

# Flora of Rae Bareli - II. Aquatic and marshy land plants\*

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A survey of aquatic and marshy plants of Rae Bareli District (U.P.) was carried out for two years (August, 1987 to July, 1989). A total of seventy four aquatic and marshy angiosperms belonging to thirty six families are reported in this paper of which Poaceae and Cyperaceae are dominant. Phenological observations made during the period reveal that most of the species had flowering in October whereas only a few species flowered during the month of June.

Key-words- Aquatic flora, phenology, Rae Bareli, India.

## INTRODUCTION

A survey of aquatic vegetation covering nine blocks (Rahi, Unchahar, Salon, Dalmau, Lalganj, Sareni, Saton Bachhrawan and Shivgarh) of Rae Bareli District (25°49 .

26°36 N: 80°41 . 81°34 E.) having an area of about 4609 Km<sup>2</sup> (Map 1) was conducted during 1987-1989. The maximum temperature recorded in the district is 44.7°C and the minimum is 3.1°C during the winters. The district receives average annual rainfall of 978.3 mm and has normally 43 rainy days in a year (Singh *et al.*, 1988).

The main objective of the survey was to make an account of aquatic and marshy vegetation of this district which has witnessed spurt in industrial activity during the last two decades (Michael, 1986).

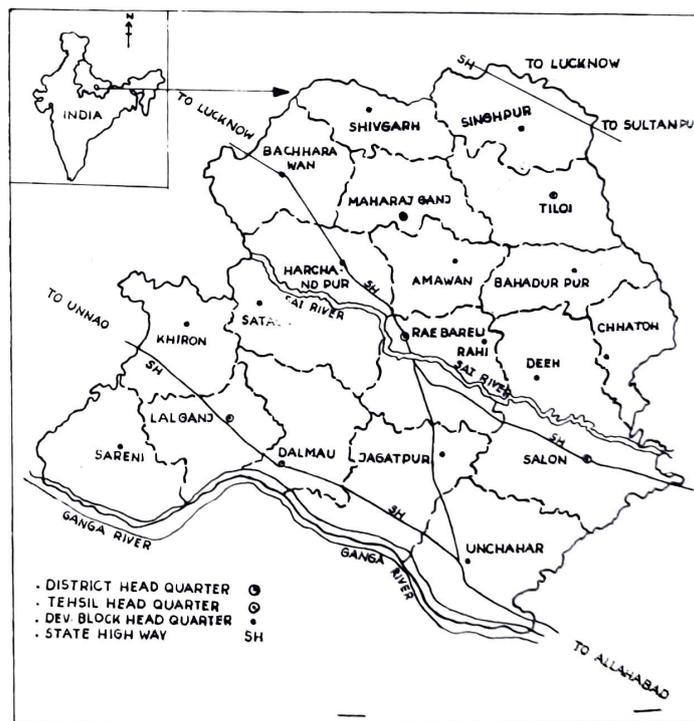
## ENUMERATION OF TAXA

The botanical name and the families given below are arranged alphabetically, whereas the local name opposite the botanical name is in capital letters. For phenological study weekly observations were made at the site.

### ACANTHACEAE

*Asteracantha longifolia* Nees. TALMAKHANA  
Common in marshes throughout the district. Fl. Oct. -  
Dec. Coll. A.K.S., FGC Herb. 00102.

*Rungia pectinata* Nees. Common in moist places.  
Fl. Nov. - Jan. Coll. A.K.S., FGC Herb. 00108.



Map 1

04101.

## ALISMATACEAE

*Sagittaria sagittifolia* L. Common in marshy places.  
Fl. Sept. - Feb. Coll. A.K.S., FGC Herb. 00301.

## AMARANTHACEAE

*Alternanthera paronochioides* St. Hil. Common in moist sandy soil. Fl. almost throughout the year. Coll. A.K.S., FGC Herb. 00409.

*Alternanthera pungens* H.B. & K., KANTEWALISANTHI. Common in moist places. Fl. Aug. - Nov. Coll. A.K.S., FGC Herb. 00402.

*Alternanthera sessilis* DC., SANTHI. Common in moist places. Fl. Jul. - April. Coll. A.K.S., FGC Herb. 00403.

## APIACEAE (Umbelliferae)

*Centella asiatica* Urban, BRAHMI. Common in moist shady places. Fl. April - Sept. Coll. A.K.S., FGC Herb. 00904.

## APONOGETONACEAE

*Aponogeton natans* Engl. & Krause. Common in ponds and lakes. Fl. Aug. - April. Coll. A.K.S., FGC Herb. 20001.

## ARACEAE

*Pistia stratiotes* L., JALKUMBHI. Common in ponds. Fl. Aug. - Nov. Coll. A.K.S., FGC Herb. 20101.

## ASTERACEAE (Compositae)

*Eclipta prostrata* L., BHANGRA. Common in marshy places. Fl. throughout the year. Coll. A.K.S., FGC Herb. 01603.

*Grangea maderaspatana* Poir. Common in marshy places and along river banks. Fl. Oct. - March. Coll. A.K.S., FGC Herb. 01608.

*Pulicaria crispa* Sch. -Bip., HALDWA. Common in marshy places and along river banks. Fl. Feb. - Aug. Coll. A.K.S., FGC Herb. 01605.

## BRASSICACEAE (Cruciferae)

*Coronopus didymus* L., PANACHOLI. Common in marshy places. Fl. Jan. - April. Coll. A.K.S., FGC Herb. 02506.

## CERATOPHYLLACEAE

*Ceratophyllum demersum* L. Common in lakes, ponds and rivers. Fl. Sept. - Nov. Coll. A.K.S., FGC Herb.

## CHENOPODIACEAE

*Chenopodium murale* L. KHARTUA. Common in moist places. Fl. Dec. - March. Coll. A.K.S., FGC Herb. 04304.

## CONVOLVULACEAE

*Ipomoea reptans* Poir, KARAMBUA. Common in ponds and lakes, Fl. Sept. - Dec. Coll. A.K.S., FGC Herb. 05105.

## CYPERACEAE

*Cyperus difformis* L. Common in moist places. Fl. June - Dec. Coll. A.K.S., FGC Herb. 05801.

*Cyperus exaltatus* Retz. Common in moist places. Fl. Aug. - Dec. Coll. A.K.S., FGC Herb. 05802.

*Cyperus kyllingia* Endl. Common in moist places. Fl. Aug. - Mar. Coll. A.K.S., FGC Herb. 05803.

*Cyperus niveus* Retz. Rare, erect glabrous herb of moist, sandy places. Collected only from Arkha. Fl. July - Oct. Coll. A.K.S., FGC Herb. 05804.

*Cyperus pangarej* Roxb. Common in moist places. Fl. July - Nov. Coll. A.K.S., FGC Herb. 05805.

*Fimbristylis annua* R. & S. Common in moist places. Fl. July - Dec. Coll. A.K.S., FGC Herb. 05806.

*Scirpus articulatus* L. Common in moist and marshy places. Fl. Oct. - March. Coll. A.K.S., FGC Herb. 05807.

## ELATINACEAE

*Bergia ammanioides* Roxb. Rare, erect or decumbent herb of moist, sandy soils with pink flowers. Collected from Arkha only. Fl. Nov. - March. Coll. A.K.S., FGC Herb. 07001.

## FABACEAE (Leguminosae)

*Aeschynomene indica* L., JHINGARAN. Common in rice fields and ponds. Fl. May - Dec. Coll. A.K.S., FGC Herb. 07618.

*Neptunia oleracea* Lour. Rare creeping herb, sensitive to touch, and with yellow flowers. Collected from Khaur and Samaspur lakes. Fl. July - Sept. Coll. A.K.S., FGC Herb. 07614.

## GENTIANACEAE

*Canscora decussata* Raem & Schult. Common in moist and marshy places. Fl. Sept. - Nov. Coll. A.K.S., FGC Herb. 07903.

*Enicostema verticillatum* Engl. Rare, procumbent herb of sandy soil with white flowers. Collected from Arkha only. Fl. June - Sept. Coll. A.K.S., FGC Herb. 07902.

*Nymphoides cristatum* Kuntze. Rare floating herb of lakes and ponds. Collected from Janai lake. Fl. April - Oct. Coll.

A.K.S., FGC Herb. 07901.

## HYDROCHARITACEAE

- Hydrilla verticillata* Royle. Common in ponds, lakes and rivers. Fl. Oct. - Dec. Coll. A.K.S., FGC Herb. 08801.  
*Hydrocharis dubia* Blacker. Common in ponds. Fl. Oct. - Dec., Coll. A.K.S., FGC Herb. 08804.  
*Ouelia alismoides* Pers. Rare, submerged herb of ponds with white flowers. Collected from Unchahar only. Fl. Oct. - Dec. Coll. A.K.S., FGC Herb. 08803.  
*Vallisneria spiralis* L. Common herb of ponds, lakes and rivers. Fl. Sept. - March. Coll. A.K.S., FGC Herb. 08802.

## LAMIACEAE (Labiatae)

- Orthosiphon pallidus* Royle. Rare, diffuse herb of moist places with white flowers. Collected from civil lines only. Fl. July - Sept. Coll. A.K.S., FGC Herb. 09703.  
*Salvia plebia* R.Br. Common herb of moist places. Fl. except during rainy season. Coll. A.K.S., FGC Herb. 09704.

## LEMNACEAE

- Lemna paucicostata* Hegelmair, CHOTI CHOWPATTI. Very common free floating herb of ponds and lakes. Fl. not seen. Coll. A.K.S., FGC Herb. 10001.  
*Spirodela polyrhiza* Schleid, CHOWPATTI. Very common free floating herb of ditches, ponds and lakes. Fl. not seen. Coll. A.K.S., FGC Herb. 10002.

## LENTIBULARIACEAE

- Utricularia stellaris* L. Rare, rootless, submerged herb of still waters. Collected along the Lucknow road from a pond only. Fl. not seen. Coll. A.K.S., FGC Herb. 10201.

## LYTHRACEAE

- Annonia baccifera* L. Common in moist places. Fl. throughout the year. Coll. A.K.S., FGC Herb. 10801.

## MOLLUGINACEAE

- Glinus lotoides* L. Common in dry ponds and moist shady places. Fl. March - Aug. Coll. A.K.S., FGC Herb. 20201.

## NYMPHAEACEAE

- Nelumbo nucifera* Gaertn, KAMAL. Common in lakes and ponds. Fl. April - Oct. Coll. A.K.S., FGC Herb. 12701.  
*Nymphaea nouchali* Burm. F., KUMODINI. Common in ponds

and lakes. Fl. August - October. Coll. A.K.S., FGC Herb. 12702.

## ONAGRACEAE

- Jussiaea repens* L., PANI KI GHAS. Common in ponds and lakes. Fl. Sept. - Dec. Coll. A.K.S., FGC Herb. 13102.  
*Jussiaea suffruticosa* L. Common in marshy places. Fl. July - Oct., Coll. A.K.S., FGC Herb. 13901.

## POACEAE (Gramineae)

- Dacteloctenium aegyptium* L., Marka, Common in moist places. Fl. May - Oct. Coll., A.K.S., FGC Herb. 14601.  
*Dacteloctenium scindicum* Boiss Common in moist places. Fl. June - Sept. Coll. A.K.S., FGC Herb. 14602.  
*Eragrostis ciliaris* R. Br. PANGHAS. Common in moist places. Fl. June - Oct. Coll. A.K.S., FGC Herb. 14603.  
*Hygrochiza aristata* Retz. Nees, ex W. & A. Common in ponds, lakes etc. Fl. Oct. - April. Coll. A.K.S., FGC Herb. 14604.  
*Oplismenus burmanii* (Retz.) Beauv. Common in moist places. Fl. June - Dec. Coll. A.K.S., FGC Herb. 14605.  
*Paspalidium geminatum* Stapf. Common in marshes. Fl. July - Dec. Coll. A.K.S., FGC Herb. 14606.  
*Perotis indica* Kuntze. Common in moist sandy places. Fl. July - Oct. Coll., A.K.S., FGC Herb. 14607.  
*Saccharum spontaneum* L., SARKANDA. Common in marshy places and along river banks. Fl. Sept. - Jan. Coll. A.K.S., FGC Herb. 14608.

## POLYGONACEAE

- Polygonum barbatum* L. Common in ponds, lakes etc. Fl. Aug. - Dec. Coll. A.K.S., FGC Herb. 14902.  
*Polygonum glabrum* Willd., NALI Very common in ponds, lakes and banks of river. Fl. Sept. - June Coll. A.K.S., FGC Herb. 14903.  
*Polygonum plebium* R. Br., MACHETI Very common in moist places. Fl. August - April. Coll. A.K.S., FGC Herb. 14901  
*Rumex dentatus* L., KHAT PALAK Very common in moist places. Fl. Jan. - June. Coll. A.K.S., FGC Herb. 14904.

## PONTEDERIACEAE

- Eichhornia crassipes* (Mart.) Solmns, JALKUMBHI. Very common in ponds, lakes, rivers. Fl. April - Oct. Coll. A.K.S., FGC Herb. 15101.  
*Monochoria vaginalis* (Burm. F.) Presl. Common in ponds. Fl. Aug. - Oct. Coll. A.K.S., FGC Herb. 15202.

## PORTULACACEAE

- Portulaca quadrifida* L. Common in the banks of Ganga River at Ralpur. Fl. Aug. Oct. Coll. A.K.S., FGC Herb. 15202.

## POTAMOGETONACEAE

*Potamogeton crispus* L. Very common in the ponds, lakes and rivers. Fl. Sept. - May. Coll. A.K.S., FGC Herb. 20301.

*Potamogeton nodosus* Poir. Very common in the ponds, lakes. Fl. Oct. - May. Coll. A.K.S., FGC Herb. 20303.

*Potamogeton pectinatus* L., SEWAR. Very common in lakes and rivers. Fl. Sept. - April. Coll. A.K.S. FGC Herb. 20302.

## RANUNCULACEAE

*Ranunculus scleratus* L., JALDHANIA. Very common in marshy places and along river banks. Fl. Jan. - May. Coll. A.K.S., FGC Herb. 15501.

## ROSACEAE

*Potentilla supina* L. DOBI. Common in marshy places and along river banks. Fl. Dec. - May. Coll. A.K.S., FGC Herb. 16102.

## RUBIACEAE

*Oldenlandia corymbosa* L. Very common in moist and muddy places. Fl. July - Oct. Coll. A.K.S., FGC Herb. 16303.

## SCROPHULARIACEAE

*Lindernia crustaceae* (L.) F. Muell. Common in moist places. Fl. July - Dec. Coll. A.K.S., FGC Herb. 17503.

*Verbascum chinense* (L.) Santapau, DONGRA KA TAMAKHU Common along the river bank. Fl. Jan. - Oct. Coll. A.K.S., FGC Herb. 17504.

*Veronica anagallis - aquatica* L. Common in marshy places and along river banks. Fl. Jan. - May. Coll. A.K.S., FGC Herb. 17505.

## TILIACEAE

*Corchorus aestuans* L., CHONCY. Very common in moist places. Fl. Aug. - Oct. Coll. A.K.S., FGC Herb., 18702.

*Corchorus capsularis* L. Common in moist places. Fl. July - Sept. Coll. A.K.S., FGC Herb. 18702.

## TRAPACEAE

*Trapa natans* L. var. *bispinosa* (Roxb.) Makina, SINGHARA. Commonly cultivated in ponds and lakes. Fl. Sept. - Dec. Coll. A.K.S., FGC Herb. 20401.

## TYPHACEAE

*Typha angustata* Bary et. Chaub, GOND Very common along

Sharda Sahayak Feeder Channel. Fl. Oct. - May. Coll. A.K.S., FGC Herb. 19101.

## VERBENACEAE

*Phyla nodiflora* (L.) Greene, BAKKAN BUTI. Very common in moist places and along river banks. Fl. April - Aug. Coll. A.K.S., FGC Herb. 19503.

*Lippia alba* L. Common along the banks of river. Fl. throughout the year. Coll. A.K.S., FGC Herb. 19504.

## ECOLOGICAL STUDIES

*Free-floating hydrophytes* :- These species occur in water but are not rooted, viz., *Eichhornia crassipes* Solms, *Hygrorhiza aristata* Retz., *Lemna paucicostata* Hegelmair, *Pistia stratiotes* L. and *Spirodela polyrhiza* Schleid.

*Submerged rootless hydrophytes* :- Only three species belong to this group and are rootless (roots present when it lands on the soil in case of *Ottelia alismoides* Pers.) are but submerged and always remain in water, e.g. *Ceratophyllum demersum* L., *Ottelia alismoides* Pers. and *Utricularia stellaris* L. *Submerged rooted hydrophytes* - Five such species anchored at the lake or pond bottom are *Hydrilla verticillata* Royle, *Potamogeton crispus* L., *P. nodosus* Poir, *P. pectinatus* L. and *Vallisneria spiralis* L.

*Rooted-floating-leaved hydrophytes* :- Roots of such plants are anchored and their leaves float on the surface of water. They are *Aponogeton natans* Engl. & Krause, *Hydrocharis dubia* Blacker, *Ipomoea reptans* Poir, *Nelumbo nucifera* Gaertn. *Nymphaea nouchali* Burm F. & *Nymphoides cristatum* Kuntze.

*Rooted-floating-shoot hydrophytes* :- These are the anchored species and their shoots remain floating on the surface of water. There are only two such species in the surveyed area, i.e., *Jussiaea repens* L. and *Trapa natans* L. var. *bispinosa* Makino.

*Emergent amphibian hydrophytes* :- These plants are rooted and only the basal lower part of the stem is submerged in water. These are *Aeschynomene indica* L., *Bergia ammanioides* Roxb., *Monochoria vaginalis* Presl., *Neptunia oleraceae* Lour, *Polygonum glabrum* Willd. and *Scirpus articulatus* L.

*Wet-land hydrophytes* - Majority of the species come in this category and are rooted in the soil. Of the seventy four aquatic and marshy species recorded here, forty seven belong to this category.

During the survey of the district, phenological observations were also carried out. It was observed that most of the aquatics plants had their flowering during October and only few flowered during the summer months, i.e., May and June. However, *Eclipta prostrata* L., *Ammannia baccifera* L. and *Lippia alba* L. were seen in flower almost throughout the year. Flowering in certain cases could not be observed, viz., in *Lemna paucicostata* Hegelmair, *Spirodela polyrhiza* Schleid and *Utricularia stellaris* L. Though most of the species enumerated above

are commonly present in the area but those which are uncommon or restricted to a locality include *Cyperus niveus* Retz., *Enicostema verticillatum* Engl., *Neptunia oleracea* Lour, *Nymphoides cristatum* Kuntze, *Ottelia alismoides* Pers., *Orthosiphon pallidus* Royle and *Utricularia stellaris*

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