Chapter-4 - Aquatic Ecosystem

(i) Fresh water Ecosystem - Salt < 5 PPT. Lake, Pond, River, Pond, etc.
(ii) Salt water Ecosystem - Salt - 35 PPT or above.
(iii) Brackish water Ecosystem - Salt - 5 to 35 PPT. Estuaries, Salt Marshes, Mangroves, Swamps etc.

Aquatic Organisms:

i) "Neuston:" unattached organisms which live at air-water interface ex water striders, beetles & back-swimmers.

(ii) **Periphyton:** These organisms which remain attached to stems and leaves of rooted plants or substances emerging above the bottom mud such as sessile algae and their associated groups of animals.

(iii) **Plankton** → Phytoplankton:- Microscopic plants "Algae"
→ Zooplankton: Crustaceans and Protozoans"

(iv) **Nekton:** Animals which are swimmers (fish etc)

(v) **Benthos:** The benthic organisms are those found living in the bottom of water mass.

Limiting factors: Aquatic → sunlight and oxygen
Terrestrial → moisture and temperature.

Photic Zone: or euphotic zone is where light penetrate in the water
↳ Photosynthesis and respiration both takes place.

Aphotic Zone: Light levels are too low, below photozone. only respiration
This deep water region is also known as the profundal zone.

- Oxygen in Aquatic Ecosystem through air water interface and photosynthetic activity of Aquatic Plants.

Oxygen is less soluble in warm water. warm water also enhances decomposition so increase in temp of waterbody depletes O_2 level.

Lake- Ecology: Naturally nutrient enrichment of lakes promotes the growth of algae, Aquatic Plants etc. This is Natural eutrophication
- When nutrient-enrichment is caused by anthropogenic activities it is known as cultural eutrophication.

Lake Sudarshan in Girnar. oldest man made lake in India. (300 BC)

Oligotrophic (Low nutrient lake), Mesotrophic (moderate), Eutrophic (High)

P eliminators & P absorbers. Removal of nutrient from lake.

Mitigation of Lake pollution

1) Riparian buffer.

(ii) N-Testing (technique to find the optimum amount of fertilizer required for crop plants.

(11) non-point pollution reduction.

Harmful Algal Blooms. (HABs).

Some Algae produce Harmful toxins, when they increase rapidly water color changes to from Red etc. i.e. known as HABs.

To 2 common cause for HABs - "nutrient enrichment & warm water" changes in climate can change the occurrence, severity, and impact of HAB events.

Wet Land Ecosystem:-

- transitional zone between oligotrophic & terrestrial Habitat - marsh, Peat land etc. Presence of Hydrophytic Hydric soil (O_2 deficient)
- In Lake Ecosystem productivity is little less in comparison with wetland Ecosystem Biodiversity is high.

India - 18.4% of Area (70% under Paddy cultivation)

National wetlands Conservation Programme. 1985-86

Aim: Conservation of wetlands to prevent their further degradation and ensuring their wise use for the benefit of local communities and overall conservation of biodiversity. Central govt is responsible.

Estuary Ecosystem:

most productive water bodies in the world"

- 0.35 salt PPT. from head to mouth, Area of little wave action bays, harbors, lagoons, inlets etc
- Biologically highly productive zone.

Mangroves:

- Tropical & subtropical mangroves are trees & bushes growing below the high water level offspring Hides which exhibit remarkable capacity for salt water tolerance.