

Studies on the Aquatic Angiosperms of the Rajshahi University Campus

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Abstract: The present investigation of the aquatic angiosperms growing throughout the Rajshahi University Campus was carried out. A total of 44 species under 37 genera belonging to 24 families were collected and identified. A brief taxonomic account of each species is given with current nomenclature, local name, family and uses. About the species, i.e. *Alternanthera philoxeroides*, *Colocasia esculenta*, *Eichhornia crassipes*, *Ipomoea aquatica*, *Nymphoides indicum*, *Ludwigia repens*, *Polygonum orientale*, *Pistia stratiotes*, *Lemna perpusilla*, *Wolffia arrhiza*, *Xanthium indicum*, *Phyllanthus reticulatus*, *Cynodon dactylon*, *Monochoria hastata* were very common and *Enhydra fluctuans*, *Euryale ferox*, *Nymphaea nouchali*, *Polygonum barbatum*, *Scirpus articulatus* were very rare species in the study area.

Keywords: Aquatic Angiosperms, Rajshahi University Campus

INTRODUCTION

Bangladesh is unique in possessing one of the largest deltaic plains of the world with extensive inland depressions. The vegetations of haors, beels, lakes and ponds are rich in aquatic flora and constitute very important resources of food and medicine for the rural population. But these natural resources, especially in the larger water bodies of the northern and eastern region of the country have hardly been given due attention for scientific studies, and thus their potentialities remain still untapped. The importance of these water flora in agriculture, pisciculture, and as a source of food and medicine can hardly be emphasized.

Water plants are taxonomically different as there is generally a lack of adequate herbarium material and a paucity of critical studies in the development of various organs due to the high degree of adaptability in form and structure in relation to aquatic environment. The peak flowering time of the aquatic flora is generally during the monsoon but some exhibit freak flowering out of the season while others are constantly in flower throughout the year^[4].

The aquatic plants are the most important component of the aquatic ecosystem. They are used as producers and phytoplankton in the aquatic ecosystem. The aquatic plants are also produced carbohydrate with the help of sunlight, chlorophyll, carbondioxide and water. They are as follows: *Azolla*, *Ceratophyllum*, *Eichhornia*, *Hydrilla*, *Lemna*, *Nymphaea*, *Ottelia*,

Pistia, *Potamogeton*, *Scirpus*, *Ludwigia*, *Spirodella*, *Vallianeria*, *Wolffia* etc. The aquatic plants are increases productivity of aquatic ecosystem and thus help to maintain ecosystem balance^[9].

MATERIALS AND METHODS

A study on the aquatic angiosperms throughout the Rajshahi University Campus was carried out. A total of 44 species under 37 genera belonging to 24 families were collected and identified. Plant species were collected as systematically as possible from the study area. The following data were recorded from the herbarium specimen, i.e. date of collection, collection number, habitat, flowering season, local uses and distribution.

The preliminary identifications can be confirmed by matching with the help of voucher specimens. In major identifications were made with the help of Khan^[4], Hooker^[3], Prain^[8], Kirtikar and Basu^[5], Sharma^[10], Sambamurty^[11], Lawrence^[6]. For the current and up-to-date nomenclature Huq^[2] and Pasha^[7] were consulted. All the collected plant specimens were kept in the Herbarium, Department of Botany, University of Rajshahi, Bangladesh.

RESULTS AND DISCUSSIONS

The taxonomic investigation on the aquatic angiosperms in the Rajshahi University Campus was carried out. A total of 44 species under 37 genera

belonging to 24 families were collected and identified. The submerged aquatic plants produce oxygen in the process of photosynthesis at the littoral zone of ponds. This oxygen is controlled by the dissolved oxygen in the ponds. As a result the balance of oxygen in the water and this water is suitable for pisciculture. There are different types of aquatic plants, i.e. submerged, semi-submerged and free floating are used in the habitat and reproductive area of fish. Most of the aquatic plants of any aquatic environment are needed for fish culture. Some fishes directly secrete their eggs on submerged hydrophytes. Many fishes live on a part of decomposed aquatic plants. Ecologically the aquatic plants are a good oxygenator of water and are used by fish for food^[11]. However, the aquatic plants play an important role to maintain the balance of the aquatic ecosystem. In this research both of aquatic and amphibious angiospermic plants were included. The check list of collected aquatic angiosperms is placed alphabetically as follows:

***Alternanthera* Frosk:**

***Alternanthera philoxeroides* (Mart.) Griseb:**

Local name: Malancho:

Family: **Amaranthaceae:** An annual floating herb, rooting at nodes. Leaves elliptic-lanceolate, entire, acute. Flowers in axillary heads, white. Fruit an utricle, compressed, ovoid-orbicular or orbiculate, margins often winged or thickened.

Uses: The whole plants are cooked and taken as a green vegetable^[4].

***Blyxa* Noronha ex Thouars:**

***Blyxa auberti* Rich:**

Local name: Unknown:

Family: **Hydrocharitaceae:** A submerged stemless plant. Leaves radical, sheathing at base, variable in size and shape, narrow lanceolate in shallow water, but ribbon-like in deeper water. Spathe 1-flowered. Flowers bisexual. Fruit linear.

Uses: Ecologically the plant is a good oxygenator of water and is used by fish for food^[11].

***Ceratophyllum* Linn.:**

***Ceratophyllum demersum* Linn.:**

Local name: Jhanjhi:

Family: **Ceratophyllaceae:** Leaves densely whorled, variable in thickness and amount of toothing, often terminated by 1 or 2 sharp, pointed bristles. Flowers unisexual, male and female flowers at different nodes. Fruit a small nutlet, green to dark pinkish in colour, sessile with persistent involucre, ovoid, compressed.

Uses: The plant is of value as a protective cover for fresh laid spawn and young fish fry. Also grown in aquaria^[4].

***Colocasia* Linn.:**

***Colocasia esculenta* Linn.:**

Local name: Kachu:

Family: **Araceae:** An perennial herb, usually tall and coarse, sometimes small and handsome, with tuberous rhizomes or a short, stout caudex. Leaves with stout petioles, sheathing below, lamina petal, ovate-cordate. Flowers monoecious. Fruit of small obconic or oblong berries. Seed oblong, sulcate.

Uses: The juice of the corm is used in cases of alopecia. Ecologically the plant is a good oxygenator of water^[11].

***Cynodon* Linn.:**

***Cynodon dactylon* Linn.:**

Local name: Durbaghas:

Family: **Poaceae:** Herb, stem prostrate, leaves short, subulate, glaucous, linule hairy, spike green or purplish, rachis very slender. Spikelet about 0.21-0.25 cm. glume I and II spreading ovate, acute; III much larger cymbiform, keel and margin scabrid.

Uses: Paste made from the whole plants are used as an application to fresh cuts and wounds^[5].

***Cyperus* Linn.:**

***Cyperus platystylis* Linn.:**

Local name: Muthaghas:

Family: **Cyperaceae:** A glabrous floating sedge. Stolons covered by ovate, acute, striate, pale-brown scale. Culm triquetrous, stiff, scabrid on angles. Leaves often as long as stems, linear to broadly linear and coarse, flattish-plicate, acuminate, light brown to purple brown. Inflorescence a compound umbel. Achenes oblong-ellipsoid or oblong, ovate, pale brownish, trigonous with concave sides, deciduous.

Uses: The plants are used as cattle fodder.

***Cyperus tagetiformis* Roxb:**

Local name: Golamethi:

Family: **Cyperaceae:** A tall, glabrous, reed-like sedge. Stem trigonous at top. Leaves short, rarely half the length of stem. Inflorescence in a spike, spikelets spicate, rachilla of spikelets distinctly winged, glumes approximately, closely imbricate.

Uses: The stems are used in making mats^[4].

***Enhydra* Lour:**

***Enhydra fluctuans* Lour:**

Local name: Helencha:

Family: **Asteraceae:** A pubescent or glabrous herb. Leaves opposite, linear-oblong, acute or obtuse, base narrowed or truncate, variable in breadth, sessile. Inflorescence a sessile head, axillary and terminal; ray florets female, many seriate, fertile; disk florets with a 5-fid campanulate limb. Cypsela oblong, enclosed in

the rigid pales, pappus 0.

Uses: The whole plant is eaten as vegetable^[4].

***Eichhornia* Kunth:**

***Eichhornia crassipes* (Mart.) Solms.-Laub.:**

Local name:Kachuripana:

Family:Pontederiaceae: Aquatic, free floating herb. Leaves emerged, radical, with petioles spongy, short, very much swollen in young specimens. Flowers 10-20, expanding and withering almost simultaneously, very showy, posterior lobe with a bright yellow, blue bordered median blotch. Fruit a capsule, linear-oblong.

Uses: The plant is used as manure and fodder^[4].

***Ethulia* Linn.:**

***Ethulia conyzoides* Linn.:**

Local name:Golphuli:

Family:Asteraceae: An erect glabrous or puberulous leafy annual herb. Leaves 5-12 cm., narrowly or broadly elliptic-lanceolate, acuminate, narrowed and entire at the base, glandular-dotted, serratures coarse, distant. Heads very numerous; peduncles short or long; flowers purplish or reddish.

Uses: Ecologically the plant is a good oxygenator of water.

***Euryle* Salisb:**

***Euryle ferox* Salisb:**

Local name:Makhna:

Family:Nymphaeaceae: Rootstock short. Fully developed leaves ultimately rotund, green on upper surface with weak prickles on veins, puckered, lower surface red or purple and with strong spiny ribs. Flowers 3-5 cm. high. Petals in 6 series, outer series purple, middle purplish-white, and inner more or less white. Fruit ovoid-conical, densely prickly.

Uses: The seeds are eaten raw or roasted. The seed flour is easily digestible and nutritious^[4].

***Hygrophila* R. Brown:**

***Hygrophila auriculata* (K.Schum.) Heine:**

Local name:Talmakhna:

Family:Acanthaceae: A stout, erect, hispid herb with usually fascicled, undivided stems. Leaves lanceolate, subsessile, acute at both ends, sparsely hispid with long white hairs, whorls large, dense with straight stout spines. Flowers in axillary whorls. Fruit a capsule, 4-8 seeded.

Uses: The plants are cooling, and diuretic in cases of hepatic obstruction, dropsy, rheumatism and diseases of the genitourinary tracts. The seeds are dumulcent, diuretic and possibly tonic^[13].

***Hydrilla* L.C.Rich:**

***Hydrilla verticillata* (L.f.) Royle:**

Local name:Kureli:

Family:Hydrocharitaceae: A glabrous, submerged weed. Leaves sessile, linear, green, often with redish-

brown dots and dashes, sharply serrate-dentate, acute. Male flower solitary in a spathe and female spathe with apex shortly bidentate. Fruit subulate, smooth or softly echinate.

Uses: The plants are used for refering the sugar. They are also used in experiments of photosynthesis conducted in the laboratory^[11].

***Hydrocharis* Linn.:**

***Hydrocharis dubia* (Bl.) Backer, Handb.:**

Local name: Unknown:

Family:Hydrocharitaceae: A stoloniferous herb. Leaves ovate-cordate to broadly ovate, apex obtusely rounded to broad acute, veins parallel, curved; stipules 1 or 2, transparent, scarious. Male spathes longer than the female ones. Petals pale yellow or white. Fruit filled with mucilage.

Uses: The plants are floating, and may be grown as ornamental in the garden ponds for their beautiful foliage and flowers^[11].

***Hydrolea* Linn.:**

***Hydrolea zeylanica* (L.) Vahl.:**

Local name:Kasschara:

Family:Hydrophyllaceae: An annual, prostrate to semierect herb, usually branched, rooting at the nodes. Leaves shortly petioled, simple, narrowed to the base, lanceolate, entire. Flowers in terminal and axillary inflorescences often in cymes, regular, 5-merous, pedicillate or subsessile. Fruit a thin transparent, globose, septicidal capsule.

Uses: The plant is often eaten by cattle. The leaves are considered to possess antiseptic properties, and are used as a poultice for obstinate ulcers^[5].

***Ipomoea* Linn.:**

***Ipomoea aquatica* Forsk:**

Local name:Kalmilata:

Family:Convolvulaceae: A glabrous trailer on mud or floating on water. Leaves ovate, ovate-oblong, deltoid, lanceolate or linear, base cordate, sagittate or hastate. Flowers 1-few in axillary cymes. Fruit a capsule, glabrous, ovoid to globose.

Uses: The leaves and young shoots are eaten as vegetable^[4].

***Ipomoea fistulosa* Mart.:**

Local name:Dholkalmi:

Family:Convolvulaceae: A shrub, branches ascending, usually fistular containing milky juice. Leaves ovate to ovate-oblong base cordate to truncate, acuminate, mature leaves pubescent below on the veins more or less glabrous above. Flower is pink in colour. Fruit is capsule.

Uses: The plants are mainly used as pisciculture in

ponds when in the presence of hot weather. It is also used as fuel wood^[5].

Lemna Linn.:

Lemna perpusilla Torrey:

Local name:Khudipana:

Family:Lemnaceae: A free floating herb. Fronds rather thin, solitary or in groups of 2-5, ovate to obovate or obovate-oblong; base strongly asymmetric, obtuse or slightly acute at both the ends, green. Stamen solitary. Fruit asymmetric, ellipsoid, laterally slightly compressed.

Uses: Ecologically it is an important fish and water bird food source, but sometimes becomes a noxious aquatic weed in still, nutrient-enriched water^[11].

Ludwigia Linn.:

Ludwigia adscendens (L.) Hara:

Local name: Kesardam:

Family:Onagraceae: A floating herb rooting at the nodes and with conspicuous white, erect, spindle-shaped, mucronate pneumatophores arising in clusters at the nodes of floating stems. Leaves broadly oblong-elliptic, obtuse or retuse, main veins prominent. Flower white in colour and fruit a capsule.

Uses: Ecologically the plant is a good oxygenator of pond water.

Limnophila R. Br.:

Limnophila indica (L.) Druce:

Local name:Karpur:

Family:Scrophulariaceae: A simple or branched plant, smelling of turpentine, with a few upper opposite, entire leaves and numerous whorled, capillaceo-multifid ones at its base. Flowers axillary, solitary, rarely subracemose. Calyx narrow, hemispheric in fruit, lobes ovate, acuminate.

Uses: It is considered as an antiseptic and made into a liniment with coconut oil to be used in elephantiasis. In pestilent fever, the juice of the plant is rubbed over the body of the patient. It is also used in dysentery^[12].

Lippia Linn.:

Lippia nodiflora Rich:

Local name:Bhui-okra:

Family:Verbenaceae: An annual herb, creeping minutely strigose, leaves cuneate-spathulate serrate, peduncles axillary rarely opposite, bracts obovate shortly acuminate as long as the corolla tube.

Uses: Useful in diseases of the heart, the blood, the eye, good for ulcers, burning sensation asthma and bronchitis^[5].

Lippia alba Linn:

Local name:Motmotey:

Family:verbenaceae: Shrubby, leaves ovate-oblong, crenate softly strigose, peduncles mostly opposite, bracts ovate, acuminate softly hairy.

Uses: Leaves are strongly aromatic, used as stomachic and nervine^[5].

Monochoria Presl:

Monochoria hastata (L.) Solms.:

Local name:Baranukha:

Family:Pontederiaceae: A perennial robust herb with often long rhizome covered with the remains of old leaf sheaths. Leaves many nerved, basal lobes divergent, petioles of radical leaves longer, broad and sheathing at the base, those of the floral leaves shorter, tumid above and embracing the short scape. Flowers in racemes or subumbellate; perianth segments pale blue. Fruit a capsule, ellipsoid.

Uses: The stems and leaves are sometimes eaten as greens^[4].

Monochoria vaginalis (Burm.f.) Presl:

Local name: Sarkachu:

Family:Pontederiaceae: Slender perennial herbs. Stems erect or obliquely erect, rootstock short, suberect, spongy. Leaves extremely variable in size and shape, usually acuminate, petioles of lower leaves long, stout, terete. Flowers blue in colour. Fruit glandular outside.

Uses: In Malaysia, the entire plant is eaten as vegetable and the juice of leaves and roots are used for medicinal purposes^[1].

Oxalis Linn.:

Oxalis corniculata Linn.:

Local name:Amrul:

Family:Oxalidaceae: Herbs, with acid juice, leaves alternate, ternately digitate, often subsensitive; stipules 2. Flowers regular, on axillary 1 or more flowered peduncles. Fruit a loculicidally dehiscent capsule with persistent valves.

Uses: The fresh leaves made into a curry are said to improve the appetite and digestion of dyspeptic patients. Prepared with hot water, the leaves make a very efficient poultice for boils^[4].

Ottelia Pers.:

Ottelia alismoides (L.) Pers.:

Local name:Panikala:

Family:Hydrocharitaceae: A submerged herb attached and rooted on the mud. The floating leaves broad-ovate, suborbicular or cordate-reniform, transparent to translucent, dentate or entire, base cordate or truncate,

apex obtuse, sometimes apiculate. Spathes peduncled, the sessile female and hermaphrodite ones 1-flowered, pedicelled male ones many flowered. Fruit oblong, apex attenuate.

Uses: The fruit is eaten by children. the petioles and blades are used as vegetable^[4].

Najas Linn.:

Najas graminea Del.:

Local name: Unknown:

Family:Njadaceae: A grass-like slender, aquatic rooting at the nodes. The tips of the main shoot and lateral branches densely leaved resulting in a plumose habit. Flowers solitary or 2-4 together, male perianth ending directly above the anther in 2 ear-like lobes. Fruits ellipsoid-oblong, attenuate at the apex.

Uses: The plants can become a noxious aquatic weed in irrigation ditches, ponds and rice paddies. Ecologically the plant is a good oxygenator of water and is used by fish for food^[11].

Nymphoides Hill.:

Nymphoides aurantiacum (Dalz.) O. Kuntze:

Local name:Haldichandmalla:

Family:Menyanthaceae: A floating herb with elongate stems not rooting at the nodes, but with several nodes producing leaves and flowers. Leaves alternate, orbicular-ovate, rounded at the apex, deeply cordate at base with a narrow sinus and subacute basal lobes; petioles dilated and sheathing at the base. Fruit subglobose, 10-20 seeded.

Uses: Ecologically the plant is a good oxygenator of pond water.

Nymphoides indicum (L.) O. Kuntze:

Local name:Panchuli:

Family:Menyanthaceae: A floating annual herb with several long branches which reach the surface of the water, producing a node with a tuft of roots, a cluster of flowers, a single floating leaf and a branch. Leaves orbicular, deeply cordate, with obtuse basal lobes and a triangular sinus and with some what sinuate margins. Flowers appearing above the water between the basal lobes of leaf. Fruit subglobose.

Uses: The plants are used as a substitute for chiretta in fever and jaundice^[12].

Nymphaea (Tourn.) Linn.:

Nymphaea nouchali Burm. f.:

Local name:Shapla:

Family:Nymphaeaceae: Leaves are sagittate to cordate, sharply sinuate-toothed. Flower buds oblong, open flower 5-15 cm. across. Sepals oblong, obtuse, 5-10 ribbed, green or rarely reddish. Petals linear or ovate-oblong, white or red or any shade in between. Fruit a globose berry with persistent stamens.

Uses: The rhizome and pedicels are eaten raw; the latter are also cooked as green vegetable. The seeds which are also edible are made into puffed grains by frying the dry seeds previously soaked in water on hot clay pans. The puffed seeds are eaten as such or prepared into home made confectionary. The flowers of red forms are used in blood dysentery and in

gynaecological complaints, and the powdered rhizome in piles, dysentery and dyspepsia^[4].

Panicum Linn.:

Panicum paludosum Roxb.:

Local name:Dalakri grass, Borati:

Family:Poaceae: A matted perennial grass, stem erect from a floating base, lower nodes spongy. Leaves linear or ensiform, serrulate, acute; sheath loose, ligule a ring of hairs. Panicle with long, spreading branches; spikelets lanceolate, upper glume orbicular and ovate; the lower lanceolate, palea minute or linear or 0. Stamens 3.

Uses: Cows and buffaloes are very fond of this grass^[4].

Pistia Linn.:

Pistia stratiotes Linn.:

Local name:Topapana:

Family:Araceae: A monoicous, free floating, gregarious herb with offsets. Leaves sessile, obovate-cuneate. Spathe small, shortly stalked, tubular below and open above, spadices subequalling the spathes. Stamens 2-8. Fruit few seeded.

Uses: Reported as a fish fodder^[4].

Potamogeton Linn.:

Potamogeton mucronatus Presl.:

Local name:Unknown:

Family:Potamogetonaceae: Perennials herbs. Leaves many nerved, undulate, mucronate, blade twice as long as the petiole, lanceolate. Peduncle very long, spike of interrupted groups or whorls of flowers. Fruit orbicular, shortly beaked.

Uses: The plants are used as food for aquatic birds and mammals, and as an oxygenator of water^[11].

Polygonum Linn.:

Polygonum barbatum Linn.:

Local name:Biskatali:

Family:Polygonaceae: An annual, erect or prostrate herb, branches erect, glabrous, internodes generally shorter than the leaves. Leaves subsessile, lanceolate or linear-lanceolate, acuminate, entire, base tapering, ventral side pubescent. Nut trigonous, black.

Uses: The root is used as an astringent and cooling remedy. The leaves and stalks is said to be used as a stimulating wash for ulcers^[5].

Polygonum orientale Linn.:

Local name:Bobobiskatali:

Family:Polygonaceae: An annual erect branched, softly pubescent herb; branches hollow. Leaves 15-20 cm. long petioled, ovate or cordate, acuminate, stipules short, hirsute. Flowers small white. Nuts 3 cm.;

orbicular, black, shiny.

Uses: Used for healing wounds, it good tonic and vulnerary^[5].

Phyllanthus Linn.:

Phyllanthus reticulatus Poir.:

Local name:Panichitki:

Family:Euphorbiaceae: A glabrous pubescent or tomentose, branches smooth or tuberculate, leaves are oblong or elliptic tip rounded obtuse or acute. Flowers are axillary and subracemose on slender branches. Fruit is coriaceous or fleshy 8-16 seeded.

Uses: Fruits are useful in inflammations. Leaves are mixed with plam nuts given to newly delivered woman to relieve them^[5].

Sagittaria Linn.:

Sagittaria sagitifolia Linn.:

Local name:Muyamuya:

Family:Alismataceae: A common scapigerous aquatic herb with long stolons ending in tubers. Leaves hastate, terminal lobes acute or obtuse, basal lobes finely acuminate. Flowers of the upper whorls male, of the lower female. Achenes obliquely obovate with intire or subrenate wings. Seeds pale brown.

Uses: Ecologically the plant is a good oxygenator of water.

Scirpus Linn.:

Scirpus articulatus (L.) Palla.:

Local name:Patpati, Chechur:

Family:Cyperaceae: A tufted perenial herb. Culms erect or recurved, terete, wide blew, transversely septate, hollow, Upper basal sheaths cylindrical, lower sheaths reduced and scale-like. Inflorescence a pseudolateral head, located at the midway position of the culm, bearing spikelets in a dense cluster, bract 1, culm like, glumes ovate, imbricate. Achenes broadly ovate.

Uses: Ecologically the plant is a good oxygenator of water.

Spirodela Schleiden:

Spirodela polyrhiza (L.) Schleid.:

Local name: Unknown:

Family:Lemnaceae: Fronds reniform to round or obovate, apex obtuse or rounded, green, ventral side and margin often reddish-purple. Roots 7-16. Each frond with 2 marginal reproductive pouches at the basal region. Inflorescence of 1 female and 2 (rarely 3) staminate flowers, enclosed within a membranous spathe. Fruit a 1 or 2-seeded urticel, slightly winged.

Uses: Ecologically the plant is a good oxygenator of water.

Utricularia Linn.:

Utricularia aurea Lour.:

Local name:Jhangi:

Family:Lentibulariaceae: Floating herbs with

numerous bladders. Inflorescence a raceme on stout peduncle with rather long, recurved pedicels. Calyx segments ovate, somewhat enlarged in fruit, hardly as long as the capsule. Corolla yellow, spur nearly as long as the lower lip. Seeds ellipsoid or obovoid, margin of the seeds entire.

Uses: Ecologically the plant is a good oxygenator of water and is used by fish for food^[11].

Utricularia stellaris Linn.f.:

Local name:Jhangi:

Family:Lentibulariaceae: An aquatic floating herb. Leaves multifid, interspersed with bladders, floating leaves ellipsoid or ovoid. Peduncle stout and without scales, bearing a whorl of oblong vesicles about the middle, pedicels thickened, usually deflexed in fruit. Calyx segments ovate, enlarged in fruit. Corolla yellow, spur shorter than the lower lip. Stamens 2. Stigma unequally 2-lobed. Fruit with reflexed calyx lobes. Seeds thickly discoid.

Uses: Ecologically the plant is a good oxygenator of water and is used by fish for food^[11].

Vallisneria Mich. ex Linn.:

Vallisneria spiralis Linn.:

Local name:Patseola:

Family:Hydrocharitaceae: A fully submerged, tufted, stemless, stoloniferous, dioiceous herb. Leaves radical, linear, ribbon-shaped, sheathing at base, apex obtuse. Male spathe on a scape, ovoid, flowers many, white, stamens 1-3. Female spathe on long, slender, filiform scape; flowers solitary, style 3. Fruit 5-13 cm. long, the basal part enclosed in the spathe. Seeds numerous.

Uses: Ecologically the plant is a good oxygenator of water and is used by fish for food^[11].

Wolffia Horkel ex Schlied.:

Wolffia arrhiza (L.) Horkel ex Wimmer.:

Local name:Bindupana:

Family:Lemnaceae: Fronds 0.5 mm long, resembling small dots or grains floating on still water in the form of thick, green, granular mass, usually as long as wide, rarely somewhat longer, base and apex obtuse.

Uses: It is favourite food of fishes and is therefore beneficial to pisciculture especially when the fronds are young^[4].

Xanthium Linn.:

Xanthium indicum Koenig ex Roxb.:

Local name:Ghagra:

Family:Asteraceae: An erect, hispid herb, unarmed, leaves petioled scabrid triangular-cordate or orbicular lobed and toothed, base cuneate, head in terminal and axillary racemes, fruiting involucre ovoid or oblong, beaks erect or diverging. Pappus absent.

Uses: Curry made from young stems are used as diabetes. It root extract is used for ulcers^[5].

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REFERENCES

1. Backer, C.A., 1951. Pontederiaceae. In Van Steenis (ed.): *Flora Malasiana Ser. 1, 4. Part-3*, Leiden, Netherlands. pp: 203-206.
2. Huq, A.M., 1986. Name Changes in Bangladesh Angiosperms. Bangladesh National Herbarium, BARC, Dhaka, Bangladesh.
3. Hooker, J.D., 1877. *Flora of British India*. Vols.1-7. L. Reeve and Co. Ltd. London, U.K.
4. Khan, M.S. and M. Halim., 1987. *Aquatic Angiosperms of Bangladesh*. Bangladesh National Herbarium, BARC, Dhaka, Bangladesh.
5. Kirtikar, K.R. and B.D. Basu., 1987. *Indian Medicinal Plants*. Vols.1-4. Lalit Mohan Basu, Allahbad, Jayyd Press, New Delhi, India.
6. Lawrence, G.H.M., 1953. *Taxonomy of Vascular Plants*. Oxford and IBM Publishing Co., Rakes Press, New Delhi, India.
7. Pasha, M.K. and M.B. Zaman., 1988. Name Changes in Plants of Bangladesh. Chittagong University Studies, Part-II, Science, 12(2).
8. Prain, D., 1903. *Bengal Plants*. Vols.1-2. Botanical Survey of India, Calcutta.
9. Rahman, M.S., 2005. *Environmental Science and Biogeography*, Abosar Publication Ltd. Dhaka-1100, Bangladesh., pp: 126-135.
10. Sharma, O.P., 2004. *Plant Taxonomy*. Tata McGraw Hill Publishing Company Limited. New Delhi, India.
11. Sambamurty, A.V.S.S., 2005. *Taxonomy of Angiosperms*. I.K. International Pvt. Ltd., New Delhi 110016, India.
12. Subramanyam, K., 1962. *Aquatic Angiosperms*. I.C.S.I.R., New Delhi, India.
13. Watt, G., 1972. *Economic Products of India*. Vols.1-6. Periodicals experts 42-D, Vivek Vihar, New Delhi, India.