Wild edible aquatic and marshland angiosperms of Baksa district, BTC area, Assam, India

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ABSTRACT

The aquatic and marshland vegetation of Baksa district is quite rich due to presence of a large number of water bodies. The study reveals that various parts of 41 species are edible and consumed by the tribal and non-tribal communities inhabiting there in. These plants belong to 33 genera and 24 families. Among these plants, 27 species belong to dicot and 14 to monocot. The medicinal and other uses of plants are also reported.

Key words: Aquatic, marshland, Baksa district, Bodo
All the information regarding vernacular names, edible plant parts, other plant parts used, mode of utilization were collected from different persons of different villages of the district. The recorded information are verified and compared with other informers and also with literature of [7]. The local uses of plant resources of the district have been analyzed as per the process suggested by [8, 9]. Plants have been identified by comparing herbarium sheets with those of Gauhati University, Kanjilal Herbarium, Shillong and also by using different monographs and floras of [10, 11, 12, 13, 14, 15 and16].

The scientific names of the plants are arranged in alphabetic order in enumeration. Other information like name of family to which the plant belongs, vernacular names in Assamese (Ass) and in Bodo, a brief taxonomic description, habitat category, flowering and fruiting (Fl. & fr.) periods, association, name of edible plant parts, mode of utilization, medicinal use, other uses of plants if any are also reported.

**Enumeration of species:**

1. *Acorus calamus* Linn.  Family: Araceae ; Bos (Ass.) ; Bas (Bodo)
   An erect aromatic herb with a thick creeping rootstock
   Association: The plant is associated with *Hedychi um coronarium* Koen ex Retz, *Canna flava* Roxb.
   Plant parts used and mode of utilization: leaf & rhizome are dried and used as condiment.
   Other uses: rhizome used in snake bite
   Place: Barama, Masalpur, Nagrijuli, Roumari

2. *Alpinia galanga* (L.) Sw  Family: Zingiberaceae; Tara (Ass.); Tharai (Bodo)
   Perennial herb with a fleshy rhizome and white pinkish inflorescence
   Fl. & fr. period: March-August; Habitat category: wetland hydrophytes.
   Association: The plant is associated with *Canna flava* Roxb., *Colocasia esculenta* (L.) Schott.
   Plant parts used and mode of utilization: dried seed used as spice.
   Other uses: ropes made with leaf sheath.
   Place: Belguri, Dumi, Gerua

3. *Alternanthera philoxeroides* (Mart). Griselo  Family: Amaranthaceae; Nolduba(Ass.) Doigaldeb (Bodo); A Prostrate, profusely branched herb with solid stem and white sessile inflorescence.
   Fl. & fr. period : June-october ;Habitat category: Rooted emergent ;
   Association: The plant is associated with *Lemna minor* L., *Enhydra fluctuans* Lour.
   Plant parts used and mode of utilization: tender shoot as leafy vegetable
   Place: Barama, Masalpur, Patkijuli

4. *A. sessilis* (L.)R. Br. Ex DC Family: Amaranthaceae ; Matikaduri(Ass), Mathi galdeb (Bodo); A Prostrate, profusely branched herb with solid stem and white sessile inflorescence.
   Association: The plant is associated with *centella asiatica* (L.) Urban, *Eclipta prostrata* L.
   Plant parts used and mode of utilization: tender shoot as leafy vegetable
   Place: Masalpur, Kharua, Tamulpur

5. *Amorphophalus campanulatus* Blume  Family: Araceae ; Ohl kasu (Ass), Olodot (Bodo); A marshy herb with a roundish warty thick corn and variegated stem.
   Fl. & fr. period : July-December ;Habitat category: Wetland hydrophytes.
   Association: The plant is associated with *Lasio spinosa* (L.) Thw., *Houtttynia cordata* Thunb.
   Plant parts used and mode of utilization: corm dried, boiled and cooked.
   Place: Nabasti, Barama, Lechera

6. *Bacopa monnieri* (L.) Pennell Family: Scrophulariaceae; Brahmi(Ass), Bd. Name: Thiphu maigong(Bodo); A profusely branched prostrate herb with white flower.
   Fl.& fr. period : April-June ; Habitat category: rooted emergent.
   Association: The plant is associated with *Rotala rotundifolia* L., *Phyla nodiflora* (L.) Greene
   Plant parts used and mode of utilization: tender shoot as leafy vegetable.
   Medicinal value: leaf extract eaten as brain tonic.

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7. Calamus tenuis Roxb. Family: Arecaceae; Jatibet(As.), Raidang(Bodo)
A Climbing plant with slender stem and spiny leaf.
Fl. & fr. period: April-June; Habitat category: Wetland hydrophytes.
Association: The plant is associated with Bambusa spp, Mikania micrantha Kunth
Plant parts used and mode of utilization: mature fruit eaten as raw and tender shoot as leafy vegetable.
Other uses: stem used for making furniture
Place: Barama, Tamulpur, Masalpur

8. Centella asiatica (L.) Urban Family: Apiaceae; Bor manimuni(As.), Manimuni gader(Bodo); A profusely branched prostrate herb with pink inflorescence
Fl. & fr. period: March-July; Habitat category: Wetland hydrophytes.
Association: The plant is associated with Hydrocotyle sibthorpioides Lamk., Oxalis corniculata
Plant parts used and mode of utilization: the juice of shoot are boiled and used as curry.
Medicinal value: juice of shoot eaten to treat dysentery.
Place: Barama, Tamulpur, Masalpur

9. Colocasia esculenta (L.) Schott. Family: Araceae; Kalakasu(As), Gusum thaso (Bodo); An erect herb with black stem and petiole and yellow spathe.
Fl. & fr. period: Any season; Habitat category: Wetland hydrophytes.
Association: The plant is associated with Polygonum hydropiper (L.) Spach., Monochoria hastata (L.) Solms
Plant parts used and mode of utilization: leaf, petiole & rhizome as vegetable.
Medicinal value: petiole used externally in ear problem.
Place: Tamulpur, Barama, Masalpur

10. Drymaria cordata Wild Family: Caryophyllaceae; Laijabri(As.), Jabshri(Bodo):
A branched herb with cordate leaf and white minute flower.
Fl. & fr. period: July-October; Habitat category: wetland hydrophytes
Association: The plant is associated with Commelina benghalensis Linn., Murdannia nudiflora (L.) Brenan
Plant parts used and mode of utilization: tender shoot mixed with other vegetables and cooked.
Medicinal value: leaves used to treat insect bite.
Place: Nabasti, Uttarkusi, Barama

11. Enhydra fluctuans Lour. Family: Asteraceae; Helasi(As), Alasi maigong(Bodo);
A branched aquatic herb with fistular stem and white minute flower.
Fl. & fr. period: April-September; Habitat category: rooted floating.
Association: The plant is associated with Alternanthera philoxeroides (Mart.) Griselo, Ipomoea aquatica Forsk.
Plant parts used and mode of utilization: tender shoot cooked as vegetable
Place: Barama, Kharua, Musalpur, Dhulabari

12. Euryale ferox Salisbury Family: Nymphaeaceae; Nikhori(As), Makhana(Bodo),
A prickly herb with red flower
Fl. & fr. period: August-December; Habitat category: rooted floating.
Association: The plant is associated with Nymphaea rubra Roxb. ex Andrews, Utricularia aurea Lour.
Plant parts used and mode of utilization: fruit eaten as raw.
Place: Kharuajan, Masalpur, Koklabari

13. Fragaria indica Andr. Family: Rosaceae; Garukhis(As), Bunmala(Bodo)
A prostrate herb with yellow flower and red fruit
Fl. & fr. period: January-May; Habitat category: Wetland hydrophytes.
Association: The plant is associated with Hydrocle zeylanica (L.) Vahl, Lindernia ruellioides (Colsm.) Pennell
Plant parts used and mode of utilization: fruit eaten as raw
Place: Masalpur, Kharua, Ramchataray

14. Hydrocera triflora(L.) Wt. & Arn Family: Balsaminaceae; Pani junka phul (As)
A tall erect herb with white pinkish flower and pentangular spongy stem.

16. *Hygroryza aristata* Nees Family: Poaceae; Bahpatia (Ass), Uri dhan (Bodo); A floating herb with inflated leaf sheaths serving as floats. Fl. & fr. period: July-October; Habitat category: Rooted floating. Association: The plant is associated with *Hymenanche assamica* (Hooker) Hiteh., *Lemma minor* L. Place: Kharua, Tamulpur, Gerua.


21. *Monochoria hastata* (L.) Solms Family: Pontederiaceae; Pani kasu (Ass), Ajnai (Bodo); An erect herb with hastate leaf and blue flower. Fl. & fr. period: May-November; Habitat category: rooted emergent.
Association: The plant is associated with *Ludwigia octovalvis* (Mich.) Raven, *M. vaginalis* (Burm.f.) Presler ex Kunth

Plant parts used and mode of utilization: flower cooked with small fish.
Place: Kharua, Nabasti, Odalbari

22. *M. vaginalis* (Burm.f.) presler ex Kunth Family: Pontederiaceae; Panikasu (Ass), Ajnai(Bodo); An erect herb with blue flower and narrowly ovate leaf.
Fl.& fr. period : May- November; Habitat category: rooted emergent.
Association: The plant is associated with *Ludwigia octovalvis* (Mich.) Raven, *M. hastata*(L.) Solms
Plant parts used and mode of utilization: flower cooked with small fish.
Place: Tamulpur, Barama, Odalbari

23. *Nelumbo nucifera* Gaertner Family: Nelumbonaceae; Padum (Ass), Padda bihar (Bodo); A herb with perennial rhizome, emerging leaf and white flower
Fl.& fr. period : June-October ; Habitat category: rooted floating.
Association: The plant is associated with *Nymphaea rubra* Roxb. ex Andrews, *Eichhornia crassipes* (Mart.) Solms (Buch-Ham. Ex Meisn) Sojak
Plant parts used and mode of utilization: seed eaten as raw, petiole cooked and thalamus used in preparation of pickles.
Medicinal value: root, leaf, flower, seed used in fever, skin diseases.
Other uses: flowers used in ritual purpose.
Place: Kharua, Chowki, Ramchatary

24. *Nymphaea nouchali* Burm. f. Family: Nymphaeaceae; Kath mouka (Ass.), Thoblo (Bodo); A herb with perennial rhizome, white flower, and serrated leaf.
Fl.& fr. period : May-October ; Habitat category: rooted floating.
Association: The plant is associated with *Nymphaea rubra* Roxb. ex Andrews, *Eichhornia crassipes* (Mart.) Solms (Buch-Ham. Ex Meisn) Sojak
Plant parts used and mode of utilization: fruit and seed eaten as raw and cooked with fish.
Place: Kharua, Nabasti, Dhulabari

25. *N. rubra* Roxb. Ex Andrews Family: Nymphaeaceae; Ranga vet (Ass), Thoblo (Bodo); A herb with perennial rhizome, red flower, and serrated leaf.
Fl.& fr. period: May-October; Habitat category: rooted floating.
Association: The plant is associated with *Nymphaea stellata* Willd.,*Eichhornia crassipes* (Mart.) Solms (Buch-Ham. Ex Meisn) Sojak
Plant parts used and mode of utilization: fruit and seed eaten as raw and cooked with fish.
Place: Barama, Uttarkusi, Odalbari

26. *N. stellata* Willd Family: Nymphaeaceae; Sindhi mouka(Ass), Thoblo (Bodo);
A herb with perennial rhizome, white flower, and entire leaf.
Fl.& fr. period: May-October; Habitat category: rooted floating.
Association: The plant is associated with *Nymphaea rubra* Roxb. ex Andrews , *Eichhornia crassipes* (Mart.) Solms (Buch-Ham. Ex Meisn) Sojak
Plant parts used and mode of utilization: fruit and seed eaten as raw and cooked with fish.
Medicinal value: root extract eaten in dysentery.
Place: Barama, Masalpur, Dumni

27. *Oenanthe fistulosa* Flaming Family: Apiaceae; pani dhania(Ass); An erect herb with white inflorescence and fistular stem.
Fl.& fr. period : February-April ; Habitat category: rooted emergent.
Association: The plant is associated with *Aeschynomene aspera* Linn., *Ludwigia perennis* L.
Plant parts used and mode of utilization: tender shoot as leafy vegetable.
Place: Nabasti, Uttarkusi, Roumari
28. *Oldenlandia corymbosa* Linn. Family: Rubiaceae; Sarpajiva (Ass), Mandaoli (Bodo); A branched herb with minute white flower.
Fl. & fr. period: June-August; Habitat category: Wetland hydrophytes.
Association: The plant is associated with *Drymaria cordata* Willd, *Spilanthes paniculata* Wall. ex DC
Plant parts used and mode of utilization: tender shoot mixed with other leafy vegetables
Medicinal value: plant extract used in stomach problem.
Place: Barama, Uttarkusi, Lechera

29. *Ottelia alismoides* (L.) Perso Family: Hydrocharitaceae; Senguntepa (Ass); A submerged herb with white flowers and ovoid fruits enclosed in a six-winged spathe.
Fl. & fr. period: July-September; Habitat category: rooted submerged
Association: The plant is associated with *Sagittaria guayanensis* Humb. Bonp. & Kunth, *Ceratophyllum demersum* Linn.
Plant parts used and mode of utilization: fruit eaten as raw
Place: Nabasti, Chapaguri

30. *Oxalis corniculata* Linn. Family: Oxalidaceae; Sengeritenga (Ass), Singri gakhwi (Bodo); Profusely branched prostrate herb with yellow flower and sour leaf.
Fl. & fr. period: November-March; Habitat category: Wetland hydrophytes.
Association: The plant is associated with *Stellaria media* (L.) Vill, *Centella asiatica* (L.) Urban
Plant parts used and mode of utilization: shoots are boiled and cooked with fish.
Medicinal value: tender shoots eaten to control dysentery.
Other uses: leaf used for cleaning metallic utensils.
Place: Barama, Tamulpur, masalpur

31. *Persicaria chinense* Linn. Family: Polygonaceae; Madhosoling (Ass), Besongali (Bodo); A branched herb with white flower and sour tasted leaf.
Fl. & fr. period: June-August; Habitat category: Wetland hydrophytes.
Association: The plant is associated with *Houttuynia cordata* Thunb, *Commelina diffusa* Burm.f.
Plant parts used and mode of utilization: tender shoot as leafy vegetables.
Place: Barama, Tamulpur, Ramchatary

32. *Persicaria hydropiper* (L.) Spach. Family: Polygonaceae; Behu (Ass), Bislangi (Bodo); An erect herb with swollen node, loose inflorescence and pinkish flower.
Fl. & fr. period: March-May; Habitat category: Wetland helophytes
Association: The plant is associated with *Cyperus difformis* Linn., *Ciria* Linn.
Plant parts used and mode of utilization: young shoot mixed with other leafy vegetables and then cooked.
Other uses: leaves burnt to control mosquito.
Place: Barama, Tamulpur, Kharuajan

33. *P. microcephalum* G. Don. Family: Polygonaceae; Madhosoling (Ass), A branched herb with white flower and sour tasted leaf.
Fl. & fr. period: June-August; Habitat category: Wetland hydrophytes
Association: The plant is associated with *Commelina oblique* Buch. Ham, *Spillanthes acmella* L.
Plant parts used and mode of utilization: tender shoot Cooked as leafy vegetable.
Place: Chowki

34. *P. perfoliata* (L.) H. Family: Polygonaceae; Bagh asora(Ass), Moitha sikhla(Bodo); A spiny climber with perfoliate leaf, white, minute flower and fleshy, black coloured fruit
Fl. & fr. period: March-May; Habitat category: Wetland hydrophytes.
Association: The plant is associated with *Mikania micrantha* Kunth, *Alpinia galanga* (L.) Sw.
Plant parts used and mode of utilization: tender shoot cooked with other leafy vegetable.
Place: Kumrikata, Dumni, Uttarkusi
35. *Rumex maritimus* Linn. Family: Polygonaceae; Talbarua (Ass), Maitha Sikhia (Bodo); An annual tall herb with ribbed and redish stem. Fl. & fr. period: March-December; Habitat category: Wetland hydrophytes. Association: The plant is associated with *Gnaphalium indicum* L., *Grangea maderaspatana* (L.) Poir. Plant parts used and mode of utilization: tender shoot cooked as leafy vegetable. Place: Subankhata, Tamulpur, Masalpur


37. *Sphenoelea zeylanica* Gaertn. Family: Campanulaceae; Lehati bon (Ass), Khampa bon (Bodo); A fleshy annual herb with bracteate spikes and white flowers. Fl. & fr. period: March-June; Habitat category: Rooted emergent. Association: The plant is associated with *Vandellia erecta*, *Lindernia crustacea* (L.) F. Muel. Plant parts used and mode of utilization: tender shoot mixed with other leafy vegetables and cooked. Place: Dumni, Barama, Kharuajan

38. *Stellaria media* (L.) Vill. Family: Caryophyllaceae; Maralia (Ass), Thatenii (Bodo); An annual branched glabrous herb with white flowers. Fl. & fr. period: February-May; Habitat category: Wetland hydrophytes. Association: The plant is associated with *Cardamine hirsuta* Hook. & T. *Fragaria indica* Andr.; Plant parts used and mode of utilization: tender shoot as leafy vegetables, also dried and grinded for cooking. Place: Nagrijuli, Barama, Odalbari

39. *Trapa natans* var. *incisa* Makino Family: Trapaceae; Pani singari (Ass), Singra kita(Bodo); A herb with the floating leaves rhomboidal and submerged leaves pinnatifid as well as root like, white flowers and spiny triangular fruit. Fl. period: September-December; Habitat category: Rooted floating. Association: The plant is associated with *Nymphoides indica* (L.) Kuntz, *N. cristata* Roxb. Plant parts used and mode of utilization: fruit edible as raw. Place: Kharuajan, Patkijuli

40. *Trapa natans* var. *bispinosa* (Roxb.) Makino Family: Trapaceae; Pani singari (Ass), Singra kita(Bodo); A herb with the floating leaves rhomboidal and submerged leaves pinnatifid as well as root like, white flowers and bi-spinious triangular fruit. Fl. period: September-December; Habitat category: Rooted floating. Association: The plant is associated with *Nymphoides indica* (L.) Kuntz, *N. cristata* Roxb. Plant parts used and mode of utilization: fruit eaten as raw. Place: Lechera, Chamuagati

41. *Typhonium trilobatum* (L.) Schott Family: Araceae; Ghiu kasu (Ass), samah (Bodo); A herb with trilobed leaf and red spadix. Fl. & fr. period: April-June; Habitat category: Wetland hydrophytes. Association: The plant is associated with *Houttuynia cordata* Thunb, *Amorphophalus campanulatus* Blume. Plant parts used and mode of utilization: Lamina and petiole are cooked directly but rhizomes are dried first, then cooked. Place: Barimakha, Odalbari, Nagrijuli

**RESULTS AND DISCUSSION**

The study reveals that 41 wild, aquatic and marshland angiospermic species belonging to 33 genera and 24 families are used as food by the people of the district. Regarding habitat category, 20 species belong to wetland hydrophytes, 9 species rooted emergent, 1 species rooted submerged and 11 species rooted floating. Among these plants, 13...
species are used medicinally. 3 species are used for other purposes like for making furniture and rope, for controlling mosquito etc. The number of edible species is more in the families Araceae and Polygonaceae. The leafy part is used frequently. Some species used frequently are Enhydra fluctuants Lour., Colocasia esculenta (L.) Schott, Stellaria media (L.) Vill., Ipomoea aquatica Forsk, Trapa natans Makino, Euryale ferox Salisbury, Nymphaea sps, Persicaria sinense Linn. etc. These species are sold in local market. Some species like Centella asiatica (L.)Urban, Hydrocotyle sibthorpioides Lamk., Oldenlandia corymbosa Linn., are used to control many diseases. The seeds of Setaria italica Beauv and Hygroryza aristata Nees. are cooked as rice during starvation. Some of the new species reported for edible value in the district are Hypericum boreale Fassett, Hydrocera triflora (L.)Wt. & Arn., Ottelia alismoides (L.) Perso., Persicaria perfoliata (L.), Fragaria indica Andr. etc.
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CONCLUSION

The present study reports that there are so many edible plants available in the wetlands, paddy fields and other swampy areas of Baksa district. The Bodo and other communities of the district have been utilizing these plants as food in daily diet routine. Also some of these plants are used for medicinal and other purposes. Thus they have traditionally acquired knowledge on these plants. But research in this field, specially in this area is not satisfactory. Vigorous studies in this field will open a new door on ethno pharmacology and will develop an ethno food hub in near future. Again it will reduce the unemployment problems and will glorify the economy of the state.

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REFERENCES