

## Wetland Flora of Jagdishpur Reservoir, Western Nepal

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### Abstract

*The Wetland flora of Jagdishpur Reservoir has been studied in the year 2021. This study was conducted to document the wetland flora found on foot trails around the Jagdishpur reservoir, Kapilvastu District. 70 species belonging to 67 genera of 37 families were recorded from the study area. 13 species were invasive which seems that the wetland is under threat. Thus; this study provides baseline information about the wetland flora of the reservoir which might help in further research and in the conservation of wetland flora.*

**Keywords:** *conservation, document, flora, invasive, baseline, wetland*

### Introduction

Literature revealed that several works have been done in wetland flora of Nepal. Most of the works have been conducted in and around Kathmandu valley and in different regions. Flora of various lake and reservoir has been studied: Ghoda Ghodi Lake (Sha et al. 2002), Rara Lake (Basnet et al. 2012), Bet kot Lake (Basnet et al. 2016), RajaRani- Dhimal Pokhari (Chaudhary et al. 2017), Maipokhari (Bhattarai, K. R. 2018), Gajedi- Danapur Tal and Nanda Bhauju Tal (Dhakal et al. 2018). Besides that several other works in Algal flora and limnological studies (Chaudhary et al. 2018, Rai et al. 2019) have also been studied. According to Ghimire (2020) 711 wetland plant species under 382 genera in 112 families are enumerated in Nepal. Wetland flora of the Rupandehi district has been explored and nearly 115 species were recorded (Dhakal *et a.* 2019) but there is no documentation in the wetland flora of Jagdishpur reservoir. An extensive exploration is still needed to be carried out. Documentation of the flora of wetland species is essential for present and future research development. The present exploration has been conducted to find out the wetland flora of Jagdishpur reservoir. Thus, this study will provide valuable baseline information regarding wetland flora of reservoir and will aid in further research and in conservation.

### Materials and Methods

#### Study Area

Jagdishpur reservoir (27° 35' N and 83° 05' E ) lies in Kapilvastu Municipality Ward 9 and 10, of Kapilvastu district of Nepal (Fig. 1), about 10 km north-west to the district headquarters

Taulihawa. It has an elevation of 197 m with a tropical monsoon climate of hot rainy summer and cool, dry winter and covers an area of 225 hectares (Dhakal *et al.* 2015).

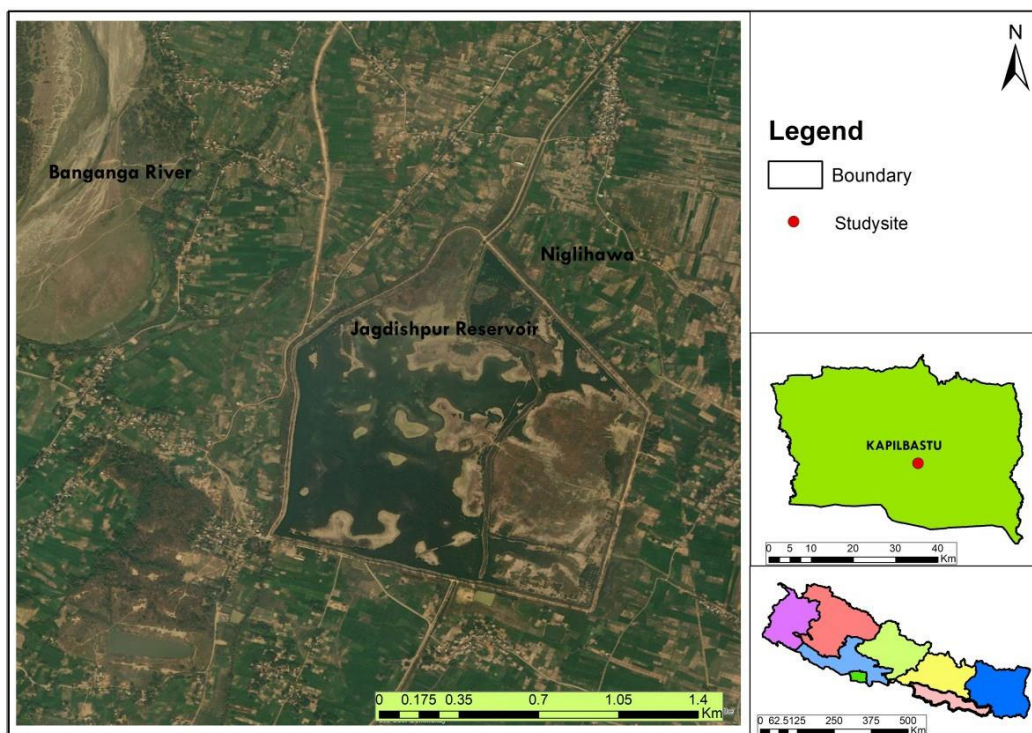


Figure – 1: Map of Study area

It was constructed in 1970s for irrigation purposes at the location of Jakhira Lake and is surrounded by agricultural land. The water was fed from Bangang River which has the catchment area in Churia hills. The reservoir is considered a paradise for birds. Several other aquatic plant species including other terrestrial species have been found in the reservoir and its adjoining areas. The Reservoir Management Committee involving the local community has taken its authority over its management. The reservoir has been utilized for the commercial fish culture and some of its southwest parts have been used for recreational (boating) purposes. Based on the criteria the Jagdishpur reservoir has been designated as Ramsar site in 2003 (Shiwakoti, 2009).

## Method

This study was conducted in March, 2021. The survey was done during the beginning of the spring season which was carried out on foot. The survey followed a fixed route, starting from the main route and walking in a clockwise direction and ending at the starting point. Plant species were observed, photographed, recorded and collected for herbarium from the margin of the reservoir. Identification was done with the help of experts from the National Herbarium and plant laboratories (KATH), some other relevant literature (Fraser- Jenkins *et al.* 2015, Ghimire *et al.* 2020), and annotated checklist of flowering plants (Press *et al.* 2000) and (The Plant list, 2013).

## Results and Discussion

70 plant species belonging to 67 genera of 37 families were recorded. Out of 37 families Compositae (9 species) comprises the highest number of species followed by Leguminosae (7 species), Poaceae (4 plant species), Malvaceae (4 species) and remaining families comprising less than 4 plant species (fig. 2). The study was focused only on macrophytes.

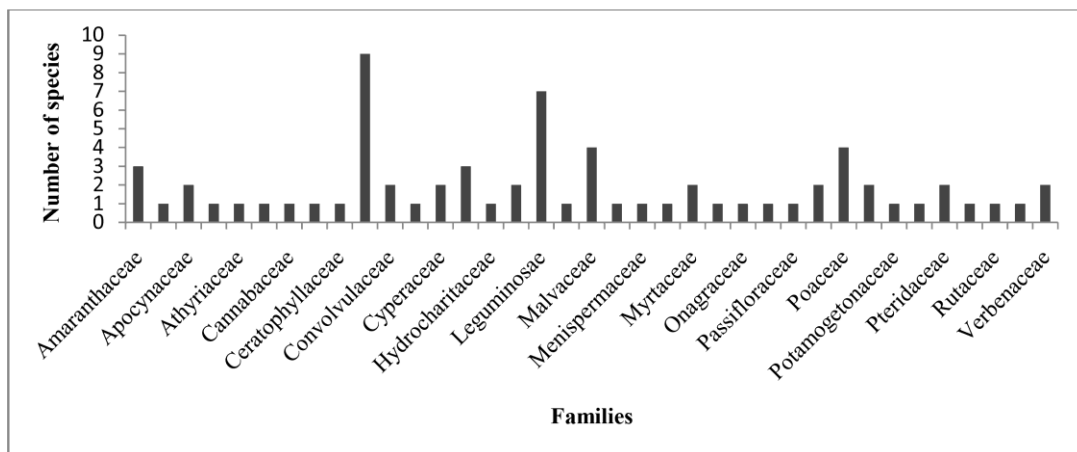


Figure – 2: Number of the plant species of Jagdishpur reservoir, Western Nepal

Most of the recorded plant species were under the plant groups of angiosperms and only a few were pteridophytes (3 species) and no gymnosperm was recorded from this place. Since this place was not appropriate for the plant belonging to gymnosperm. Plant species were divided into four life forms Herb, shrub, climber and tree. Herb (46 species) exhibits the highest number of plant species followed by shrub (11 species), tree (7 species) and climbers (6 species) (Annex 1). Submerged and free floating aquatic plant species *Hydrilla verticillata*, *Nymphoides hydrophylla*, *Nelumbo nucifera* were recorded respectively. Tree species like *Dalbergia sissoo*, *Syzygium cumini* (Jamun) were

also recorded. Similarly, 13 invasive species *Ipomoea carnea*, *Xanthium strumarium*, *Ageratum houstonianum*, *Urena lobata*, *Parthenium hysterophorus* (Annex) were also recorded. Similar species have been recorded from the relevant literatures from other wetlands (Basnet *et al.* 2016 and Chaudhary *et al.* 2018). Herbs exhibiting the highest concentration were similar with the result (Basnet *et al.* 2016, Paudel *et al.* 2016). In the present study 70 species were recorded that is more or less similar to the findings of Dhakal, *et al.* (2015) where they have recorded 68 species belonging to 35 families.

## Conclusion

The present investigation in Jagdishpur reservoir documented 70 plant species belonging to 67 genera of 37 families. Herbs (46 species) exhibits the highest number of plant species followed by shrub (11 species), tree (7 species) and climbers (6 species). Out of the 70 species 13 species were invasive which seems that the wetland is under threat. This study provides baseline information about the wetland flora of the reservoir. This study did not cover all the

category of flora so, further exploration is recommended in this area at different seasons.

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## Annex

S.N.	Scientific Name	Family	Life form
1	<i>Alternanthera paronychioides</i> A.St.-Hil.	Amaranthaceae	Herb
2	<i>Achyranthes aspera</i> L.	Amaranthaceae	Herb

3	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	Amaranthaceae	Herb
4	<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Herb
5	<i>Ichnocarpus frutescens</i> (L.) W.T.Aiton	Apocynaceae	Climber/ lianas
6	<i>Calotropis procera</i> (Aiton) Dryand.	Apocynaceae	Shrub
7	<i>Colocasia esculenta</i> (L.) Schott	Araceae	Herb
8	<i>Diplazium esculentum</i> (Retz.) Sw.	Athyriaceae	Herb
9	<i>Euploca strigosa</i> (Willd.) Diane & Hilger	Boraginaceae	Herb
10	<i>Cannabis sativa</i> L.	Cannabaceae	Herb
11	<i>Cerastium arvense</i> L.	Caryophyllaceae	Herb
12	<i>Ceratophyllum demersum</i> L.	Ceratophyllaceae	Herb
13	<i>Cyanthillium cinereum</i> (L.) H.Rob.	Compositae	Herb
14	<i>Xanthium strumarium</i> L.	Compositae	Herb
15	<i>Ageratum houstonianum</i> Mill.	Compositae	Herb
16	<i>Parthenium hysterophorus</i> L.	Compositae	Herb
17	<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob.	Compositae	Herb
18	<i>Tridax procumbens</i> (L.) L.	Compositae	Herb
19	<i>Cirsium</i>	Compositae	Herb
20	<i>Hypochaeris radicata</i> L.	Compositae	Herb
21	<i>Ageratum conyzoides</i> (L.) L.	Compositae	Herb
22	<i>Ipomoea carnea</i> Jacq.	Convolvulaceae	Shrub
23	<i>Ipomoea aquatica</i> Forssk.	Convolvulaceae	Trailing vine
24	<i>Coccinia grandis</i> (L.) Voigt	Cucurbitaceae	Climber
25	<i>Cyperus</i> sp.	Cyperaceae	Herb
26	<i>Eleocharis atropurpurea</i> (Retz.) J.Presl & C.Presl	Cyperaceae	Herb
27	<i>Chrozophora rottleri</i> (Geiseler) A.Juss. ex Spreng.	Euphorbiaceae	Herb
<b>S.N.</b>	<b>Scientific Name</b>	<b>Family</b>	<b>Life form</b>
28	<i>Croton bonplandianus</i> Baill.	Euphorbiaceae	Herb
29	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Herb
30	<i>Hydrilla verticillata</i> (L.f.) Royle	Hydrocharitaceae	Herb
31	<i>Hyptis suaveolens</i> (L.) Poit.	Lamiaceae	Herb
32	<i>Clerodendrum infortunatum</i> L.	Lamiaceae	Shrub
33	<i>Lathyrus sativus</i> L.	Leguminosae	Climber
34	<i>Alysicarpus vaginalis</i> (L.) DC.	Leguminosae	Herb



35	<i>Trifolium pratense</i> L.	Leguminosae	Herb
36	<i>Senna occidentalis</i> (L.) Link	Leguminosae	Shrub
37	<i>Dalbergia sissoo</i> DC.	Leguminosae	Tree
38	<i>Leucaena leucocephala</i> (Lam.) de Wit	Leguminosae	Tree
39	<i>Acacia nilotica</i> (L.) Delile	Leguminosae	Tree
40	<i>Utricularia aurea</i> Lour.	Lentibulariaceae	Herb
41	<i>Sida acuta</i> Burm.f.	Malvaceae	Shrub
42	<i>Sida rhombifolia</i> L.	Malvaceae	Shrub
43	<i>Sida cordata</i> (Burm.f.) Borss.Waalk.	Malvaceae	Shrub
44	<i>Urena lobata</i> L.	Malvaceae	Shrub
45	<i>Melia azedarach</i> L.	Meliaceae	Tree
46	<i>Cissampelos</i> sp.	Menispermaceae	Climber
47	<i>Nymphoides hydrophylla</i> (Lour.) Kuntze	Menyanthaceae	Herb
48	<i>Syzygium cumini</i> (L.) Skeels	Mrytaceae	Tree
49	<i>Psidium guajava</i> L.	Myrtaceae	Tree
50	<i>Nelumbo nucifera</i> Gaertn.	Nelumbonaceae	Herb
51	<i>Ludwigia</i>	Onagraceae	Herb
52	<i>Oxalis corniculata</i> L.	Oxalidaceae	Herb
53	<i>Passiflora foetida</i> L.	Passifloraceae	Climber
54	<i>Phyllanthus niruri</i> L.	Phyllanthaceae	Herb
55	<i>Phyllanthus reticulatus</i> Poir.	Phyllanthaceae	Shrub
56	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Herb
<b>S.N.</b>	<b>Scientific Name</b>	<b>Family</b>	<b>Life form</b>
57	<i>Paspalum distichum</i> L.	Poaceae	Herb
58	<i>Phragmites karka</i> (Retz.) Trin. ex Steud.	Poaceae	Herb
59	<i>Polypogon fugax</i> Nees ex Steud.	Poaceae	Herb
60	<i>Persicaria hydropiper</i> (L.) Delarbre	Polygonaceae	Herb
61	<i>Rumex nepalensis</i> Spreng.	Polygonaceae	Herb
62	<i>Potamogeton nodosus</i> Poir.	Potamogetonaceae	Herb
63	<i>Anagallis arvensis</i> L.	Primulaceae	Herb
64	<i>Adiantum philippense</i> L.	Pteridaceae	Herb
65	<i>Pteris vittata</i> L.	Pteridaceae	Herb
66	<i>Ziziphussp</i>	Rhamnaceae	Shrub

67	<i>Murraya paniculata</i> (L.) Jack	Rutaceae	Shrub
68	<i>Physalis</i> sp.	Solanaceae	Herb
69	<i>Phyla nodiflora</i> (L.) Greene	Verbenaceae	Herb
70	<i>Gmelina arborea</i> Roxb.	Verbenaceae	Tree