Tribal Fisheries Wisdom: The Land of the Rising Sun

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ABSTRACT

Arunachal Pradesh, fondly called the "Land of the Rising Sun," is a treasure trove of indigenous knowledge systems. Its diverse tribes have developed unique, sustainable fishing techniques suited to fast-flowing hill streams and integrated agro-ecosystems. This article highlights traditional practices of tribes such as the Nocte, Galo, Adi, Apatani, and Wancho. These methods demonstrate deep ecological understanding, community participation, and minimal environmental impact. Documenting this wisdom is crucial for preserving cultural heritage and promoting sustainable fisheries in the face of modern challenges.

INTRODUCTION

Arunachal Pradesh, located in Northeast India, is blessed with numerous rivers, streams, and rich fish diversity. The state's indigenous tribes have evolved sophisticated fishing methods over generations, perfectly adapted to the challenging terrain of fast-flowing hill streams (Dutta *et al*., 2019; Hussain *et al*., 2016). Unlike capital-intensive modern fishing, these traditional practices are low-cost, eco-friendly, and community-driven. They rely on local materials like bamboo, stones, and plants, and demonstrate keen observation of fish behaviour, water flow, and seasonal changes. This article presents key tribal fishing techniques, their scientific basis, and their importance for sustainable resource management.

Major Indigenous Fishing Techniques

Longphongtook: Fish Aggregating Device of the Nocte Tribe

The Nocte tribe of Tirap district practices Longphongtook, an innovative fish aggregating method in the Namsang stream. Fishers construct circular structures of 2.5 to 2.75 m diameter using boulders and pebbles from the riverbed, stacked up to 1 m height. Larger boulders are placed in the centre to create shelter. This technique cleverly uses the thigmotropism behaviour of fishes — their tendency to seek physical contact with surfaces (Dutta *et al*., 2019). Constructed in winter when water levels recede, these structures are left for 35–45 days before harvesting with nets. The method primarily targets migratory hill stream fishes and is highly efficient in shallow waters with low current.

Lipum: Stone House Technique of Adi and Galo Tribes

In the Siang river basin, the Adi and Galo tribes construct Lipum (stone houses for fish). Stones are arranged in circles (1.5–2.3 m diameter, 0.7–1.2 m high) during November–December, creating a sheltered depression at the bottom where algae grow. This provides an ideal habitat for fishes during winter. During harvest, the structure is surrounded by nets (ishir) and traps (edir), stones are removed, and fishes are scooped out (Hussain *et al*., 2016). One person can build 3–4 Lipum structures daily, yielding 4–10 kg of fish. This sustainable practice supports subsistence needs while maintaining river ecosystems.

Bheta: Community Barrier Fishing by the Nocte Tribe

Bheta fishing is a collective effort by the Nocte community. During low water periods (September–October), groups of 8–10 men build temporary barriers across streams using boulder pillars, bamboo fences, and various traps. Migratory cyprinids such as *Tor putitora* are trapped as they try to overcome the obstruction (Dutta & Dutta, 2013). The method strengthens social bonds and effectively utilises fish migratory behaviour.

Integrated Paddy-Fish Culture of the Apatani Tribe

The Apatani tribe of Ziro Valley has perfected an integrated rice-fish farming system known as Aji-ngyii. Fish such as Channa sp. and Puntius sp. thrive naturally in terraced paddy fields supported by an efficient water management system using bamboo pipes. This system recycles nutrients, controls pests, and provides dual benefits of rice and fish protein. It exemplifies efficient land and water use in a high-density valley and has been recognised for its ecological sustainability (Nimachow *et al*., 2010).

Other Practices among Galo and Wancho Tribes

The Galo tribe employs diverse gears including gill nets (Machua jal), cast nets (Esap), and indigenous traps like Edir, Raju, and Takom (Karga *et al*., 2020). The Wancho tribe uses a unique community method where they make pool water muddy to reduce oxygen levels, forcing fishes to the surface for easy capture using cast nets from bamboo rafts (Dutta & Bhattacharjya, 2008).

Table 1: Selected Traditional Fishing Techniques in Arunachal Pradesh

Technique	Tribe (s)	Key Principle	Season	Sustainability Features
Longphongtook	Nocte	Stone shelter & thigmotropism	Winter	Low impact aggregation
Lipum	Adi & Galo	Artificial stone habitat	Winter	Habitat creation, subsistence yield
Bheta	Nocte	Barrier & traps	Post-monsoon	Community participation
Paddy-Fish Culture	Apatani	Integrated agro-aquaculture	Year-round	Nutrient recycling & land efficiency
Muddy Water Fishing	Wancho	Deoxygenation of water	Festival time	Effective in pools with minimal gear

Cultural and Ecological Significance

These techniques reflect profound traditional ecological knowledge (TEK) and promote sustainable use of resources. They minimise by-catch, use renewable materials, and are often practised seasonally to allow fish stocks to recover. Many practices also have cultural and medicinal dimensions, with certain fish species used in traditional healing (Khesoh *et al*., 2026). However, modern destructive methods like poisoning and electric fishing pose serious threats to these traditions and biodiversity.

CONCLUSION

The tribal fisheries wisdom of Arunachal Pradesh offers valuable lessons in sustainability, ingenuity, and harmonious living with nature. From stone-based fish shelters to integrated farming systems, these practices provide models for eco-friendly fisheries. Preserving this indigenous knowledge through documentation, community involvement, and supportive policies is essential. As the world seeks sustainable solutions, the wisdom from the "Land of the Rising Sun" can guide future conservation and food security efforts.

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