International Journal of Entomology Research
www.entomologyjournals.com
ISSN: 2455-4758
Received: 16-07-2022, Accepted: 03-08-2022, Published: 19-08-2022
Volume 7, Issue 8, 2022, Page No. 87-91

Entomophagy of the Bodos in Murara, Kamrup district, Assam

Sabina Langthasa[1*], Diganta Kumar Sarma[2]
[1] Assistant Professor, Department of Zoology, B. Borooah College, Affiliated to Gauhati University, Guwahati, Kamrup (M), Assam, India
[2] Department of Zoology, B. Borooah College, Affiliated to Gauhati University, Guwahati, Kamrup (M), Assam, India

Abstract
Edible insects are considered as important dietary component. The present study explores and documents the practices of consuming different insects and insect products as food by the Boros of Murara, Kamrup district, Assam. Field survey was conducted from June 2021 to November 2021 following interviews through structured questionnaires. The study documented 15 species of insects belonging to 13 families such as Saturniidae, Formicidae, Apidae, Gryllidae, Scarabaeidae, Dytiscidae, Mantidae, Termitidae, Tettigoniidae, Acrididae, Gomphidae, Belostomatidae and Vespidae to be consumed as food by the Bodos. Insects are seasonal but some can thrive in all the environmental conditions. For the Bodos, pupae of eri silkworm and eggs of weaver ants are regarded as delicacy. Culinary practice of insects varies from raw to roasted, which ensures the prevalence of entomophagy in the region since ages. Preference and acceptance of insects as food were found the highest among the elderly people. Insects too serve as the means of livelihood for the people. The study recognises edible insects as one of the important components of food in the region and assures the need for conservation and management for the better utilisation of the insect resource.

Keywords: Assam, Bodos, dietary, edible insects, entomophagy, livelihood

Introduction
Entomophagy refers to the human consumption of insects as food. Traditionally, ethnic communities use insects mainly for their nutritional requirements and are considered as staple and a delicacy food. Being quite rich in protein, vitamins and minerals, the caloric content of insects is about 7770 kcal/kg as compared to 4660 kcal/kg of pork and only3700 kcal/kg of corn (Srivastava, 3).
Insects such as ants, termites, water bugs, crickets, cicadas etc has been used as a source of food and nutrition in many parts of the world such as Asia, Australia, Africa and the Middle East (Bodenheimer, 1) [1]. Data analysis on the nutritional value of edible insects showed that 50% of insects had a calorific value higher than soyabeans, 70% higher than fish, lentils and beans and 87% higher than corn (Chakravorty *et al.*, 2) [2]. According to entomological society of America, termites, grasshoppers, caterpillars etc are sources of high-quality proteins and provide essential amino acids than cattle, chicken, pork or lamb (Srivastava, 4).
Insects, if included in our daily food habits, has the potentiality to fill up the space for providing the complete nutrition. This requires knowledge to be able to distinguish between edible and nonedible insects. Indigenous people have sound traditional knowledge of natural resources since they have been closely associated with nature. North-east India is home to a large number of traditionally living ethnic communities, who possess a vast knowledge on entomophagy and entomotherapeutic practices, among them Bodos are one such community. Although, various workers have documented uses of edible insects from different parts of India, such information among the Bodos of the Murari, Kamrup district is scanty. Thus, it is essential to undertake an in-depth study of the insect consuming habit of the people for preservation of traditional knowledge practices of the region.

Materials and Methods
The survey was carried out in Murara village inhabited mostly by the Bodo community (Fig.1). The village is situated in Rangia block of Kamrup district, Assam with a geographical area 184.47 Hectors (https://villageinfo.in). It is one among the 93 villages of Rangia block and 47 KM away from the district head quarter Amingaon. The village is located at a surface distance of 65 KM from Guwahati, the capital city of Assam with a population of 3730 people (https://villageinfo.in).
The study was conducted from June 2021 to November 2021. Methodology of the study involves both interview and observation on insect use. Questionnaires were developed with questions like types of edible insects, vernacular names, seasons of their availability, mode of consumptions, edible stage, edible part, time of collection, culinary knowledge etc. Interviewers were of a mixed group of ethnic people including farmer, driver,

business man, weaver and labour with different age groups between 30 to 70 years including both men and women. Collected insects were identified with literatures and by consulting authentic taxonomical records of preserved specimens.

Results and Discussion

The study recorded a total of 15 species of edible insects belonging to 13 families such as Saturniidae, Formicidae, Apidae, Gryllidae, Scarabaeidae, Dytiscidae, Mantidae, Termitidae, Tettigoniidae, Acrididae, Gomphidae, Belostomatidae and Vespidae in Murara village, Kamrup district, Assam (Table 1).

The study signifies the rich diversity of edible insects among the Bodo people in Murara village. The Bodos bear rich knowledge of ethnozoology and insect consumption is an old practice among them. Edible insects form an important part of their diet and traditional culture. Preference and acceptance of insects as food were found the highest among the aged people above 50 years of age. Of all the 15 edible insects, *Lethocerus indicus* and *Dytiscus marginalis* were found in aquatic habitat while rest were found in terrestrial habitat. The preference of consumption of insects varies person to person. The people of the region consume insects for their taste and deliciousness. Mode of consumption of edible insects varies among species to species. Some consume fry while some preferred roasted or in raw stage. *Samia ricini* (Fig. 7) and *Oecophylla smaragdina* (Fig. 6) showed the most preferred food among the ethnic tribe. The pupae of *Samia ricini* (Fig.8-Fig.11) constitute a special delicacy for the Bodo people while the eggs of *Oecophlylla smaragdina* (Fig.12 -Fig.15) were consumed a sort of spicy paste along aside garlic and chili. This serves as delicacy among the Bodos. Beside these 2 species, the Bodo people consume eggs of *Polistis olivaceus*, *Chondracris rosea* and *Statillia maculate* (Fig. 3) in fried or in smoked form whereas *Ictinogomphus rapax* (Fig. 2*)*, *Mecopeda elongate* (Fig.4) *Acheta domesticus* (Fig.5) were preferred in fried and smoked form respectively (Table 2).

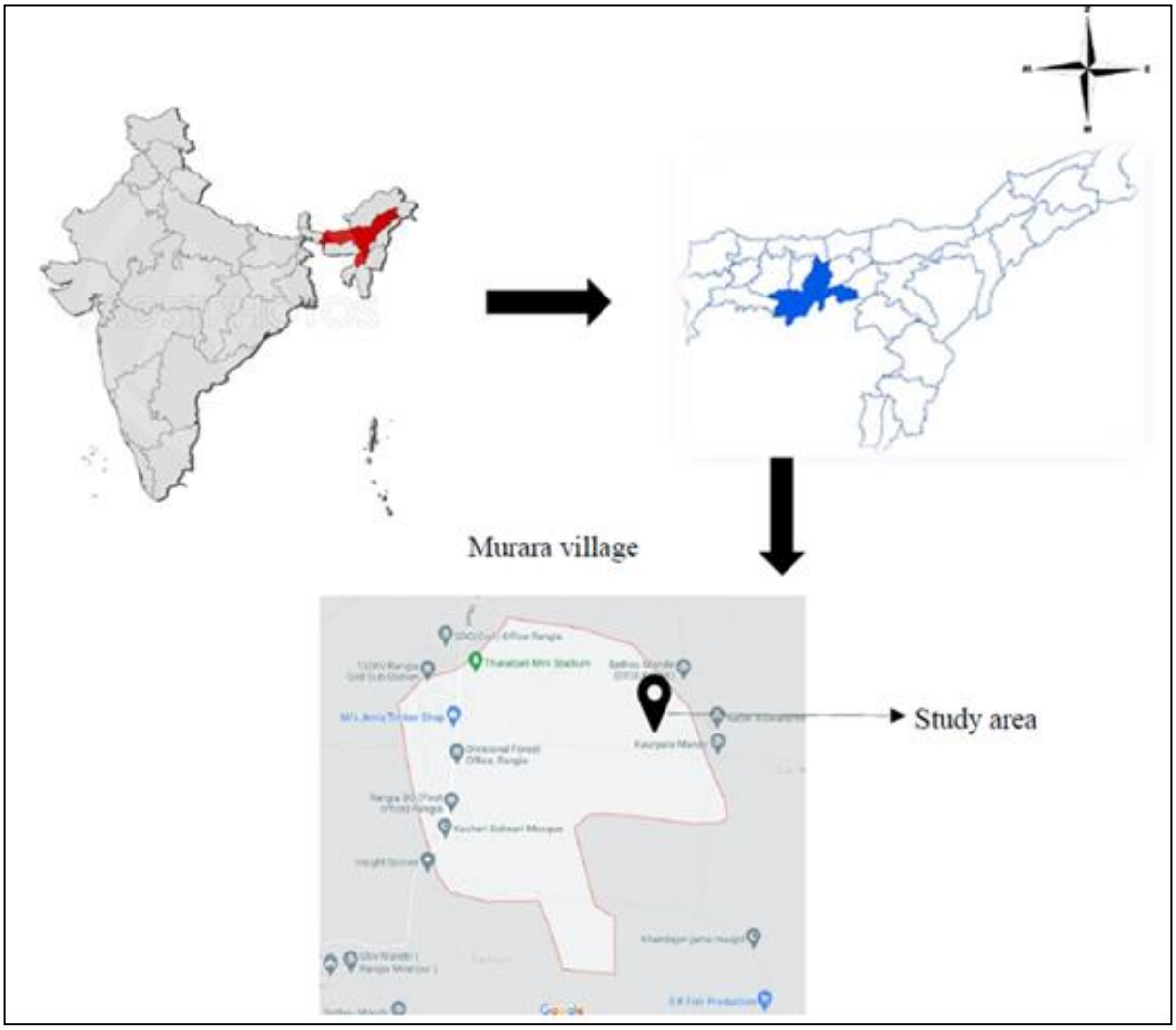
Seasonal availability of edible insects in the region showed maximum availability of insects during the months of June to October and then reduces gradually towards winter season. Some edible insects like *Samia ricini, Tarbinskiellus portentosus, Dytiscus marginalis, Statilia maculate* were found available throughout the year while more than half of the edible insects were found during the rainy season.

Table 1: Edible insects in Murari, Kamrup district, Assam

Sr. No.	Common name	Scientific name	Vernacular name	Family	Seasonal availability
1	Eri silkworm	*Samia ricini*	Lathemphao	Saturniidae	Whole year
2	Weaver ant	*Oecophylla smaragdina*	Khijima	Formicidae	Mar-Aug
3	Paper wasp	*Polislis olivaceus*	Bere	Vespidae	Jun-Oct
4	Honey bee	*Apis indica*	Mao Bere	Apidae	Apr-Oct
5	House Cricket	*Acheta domesticus*	Ushringkai	Gryllidae	Aug-Nov
6	Cricket	*Tarbinskiellus portentosus*	Khusanggra	Gryllidae	Whole year
7	White grub beetle	*Holotrichia serrata*	Borbai	Scarabaeidae	Jun-Oct
8	Diving beetle	*Dytiscus marginalis*	Chingkhouri	Dytiscidae	Whole year
9	Praying mantis	*Mantis inornate*	Guma	Mantidae	May-Sept
10	Termite	*Microtermes obesi*	Wuri	Termitidae	Sept-May
11	Grasshopper	*Mecopeda elongata*	Guma khufri	Tettigoniidae	May-Sept
12	Grasshopper	*Chondracris rosea*	Guma daosrijagra	Acrididae	Sept-Dec
13	Dragon fly	*Ictinogomphus rapax*	Julai mala	Gomphidae	May-Oct
14	Giant water bug	*Lethocerus indicus*	Gangjema	Belostomatidae	May-Oct
15	Mole cricket	*Statilia maculata*	Sosroma	Mantidae	Whole year

Table 2: Edible insects and their edible part, stage and culinary process

SL no.	Scientific name	Edible Part	Edible Stage	Culinary knowledge
1	*Samia ricini*	Whole body	Pupae	Fried
2	*Oecophylla smaragdina*	Egg, whole body	Larvae, pupae	Raw, fried
3	*Polislis olivaceus*	Whole body	Larvae	Fried, smoked
4	*Apis indica*	Whole body	Larvae	Raw with salt and chilly
5	*Acheta domesticus*	Whole body except wings	Adult	Smoked
6	*Tarbinskiellus portentosus*	Whole body except wings	Adult	Smoked
7	*Holotrichia serrata*	Whole body except wings	Larvae and adult	Fried
8	*Dytiscus marginalis*	Whole body except legs	Larvae and adult	Roasted and curry
9	*Mantis inornate*	Whole body	Adult	Fried, smoked
10	*Microtermes obesi*	Whole body	Adult	Fried
11	*Mecopeda elongate*	Whole body except wings	Adult	Fried
12	*Chondracris rosea*	Whole body except wings	Adult	Fried, smoked
13	*Ictinogomphus rapax*	Whole body	Nymph	Fried
14	*Lethocerus indicus*	Whole body	Nymph and adult	Fried, roasted
15	*Statilia maculate*	Whole body	Adult	Fried, smoked



Source: www.maps-india-in.com

Fig 1: Map of study area

Plate I
Edible insects

Fig 2: *Ictinogophus rapax*

Fig 3: *Statillia maculate*

Fig 4: *Mecopeda elongate*

Fig 5: *Acheta domesticus*

Fig 6: *Oecophylla smaragdina*

Fig 7: *Samia ricini*

Plate II
Culinary practice
(A) Eri silkworm (*Samia ricini*)

Fig 8: Eri silkworm in a bamboo platter

Fig 9: Cocoons in a bamboo platter

Fig 10: Pupae extracted from cocoons

Fig 11- Fried Eri silkworm in a plate

(B) **Weaver ant (*Oecophylla smaragdina*)**

Fig 12: Weaver ants with their hives

Fig 13 Eggs in a bamboo platter

Fig 14: Frying ants in a pan

Fig 15: Fried ants on a banana leaf

Conclusion

Insects serve as an important source of food for the Bodo community. But studies have shown that the trend of eating insects has been declining among the younger generation of the present era. This may be because of the influence of unawareness about the nutritional and ecological values of insects. Thus, through this study an attempt has been made to make people aware about edible insects and its nutritional sustainability to improve food security which might help to alleviate poverty in the long run.

References

1. Bodenheimer FS. Insects as Human Food. The Hague: W. Junk, 1951, 7-38.
2. Chakravorty J, Ghosh S, Meyer-Rochow VB. Comparative Survey of Entomophagy and Entomotheraputic Practices in Six tribes of Eastern Arunachal Pradesh (India). Journal of Ethnobiology and Ethnomedicine., 2013, 9-50.
3. Srivastava KP. A textbook of Applied entomology.,1995:2:400-486.
4. Srivastava SK, Babu N, Pandey H. Traditional insect bio prospecting—as human food and medicine. Indian Journal of Traditional Knowledge., 2009, 485-494.
5. www.cencusindia.gov.in. Last assessed on 26th July, time 4:50 pm.
6. www.maps-india-in.com. Last assessed on 20th May, 3:17 pm.
7. www.villageinfo.in. Last assessed on 2nd July, 8:15 am.