made in present study to document Indigenous Technical Knowledge (ITK) related to aquaculture in the Hills Zone of Assam. Data was collected after interviewing 80 fishers in one of such areas with the help of an interview schedule. In Pond construction/maintenance, seed transport and fish health management, nine ITKs were documented in this study. Under pond construction and maintenance, ITKs on traditional spillway, and protection of pond dyke were documcnted and under fish health management ITKs on control of dissolved oxygen deficiency, turbidity control, control of Argulus, leach control and control of Epizootic Ulceratic Disease Syndrome were documented.

Keywords: Indigenous technical knowledge, Pond construction, Fish seed transportation, Fish health management, Inland fisheries.

Indian Journal of Traditional Knowledge, 4(1): 57-64, (2005).

Plants used by the Hill Miri tribe of Arunachal Pradesh in ethnofisheries

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Abstract

The state of Arunachal Pradesh is known for its rich bioresources and ethnocultural diversity. Ethnobiological survey was conducted during 2001-2003 in Hill Miri dominated districts of Arunachal Pradesh, which reveals their hidden Indigenous Knowledge System. Fishing and hunting is one of the major economic activities of this hilly tribe apart from Jhum cultivation. They derive their fish protein diet requirement directly from the wild sources. Two major rivers and number of its tributaries form ideal site for fisheries activity. A total of 21 plants significant for ethnofisheries have been listed. Twelve plants are used as ethnotoxic (Fish Poison) and rest 9 species are used in different ethnofisheries techniques and gears.

Keywords: Ethnobiology, Ethnofisheries, Fish poison, Hill Miri tribe, Arunachal Pradesh, Ethnomedicine.

Indian Journal of Traditional Knowledge, 4(1): 91-93, (2005).

Fish attractant: An indigenous device to prevent escapement of fishes

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Abstract

Studies on fish attractant especially in fresh water fish are very scanty. Tribal people, who practice fish attractant against the escapement of fish during inundation of ponds during flood, mainly inhabit the Karbi-Anglong district of Assam. This fish attractant is made from locally available ingredients such as rice bran, oil cake, Jubulee, etc. The practice is quite popular among the fishers in Karbi-Anglong. On verification of the efficacy of this indigenous method, it was observed that as many as 70% of fishes remain in the pond after flood.

Key words: Fish attractant, Fish escapement, Rice bran, Oil cake, Jubulee, Rice Beer, Assam

Indian Journal of Traditional Knowledge, 6(2): 334-336, (2007).

Herbal fish toxicant used by fishers of Karbi-Anglong district, Assam

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Abstract

Use of plant, *Polygonum hydropiper* Linn. (Smartweed) as fish toxicant by the tribal people of Karbi-Anglong district of Assam for catching fish from natural aquatic resources as well as for removal of uneconomical fishes from the aquaculture pond has been discussed. Indigenous Technical Knowledge on aquaculture has generously been passed on to newer generation by older ones. Plant's botanical identity, local name, family, plant parts used, therapeutic uses and mode of application of the drug have been described. It was observed that carp fishes died immediately, but air-breathing fishes (*Heteropneustus fossilis* and *Channa puntatus*) lasted for sometime.

Key words: Smartweed, Fish poison, Fish toxicant, Indigenous Technical Knowledge, Karbi-Anglong, Assam

Indian Journal of Traditional Knowledge, 7(4): 618-623, (2008).

Traditional knowledge associated with fish harvesting practices of War Khasi community of Meghalaya

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Abstract

The paper reports and analyses the findings of Traditional Ecological Knowledge associated with fish harvesting practices of *War Khasi* community, a sub tribe of *Khas*i, inhabiting southern slopes of Meghalaya. The study area has a forested landscape and harbours dense network of streams and rivers, viz. *Wah Umsong, Wah Umsi, Wah Umshrei, Wah Umkhat, Wah Durit* and *Wah Umjar*. These rivers and their associated water bodies are impregnated with a variety of fish and other aquatic life forms, which constitute a sizable part of the diet of local people. The War Khasi community has evolved several traditional fish-harvesting practices, locally known as *Buh Kroh, Riam Kriah, Riam Khohka, Riam Kyllong, Ring Khashiar, Buh Ruh* and *Bia Dohpieh*. The study revealed that these methods are most suited to local conditions, help in perpetual fish harvest and conservation of aquatic biodiversity of the region. The paper discusses the ecological and biodiversity value of these practices in the light of recent policy decisions of local communities concerning conservation of aquatic resources of region and other biodiversity enriching and livelihood enhancing practices of these communities.

Keywords: Traditional Ecological Knowledge, Ethnobiology, Fish harvesting, *War Khasi*, Meghalaya

Indian Journal of Traditional Knowledge, 7(4): 624-626, (2008).

An indigenous community fishing practice of Tirap district, Arunachal Pradesh

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Abstract

An indigenous community fishing practiced by the *Wancho* tribe of Tirap district, Arunachal Pradesh in Tissa river is described. In this practice, fishing was facilitated in the pool zones of the hill stream by making the stream water muddy. Fishes gasping for air in muddy waters is then caught using cast nets operated from indigenous bamboo rafts (4.6-6.1 m long and 1.1-1.4 m wide). The study revealed that community fishing is a part of the cultural heritage of the *Wancho* tribe of Tirap district. The principle behind the fishing method was found to be deoxygenation of water caused by churning of bottom sediments.

Keywords: Indigenous Technical Knowledge, Traditional fishing practice, Community fishing, Bamboo raft, Arunachal Pradesh, *Wancho* tribe, Ethnobiology, Fish harvesting

Indian Journal of Traditional Knowledge, 8 (2): 237-241, (2009).

Fishing methods in the rivers of Northeast India

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Abstract

The Northeast frontier of India, which has been ranked 6th among the top 25 biodiversity spot in the world demonstrates the absolute dependence of men on nature. Riverine fishery resources of these states comprise 19,150 km of streams and rivers with diversified fish fauna, having both torrential and plain forms but still the old traditional methods of fishing are prevalent and most of the practices followed are primitive and outdated as there is no new and reliable technology available. Some of the existing fishing methods in the hill steams are hooks and line, maze/ barricade, encircling gear, entangling gear, impaling gear, scooping gear, groping, impoundment, indigenous trap and noose fishing. For the large scale fishing destructive practices such as dynamiting and poisoning are employed. Electric fishing is also becoming very popular in some parts.

Keywords: Fishing methods, Northeast India, Traditional medicine

Indian Journal of Traditional Knowledge, 8 (4): 535-538, (2009).

Plants used as fish toxins in Garhwal region of Uttarakhand Himalaya

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Abstract

Garhwal Himalaya is known for its rich bio-resources and ethnocultural diversity. Ethnobiological survey was conducted in different hilly districts of Uttarakhand which reveals their Indigenous Traditional Knowledge (ITK) in fish capture. Fishing is one of the important sources of animal protein for the people of hilly region. In the study, a total of 13 plants, which are significantly used as fish toxicant by local people in the aquatic resources of the Garhwal region have been listed. Plant's characteristic feature, vernacular name, family, distribution, parts used and other ethnobotanical uses have been also described.

Keywords: Fish diversity, Garhwal, Aquatic resources, Fish toxin, Traditional fish folk, Uttarakhand

Indian Journal of Traditional Knowledge, 8(4): 539-542, (2009).

Plants traditionally used in fish harvest & angling potential feed attractants in aquaculture

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Abstract

Several herbal materials have been in use for alluring fish during harvest and angling by traditional farmers in different parts of India. Experiments were conducted using behavioural trough to evaluate 10 herbs collected from Tripura state as feed attractants on post larvae of giant freshwater prawn (*Macrobrachium rosenbergii*) and fingerlings of Indian major carps *catla* (*Catla catla*), *roh*u (*Labeo rohita*) and *mriga*la (*Cirrhinus mrigala*). The herbs used in the study are *jatamansi, ekangi, latkhandhana, jayatri, kakla, latakasturi, aobel, bhuski, kharbaz* and *tambu*l. The powdered herbal materials were incorporated in starch at 1% level to make a dough and it was placed in different compartments of the trough for evaluation. The results of experiments clearly demonstrated higher feeding attractant activity of herbal materials compared to commercially available chemoattractant, betaine. The post larvae of freshwater prawn were attracted in greater numbers towards *ekangi, kakla* and *bhuski* compared to betaine. The attractant activity of different herbs was found to be species specific in case of Indian major carps. The highest attractant activity was shown by latkhandhana on catla, kakla on rohu, and kharbaz on mrigala.

Key words: Fish attractants, Freshwater prawn, Aquaculture, *Catla, Rohu, Mrigala*

Indian Journal of Traditional Knowledge, 9 (2): 252-255, (2010).

Indigenous technical knowledge for fish harvesting in Karbi-Anglong district of Assam

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Abstract

Most of the inhabitants of the Karbi-Anglong district of Assam, survive on their traditional knowledge base. Livelihood of the people is bound by traditions and the community in general is relatively untouched by modern scientific knowledge on fisheries and allied sector. Documentation and compilation of indigenous technical knowledge (ITK) is of great importance. In the study, a total of 100 fishermen from four blocks were interviewed using pre-tested interview schedule. Accordingly, the study has documented some unique indigenous knowledge related to fish harvesting. ITK regarding fish harvesting, fishing with attractant, piscicidal plants, community fishing, wounding gear and *bana* fishing were documented. Under fishing with attractant, *matia chali*, *kalpotua chali*, pot fishing and crab fishing were documented. Under plant piscicides, *smartweeds*, *karoi* tree and *moin*, were documented. Under community fishing, scare fishing and *dalbandhi maach mara* were documented.

Keywords: Indigenous Technical Knowledge, Fish harvesting, Assam

Indian Journal of Natural Products and Resources, 3(4): 582-588, (2012).

Traditional knowledge and ethnobotanical uses of piscicidal plants of Nagaland, North east India

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Received 1 December 2011; Accepted 24 August 2012

Abstract

Harvesting of fish using piscicidal (fish poisoning) plants has been a common practice by the tribal people of Nagaland. The present study documents the piscicidal plants and their usage based on the information acquired from the local community. Many of these plants besides piscicidal property possess other therapeutic properties which are used in traditional medicines. Seventeen piscicidal plants which are traditionally used for fish catching and in preparation of local medicine from the state of Nagaland have been recorded, along with plant parts, viz. roots, bark, leaves, fruits and seeds. The paper enumerates and discusses the piscicidal and ethnobotanical utilization of these plants and their bio-active compounds. Some of these plants may have application in fish nursery management by local farmers substituting for rotenone.

Keywords: Fishery, Piscicidal, Nagaland, Ethnobotanical, Bio-active compounds.

Indian Journal of Traditional Knowledge, 12 (1): 66-71, (2013).

Indigenous technical knowledge for pond maintenance, fish health management and fish seed in Tripura, India

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Abstract

Traditional knowledge base rheostats the livelihood of inhabitants of Tripura. Fishers' community of the state are precisely innovative and skilful to use traditional knowledge in fish culture and its management. The study attempted at compilation and documentation of indigenous technical knowledge (ITK) related to pond maintenance, fish health management and fish seed. The objective was achieved through primary survey using semi-structure interview method at village level. 160 farmers from 16 villages of four districts shared their knowledge. Study discussed traditional techniques of controlling predatory animals, unwanted fish, snake, snails, and tadpole under pond maintenance theme. Besides, study identified traditional techniques of controlling algal bloom using water hyacinth and cattle urine. Their unique practice for checking water pH was also documented. Under fish health management theme, control of Epizootic Ulcerative Syndrome (EUS) and control of external parasite of fish was two important areas of identification. ITKs to reduce the seed mortality and susceptible measures to mitigate disease contamination during transportation also have been documented.

Keywords: Indigenous technical knowledge, Pond maintenance, Health management, Fish seed transportation and Epizootic ulcerative syndrome.

Indian Journal of Traditional Knowledge, 12 (1): 80-84, (2013).

Indigenous Technical Knowledge (ITK) of fish farmers at Dhalai district of Tripura, NE India

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Received 15.0210, revised 09.06.11

Abstract

Fisheries in Tripura form an integral part of the economy of the state. Indigenous technical knowledge in the field of fish farming is a practical knowledge of the local farmers of this district. This is based on intimate experience accumulated over generation after generation. Such traditional practices were sustainable in terms of land use, utilization of local available materials, labour, money, and could be easily operated without any specially skills. The study was conducted in the villages of Balaram and Maracherra clusters of Dhalai district of Tripura to collect the indigenous technical knowledge in fish based farming system, to characterize and catalogue the available bio-resources in the locality and to protect the IPR issues for future uses. Information was documented by using Participatory Rural Appraisal (PRA) like observation and discussion. In this study, the traditional knowledge of fish farmers were identified and described on integration of animal and plant component in fish based farming system, protection of fishes from enemies, ponds used for the protection of bamboo from damage and fishing methods. The ITKs on fish-cum-vegetable (bottle gourd) culture, paddy-cum-fish culture, fish-cum-duckery, practice of protection of fishes from enemies, ponds used for the protection of bamboo from damage, and different types of bamboo made fishing traps were recorded in the present paper.

Keywords: Dhalai district, Fish, *Garo* tribes, *Lau macha*, Duck house, *Ushas*

Indian Journal of Traditional Knowledge, 12 (1): 130-136, (2013).

Traditional fish aggregating wisdom of Manipur, Northeastern India

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Abstract

In the present study, endeavor was been made to document the different types of traditional fish aggregating devices (FADs) being practiced by the fishermen from the study area and to explore the fishers' rationale behind their use. Looking into the nature of the study, the information was collected by personal interviews, field observations and conducting focus group discussions with 10-12 practicing fishermen of the *meitei community*, Manipur state. The study explored a unique traditional fish aggregating wisdom of central valley region of Manipur namely, *Phoom namba , Phoomdao thumba* (for Air breathing fishes), bunches of weeds (for grass carp) in loktak lake, macrophytes in low lying areas and branches of the tree and twigs (Kao) in the river systems. Further, the study has also revealed that the operation of the fish aggregating techniques ranges from individual to group of fishermen which share the benefits out of the common property resources.

Keywords: Indigenous knowledge, Traditional fishermen, Fish aggregating device (FAD), *Meitei community*

Indian Journal of Traditional Knowledge, 12 (1): 137-143, (2013).

Traditional fishing methods in Central valley region of Manipur, India

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Abstract

Central valley region of Manipur harbours great ichthyofaunal diversity; diverse fisheries resources, thus uses wide array of fishing methods which are evolved traditionally and being practiced extensively throughout the central valley. Some of the practices are unique to certain area such as the Loktak lake. The different traditional fishing methods presently being practiced by the fishermen are broadly categorized into major and minor fishing gears. In present paper an attempt has been made to collect and document the Indigenous technical knowledge (ITKs) related to fishing methods in central valley of Manipur, India. In addition to the documentation of different fishing methods, the rationales behind their use, as perceived and mentioned by the respondents, were also concurrently discussed to facilitate comprehension.

Keywords: Fishing methods, Central valley, Traditional fishermen, Livelihood

Indian Journal of Traditional Knowledge, 12 (1): 149-156, (2013).

Indigenous fishing devices in use of capture fishing in Tripura

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Abstract

Fishing with traditional devices is an old age practice followed by fisher folk of Tripura. The present fishing technique and devices are the results of knowledge and experience gained the fishing community from the ancestors. The documentation of these practices and devices are important for their development on scientific line and for betterment of fishing community. Hence an attempt has been made to study existing the fishing methods, designs, structures and operations of fishing gears of Tripura. The Rudra Sagar lake of West Tripura district and Harijala water body of South Tripura district were selected for conducting this study. The survey results revealed that three types of fishing devices, viz. fishing gears with net, hooks and spears and traps are in use for fishing in the study area. It appears from the study of fishing devices of Tripura that though it is a small state of the country yet has a rich indigenous know how about capture fishing. The indiscriminate fishing, fishing in the breeding season, poisoning and fishing with gillnets are some of the ill practices of fishing observed in the study area. These are potential threats to the fish biodiversity of Tripura and as such these should be discouraged.

Keywords: Fishing gears, Net, Hook, Spear, Trap, Tripura

Indian Journal of Traditional Knowledge, 12(1): 162-165, (2013).

Bheta fishing - A traditional community fishing practice of Nocte tribe of Tirap district, Arunachal

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Abstract

A traditional community fishing practiced by the *Nocte* tribe of Tirap district, Arunachal Pradesh in Namsang stream is discussed. The objective of the present study is to bring out detailed information about this indigenous fishing method. In this practice, fishes are caught in the lower reaches by obstructing water flow of the stream. Fishes in their attempt to overcome this obstruction ultimately got trapped. The study revealed that community fishing is a part of the cultural heritage of the *Nocte* tribe of Tirap district. Migratory behaviour of Cyprinids (e.g. *Tor putitora, Barilius tileo, B.bola*) has been effectively used in this fishing method for catching them.

Keywords: Indigenous Technical Knowledge, Fishing, Arunachal Pradesh, *Nocte* tribe, *Bheta*

Indian Journal of Natural Products and Resources, 5(4): 351-358, (2014).

Understanding of traditional knowledge and characterization of *telesech* - a fermented fish product of Tripura state

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Received 5 August 2013; Accepted 25 August 2014

Abstract

Fermented fish products are popular in the North east India because of their characteristic flavour and aroma. *Telesech* is a local name of salt-free fermented *Setipinna phasa* which is very popular amongst the people of Tripura in general. Higher cost of imported dry punti fish as well as high production cost and retail price of punti shidal necessitated the development of telesech from estuarine fish *Setipinna phasa*. The traditional method of its production has been studied and the biochemical, microbiological and sensory qualities of *telesech* has been evaluated. The pH, moisture, protein and lipid content of the product were found 6.21±0.13, 35.87±3.25, 28.38±0.63 and 16.98±1.71, respectively, indicated their stability at ambient temperature. The quality parameters like TVBN, AAN, PV and FFA showed a higher value. The total plate count and total fungal count were observed as 6.42 and 4.02 log cfu/g, respectively. Predominant groups of bacteria were identified as Staphylococcus sp. and Bacillus sp. A sufficient numbers of Lactic acid bacteria (LAB) were also found. The product *telesech* was found to be contaminated with Salmonella which indicates lack of hygienic condition in processing and retail centres. Organoleptically the product was acceptable as the overall acceptability score was found 7.5±0.37.

Keywords: *Setipinna phasa*, *Telesec*h, North east, Fermentation, *Bacillus* sp. and *Staphylococcus* sp.

Indian Journal of Traditional Knowledge, 13 (1): 70-86, (2014).

Myths, perceptions and knowledge of farmers on basics of fishes and fish farming in western Himalayas: A review of realities

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Received 02.07.12, revised 03.10.2013

Abstract

A study carried out to assess existing basic knowledge and perceptions of farmers on fish farming in Uttarakhand Himalayas during 2003-08 indicated prevalence of as many as 16 mythical superstitions on fish identification, features of fishponds and various attributes of fishes or fish farming among farmers adding to already existing problems of fisheries development in the region. Preference for deeper fishponds or water harvesting structures (WHS) and coldwater river fishes against farmed or warm water river fishes; ignorance on the needs of liming or fertilization in fishponds and various benefits of fishes or fish farming other than for food purpose were widely held by 81-86% respondents. Ignorance on the negative impacts of fishing in rivers using powder prepared from the woody shrub, *Zanthoxylum armatum* DC., locally called as *timru* was observed in 69% respondents and probably this helps to continue periodically organized traditional fishing festivals, known as *mound* or *machli mela* using *timru* powder, that destroy riverine ecosystems in the region. Importance of water management in fish farming and potential of pig rearing or use of pig dung as fertilizer in fishponds or crop fields were not recognized by 50% respondents. Overall, ignorance on various principles, recommended practices and inputs of fish farming, features of fishes and fishing in rivers were prevalent in the region. A review made on issues of prevailing superstitions provided scientific and logical explanations either in support of them or otherwise. The paper identifies possible researchable issues associated with the myths and suggests dispelling unscientific superstitions maybe through appropriate research findings, trainings and positive demonstrations by the existing advisory systems.

Keywords: Western Himalayas, Myths and perceptions on fish farming, Taste of wild or coldwater fishes, Fish stocking density, Pond design features, Pond depth, *Zanthoxylum armatum* DC., Timru