

Traditional techniques of search, finding, rear, and harvest of Asian giant hornet (*Vespa mandarinia* Smith) and its socio-economic perspective on Phek district of Nagaland, Northeast, India.

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Abstract:

The Asian giant hornet (*Vespa mandarinia* Smith), also called “*khude*” in the local tongue of *chokri* speaking people of Phek district, Nagaland, is widely reared in its traditional method in almost all villages and towns during the months of May to October every year. This annual proceeding is pursued by both the town and village dwellers for the purpose of economy and consumption in the near future. It is found beneath the surface of the earth in the forest region. The Asian giant hornet is first engaged from sap-giving trees (*usually the oak trees- a tree of the genus Quercus, abound in the district*) which produce healthy sap in the months of the Spring season. Here, the Asian giant hornet is located, collected, and is relocated to a new rearing site. Although the sting of the Asian giant hornet is quite unpleasant and deadly, it does not devalue people’s interest in finding and rearing it. Neither, do people wear modern safety gear while harvesting the hive. The Asian giant hornet is one of the highly sought varieties of edible insects found in the Phek district of Nagaland. In the district, rearing of the Asian giant hornet with nil capital input has become mini-industry a thriving mini-industry and a source of income to a small section of the community, and moreover, a food delicacy to both the young write-up old. Thus, this write-up thoroughly deals with a detailed process of finding traditional search, find, collect, consuming, rear, harvesting, consuming, and selling of the Asian giant hornet in this part of Nagaland.

Keywords: Asian giant hornet, traditional, working hornets, metamorphose, search, find, rear, socio-economic, comb, hive, rearing-pit, forage, feed, Phek district of Nagaland.

Method: The current research employed a field-based ethnographic research method and a semi-structured oral interview was conducted with experienced folk related to the search, find, and rearing of the Asian giant hornet.

Introduction

The larvae and pupae of the Asian giant hornet are more sought after than the adult hornet, but even so, people do not totally disregard the adults. The process of searching, finding, and relocating the rearing of the hornet is an arduous and dangerous job. Nevertheless, people are enthused about its gain and profit rather than the harm and difficulty of the process of finding it. Moreover, the delicacy and the taste, also is one fine factor for the high demand for the hornet, though, the cost is unaffordable to many. March, April, and early May of the year is the 'search and find' season, whereas, October is the most proper time for the harvest. During this part of the year, one can observe different sizes of combs being sold, gifted, and even conveyed to the State capital, *Kohima* for all socio-economic reasons. And at the same time, the long-anticipated desire to feast on the grubs is fulfilled in the pots of the affordable buyers and Rearers, though a short-lived event, it is.

The Search Process

Search for Asian giant hornet commences in the late half of March, the whole month of April, and the early half of May every year. In the months – of March, April, and May, oak trees are in full bloom with soft green leaves. Oak trees are plenteous in Phek district. And the sap, which is the most related feed of the larvae is abounding in this time of Spring and fall. The adult working hornets and sometimes the queen hornet herself, (*when there are not yet adult working hornets to aid and support her*) foraging feeds for the larvae come to the oak trees to collect their sap. Here, the first step to finding the hive of the Asian giant hornet starts. Two to three persons are mostly engaged in the search and find the activity of the Asian giant hornet. But two decades ago, seven of us were involved, due to the long distance of dense jungle and rough terrain over which was the flight of the hornet. Asian giant hornets inhabit higher altitude forests in both temperate and tropical areas where there is plenty of food. The topography and climate of Phek district, no lesser or more than other districts of Nagaland and the Northeast as well, is in fact, home to a variety of edible insects, wasps, and hornets apart from the Asian giant hornet.

Search for its hive sometimes take even a week or more, sometimes it's only about hours, and sometimes it takes one or two days. It all depended on the distance from the sap-giving tree to the hive. It is observed that usually, the search party had to cross thorny bushes, dense jungle, and rough terrains in order to locate the hive. Though arduous and dangerous activity it is, people have sought this brief industry, for, in the end, they know the harvest will be good. It is found that not every oak tree or other sap-producing tree in that the Asian giant hornet collects the sap. Only from a few trees, do the hornets make it their permanent spot. Here, on the tip of any long stiff stem or a long tiny bamboo pole, the fleshy torso of an insect, particularly that of the dragonfly is attached and lured upon. Some groups of people make use of local gum (*tsati/tsade*) without using bait. Once the hornet is stuck at the tip of the pole or is already busy over the fleshy bait, the pole is pulled back to the hand's reach. An already prepared; small and thinly spread-out cotton with a rolled thread at one end is tight around the narrow waist of the hornet. When the hornet is done with a good chunk of the fleshy bait with its strong mandibles, it is set loose.

Now the flight of the hornet and the direction it is headed for is observed well by the search party. The flight of the hornet is observed as far as the naked eye can perceive it. It is to be noted that the blue and green background of the mountain forests and the clear blue sky during this time of the year help the search party's observation easier for tracking the movement of the cotton-attached hornet

for a good portion of the distance. This thorough observation of the hornet’s flight is a very important aspect of finding the hive. During the flight, if the hornet continues to fly without any sign of descending trend, till the distance the eyes can see, it is understood that the hornet has to move on beyond the distance where the eyes can no longer perceive its movement. In this case, the deployment of a second person is necessitated to that spot where the observing eyes could last perceive the movement of the hornet. An interesting observation is that the hornet that was let loose with cotton tight at the waist comes back to the same tree. Sometimes with the cotton still tight on its waist. When this is the case, the hornet is to be lured with the fleshy chunk of bait and let loose again, followed by the earlier process of observation. However, on its return to the tree, when it has bitten off the cotton from its body, the search party will have to start the procedure of administering the bait and the cotton all over again.

Now, before letting loose the hornet for the second time, one person from the search party is made to reach the spot where the hornet has been last seen by the group. This person is made to occupy a high, open spot (*usually the top of a tree*) where he can easily observe the approach of the hornet and the movement beyond his spot, till his eyes can perceive its flight. The deployment of persons following the above process continues until there is a descent of the hornet’s flight, from its normal flight high above the trees. The downward or descent of the hornet’s flight indicates the proximity of its hive. Once the downward flight into a particular spot is ensured by the observer, the team conducts a search in the area, and finally, the entrance to the hive is located. According to various *local experts*, “*some found hives are tended by the queen alone; since the grubs are all in the larvae stage and had not to metamorphose into adults. Whereas, some found hives are already busy with adult working hornets foraging and feeding the grubs, while the queen is let to do her job of laying eggs*”.



Fig: 1
Search party trying to lure a hornet with bait.



Fig: 2
The hornets are clipped at the waist with arranged bamboo rind and stems of the reed.



Collecting of The Comb

The queen hornet and the adult working hornets are awaited at the spot, and on their landing at the entrance, with the help of the local gum, they are clipped at the waist, one by one, with the twisted and bent rind of the bamboo or with the stem of the reed, which had been made ready and handy. The clipped stems are then pierced separately into a cut banana trunk. And the comb (*mostly the size of a*

man's palm) which is harmless is finally collected. Now, the queen, adult working hornets, and the comb are conveyed from its jungle home to a new rearing site



Fig: 3
A small comb, the queen, and working hornets were brought to a relocated site.



Fig: 5
Clipped hornets arranged on a cut banana trunk.



Fig: 4
A larger hive and a good number of working hornets ready for the new location.

Rearing of The Pit

The pit for rearing Asian giant hornets is normally relocated at places like individual farms, away from the towns and villages. But, according to *Mhase Vadeo*, most of the Rearers of the hornet prefer a fenced pit in the kitchen garden area, where people seldom have access to it. This preference for the pit nearby home is so, because, Rearers can give their full time in the management of the industry, and safety thereafter. Usually, a circle of 4 feet in circumference is dug, with a depth of 2¹/₂ feet to 3 feet. All the soil dug is moved out, and a little less than half of the whole earth dug out is arranged into fine grains, eliminating any rough and solid particles, and put back into the pit. This is done to let the adult working hornets bring out the grains of the earth without much hardship, clearing the way for the downward growth of the hive.

Now, a dry and strong pole that can hold a 20kg to 25kg weight is arranged horizontally at the top, and centre of the pit. The two ends of the pole are extended beyond the edges of the pit and are firmly placed. At the centre of the pole, the comb is securely tight without damaging it, with its back facing the outside and the compartmental hexagonal comb with a white outer covering facing the inside. *Mudosu Kho*, pointed out that, “while collecting the comb in the jungle, one must be extra sure to put a mark on the comb area facing the entrance. So, while it is being tight in the middle of the pole at the relocated site, the marked area should face the entrance hole”. Finally, the pit is covered with earth over locally available materials and a temporary roof is provided. A proper drain is arranged along the circular sides of the pit, to avoid water getting inside it. At the same time, the entrance of the hive is arranged. “Usually, the entrance is rectangular in shape, with an inch width (vertical) and three inches’ length (horizontal)”, commented *Venuta Venuh*.



Fig: 6
Working hornets are busy moving out the grain of the earth for enabling the downward growth of the hive.

In case, only a comb of larvae and the queen hornet, without any adult working hornets are found and collected in the jungle, during the search and find process and are brought to the relocated site for rearing, the Rearers provide insects and sugar water near the entrance of the pit in order to assist the queen to feed its young grubs, ‘*saving time and energy*’ as is said, till the young ones metamorphosise to working adults.

The Structural Formation of the Hive

From the palm-sized comb brought from the jungle and hung on the pole in the pit, the structural growth of the hive begins as the ‘*forage and feed*’ activity is carried forward by the ever-increasing number of adult working hornets. All combs are circular, and the topmost comb is the biggest, usually having a diameter of 60cm to 70cm, with about 220cm in circumference. The formation of the hive is in downward modes, like a supposedly ‘*inverted Pyramid*’. The size of the combs that follow the first and the topmost comb decreases one after another down to the last comb. In a hive, Combs usually number from 6 to 7, but in some cases, the number can go up to 8 and 9.

Shekho Chizo remarked, that, “*when a good chunk of earth grain is been brought out of the pit by the working hornets, there is the certainty of growth in the_hive*”. Another observation of **Muleyi Luro** is, “*when there is an unceasing and a continuous ‘in and out’ movement of the working hornets at the entrance and the take-off flight of the ‘out for foraging’ hornets is 75⁰ and above, it is understood that the hive is thriving well*”.

The Harvest

Most of the hornet hives are harvested in the month of October. Harvesting takes place at night when the normal routine activity has stopped. First, the sentry hornets are taken care of and the entrance is blocked. Already the harvest team has prepared a huge bundle of dry bamboo twigs, another bundle of dry thatch, lighting materials, and a blower. Sometimes, the leaves of Indian wormwood (*Artemisia species*), locally called ‘*pina*’ is also used for silencing the hornets faster. Now, the bamboo twigs, thatch, and ‘*pina*’ are lit and placed at the entrance – the blockade material of the hole has already been removed. The next ten to twenty minutes depended on how the harvest team blow the fire and smoke into the hole. Eventually, when there is dead silence inside the pit, the team removes the covering of the pit, and carefully the pole and the combs attached to it, are pulled out.



Fig: 7
A buyer evaluating the combs.



Fig: 8
Harvested hive which can fetch about Rs. 20,000 to Rs. 30,000.

Sale and Gifting of the Comb

The next day of the harvest, combs are made available in the neighborhood, with different sizes and prices – ranging from Rs. 1500 to Rs. 5000. It has been observed that hornet combs reaching the marketplace have become infrequent lately, because of the availability of buyers in the locality,

varying sizes with affordable prices, and the ‘want to eat’ impotunity once in a year. Another interesting and ‘in trend’ method of sale in this part of Nagaland is the “*blind bidding*” or “*quoting a price*” by the Rearer (seller) to the buyer for buying the whole hive in the pit, from Rs. 30,000 to Rs. 50,000 depending on the observation of the highly matured and ripened status of the pit, with no activity of harvest initiated at all. Of course, a price bargain is settled finally, and the pit is harvested. According to *Khuta Khesoh*, “*harvest of this kind is not encouraged and appreciated by the society, nonetheless, there is no dearth for buyers. And this trend will go on for a long time*”.

Apart from selling and consumption of the Asian giant hornet, gifting the same in bulk and pieces have become a tradition in trend, in this part of Nagaland. Combs are gifted to family and friends on societal bond, and at the same time, combs are gifted to ‘*big shots*’ in the political and socio-economic realm, for seeking favor and support, for a better livelihood.



Fig: 9
The ‘delicacy’ of the Asian giant hornet through its different stages.

The Socio-Economic Perspective

People of the Phek district are mostly knitted in agriculture. The bulk of people in the district is categorized as low socio-economic status, who usually have less access to socio-economic resources. Whereby, obliging people to seek other part-time sources of income apart from their agro-based activity throughout the year. No wonder, the production of nature, even though seasonal, has impacted hugely a section of the society in the district, elevating their short stint economy, though minimal in nature. For this matter, the rearing of the Asian giant hornet, both in towns and villages has doubled within these few years. People are happy for nature’s provident. They are enthused by this traditional occupation which involves nil input of capital but, good production, and a good profit. As the year-end approaches, from the fading October, preparation for the festive atmosphere is accelerated and the payment for fees of educational institutions is in demand. In this consequence, the minimal income from the sale and the monetary favor from the gifting of the hornet comes in handy. Apparently, a big problem of a section of the society is in fact, worked out, from the practice of the traditional rearing of the hornet. Thus, this traditional semi-domestication of the Asian giant hornet has become part and parcel of a section of the Chakhesang community of the Phek district of Nagaland, thereby, facilitating socio-economic purposively in the least it can.

Conclusion

The sting of the hornet, “*deadly as it is, tastes pleasing to the tongue, as well*”, holds **Venuta Venuh**. The Asian giant hornet is assigned as a menace and a destructive insect and also is considered a threat to the ecological balance in a good part of the planet Earth. However, in this part of the Phek district of Nagaland, it is quite the contrary. Folks envision its habitation among men not as a threat, but, as a source of food and a minimal path of seasonal succour. While its existence span is brief, and the activity for search, find rear, and harvest is all interesting and profiting, people out here, are more to its usage and gain than to its menace and destruction.

All these traditional activities of search, find, rear, and harvest are evolutionary in nature. These are processes of progression through individual and group experiences since the first awareness of this particular skill. In fulfilling the activities of searching, finding, rear, and harvesting of the Asian giant hornet till today, no modern equipment, gear, or technique is being used as a happy substitute. Even though the sting of the Asian giant hornet is lethal and can subject to death, with a good dose of it, folks here, do not necessarily opt for modern technology or equipment but rely on their long-time acquired expertise. People are prone to cautiousness about this deadly insect and at the same time, they are interested less in acquiring modern equipment that cannot be afforded them. Thus, the traditional method of searching, finding, rear, harvesting, consuming, and sale of the Asian giant hornet in the Phek district of Nagaland has become a source of minimal economy to a section of the society. Its connection with the people, no doubt, has improvised the economic situation of some few in the district. And last but not least, its vast and regular habitation in the district, and the entomophagy nature of the Chakhesang folk, clearly *blend in* with the socio-economic way of life, and the ecological way of nature.

References

The following persons I have interviewed and referred to, are all local experts in search, find, and rear of the Asian Giant Hornet in Phek District, Nagaland, India.

1. **Mhase Vadeo**: interviewed at the newly dug rearing pit, at Kutsapo village, Phek District, Nagaland on 24th May, 2021.
2. **Mudosu Kho**: interviewed at his residence at Khomi village, Phek District, on 16th April, 2022.
3. **Venuta Venuh**: interviewed at his kitchen garden facing the entrance of the rearing pit, at Phek Town, District headquarter, on 7th July, 2021.
4. **Shekho Chizo**: interviewed at K. Khuno village, Phek District, On 13th July 2022.
5. **Muleyi Luruo**: interviewed at the rearing pit site, at Runguzu village, Phek District, on 16th October 2021.
6. **Khuta Khesoh**: interviewed at his residence, Phek Town, District headquarter, on 20th October 2022.