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Insect in Human Life: An Account of Red Ant (*Hau*) Utilization among the Birhor of Jharkhand

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Abstract
Insects are the most prevalent terrestrial life form but social scientists have generally shown little interest in studying insect human interaction. However, in recent years, as enthnobiology and cultural entomology have grown as sub-disciplines, interest in studying insect-human interactions has increased. As a result, researchers have been looking at how insects have influenced human societies' cultural lives in terms of literature, mythology, music, art, religion, folklore, and recreation in addition to their practical applications as food or medicine. The present study is an endeavour to document the multifarious usage of red ants in Birhor community of Jharkhand. This article is based on data generated from a fieldwork of more than four months on the Birhor community of Jharkhand to understand the relevance of red ants in their life and livelihood. In order to document the different resources available in the area and related knowledge as well as to identify the role of those resources in livelihood and survival in hostile situation, a case study was carried out in a small village named Paharsingh located in Angara Block of Ranchi, Jharkhand, India. The study concludes that ethnoentomological studies have the potential to increase public understanding of the significance of insects in both human communities and ecosystems. Researcher appreciation of insects and their significance in maintaining life on Earth can be fostered by recording traditional knowledge and disseminating it to larger audiences.

Keywords: Insect, Human, Red Ants, Birhor, Jharkhand.

Introduction

Naturally, the most prevalent terrestrial life form is the insect, but social scientists have generally shown little interest in studying insect life. However, in recent years, as enthno-biology and cultural entomology have grown as sub-disciplines, interest in studying insect-human interactions has increased. As a result, researchers have been looking at how insects have influenced human societies' cultural lives in terms of literature, mythology, music, art, religion, folklore, and recreation in addition to their practical applications as food or medicine (Bodenheimer 1951; Clausen 1954; Hogue 1987; Van Huis 1996). Rather than concentrating only on insects, the current study adopts a wide approach, integrating several facets of human-insect interactions within the Birhor community. This integrative viewpoint enables a more thorough comprehension of the dynamics in operation. Though our focus appears to be

on the ways in which individuals within the Birhor community engage with insects and the consequences of these relationships, ants—being particularly interesting insects—probably play a large role in these interactions.

Insects are used in medicine as well as in food is known from all parts of world, including Africa, the U.S. and China (Kumari and Sudhanshu K 2009). Humans eat over 1600 species of insects worldwide (Ragunath G et al. 2017). India is rich in traditional knowledge. Ethnic people of India consume insects in the form of food. A total of about 255 species of insects are consumed by different tribes of India (Chakravorty 2014). Preference given to insect species utilized as food by ethnic people of India depends on the insect's palatability, availability and nutritional value as well as local traditions and customs. Entomophagy is suggested to serve as a significant measure not only in obtaining protein rich, inexpensive foods but also considered as delicacies (Srivastava et al. 2009). The Muria tribals of Chhattisgarh roast red ants to prepare a sauce or sun-dry and powder them for later consumption (Oudhia 2001; Srivastava et al. 2009). In North East India the practice of entomophagy is common among the tribes of Arunachal Pradesh, Assam, Manipur, and Nagaland while least in Kerala, Tamilnadu, Madhya Pradesh, Odisha and Central part of India. However, with the modernization of human life style, except for the custom of eating insects as food and medicine by tribals its consumption is lost (Oudhia 2001; Borgohain et al. 2014). A number of insect species are available only for a short season depending on weather and other environmental condition (Borgohain et al. 2014). Over recent decades, edible insects have been used in value added products such as canned foods or even snacks on a commercial scale (Siriamompum and Thammapat 2008). The use of traditional food is sustainable and has economic, nutritional and ecological benefits for rural communities in developing country. Traditional folk knowledge of Arthropods is the sum of attitudes, opinions, belief and custom handed down from generation to generation on arthropods usage in a given society. The present study is an endeavour to document the multifarious usage of red ants in Birhor community of Jharkhand. The Jharkhand State has one of the highest Schedule Tribe Population (26.2%) and at the same time this particular section of population has been extremely poor for various reasons such as literacy, non-access and unsuccessful in exploitation of natural resources (even the state is well-endowed with natural resources in terms of forest area). Though the tribal communities have their own system of community governance but still they are lacking in organizing themselves to reap the benefit of decentralized planning as envisaged by the Government of India. The Birhor is one of the particularly vulnerable tribal groups (PVTG) of the state of Jharkhand distributed mainly in the districts of Ranchi, Hazaribagh, Dhanbad, Gumla and West Singhbhum. The term Birhor is a summation of Bir and Hor, meaning jungle and man respectively, meaning 'man of jungle'. In the neighbouring Oriya-speaking region, they are popularly known as Mankiria or Mankidi meaning the people who are in the habit of eating and rearing gari (monkey). They belong to proto-australoid racial stock. Linguistically, they belong to Austro-Asiatic (Mundari) group. In the past, they would constantly move from hill to hill, gathering forest products like gum, the bark of certain trees, mango, kusum, and mohua flowers and fruits, roots and tubers of wild plants that were used as vegetables, honey, and the Gungu Patta shrub, which was used to make ropes. The oil from the mohua seeds is used for body massage, cooking, and wound treatment. The ropes were exchanged for the grains with local villagers and also used to beg food from them. But now-a-days, they are living in settled colony provided by the government, The Birhor economy presents a mixture of forest economy and partially labour, nowadays. The Birhors in some villages have learnt the art of the agricultural operations and work as agricultural labourer and also rear goat, and poultry to

supplement their economy. In regard to this, the current study aims to investigate the function of ants in Birhor culture, beyond their well-known use as food and medicine.

Study Area: *Paharsingh* Birhor *Tola*

The study was conducted at *Birhor dera* in Paharsingh village (revenue village), located in Angara Block of Ranchi, Jharkhand, India. It falls in the Barwadag Panchayat. This tola is inhabited by the "Birhors", one of the eight recognized Particularly Vulnerable Tribal Groups (PVTGs). The village is situated atop a hill and is about 50 kms from Ranchi city. It is surrounded by forest from all sides which is very similar to their customary surroundings. It comprises of 37 families. Most of the dwellings are pukka houses with name of the family head engraved on the wall. The construction of these pukka houses (twelve) were facilitated by Ramakrishna Mission Ashrama, Ranchi some 15-20 years ago to rehabilitate those nomadic Birhor community. The tola, though situated remotely, has been witnessing development works since a long time. There is a primary school building and an Aanganwadi centre. The nearest PHC is at Jonha village (famous tourist destination for water fall) that is about 20 km from the village. We have observed the presence of different development initiatives undertaken by the following organizations' in the Birhor dera:

NABARD has constructed cemented roads stretching upto 7km and hence, the village has a better connectivity from town. Jharkhand Tribal Development Society (JTDS) has facilitated building of pukka houses for the Birhor households under the Indira Awaas Yojana (IAY) and installation of two solar-powered water pump in partnership with MECON and Jharkhand Renewable Energy Development Agency (JREDA). One of the water pump is defunct and one of the villager reported that the solar panel are being stolen by some goons just after installation. JTDS also dig up a pond which is the only source of irrigation and to mitigate household needs round the year. Defunct pipeline connection with tap to provide water at the doorstep of each household was also observed. At present the entire community quench their thirst through a perennial *chuan* located next to the pond.

This community is still largely dependent on forest for their livelihood by selling firewood in nearby villages as well as in local market. Seasonally they also collect and sell lac, mahua seeds. However, they themselves do not cultivate lac but collect the remains of harvested lac from the owners of lac host trees and sell in the local market. They still make ropes but the creepers were replaced by plastic as raw material. Majority of the people have marginal landholding for cultivation. As per their account, only twelve families, who were the early settlers, have land which has now been even more fragmented amongst the present generation. So the produce from those lands are used for household consumption only and that too is not stable as there is an acute problem of irrigation. During the fieldwork we have observed the presence of fowl and goats but surprisingly no cow or buffalo. Paddy cultivators usually keep ox/cow to plough their land but they told that they hire tractor for ploughing. It is interesting to note that, since they are not traditional cultivator, hence they lack the skill to plough using animals. These people also work as labourers and sometimes migrate for 2-5 months a year outside state for working in construction sites and brick kilns. Their level of literacy is found to be very low. Though one of the girl from the village recently passed secondary exam from Kasturba Gandhi Vidyalaya. They seemed to be quite satisfied by the services of the Anganwadi *didi* and the ANM *didi*. Both of them come from a nearby tola to Birhor tola to render their services. They do not participate in Gramsabhas as they believe it is not helpful and there is no ward member from this tola. It was felt that these people are continuously struggling to match up with the changing market demands and diversify their products to

get a good price in return. They acknowledge that they need to look out for and adopt alternative sources of income or get absorbed in the mainstream permanent government jobs to ensure a secure and sustainable livelihood in the future but what they are finding difficult is to detach from their roots that is the forest and which defines their culture. There are so many development works going on around them. Even they have been taken in the fold. But still they continue to live at subsistence level. It was interesting to notice that they live in close proximity to railway lines and roads, which are considered to be initial marks of development for any place, yet appeared to be completely isolated from the world.

Materials and Methods

The article is an outcome of the research carried out among the PVTG community named Birhor, who are considered as one of the earliest inhabitants of Jharkhand currently distributed in Ranchi, Giridih, Hazaribagh, Latehar districts of Chotanagpur plateau. This article is based on data generated from a fieldwork of more than four months on the Birhor community of Jharkhand to understand the relevance of red ants in their life and livelihood. In order to document the different resources available in the area and related knowledge as well as to identify the role of those resources in livelihood and survival in hostile situation, a case study was carried out in a small village named Paharsingh as mentioned in details in the earlier section. The village is situated in a very interior location and inhabited by only 37 households.

The research has been carried out in different phases. Initial period of research proved to be difficult because of hilly terrain and suspicious attitude of the respondents that gives the impression of a culture whose members constitute what Adler and Adler (2002) described as reluctant respondents who are not only hard to find but even harder to secure for permission to study. However, employing a ‘local boy’ as field guide helps overcome this predicament. The ‘local boy’ plays a role of passive translater rather engaging directly in the interview process. Key informant interview, Jungle walk (for specimens’ collection), Census Schedule, Observation Schedule and Specimen Identification were the key methods, tools and technique for collecting primary data. Moreover, prior to the 'real' field work, few informal meetings and interviews were carried out with some key people and potential key informants in block and village to explore more on baseline information regarding the study. The data on indigenous practices were collected through open ended interview and guided observation by the field guide. Almost every member of the village incorporating male, female, adult and young were interviewed independently to find the shared and distributed knowledge concerning resource utilization and management. The study was principally guided by qualitative methodology and data validation was based on focused group discussion and peer group meeting. A wide range of issues pertaining to the use of insects were covered in the schedule, such as the kinds of insects that are ingested, how they are prepared, when they are consumed, their cultural significance, how they are collected, and possible commercial uses. By using a comprehensive approach, the research data help us our understanding of the complex function that insects play in Birhor culture.

Relevance of Red Ants (*Oecophylla smaragdina*) in Birhor Life

With the exception of Antarctica and islands like Greenland, Iceland, some regions of Polynesia, and the Hawaiian Island, ants can be found practically anywhere on Earth in niches that can support them (Thomas, 2007; Jones, 2008). In addition to providing food and medicine for humans, they are crucial in maintaining ecosystem balance to support pollination and seed dissemination in a variety of plant

species (Long, 1901; Mahawar and Jaroli, 2008; Lengyel et al., 2010; Rastogi, 2011; Van Huis et al. 2013). Tribal people in Chhattisgarh, Assam, Jharkhand, and Odisha are accustomed to using specific ant species as food, medicine, and a source of revenue through selling them in the market (Oudhia, 2002; Narzari and Sharmah, 2015; Jena et al., 2020). However, as of yet, the Birhor community of Jharkhand lacks any documentation about the above-described facet. But Oecophylla smaragdina, the red ant (*hau*) that the Birhor people are known to use for food, medicinal, and other purposes, is the subject of this article.

Use as Food Item

It has been noted that the Birhor exclusively gather red ants (*Oecophylla smaragdina*) from nests that are built in the trees by two or more individuals. They have developed the habit of gathering these ants between September and February, when a lot of anthills may be found. The Birhor never use the ants that are located in the ground; instead, they are mostly drawn to the ants found in the Sal trees. Certain families have a custom of making *Chutney*, a dish that is universally regarded as appetising. The necessary amounts of chilli, mint, onion, ginger, garlic, cumin, mustard oil, and salt are added to make the aforementioned *chutney*. Because this kind of ant preparation is expensive, poor households have been accustomed to using these ants in alternative ways. With the use of a mortar, they have perfected the art of pasting these ants. After that, the mixture is combined with salt, chilli, onion chunks, and a few drops of mustard oil. They eat rice for lunch or dinner for two to three days while these preparations are made. These ants are occasionally boiled and eaten by people. Due to its excellent flavour, the chutney is very expensively offered at festivals and markets. Additionally, during the other months of the year when these ants are not present in forests, people are used to keeping sun-dried ants in containers and selling them for a high price. The Birhors have adapted to trading live, dried, and easily eaten ants at the marketplace.

Medicinal Use

It is used as medicine in Birhor society to cure common colds, especially in situations involving adults and babies older than five years old. The entire body, including the eggs, was dehydrated into an aqueous state, mixed with the appropriate quantity of green chilli, and given as medicine to either an adult or a newborn patient by spoon feeding. Results will be apparent two or three days after ingestion. Excellent results could be anticipated in two or three days. In cases of enteric gas, the raw extract from this ant is also used as an acidifying agent. Relief can be obtained in one to two hours after consuming one cup of this juice, which is generated from the crude homogenate that has been created and allowed to filter. The brood content is crushed to create an aqueous extract, which is subsequently given to the vomiting patient. The vomiting should stop in five to seven hours. When treated with an aqueous extract of the whole body and the young worker ants, the patient will recover in two to three days. The usage of eggs and an aqueous extract of the complete body are beneficial for Jaundice. The people of the Birhor community believe that red ants keep them well and disease-free. Formic acid from these insects is used to treat gastrointestinal issues, irregular blood pressure, toothaches, malaria, and scabies. It was found that the Birhor, male and female, understood traditional treatments well, especially those created from insects (Doley, 2012). By supplying calcium, red ants can also aid in the development of bone density (Srivastava et al. 2009).

Economical use

The forest is vital to the Birhor community's way of existence. They have historically been a nomadic group of food gatherers, which has given them knowledge of the various useful materials found in nature. The Birhor people rely on red ants, which are often disregarded by the non-tribal population, for their daily sustenance. Because of their advantageous location in the middle of a forest, the Birhor communities are able to gather red ants and their larvae for a variety of uses. In addition to being important for making money by selling in the local market, it is also used as food and medicine, as was previously noted. The non-tribal population has a high demand for the processed red ant chutney. A small number of Birhor individuals were found to make a red ant curry during the days of tribal *haat*, which the people drank with *handia* or *mohua*, the traditional alcoholic beverage. Given the medicinal properties of red ants, some locals also want raw ants, which cost Rs. 10 for 100 grammes. The red ant *chutney* has received GI labelling, which is a noteworthy development that will increase demand for raw ants for use in commercial settings. Those who keep fish and birds as pets are also big consumers of red ants and their larvae. While the majority of the Birhor in the research region gather red ants for their own use, a small percentage also gather in order to sell the ants at the neighbourhood *haat*.

Ecological Significance

The Millennium Ecosystem Assessment (MA) provides a general framework for classifying the various forms of ecosystem services provided by organisms are – provisioning services, regulating services, supporting services and cultural services. Ants are the most diverse group of social insects extremely abundant in most terrestrial ecosystems and can account for large percentages of the total animal biomass in many environments (Wilson 1987, Hölldobler & Wilson 1990). Here, we attempt to demonstrate how, within the Birhor community under study, ant biodiversity is significant for all four types of ecosystem services as defined by the MA. Ants are a major source of protein and are commonly eaten by the Birhor as part of traditional meals because of their abundance in the local habitat. In Jharkhand, the practice of providing food through ant farming is still not well documented. However, society stands to benefit from additional research on the nutritional content of ants and their potential for sustainable use. Ants treat a variety of illnesses that are recorded among the Birhor, serving as additional providers of biological services. According to Birhor, ants are frequently in charge of pollination and seed dissemination, both of which are crucial for expanding the amount of forest cover. Additionally, ants are essential to Birhor life because they offer a variety of helpful services like predicting when it will rain, shielding fruit plants from predators, and entertaining kids.

Cultural Significance

Alongwith *Datura* and Tobacco, red ants completed the sacred trinity of powerful ritual medicines used by the Birhor community possessing both therapeutic and mind-altering properties. Despite their significance, the use of red ants in either ritual or medicinal contexts is poorly represented in the published literature. One reason for the paucity of data is that many of the societies which used red ants were extinct or no longer fully functioning by the time ethnographers arrived for documentation. Brief mentions of red ant swallowing appear irregularly in the ethnographic records of several groups. Similar practices were also reported among the Birhor of the study area but the practice is almost extinct nowadays. The reported account indicate that the large quantities of live red ants were swallowed in order to induce visions and thereby acquire supernatural power in the form of a ‘dream helper’. Quite

apart from any virtues or specific skills they might confer, dream helpers were critically important in leading safe, healthy and prosperous life. Possession of a dream helper represented a direct connection with supernatural power – a source of security in an otherwise unpredictable environment. Birhor believed that the men who sought shamanic power would ingest red ants over a period of months or year. Besides, Birhor used to offer the chutney made of red ant during the ritual performed before embarking for community hunting. The making of red ant curry is regarded in the community as a sign of prestige, even during significant festivities and life cycle rituals. The folks love to consume the traditional beverages that go with the red ant delicacies.

Discussion

The traditional knowledge of red ants among the tribes of Jharkhand is diverse, but limited because the usage of this knowledge is only verbally transmitted, without written records, from one generation to the next. Raising awareness of the significance of gathering as much indigenous information as possible is therefore imperative. A lot of researchers are attempting to use edible insects in the current scientific era. It has long been a priority of scientists to determine the significance of helpful insects utilised in various indigenous remedies. The most conventional data has been produced by the age group of above 60. Compared to respondents in other age groups, those over 60 provided noticeably more traditional information, despite their relatively modest number of responses. The lack of traditional knowledge about insects, along with other animals and plants, among younger age groups raises the possibility that in 30 to 40 years the ethno-biological knowledge currently present in the region would disappear. The informants can use natural resources in a sustainable way since they have sufficient levels of education. It was surprising to hear that red ants are used not only as food but also as a remedy for a number of ailments. The tribes' way of life depends on the red ant, a delicious traditional food and potential source of medicine. This species offers a host of social and ecological benefits to the ecosystem. The tribes' comprehensive information regarding the ethno-entomological uses of this species may raise public awareness of the beneficial uses of this species in medicine and health. After being collected from rural areas, red ants are commonly sold in the markets. The increased removal of this species from its natural habitat for socioeconomic reasons may result in the loss of this species' rural biodiversity. However, additional research, surveys, and data collection on diverse insect faunas can aid in the acquisition of logistical knowledge regarding edible insects.

Conclusion

Insects as a major animal group contribute enormous biodiversity and form a valuable biomass in nature. They offer many ecological, economic and social benefits. Many traditional societies have extensive knowledge of the medicinal properties of insects. Documenting this information may help in the search for novel medications or healing substances. Birhor has employed insects as medicine for a variety of conditions, including jaundice, pain management, and other conditions. Gaining knowledge about the ways in which traditional cultures employ insects can help develop sustainable harvesting methods and conservation plans. Researchers and conservationists can identify culturally significant insect species and create management plans that guarantee their continued use and protection by compiling traditional knowledge. For thousands of years, insects have been a fundamental component of human civilization, appearing in rituals, art, folklore, and food. Because ethnoentomological surveys record customs, beliefs, and insect use, they aid in the preservation of this cultural heritage. Red ants are already known to have

high nutritional value, and eating them gives the Birhor diet access to a rich supply of vitamins and protein. Collections of customary knowledge around eating insects can help advance efforts to promote insect-based meals as nutritious and sustainable substitutes for traditional livestock. Birhor can benefit economically from red ants, as they can generate cash by selling both raw and processed red ant products. It is possible to promote local economies and build sustainable livelihood plans by having an understanding of how insects are used in traditional economies. As a result, we must safeguard the area's biodiversity and preserve its priceless insect wealth for future generations. This article's goal has been to examine the significance of red ants in Birhor culture in order to inspire more study on the interactions between insects and humans. With the current article showing the usefulness of ants in the Birhor community of Jharkhand, India for the first time, it is now evident that ants are beneficial in Birhor life from a variety of perspectives. Finally, it may be said that ethnoentomological studies have the potential to increase public understanding of the significance of insects in both human communities and ecosystems. Researcher appreciation of insects and their significance in maintaining life on Earth can be fostered by recording traditional knowledge and disseminating it to larger audiences.

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