



Biodiversity of one Garo village of Assam with an emphasis on the traditional knowledge and use of the wild plants

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ABSTRACT

The traditional knowledge on the use of plants by Garo tribals is fast vanishing because of rapid urbanization and life style changes. Therefore, documentation of the traditional knowledge is very urgent which otherwise will be lost forever. In our study, a survey has been done to gather the information regarding wild food plants used by the selected Garo village of Assam with an emphasis on the traditional knowledge and use of the wild plants. A total of 29 plant species out of 22 families are recorded from the selected village which are also used by the tribal people for their livelihood. The present study reveals that people of Sengelimari Garo village have a good knowledge of medicinal plants and they mostly rely on the locally available plants for their medicinal purposes. Out of the plants, 18 species are used for medicinal purposes. 19 bird species belonging to 18 families are recorded in the present study among which *Leptoptilos javanicus* is listed vulnerable in the IUCN red list. Due to inclination towards the allopathic medicine and also changing life styles, new generation is least concern about the traditional use of these plants. Hence, there is need to motivate younger generation to acquire the knowledge on medicinal uses of plants and also the proper documentation is required.

1. Introduction

It is reported that the Garos originally came from Tibet and settled in Koch Behar for about 400 years. Like the Mishings, Garos have no written history in black and white. They use to carry down their history orally from one generation to the other. Some similarities in the Tibetan and Garo vocabularies tend to confirm their belief. From Koch Behar, the Garos moved to Rangamati. They wandered eastwards up the Brahmaputra valley and moved on to the bank of Manas River, Jugighopa (Bongaigaon District), Garomari (Goalpara), Kamakhya, Baghmelpahar (between Boko and Chaygaon), Tukreswari (Goalpara) and finally settled in the Garo Hills of Meghalaya that now forms the home of these tribes. The traditional knowledge on the use of plants by Garo tribals is fast vanishing because of rapid

urbanization and life style changes. Therefore, documentation of the traditional knowledge is very urgent which otherwise will be lost forever. Decentralization of the traditional knowledge study may help to revitalization of the in-situ and ex-situ conservation of plant species of importance. In our study, a survey has been done to gather the information regarding wild food plants used by the selected Garo village of Assam with an emphasis on the traditional knowledge and use of the wild plants.

2. Materials and Methodology

The study was conducted in the Sengelimari village of Sonitpur district of Assam, Northeast India. The floral diversity was recorded following line transects method (Barhaum *et al.*, 1980).

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Table 1. Plant species found in Sengelimari village, Assam

| S.no | Plant name | Family | Garó name | Parts utilize | Mode of uses |
|------|---|---------------|------------|-------------------------|--|
| 1 | <i>Areca catechu</i> L. | Arecaceae | Gui Bol | Fruit | Eaten raw, mouth Freshner |
| 2 | <i>Mangifera indica</i> L. | Anacardiaceae | Thekachú | Fruit | Eaten raw |
| 3 | <i>Artocarpus heterophyllus</i> Lam. | Moraceae | Thebrong | Whole plant | Medicine for diarrhea, fever, ulcers and wounds |
| 4 | <i>Cocos nucifera</i> | Arecaceae | Narikol | Fruit | Eaten raw as fruits, also used to make sweets at home |
| 5 | <i>Psidium guajava</i> | Myrtaceae | Khampareng | Fruits and Leaves | Tender leaves are used in fever and mouth infection |
| 6 | <i>Aquilaria agallocha</i> (Lour.) Roxb. | Thymelaeaceae | Agaru | Bark | Bark is used to make agarbatti, now-a-days commercially used by Garo people |
| 7 | <i>Lagerstroemia speciosa</i> (L.) Pers. | Lythraceae | Ajar | Whole plant | Great quality wood to make furniture |
| 8 | <i>Zizyphus jujuba</i> | Rhamnaceae | Khangkhal | Whole plant | Bark is used to cure cough |
| 9 | <i>Andrographis paniculata</i> (Burm. f.) Wall. ex Nees | Acanthaceae | Sirota | Leaves and stem | Used as medicine for diarrhea, dysentery and common cold |
| 10 | <i>Colocasia esculenta</i> (L.) Schott | Aracaceae | Thagong | Whole plant | The tubers are rich in starch and used like potato, good for blood purification |
| 11 | <i>Flemingia strobilifera</i> (L.) W.T.Aiton | Fabaceae | Makhiyoti | Leaves | Traditional medicine to treat epilepsy, hysteria and fever |
| 12 | <i>Cinnamomum tamala</i> | Lauraceae | Tezpat | Leaves and bark | Leaves are carminative, used in colic, diarrhea and rheumatism, reduces blood sugar level and helps in release of more insulin |
| 13 | <i>Manihot esculenta</i> | Euphorbiaceae | Thabulsu | Roots and bulb | Garo people used this as tonic for growing body |
| 14 | <i>Acorus calamus</i> L. | Acoraceae | Bos gos | ----- | ----- |
| 15 | <i>Hibiscus rosa -sinensis</i> L. | Malvaceae | Joba | Leaves | Used in hair fall treatments |
| 16 | <i>Moringa oleifera</i> | Moringaceae | Sojina | Leaves, bark and Fruits | Used as anti-inflammatory and anodyne |
| 17 | <i>Cedrus deodara</i> | Pinac eae | Debodaru | Bark | Used as building materials |
| 18 | <i>Kalanchoe pinnata</i> (Lam.) Pers. | Crassulaceae | Walkham | Leaves | Used in treatments of bruises, boils, and bites of insects. Also used in gall bladder stone removal. |
| 19 | <i>Opuntia dilenii</i> | Cactaceae | Sagorfena | Frits and stems | Used as a remedy for cough, snake bites, hepatic congestion and asthma |
| 20 | <i>Citrus sinensis</i> (L.) | Rutaceae | Narang | Fruits | Eaten raw and used for juice |
| 21 | <i>Bambusa blumeana</i> | Poaceae | Wage | Whole plant | Used in construction and making handicrafts |
| 22 | <i>Cajanus cajan</i> | Fabaceae | Landu | Seeds and Leaves | Seeds used as pulses, leaves are used to control sugar level |
| 23 | <i>Citrus documana</i> | Rutaceae | Jambura | Fruits | Used as a medicine in epilepsy, cough. It also relives sore throat, asthma, thirst, hiccups, digestion and intoxication |
| 24 | <i>Oxalis corniculata</i> L. | Oxalidaceae | Samphék | Whole plant | Used as vegetables, great source of vitamin C and helpful in dyspepsia |

| S.no | Plant name | Family | Garó name | Parts utilize | Mode of uses |
|------|---------------------------------|--------------|-----------|--------------------------|--|
| 25 | <i>Tamarindus indica</i> L. | Fabaceae | Cheng | Leaves, Fruits and seeds | Leaves are used in ulcers, fever and jaundice. Seeds are used to treat dysentery, burning sensation and diabetes |
| 26 | <i>Streblus asper</i> Lour. | Moraceae | Kuthura | Leaves, tender shoots | The Garó people uses leaves and tender shoots as a vegetable |
| 27 | <i>Spilanthes acmella</i> | Asteraceae | ----- | Leaves, stems, roots | Stem juice is used in high fever and also in jaundice, rich in protein, calcium and phosphorous, starch obtained from the roots and stems are useful in diarrhea and dysentery |
| 28 | <i>Erythrina variegata</i> L. | Fabaceae | ----- | Ornamental | ----- |
| 29 | <i>Ananas comosus</i> (L.) Merr | Bromeliaceae | Anarus | Tender, Leaves and Tuber | Medicinal value for dysentery and intestinal worms |

The bird population was recorded following the belt transect method (Cunningham *et al.*, 2006). Identification of flora and fauna was done with the help of literature (Kanjilal & Bor 1934). During a transect walk, the observer recorded data on the sightings of the bird species. The survey for bird population was conducted both during morning and evening time zone (Cunningham *et al.*, 2006, Simons *et al.*, 2006). 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. Identifications of butterflies were done from photographs and using field guides (Evans, 1932).

Table 2. Table showing the traditional use of the available plants for medicinal purposes

| Disease name | Number of plants used |
|--------------------|-----------------------|
| Diarrhea | 4 |
| Ulcers | 2 |
| Dysentery | 4 |
| Jaundice | 2 |
| Cough | 2 |
| Common cold | 1 |
| High fever | 4 |
| Blood purification | 1 |
| Diabetes | 3 |
| Asthma | 2 |
| Wounds | 1 |
| Epilepsy | 2 |
| Digestion | 1 |

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

3. Results and Discussion

A total of 29 plant species out of 22 families were recorded from the selected village which are also used by the tribal people for their livelihood. The present study reveals that people of Sengelimari Garó village have a good knowledge of medicinal plants and they mostly rely on the locally available plants for their medicinal purposes. Out of the plants, 18 species are used for medicinal purposes. 19 bird species belonging to 18 families were recorded in the present study among which *Leptoptilos javanicus* is listed vulnerable in the IUCN red list (Bird Life International, 2013).

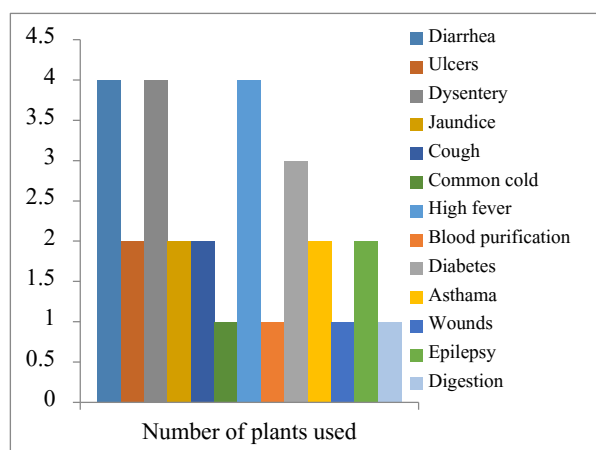


Figure 1. Figure showing the traditional use of the available plants for medicinal purposes

4. Conclusion

Due to inclination towards the allopathic medicine and also changing life styles, new generation is least concern about the traditional use of these plants. Hence, there is need to motivate younger generation to acquire the knowledge on medicinal uses of plants and also the proper documentation is required.

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Table 3. Bird species found in Sengelimari village, Assam

| S.no | Scientific name | Common name/ English name | Conservation 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 4. Butterfly species found in Sengelimari village, Assam

| S.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 |

| S.no | Scientific name | Common name | Family |
|------|---------------------------------|------------------------|--------------|
| 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 |
| 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>Mycalasis perseus</i> | Common Bush Brown | Nymphalidae |
| 54. | <i>Neptis hylas</i> | Common Sailer | Nymphalidae |

| S.no | Scientific name | Common name | Family |
|-------------|--------------------------|--------------------|---------------|
| 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 |