

Wetland Plant Diversity in Andaman and Nicobar Islands, India

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Abstract

The present paper deals with wetland plant diversity of Andaman and Nicobar Islands, one of the hotspots of biodiversity. These Islands chiefly comprise tropical evergreen forests including wetlands, mangroves and coral reefs. Anthropogenic disruption as well as natural disasters in the recent years made a direct effect on the steadiness of these habitats in the Islands. If this condition continues, it will lead to the loss of biodiversity and bring a drastic change in the climate of these Islands. The results further suggest the need of controlling the anthropogenic disturbance on wetlands and promoting the activities of conservation of wetland plants to maintain their stability in the Islands.

Keywords: Wetland plants, Andaman and Nicobar Islands, India.

Introduction

Wetlands constitute about 4.7% of the total geographical area of India (Nitin Bassi *et al.*, 2014). According to the definition of Ramsar Convention (2013), most of the natural water bodies including rivers, lakes, coastal lagoons, mangroves, peat land, coral reefs and manmade wetlands such as ponds, irrigated fields, reservoirs, sewage farms, canals, etc. are considered as wetlands. These act as a highly productive ecosystem (Ghermandi *et al.*, 2008), by providing water and food for human being, shelter for aquatic organisms, resting and breeding sites for birds, etc. These also have vital role in assigning the level of ground water. The unique plant wealth of these wetlands is very important to maintain the ecological balance. Besides, these plants belonging to different families provide food, raw-materials and other needs of humankind all over the world, especially in countries like India where aquatic and wetland situations are seen quite common. Subramanyam (1962) described 32 families of aquatic angiosperms found in India. Cook (1996), in “Aquatic and wetland plants of India”, included 121 families of wetland plants from the country which remains the authentic account on Indian aquatic and wetland plants. The physiological adaptations of these plants are different in different groups. Among these, the purely aquatic plants are adapted to float on water

surface by having air cavities on the body (*Ceratophyllum demersum* L., *Eichhornia crassipes* (Mart.) Solms, etc.). They cannot survive in water free habitats. Some plants are able to grow in marshy lands (*Lindernia crustacea* (L.) F. Muell., *Monochoria vaginalis* (Burm.f.) K.B. Presl., etc.). The grass species *Vetiveria zizanioides* (L.) Nash can grow well in aquatic and dry habitats. Many aquatic and wetland plants are highly medicinal (*Acorus calamus* L., *Centella asiatica* (L) Urb., *Rotula aquatic* Lour., etc.), many provide raw-materials for cottage industries (*Pandanus* spp., *Typha angustifolia* L., etc.), few are considered as worst weeds (*Eichhornia crassipes* (Mart.) Solms, *Pistia stratiotes* L., etc.).

The Andaman and Nicobar Islands are well known for their tropical forest ecosystem including a number of wetlands and permanent water bodies with rich plant diversity. Though the number of natural fresh water bodies includes streams, ponds etc. are comparatively less in the Andaman and Nicobar Islands, they are well known for coastal lagoons, mangroves, peat land, coral reefs and other marshy wetlands with a rich diversity of water specific plants (**Plate 1 - 3**). Majority of them are mangroves which protect the Islands from coastal erosion, cyclone and tsunami (Singh, 2012). These plants are well influenced by the life of the inhabitants of these Islands both directly and indirectly.



Plate 1. A - H- Different Wetland Ecosystems of Andaman & Nicobar Islands

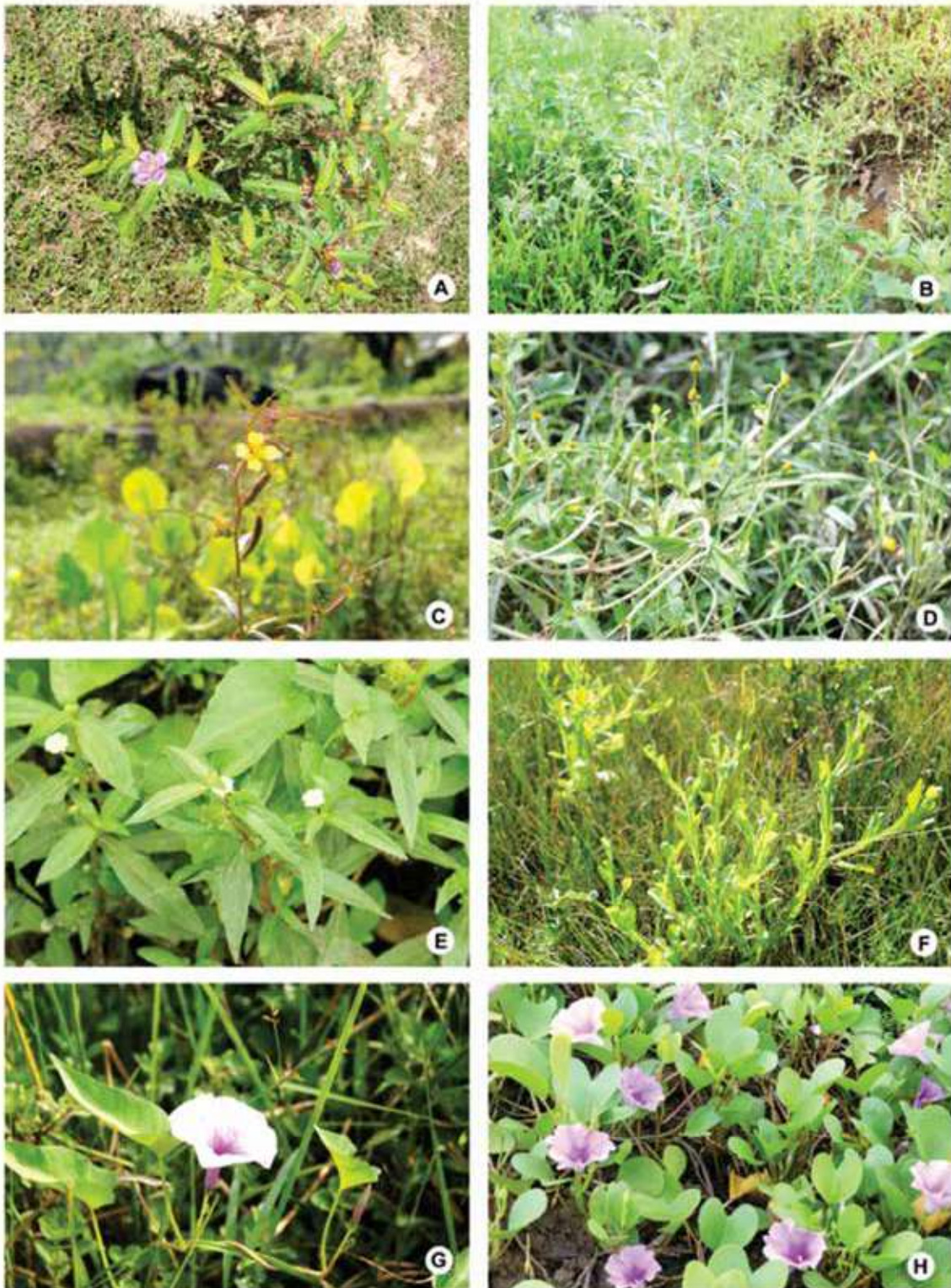


Plate 2. **A** - *Melastoma malabathricum* L. ; **B** - *Ammania baccifera* L. ; **C** - *Ludwigia perennis* L. ; **D** - *Acmella paniculata* (Wall. ex DC.) R.K. Jansen ; **E** - *Eclipta prostata* (L.) L. ; **F** - *Sphaeranthus africanus* L. ; **G** - *Ipomoea aquatica* Forssk. ; **H** - *Ipomoea pes-caprae* Roth



Plate 3. **A**- *Alternanthera sessilis* (L.) R.Br. ex DC. var. *sessilis* ; **B** - *Eichhornia crassipes* (Mart.) Solms ; **C** - *Monochoria vaginalis* (Burm.f.) K.B. Presl. ; **D** - *Commelina diffusa* Burm. f. ; **E** - *Murdannia nudiflora* (L.) Brenan ; **E** - *Limnocharis flava* (L.) Buchenau ; **F** - *Coix lachryma-jobi* L. ; **G** - *Eragrostis unioloides* (Retz.) Nees ex Steud.

Plant diversity of these Islands including many aquatic and wetland plants has been studied time to time by various workers (Sinha, 1999; Dagar and Singh, 1999; Hajra *et al.*, 1999; Debnath, 2004; Pandey and Diwakar, 2008; Rsingam, 2010; Singh, 2012; Singh and Murugan, 2014; Ranjan *et al.*, 2014; Singh *et al.*, 2014). However, there is no comprehensive account on these vulnerable group of plants as a whole in Andaman and Nicobar Groups of Islands.

The present status of aquatic and wetland plants and management of wetland ecosystem in the Andaman and Nicobar Islands have been attempted in the present paper provided short description and other details of 123 species of aquatic and wetland plants belonging to 39 families excluding mangroves.

Materials and Methods

The present study is based on field observations and live specimens collected from various wetlands of the Andaman and Nicobar Islands. Identification of specimens was done based on consultation of herbarium specimens deposited in CAL and PBL and critical examination of them with the help of relevant literature (Hooker, 1896;

Subramanyam, 1962; Cook, 1996; Hajra *et al.*, 1999). Relevant specimens were deposited at PBL.

Study area

The study area constitutes Islands of different sizes in Andaman and Nicobar with wetlands of following two categories.

1. Pre-tsunami Wetlands: Majority of wetlands found in these Islands are of this kind including fresh water ponds, water channels, marshy low lying fields, etc.
2. Post-tsunami Wetlands: These are being created after the last Tsunami happened in 2004, where seawater got trapped in low-lying fields and converted to permanent water reservoirs or marshy lands by having disconnected by the sea.

Results and Discussion

The wetlands in the Andaman and Nicobar Islands are congenial habitat for many hydrophytic plants. The primary classification of them based on the number of species growing in aquatic and semi-aquatic situations has been provided in the table given below.

Table 1. Number wise comparison of purely aquatic and semi aquatic species occur in Andaman and Nicobar Islands

PURE-AQUATIC SPECIES		SEMI-AQUATIC SPECIES	
Floating	Floating but Rooted	Obligatory Semi-Aquatic	Facultative Semi-Aquatic
7	10	91	15

A total of 77 genera and 123 species have been included in the present study which is provided in table 2. The family Poaceae constitutes maximum number of 15 genera and 22 species in the wetlands of Andaman and Nicobar Islands. The second major family represented is Cyperaceae with 18 species under 6 genera. *Eichhornia*

crassipes, *Limnocharis flava* and *Pistia stratiotes* have been found as troublesome weeds in the Islands.

During the field survey authors noted that anthropogenic activities are major threats to the wetlands in these Islands and also noticed that the percentage of anthropogenic stresses on post-tsunami wetlands is significantly greater than that of pre-tsunami wetlands.

Table 2. List of aquatic and wetland plants in Andaman and Nicobar Islands with their salient characters

[♣ Floating pure aquatic species; ♦ Pure aquatic species with floating leaves and stems but rooted at base; ■ Obligatory semi-aquatic species; ● Facultative semi-aquatic species]

No.	Botanical Name	Family	Major Characters
1	♦ <i>Nymphaea nouchali</i> Burm.f.	Nymphaeaceae	Herb, rhizomatous; leaf subpeltate; flower up to 7 cm across; pale blue, pink or white, slightly fragrant; carpel 7 – 11 nos.
2	♦ <i>Nymphaea pubescens</i> Willd.	Nymphaeaceae	Herb, rhizomatous; leaf subpeltate, margin dentate to undulate; flower up to 20 cm across, white to pinkish; carpel 18 – 20 nos.
3	♦ <i>Nelumbo nucifera</i> Gaertn.	Nelumbonaceae	Herb, rhizomatous; leaf peltate, floating; flower rose coloured
4	♦ <i>Barclaya longifolia</i> Wall.	Barclayaceae	Herb; rootstock villous; leaf membranous, floating; flower reddish to purplish; sepal 5; petal numerous; fruit berry
5	● <i>Melastoma malabathricum</i> L.	Melastomataceae	Shrub; leaf strongly 3-nerved; flower rose to purplish coloured, 5-merous; berry ovoid
6	■ <i>Aeschynomene indica</i> L.	Fabaceae	Undershrub; stem slender, woody; flower small; peduncle viscid; pod smooth or papillose on faces
7	■ <i>Sesbania bispinosa</i> (Jacq.) W.F.Wight	Fabaceae	Herb or undershrub; branch armed; leaf paripinnately compound; flower yellow with purple spots; pod linear, falcate, beaked, septate
8	■ <i>Ammania baccifera</i> L. ssp. <i>Aegyptiaca</i> (Willd.) Koehne	Lythraceae	Herb; leaf oblong to elliptic; flower sub-sessile, 4-merous; capsule globose
9	■ <i>Ammania multiflora</i> Roxb.	Lythraceae	Herb, erect; leaf sessile; flower red in axillary cymes; calyx 4-lobed; corolla 4-lobed; capsule depressed; seed many
10	■ <i>Rotala andamanensis</i> S.P. Mathew & Lakshmin.	Lythraceae	Herb; leaf decussate, sessile, oblanceolate; flower sessile, solitary in axils; sepal reddish; petal absent; ovary 4-loculed; stigma capitate
11	■ <i>Rotala illecebroides</i> (Arn.) Koehn.	Lythraceae	Herb, erect; flowers 4-merous; ovary sub-globose to ellipsoid; capsule ovoid to ellipsoid
12	■ <i>Ludwigia hyssopifolia</i> (G. Don) Exell	Onagraceae	Undershrub; stem semi-woody, well branched; flower 4-merous, pale yellow; stamen 8; ovary 4-loculed; capsule sub-terete
13	■ <i>Ludwigia octovalvis</i> (Jacq.) P.H. Raven	Onagraceae	Undershrub, well branched; leaf linear lanceolate; flower 4-merous, yellow; stamen 8; ovary 4-loculed; capsule 8-ribbed
14	■ <i>Ludwigia perennis</i> L.	Onagraceae	Herb; stem cylindrical; leaf linear-lanceolate; flower 4-merous, yellow; stamen 4; ovary 4-loculed; capsule terete; 4-ribbed
15	■ <i>Ludwigia peruviana</i> (L.) H. Hara	Onagraceae	Shrub; stem villous, cylindrical; flower on upper leaf axils, yellow; stamen 8 or 10; ovary 4-loculed; capsule quadrangular, 4-ribbed
16	■ <i>Ludwigia prostrate</i> Roxb.	Onagraceae	Herb; branch winged; flower sessile, 4-merous, yellow; stamen 4; ovary 4-loculed; capsule narrow, 4-angled, 4-ribbed
17	● <i>Centella asiatica</i> (L.) Urb.	Apiaceae	Herb, trailing; leaf reniform, crenate or lobulate, sparsely pubescent beneath; flower in sessile umbels, reddish brown

18	● <i>Hydrocotyle javanica</i> Thunb.	Apiaceae	Herb, prostrate, rooting at nodes; leaf 6 – 9-gonal, crenate, strigose; petiole villous; flower greenish in umbels; fruit sub-quadrate
19	● <i>Acmella paniculata</i> (Wall. ex DC.) R.K. Jansen	Asteraceae	Herb; leaf ovate-elliptic; inflorescence heads in axillary and terminal panicle, yellow; achene dorsally compressed
20	● <i>Eclipta prostrata</i> (L.) L.	Asteraceae	Herb, prostrate to decumbent; leaf sessile; head axillary or terminal; ray floret bidentate, 4 – 5-lobed; achene dark brown
21	■ <i>Grangea maderaspatana</i> (L.) Poir.	Asteraceae	Herb, prostrate; stem pubescent; leaf sinuate-pinnatifid; flower yellow; achene glandular
22	■ <i>Sphaeranthus africanus</i> L.	Asteraceae	Herb; leaf obovate; head with purplish flower; achene angled, glandular
23	■ <i>Lobelia alsinoides</i> Lam.	Lobeliaceae	Herb; leaf ovate to oblong; flower solitary, axillary, blue; capsule baccate, opening by 2-valves
24	■ <i>Sphenoclea zeylanica</i> Gaertn.	Sphenocleaceae	Herb; leaf elliptic-lanceolate, glaucous beneath; flower in terminal spikes, pale green; capsule circumscissile
25	■ <i>Hydrolea zeylanica</i> (L.) Vahl	Hydrophyllaceae	Herb; rooting at nodes; leaf lanceolate; flower bright blue; calyx glandular pubescent
26	■ <i>Rotula aquatica</i> Lour.	Boraginaceae	Undershrub; stem woody; leaf spatulate; flower axillary, purple; drupe globose, apiculate, orange coloured when ripe
27	■ <i>Ipomoea aquatica</i> Forssk.	Convolvulaceae	Herb, prostrate; leaf 3-angled, ovate to oblong-lanceolate; flower purple or white; fruit globose, grey pubescent
28	● <i>Ipomoea pes-caprae</i> Roth	Convolvulaceae	Herb, prostrate; leaves lobed at apex, veins parallel; flowers purple red; ovary 4-celled; stigma 2-lobed; seeds covered with long tomentum
29	■ <i>Bacopa monnieri</i> (L.) Wettst.	Scrophulariaceae	Herb, prostrate; leaf sessile, fleshy, obovate; flower axillary, solitary, pale pink
30	■ <i>Bacopa floribunda</i> (R. Br.) Wettst.	Scrophulariaceae	Herb, erect; leaf sessile; flower axillary, usually solitary, blue or violet; bract setaceous; capsule ellipsoid
31	■ <i>Dopatrium junceum</i> (Roxb.) Buch. -Ham. ex Benth.	Scrophulariaceae	Herb; branch fleshy; leaf radical and cauline; flower violet; calyx 5-partite; stamen bearded; capsule globose
32	■ <i>Limnophila chinensis</i> (Osbeck.) Merr.	Scrophulariaceae	Herb, stem hirsute; leaf sessile, serrate, linear oblong; flower solitary, axillary, bluish
33	■ <i>Limnophila repens</i> (Benth.) Benth.	Scrophulariaceae	Herb; leaf sub-sessile, serrate, ovate or obovate; flower axillary, solitary, violet
34	■ <i>Lindernia antipoda</i> (L.) Alston	Scrophulariaceae	Herb, decumbent; leaf elliptic-lanceolate, narrowly serrate; flower white with purple tinge; stamen 2; capsule linear cylindrical
35	■ <i>Lindernia ciliate</i> (Colsm.) Pennell	Scrophulariaceae	Herb, decumbent; leaf sessile, serrate with sharp lobes; flower pinkish
36	■ <i>Lindernia crustacea</i> (L.) F. Muell.	Scrophulariaceae	Herb; leaf entire to crenate; flower purplish violet; calyx 5-ribbed; stamen 4; capsule ovoid spherical, equalling or shorter than calyx lobes

37	♣ <i>Utricularia gibba</i> L.	Lentibulariaceae	Herb, floating, stoloniferous; leaf dichotomously branched, modified into bladder; flower yellow with reddish streaks
38	♣ <i>Utricularia striatula</i> Sm.	Lentibulariaceae	Herb; stoloniferous; leaf rosulate, reniform, ovoid; flower violet with an yellow spot in scape; seed glochidiate
39	■ <i>Acanthus ilicifolius</i> L.	Acanthaceae	Shrub; leaf prickly, lobe spiny; flower bluish; anther bearded; capsule oblong
40	■ <i>Hygrophila erecta</i> (Burm.f.) Hochr.	Acanthaceae	Herb, erect or ascending; leaf obovate to oblong, densely pubescent; flower violet or white; capsule mucilaginous hairy
41	■ <i>Hygrophila pusilla</i> Blume	Acanthaceae	Herb, rigid; leaf linear, entire, near to glabrous; flower in small axillary clusters; white
42	■ <i>Hygrophila ringens</i> (L.) Steud.	Acanthaceae	Herb, erect; stem quadrangular; leaf lanceolate; flower whorled, blue; calyx 5-partite; corolla bilipped; seed orbicular
43	■ <i>Clerodendrum inerme</i> (L.) Gaertn.	Verbenaceae	Shrub, scandent; leaf membranous; flower in threes on branch; flower campanulate; white; stamen exerted; drupe obovoid
44	■ <i>Phyla nodiflora</i> (L.) Greene	Verbenaceae	Herb, prostrate, rooting at nodes; leaf fleshy, spatulate; serrate towards base; flower pinkish to purplish; stamen 4, didynamous; fruit enclosed in calyx
45	■ <i>Alternanthera philoxeroides</i> (Mast.) Griseb.	Amaranthaceae	Herb, ascending from creeping base; leaf oblong; flower peduncled; perianth almost sessile; stamen 5; ovary shortly stalked
46	■ <i>Alternanthera sessilis</i> (L.) R.Br. ex DC. var. <i>sessilis</i>	Amaranthaceae	Herb, prostrate, rooting at nodes; leaf lanceolate to oblong or obovate; head sessile, white; utricle compressed; seed orbicular
47	■ <i>Alternanthera sessilis</i> (L.) DC. var. <i>tenuissima</i> Baker	Amaranthaceae	Herb, prostrate, rooting at nodes; leaf lanceolate to oblong or obovate; head sessile, white; utricle compressed; seed orbicular
48	■ <i>Pilea microphylla</i> (L.) Liebm.	Urticaceae	Herb, prostrate; leaf pilose, oblanceolate; flower reddish in axillary cymes
49	♣ <i>Ceratophyllum demersum</i> L.	Ceratophyllaceae	Herb, free floating; leaf dissected, filiform; flower sessile, minute; fruit ovoid to ellipsoid, straw coloured, tuberculate
50	◆ <i>Blyxa aubertii</i> Rich.	Hydrocharitaceae	Herb, submerged, stemless; leaf radical; sepal 3; petal linear; capsule cylindrical; seed ovate to elliptic, tubercled
51	◆ <i>Blyxa octandra</i> (Roxb.) Planch. ex Thwaites	Hydrocharitaceae	Herb, stemless, scaperous; leaf linear; flower bisexual; stamen 3; seeds obscurely tubercles, apiculate at both ends
52	◆ <i>Enhalus acoroides</i> (L.f.) Royle	Hydrocharitaceae	Herb, rhizomatous, submerged; leaf ribbon like; male flower many on conical axis; peduncle of female flower dilated, spathe
53	◆ <i>Halophila ovalis</i> (R.Br.) Hook.f.	Hydrocharitaceae	Herb, rhizomatous; root one at each node; male flower spathe elliptic-lanceolate; female flower spathe ovate-oblong; seeds reticulate

54	● <i>Burmannia championii</i> Thwaites	Burmanniaceae	Herb, slender; flower trimerous; perianth lobe triangular to spatulate; style 3-fid; stigma funnel shaped
55	● <i>Burmannia colestis</i> D. Don	Burmanniaceae	Herb, erect; stem filiform; leaf reduced to scales; flower purple
56	■ <i>Polygonum barbatum</i> L.	Polygonaceae	Herb, ascending; leaf sub-sessile, lanceolate to oblong; perianth white or pinkish; nut ovoid to ellipsoid
57	■ <i>Polygonum caespitosum</i> Blume	Polygonaceae	Herb, ascending; leaf elliptic to lanceolate; pseudo-spike combined into panicle; nut brown, polished
58	♣ <i>Eichhornia crassipes</i> (Mart.) Solms	Pontederiaceae	Herb, floating; leaf obovate; flower in dense raceme, bluish violet
59	■ <i>Monochoria vaginalis</i> (Burm.f.) K.B. Presl.	Pontederiaceae	Herb; leaf ovate to sagitate; flower in axillary raceme, blue; capsule oblong
60	■ <i>Commelina diffusa</i> Burm. f.	Commelinaceae	Herb, straggling; leaf sessile, lanceolate; spathe solitary; flower blue; capsule oblong; seed 5, tubercled
61	■ <i>Floscopa scandens</i> Lour.	Commelinaceae	Herb, decumbent; leaf nearly sessile, lanceolate; flower terminal, violet; capsule 2-celled; seed elliptic, striate
62	■ <i>Murdannia crocea</i> (Criff.) Faden	Commelinaceae	Herb, erect, scandent; leaf elliptic lanceolate, ovate towards apex; flowers yellowish or with orange shade
63	■ <i>Murdannia nudiflora</i> (L.) Brenan	Commelinaceae	Herb, diffuse, rooting at nodes; leaf elliptic-lanceolate; flower in sub-corymbose panicle; capsules sub-globose
64	■ <i>Murdannia spirata</i> (L.) Bruckn.	Commelinaceae	Herb, decumbent; leaf linear lanceolate; flower 4 – 6 together; capsule globose
65	● <i>Pandanus furcatus</i> Roxb.	Pandanaceae	Tree; leaf spiny along margin, spine curved; spathe inodorous, golden yellow; fruit reddish brown; drupe 5 – 6-angled
66	● <i>Pandanus lerum</i> Jones ex Fontane	Pandanaceae	Tree, stem with short spiny like outgrowths; leaf sword shaped, margin spiny; fruit ellipsoid or globose
67	● <i>Pandanus odoratissimus</i> L.f.	Pandanaceae	Tree; leaf ensiform, margin spiny; male spadix many, female spadix solitary; fruit ovoid, orange yellow
68	■ <i>Typha angustifolia</i> L.	Typhaceae	Herb, erect; leaf radical, thick, spongy; flower on spikes, unisexual, brown to yellowish; fruit achene; style persistent
69	◆ <i>Potamogeton nodosus</i> Poir.	Potamogetonaceae	Herb, stoloniferous; leaf elliptic-lanceolate; flower greenish white; drupelet subovoid, beaked, spongy
70	● <i>Acorus calamus</i> L.	Araceae	Herb; aromatic; rootstock creeping; leaf distichous, ensiform, nerves parallel; peduncle leaf like; spadix sessile, cylindrical
71	● <i>Alocasia decipiens</i> Schott	Araceae	Herb; leaf oblong, sagitate, posticous lobes half the length of the anticous; petiole long, slender; ovary globose; stigma capitate
72	■ <i>Colocasia esculenta</i> (L.) Schott	Araceae	Herb, erect; leaf ovate to subcordate; spathe yellow; male inflorescence longer, female inflorescence as long as staminodes

73	◆ <i>Cryptocoryne ciliata</i> (Roxb.) Fisch. ex Wydler	Araceae	Herb, tuberous; leaf linear-lanceolate; spathe limb purple, densely fimbriate; fruit peduncled
74	♣ <i>Pistia stratiotes</i> L.	Araceae	Herb, floating; stoloniferous; leaf rosette, sessile, ovate to obovate; flower unisexual; stamen 2 – 8, connate; fruit green, ovoid
75	♣ <i>Lemna perpusilla</i> Torr.	Lemnaceae	Herb; scale like, floating; thalloid, fronds asymmetric, flat; flowering cavity lateral; spathe naked; utricle ribbed, 1-seeded
76	■ <i>Limnocharis flava</i> (L.) Buchenau	Alismataceae	Herb; leaf ovate, thick; flower in clusters, pale yellow; fruit compound; seed dark brown, horseshoe-shaped, angular
77	♣ <i>Najas indica</i> (Willd.) Cham.	Najadaceae	Herb, submerged; branch dichotomous; leaf narrow, linear, recurved, margin toothed; flower solitary; seed pitted
78	■ <i>Eriocaulon helferi</i> Hook.f.	Eriocaulaceae	Herb; rootstock absent; peduncle few; head ovoid or globose; seed ovoid to globose, obtuse, dark purple; cell rectangular, transversely elongated
79	■ <i>Eriocaulon sexangulare</i> L.	Eriocaulaceae	Herb; rootstock absent; peduncle many; head ovoid or hemispherical; seed ovoid or globose, obtuse; cell rectangular, transversely elongated
80	■ <i>Eriocaulon truncatum</i> Buch.- Ham. ex Mart.	Eriocaulaceae	Herb; rootstock absent; peduncle many; head hemispherical; seed oblong or ovoid, obtuse or apiculate; cell rectangular, vertically elongated
81	■ <i>Eriocaulon xeranthemum</i> Mart.	Eriocaulaceae	Herb; rootstock absent; peduncle few; head hemispherical or cuneate; seed oblong, ellipsoid, obtuse or acute; seed coat cell rectangular, transversely elongated
82	■ <i>Cyperus compactus</i> Retz.	Cyperaceae	Cum solitary or few together; bract 3 – 5; spike with stellately arranged spikelet; rachilla with hyaline wings; nut linear to oblong, trigonous
83	■ <i>Cyperus odoratus</i> L.	Cyperaceae	Herb; stem trigonous to triquetrous; spikelet spicate, subterete, 4 – 20-flowered; rachilla flexuous, winged; nut trigonous, apiculate, greyish brown to blackish
84	■ <i>Cyperus difformis</i> L.	Cyperaceae	Herb; stem rather weak, triquetrous; spikelet stellately spreading, linear to oblong; rachilla straight, wingless; nut triquetrous, ellipsoid, shining pale brown
85	■ <i>Cyperus diffuses</i> Vahl	Cyperaceae	Herb; stem trigonous below, triquetrous above; spikelet digitately arranged, compressed; style hardly any; nut triquetrous, subpyramidal, shortly apiculate
86	■ <i>Cyperus iria</i> L.	Cyperaceae	Herb; stem triquetrous; leaf basal; spikelet spicately arranged, compressed, 6 – 20-flowered; rachilla wingless; style hardly any; nut triquetrous, shining dark brown
87	■ <i>Eleocharis andamanensis</i> Govind.	Cyperaceae	Herb, stoloniferous; tuber covered with multilayered scales; spikelet elliptic-ovate, many flowered; glume 4-ranked; nut biconvex, neck not forming annules

88	■ <i>Eleocharis dulcis</i> (Burm.f.) Trin ex Henschel	Cyperaceae	Herb; stem terete, striated, transversely septate; sheath oblique at mouth; spikelet cylindrical; style 2 – 3-fid; nut biconvex, hardly constricted
89	■ <i>Eleocharis geniculata</i> (L.) Roem & Schultes	Cyperaceae	Herb; stem angular-striate; sheath oblique at mouth; spikelet globose to oblong-ovoid, many flowered; style 2-fid; nut biconvex, shining black
90	■ <i>Eleocharis retroflexa</i> (Poir.) Urb.	Cyperaceae	Herb; stem angular, 4 – 5-ribbed, punctulate; spikelet ovoid, 3 – 10-flowered; style 3-fid; nut equilaterally triquetrous, constulate at angles
91	■ <i>Fimbristylis aphylla</i> Steud.	Cyperaceae	Herb; stem 4 – 5-angled, almost winged; sheath obliquely truncate; spikelet solitary, terete, many-flowered; style triquetrous; nut trigonous, verruculose
92	■ <i>Fimbristylis cymosa</i> R.Br.	Cyperaceae	Herb; stem sub-terete; spikelet solitary or in clusters, oblong-ovoid, many-flowered; style flat or triquetrous, dilated at base; nut biconvex, trigonous, almost smooth
93	■ <i>Fimbristylis dichotoma</i> (L.) Vahl	Cyperaceae	Herb; stem angular, striate; spikelet solitary or aggregate, ovoid, terete, many-flowered; style flat; nut biconvex, obovoid, sparsely verruculose
94	■ <i>Fimbristylis miliacea</i> (L.) Vahl	Cyperaceae	Herb; stem 4 – 5-angled, striate; sheath obliquely truncate at mouth; spikelet solitary, ovoid, angular, many flowered; style triquetrous; nut trigonous
95	■ <i>Kyllinga brevifolia</i> Rottb.	Cyperaceae	Herb; rhizome creeping; inflorescence capitate heads, greenish; spikelet closely packed, 1-flowered; nut biconvex, compressed, apiculate, yellowish brown
96	■ <i>Kyllinga nemoralis</i> (J.R. & Forst.) Dandy ex Hutchins. & Dalz.	Cyperaceae	Herb; rhizomatous; stem triquetrous; inflorescence head like spikes; spikelet compressed; nut biconvex, compressed
97	■ <i>Pycreus polystachyos</i> (Rottb.) P. Beauv.	Cyperaceae	Herb; stem trigonous; spikelet numerous, congested; rachilla flexuous, narrowly winged; stamen 1 – 2; styles bifid; nut linear-oblong, brown to shining black
98	■ <i>Schoenoplectus articulatus</i> (L.) Palla	Cyperaceae	Herb; stem terete, transversely septate; leaf reduced; sheaths obliquely truncate at apex; inflorescence pseudo-lateral heads; spikelet sessile; nut triquetrous, apiculate
99	■ <i>Schoenoplectus juncooides</i> (Roxb.) Palla	Cyperaceae	Herb, rhizomatous; leaf reduced to sheaths; inflorescence pseudo-lateral heads; spikelet densely flowered; glume ciliolate along margin towards apex; achene transversely wrinkled, brownish black
100	■ <i>Arundo donax</i> L.	Poaceae	Herb; culm tufted, rhizomatous; internode hollow; leaf distichous; panicle dense to effuse, enclosed in sheath; spikelet paired
101	■ <i>Coix aquatic</i> Roxb.	Poaceae	Herb; culm creeping or floating; leaf upper surface tuberculate; spike terminal; ripe involucre abruptly constricted at neck into a beak

102	■ <i>Coix lachryma-jobi</i> L.	Poaceae	Herb, rooting at lower nodes; leaf linear-lanceolate; inflorescence a false raceme; female spikelet basal, enclosed in bracts, male spikelet upper; fruit ovoid, bony
103	■ <i>Echinochloa colonum</i> (L.) Link.	Poaceae	Herb, geniculately ascending; panicle adpressed to axis; caryopsis plano-convex
104	■ <i>Echinochloa crus-galli</i> (L.) P. Beauv.	Poaceae	Herb, decumbent; lower glume orbicular; caryopsis elliptic
105	■ <i>Eleusine coracana</i> (L.) Gaertn.	Poaceae	Herb; culm tufted; leaf sheath strongly keeled; inflorescence 4 – 8 digitate spikes; spikelet secund, compactly arranged, sessile
106	● <i>Eragrostis unioloides</i> (Retz.) Nees ex Steud.	Poaceae	Herb; culm erect to decumbent, rooting at lower nodes; panicle open to congested; spikelet green to brownish; floret disarticulating from base upwards
107	■ <i>Isachne globosa</i> (Thunb.) O. Kuntze	Poaceae	Herb; culms decumbent; panicle compact to effuse; spikelet sub-globose; florets unequal
108	■ <i>Isachne miliacea</i> Roth	Poaceae	Herb; culm creeping; lower nodes rooting; leaf ovate to lanceolate; spikelet paired, one sub-sessile, other pedicelled
109	■ <i>Ischaemum muticum</i> L.	Poaceae	Herb; culm trailing; leaf ovate-lanceolate; sheath slightly keeled; raceme 2, concealed or hardly exerted from spathe; spikelet sessile and pedicelled; stamen 3
110	■ <i>Ischaemum rugosum</i> Salisb.	Poaceae	Herb; culm tufted, geniculate; lower nodes rooting; inflorescence 2-digitate axillary or terminal raceme; spikelet one sessile
111	■ <i>Leersia hexandra</i> Sw.	Poaceae	Herb; culm decumbent; raceme 8 – 12, alternate; spikelet imbricate, plano-convex, angled; stamen 6
112	■ <i>Oryza meyeriana</i> (Zoll. & Moritzi) Baill. var. <i>inandamanica</i> (J.L. Ellis) Veldk.	Poaceae	Herb, profuse; culm polished; leaf sheath maroon coloured; inflorescence spicate, unbranched; stamens 6; caryopses linear to oblong
113	■ <i>Oryza sativa</i> L.	Poaceae	Herb; culm tufted, erect; lower nodes rooting; panicle lax; spikelet oblong to ellipsoid; stamen 6
114	■ <i>Panicum repens</i> L.	Poaceae	Herb; culm decumbent; panicle lax to compact, raceme alternate; spikelet paired
115	■ <i>Paspalum conjugatum</i> P.J. Berguis	Poaceae	Herb; culm stoloniferous; lower nodes rooting; inflorescence 2-digitate, conjugate raceme; spikelet sub-sessile
116	■ <i>Paspalum scrobiculatum</i> L.	Poaceae	Herb; culms tufted, stoloniferous; nodes band like; inflorescence 2 – 5-digitate raceme; rachis flat
117	■ <i>Phragmites karka</i> (Retz.) Trin. ex Steud.	Poaceae	Herb; culm reed like, enclosed by leaf sheaths; inflorescence lax to bushy; peduncle enclosed by sheath
118	■ <i>Saccharum spontaneum</i> L.	Poaceae	Herb; culms tufted, rhizomatous; panicle ample, raceme whorled, silver coloured; spikelet paired, one sessile and one pedicelled

119	■ <i>Saccioplepis indica</i> (L.) Chase	Poaceae	Herb; culm erect to geniculate; inflorescence spiciform; spikelet compactly arranged on rachis; pedicel turbinate
120	■ <i>Saccioplepis myosuroides</i> (R. Br.) A. Camus	Poaceae	Herb; culm erect or decumbent; lower nodes rooting; inflorescence spiciform, cylindrical, interrupted; spikelet in 2 – 5 clusters
121	● <i>Vetiveria zizanioides</i> (L.) Nash	Poaceae	Herb; culm tufted; leaf mostly aggregate at base; panicle branched whorled; spikelet in 4 – 6 pairs with florets sessile and pedicelled
122	■ <i>Marsilea quadrifolia</i> L.	Marsileaceae	Herb; rooted at nodes; sporocarp perpendicular to ascending, pubescent at young stage
123	■ <i>Ceratopteris thalictroides</i> (L.) Brogn.	Ceratopteridaceae	Herb; rhizome with fleshy roots; stipe fleshy; sterile lamina unipinnate, segment variously lobed; fertile lamina dichotomously branched

Conclusion

Wetlands are considered as wastelands nowadays by using them for dumping urban wastes, filling for construction, plantation, etc. Therefore, they are becoming the most threatened ecosystem. The urban waste and chemical effluence cause the depletion of the structure of this ecosystem. They affect directly on the survival of water specific plants, thus the species diversity is getting reduced day by day. Other reasons for decrease in their numbers are natural calamities and global warming which happen as a result of urbanization and industrialization. Anthropogenic activities are major threats to the wetlands of the Andaman and Nicobar Islands, mainly by filling the wetlands for construction purpose which has resulted in decreasing the population of sensitive group of water specific plants. Therefore, a step towards the conservation of wetlands of these Islands has to be taken care, so that the biodiversity and thereby the ecological balance of these Islands as a whole could be maintained.

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