FLORISTIC DIVERSITY OF KAKALBHAGI AND BORAKOTA WETLAND OF SONITPUR DISTRICT, ASSAM

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Abstract: Aquatic plants support all life forms through extensive food webs and biodiversity, therefore they are known as "Kidney of the Landscape" and also "Biological Super Market". Richness of biodiversity especially of angiospermic plants is well observed in aquatic or wetland vegetation. The present study records the valuable aquatic plants of Kakalbhagi and Borakota wetlands of Sonitpur district having economic as well as ethnomedicinal importance. From the study, a total of 72 species has been enlisted; Asteraceae and Araceae are found to be dominant in dicotyledonous and monocotyledonous families respectively. *Ipomoea aquatica, Marsilea minuta, Nymphaea nouchali, Nymphaea rubra, Nymphaea pubescens* are some economically important aquatic species of those wetlands. But due to natural as well as anthropogenic activities like encroachment for construction, excessive collection of species for various commercial purposes, pollution etc. the floristic diversity is decreasing very rapidly and creating threats to the native flora of the region. It is unfortunate to say that the richness of density of some species like *Euryale ferox, Trapa natans* are decreasing day by day at an alarming rate. So it is very much urgent to take every action for proper conservation of these two significant wetlands of the district of Sonitpur.

Keywords: Ethnomedicinal; Flora; Sonitpur; Wetland

1. Introduction:

Aquatic plants are those which usually grow in water or soil covered with water. They are also referred to as hydrophytes or macrophytes. According to Ramsar Convention (1971) [1], "Wetlands are areas of marsh, fen and peat-land or water whether natural or artificial, permanent or temporary, with water that static or flowing, fresh, brackish or salt including areas of marine water, the depth of which at low tide does not exceed six meters. Further, wetlands may incorporate riparian and islands or bodies of marine water deeper than six meters at low tide lying within the wetlands".

Richness of biodiversity especially of angiospermic plants is well observed in aquatic vegetation. Different workers have different perspectives about aquatic plants. Sculthrope [2], classified aquatic plants into two groups depending on the water requirement and the relative position of various parts in

1. Water hydrophytes attached to substratum and
2. Free floating macrophytes.

The study area Kakalbhagi is located between $26^0 45' 47.1'' N$ latitude and $92^0 39' 46.4'' E$ longitude. While the other study area Borakota is situated on the bank of river Brahmaputra between $26^0 38' 47.50'' N$ latitude and $92^0 40' 35.80'' E$ longitude.

2. Materials and Methods:

Extensive survey was carried out (from February, 2019 to January, 2020) involving collection and documentation of specimens from Kakalbhagi and Borakota wetland, Sonitpur, Assam. Specimens were collected at their blooming state and herbarium was prepared by following standard protocol given by Jain and Rao [3]. During collection important field characters were noted down against each field number, along with some field

information at their habitats. The specimens were identified at GUBH by consulting relevant taxonomic literatures along with previously identified specimens.

3. Result:

The present study on "FLORISTIC DIVERSITY OF KAKALBHAGI AND BORAKOTA WETLAND OF SONITPUR, ASSAM" was carried out during February, 2019 to January, 2020 and recorded a total of 72 species of plants. Out of these, 69 species belong to Angiosperms under 56 genera and 34 families, 3 species belong to Pteridophytes under 3 genera and 2 families. The dicotyledons comprise of 42 species under 31 genera and 23 families and the monocotyledons comprises of 27 species under 25 genera and 11 families. These 72 species includes 68 herbs and 4 shrubs. Among dicotyledons the most dominant family is Asteraceae with 5 species, while in monocotyledons Poaceae with 6 species.

The recorded plants have been enumerated in Table-1 with their scientific names along with families, vernacular name(s) whenever available, locality of occurrence, growth forms, flowering-fruiting time and uses.

Table 1:

Sl. No.	Scientific name	Family	Vernacular name	Growth form	Flowering & Fruiting	Uses
1	*Acmella calva* (DC.) R.K. Jansen	Asteraceae	Suhoni-bon	Hel	February-May	Used in mouth ulcer
2	*Acmella paniculata* (Wall. ex DC.) R.K. Jansen	Asteraceae	Suhoni-bon	Hel	February-May	Used in toothache and on wounds & boils
3	*Acorus calamus* L.	Acoraceae	Boch	Hel/Hyp	March-December	Used to treat fever & cough
4	*Aeschynomene virginica* (L.) Britton, Sterns & Poggenb	Papilionaceae	Kunhila	Hel/Ten/Hyp	March-July	The spongy white part of stem is used for making hat; as fodder
5	*Aeschynomene indica* L.	Papilionaceae	Bor-kunhila	Hel/Ten/Hyp	March-November	The spongy white part of stem is used for making hat; as fodder
6	*Alocasia fornicata* (Kunth) Schott	Araceae	Kochu	Hel	April-December	Used to treat cuts
7	*Alpinia nigra* (Gaertn.) B.L. Burtt	Zingiberaceae	Bogi-tora	Hyp	April-September	Used as appetizer; shoot juice is used to treat worm
8	*Alternanthera paronychioides* (Mart.) Griseb.	Amaranthaceae	Teta-helonchi	Hel	Round the year	Tender shoots edible as leafy vegetable
9	*Alternanthera Philoxeroides* (Mart.) Griseb.	Amaranthaceae	Neuthoni-sak	Hyp	February-August	Tender shoots edible as leafy vegetable
10	*Alternanthera sessilis* (L.) R.Br. ex DC.	Amaranthaceae	Matikaduri	Hel	Round the year	Tender shoots edible as leafy vegetable
11	*Aponogeton undulatus* Roxb.	Aponogetonaceae	Ghachelu	Ros/Eph	April-September	Bulbils edible
12	*Arundo donax* L.	Poaceae	Nol	Hel	April-December	Dried mature culms are used for making fish traps

13	*Azolla pinnata* R.Br.	Salviniaceae	Xoru-puni	Ple	November-February	Used as biofertilizer in rice fields
14	*Canna indica* L.	Zingiberaceae	Parijat	Hel	Round the year	Used as ornamental plant
15	*Centella asiatica* (L.) Urb.	Apiaceae	Bor-manimuni	Hel	Throughout the year	Entire plant is used as leafy vegetable; leaf paste used in skin disease; leaf juice used in dysentery
16	*Ceratophyllum demersum* L.	Ceratophyllaceae	Sirolia	Pla/Vit	February-June	Leaf used as cooling agent in boils
17	*Chrysopogon zizanoides* (L.) Roberty	Poaceae	Birina	Hel	April-November	-
18	*Cleome gynandra* L.	Cleomaceae	Bhutmola	Hel	February-September	Leaf paste used to cure boils
19	*Cleome rutidosperma* DC.	Cleomaceae	Hurhuria	Hel	February-November	Leaf extract used to soothe skin irritation
20	*Colocasia esculenta* (L.) Schott	Araceae	Kochu	Hel/Eph	February-September	Used as vegetable
21	*Commelina benghalensis* L.	Commelinaceae	Kona-simolu	Hel	July-December	Used to treat skin inflammations; as fodder
22	*Cyperus compressus* L.	Poaceae	Muthi-bon	Ten/Hel	May-December	-
23	*Cyperus rotundus* L.	Poaceae	Keya-bon	Hel	April-December	Tuber juice is used to treat skin disease
24	*Drymaria cordata* (L.) Willd ex Schult.	Caryophyllaceae	Laijabori	Hel	March-September	Leaf paste used to treat insect bite
25	*Eclipta prostrata* (L.) L.	Asteraceae	Kenhraj	Hyp	Throughout the year	Entire plant is used in fresh cuts and wounds; plant juice used as hair growth tonic
26	*Eleocharis acutangula* (Roxb.) Schult.	Cyperaceae	Mitmiti-bon	Hyp/Ten	February-October	Tubers edible
27	*Eleocharis dulcis* (Burm.f.) Trin. Ex Hensch	Cyperaceae	Mitmiti-bon	Hyp/Ten	February-October	Tubers edible
28	*Enydra fluctuans* Lour.	Asteraceae	Helachi	Hel/Hyp	April-May	Used as leafy vegetable
29	*Euryale ferox* Salisb.	Nymphaeaceae	Nikori	Eph	February-November	Seeds edible
30	*Hedychium coronarium* J. Koenig	Zingiberaceae	Dulon champa	Hel	June-November	Flowers used for bathing
31	*Heliotropium indicum* L.	Boraginaceae	Hati-suria	Hel	April-August	Entire plant is used as antiseptic in minor cuts &

						wounds for healing
32	*Hydrilla verticillata* (L.f.) Royle	Hydrocharitaceae	-	V it	September-February	Used as biofertilizer
33	*Hydrolea zeylanica* (L.) Vahl.	Hydroleaceae	Indraneel-bon	Hel	November-March	Leaf is used as antiseptic
34	*Hygrophila ringens* (L.) R.Br. ex Spreng.	Acanthaceae	Ikhyugondhi	Hyp	April-November	-
35	*Ipomoea aquatica* Forsskal	Convolvulaceae	Kolmou	Eph/Hyp/ Ten	October-April	Used as leafy vegetable
36	*Ipomoea carnea* Jacq.	Convolvulaceae	Goch-kolmou	Hyp	September-February	Milky latex is used in skin disease
37	*Lemna minor* L.	Araceae	Xoru-puni	Ple	April-October	Used as fish & duck food
38	*Limnophila repens* (Benth.) Benth.	Plantaginaceae	Aam-gondhi	Hel	November-February	-
39	*Ludwigia ascendens* (L.) H. Hara	Onagraceae	Pani-khutura	Ple	February-December	Used as leafy vegetable
40	*Ludwigia prostrata* Roxb.	Onagraceae	-	Ple	March-December	Used as leafy vegetable
41	*Marsilea minuta* L.	Marsileaceae	Pani-tengechi	Ten	November-February	Used as leafy vegetable
42	*Monochoria hastata* (L.) Solms	Pontederiaceae	Bor-meteka	Ple/Hyp	February-August	Flowers are eaten as vegetables
43	*Najas indica* (Willd.) Cham.	Hydrocharitaceae	-	Vit	August-October	Used as organic fertilizer
44	*Nelumbo nucifera* Gaertn.	Nelumbonaceae	Podum	Hyp	April-September	Rhizome, carpel and torus eaten as vegetable
45	*Nymphaea nouchali* Burm.f.	Nymphaeaceae	Bhet	Eph	April-November	Fruit edible
46	*Nymphaea pubescens* Willd.	Nymphaeaceae	Mokua	Eph	April-November	Petiole used as vegetable
47	*Nymphaea rubra* Roxb. ex Andrews	Nymphaeaceae	Ronga bhet	Eph	Almost round the year	Fruit edible
48	*Nymphoides cristata* (Roxb.) Kuntze	Menyanthaceae	Pani-seuli	Eph	March-November	Tubers edible
49	*Nymphoides indica* (L.) Kuntze	Menyanthaceae	Pani-seuli	Eph	March-November	Petiole & stolons are edible as vegetable
50	*Oenanthe javanica* (Blume) DC.	Apiaceae	Pani-dhania	Hyp/Hel	February-September	Used as leafy vegetable
51	*Ottelia alismoides* (L.) Pers.	Hydrocharitaceae	Pani-kol	Ros/Eph	March-December	Fruit edible
52	*Oxalis corniculata* L.	Oxalidaceae	Xoru-tengechi	Hel	Round the year	Plant juice used in dysentery

53	*Oxalis debilis* Kunth	Oxalidaceae	Bor-tengechi	Hel	February-December	Leaf paste used to treat cuts & skin infections
54	*Persicaria hydropiper* (L.) Delarbre	Polygonaceae	Bihlongoni	Hel	Round the year	Dried plant parts used to control mosquito
55	*Phragmites karka* (Retz.) Trin. ex Steud.	Poaceae	Khagori	Hyp	September-December	Used in hut roofing; as fodder
56	*Pistia stratiotes* L.	Araceae	Bor-puni	Ple	March-October	Used as fodder
57	*Polygonum chinense* L.	Polygonaceae	Modhuxuleng	Hyp	April-September	Used as leafy vegetable
58	*Pontederia crassipes* Mart.	Pontederiaceae	Pani -meteka	Ple/Hyp	February-September	Used for making bags; as biofertilizer
59	*Portulaca oleracea* L.	Portulacaceae	Malbhog-sak	Hel	Round the year	Used as leafy vegetable
60	*Potamogeton crispus* L.	Potamogetonaceae	-	Vit	December-March	-
61	*Ranunculus sceleratus* L.	Ranunculaceae	Bon-dhonia	Ten/Eph	February-April	Used in burns and swellings
62	*Rotala rotundifolia* (Buch.-Ham ex Roxb.) Koehne	Lythraceae	Pani-leheti	Hyp	November-April	Shoot juice used to treat cold, cough & fever
63	*Saccharum spontaneum* L.	Poaceae	Kanhua	Hel	September-December	Used for making ropes, broom; as fodder
64	*Sagittaria sagittifolia* L.	Alismataceae	Jathipotia	Hyp	February-September	Leaf paste used to treat insect bite
65	*Salvinia molesta* D. Mitch	Salviniaceae	Bor-puni	Ple	November-February	Used as biofertilizer in rice fields
66	*Scorparia dulcis* L.	Plantaginaceae	Meetha pat	Hel	Round the year	Used to treat cough
67	*Spirodela polyrhiza* (L.) Schleid.	Araceae	Puni	Hel	February-October	Used as fish & duck food
68	*Stellaria media* (L.) Vill.	Caryophyllaceae	Morolia	Hel	November-March	Used as leafy vegetable
69	*Trapa natans* L.	Trapaceae	Singori	Eph	February-December	Fruits edible
70	*Torenia crustacean* (L.) Cham. & Schltdl.	Linderniaceae	Kaachidoria	Hel	September-January	Used to treat boils
71	*Vallisneria spiralis* L.	Hydrocharitaceae	Feta kutali	Ros	April-September	Used as biofertilizer
72	*Xanthium strumarium* L.	Asteraceae	Agora	Hel	July-February	Leaf paste used in fungal infection

[Abbreviations used: Eph=Epihydrate; Hel=Helophyte; Hyp=Hyperhydate; Pla=Plankton; Ple=Pleustophyte; Ros=Rosulate; Ten=Tenagophyte; Vit=Vittate].

PHOTOPLATES

Nymphoides indica

Nelumbo nucifera

Ottelia alismoides

Pistia stratiotes

Ludwigia ascendens

Heliotropium indicum

Sagittaria sagittifolia

Nymphaea pubescens

Rotala rotundifolia

4. Conclusion:

All together 72 species were identified under the 56 genera and 34 families during the present investigation from the two wetlands viz., Kakalbhagi and Borakota wetland of Sonitpur district. These two wetlands are the major source for livelihood support of the people living in its vicinity. However, gradually such valuable wetlands,

which possess several economically important species like Ipomoea aquatica, Marsilea minuta, Nymphaea nouchali, Nymphaea rubra, Nymphaea pubescens and Nelumbo nucifera are degrading due to natural as well as several anthropogenic activities including eutrophication, encroachment for construction of houses, agricultural purposes, excessive collection of resources for commercial purposes, pollution etc. It is unfortunate to say that the richness of density of some species like Trapa natans and Euryale ferox are decreasing day by day at an alarming rate in these two significant wetlands. Therefore, conservation measures of these macrophytes and immediate attention of their ethnomedicinal uses should be taken at the earliest to protect the native flora of the region from degradation.

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