

**TRADITIONAL FISHING TECHNIQUES
IN KHASI AND JAINTIA HILLS OF
MEGHALAYA**



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Rev Dr. Fr. I. Warpakma SDB, former Principal of St. Anthony's College, Shillong, dedicated his service as principal more than ten years (8th May 2002 to October 2012). During his tenure, with his continuous effort college has reached a new stride in the country. During his tenure St. Anthony's College was reaccredited with Grade "A" (3.60/4 CGPA) in the year 2009. Further academic expansion was made during his time by establishing Department of Music, Post Graduate Course in Biotechnology and Computer Science. He has many publications to his credit including research paper and books.

About the Book

Meghalaya, a tiny hills state of India, possesses nearly 20% India's total 806 fresh water fish species. Physiographically the state comprises with three hilly regions viz. Khasi hills, Jaintia hills and Garo hills. The wealth of aquatic resources of Khasi and Jaintia hills of Meghalaya is an unlimited gift of nature. The traditional fishing technique is being provided a sizeable quantity of fish food for the tribes of Khasi and Jaintia hills of Meghalaya. This piece of work is an attempt to study the different types of traditional fishing gear use by the fishers of Khasis and Jaintias with their traditional knowledge, which are still being practised till date.

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INTRODUCTION

Meghalaya with a geographical area of 22,429 sq.km is situated in North East India and lies between 25°47' and 26°10' North latitude and 89°45' and 92°47' East longitude. The state is divided into three hilly regions viz. Khasi hills, Jaintia hills and Garo hills and accordingly being homeland of Khasi, Jaintia and Garo tribes. The state of Meghalaya is divided into two main natural divisions, viz. a) Central and Eastern Meghalaya and b) Western Meghalaya on the basis of general surface configuration, slope, and drainage system of the state. The Khasi and Jaintia hills region falls in the Central and Eastern Meghalaya comprises of six districts i.e. East Jaintia hills, West Jaintia hills, East Khasi Hills, West Khasi Hills, South Khasi Hills, and Ri-Bhoi which covers an area 14375 sq.km. Physiographically, this part again sub divided into three district units: (i) The Northern Undulating Hills, which is characterized by undulating hills and it gradually slopes down towards the Brahmaputra valley and there by formed the region of the central Meghalaya. The Khasi and Jaintia people call this area as the Bhoi Country. (ii) The Central Upland of Meghalaya i.e, Shillong massif covers one third of the Central Eastern Meghalaya. The Central Upland Zone contains fragments of many peneplain surface with the altitude ranging from 1,500 meters to 2,083 meters, (iii) Southern Precipitous Zone is the steepest parts of the region locally known as the War country. The Jaintia Hills have more flat lands than Khasi hills. The Jaintia hills forms a contiguous part of the Central Meghalaya and the Central Jowai upland and the southern escarpment is relatively

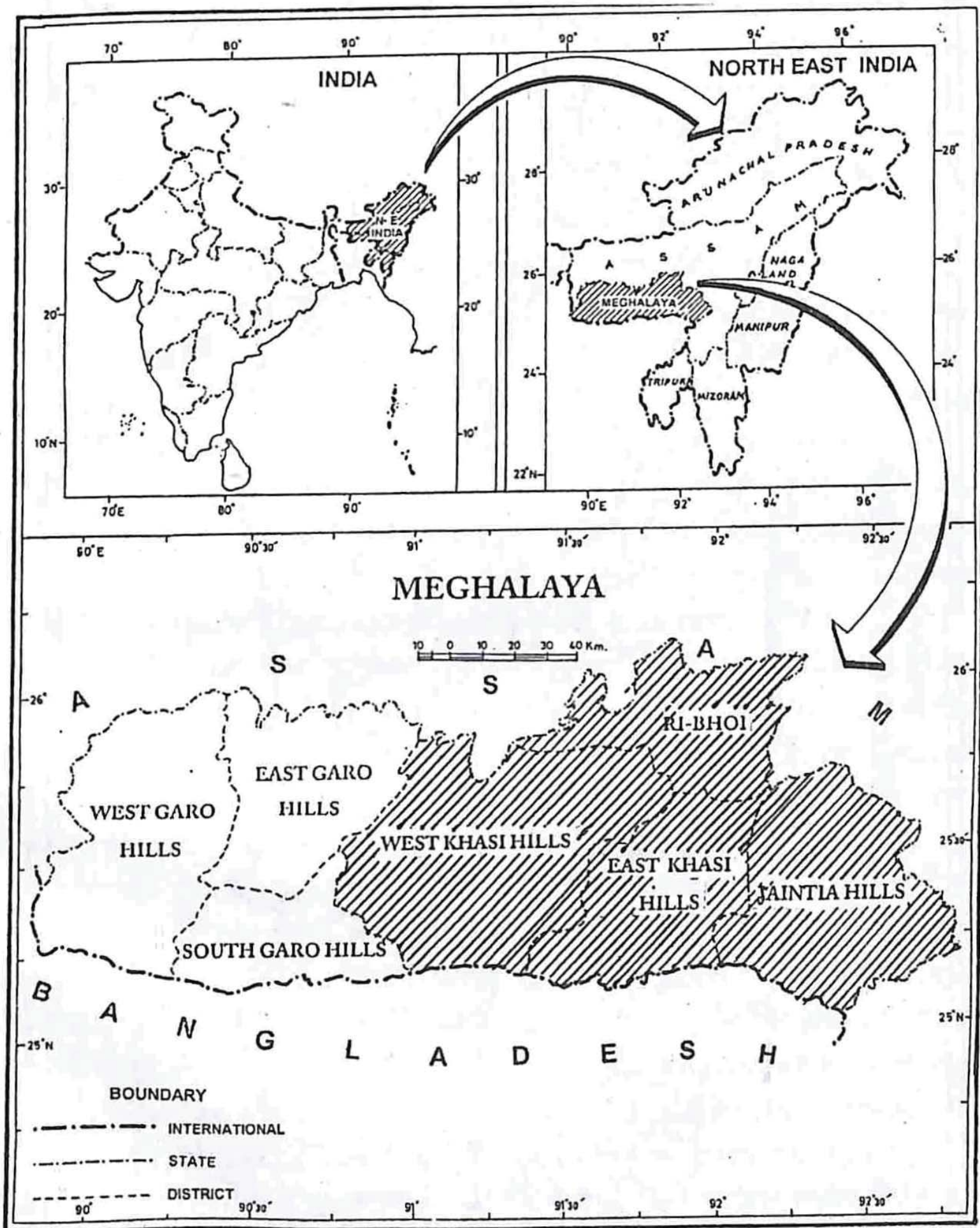
lower having a general elevation more than 1200 meters. (Sarma, 2003). The constitution of India recognized the dynamic and vibrant traditional and customary institutions of tribal areas in the state of Assam, Meghalaya, Tripura and Mizoram and make provisions to the Administration of the Tribal Areas. Article-224(A) was inserted into constitution of India by the Constitution (Twenty second amendment) Act, 1969 and State framed the Sixth Schedule for setting up of Autonomous Districts and Autonomous Regions within the state. The sixth schedule provide a mechanism for the hill people of the region to legislate, adjudicate and regulate the traditional, social, cultural and economic development of their society in a manner which would be conducive to such traditions, customs, practices and conventions. At present Meghalaya has three Autonomous District Councils, namely the Jaintia Hills Autonomous District Council, the Khasi Hills Autonomous District Council, the Garo Hills Autonomous District Council. (The Constitution of India, 2005). According to the 2011 Census, Meghalaya has a population of 29,64,004 of which 14,92,668 are males and 14,71,339 are females. The population of Khasi and Jaintia hills is 18,60,892.

Table 1: District wise population in Khasi and Jaintia Hills (Census, 2011)

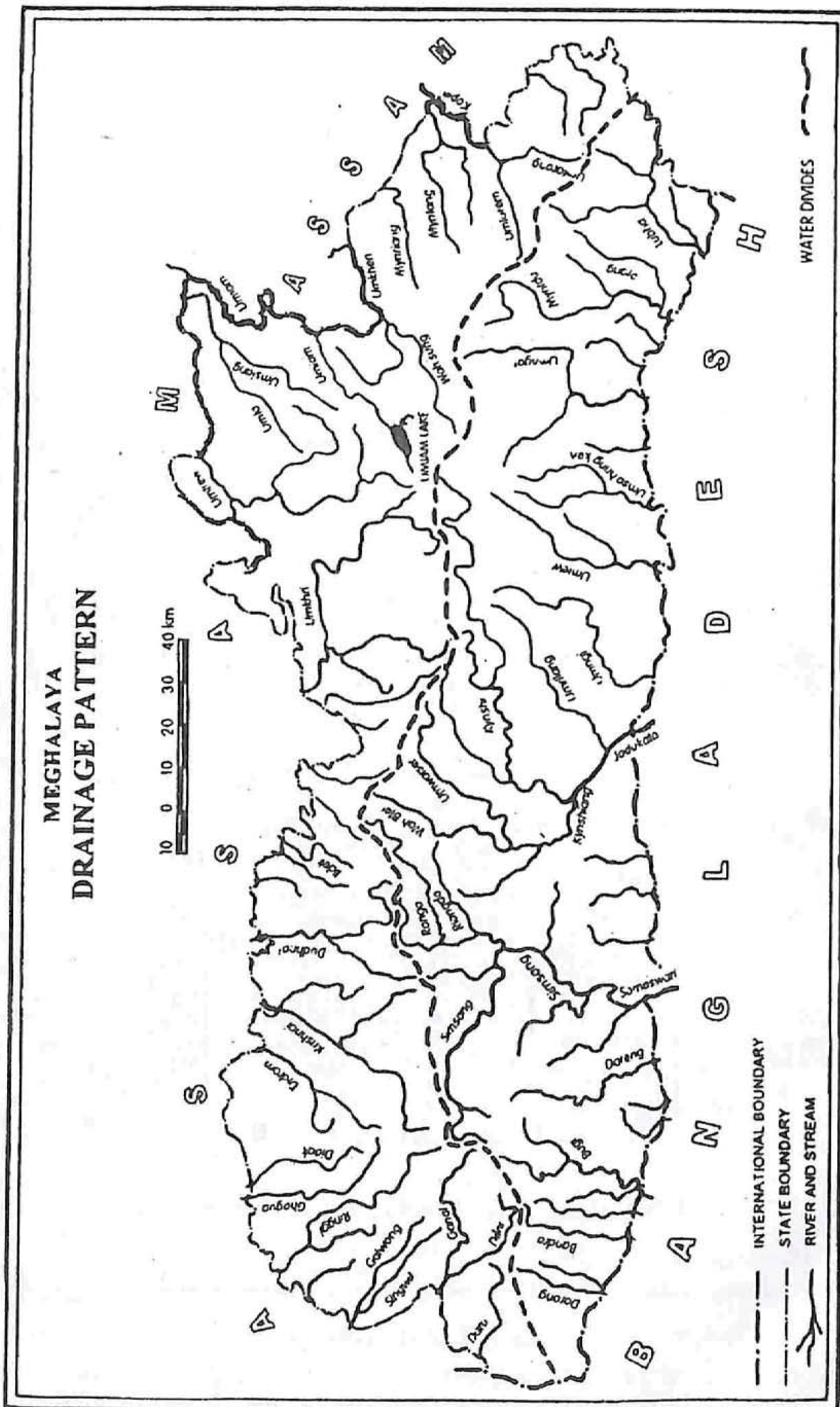
District	Head quarter	Area (Sq. Km.)	Population
East Khasi Hills	Shillong	2,748	8,24,059
West Khasi Hills	Nongstoin	5,247	3,85,601
Ri-Bhoi	Nongpoh	2,448	2,58,380
Jaintia Hills	Jowai	3,819	3,92,852
Total		14262	18,60,892

Drainage system of Khasi and Jaintia Hills

Sarma, 2003 reported that the geological formations, its resultant topography and tendency of head water erosion by rainwater have led to the creation of drainage network in Meghalaya. The lotic systems viz. streams and rivers of this region get merged either into the Brahmaputra river systems in Assam



Map 1. Location Map



Map : 2

or into the Surma river system in the Bangladesh. The rivers flowing towards the Brahmaputra have gentle gradient but the rivers flowing towards Bangladesh are characterized by steepest gradient and waterfalls. The dendritic or tree like pattern of drainage is almost common throughout the Khasi and Jaintia hills. The important rivers in the northern slope of Khasi and Jaintia Hills are Umkhri, (Digaru), Umiam, Umran, Umralane, Umkhen, Umiurem, Myntang, Kupli (Kopili). The rivers in the southern slope of the Khasi and Jaintia Hills are the Kynshi, Myntdu, Umngot, Lubha and Umiew.

Meghalaya is endowed with immense natural water resources in terms of mid and low altitude rivers and streams, lakes, wetlands man made reservoirs. Aquatic resources comprising 3329 km rivers and streams, 41 ha lakes, 8489 ha reservoirs, 358 ha wetlands and 2500 ha ponds harbour approximately 169 fish species exhibit a contribution of both hill streams and plain water form. The state possesses nearly 20% of the India's total 806 fresh water fish species. Fishing techniques have continuously evolved and recorded in history also included as traditional knowledge. Traditional Knowledge (TK) is defined as "the knowledge based on plants, animals, climate change, etc. possessed by both indigenous and local people over the years through their direct contact with the environment. 'Traditional Knowledge' is a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including human beings) with one another and with their environment. Traditional Knowledge also known as indigenous knowledge and defined as the knowledge that people in a given community has developed over time, and continues to develop (Sharma et.al, 2010). Fishers are innovative and always try to translate new ideas comes to their mind to devise new fishing gears of techniques. A fishing gear is the tool with which fishes are captured, whereas the fishing techniques are how the gear is used. Gear also includes harvesting organisms when no particular gear is involved. Furthermore, the same fishing gear can be used

in different ways. A common way to classify fishing gears and methods is based on the principles of how the fish or other prey is captured and, to a lesser extent, on the gear construction, one place allowing the target species to approach the capture device. Fishing gears of the state is classified into two general categories, active gear and passive gear. Active gears are designed to chase and capture target species, while passive gears generally fix in one place allowing the target species to approach the capture device. The United Nations Food and Agriculture Organization (FAO) further classify fishing gear into 11 categories primarily based on how the gear are fished. FAO defines and classifies the main categories of fishing gear as follows:

1. Surrounding nets (including purse seines)
2. Seine nets (including beach seines and Boat, Scottish/Danish seines)
3. Trawl nets (including Bottom: Beam, Otter and Pair trawls, and Midwater trawls: Otter and Pair trawls)
4. Dredges
5. Lift nets
6. Falling gears (including cast nets)
7. Gillnets and entangling nets (including set and drifting gillnets; trammel nets)
8. Traps (including pots, stow or bag nets, fixed traps)
9. Hooks and lines (including handlines, pole and lines, set or drifting longlines, trolling lines)
10. Grappling and wounding gears (including harpoons, spears, arrows, etc.)
11. Stupefying devices

Regenstein (1997) categorized fish catching techniques broadly into three different types of methods namely net methods, hooking methods and other techniques. Rounseefll (1985) described eight types of fishing gears and their mobility viz. impaling, hook and long line, maze or barricade, entangling nets, encircling nets, towed nets, scooping nets and miscellaneous type. All types of fishing gear in the Khasi and Jaintia hills, regardless

of how it is used, are designed to lure and capture fish. Additionally, a single type of gear may also be used in multiple ways. Different target species require different fishing gear to effectively catch the target species. Gurumayum and Choudhury (2007) reported approximately seventeen different types of fishing gears and techniques from the North East Region. They are Hook and line, Trap fishing, Maze/barricade, Arial trap, Encircling gear, Entangling gear, Impaling gear, Scooping gear, Dragging gear, Lift net, Electric fishing and miscellaneous devices (Grouping, Impoundment, Dynamiting, Poisoning, Indigenous traps, Noose fishing etc.) . Sen, 1995 reported four traditional fishing gears in Meghalaya viz. *Tynsong* (scoop net), *Kriah*, *Bneid* (lift net) and *shrip* (trap). Tynsong and Tiwari (2006) analysed and stated on traditional knowledges associated with fish harvesting techniques of War Khasi communities, a sub tribe of Khasi in Megahalaya. The important traditional fishing gears and techniques are *Riam Kriah*, *Riam Khokha*, *Buh Kroh*, *Riam Kyllong*, *Ring Khasihar*, *Krang Wah*, and *Bia Doh Pieh*. Baruah et al, 2010 identified five major categories with 30 varieties of fishing traps based on the principle of capture, design and operation methods in the North East Region of India. A perusal of literature reveals that several plants from the North East India are significant in ethno fisheries and ethno toxic. (Tag et al,2005; Kamal Kishore et al, 2009). Both Khasi and Jaintia hills are endowed with diverse aquatic resources in form of rivers, streams, wet lands, reservoirs and harbour diverse group of fishes. The altitude of the region ranging from 100m to 1960 m is significantly influenced by its varied climatic conditions from Tropical to Temperate zone. Hot and humid climate in the foot hills makes suitable for warm water fishes but above 1200 msl provides shelter to hill stream and cold water fishes. The riverine resource includes 12 major rivers along with its tributaries in the Khasi and Jaintia hills region serve ideal habitat for fresh water fishes. CAMP (1998) reported 169 fish species in the state and out of that, the region harbours more than 90% of the total fish species of the state. Local tribes of the Khasi and Jaintia hills use various fishing gears and

techniques to capture fishes from natural and man made water bodies. The classification of the fishing gears of Khasi and Jaintia Hills described in this book is being modification of FAO classification of Fishing Gears to accommodate the different types of fishing gears and techniques used by the fishers of the region.

Table 2 : Major water bodies in Khasi and Jaintia hills of Meghalaya

<i>Rriver</i>	<i>Region</i>	<i>Drained to</i>
Umiam river	Khasi hills	Brahmaputra
Umtru river	Khasi hills	Brahmaputra
Umran river	Khasi hills	Brahmaputra
Umshyrpi river	Khasi hills	Brahmaputra
Umkhrah river	Khasi hills	Brahmaputra
Umralane river	Khasi hills	Brahmaputra
Kynshi river	Khasi hills	Bangladesh
Myntang river	Jaintia hills	Brahmaputra
Umiurem river	Jaintia hills	Brahmaputra
Kupli river	Jaintia hills	Brahmaputra
Myntdu river	Jaintia hills	Bangladesh (Surma)
Umngot river	Jaintia hills	Bangladesh (Surma)
ReservoirUmiam	Khasi hills	–
Thadlaskein lake	Jaintia hills	–

Plate I : Important Water Bodies of Khasi and Jaintia hills



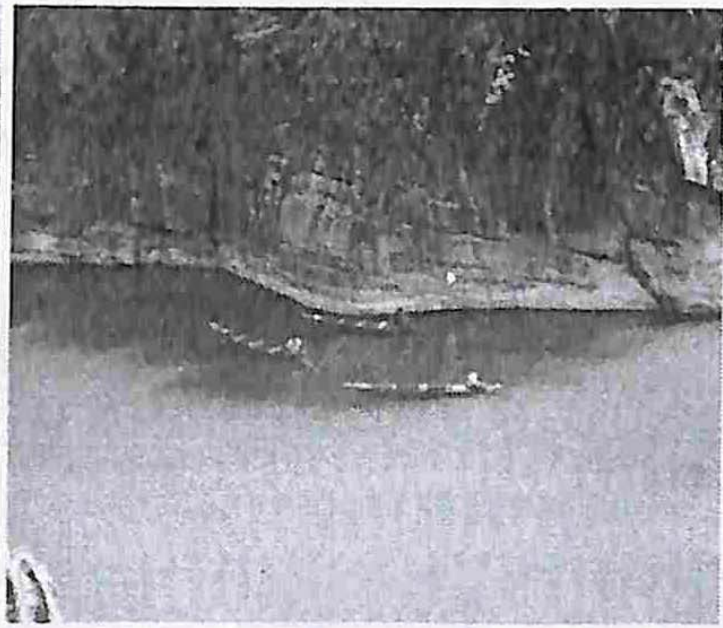
River Umrain (Khasi hills)



River Kynshi (Khasi hills)



Umiyam reservoir (Khasi hills)



River Umngot (Jaintia hills)



River Myntang (Jaintia hills)



Thadlaskein lake (Jaintia hills)

Plate II : Important Fishes of Khasi and Jaintia hills



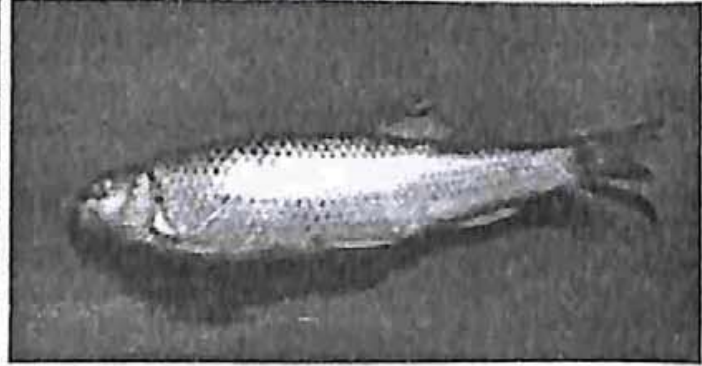
Devario aequipinnatus (Shalynnai)



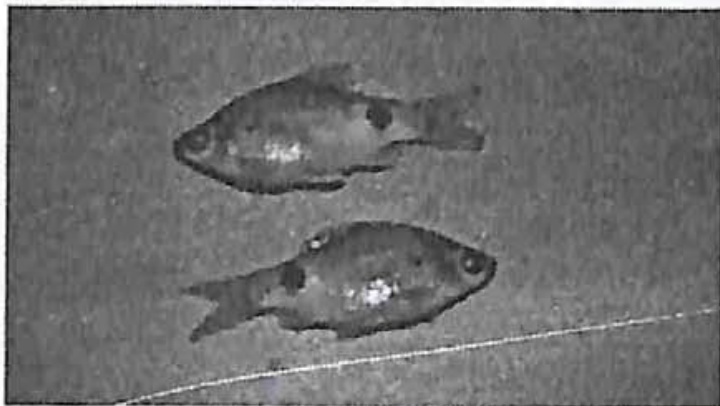
Danio dangila (Shalynnai)



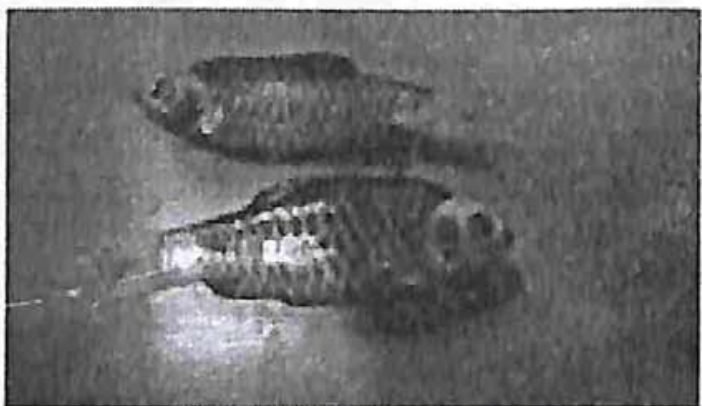
Garra lissorynchus (Doh sher)



Barilius bendelisis (Kha ilong)



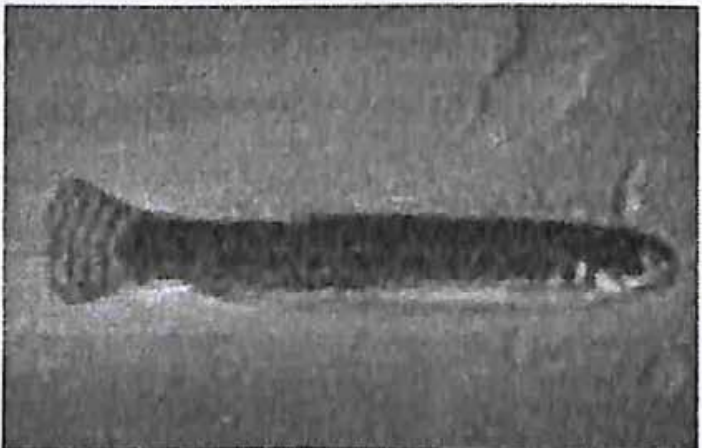
Puntius conchonioides (Shalynnai)



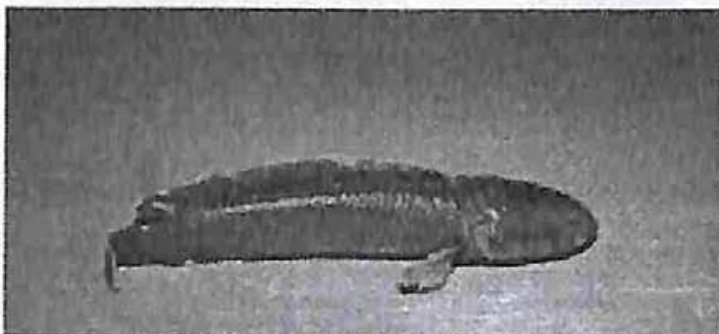
Puntius shalynius (Shalynnai)



Labeo calbasu (Kha iong)



Lepidocephalus guntea (Sher Syngkai)



Channa orientalis (Doh thli)



Channa punctatus (Doh thli)

1. GROUPING OF FISHING GEAR

A fishing gear is the device with which aquatic organisms are captured, whereas the fishing technique is how the gear is used or operated in the water bodies to catch fishes. Fishing gear also includes harvesting organisms when no particular gear (device) is involved (FAO). Furthermore, the same fishing gear can be used in different ways. A common way to classify fishing gears and methods is based on the principles of how the fish or other prey are captured and, to a lesser extent, on the gear construction. All fishing gears can be grouped under two categories viz. Passive gear and Active gear. Passive gears those devices that are not actively moved by human or machines while the fishes are being captured from the water bodies taking advantage of movement of fishes. The techniques involved known as Passive capture technique. In passive capture technique fishing gears are fixed in one place and fishes are entrapped, enmeshed or hooked because its movement. Common passive fishing gears are Trap, Hook and line, Gill net. On the other hand active gears are those devices that are actively moved by the fishers or machines to catch fishes. Active capture techniques involve the capture of fish or other aquatic animals by Falling gear (casting), Scoop net (scooping), Surrounding net (encircling), and Lifting net that are moved actively by fishers. Fishing gears are used to capture fishes in Khasi and Jaintia Hills has been grouped broadly under the following categories.

Table 3: Categorization of fishing gears of Khasi and Jaintia Hills

Categorization	General categorization (Active or Passive)	Principle
Hook and line	Both active and passive	Luring
Gill Net	Passive	Filtering
Traps	Passive	Entrapping
Falling gear	Active	Filtering
Lift net	Active	Filtering
Scoop net	Active	Filtering
Surrounding net	Active	Filtering
Other methods	Both active and passive	Filtering/Luring