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INVENTORY ON THE BIODIVERSITY OF A TRIBAL VILLAGE IN ASSAM, INDIA, WITH SPECIAL REFERENCE TO THEIR USE PATTERN

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ABSTRACT

Mishing (Miri) tribe is inhabiting the districts of Dhemaji, North Lakhimpur, Sonitpur, Tinsukia, Dibrugarh, Sibsagar, Jorhat and Golaghat of Assam, Northeast India. A good number of wild plants are traditionally used by them for their day to day life. The present study highlights the biodiversity of one of the Mishing tribal villages of Assam with an emphasis on the traditional knowledge and use pattern of these wild plants. A total of 67 plant species belonging to 48 families and 19 bird species belonging to 18 families were recorded in the present study. In addition to that, 67 species of butterflies belonging to 5 families were also reported. The present study also highlights that people of the Mishing villages have a good knowledge of plant diversity and they rely on local plant diversity for medicinal purposes. There is need to motivate the younger generation on these traditional knowledge and hence proper documentation of biodiversity is warranted.

Keywords: Mishing tribe, Biodiversity, species.

INTRODUCTION

The Mishing tribe is one of the hordes of the Mongoloid groups of people occupying the hills and valleys of northeastern India. The Mishing tribal community belonged to Mongoloid group – a multitude of people that followed Austro-Asiatic races to India (Singh *et al.* 1996). Mishing or Miri tribe inhabiting the districts of Dhemaji, North Lakhimpur, Sonitpur, Tinsukia, Dibrugarh, Sibsagar, Jorhat and Golaghat of Assam, Northeast India. Many of the wild plants are used in the livelihood strategies of the tribal people. A good number of wild plants are traditionally used by the Mishing people in their day to day life (Barua *et al.* 2007). The present study highlights the biodiversity of one of the Mishing tribe villages of Assam with an emphasis of the traditional knowledge and use of these wild plants.

MATERIALS AND METHODS

The study was conducted in the Baligaon Miri Green village of Sonitpur district of Assam, Northeast India. Sonitpur district is spread over on the northern banks of Brahmaputra, the lifeline of Assam. It falls in the Tropical

Rainforest climate region that enjoys both hot and wet climatic condition. The selected area is rich in biodiversity. It is home to many trees, shrubs, undershrubs, herbs, butterflies and birds including some the endemic species. Summers are hot and humid with an average temperature of 27 °C. Location map of the area under study is given.

Surveys were carried out at different spots of the village band and its vicinity. The floral diversity is recorded by line transects method (Barhaum *et al.*, 1980). Species were noted along with the time, date and location of capture. Identification of flora was done with the help of literature. The information was collected after discussion with the local inhabitants and following Dutta *et al.* (2016). The bird population was recorded using the belt transect method (Cunningham *et al.*, 2006). During a transect walk, the observer recorded data on the sightings of the bird species. The survey was conducted either during the morning time zone (between 7:00-9:00 hr) or during the evening time zone (between 16:00-18:00 hr) when there is maximum bird activity (Cunningham *et al.*, 2006,

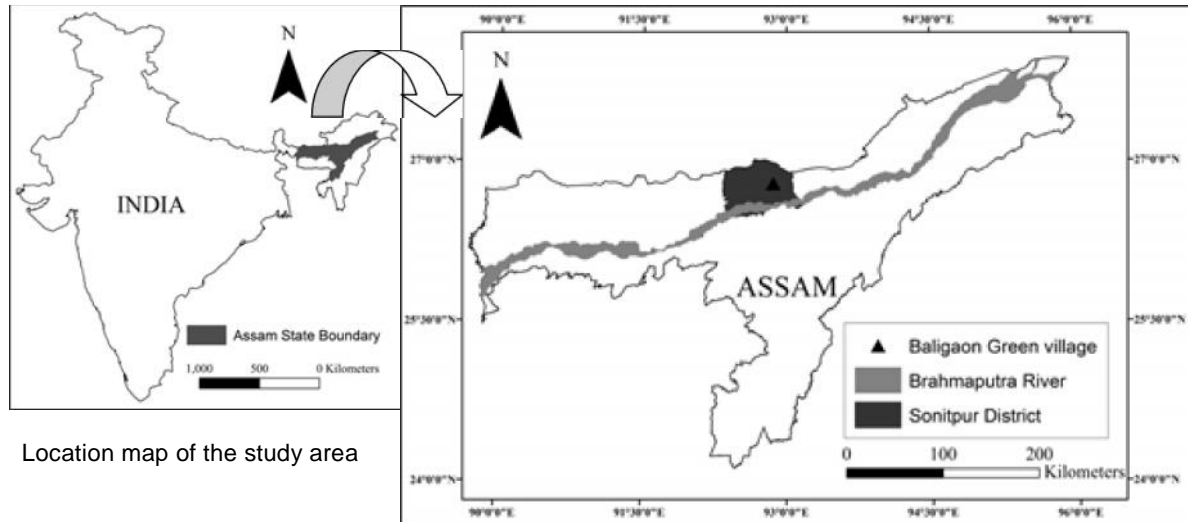


Table 1(a). Plant species found in Baligaon, Assam

Sl No	Scientific name	Common name / Local name	Family	Conservation status	Plant parts used
1.	<i>Abelmoschus moschatus</i>	Devil's Cotton	Malvaceae	Least concern	Seeds / Medicinal value
2.	<i>Adhatoda vasica</i> Nee	Malabar nut	Acanthaceae	Least concern	Leaves, Flowers / Medicinal value
3.	<i>Albizia procera</i> (Roxb.) Benth.	White siris tree	Mimosaceae	Least concern	Leaves / Medicinal value
4.	<i>Alocasiaa cuminata</i> Schott	Kochu (Assamese.), Ange (Mishing)	Araceae	Least concern	Shoots, leaves, tubers / Edible, Medicinal value
5.	<i>Alpinia alughas</i> (Retz) Rose	Tora (Assamese); Talayangakhan (Mishing)	Zingiberaceae	Least concern	Leaves, Young shoot/ Medicinal value
6.	<i>Amaranthus caudatus</i> L.	Love-lies-bleeding	Amaranthaceae	Least concern	Leaves and seeds / Edible
7.	<i>Ananas comosus</i> (L.) Merr.	Pineapple	Bromeliaceae	Least concern	Fruit/Edible
8.	<i>Artocarpus heterophyllus</i> Lamk.	Jackfruit tree	Moraceae	Least concern	Fruit / Edible
9.	<i>Azadiracta indica</i> A. Juss.	Neem	Meliaceae	Least concern	Leaves / Edible, Medicinal value
10.	<i>Baccaurea sapida</i> L.	Leteku (Assamese, Mishing)	Euphorbiaceae	Least concern	Fruit / Edible
11.	<i>Bambusa balcooa</i> Roxb.	Bamboo	Poaceae	Least concern	Shoot / Edible
12.	<i>Benincasa hispida</i> (Thunb. ex Murray) Cogn.	Wax gourd	Cucurbitaceae	Least concern	Fruit / Edible
13.	<i>Calamus rotang</i> L.	Common rattan	Arecaceae	Least concern	-
14.	<i>Cassia tora</i> L.	Pot Cassia	Caesalpinaceae	Least concern	Young leaves / Edible, Medicinal value
15.	<i>Centella asiatica</i> (L.) Urb.	Indian pennywort	Apiaceae	Least concern	Whole plant / Edible, Medicinal value
16.	<i>Ceratopteris thalictroides</i> (L.) Ad. Brongn	Water sprite, swamp fern,	Pteridaceae	Least concern	Fronds / Edible
17.	<i>Chukrasia tabularis</i> A. Juss.	Bastard cedar	Meliaceae	Least concern	-
18.	<i>Citrus paradise</i>	Lemon	Rutaceae	Least concern	Fruit / Edible
19.	<i>Clerodendron serratum</i> (L.) Moon	Blue glory, Beetle killer	Lamiaceae	Least concern	Root, Leaves / Medicinal value
20.	<i>Clerodendrum cloebrookianum</i> L.	East Indian Glory Bower	Lamiaceae	Least concern	Leaves / Medicine
21.	<i>Colocasia esculenta</i> (L.) Schott	Cocoyam	Araceae	Least concern	Tender leaves, tubers / Edible

Table 1(b).
Plant species found in Baligaon, Assam

Sl No	Scientific name	Common name / Local name	Family	Conservation status	Plant parts used
22.	<i>Corchorus capsularis</i> L.	White jute	Malvaceae	Least concern	Young plant / Edible, Medicinal value
23.	<i>Costus speciosus</i>	Elegant Costus, Kusta	Costaceae	Least concern	Rhizome / Medicinal
24.	<i>Cycas pectinata</i>	Sago Palm	Cycadaceae	Vulnerable	-
25.	<i>Dalbergia sissoo</i>	Indian rosewood	Fabaceae	Least concern	Leaves, Roots / Medicinal value
26.	<i>Dillenia indica</i> L.	Elephant apple	Dilleniaceae	Least concern	Fruit / Edible
27.	<i>Dioscorea alata</i> L.	Purple yam	Dioscoreaceae	Least concern	Tuber / Edible
28.	<i>Diplazium esculentum</i> (Retz.) SW	Vegetable fern	Athyriaceae	Least concern	Tender, leaf / Edible
29.	<i>Drymaria cordata</i> (L.) Willd ex Roem.	Tropical chickweed	Caryophyllaceae	Least concern	Tender, leaves, shoots / Medicinal value
30.	<i>Ficus glomerata</i> Roxb	-	Moraceae	Least concern	Leaves/Medicinal value
31.	<i>Ficus hispida</i> L.f.	Indian Ivy	Moraceae	Least concern	-
32.	<i>Flacourita cataphracta</i> L.	Indian Plum	Flacourtiaceae	Least concern	Fruit/Edible
33.	<i>Flacourita indica</i> (Burm. f.) Merr.	Governor's Plum	Flacourtiaceae	Least concern	Fruit, Leaves and Roots / Edible, Medicinal value
34.	<i>Garcinia cowa</i> L	The cowa fruit	Clusiaceae	Least concern	Fruit / Edible
35.	<i>Hibiscus cannabinus</i> L.	Kenaf	Malvaceae	Least concern	Seed / Edible
36.	<i>Hibiscus sabdarifa</i> L.	Roselle	Malvaceae	Least concern	Leaves, fruits / Edible
37.	<i>Houttuynia cordata</i> Thunb	Fish mint / Rainbow plant	Saururaceae	Least concern	Leaves / Edible, Medicine
38.	<i>Hydrocotyle sibthopoides</i> L	Lawn marshpennywort	Araliaceae	Least concern	Whole plant / Medicinal value
39.	<i>Leucas aspera</i> Link.	Thumbai	Lamiaceae	Least concern	Leaves / Medicinal value
40.	<i>Mangifera indica</i> L.	Mango	Anacardiaceae	Least concern	Fruit / Edible
41.	<i>Manihot esculenta</i>	Cassava	Euphorbiaceae	Least concern	Roots / Edible
42.	<i>Meliosma pinnata</i> (Roxb.) Maxim.	Khadiri	Sabiaceae	Least concern	Young leaves / Edible
43.	<i>Meliosma simplicifolia</i> (Roxb.) Walp.	Dhapapatia (Assamese), Nitak (Mishing)	Sabiaceae	Least concern	Young leaves / Medicinal value
44.	<i>Mikania micrantha</i>	Bitter vine	Asteraceae	Least concern	Young leaves / Medicinal value
45.	<i>Moringa pterygosperma</i> Gaertn	Drumstick tree	Moringaceae	Least concern	Leaves/Edible
46.	<i>Nyctanthus arbor-tristis</i> L.	Night-flowering jasmine	Oleaceae	Least concern	Leaves, flower / Edible
47.	<i>Oxalis corniculata</i> L.	Creeping woodsorrel	Oxalidaceae	Least concern	Whole plant / Edible , Medicinal value
48.	<i>Paederia foetida</i> L	Chinese fever vine.	Rubiaceae	Least concern	Stem, leaves / Medicinal value
49.	<i>Phoebe hainesiana</i>	Bonsum	Lauraceae	Least concern	-
50.	<i>Psidium guajava</i> L.	Guava	Myrtaceae	Least concern	Fruit / Edible

Table 1(c). Plant species found in Baligaon, Assam

Sl No	Scientific name	Common name / Local name	Family	Conservation status	Plant parts used
51.	<i>Santalum album</i> L.	Sandal Wood	Santalaceae	Vulnerable	-
52.	<i>Sarcochlamys pulcherrima</i> Gaud.	Duggal fibre tree	Urticaceae	Least concern	Young leaves / Edible
53.	<i>Scoparia dulcis</i> L.	Licorice weed	Plantaginaceae	Least concern	Leaves / Medicinal value
54.	<i>Shorea robusta</i>	Sal tree	Dipterocarpaceae	Least concern	Timber / Medicinal value
55.	<i>Solanum indicum</i> L.	Indian nightshade	Solanaceae	Least concern	Leaves, Fruit / Edible
56.	<i>Spilanthes acmella</i> Murr.	Pellitary	Compositae	Least concern	Plant Extract / Medicinal value
57.	<i>Stenochlaena palustris</i> (Burm. f.) Bodd.	Climbing fern	Blechnaceae	Least concern	Young frond / Edible
58.	<i>Streblus asper</i> Lour.	Siamese rough bush	Moraceae	Least concern	Root, Stem, Leaves, Fruit, Seeds / High Medicinal value
59.	<i>Swietenia mahagoni</i> (L.)	Mahogany wood	Meliaceae	Endangered	-
60.	<i>Tamarindus indica</i> L.	Indian date	Fabaceae	Least concern	Seed, young leaves / Edible
61.	<i>Tectona grandis</i>	Teak	Lamiaceae	Least concern	Wood / Timber
62.	<i>Terminalia arjuna</i> (Roxb.)	White murdah	Combretaceae	Least concern	-
63.	<i>Tinospora cordifolia</i>	Gulanch, Guduchi	Menispermaceae	Least concern	Roots, Stem, Leaves / Medicinal value
64.	<i>Tinospora crispa</i>	Patawali, Akar Patawali	Menispermaceae	Least concern	Stem / Medicinal value
65.	<i>Vicia benghalensis</i> L.	Purple vetch	Faboideae	Least concern	-
66.	<i>Vitex negundo</i> L.	Chinese chaste tree	Lamiaceae	Least concern	Leaves / Medicinal value
67.	<i>Zanthoxylum oxyphyllum</i> Edgn	Prickly ash	Rutaceae	Least concern	Tender, shoots

Table 2. Bird species found in Baligaon, Assam

Sl No	Scientific name	Common name / English name	Status	Family
1.	<i>Phalacrocorax niger</i>	Little Cormorant	Least Concern	Phalacrocoracidae
2.	<i>Acridotheres tristis</i>	Common Myna	Least Concern	Sturnidae
3.	<i>Streptopelia chinensis</i>	Spotted dove	Least Concern	Columbidae
4.	<i>Pycnonotus cafer</i>	Red-vented bulbul	Least Concern	Pycnonotidae
5.	<i>Pteropus vampyrus</i>	Large flying fox	Least Concern	Pteropodidae
6.	<i>Passer domesticus</i>	House sparrow	Least Concern	Passeridae
7.	<i>Aethopyga siparaja</i>	Crimson sunbird	Least Concern	Nectariniidae
8.	<i>Copsychus saularis</i>	Oriental Magpie robin	Least Concern	Muscicapidae
9.	<i>Dendrocygna javanica</i>	lesser whistling duck	Least Concern	Anatidae
10.	<i>Ardea alba</i>	Large Egret	Least Concern	Ardeidae
11.	<i>Amaurionis phoenicrus</i>	The white-breasted waterhen	Least Concern	Rallidae
12.	<i>Corvus splendens</i>	House crow	Least Concern	Corvidae
13.	<i>Leptoptilos javanicus</i>	Lesser Adjutant	Vulnerable	Ciconiidae
14.	<i>Vanellus indicus</i>	Redwattled lapwing	Least Concern	Charadriidae
15.	<i>Dicrurus macrocercus</i>	Black Drongo	Least Concern	Dicruridae
16.	<i>Dendrocitta vagabunda</i>	Rufous Treepie	Least Concern	Corvidae
17.	<i>Lanius cristatus</i>	Brown Shrike	Least Concern	Laniidae
18.	<i>Coracias benghalensis</i>	Indian Roller	Least Concern	Coraciidae
19.	<i>Halcyon smyrnensis</i>	White throated Kingfisher	Least Concern	Alcedinidae

Table 3 (a).
Butterfly species found in Baligaon, Assam

Sl. No	Scientific name	Common name	Family
1.	<i>Celaenorrhinus leucocera</i>	Common Spotted Flat	Hesperiidae
2.	<i>Telicota ancilla</i>	Dark Palm Dart	Hesperiidae
3.	<i>Odontoptilum angulata</i>	Chestnut Angle	Hesperiidae
4.	<i>Notocrypta curvifascia</i>	Restricted Demon	Hesperiidae
5.	<i>Spialia galba</i>	Indian Skipper	Hesperiidae
6.	<i>Pseudocoladenia dan</i>	Fulvous Pied Flat	Hesperiidae
7.	<i>Udaspes folus</i>	Grass Demon	Hesperiidae
8.	<i>Telicota colon</i>	Pale Palm Dart	Hesperiidae
9.	<i>Iambrix salsala</i>	Chestnut Bob	Hesperiidae
10.	<i>Taractrocera maevius</i>	Common Grass Dart	Hesperiidae
11.	<i>Sarangesa dasahara</i>	Common Small Flat	Hesperiidae
12.	<i>Common Dartlet</i>	Oriens gola	Hesperiidae
13.	<i>Troides helena</i>	Common Birdwing	Papilionidae
14.	<i>Papilio helenus</i>	Red Helen	Papilionidae
15.	<i>Graphium sarpedon</i>	Common Bluebottle	Papilionidae
16.	<i>Papilio iswara</i>	Great Helen	Papilionidae
17.	<i>Papilio polytes</i>	Common Mormon	Papilionidae
18.	<i>Papilio memnon</i>	Great Mormon	Papilionidae
19.	<i>Papilio demoleus</i>	Lime Butterfly	Papilionidae
20.	<i>Graphium doson</i>	Common Jay	Papilionidae
21.	<i>Graphium agamemnon</i>	Tailed Jay	Papilionidae
22.	<i>Papilio clytia</i>	Common Mime	Papilionidae
23.	<i>Pachliopta aristolochiae</i>	Common Rose	Papilionidae
24.	<i>Catopsilia Pomona</i>	Common Emigrant	Pieridae
25.	<i>Catopsilia pyranthe</i>	Mottled Emigrant	Pieridae
26.	<i>Eurema sari</i>	Chocolate grass yellow	Pieridae
27.	<i>Pieris brassicae</i>	Large Cabbage White	Pieridae
28.	<i>Eurema brigitta</i>	Small grass Yellow	Pieridae
29.	<i>Pieris canidia</i>	Indian Cabbage White	Pieridae
30.	<i>Cepora nadina</i>	Lesser Gull (Rare)	Pieridae
31.	<i>Cepora nerissa</i>	Common Gull	Pieridae
32.	<i>Colotis aurora</i>	Plain Orange Tip	Pieridae
33.	<i>Ixias Marianne</i>	White Orange Tip	Pieridae
34.	<i>Hebomoia glaucippe</i>	Great Orange Tip	Pieridae
35.	<i>Colotis etrida</i>	Small orange tip	Pieridae
36.	<i>Delias eucharis</i>	Common Jezebel	Pieridae
37.	<i>Eurema hecabe</i>	Common Grass Yellow	Pieridae
38.	<i>Eurema hecabe</i>	Grass yellow sp.	Pieridae
39.	<i>Junonia iphita</i>	Chocolate Pansy	Nymphalidae
40.	<i>Junonia lemonias</i>	Lemon Pansy	Nymphalidae

Simons *et al.*, 2006). Butterfly sampling was carried out upto 5m on both sides along a stretch covering the whole village. The 'Pollard walk' (Pollard and Yates, 1993) method was used for sampling butterflies. Sampling was carried during the sunlight hour (8:00 to 15:00 hr) mostly on sunny days. The taxa encountered were recorded in each sampling. Butterflies were identified from photographs and using field guides (Evans, 1932).

The samplings were carried out for both flora and fauna of the village covering all the months in different localities during 2017 and 2018. Field notes, photographs and observations of the flora and fauna were taken for all the seasons during the daylight hours.

RESULTS AND DISCUSSION

A total of 67 plant species belonging to 48 families and 19 bird species belonging to 18 families were recorded in the present study. Most of the plants have traditional medicinal value and many are used as food in the Mishing communities (listed in Table 1). Among the plant species, *Santalum album* L. and *Cycas pectinata* are vulnerable (IUCN, 2010) and *Swietenia mahagoni* (L.) is listed as endangered species in the IUCN red list (IUCN, 1998). The species diversity and status of each bird species in different habitat were different as the habitat and vegetation cover is different. A wide range of trees such as- *Artocarpus*

Table 3 (b).
Butterfly species found in Baligaon, Assam

Sl. No	Scientific name	Common name	Family
41.	<i>Junonia almanac</i>	Peacock Pansy	Nymphalidae
42.	<i>Junonia hierta</i>	Yellow Pansy	Nymphalidae
43.	<i>Junonia atlites</i>	Gray Pansy	Nymphalidae
44.	<i>Phalanta phalantha</i>	Common Leopard	Nymphalidae
45.	<i>Cethosia biblis</i>	Red Lacewing	Nymphalidae
46.	<i>Danaus genutia</i>	Common Tiger	Nymphalidae
47.	<i>Cethosia cyane</i>	Leopard Lacewing	Nymphalidae
48.	<i>Ypthima huebneri</i>	Common Four Ring	Nymphalidae
49.	<i>Orsotriaena medus</i>	Nigger	Nymphalidae
50.	<i>Ypthima baldus</i>	Common Five Ring	Nymphalidae
51.	<i>Ariadne ariadne</i>	Angled Castor	Nymphalidae
52.	<i>Melanitis leda</i>	Common Evening Brown	Nymphalidae
53.	<i>Mycalesis perseus</i>	Common Bush Brown	Nymphalidae
54.	<i>Neptis hylas</i>	Common Sailer	Nymphalidae
55.	<i>Athyma nefte</i>	Colour Sergeant	Nymphalidae
56.	<i>Athyma perius</i>	Common Sergeant	Nymphalidae
57.	<i>Parantica aglea</i>	Glassy Tiger	Nymphalidae
58.	<i>Moduza procris</i>	Commander	Nymphalidae
59.	<i>Euploea core</i>	Common Indian Crow	Nymphalidae
60.	<i>Tanaecia lepidea</i>	Grey Count	Nymphalidae
61.	<i>Chilades lajus</i>	Lime Blue	Lycaenidae
62.	<i>Jamides celeno</i>	Common Cerulan	Lycaenidae
63.	<i>Castalius rosimon</i>	Common Pierrot	Lycaenidae
64.	<i>Cheritra freja</i>	Common Imperial	Lycaenidae
65.	<i>Loxura atymnus</i>	Yamfly	Lycaenidae
66.	<i>Zizula hylax</i>	Tiny Grass Blue	Lycaenidae
67.	<i>Curetis thetis</i>	Indian Sunbeam	Lycaenidae

heterophyllus Lamk, *Magnifera indica*, *Santalum album* Balipara Tract and Frontier Foundation and Wild L., *Shorea robusta*, *Tectona grandis* etc. are found in the village locality. These trees provide a good habitat for different species of birds. Among the bird species, *Leptoptilos javanicus* is listed vulnerable in the IUCN red list (Bird Life International, 2013). Their population is

under study.

reducing day by day. They are mostly found in freshwater wetlands of the village. Butterflies are most beautiful creatures on earth. Around 1500 species of butterflies are reported from India of which nearly half are reported from Assam and Northeast India. The swallowtail butterflies occupy an important place and the IUCN has identified the entire NE region as swallowtail rich zone under "Swallowtail Conservation Action Plan". In our study, 67 species of butterflies of 5 different families are reported in the studied area.

CONCLUSION

Biodiversity provides a variety of environmental services which play an important role at the global, regional and local levels. Therefore, it is very important to take proper management strategies for all the species that enhances the richness of biodiversity of the region. The present study also reveals that people of the Mishing village have a good knowledge of plants and they mostly rely on the locally available plants for their medicinal purposes. There is need to motivate the younger generation to acquire the knowledge and hence the proper documentation is required.

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REFERENCES

- Singh, J., Bhuyan, T. C., and Ahmed, A., 1996. Ethnobotanical studies on the Mishng tribes of Assam with special reference to food and medicinal plant, *Journal Economic Taxonomy Botany*, 12, 350–356.
- Barua, U., Hore, D. K. and Sarma, R. 2007. Wild edible plants of Majuli Island and Darang districts of Assam, *Indian Journal of Traditional Knowledge*, 6, 191–194.
- Barhaum, K. P., Anderson, D. R. and Cauke, Z. L., 1980. Estimation of density from line transects sampling of biological population, *Wildlife Monographs*, 72, 515.
- Dutta, G., Baruah, G., and Devi, A. 2016. Wild food plants of Mishng tribe –an ethnobotanical survey, *Tropical Plant Research*, 3 (1): 221-223.
- Cunningham, M. A., Johnson, D. H. and Svingen, D. N. 2006. Estimates of Breeding Bird Populations in the Sheyenne National Grassland, North Dakota. *The Prairie Naturalist*, 38(1): 50–67.
- Simons, T.R., Shriner, S.A. and Farnsworth, G. L. 2006. Comparison of breeding bird and vegetation communities in primary and secondary forests of Great Smoky Mountains National Park, *Biological Conservation*, 129: 302–311.
- Pollard, E. and Yates, T. J. 1993. *Monitoring Butterflies for Ecology and Conservation*, Chapman & Hall, London, pp: 274.
- Evans, W.H. 1931. *The Identification of Indian Butterflies-Second Edition*. Bombay Natural History Society, Bombay. pp: 464.
- The IUCN Red List of Threatened Species, 1998, 2010. <http://dx.doi.org/10.2305/IUCN.UK.20103.RLTS.T42062A10617695.en>
- <http://dx.doi.org/10.2305/IUCN.UK.1998.RLTS.T32519A9712452.en>
- Bird Life International. 2013. *Leptoptilos javanicus*. The IUCN Red List of Threatened Species, 2013.
- <http://www.iucnredlist.org/details/22697713/0> Electronic version accessed, September 2015.