



WETLAND: AS A RESOURCE OF INDIA

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Abstract

Since the origin of man on earth, man has used various elements of nature to suit his needs. In the past, people discovered fires to protect themselves while living in caves and to burn animal meat. This is how people meet their needs from different places. Nature has given us a lot of resources, one of which is wetlands. India has a deep socio-economic and cultural relationship with this wetland. Different types of wetlands have developed in different parts of India through flood control, ground water recharge, protection of water quality, protection of biodiversity, water supply to factories, waste disposal, climate control and protection of natural beauty in India. These wetlands are very important in terms of biodiversity. Because different species of aquatic plants, algae, plankton, fish, amphibians, birds, reptiles, terrestrial plants, medicinal plants, etc. are found here, wetlands have been identified as the habitat of several endangered species in the world. About 37 wetlands in India are identified as Ramsar sites. Which is much more important. Migratory birds from different parts of the world come here to enhance the natural beauty of the place.

Keywords-Wetland, Ramsar site, flood control, Groundwater recharge, Climate control, biodiversity,

Introduction-

Our Earth originated about 4.5 billion years ago. Since then, the Earth has been constantly cooling to its present state. About 70 % of the earth's surface is water and only 30 % is land. Different types of biodiversity have developed in every part of the world. In the same way, a place full of biodiversity is a wetland. About 6% of the world's wetlands are covered by a separate ecosystem. As a result, its environmental importance is immense. However, at present, due to various human activities, wetlands are being damaged, which is causing damage to the man, environment and various living, non-living elements in the environment.

Objectives of the study-

Wetlands are an important resource of our environment that not only benefits humans and wildlife, it is also important for the environment. From this, we can control flood, ground water recharge, maintain water quality, protect biodiversity, water supply, climate control, protection from marine storms etc. Despite its many benefits, it is not properly conserved, so it is important to make people aware and try to balance the biodiversity.

Definition - A definition of wetlands was given at the 'Ramsar Conference' held in Iran in 1997 is 'An areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary with water that is static or flowing fresh, brackish or salty including areas of marine water the depth of which at low Tides does not exceed six metres'.

A wetland is a low-lying area of land that is inundated with water all year round, where a variety of aquatic plants and animals can be observed and which are created by human and natural causes. Wetlands come in a wide range of structures. They can be flowing zones, bogs, lowlands or marshes among numerous different kinds. In any case, they all offer attributes that make them wetlands.

Characteristics of Wetland-

The main features of a wetland that can be identified by various features are –

1. This is a degraded part of land.



2. It contains water at different times of the year.
3. The depth of water does not exceed 9 m.
4. It grows a variety of aquatic plants and animals.
5. It has a specific ecosystem.
6. It has economic, social and environmental importance.
7. Wetland water can be sweet or salty in taste.

Wetland's location in India- About 4.7% of India's land area is wetlands. India has about 58.2 million hectares of wetlands, that helps India in water supply, Irrigation, produce electricity, fishing, flood control, climate control, Increase natural beauty etc.

Total 37 wetlands have been identified as 'Ramsar site' in India. These are-

1. **Wular Lake** - 18,900 ha
2. **Hokera** - 1,375 ha
3. **Surinsar-Mansar Lakes**- 350 ha
4. **Tsomoriri** - 12,000 ha
5. **Chandertal**- 49 ha
6. **Pong Dam lake** - 15,662 ha
7. **Kanjili**- 183 ha
8. **Harike Lake** - 4,100 ha
9. **Ropar** -1,365 ha
10. **Renuka**- 20 ha
11. **Sambhar Lake**- 24,000 ha
12. **Keoladeo National Park** - 2,873 ha
13. **Upper Ganga River** -26,590 ha
14. **Nalsarovar Bird Sanctuary**- 4,100 ha
15. **Bhoj Wetland**- 3,201 ha
16. **Deepor Beel**- 4,000 ha
17. **Loktak Lake**- 26,600 ha
18. **Rudrasagar lake**- 240 ha
19. **East Kolkata Wetlands**- 12,500 ha
20. **Bhitarkanika Mangroves**- 65,000 ha
21. **Chilika**- 1,16,500 ha
22. **Kolleru Lake**- 90,100 ha
23. **Point Calimere Wildlife and Bird Sanctuary**- 38,500 ha
24. **Vembanad-Kol**- 1,51,250 ha
25. **Ashtamudi**- 61,400 ha
26. **Sashthamkotta Lake**- 373 ha
27. **Sundarban Wetland**- 423,000 ha
28. **Nandur Madhameshwar**- 1437 ha
29. **Keshopur-Miani Community Reserve**- 343.9 ha
30. **Samaspur Bird Sanctuary**-799 ha
31. **Parvati Agra Bird Sanctuary**- 722 ha
32. **Sarsai Nawar Jheel**- 161 ha
33. **Nangal Wildlife Sanctuary**- 116 ha
34. **Nawabganj Bird Sanctuary**- 225 ha
35. **Sandi Bird Sanctuary**- 308.5 ha
36. **Beas Conservation Reserve**- 6428.9 ha
37. **Saman Bird Sanctuary**- 526.3 ha

The importance of wetlands- In order to protect the environment, we must pay attention to the conservation of wetlands. The above mentioned wetlands help the people and the environment a lot -



1. **Flood control-** After excess rainfall, some of the rain is absorbed by the soil and the rest is blown away and deposited in various low-lying areas such as wetlands. Currently, most of the wetlands are being filled and constructs houses or mills, which is increasing the incidence of floods.
2. **Groundwater recharge-** Most of our drinking water, we collect from different wells or tube wells. This groundwater is usually saturated with rainwater. This means that in areas where the amount of rainwater is high, the groundwater level is usually very close to the groundwater table. These wetland systems can controlling changes in the water table above 130 metres. The seepage of this wetland saturates the ground water table so that the ground water recharges easily.
3. **Maintaining water quality-** Wetlands are often contaminated with toxic and contaminated water from various mills, resulting in contaminated water. However, various types of plants and algae present in the wetlands make the water suitable for human consumption by purifying the pollutants and harmful substances dissolved in the water.
4. **Protecting biodiversity-** Each wetland develops a different type of ecosystem in which aquatic plants and animals predominate and different species arrive at the center of the wetland.
5. **Factory water supply-** Different types of factories collect their required water from the wetlands, so the mills for water depend a lot on the wetlands.
6. **Waste disposal-** Polluted and toxic water from different types of factories is discharged directly into the wetlands which purifies the water by absorbing the contaminants like different types of algae, weeds, fish etc. present in the wetlands.
7. **Climate control-** Wetlands are called the kidneys of nature. They control the climate by maintaining the balance of CO₂, Methane gas absorb, controls the climate through carbon fixation. The evapotranspiration caused by algae and weeds present in the wetlands helps in maintaining the humidity of the environment.
8. **Protecting natural beauty-** The arrival of different types of algae, weeds, aquatic animals, migratory birds around the wetlands enhances the natural beauty of the place.

The major wetlands of India and their importance- There are a total of 37 wetlands in India which are of considerable environmental, social and economic importance.

1. Wular lake –This lake is located in Jammu and Kashmir. It is about 260 square kilometers and a depth of 14 meters. It is important from the point of view of environmental importance. It contains different types of plants, animals, aquatic animals, birds, algae, etc. There are different types of fish, such as – Rosy barb, mosquitofish, common carp, chush snowtrout, etc. species of birds can be seen here. Like –himalayan golden eagle, Himalayan monal, common cuckoo, Indian roller, barn swallow, etc.

There are about 70 species of phytoplankton in this wetland, one of which are Bacillariophyceae, Chlorophyceae, Cyanophyceae and Euglenophyceae. These phytoplankton help a lot in fixing ecological disturbances. They greatly reduce the amount of pollutants emitted from different types of factories.

2. Hokera lake- It is located in Jammu and Kashmir with a size of 1375 hectares at a depth of 0.91 m to 2.4 m. There are different types of flora present in this lake, like macrophytes, Phragmites australis and Trapa natans. It is famous as a Bird Reserve. Most of the migratory birds that come here from Central Asia and Siberia. Between 2000- 2001, about 500,000 water birds arrived, most notably birds are Ruddy shelduck, common pochard, red-crested pochard, Eurasian coot etc.

3. Surinsar-Mansar Lakes- The lake is located in Jammu and is located on two adjacent lakes of Surinsar and Mansar. The size of the lake is 350 hectares. This lake is rich in different types of micronutrients which has resulted in the arrival of different types of migratory birds. Like Peafowl, green pigeon, red jungle fowl, rufus turtle dove etc. This lake is very important historically and culturally.

4. Tsomoriri - The lake is located in Ladakh. It is located at an altitude of about 4,522 meters. Its size is 12,000 hectares. The maximum depth is 105 meters. The main birds are Brown-



headed gulls, Black-necked grebe, Great crested grebe, Black-necked cranes, etc. There is no such vegetation in the depths of this lake but in some parts it is different types of sedges and reeds are seen. There are a variety of flora and fauna for which birds migrants from far and wide come here for breeding.

5. Chandertal lake- This lake is located in Himachal Pradesh at an area of 49 hectares. It is located at an altitude of about 4,300 meters. It is famous for its tourist spots and trekking. There are huge glades in lake. In spring, these glades are covered with several assortments of blossoms. This lake is home for couple of animal categories, like Snow Cock, Chukor, the Snow Leopard, Kestrel, Black Ring Stilt,, Chough, Red Fox, Himalayan Ibex, Golden Eagle and Blue Sheep. They adjusted in cool dry atmosphere, extraordinary radiation, and oxygen lack by creating uncommon physiological highlights. Transient species, for example, the Ruddy shelduck are found in summer. The important species are Potentilla, Aquilegia, Primula, Aconitum, Aster, Thymus, Ranunculus, Asteraglus, Bistorta affinis, Delphinium, Oxyria, Polygonium, Geranium, Ranunculus, Rosularia and Stellaria. The basic grasses every now and again experienced are Poa and Agropyron. These grasses have rich nutritive worth. The faunal species like Marmot, snow panther, Red Fox, Wild Chukar, Goat, Blue Sheep, Snow Cock, Black Winged Stilt, Brahminy Duck, Golden Eagle.

6. Pong Dam lake - This lake is located in Himachal Pradesh, Its size is 15,662 ha.

The lake is an important fish reservoir. where various species of fish are found. In addition, more than 5,000 migratory birds visit here every winter, including about 119 species of waterfowl. The birds are Northern Pintail, Common Teal, Common Pochard, Common Coots, Great Cormorant, and Eurasian Wigeon, principal secretary, Bar Headed Goose, Tufted Pochard, Ruddy Shelduck. This lake has a Hydrological esteem in rainstorm season flood avoidance, water guideline, groundwater revive, sediment catching and forestall soil disintegration; power produced for neighboring states, and water system water directed to abandon regions of the Punjab and Rajasthan. It is famous for its abundant food security and breeding facilities. It is home to a wide variety of habitats. There are about 18 species of snakes, 421 species of birds, 90 species of butterflies and 27 species of mammals.

7. Kanjili- This lake is located in Punjab. The area of this lake is 183 ha. This lake is man made, There are about 34 species of zooplankton, 11 species of aqua flora and 15 species of invertebrates. Notable among the fish species that are present here, like Labeo rohita., Catla catla, Cirrhinus mrigala, Channa marulius, etc. Moreover, turtles are easily found here. There are about 28 species of resident birds and 9 types of migratory birds present, like shoveller, tufted pochard, pintail, common teal etc. The mammals are common Indian hare, mongoose, squirrel etc.

8. Harike Lake - This lake is located in Punjab. The area of this lake is 4,100 ha. The rich biodiversity of the wetland which assumes a fundamental function in keeping up the valuable hydrological offset in the catchment with its huge grouping of transient fauna of waterfowls including various around the world undermined species. The rich biodiversity of the wetland, with a few types of winged animals, turtles, snakes, creatures of land and water, fishes and spineless creatures, is allegedly one of a kind.

The wetland was proclaimed a fledgling safe-haven. 200 types of flying creatures visit the wetland during winter period of which a portion of the notable species are the horned grebe, cotton pygmy goose, brown-headed gull, tufted duck,, Eurasian tree sparrow, etc. The wetland's rich floating vegetation comprises the following- Azolla sp., Nelumbo nucifera, Ipomoea aquatica,, Ceratophyllum, Potamogeton, Vallisneria, Dalbergia sissoo,, Zizyphus sp., Ficus sp., alien Prosopis juliflora, Eichhornia crassipes, Hydrilla, Acacia nilotica

9. Ropar lake- this lake is located in Punjab. the area of this lake is 1365 hectare. this lake is a man made fresh water. the wetland is thick, with a limit of 19 kinds of trees and 14 kinds of plants and vegetation. a significant part of the greenery referenced beneath ameles modesta, azadirachta Indica, bombax ceiba, acacia nilotica, acacia catechu, albizzia lebbek are tree species.



An enormous types of fish has been recorded in the wetland; a portion of the economically critical species are: Rohu; Labeo calbasu Kalbans;; catla Thal; Cirrhinus mrigala Mori. Labeo gonius Seerha; Labeo dero Gid. This site is an ideal reproducing spot, jeopardized Indian Pangolin is accessible. Around 35 sorts of fish is a part of the food framework, with the help of around 150 neighborhood and transitory fowl species. Neighborhood fisheries are deliberately important and the remote region develops wheat, rice, sugar stick, and sorghum.

10. Renuka lake - This lake is located in Himachal Pradesh, this lake has an area of about 20 hectares. The lake is well developed in terms of biodiversity. Every year a variety of species come here. There are more than 400 types of species and more than 100 types of birds species living here. Phytoplankton grows in large numbers here, which attracts a large number of migratory birds from home and abroad. It is one of the oldest biodiversity hotspots in Himachal Pradesh. There are different species of trees, of which Sal is the main one. These are the creatures that are here - hill crow, bulbul, green pigeon, spotted deer, blue jay, etc. Moreover, the region has religious and cultural values.

11. Sambhar Lake- This lake is located in Rajasthan, this lake has an area of about 24,000 ha. The water of this lake is saline in nature. About 10% of India's salt is produced here. so the economic importance of this lake is much higher. The importance of this lake in terms of biodiversity is that thousands of birds come here every winter from Siberia and North Asia. This is especially for migratory birds such as flamingos and water fowls. Moreover, about 350 species of plants and about 400 species of avifauna are found here. Among them Pink Flamingos are notable and Nilgai, Deer etc. are found here.

12. Keoladeo National Park – This lake is located in Rajasthan. The area of this lake is about 2,873 ha. There is about 270 species of birds, so the region is called a bird's heaven. There are different types of birds came here from far and wide in winter. There are different types of macro invertebrates that attract different types of birds. About 50 species of butterflies, eight species of amphibians and 28 species of reptiles are found here. During the monsoon season, the area is flooded every year with a variety of trees, including Jamun, Babul, Kadam etc. Here are its main birds are Heron, Ducks, Common sandpiper, Sarus crane, White spoonbill, Tufted duck, Tittle cormorant etc. Here's its main mammals are smooth coated otter, Bengal fox, leopard cat, wild boar, blackbuck, sambar, hanuman langur, etc.

13. Upper Ganga River - It is located in Uttar Pradesh, India. Its area is about 26,590 ha. It is also an important area recorded by the Ramsar site. where a variety of biodiversity has developed. Among them various types of plankton, aquatic insects, fish, mammals, birds etc. are notable. There are different types of macrophytes that purify water by absorbing various contaminants in the water. This wetland is mainly used for fish farming, pilgrimage and various post-cremation activities. Moreover, there are mainly 80 species and more fish. There are often more than 100 species of birds living here and there are some special plants that have medicinal properties, like Aquatic Eichhorina, Eucalyptus globules, Ficus bengalensis, etc.

14. Nalsarovar Bird Sanctuary- This aviary is located in Gujarat, India and has an area of about 4,100 hectares. It was declared the Bird sanctuary in 1969. About 250 species of birds arrive here in winter. According to the Forest Department, about 2,24,000 birds arrived here in 1992. Among them are significant birds are crane, pelicans, flamingo, geese, dalmation pelican, fish- eagle, Indian skimmer, etc. At other times, there are more than 50 algae and more than 70 Aquatic plants seen, most notably chara, vallisneria, ceratophyllum, etc.

15. Bhoj Wetland- This wetland is located in Bhopal, Madhya Pradesh. The area of this wetland is about 3201 ha. It is commonly used as a source of drinking water. About 40% of Bhopal's water needs are supplied from this wetland. Moreover, this wetland is used for many other purposes. This wetland is also quite important in terms of bio-diversity.

A variety of phytoplankton, zooplankton, fish, migratory birds, amphibians and reptiles are available here. About 180 species of birds are found here of which notable Red crested, coot, grey heron, sarus cranes, etc. There are different types of wildlife here as well Indian fox,



golden fox, chital, wild boar, nilgai, etc. There are about 40 species of fish, 100 species of insects and 10 species of reptiles.

16. Deepor Beel- It is located in the Indian state of Assam and covers an area of about 4,000 hectares. This wetland is filled with water from two rivers that is Basistha, kalmani and rainwater which makes it a fresh water lake. This wetland is very important as a biological spot. There are different types of aquatic plants, animals, birds, etc. There are different types of aquatic plants like water-hyacinth, aquatic grasses, giant water-lily and many more. There are about 18 species of phytoplankton in the main is microcystis, oscilatoria etc. There are different types of plants here, like common teak, ficus benghalensis, bombax malabaricum, shorea robusta etc. About 200 species of birds are found here, of which more than 70 species are migratory species such as palla's sea eagle, greater adjutant stork, Siberian crane, spotbilled pelican, born swallow, brown shrike, brown-headed gull etc. About 20 species of amphibians, 18 species of snakes, 6 species of tortoises are found here. The Korbi community lives on the shores of this wetland and meets most of their daily needs from this wetland. This wetland is very important for food grain production, vegetable production, water purification, carbon sink and flood control.

17. Loktak Lake- It is located in the Indian state of Manipur and covers an area of about 26,600 hectares. This wetland is used for various purposes such as water supply, drinking water, agriculture, hydropower generation, etc. In addition, people are benefitted in economic activities. The climate here is mainly tropical monsoon in nature with a wide variety of biodiversity. About 230 species of aquatic macrophytes are found here. Different species of plants are found here like oryza sativa, phragmites karka, erianthus ravennae etc. There are about 57 species of aquatic birds, including 28 species of migratory waterfowl. Different types of animals can be seen here, like sambhar, Indian python, brown-antlered deer, eids deer etc. There are different types of fish species in aquatic animals. All these fish are shot channa punctata, ukabi, Anguilla, tharak, silver carp, grass carp etc. About 1500 tons of fish produce from this wetland every year.

18. Rudrasagar lake- This lake is Located in the Indian state of Tripura, It covers an area of about 240 acres. This wetland is important for a variety of economic, social and biodiversity aspects. This wetland is used for agriculture, fisheries, drinking water supply etc.

This wetland is used for agriculture, fisheries, drinking water supply etc. This is an important aviary where different species of birds come and nest in winter. like Baer's pochard, ferruginous duck etc. About 35 species of phytoplankton are found here e.g. Cyanophyceae, Chlorophyceae, Bacillariophyceae etc.

19. East Kolkata Wetlands- It is located in West Bengal, India and covers an area of 12,500 hectares. It is famous as a Natural & Manmade wetland. This wetland is mainly used for Kolkata Sewage Treatment, Fish Cultivation and Agricultural Production. There are about 100 species of plants here, that is Cyperus spp., Ipomoea aquatic, sagittaria montividenensis etc. In addition, coconut and betel trees can be seen around here. Different species of vegetables are cultivated here, such as cauliflower, Sunflower, egg Plant etc. This wetland by the different types of fish farming is called in local language is Bheris., mainly tilapia, silver carp etc. fish farming is every year here, about 10 thousand tons of fish production is moreover, these are the different types of vegetables production is here that all fish and vegetables production is its surrounding market cheaply is sold. Every year during this wetland winter, a variety of migratory birds arrive, most notably small Indian civet, small Indian mongoose, etc. This wetland is very important in terms of sewage treatment. One-third of sewage in Kolkata is treated here. The East Kolkata Wetland has a wide variety of flora and fauna, which is why the region is used as a carbon dioxide sink.

20. Bhitarkanika Mangroves- This wetland is located in Orissa, India and has an area of about 65,000 hectares. There are about 60 species of mangroves, the most notable of which are shots heritiera, rhizophora, Avicenna. A notable species here is the Olive Ridley Turtles who come here in large numbers to lay eggs. Notable among these are the many species of birds that have settled here are black ibis, darters, asian open bill etc. More than 320 species are found here. Moreover different species of fish prawn, shrimp, crabs, crocodile, turtles etc. are found here. There are



about 55 species of mangroves. The most famous of this place for crocodile, which is large in length and breadth. Among the other reptile species are Indian Python, King Cobra, fishing cat, Leopard, dolphins, etc. are notable. The local people collect some of their necessities from this wetland, such as honey, wax and a variety of medicinal plants.

21. Chilika- This lake is located in Orissa, India. It is mainly a brackish water lagoon. Migratory birds from different parts of the world come here in winter, among which the main birds are purple moor hen, egrets, purple herons, white ibis, pintails, sea eagles etc. Many of these species are endangered. The area of this lake is 1,16,500 ha. There are about 725 species of flowering plants. Here are the main plant species are fabaceae, poaceae, cyperaceae, cassipourea ceylanica etc. There are about 323 species of aquatic species, including 261 species of fish, 28 species of prawns and 34 species of crabs. The fish species found here are indo-pacific tarpon, ten pounder, hilsa, mullet etc. There are two special species of dolphins called irrawaddy dolphins and bottlenose dolphins which are found in very few places in the world. Fishing is a major livelihood of the residents. There are about 132 villages involved in fishing which is a major source of livelihood.

22. Kolleru Lake- This lake is located in Andhra Pradesh, India. This is a fresh water lake. Its area is about 90,100 hectares. There are settlements of different types of plants, birds, aquatic plants. According to experts, there are about 200 species of birds found here, the most notable of which are ibis, painted storks, Siberian crane, spot-billed pelican, spoon-billed sandpiper etc. The lake is known to be home to about 20 million birds. About 63 species of fish are found here. These wetlands help significantly reduce the Earth's carbon emissions. These help reduce the amount of pollutants that are emitted from various factories. The locals get most of their needs from this wetland. They make their living from fishing and other aquatic resources.

23. Point Calimere Wildlife and Bird Sanctuary- This wetland is located in the southern part of India in Tamil Nadu. Its area is about 38500 hectares. This wetland is mainly famous for greater flamingos. There are also different types of aquatic plants, birds, aquatic animals, etc. There are about 14 species of mammals, 18 species of reptiles and 9 species of amphibians. There is also a significant species called blackbuck antelope. Notable among feral pony, black naped hare, small indian civet, wild boar, spotted deer, etc. the marine animals is bottle nose dolphins, olive ridley turtle, bryde's whale etc. There are about 103 species of waterbirds, most notably....asian dowitcher, lesser flamingo, spoonbill, black-necked stork, spot-billed pelican, etc. There are different types of shrubs in this wetland. Of which about 50 % are medicinal plants.

24. Vembanad-Kol- It is located in Kerala, India. Its area is about 151250 ha. More than 20,000 waterfowls are found here in winter. There are 90 species of resident birds and 50 species of migratory birds. These migratory birds come here from different parts of Central Asia. There are different species of butterflies, spiders, honey bees, Indian koel, tailor bird, small green barbet. About 45 species of fish are found here, the most notable of which are catfish, prawn, wallago attu, murrel, etc. more than 6 species of shrimps and prawns, 4 species of molluscs available here. About 44 species of mangrove are found here. Moreover there are different types of endangered tree and plant species.

25. Ashtamudi- It is located in Kerala, India. Its area is 61400 ha. It is very famous for houseboat and backwater resorts. There are often 57 species of avifauna, 45 species of insect, 26 species of butterflies, 29 species of zooplankton and 9 species of phytoplankton. About 97 species of fish are found here. The inhabitants of this region mainly make a living by fishing, hunting various aquatic animals and also relying on tourism. There are about 40 species of mangrove plants, such as brugiera gymnorhize, sonneralia caseolarisbas etc. Notable bird species are shot here tailor bird, little cormorant, Indian smaller egret, yellow bittern, blue winged teal, fish hawk etc.

26. Sashthamkotta Lake- It is located in Kerala, India. Its area is 373 hectares. This lake is suitable for drinking water due to the presence of different types of bacteria. Its water does not contain any salt or minerals. There are 27 species of fish in this lake, the most notable of which are calichrous bimaculatus, wallago attu, catfish, prawns, herrings, sardins etc. Notable bird shots



here are common teal, herons, kingfishers, egrets, etc. There are different types of zooplankton like brachionus, Cyclops, daphnia etc. Moreover the main phytoplankton shots are chlorella, scenedesmus, spirogyra, oscillatoria etc.

27.Sundarban Wetland- This wetland is located in West Bengal, India. Which is mainly located near the Bay of Bengal. About 40 % of it is located in India and 60 % in Bangladesh.

There are often 290 species of birds. There are 120 species of fish, 42 species of mammals and 35 species of reptiles. The main mangrove species found here are Sundari, Gewa, Goran, keora etc. According to the 2011 census, there are about 180 species in the Sundarbans. Other animals are Jungle cat, fishing cat, Leopard cat etc. About 290 species of birds are found here, the most notable of which are white eyed pochards, woodpeckers, seagulls, great egrets, gray herons, coots, marsh harriers, open billed storks, white bellied sea eagles, ospreys, brown winged Kingfishers etc. In addition to these animals, there are many other species of animals, birds, reptiles, etc., such as Olive ridley turtle, python, green vine snake, Rat Snake, crocodile, Russell's viper, sea snake, common toads, tree frogs, gangetic dolphins, silver carp, starfish, sawfish etc.

28.Nandur Madhameshwar- This wetland is located in Maharashtra, India. Its area is about 1437 hectares. It is a famous biodiversity rich region. There are many different species living here. There are 265 species of birds, 24 species of fish, 41 species of butterflies, etc. Notable birds here are godwits, curlews, water hens, buzzards, kites, herons, black ibis, white stork, spoonbills, wigeon, goose brahminy duck etc. In addition to birds, there are about 460 species of plants here, notably Babul, Jamun, Nilgiri, mango, tamarind, neem. Moreover, different types of grains are produced here, such as wheat, maize, bazra and various types of vegetables. There are also different types of wildlife such as wolves, fishing cat, spotted here, Mongoose and various species of reptiles.

29.Keshopur-Miani Community Reserve- This wetland is located in the Punjab of India. Its area is about 343.9 hectares. About 344 species of plants are found in this region. There are also 58 species of migratory birds. Which mainly comes from Pakistan, South Africa, America etc. Notable birds here are spotted duck, gray wagtail, white wagtail, common pochard, common coot, woolly necked stork, Sarus crane, Mallard etc. In 2016, about 25000 migratory birds arrived here for nesting.

30.Samaspur Bird Sanctuary- This aviary is located in Uttar Pradesh, India. Its area is about 799 hectares. There are different species of fish, aquatic plants, animals, etc. It is home to about 46 species of fish. Notable fishes include ompok pabda, channa marulius, labeo pangusla, ailia coila, chitala chitala etc. About 250 species of birds are found here, among which teal whistling, spot bill teal, vulture, kingfishers are notable. In addition, about 50,000 of the migratory birds that come here are waterfowl species. Notable trees here are shesham, Mahuwa, mango etc.

31.Parvati Agra Bird Sanctuary- This region is formed in Uttar Pradesh, India. Its area is about 722 hectares. There are about 35 species of migratory and residential birds. Those who come here from different parts of the world, such as China, Tibet, Siberia etc. Notable birds include black drongo, gray headed swampphen, bronze winged, Sarus crane, Asian open bill, Indian peafowl and various species of vultures. Birds of this species come from far and wide to nest here. They reach here after crossing a distance of about 5000 kilometers. There are a variety of plant species that feed on birds.

32.Sarsai Nawar Jheel- This wetland is located in Uttar Pradesh, India. Its area is about 161 hectares. There are different types of threatened species of birds like woolly necked stork, white rumped vulture, etc. There are about 150 Oriental white backed vultures in this wetland. Every year about 12000 waders, 6000 ducks, geese, make their home here in winter. Other species of birds are common greenshank, wigeon, northern pintail etc.

33.Nangal Wildlife Sanctuary- This sanctuary is located in the Punjab of India. Which is at the foot of Shivalik mountain. Its area is about 116 hectares. There are many different species. Moreover, it is also quite important in terms of biodiversity. About 60 species of birds are found here. Most of them come here from far and wide for breeding. Notable birds here include lesser



whistling duck, Indian golden oriole, common hawk cuckoo etc. About 17 species of zooplankton are found here. Other animals here are stone chat, sambar, hog deer, common sandpiper, Indian gray hornbill etc.

34.Nawabganj Bird Sanctuary- This aviary is located in Uttar Pradesh, India. Its area is about 225 hectares. More than 250 migratory birds arrive here in the winter. They come here mainly from Siberia, Europe, China and other countries. Notable birds include bee eater, purple moorhen, white necked stork, peafowl, Mallard, red crested pochard, lapwing, white ibis, sarus crane, greylag goose etc. Apart from birds, there are different types of snakes like Rat Snake, water snake, cobra etc.

35.Sandi Bird Sanctuary- This aviary is located in Uttar Pradesh, India. Its area is about 300 8.5 hectares. About 157 species of birds are found here. Some of these birds come here every winter. The main birds are crested serpent eagle, little grebe, black bittern, cattle egret, spot billed duck etc.

36.Beas Conservation Reserve- This wetland is located in the Punjab of India. Its area is about 6428. 9 hectares. There are different species of fish, aquatic birds, aquatic animals and reptiles. There are about 500 species of birds. There are some endangered species of animals like smooth coated otter, hog deer, Indus river dolphin, gharials etc. About 90 species of fish are found here and a special type of functionally blind mammal is found here.

37.Saman Bird Sanctuary- It is located in Uttar Pradesh, India. Its area is about 526.3 hectares. About 187 species of birds are found here. Most of these migratory birds are sarus crane, Egyptian vulture, black kite, crested serpent eagle, tailorbird, Asian openbill etc.

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