



Traditional honey harvesting by the *Pnar* community of South Assam, India

Biswajyoti Bikomiya Deori¹, Panna Deb^{1,2*}, Hilloljyoti Singha^{1,2} and Manabendra Ray Choudhury¹

¹Department of Ecology and Environmental Science, Assam University, Silchar-788011, Assam, India

²Centre for Biodiversity and Natural Resource Conservation, Assam University, Sichaer-788011, Assam, India

*E-mail: pannadeb@rediffmail.com

Abstract

Honey obtained from the bee hives is a sweet food and has a great medicinal value. Honey collected from nature by the ethnic communities is an important source of nutrition and also contribute to their income generation. Honey collection from the wild is especially done by the indigenous tribe and forest dwellers. The *Pnar* community living in Barak Valley, South Assam is also engaged in the collection of honey from the forest, especially during the spring season. The process starts with the gathering of information, followed by the preparation for the activity and subsequently extraction of honey from the bee hive. The technique used by the *Pnar* community is a challenging one as it involves harvesting of honey from lofty trees in forest with traditionally made gears like bamboo basket, smoke torch and a one bamboo ladder. The indigenous ways involves lining the bamboo basket with leaves for the collection of honey, using smoke to frighten the bee and storage of honey in the bamboo pipes. The present study exhibits the rich traditional knowledge that has paved the way for a sustainable livelihood since long and at the same time provides income generation opportunity for the community.

Key words : Barak Valley, Bee, Ethnic community, Traditional knowledge

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Introduction

Traditional knowledge (TK) is the wisdom that is passed on from one generation to

another and it includes the sustainable use of natural resources from its surroundings (Raut *et al.*, 2012). With changing socio-

economic conditions, now these wisdoms are getting eroded day by day. All over the world there has been an increasing realization among the scientific community about the human-nature interaction (Upadhaya *et al.*, 2016). World health organization estimated that almost 80% of world's population are still dependent upon the traditional usage of natural resources for health care (Upadhaya *et al.*, 2016). An estimated 50 million economically marginalized forest dwellers in India harvest large quantities of NTFPs for their subsistence as well as for trade. Non-timber forest products (NTFPs) are the materials from both plant or animal origin, which is derived from the forest and allied land uses for daily use as well as for income generation (Dattagupta *et al.*, 2014).

Honey is a delicacy which also has substantial medicinal properties; thus, it has a great demand throughout the year especially for its Ayurvedic medical utilities (Demps *et al.*, 2012). In India, honey is obtained mainly from *Apis dorsata*, *A. florea*, *A. cerana*, and *A. mellifera*. Among these, *A. cerana* and *A. mellifera* are cultivated by the people for honey production, while *A. dorsata* is a wild rock bee and has still not been domesticated. The collection of honey from the forested landscape is prevalent mostly among the tribal communities and forest dwellers viz. Jenu Kuruba of Karnataka, Kurumbas and the Irulas of Nilgiris and the Mowals, an indigenous community of Sundarban (Demps *et al.*, 2012).

Pnar or Jaintia community are the subpopulations of Khasi tribes. They are of mongoloid race and speak Mon-Khmer dialect of an Austric language (Tyagi, 2000). *Pnar* are mostly concentrated in the Jaintia Hills of Meghalaya with a scattered population in surrounding foothill regions of Ca-

char, Karimganj and Hailakandi district of Assam (Tyagi, 2000; Dattagupta *et al.*, 2010; Nath *et al.*, 2011; Dattagupta and Gupta, 2014). They are mainly agriculturist and known best for their betel leaf cultivation or *paan jhum* cultivation in the area (Tyagi, 2000; Dattagupta *et al.*, 2010). They possess high indigenous knowledge system in the utilization of the rich plant diversity around them for their daily needs (Samati and Begum, 2006). The *Pnar* people mainly engage themselves working in the *Paan jhum* fields throughout the year and also collect minor forest products and wild edible fruits like bamboo, mushroom, firewood and honey from the surrounding forest. Though the collection of honey from the wild is a challenging task, the *Pnar* people with their indigenous ways collect honey efficiently. In this paper, we have documented the traditional techniques opted by the *Pnar* communities for the collection of honey from the forest.

Methods

Study area

The present study has been carried out in the villages of Marwacherra Part I and II (N24°58'619" E92°56'837", 30 m asl); Bombaithol (25°03'589"N 092°38'005"E, 49 m asl); Kayang (25°05'101"N 92°47'47.6"E, 109 m asl); Nuncheeri (25°01'705"N 092°42'395"E, 365 m asl); Durbintilla (24°01'47.4"N 92°46'32.9"E, 309 m asl); Kochukhal (25°02'551"N 092°41'201"E, 332 m asl); Indranagar (24°59'12.9"N 092°51'55.4"E, 49 m asl) and Durgacherra (25°01'13.7"N 92°46'26.9"E, 109 m asl) located near the Barail Wildlife Sanctuary (BWLS), Cachar district in South Assam (Fig. 1). The BWLS is situated in the northern part of the Cachar district of Assam and lies along the

foot hills of Barail Hill Range. The villages investigated are inhabited by the *Pnar* community. The field observations were made from December 2013 to March 2015. The forest types of the study area can be broadly classified under 1BC3 Cachar Tropical Wet Evergreen and 2BC2 Cachar Tropical Semi-Evergreen forests (Champion and Seth, 1968). The area has a typical subtropical monsoon climate (Anonymous, 2011).

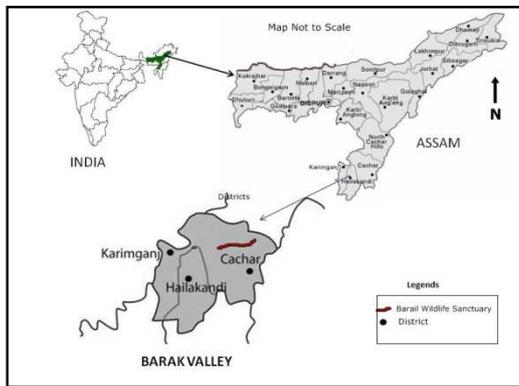


Figure 1. Map of the study area.

Data collection

Primary data were collected through the household survey, focused group discussion, personal observation and participatory rural appraisal (Cotton, 1996). We tried to document the technique and procedures opted for the collection of honey from the forest. Field visits were made during honey collection with the local people. The plants used in the collection of honey were collected and later identified by consulting herbaria of Botanical Survey of India, Eastern Circle, Shillong, Meghalaya. The honey bees were identified by consulting with experts from Assam Agriculture University, Jorhat, Assam. The headman and the people interviewed were appraised about the purpose of the study.

Results and discussion

Honey bee types

Pnar people call the honey bee as *Umngap*. We found four types of honey bees to be occurring in the study area. Depending upon the habitat and size of honey bee, the *Pnar* people categorised them into four main types:

- i. *Ngap-Kwep* (Small bee, *Apis florea*): These are wild in nature and choose shaded place among bushes and trees for making their hive. The quantity of honey yield is very little ranging about 200-250g per colony (Rahman and Deka, 2008).
- ii. *Ngap-lawe* (Large bee, Rock bee, *Apis dorsata*): This species is larger in size than all other bee species. It builds a single comb fix to a tree branch or under the roof of rock. Bees cover the comb like a curtain and a colony can yield upto 50 kg of honey. The bee migrates long distances from plains to hills to avoid dry dearth period and unfavourable weather condition (Rahman and Deka, 2008).
- iii. *Ngap-rapiang* (Medium size, Indian bee, *Apis cerana*): It is a domesticated variety of honey bee and available throughout the continent. There are different races of *Apis cerana* found in India. *Apis ceranahimalaya*, a medium sized honey bee is found in the Northeastern region of the country. It makes hive under the tree hole, rock hole and even under the ground. The honey yield varies from 12 to 15 kg/hive/annum (Rahman and Deka, 2008).
- iv. *Ngaosnon* (Medium size, Western bee, *Apis mellifera*): This species of bee is most widely distributed and commercially reared honeybee species in the

world. The average honey production from this species is between 30-40 kg/hive/annum (Rahman and Deka, 2008).

Techniques of honey extraction

Honey collection is a challenging task as there is a risk of attacks by the bee. Honey collection technique has been passed down from one generation to another. They have been following the age old tradition even in the absence of written records and formal instruction. The present paper describes the technique of honey collection from the hives of *Apis dorsata* (Ngap-lawe). The Pnar community mainly collects the honey during the month of March-May (spring season) each year. The process of the honey collection begins with the gathering of information followed by time fixation for extraction, making arrangements for the required tools and utensils and finally cutting the bee hive and filtration. The process is discussed in detail below:

Gathering information: They usually gather information about the beehive during their work in the betel leaf cultivation field. Whenever they encounter bees flying nearby they focus on a particular bee and follow its trail. Once the hive is located and identified, they fix the plan for honey collection based on size, position, and location of the hive. The honey bee usually selects the big trees with profuse branching and spreading crown such as *Mangifera sylvatica* L., *Artocarpus chaplasha* Roxb, *Spondias pinnata* (L.f.) Kurz, *Chrysophyllum roxburg-*

hii G.Don, *Pterospermum acerifolium* (L.) Willd etc.

Fixing time to extract the honey: There is usually no fixed time for honey collection, but there is a general belief that during the full moon, it produces more honey as compared to the other time. Depending upon the location, the size of the hive and height at which the hive is present in the tree, they fix a time to cut the comb. They mostly collect honey during the daytime, but sometimes, collection is done during the night also when the hive is located very high in the tree or in some precarious positions. Usually, honey is collected individually but in case of bigger hives, two to four persons are involved.

Tools required for honey collection: The Pnar people mainly use the knife (*Waip*) in the honey collection. Though, there is no special knife for cutting the comb, but when the hive is in the tree hole, they use a special kind of knife called *Waip-erdet* (*Waip* means knife and *er-det* under the hole) (Fig. 2A). For collecting honey from the tree they use a bamboo basket called *khara* (Figs. 2B-C). The size of the *khara* is around 1.5feet. They also use a special kind of ladder *Jinkein* made of single bamboo (Fig. 2D) to climb tall trees without branches. The *Jinkein* is very characteristic to the collection of honey from very tall and robust trees with less branching.

Procedure for cutting the comb: They use smoke and chase technique for cutting the comb. The group members distribute the work among themselves. They first prepare



Figure 2. Honey collection procedure by *Pnar* community: A) Knife used during honey collection, B) *Khara* lined with *Phrynium* leaves, C) honey collected in a *Khara*, D) *Jinkein* used for climbing trees, E) Preparation of smoke torch, F) preparation of torch using *Alpinia* leaves, G) Man climbing tree with smoke torch, H) Filtration of honey.

a bamboo torch with dry and fresh leaves of *Latar* (*Phrynium punenurve* (Gaertn.) Burt) to produce smoke (Figs. 2E-F). They then arrange the *Phrynium* leaves (*Sla-la-met*) in the *khara* to collect the honey. They place *Phrynium* leaves inside the *Khara* in such a manner that the honey does not come out of it (Fig. 2C).

The person carrying the bamboo torch always covers his face with a piece of cloth and hold the smoking torch while cutting the comb in order to escape from being stung by the bees (Fig. 2G). With the fumes of the torch, the honey bees generally flee away leaving the hive. The bee hives are collected during that period very fast. They will leave some portion of the hive on the tree so that the bee can again rebuild its hive. As soon as the comb is cut, the collected hives are immediately placed in the basket (*Khara*). The persons collecting the honey will be carrying the bamboo torch for some time even after climbing down from tree to protect himself from the attack of furious bees who had been displaced from their hives. In the event of being stung by the bees, honey is immediately applied in the affected area to get relief from the pain.

Filtration and preservation: The freshly collected honey is a mixture of wax and sometimes the young bee from the hive are also found. They would then filter the impure honey for preservation. They filter it with a sieve made from bamboo and preserve the honey in a bamboo or a glass jar (Fig. 2H). After filtration, if the wax is left in high amount, they use it to prepare candle.

Tropical forests provide a large number of products such as fruit, seed, resin, medicine, wildlife meat and by-products

defined as non-timber forest products (NTFPs). NTFP extraction can contribute positively to sustainable forest management as it provides tangible economic benefits to poor rural communities whilst simultaneously conserving biodiversity (Peters, 1989; Kaushal and Melkani, 2005; Mahapatra *et al.*, 2005). Since very early times the traditional societies have a sound traditional knowledge which can be attributed to their rich experience and close interaction with the natural ecosystem. The knowledge is neatly woven into their culture and has percolated from one generation to another and played a significant role in shaping their cultural identity. The traditional communities have always depended on natural resources and have always been sustainable in their approach to handle it. Honey collection by the *Pnar* community of Barak Valley, located in the southern part of Assam provides a similar case of sustainable use of forest resources in the area. Though they collect the honey for personal consumption, yet the surplus is often sold and is a good source of income generation. Honey has tremendous socio-economic value in terms of its use in rituals, social, and health benefits. The market price of honey varies from Rs. 300-400 per litre in the local markets. Honey collection is one of the favourite hobbies and earning source for the community. The knowledge pertaining to honey collection signifies the rich traditional knowledge of the ethnic community.

The honey collection from wild has been a traditional practice maintained by different tribes and communities in India and neighbouring countries (Zvelebil, 1979; Demps *et al.*, 2012; Sohela, 2013; Singh, 2014). A study in Nagaland reveals that among the 150 bee keepers, 86% have learnt the process of honey harvesting tradi-

tionally (Singh, 2014). In the Nilgiri hills, gathering honey from the wild has been the regular occupation of the Kurumbas and the Irulas tribes (Zvelebil, 1979). Honey collecting has been and still is an important economic and ritualistic activity for the Jenu Kuruba tribe in Karnataka, India. The practice is so popular that the tribe is named after Jenu which means honey in the local dialect (Demps *et al.*, 2012). Like Jenu Kuruba in India, Mowals, one of the indigenous communities of Sundarban, Bangladesh is engaged in the honey collection (Sohela, 2013).

The 'smoke and chase' technique is a common practice in the subcontinent; however, there are differences in application depending on the local conditions and availability of natural resources. In Nagaland, India, the honey collector would eat garlic, ginger and other edible fruits from the forest and blow the hive to tame the bees (Singh, 2014). In most of the cases, the main collector carries the torch to smoke, but Kurumbas adopt a different technique; a person smokes below the hive, while the main collector descends down from steep rock by a ladder made up of wild creeper (Zvelebil, 1979). In Nilgiris, they collect honey from bee hive hanging on huge rocks; hence, they use a rope ladder to swing to reach the hive. In Sundarban, Bangladesh, the leader climbs up the tree to reach the beehive, while another person holds the long stick to make smoke from the ground (Sohela, 2013). However, in the case of *Pnar* community of Barak valley, Assam, the honey collector himself climbs the tree with a bamboo torch to smoke and cut the comb. He does almost the entire process by himself, collecting the cut pieces of comb in a bamboo basket (*Khara*). The Kurumbas and the Irulas, on

the other hand used bamboo pipes or empty gourds as receptacles (Zvelebil, 1979) while Jenu Kuruba tribe use basket lined with leaves (Demps *et al.*, 2012), similar to the *khara* used by the *Pnar* community in Barak Valley, Assam.

The honey harvesting in the forest is a risky job, and therefore it is a group activity: three people in Kurummba (Zvelebil, 1979), 3–8 are the most common in Jenu Kuruba (Demps *et al.*, 2012) and 5-10 people in Mowal community (Sohela, 2013) form the group. The division of labour is practiced among the group members. The Mowal community of Bangladesh adopts a technique similar to that of the *Pnar* community in the present study wherein they too locate a beehive by following the bee (Sohela, 2013). We did not see any rituals being performed by the *Pnar* community before or during honey harvesting; however, the Kurumba and Irula collectors perform certain rituals one week before the collection (Zvelebil, 1979). Women are forbidden to touch anything used in honey-gathering operations. The old generation of Jenu Kuruba tribe sings a honey collecting song (Demps *et al.*, 2012). They also use a bamboo ladder, but the *Jinkein* used by the *Pnar* community is very different; it is made up of a single bamboo, with steps made in it by inserting small bamboos into the long bamboo pole.

The *Pnar* people restrict the collection of honey only to the spring season of the year which coincides with the availability of flowers everywhere and the honey production is also recorded high during that period. Jenu Kuruba tribe from Karnataka are found to collect honey during June (Demps *et al.*, 2012). Thus, by collecting the honey during this time they ensure that they do not disturb the process as they can

start to build fresh hives quickly after getting dislodged from the present one. Moreover, the practice of not destroying the hive completely and leaving some portion of it after honey collection to help the bees rebuild the hives once more also signifies the sustainable approach followed the communities. The community should be encouraged to take honey bee cultivation in a large way to reap more benefits out of apiculture.

Given the vital links to the basic survival and culture of many rural communities, the sustainable management of NTFPs are widely considered to be a good twinning strategy to biodiversity conservation. Sustainable management and value chain development of NTFPs can provide holistic contributions, particularly better income for rural forest resource-dependent communities, biodiversity conservation and capturing market niches for the local communities. The potential of NTFPs has not been fully realized and harnessed in the area, either for the development of the forest or for the betterment of the community. Extensive research on honey as a product is needed, to evaluate the feasibility of insitu cultivation of NTFP in the area so that maximum benefit could be reaped from the available resources, following the goal of sustainable development.

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