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Floral and Bird Biodiversity of Dingaputa Haor and Its Surrounding Area of Mohangong Upazila, Netrakona District

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Abstract The study was undertaken at Dingaputa haor and its surrounding area with a view to investigate the biodiversity of plants, and birds. The taxonomic status of the species of the area was categorized into threatened, endangered, common, few and very few based on their richness, uses and conservational viewpoints. The total number of plant observed 152 species under 79 families and 37 species of birds under 24 families. The present total species diversity index (H) represent that plants belonged that 71 (1.27) species, 41families.Cultivated crops have 24 species (2.40) and 11 families. The weeds had 57 species (1.51) and 23 families. The birds had 37 species (1.89) and 24 families, other aquatic faunal species 17 (2.66) and 16 families. In the biodiversity of Dingaputa haor was decreasing day by day. Agricultural crops and other aquatic fauna were listed maximum but plants, and weeds diversity index were minimum.

Keywords: *biodiversity, Dingaputa haor, biodiversity index, plants of haor*

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1. Introduction

Bangladesh is rich in wetland resources. There are about 1, 14,160 hectares of *beels*, 1, 92,367 hectares of haors and about 5488 hectares of *baors* are located here and there in Bangladesh. Among 96 *haors* of the country, most of the *haors* lie in the district of Kishoregonj, Netrakona, Kushtia, Habigonj, Sunamganj, Moulvibazar and Sylhet [1]. *Dingaputa haor* is the inland freshwater wetland ecosystem, located at Mohonganj upazila of Netrakona district. It is also important for the conservation and sustainable utilization of wetlands. The surface area of Dingaputa Haor is 49 km2. The *haor* is located at (Figure 1) 24°52′00″N 90°58′00″E / 24.8667°N 90.9667°E. The word '*haor*' basically derived from the word '*saior*' which is the local pronunciation of *sagor* in *haor* region [2].

The term biodiversity has been widely used, misused and interpreted [3]. Article 2 of the Convention on Biological Diversity [4] defines biological diversity as: The variability among living organisms from all sources including, interalia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems [5]. Bangladesh is enriched with her diversity of aquatic biological resources containing 289 species of freshwater finfish belonging to 55 families (placing Bangladesh third in the world in terms of fish species per land area), 150 species of waterfowl, 50 species of reptiles. 24 species of mammals, 19 species of amphibians, 63 species of palaemonid and penaeid prawns [6,7,8], 25 species of edible tortoise and turtles, and 17 species of crabs, freshwater mussels, and snails. Moreover, 15 exotic fish species also contributed and diversified total fishery resources of the country [6]. The world-wide loss of biodiversity is widely accepted as a major problem, yet it is poorly documented because of our poor knowledge on the taxonomy of most organisms [9].

Some partial research works on biodiversity of Bangladesh were conducted by Islam [10], Safiullah [11] and Rahman [6]. But no research was yet carried out on biodiversity of the *Dingaputa* and its surrounding areas in the past. Keeping these views in mind the study was undertaken to identify present status of plant biodiversity and the causes of loss of wetland biodiversity of this *Dingaputa* hoar.

2. Materials and Methods

2.1. Geographical Location of the Study Area

The study area is located within the Mohonganj upazila at approximately between the latitudes of 24°52′00″N to 24.8667°N and between the longitudes of 90°58′00″E to 90.9667°E in Netrakona District in the Dhaka division of Bangladesh. It has 24011 units of house hold and total area243.2 km². It is located 30 km east from Netrakona district. The study was conducted for a period of July to October, 2010.

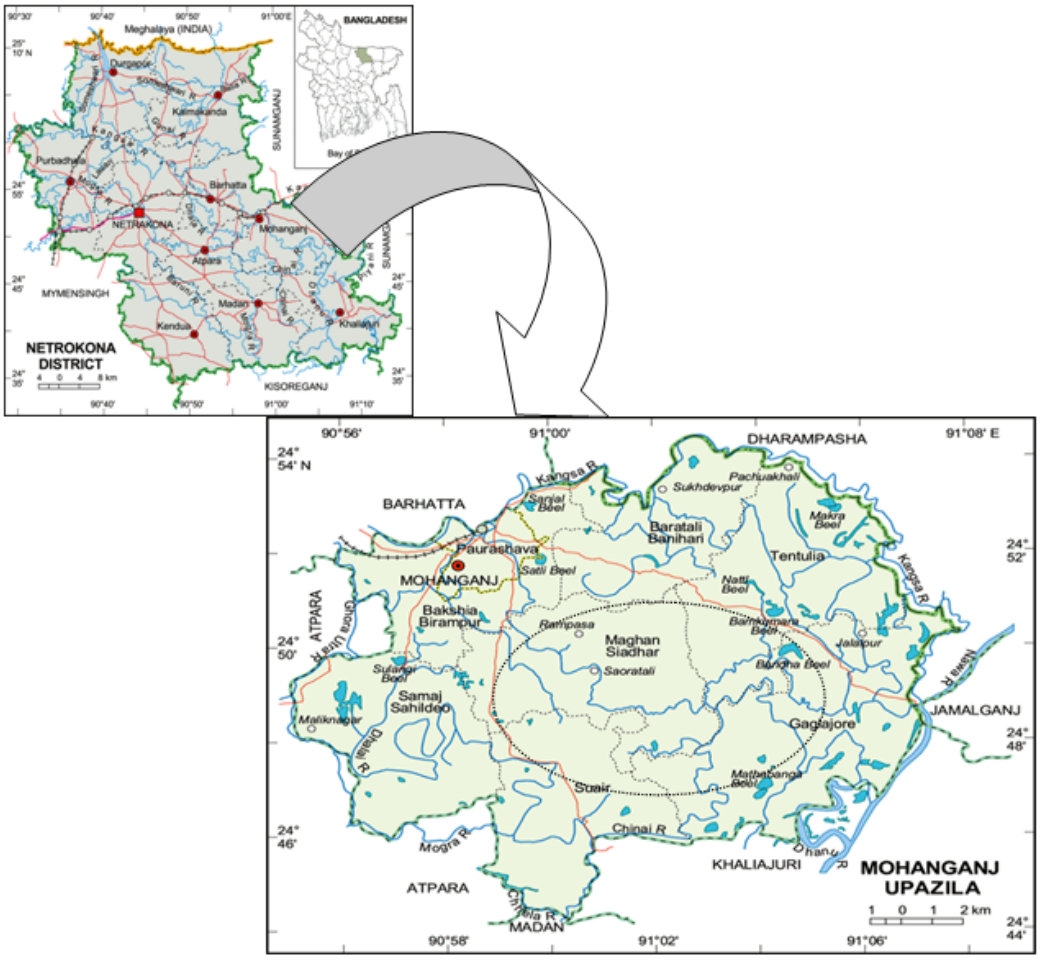

Figure 1. Study area

2.2. Biological Environment Condition of the Study Area

The Biological environment covers a vast area of flora and faunal species cultivated and observed in the study locality. Cereals, pulses crops, wood and fruit trees mainly consist of the plant community where small indigenous fishes along with cultivated species of fish and some common waterfowls and birds documented the fanual scenario. Some wild mammals, common reptiles and amphibians also found on the study area

2.3. Source of Data Collection

During collection of data both primary and secondary sources are considered. Primary data were collected from fishermen and fermer by the researcher himself. The secondary information was collected from fisheries offices, Agriculture offices,at Mohonganj upazila. The researcher collected information detailed on flora and fauna having diversity by spot visit. Several visits are made to the study area to collect accurate information.

2.4. Floral and Faunal Diversity Analysis

After completion of the study in the selected area of *Dingaputa haor*, the researcher discussed the floral and faunal information into the distinct systemic category to easily find out the status of the exist and extinct species of the area. The information of areas floral and fauna are arranged and tabulated in the scientific way with a view to clarifying the objectives of the study and concluded the biodiversity status of the selected area.

2.5. Species Diversity Index

Species diversity differs from species richness in that it takes into account both the numbers of species present and the dominance or evenness of species in relation to one another. As a measure of species diversity, we will calculate the Shannon index, H. Interestingly Shannon, a physicist, developed the index as a formula for measuring the entropy of matter in the universe. It turns out that the mathematical relationships hold true whether one is dealing with molecules in solution or species in an ecological community.

$$H= -\sum Pi \ In \ Pi$$

Where Pi is the proportional abundance of ith species such that Pi = n/N n is the number of the individuals in ith

species and N is the total number of the individuals in ith species and N is the total number of the individuals of all species in the community

3. Results and Discussion

3.1. Floral Biodiversity Analysis

3.1.1. Biodiversity of Plants

Dingaputa haor contained a very dense swamp forest in the past, but deforestation and the lack of conservation practices had virtually destroyed this unique forest in the last two decades. The people in the vicinity used this material in various ways: for example as roofing, wall or wall panel material for their houses and for making mats. The utilization of wetland products was now less intensive, because in recent years the vegetation had decreased considerably. Some common type of tree species about 71 were recorded fewer than 41 families, when the *haor* had been visited.

Another important use of the resources from this wetland was for fuel wood. Due to the scarcity of fuel wood around homesteads, the people were becoming increasingly dependent on this source of fuel. Swamp forest trees, except for hijol, were the most popular fuel wood in these areas. However, all woody shrubs including grasses were also used for this purpose. The naturally regenerating saplings in the swamp forests were being harvested at a non sustainable rate because of the scarcity of fuel. Wetlands products were also used as bio-fertilizer or green manure. All the small herbs and grasses grown in the haor were used as green manure. Farmers living around the Haor used these materials instead of chemical fertilizer. There were many aquatic plants which were grown in the Haor area, and were used as food, medicinal plants, duck feed, or for fuel.

3.1.2. Timber Plants of the Study Area

The recorded timbered plants in the *dingaputa haor* were 19 belonging to 15 families where all the species are tree (Table 1). Mimosae were the largest families having 2 species and other families have only one species. The species abundance of swamp tree Koroch (*Pongamia pinnata*), Hijol (*Barringtonia acutangula*) and Borun (*Crataeva nurvala*) but the plantation richness of the Raintree (*Samania saman*), and Mahogoni (*Swietenia macrophylla*).

3.1.3. Fruit Plants of the Study Area

Under the fruit plant species, a total of 28 plants have been recorded under 14 families having 1 herb and 27 trees. Four palms, 1 herb and 23 tree fruit plants were observed in the area with the abundance of Mango and Banana (Table 2). Rutaceae was the biggest family with 5 species and Musaceae was the lowest family with single species. Moraceae 2 species, Myrtaceae 2 species, Euphorbiaceae 3 species, Palmaceae had 4 species and Anacardiaceae, Combretaceae, Caesalpinieae, Elaeocarpaceae, Averrhoaceae, Rhamnaceae, Dilleniaceae, Clusiaceae, Ebenaceae, Punicaceae, Caricaceae, and Musaceae had only one species of each.

Table 1. Timber plant species observed selected in the *haor* area

Local Name	Scientific name	Family name	Habit
1.Koroch	*Pongamia pinnata*	Leguminosea e	Swamp Tree
2.Hijol	*Barringtonia acutangula*	Lecythidacea e	Swamp Tree
3.Borun	*Crataeva nurvala*	Capparidacea e	Swamp Tree
4.Shimul	*Bombax ceiba*	Bombacaceae	Tree
5.Jarul	*Lagerstroemia apeciosa*	Lythraceae	Tree
6.Mander	*Erythrina variegate*	Papilionaceae	Tree
7.Jiga	*Garuga pinnata*	Burseraceae	Tree
8.Kadam	*Anthocephalus chinensis*	Rubiaceae	Tree
9.Sheora	*Sterblus asper*	Urticaceae	Tree
10.Raintree	*Samania saman*	Mimosaceae	Tree
11.Sissoo	*Dalbergia sissoo*	Papilionaceae	Tree
12.Eucalyptus	*Eucalyptus camaldulensis*	Myrtaceae	Tree
13.Akashmoni	*Acacia auriculiformis*	Mimosaceae	Tree
14.Akashi	*Dillenia scabrellarobx*	Dilleniaceae	Tree
15.Mahogoni	*Swietenia macrophylla*	Meliaceae	Tree
16.Bot	*Ficus bengalensis*	Moarceae	Tree
17.Sada koroi	*Albizia procera*	Mimosaceae	Tree
18.Kala koroi	*Albizia lebbeck*	Mimosaceae	Tree
19.Bamboo	*Bambusa aurundinaceae*	Gramineae	Tree

Table 2. Fruit plant species identified in the study area

Local Name	Scientific name	Family name	Habit
1.Am	*Mangifera indica*	Anacardiaceae	Tree
2. Kanthal	*Artocarpus heterophyllus*	Moraceae	Tree
3.Dewa	*Artocarpus lakoocha*	Moraceae	Tree
4.Jam	*Syzygium cumini*	Myrtaceae	Tree
5.Payra	*Psidium guajava*	Myrtaceae	Tree
6.Bel	*Aegle marmelos*	Rutaceae	Tree
7.Jamrul	*Citrus grandis*	Rutaceae	Tree
8.Jambura	*Citrus grandis*	Rutaceae	Tree
9.Pati lebu	*Citrus limon*	Rutaceae	Tree
10.Kazi lebu	*Citrus aurantifolia*	Rutaceae	Tree
11.Horitoki	*Terminalia chebula*	Combretaceae	Tree
12.Tantul	*Tamarindus indica*	Caesalpinieae	Tree
13.Jalpai	*Elaeocarpus robustus*	Elaeocarpaceae	Tree
14.Kamranga	*Averrhoa carambola*	Averrhoaceae	Tree
15.Boroi	*Zizyphus mauritiana*	Rhamnaceae	Tree
16.Chalta	*Dillenia indica*	Dilleniaceae	Tree
17.Lotkon/bubi	*Baccaurea ramiflora*	Euphorbiaceae	Tree
18.Amloki	*Phyllanthus embelica*	Euphorbiaceae	Tree
19.Aorbaroi	*Phyllanthus acidus*	Euphorbiaceae	
20.Dafol	*Garcinia xanthochymus*	Clusiaceae	Tree
21. Gab	*Diospyros peregrina*	Ebenaceae	Tree
22.Dalim	*Punica granatum*	Punicaceae	Tree
23.Papay	*Carica papaya*	Caricaceae	
24.Banana	*Musa sapientum*	Musaceae	Herb
25.Tal	*Borassus flabellifer*	Palmaceae	Palm
26.Narikel	*Cocos nucifera*	Palmaceae	Palm
27.Shupari	*Areca catechu*	Palmaceae	Palm
28.Khejur	*Phoenix sylvestris*	Palmaceae	Palm

3.1.4. Medicinal Plants of the Study Area

Only 11 species 8 families of medicinal plants was found in the haor area with species abundance of Chatim (Alstonia macrophylla) and Mehedi (Lawsonia mermis). Tulsi belong to Labiatae, Dhutora belong to Solanaceae, Tankuni belong to Umbelliferae were the most common species of the wild medicinal plants. According to family, Solanaceae had 3 species, Meliaceae 2 species, and

Mimosae, Labiatae, Combretaceae, Lythraceae, Apocynaceae, Umbelliferae having single species (Table 3).

Table 3. Medicinal plant species observed in the area

Local Name	Scientific name	Family name	Habit
1.Neem	*Azadirachta indica*	Meliaceae	Tree
2.Lazzabati	*Mimosa pudica*	Mimosae	Herb
3.Tulsi	*Ocimum sanctum*	Labiatae	Herb
4.Dhutora	*Datura metel*	Solanaceae	Shrub
5.Bontamak	*Nicotiana plumbaginifolia*	Solanaceae	Herb
6.Bonbegun	*Solanum fexox*	Solanaceae	Shrub
7.Arjun	*Terminalia arjuna*	Combretaceae	Tree
8.Mehedi	*Lawsonia mermis*	Lythraceae	Tree
9.Chatim	*Alstonia macrophylla*	Apocynaceae	Tree
10.Tankuni	*Hydrocotyle asiatica*	Umbelliferae	Herb
11.Pitraj	*Amoora rohituka*	Meliaceae	Tree

3.1.5. Ornamental Plants of the Study Area

Identified species of existing ornamentals were 13 with 2 herbs, 3 trees and 8 shrubs in the haor area (Table 4). Compositae with 2, Oleaceae 2 and 1 species of Magnoliaceae, Rosaceae, Malvaceae, Amaranthaceae, Euphorbiaceae, Rubiaceae, Lythraceae, Sapotaceae, and Leguminosae were recorded in the Dingaputa haor area.

Table 4. Ornamental plant species identified in the area

Local Name	Scientific name	Family name	Habit
1.Dahlia	*Dahlia imperialis*	Compositae	Herb
2.Gendaphul	*Tagetes erecta*	Compositae	Herb
3.Beli	*Jasminum sambac*	Oleaceae	Shrub
4.Shafaly	*Nyctanthes arbotristis*	Oleaceae	Shrub
5.Champa	*Michelia champacea*	Magnoliaceae	Shrub
6.Golap	*Rosa Spp.*	Rosaceae	Shrub
7.Joba	*Hibiscus rosasinensis*	Malvaceae	Shrub
8.Muragphul	*Celosia argentea*	Amaranthaceae	Shrub
9.Pata bahar	*Codiaeum variegatum*	Euphorbiaceae	Shrub
10.Gandharaj	*Gardenia jasminoides*	Rubiaceae	Shrub
11.Mehedi	*Lawsonia inermis*	Lythraceae	Tree
12.Bakul	*Mimusops elengi*	Sapotaceae	Tree
13.Krishnachura	*Delonix regia*	Leguminosae	Tree

3.2. Species Diversity Index of Plants

Species diversity index is a measure which renders considerable ecological insight (Magurran, 1988). Shannon-Wiener Index of species diversity (H) was worked out to examine the species richness and abundance distribution in *haor* area.

Table 5. Formula of plant species diversity index H

Species	No. of individual	(pl)	|ln pl|	-Σ(pl) |ln pl|
Fruit	28	0.394	-0.93	0.93
Timber	19	0.27	-1.31	1.31
Ornament	13	0.18	-1.69	1.69
Medicine	11	0.154	-1.87	1.87
Total	71	1.00		

The diversity index varies between the different groups of plant species (Table 5). The results show that diversity and abundance was higher for medicinal species than for other plant species in *haor* area. The reason might be that people of the locality like to planting fruit and timber for economic purpose and their needs of fruits. It may also be due to *haor* land is more fertile and support to grow fruit species than other.

3.2.1. Biodiversity of Crops

A total number of 24 agricultural crops, among them 2 were recorded as cereal crops, 3 were as oil crops, 5 were as pulses crops, 3 were as cash crops, and 11 were as vegetable crops under 11 families (Table 6). Leguminosae and cucurbitaceae family have the highest number of crops. Some crops cultivation at *Dingaputa haor* region. As there was no germplasm museum at *haor* areas for long preservation of seeds of all crops and as the fertility level increased day by day, the status of crop biodiversity became poor. Rice cultivation and cattle grazing during dry season in the vast area of *haor* especially buffaloes, cows, goats etc. were found when visited the *boitakali beel* of the *haor* (Table 6).

Table 6. Crops species identified in the area

Local Name	Scientific name	Family name	Group name
01. Rice*	*Oryza sative*	Gramineae	Cereal crops
02. Wheat	*Triticum aestivum*	Gramineae	Cereal crops
03.Mustard	*Brassica campestris*	Cruciferae	Oil crops
04.Sesame	*Sesamum indicum*	Peladiaceae	Oil crops
05.Groundnut	*Arachis hypogae*	Leguminosae	Oil crops
06.Chickpea	*Cicer culinaris*	Leguminosae	Pulse crops
07.Cowpea	*Vigna unguiculata*	Leguminosae	Pulse crops
08.Blck gram	*Vigna mungo*	Leguminosae	Pulse crops
09.Grasspea	*Lathyrus stivus*	Leguminosae	Pulse crops
10.Arhar	*Cajanus cajan*	Papilionaceae	Pulse crops
11.Jute	*Chrchorus capsularis*	Tilaceae	Cash crops
12.Chili	*Capsicum frutescens*	Solanaceae	Cash crops
13.Garlic	*Alium cepa*	Liliaceae	Cash crops
14.Potato	*Solanum tuberosum*	Solanaceae	Vegetable crops
15.Tomato	*Lycopersicom esculentum*	Solanaceae	Vegetable crops
16.Brinjal	*Solanum melongena*	Solanaceae	Vegetable crops
17.Radish	*Raphanus sativas*	Cruciferae	Vegetable crops
18.Carrot	*Daucus carota*	Umbelliferae	Vegetable crops
19.Sweet potato	*Ipomoea batatus*	Convolvulaceae	Vegetable crops
20.Spinach	*Spinacia oleracea*	Chenopodiaceae	Vegetable crops
21.Sweet gourd	*Cucurbita moschta*	Cucurbitaceae	Vegetable crops
22.Sponge gourd	*Luffa cylindrical*	Cucurbitaceae	Vegetable crops
23.Pointed gourd	*Trichosanthes dioica*	Cucurbitaceae	Vegetable crops
24.Bitter gourd	*Momordica charantia*	Cucurbitaceae	Vegetable crops

*Rice Varity BR 14, 47, 19, BR 28, 29, BORO

3.3. Weeds Biodiversity

3.3.1. Aquatic Weeds

A total number of 18 aquatic weeds were found in the area of Dingaputa haor and its surrounding belong to 11 families having 1 shrub, 3 grasses and 14 herbs species (Table 2). The total genus of completely aquatic species was 10 bearing the dominant species Nymphaea pubescens (Sada Shapla) and Hygrorhiza aristata (Dol). Gramineae was the largest and Azollaceae was the minor family based on their species abundance in the area. Family Convolvulaceae having 2 species,Pontederiaceae 2 species, Polygonaceae 2 species, Cyperaceae 3 species, Compositae 1 species, Araceae 1 species and Amaranthaceae 1 species each (Table 7).

Table 7. Aquatic weeds in study area

Local Name	Scientific name	Family name	Habit
1.Kachuripana	*Eichhornia crassipes*	Pontederiaceae	Herb
2.Panikachu	*Monochoria hastata*	Pontederiaceae	Herb
3.Khudipana	*Azolla pinnata*	Azollaceae	Herb
4.Dol	*Hygrorhiza aristata*	Graminae	Herb
5.Arial	*Leersia hexaandra*	Graminae	Herb
6.Khudey shama	*Echinochola crusglli*	Graminae	Herb
7.Topapana	*Pistia statiotes*	Araceae	Herb
8.Panimorich	*Polygonum orientale*	Polygonaceae	Herb
9.Biskatali	*Polygonum hydropiper*	Polygonaceae	Herb
10.Shapla	*Nymphaea nouchli*	Nymphaeaceae	Herb
11.Kolmilota	*Ipomoea aquatica*	Convolvulaceae	Shrub
12.Dholkalmi	*Ipomoea fistulosa*	Convolvulaceae	Herb
13.Malancha	*Alternanthera philoxeroides*	Amaranthaceae	Herb
14.Halancha	*Enhydra fluctuans*	Compositae	Herb
15.Chechra	*Scirpus mucronatus*	Cyperaceae	Grass
16.Jonia	*Fimbristylis miliacea*	Cyperaceae	Grass
17.Keshur	*Cyperus michelianus*	Cyperaceae	Grass
18.Panilong	*Ludwigia hyssopifolia*	Onagraceae	Herb

3.3.2. Land Weeds

Identified species of existing weeds were 39 under 16 families having 4 Shurb, 1 climber, 23 herbs and 11 grasses in the wetlands (Table 8). Grminaeae with 9, Cyperaceae 7, Commelinacae 3, Compositae 3, Amaranthaceae 3, Leguminosae 4, and Umbelliferae, Dryopteidaceae, Cruciferae, Cuscutaceae, Oxalidaceae, Boraginaceae, Bixaceae, Araceae, Poaceae with single genus and single species (Table 8).

Table 8. Land weeds in study area

Local Name	Scientific name	Family name	Habit
1.Prem Kata	*Chrysopogon aciculatus*	Graminae	Grass
2.Gaicha	*Paspalum commersonii*	Graminae	Grass
3.Durba	*Cynodon dactylon*	Graminae	Grass
4.Chelagash	*Parapholis strigosa*	Graminae	Grass
5.Chapra	*Eleusine indica*	Graminae	Grass
6.Monagash	*Paspalum commersonii*	Graminae	Grass
7.Chiragash	*Eragrostis gangetica*	Graminae	Grass
8.Carpetgash	*Axonopus compressus*	Graminae	Grass
9.Anguligash	*Digitaria sanguinalis*	Graminae	Grass
10.Ulu	*Imperata cylindrical*	Cyperaceae	Grass
11.Mutha	*Cyperus rotundus*	Cyperaceae	Herb
12.Holde mutha	*Cyperus esculentus*	Cyperaceae	Herb
13.Bara chucha	*Cyperus iria*	Cyperaceae	Herb
14.Sabuj nakful	*Cyperus difformis*	Cyperaceae	Herb
15.Jonia	*Fimbristlis miliacea*	Cyperaceae	Shrub
16.Shakta khagra	*Cyperus pilosus*	Cyperaceae	Shrub
17.Chanchi	*Alternanthera sessilis*	Amaranthaceae	Herb
18.Katanotey	*Amaranthus spinosus*	Amaranthaceae	Herb
19.Shanknotey	*Amaranthus viridis*	Amaranthaceae	Herb
20.Ghagra	*Xanthium italicum*	Composita	Shrub
21.Shial mutra	*Blumea lacera*	Composita	Herb
22.Bontula	*Sonchus arvensis*	Composita	Herb
23.Kanibashi	*Commelina benghalensis*	Commelinaceae	Herb
24.Bothua	*Chenopodium album*	Commelinaceae	Herb
25.Halud nakful	*Wahlecbergia marginata*	Commelinaceae	Herb
26.Dhekishak	*Dryopteris serrato-dentata*	Dryopteidaceae	Herb
27.Ban sharisha	*Brassica kaber*	Cruciferae	Herb
28.Bonhalud	*Bixa orellana*	Bixaceae	Herb
29.Thankuni	*Hydrocotyle asiatica*	Umbelliferae	Herb
30.Lazzabait	*Mimosa pudica*	Leguminosae	Shrub
31.Bhatshola	*Aeschynomene aspera*	Leguminosae	Herb
32.Arich	*Cassia tora*	Leguminosae	Herb
33.Banmosur	*Vicia sativa*	Leguminosae	Herb
34.Ban palog	*Rumex maritimus*	Polygonaceae	Herb
35.Amrul	*Oxalis europaea*	Oxalidaceae	Herb
36.Hatisur	*Heliotropium indicum*	Boraginaceae	Herb
37.Kachu	*Colocasia esculenta*	Araceae	Herb
38. Sharnalata	*Cuscuta reflexa*	Cuscutaceae	Climber
39. Nol	*Arundo donax*	Poaceae	Grass

3.4. Biodiversity of Birds

3.4.1. Migratory

The *haor* is an ideal place for the migratory birds. Every winter about many types of migratory birds come to this *haor* and make their temporary habitat here (Table 9).

Several bands of local poachers set poison traps on the bank of the Haor during the winter, although killing or trapping migratory birds was legally prohibited and a punishable act. The migratory birds were flying and swarming when visited the *haor* in winter season. This was the scenery of touching the heart.

Table 9. List of Migratory birds

SI. No.	Comon name	Scientific name	Family	Status
1.	FulvousWhistling-duck	*Dendrocygna bicolor*	Deutscher	Winter
2.	Gadwall	*Anas strepera*	Anatidae	Winter
3.	Northern Pintail	*Anas acuta*	Anatidae	Winter
4.	Gagany	*Anas querquedula*	Anatidae	Winter
5.	Common Teal	*Anas crecca*	Anatidae	Winter
6.	Red-crested Pochard	*Netta rufina*	Anatidae	Winter
7.	Common Pochard	*Aythya ferina*	Anatidae	Winter
8.	Ferruginous Duck	*Aythya nyroca*	Anatidae	Winter
9.	Tufted Duck	*Aythya fuligula*	Anatidae	Winter
10.	Little Cormorant	*Phalacrocorax niger*	Phalacrocoracidae	Resident
11.	Pallas's Fish-eagle	*Haliaeetus leucoryphus*	Accipitridae	-

3.4.2. Waterfowl Birds

A total number of 18 waterfowl species had been recorded under 13 families (Table 10). Migratory, resident and domestic waterfowls were identified in the wetland area. Usually for the women, duck rearing is a good practice in this area. The largest family Ardeidae having 5 species, Anatidae having 2 species, and Ciconiidae, Charadriidae, Motacillidae, Turnicidae, Pelecanidae, Accipitridae, Podicipedidae, Gaviidae, Pandionidae, represented only single species.

Table 10. List of waterfowl birds

SI. No.	Comon name	Scientific name	Family	Status
1.	Greylag Goose	*Anser anser*	Anatidae	MVF
2.	Duck	*Cairina scutulata*	Anatidae	DC
3.	Kingfisher	*Alcedo atthis*	Alcedinidae	RF
4.	Great Egret	*Egretta alba*	Ardeidae	RC
5.	Cattle Egret	*Ardeola ibis*	Ardeidae	RC
6.	Grey Heron	*Ardea cinerea*	Ardeidae	RC
7.	Black Heron	*Egretta ardesiaca*	Ardeidae	RF
8.	Night Heron	*Nycticorax nycticorax*	Ardeidae	RT
9.	Stork	*Ciconia boyciana*	Ciconiidae	RF
10.	Plover	*Pluvialis dominica*	Charadriidae	ME
11.	Hemipode	*Turnix sylvatica*	Turnicidae	ME
12.	Water Pipet	*Anthus spinoletta*	Motacillidae	ME
13.	Crested Grebe	*Podiceps cristatus*	Podicipedidae	MO
14.	Diver	*Gavial stellata*	Gaviidae	MF
15.	White Pelican	*Pelecanus onocrotdus*	Pelecanidae	MT
16.	Brown fish Owl	*Ketupa zeylonensis*	Strigidae	RF
17.	Brahiminy Kite	*Haliastur indus*	Accipitridae	RVF
18.	Osprey	*Pandion haliaetus*	Pandionidae	MVF

**M: Migratory, R: Resident, D: Domestic, T: Threatened, C: Common, O: Occasional, F: Few, VF: Very few, E: Extinct.

3.4.3. Bank Birds

Eight species under 7 families were recorded which revealed a high richness of the bank birds (Table 11). Sturnidae was the largest family with 2 species. Common Myna, Bulbul was the most common birds where other species were recorded as moderately common species. Dove and Woodpecker were on the verge of extinction.

Table 11. List of bank birds

SI. No.	Common name	Scientific name	Family	Status
1.	Common Myna	*Acridotheres tristis*	Sturnidae	RVC
2.	Common Starling	*Sturnus vulgaris*	Sturnidae	MT
3.	Bulbul	*Pcynonotas jocosus*	Peynonotidae	RVC
4.	Dove	*Streptopelia decaocto*	Columbidae	RF
5.	Sociable Lapwing	*Vanellus gregarious*	Charadriidae	RC
6.	Magpie Robin	*Copsychus saularis*	Turdine	RF
7.	Woodpecker	*Chrysocolaptes lucidus*	Picidae	RF
8.	Weaver	*Ploceus benghalensis*	Passeridae	RF

VC: Very Common, F: Few, M: Migratory, R: Resident

4. Conclusion

The wetland biodiversity of Bangladesh are being drastically by the impacts of the burgeoning human population. Wetlands are being continuously lost or degraded primarily because of various recent developments reflecting a lack of community awareness of wetland functions and values. Khan [12] reported that the rapid diminution of wetland biodiversity in relation to scarcity of water and pollution of water body, degradation and devastation of soil is essentially a crisis for the human spirit. The researcher identified the following causes of the depletion of wetlands biodiversity of *Dingaputa haor* are given here in.

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