



Short Communication

An ethnozoological study of *Vespa magnifica* with special reference to hunting by Nyishi tribes of Arunachal Pradesh, India.

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Abstract: Many tribes of Arunachal Pradesh consider the hornet *Vespa magnifica* as highly delicious and seasonal food with high economic value. The hunting practices of these hornets are an age-old tradition that has been passed down from generation after generations. Unfortunately, nowadays many new methods of hunting these hornets have emerged like the use of DDT, Kerosene, Diesel and Bleaching powder. Due to these practices the sightings and hunting of hornets has declined. The present study provides a documentation of the traditional hunting techniques of these hornets in Lower Subansiri District of Arunachal Pradesh and suggests a more sustainable approach to maintain the rich economic, diet and diversity value of these hornets.

Keywords: Arunachal Pradesh, Ethnozoology, Hornet hunting, Traditional practice

I. Introduction

The hornets are the largest known eusocial wasps native to many Asian and European countries. They belong to the family Vespidae and the genus *Vespa* Linnaeus, 1758. About 22 species have been recorded worldwide (Archer, 2012). They depend on nectar or sugar-rich materials such as rotting sweet fruits, sap of trees, and indirectly they also pollinate flowers. They also prey upon smaller sized honey bees, especially *Apis mellifera* (Smith-Pardo et al., 2020), feeding both the adults and developing larvae. They are also a threat to humans as their stings are very painful and they show a very formidable defensive behaviour and their sting causes a severe anaphylactic shock (George et al., 2008). Among the 22 species of hornets *Vespa magnifica* Smith, 1852, is the world's largest species measuring up to 5 cm in length (Ono et al., 2003). They usually build nests which are attached to tree branches or shrubs, or found in crevices, under eaves or underground (Smith-Pardo et al., 2020). They are usually found in hilly environments with high altitude and build nests which are located underground in soils in deep jungles or uncultivated areas making it rather difficult to locate them. Despite their hard sighting and ferocious nature, they are highly sought after as nutritious food delicacies. The studies on this ferocious hornet in India are very limited with only few works by Das et al. 1983 and 1989. Many works in regard to entomophagy and ethnozoology of other insects have been carried from Arunachal

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Pradesh but studies in respect to *V. Magnifica* are totally absent. Therefore, this is the first study on *V. magnifica* from the state with its ethnozoological implications.

II. Materials and Methods

Study area

Arunachal Pradesh (29°30'N; 97°30'E) lies in the eastern Himalayan region. It is a part of the Indo-Myanmar biodiversity hotspot (Myers et al., 2000) and one of the 200 globally significant ecoregions (Olson and Dinerstein, 1998). The state has a varied topography with high mountains, deep gorges and valleys. This state also has a rich diversity of faunal population. The inhabitants are mostly tribal's of the Nyishi tribe, engaged in agricultural practices and entomophagy is an old age tradition. Many insects are consumed but hornets are considered a highly valuable delicacy due to its rare sightings, difficulties in hunting which involves great expertise and risk of even losing life by its sting during the process. Therefore, the adults, pupae as well as their large sized larva are considered an important diet supplement and economic value for the market.

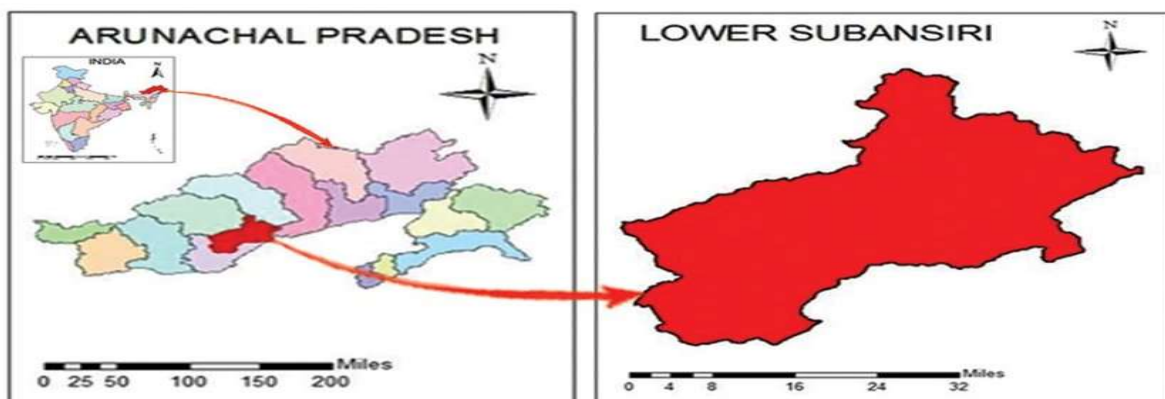


Figure 1. Map of the Study Area (Lower Subansiri, Arunachal Pradesh)

Methodology

Field visit and survey to document the techniques used in hornet hunting of *V. magnifica*, were done between August 2020 and November 2021. The sites visited during the study consisted of 5 villages of Lower Subansiri District viz., Yachuli, Mai, Joram, Lej and Talo.

The data in this study is a result of accompanying the hunters on their hunting trips, collection of hornet nests sold in the markets and personal interviews with the locals.

III. Results and Discussion

Many species of hornets are hunted in the area but the most prized trophy is the nest of *V. magnifica*. The nest size is big and can weigh about 8 to 9 kg and it is sold at 2000 rupees per kg in the local market. Variety of dishes are preferred from the adults, pupae and larvae; of this larva is the most sought after in the market as its size and protein content is much more than other hornet species. The hunting season starts from July to November and those hunted around late December yield less larva as most of them mature into adults and change nests. Therefore, most of the hunts are carried out during the months of September and October. The data of hunting results for the years 2020- 2021 based on confirmation by personnel interview with the hunters are given in table 1. The locals are well acquainted with the hornets' behaviours, nesting grounds and seasonal availability. This ethnozoological study will be detailed in the following sections.

Finding hornet nest

The sighting of hornets is common during July to August months around banana blossoms and trees that produce sweet saps. But following them and finding their nest is an age-old technique that the locals have had from generations. In order to track the nest, the hornets are fed with artificial baits such as meat pieces especially chicken meat or liver, frogs and honey bee larva. The bait is tied to a long bamboo and placed beside the banana blossoms or tree saps. The hornets feed on the meat and make a ball shaped structure out of it to carry. Since the meatball has weight their flight is slowed down and it is easier to follow them during their flight back to their nest. Accordingly, if their flight is low from the ground, it is believed that their nest is in long distance and if their flight is high from the ground hunters say that the nest is in short distance. Their flight is monitored for 20 to 30 minutes and the frequency for their visit to the bait is also used to determine the distance of the nest. The hunters then attach small sized chicken feathers tied to a thin rope around the hornet's legs or head; this helps as a visual marker to follow them during flight. Another way to keep an eye on them is that the bait is given during early mornings or late afternoon so that their wing gives off a reflection by sunlight. Since the flight cannot be observed more than 60-70 metres so many hunters work in groups to fill up the distance gap between mountains till the nest is located. Therefore, communication among the hunters is very necessary and team work is required to navigate through the thick forest and mountains.



Figure 2. A. Hornets feeding on Chicken bait

Collecting the hornet nest

Once the nest is located, the hunters mark the area and examine; whether the soil pellets dumped outside the nest are huge because it corresponds to the size of nest and hornets' population inside. Accordingly, the hunters decide the time to collect the nest within a few days or after a few months.

In order to collect the nest or the brood chambers the hunters visit the sites during the night time when hornets are resting. They wear thick clothing as a protective gear and torch the entrance by burning twigs or especially dried bamboo splits. The smoke is fanned into the nest to sedate the hornets inside the nest using a plate. Many hornets die in flames trying to fly out of the entrance. When the buzzing sounds from the nest cease and no hornets are coming out the hunters dig the ground with spades and the nest is retrieved. Even the dead adults are collected carefully to avoid being stung. Many times, the hunters are stung in the process, in that case they apply fermented bamboo shoots, onions and even liquor to the affected area to ease the pain.



Figure 3. Collection of nests: B& E. Torching of the nest, C. Collected brood chambers, D. Smoking the nest.

Table 1: The Number of hornet nest hunted in 2020-2021

Sl.no	Village	Number of nest
1.	Yachuli	26
2.	Mai	37
3.	Joram	22
4.	Talo	30
5.	Lej	40

IV. Conclusion and Recommendations

The hunting of *V. magnifica* has increased many folds in recent years due to their demands in the market. In order to make more profits there has been a decline in traditional hunting practices, many new and dreadful methods are used today viz., DDT, Kerosene, Diesel and Bleaching powder are used to kill the hornets. These chemicals are placed at the entrance of the nest and left for a day till all hornets have died or left the place. It is easy labour as chances of being stung are very less. Due to this there is a decline in the number of hunts and sightings of the hornets in a season compared to earlier years. Since the inception of new dreadful methods, hornets have started to settle in the deep jungles which are hard to navigate.

Even though the traditional techniques like torching and smoking have also led to of decrease in the population of hornets but these are not as threatening as the new methods of hunting. Domestication techniques should be given more emphasis, which will yield better economic and social benefits if it is successfully commercialised. Along with the traditional hunting and management techniques, the ecological services rendered by these hornets should not be overlooked. The hornet hunting practice should be in a sustainable manner keeping in mind the economic value it has, the valuable diet supplement it provides and the importance of their diversity in an ecosystem.

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