

Edible Insects as tribal food among the Rabhas of Assam

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ABSTRACT

*Insects are highly specialized group belonging to the largest animal phyla, Arthropoda. It is in folk mind of the people that they are enemies of mankind but there are number of insects which are beneficial to man in a number of ways so much so that same can be considered more or less indispensable to man. Edible insects are a natural renewable resource that provides food to many ethnic groups abroad and North East India too. Some of these species are overexploited because of increased consumption, caused by the huge human population growth in the area. The rural people hunt or collect different kinds of resources, in order to have more means to satiate their hunger, but the quantity or quality of foods found is unequal depending on the place, season and people seeking these foods. Insects are a healthy, nutritious and a savoury meal. Species of insects are collected according to their seasonal presence and abundance. Most people in developed countries dislike or hesitate to consume them – probably because they are repulsed by the appearance of insects, not their taste. Tribal people especially Rabha people of Assam have chosen to take entomophagy as a sustainable source of food as it has been using since ancient times, a knowledge which has been passed down from generation to generation through word of mouth. The Rabhas are a tribe belonging to the great Bodo family and scattered in parts of lower Assam, Kamrup district, Goalpara district, parts of West Bengal and Meghalaya. Some edible insects consumed by Rabha people in lower Assam in India are cricket, grasshoppers, water giant bug (*Bellostoma*) termites, red ants, beetle larvae, pupa of insects, water skater (*Gerridaec*) etc. Edible insects, among the Rabhas, are not used as emergency during food shortages, but are included as a planned part of the diet throughout the year or when seasonally available. Insects can be accepted favourably in the future by processing and mixing them with other foodstuffs.*

Keywords: *Edible insects, Energy, folk food, Rabhas of Assam*

Introduction:

Insects are the major animal group on Earth. They lodge an enormous biodiversity and constitute a huge amount of biomass. They constitute four-fifths of the animal kingdom, and the invertebrates form 95% of the totality of animals. The number of insect species is unknown but has been estimated at about three to four hundred million species. They are found everywhere because they colonize any type of habitat in the aquatic and terrestrial milieu, in which they play a vital role in the ecology. They are mostly primary consumers and due to their high rate of reproduction tend to dominate all sources of energy because of competitive exclusion. The many benefits insects offer us are often overlooked and under-estimated. For instance, they can be used in human and animal nutrition, in medicine and also as recyclers of organic matter.

Insects offer us many benefits, including their use in human and animal nutrition, in medicine, religion, art, and handicrafts. Also, they are efficient recyclers of organic matter and provide a source of economic gain for the poor through their commercialization (Ramos-Elorduy, 1997a). Upto date around 2000 different edible insect species in the world have been recorded. Because of their high nutritive value and ubiquitous presence, insects present a potential sustainable food source for humans. Once we select suitable species and develop appropriate breeding methods, insects can provide a reliable and sustainable source of high-quality animal protein (ibid). Indeed, it is ironical that many international and non-governmental organizations try to save crops that contain no more than 14% protein by killing another food source (insects) that may contain up to 75% of high quality protein.

Hundreds of insect species have been used as human food, some of the more important groups include grass-hopper, caterpillars, beetle grubs and sometimes adults, winged termites (some of which are very large in the tropics), bee, wasp and ant brood (larvae and pupae) as well as winged ants, cicadas, and a variety of aquatic insects. Ordinarily, insects are not used as emergency during food shortages, but are included as a planned part of the diet throughout the year or when seasonally available (Banjo et al, 2006). The consumption of non-toxic insects should be encouraged. Insects are traditional foods in most cultures, playing an important role in human nutrition and have much nutrient to offer. They can be reared for their high nutritional qualities and sold to the populace that regards them as delicacies. Edible insects constitute an important part of daily diet of a large proportion of the population on southwestern Nigeria. These insects provide high quality of proteins and supplements (minerals and vitamins) even when dried (ibid).

Insect consumption is a traditional alimentary habit that comes from ancient times. It varies from group to group, according to the ecosystem. This is because insects play a significant role in providing food. In many cases they are a vital dietary element

providing nutrients of high biological value including energy. Ingestion of this natural renewable resource is rooted among most ethnic groups around the world, embracing a large cultural biodiversity of people who eat them in a continuous way since a seasonality exists for each species (Ramos-Elorduy, 1997b).

Ramos-Elorduy (2008) says that human beings are omnivores. However, from a biological point of view, humans consume only a small number of edible resources. For societies in different parts of the world, some foods are appreciated while others are rejected or despised (ibid.). He cites an example from Pimentel (2005) that says that duck eggs that have been incubated for 17 days so that the embryo develops, are eaten cooked in the Philippines where they are considered a delicacy, and from Paoletti et al., (2000) that the consumption of earthworms by the Ye'Kuana in South America is appreciated as a gourmet food. He also quotes Menzel and D'Alusio (1998) that tribes such as the Yanomami in South America even eat spiders such as *Tarantula* sp. Furthermore he quotes from his own work (1998), that edible insects are also eaten in some industrialized societies and that edible insects are a natural renewable resource used as food by people around the world (1994).

Ramos-Elorduy(2008) says that insects are easy to raise and can be preserved with sun energy in tropical countries. He quotes Pimentel and Pimentel (1983): “the safe preservation of abundant harvests to augment the human food supply and ensure a reliable source of nutrients is a vital priority in coming decades in order to meet the food needs of the rapidly expanding world population.”

We must look for other alternatives to improve human and animal nutrition. Edible insects are one viable resource. Insects are an animal group with many advantages supplying much food energy (Ramos-Elorduy, 2008). They have many favorable intrinsic characteristics (Ramos-Elorduy, 2004) that make them suitable for greater inclusion in human nutrition. Many of the edible insect species do not compete with human beings for food resources, and according to Pimentel (2004), 99% of the USA and world food is produced on land. Insect farming requires little water, which is significant because water shortages already exist throughout the world and are likely to increase. Hence, insects could be conserved as “Minilivestock” (Paoletti and Dreon, 2005).

Insects as food among the tribal folk:

In cultures where insect consumption is common, insects form a regular part of the diet, as a side dish, snack, or ingredient of composite dishes, whenever available during the year (Bukkens, 1997). Bukkens(1997) quotes Durfour (1987) that although generally insects are not merely eaten to avoid starvation, some studies show that insects are most often collected and consumed when other animal foods are available in

very limited quantities, or not at all. Nevertheless, depending on the culture, some forms of insects are valued as delicacies in their own right (Bukkens, 1997).

In fact, insect pests are eaten by several ethnic groups and many species are preserved and stored for consumption as is the case with locusts and caterpillars and many bugs. The diet reflects the socio-economic conditions of a people. Dietary habits and taste perception are closely bound to a people's history and their geographic origin and evolve in relation to life style, tradition and education. This may explain that in some developed culture insects are looked upon as primitive food, whereas some other cultures consider them to be a valuable and integral part of the diet.

Undoubtedly, it is the people living in rural areas, specially the tribal folk, that consume the largest variety and number of insects, but, depending on the country, people of the urban areas also eat some insect species available in the market. The folk knowledge of collecting, preparing, eating, preserving and using edible insects is often passed on from generation to generation by oral communication. These practically have zero cost.

Edible insects among Rabha folk

Tribal people especially Rabha people of Assam have chosen to take entomophagy as a sustainable source of food as it has been using since ancient times, a knowledge which has been passed down from generation to generation through word of mouth. The Rabhas are a tribe belonging to the great Bodo family and scattered in parts of lower Assam, Kamrup district, Goalpara district, parts of West Bengal and Meghalaya. Some edible insects consumed by Rabha folk in lower Assam are cricket, grasshoppers, termites, red ants, beetle larvae, pupa of insects, water skater (Gerridaec), silkworm or mulberry silk moth, *Mou* (Honey bee), *Japripoka* (Water Giant Bug), *karaipoka* (water scavengers), *hamka* (snail) etc. All these insects have long been considered a food delicacy among the Rabha folk.

There is a place in Baksa district of Assam, Medaghat, where the folk eat *telpoka* (cockroach) *khunda* (Paste with chilli and other ingredients). *Telpokais* also used as a traditional medicine to cure jaundice by some shamans.



Figure 1.1. (a) Traditional dish form of grasshopper, *Oxyahylahyla* from Assam, North-East India (b) Edible giant water bug, *Belostomaindica*.



Figure: 1.2- A photo of Water Giant Bug as well as diving beetle.

Some Edible insects commonly used by Rabha people are shown in table: 1

Order	Family	Scientific name	English name	Local name	Consumption stage
Orthoptera	Acridae	Oxyahylahyla	Grasshopper	Foring/ Firung	Adult
Orthoptera	Gryllidae	Rachytrypes spp.	Crickets	Kumti	Adult
Hymenoptera	Apidae	Apismellifera	Honeybee	Mou	Eggs, larvae, pupae
Hemiptera	Belostomatidae	Belostomaindica	Water giant bug	Jhapripoka/ Jhabdipoka	Adult
Coleoptera	Hydrophilidae	Hydrophilusolivaceus (Fabricius)	Water scavengers	Karaipoka	Larva and adult

Table: 1 Describes the nomenclature of scientific taxonomy, English and local names as well as consumption stage of insects.

Gathering Techniques of some of the insects

The methods to capture insects are usually fairly simple. Often they are collected by hand or with the help of a net. Sometimes big sticks are used as well as scoops or barretas or machete or axes. It is of course necessary to efficiently handle these kinds of tools. Most insect species are captured in a casual way, but in other cases people may actively search them or lure them (Julieta, 1997 b).

Kumti (Crickets) are found to be holed up in soft ground. The Rabha folk use a very simple technique to catch hold of them. By their expertise they can easily identify the holes where *kumtis* are likely to be found. They pour in water or sand until the *kumti* is forced to come out due to suffocation. When the *kumti* is sighted a little below the over ground a grass is inserted so that the insect clings to it in an effort to save itself. Nonetheless, it finds itself in the hands of the expert hunter.

Insect species are selected for consumption according to their seasonal presence and abundance. *Foring/ Firung* (Grasshoppers) are mostly caught during the harvesting season. When the insect clings to a stalk, the expert insect hunter catches the resting insect in a jiffy with the swift movement of his hand. *Forings* are caught not only for food but also to feed the young ones of a *maina* bird that the boy of the house brings in order to domesticate. They are often stored in bottles or stitched together with a rice stalk or a long grass and then hanged to the thatched roof.

Japripoka (water giant bug) and *karaipoka* (Water scavenger) are caught in marshy places or water bodies mostly while fishing using a *jal* (fishing net) or a *jakhai* (traditional fishing equipment). The one who manages to catch a *japripoka* or a *karaipoka* considers himself / herself lucky and sighs in pride. He/ she takes the pride to show his/ her catch to the others who in turn says, "Baah!"

Hamka (Snails) are also caught using a *jakhai* (traditional fishing equipment). Sometimes they are caught without any intention. A folk goes out fishing and accidentally he/ she bumps into a snail bed. It depends a lot upon his/ her fish-catch. If he/ she manages to catch a good quantity of fish, he/ she goes home without picking the *hamka*, keeping it for some other day. But it almost becomes certain that he/ she will come back to the same water bed some other day and this time solely for the *hamka*. When a folk is asked about the thing that he/ she is carrying in the fish scoop, he/ she jokingly says that he/ she carrying *khusrapoisa* (coins). This is because the snails when being washed make the sound of coins. The folk also call the snail curry as kissing curry as one has to literally smooch while eating it. They believe that *hamkass* are good for better eyesight. Snail-hunting thus becomes a good purpose.

Eggs of *Jamlai* (red ants) are collected from tree tops using a long bamboo with a sickle attached at the topmost end to cut off the branches along with the ant homes. The ant homes are then dipped into water to ward off the ants leaving behind the eggs. Sometimes the ant homes are kept for long on a tin or a plastic and left in the hot sun. The heat becomes unbearable for the ants that in turn ward off leaving their precious eggs. The eggs may be a delicacy but the one who goes ant-egg hunting has a difficult time because of the painful ant bites.

PREPARATION

Most insects are cooked roasted, fried, or boiled and they are eaten with chili or salt only. Only a very few species are eaten alive, jumiles or the honey ants. Generally people treat insects, as others *dohamuk* (escargots, snails): they keep them alive one day before eating them in order to empty their digestive tube. In this way, they increase their flavour, as happens with grasshoppers, butterfly larvae or beetle larvae. On the other hand, if they are immediately roasted and eaten, the flavour is not so good, and could be a little bitter. Grasshoppers are left without feed for one day, after which they are boiled in water with salt. As they are green, brown, or gray when they are alive, after boiling they become red as happens with boiled shrimp. This colour is more attractive organoleptically. After boiling the grasshoppers are fried in oil, with a mix of onion, garlic and pepper. When ready to be eaten, lemon juice and chili are added.

Grasshoppers are sold at the market of Oaxaca City, in a special place, because they are much appreciated, by measures of different sizes of earthen stew pots (Julieta, 1997b).

Hamkas(Snails) are kept in water the whole night. This makes the mud that's inside to come out: further the snails are rubbed and washed repeatedly to clean off all mud or moss clinging to it. The tail end is then cut off and the lid that's in the front is removed with a needle. They are then boiled and later cooked with black dal or pumpkin using other cooking ingredients like ginger leaf, chilli, onion, salt and turmeric powder.

Eggs of *Jamlai* (red ants) are fried with onion and chilly and other ingredients and often taken as snacks with *mod* (rice beer) or *gela*(rice spirit).

The *Japripoka* (water giant bug) and *karaipoka* (Water scavenger) are roasted a paste of it is prepared with hot chilli, ginger, garlic, coriander leaf and salt. The Rabha folk prefer to add the world's hottest chilli, the BhootJolokia. The insects, sometimes, are also being fried in mustard oil after the wings are removed.

Conclusion:

This highlights the folk cookery of the Rabhas of Assam. Folk cookery is obviously the opposite of the commercial, institutional, and scientific- nutritional versions of cookery (Yoder, 1972). Edible insects provide food and economy to the Rabha folk and most Rabha women take it up as their livelihood. They sell their insect catch in daily markets to get a modest earning in return. Thus, edible insects are not only a source of food for the Rabhas but also a source of income.

In general, consumption of edible insect is part of folk cultural heritage, and the tribal knowledge on how to find, gather, prepare and conserve insects is passed down from generation to generation through oral communication. Children learn from their parents how to find or collect insects through imitation or instruction.

Human development is linked to alimentation and for this reason nutrition is a key to a more productive life and human progress. With 2/3 of the human beings in the third world countries suffering hunger or malnutrition, we need to consider sustainable alimentary alternatives that will be accepted by those people in need and that will fit in their deeply-rooted dietary habits. In this context, edible insects are an important and promising food resource to be developed in the near future. Indeed, even though insects are considered a non-conventional food and often a low-prestige food by occidental cultures, they form an integral part of the daily diet of many ethnic groups in the world.

There is an urgent need for documentation of traditional rearing, cultivation and sustainable use of edible insects (natural resource) used as food and conservation for the greater benefit of mankind and maintenance of insect bio-diversity. Insects can be cultivated easily, requiring minimal space. In contrast to larger domestic food animals whose bones, blood and offal are almost unusable as food, the entire insect can be used or processed into food.

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