

## Short Communication

# Wild Rats: A Traditional Delicacy and Socio-Cultural Heritage of Trapping Technique in Siang Valley of Arunachal Pradesh, India

Isum Lollen, Ruksar Rukbo, Upasa Gowala, Indira Sarma and Hirendra Nath Sarma\*

Department of Zoology (Center with Potential for Excellence in Biodiversity),  
Rajiv Gandhi University, Rono Hills, Itanagar – 791 112, Arunachal Pradesh, India

\*Corresponding author : hirendra.sarma@rgu.ac.in

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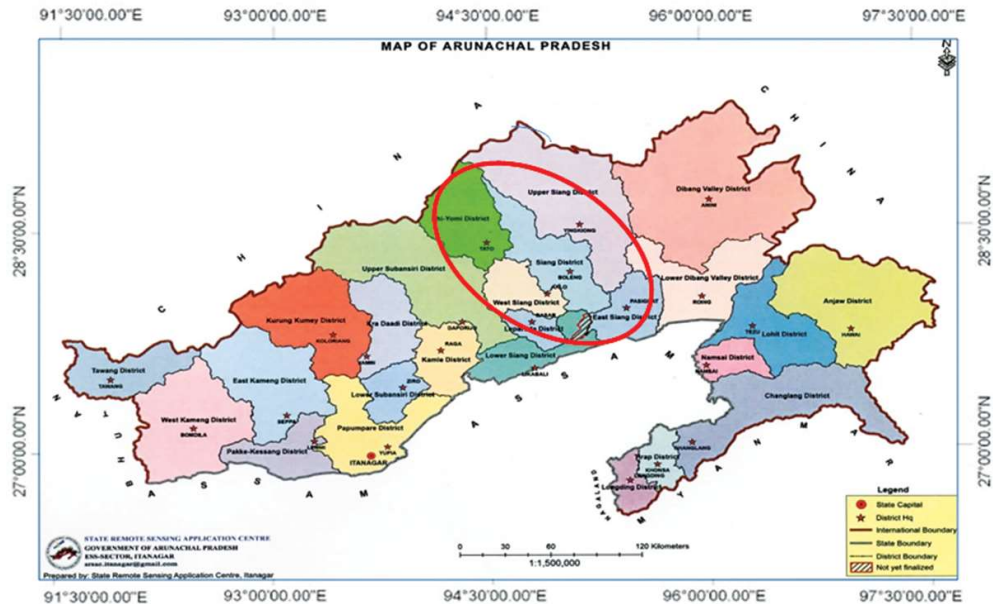
**Abstract:** Arunachal Pradesh is one of the frontier states of north eastern region of India. The state situated on the eastern Himalayan region is inhabited by more than one hundred different tribal communities. The Siang valley people are one of the oldest civilizations of the state comprising two major tribal communities namely “Adi” and “Galo”. They are rich in traditional and indigenous knowledge on traditional food, agricultural practice, trapping and hunting techniques of wild animals. Among the tribal communities tradition prevail on trapping of wild rats in forest and agricultural fields. The trapped wild rats are most favoured delicacy and occupy a special socio-cultural status among these tribal populations. The present study has been carried out among the Adi and Galo tribal community of Siang valley. Data have been collected through first hand information from the indigenous tribal community visiting villages in Aalo of West Siang, Basar in Lepa Rada and Pasighat in East Siang district. These communities use different trapping technique for wild rats in wild habitat. Rat meat has been considered as prestigious delicacy and very often the dried animals are offered to dignitaries as gift. The indigenous technique and process of preparation of wild rat meat needs to be documented. Scientific use of the data could find method for pest control as well as new food source for the communities.

**Key words:** Adi, Galo, Siang valley, trapping technique, wild rat

## Introduction

The greater Siang valley of Arunachal Pradesh is predominantly inhabited by Adi and Galo tribal communities living on hill spur, valleys, plateaus and river banks in their age old villages. The Siang valley is known for treacherous mountain on both bank of mighty Siang River with extreme diversity of flora and fauna. Among these communities tradition of trapping rat and squirrel in wild habitat of agricultural land and forest prevails as social cultural heritage. Rat meat is a popular food item in few tribal communities and is accepted as a popular source of protein. It has been reported that, more than 71 genera and 89 species of rodents

have been consumed by peoples in tropical world (Oyarekua *et al.*, 2010). Many tribal communities across the world accepted rodents as a popular source of protein. Hunting or trapping of rats for food is still a common practice among Galo and Adi tribes of greater Siang valley covering present day's Siang, Upper Siang, West Siang, Lower Siang and East Siang districts of Arunachal Pradesh. The wild edible rat such as *Rattus nitidus*, *Rattus tanzumi*, *Bandicota indica* Bechstein etc. are abundant in Siang valley. They are mostly found on agriculture field, mountainous zone, river bank and the areas with availability of food source. Wild rats choose their habitat



**Fig. 1.** Map of Arunachal Pradesh. The study area shown within the red circle in Siang valley. Aalo, Basar and Pashighat are three study areas situated in three different districts of Siang valley. The red circle shows the study areas in different districts of Siang valley. Original Photo Sources. Government of Arunachal Pradesh, State Remote Sensing Department.

based on the availability of shelter, food and water (Kajdacsi *et al.*, 2013). Studies on nutritional value of rodents reveal that few species of rodents are most promising commercial commodities contributing from 20% to 90% of the total animal protein. Rat is a delicacy among Adi tribes and also plays a role in their matrimonial system. In Adi tribe there is a festival called “Unying-Aran” during which enormous numbers of animals mostly wild rats are procured. Two wild rats species known as “Keti” and “Bungko” (both are local name in Adi language) are found in wild habitat of Siang valley. Rodents contribute significant losses to stored food, product like grains, tubers and other edibles (Sarangi *et al.*, 2009). They also destroy the crops on the field like paddy, pineapple, maize, banana, oranges and other vegetable and fruit crops.

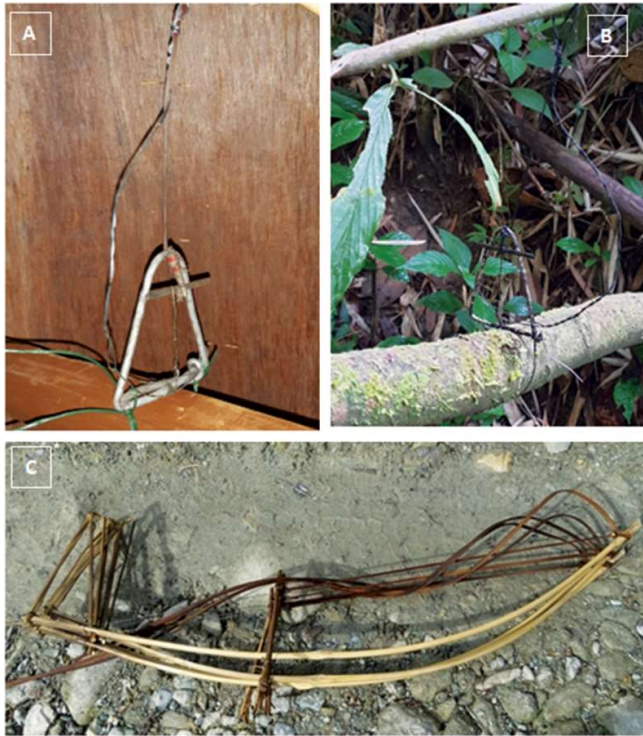
Modern mechanical trapping techniques of rats for prevention of significant loss in agricultural product as pests as well as vectors for various dreaded disease has been reported (Rao *et al.*, 2015). Over and above, the traditional method of rat trapping of Siang valley is very sophisticated, simple, precise and safest made out of non toxic substances, locally available plant materials like bamboo and cane string.

These traditional methods originated from Siang valley to hunt or trap rats are yet to be documented in scientific literature.

The present report documents the traditional trap and indigenous knowledge behind the trapping technique of Adi and Galo community. Moreover, scientific technological development and application of these techniques could culminate method of pest control and development of traditional delicacies.

### Study area and Data Collection

The present study has been carried out in Aalo circle (Pobdi village) of West-Siang District, Basar in Lepa Rada district and Pasighat in East Siang district of Siang valley of Arunachal Pradesh (Fig. 1). Data have been collected through first hand information from indigenous tribal communities visiting fields and villages of the study areas. The rats found around human settlement are usually not eaten. People trap edible rats at forest and farmlands away from human settlements. About 4-5 varieties of rats found in this region are edible. However, a scientific documentation of all these different species of the wild rats is yet to be done.



**Fig. 2.** Indigenous traps used for animal trapping by Adi and Galo community of Siang valley. **A.** A **Ooju Gonam/Tennam trap**. **B.** The trap **Ooju Gonam/Tennam** placed on the way of wild rat movement . **C.** “**Etku**” the traditional trap used by Adi community.



**Fig. 3.** **A.** Rat trapped in Ooju Gonam/Tennam. Each trap can catch one animal at a time. The trap can be reused after the collection. **B.** Wild rats collected from traps from wild habitat.

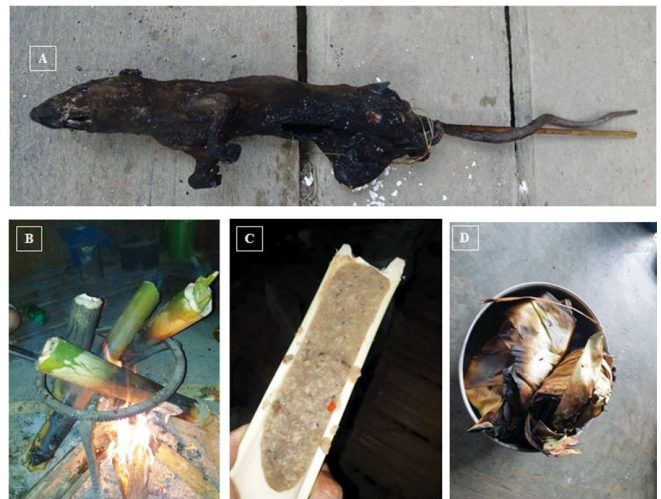
**Results**

**Traps and trapping method**

The traps and trapping techniques used by the Adi and Galo people of Siang valley are as follows:



**Fig. 4:** A photograph of using **Middu Huunam** or **Medung** by local people of Siang valley. Rat hole is smoked by burning rice husk inside to bring out the hiding rats out of the hole.



**Fig. 5.** **A.** the dried rat stored for food as and when necessary. **B.** Preparing the rat meat putting inside a bamboo node and cooking on fire. **C.** The cooked rat meat in bamboo. **D.** Roasted rat meat wrapped by **Ekkam/Oko** leaf.

**1. Ooju Gonam/Tennam**

This method is usually performed when there is availability of food for rats in the forest areas i.e. from June-December. This trap is generally placed on a bamboo bridge or bamboo log over irrigation channel and water streams from where the rats come in the paddy field (**Fig. 2 A & B**). The materials required in this method are Bamboo, iron wire (3mm), fine rope and thread. About 30 to 300 such wooden sticks are laid over flowing water at an interval or distance of about 5m from each other. Rats use this stick as their route to paddy field across the flowing water for some time and later will be

familiar of that route. Ooju Gonam or Tennam is a triangular trap with a thread triggered by rat movement which is pulled by a slender stick. The mechanism is activated when the rat is trapped with the thread and pulled by the slender stick (**Fig. 3 A & B**). Traps are set on afternoon and kept overnight, as the wild rats are nocturnal and active during night. During the day of new moon and a night before full moon the traps are revisited during night time. They believe there is a secret of maximum trap in these two days. Trapping of rat continues for several months. Rats are the primary targets but sometime squirrel, birds and unwanted animals like lizard, frogs and snakes were also caught in the trap.

## 2. Etku

Etku is a similar trap made up of bamboo and cane string (**Fig. 2 C**). In recent time, tensile plastic strings are also used. The principle and mechanism of the Etku is similar to that of Ooju Gonam/Tennam. Etku is mainly placed in multiple numbers in different possible movement routes of wild rats.

## 3. Middu Huunam or Medung

This method of rat trapping is common in both Galo and Adi tribe. Middu Huunam is called by Galo tribe whereas, Medung is called by Adi tribe (**Fig. 4**). This method is performed during winter, when rats rest under their holes and less snake activities are observed. Middu Huunam or Medung is usually carried out at farmland or paddy fields. Under this method rice husk or rice bran are stuffed inside a young bamboo with size about mouth opening. Medung is basically a bamboo smoke pipe with open small hole in one side. Husks are stuffed upto 3 inches below the opening and husks are ignited with a charcoals to produce smoke. The smoke is then blown into the rat burrow and makes the rat or rats come out lest they die of smoke suffocation. Burrowing rats often have several exits and about 3 or 4 peoples are compulsorily required because some rats often escapes through other exits and usually rats end up dying inside the hole. Later they are recovered by digging the hole. Once the hole is excavated the same cannot be used for hunt rats again.

## 4. Buuye Yenam

This method is performed on farmlands and paddy fields during winter, when there is no snake activities observed. Favourable timing is early in the morning when there is winter rain and the rat activities become slow due to low temperature. To perform this technique, requires at least 6 peoples. Several peoples surrounds a selected area where rat movement have seen and each person using a machete, grass-cutter or sticks cuts the grasses slowly by surrounding the area. some grass areas are left uncut at center and now everyone get ready to catch the rats with bare hand. A person slowly cuts the remaining uncut grass at the centre, now at this time the rats tries to escape and are caught by peoples by hands. Non-burrowing rodent species like *M. Musculus* and *R. Rattus* are commonly caught by this method.

## Preservation and method of preparation of wild rat meat

The trapped rats are consumed in roasted, cooked or smoked form by the people of Siang valley. They have various method of cooking rat meat. They preserve the rats for longer period for emergency or to feed an unexpected guest. They usually serves roasted or smoked rat by cutting the tails and legs and turning it into a stew as quickly as possible (**Fig. 5 A**). They cooked rat stew in raw bamboo pipe by inserting the bamboo in fire (**Fig. 5 B & C**). Another famous technique is to wrap the rat by leaf of *Phyrinium pubinerve*, locally known as Ekkam/Ok, and placed under fire pit (locally called Imik/Miram). It is covered by some metallic plate and some charcoal over the metallic plate and then put in fire for cooking (**Fig. 5 D**). Throughout the Siang valley the rats are very famous as delicacy and have immense traditional values. The practice of gift exchange is also a ritual in Adi tribe. Gifting rats to their relatives, or families with “Apong” (rice beer), strengthens relationship. In Adi community, there is a tradition of gifting rat for marriage proposal by groom’s to Bride’s family, without this tradition Groom’s family will not recognize the bride.

## Discussions

Practice of eating wild animals has been recorded in different countries of the world. The giant rat is one of the popular

rodents consumed in Nigeria. The analysis of nutrient composition of adult male African giant rat (*Cricetomys gambianus*) weighing up to 1.3 kg had excess of iron than recommended values. The brain had the highest levels of phospholipids, moisture and phosphorus. The limb muscle appeared to be more desirable in terms of nutritive value (Oyarekua et al., 2010). In India the consumption of rat is not seen in commonplace. It held a religious belief as there is also a place in temple dedicated to them. But in the northeastern Indian states like Nagaland and Arunachal Pradesh wild rats are used in the various occasions as offerings and for consumption. Traditionally there is no written records of why the people of this part of India consumes rats so it is not possible to state exactly since when the rats have been part of the diet of the local people. As rats are considered to be filthy, they are avoided and killed as the animal acts as vector for transmitting diseases also damages crops, vegetables etc. However the tribes Adi and Galo of the Siang valley of Arunachal Pradesh have high appreciation of rats as meat source. As seen in the survey with the local people the rats are presented in the matrimonial rituals of the indigenous tribes and also in the festivals so it shows that they are highly valued offerings/presents in the traditional systems of beliefs (Meyer-Rochow et al., 2015). Moreover the village dwellers go for recreational hunting of the wild rats and this makes the community system strong and this provides a way for preserving the traditional knowledge system. In recent times the people dwelling in the towns and cities of the state, usually neither have time for hunting nor traditional hunting knowledge for rats. They pay handsome money to buy the rats for consumption and for traditional values. The demands of rats are very high these days and the villagers earn good amount of money out of that by selling them in the markets.

In these regions outbreak of wild rats in the forest is also seen during the bamboo flowering season. Rodent migrating towards the gregarious bamboo flowering areas can trigger a consequences far more serious than crop destruction, an increase in the frequency of transmission of rodent-borne pathogens to human and animals (Biswas

et al., 2016). Apart from destruction of crops, rats may serve as reservoirs of rat associated Zoonoses transmitted to human through bites. Urban Norway rats (*Rattus norvegicus*) can carry MRSA (Methicillin resistant *Staphylococcus aureus*) (Lee et al., 2018). The flowering of bamboo produces large quantities of seeds, resulting in a population explosion of rats in that. In this season the villagers acquire the rats using their own methods of controlling the rat population during the outbreak period (Thakur et al., 2013). Trapping rat is an old age method which is ecologically sound and environment friendly in Siang valley. Indigenous traps are found more efficient than modern traps as locally available materials reduce the cost of indigenous traps and thus these are relatively cheaper. Efficiency of indigenous traps might be due to raw materials used i.e. bamboo sticks. Because of their natural color these traps camouflage with natural vegetation, hence could not be easily recognized by rodents under field conditions or in bamboo grooves, which ultimately enhance their trapping efficiency. Usually traps are set in day time left overnight and revisited the next morning to remove any rats caught in them and to check if traps get damaged or caught unwanted animals. Depending on the numbers of traps set, on a good day, defined by the catch some 30 rats may be caught by a single hunter. The traps are set based on external variability of rat species found in the particular area. So in this season a villager can earn more amount of money by selling these rats in the market.

Though the IUCN has listed the wild edible rats in “least concern” of the conservation status, the process of hunting or capturing the rats is a tedious job. As there is high demand in the tribal communities of erstwhile Siang district and also in other countries like Africa etc. captive breeding of the species could be a easy source of earning for the villagers depending on cultivation and agriculture. Food preparing and packaging facilities can be developed in the region to facilitate the easy procurement of the products and also to provide longevity to the food items. Thus, these wild edible rats could be a potential target to develop business for the local indigenous tribal communities for food security and economic empowerment.

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## Reference

- Biswas S, Kumar S and Mittal V. 2016.** A Note on Rodent Migration Following Gregarious Bamboo Flowering In North Eastern Hill Region with particular reference to Mizoram(India) and its consequences. The Journal of communicable diseases. 48(3): 1-12.
- Himsworth, C G, Miller, R R, Montoya, V, Hoang, L, Romney, M G, Al Rawahi, G N, Kerr T, Jardine CM, Patrick DM, Tang P and Weese JS. 2014.** Carriage of methicillin resistant *Staphylococcus aureus* by wild urban Norway rats (*Rattus norvegicus*). PLoS ONE. 9(2): e87983-e87989.
- Kajdacsí B, Federico C, Chaz H, Fleur P, Julia B, Gorete R, Helena F, Mitermeyer G. and Adalgisa C. 2013.** Urban population genetics of slum-dwelling rats (*Rattus norvegicus*) in Salvador, Brazil. Mol Ecol. 22(20): 5056-5070.
- Lee MJ, Byers KA, Donovan CM, Zabek E, Stephen C, Patrick DM and Himsworth CG. 2018.** Methicillin resistant *Staphylococcus aureus* in urban Norway rat (*Rattus norvegicus*) populations: Epidemiology and the impacts of kill trapping, 2018, Zoonoses Public Health. 00:1-6.
- Oyarekua MA and Ketiku AO. 2010.** The Nutrient Composition of the African Rat. Adv. J. Food Sci. Technol. 2(6): 318-324.
- Rao AMK M and Sakthivel P. 2015.** Role of rodents in poultry environs and their management. J Dairy Vet Anim Res. 2(3): 107-114.
- Sarangi SK, Singh R and Singh KA. 2009 .** Indigenous method of rat proof grain storage by *Adi tribe* of Arunachal Pradesh. Indian Journal of traditional Knowledge. 8(2): 230-233.
- Thakur NSA, Firake DM and Kumar D. 2013.** Indigenous traps for the management of rodent outbreak in North-Eastern Hill Region of India. Ind J Trad Knowl. 12(4): 730-735.
- Meyer-Rochow VB, Megu K and Chakraborty J. 2015 .** Rats: If you can't beat them eat them (Tricks of the Trade observed among the Adi and other North-East Indian Tribals). J Ethnobiol Ethnomed. 11: 45.