Quadrant II – Transcript and Related Materials

Programme: Bachelor of Arts/Commerce/Science (First Year)

Subject: Environmental Studies

Paper Code: AECC

Paper Title: Environmental Studies

Unit: III

Module Name: Introduction, types, features, structure and functions of aquatic ecosystem (ponds, streams, lakes, rivers, oceans, coastal zone, estuaries)

Module No: 37

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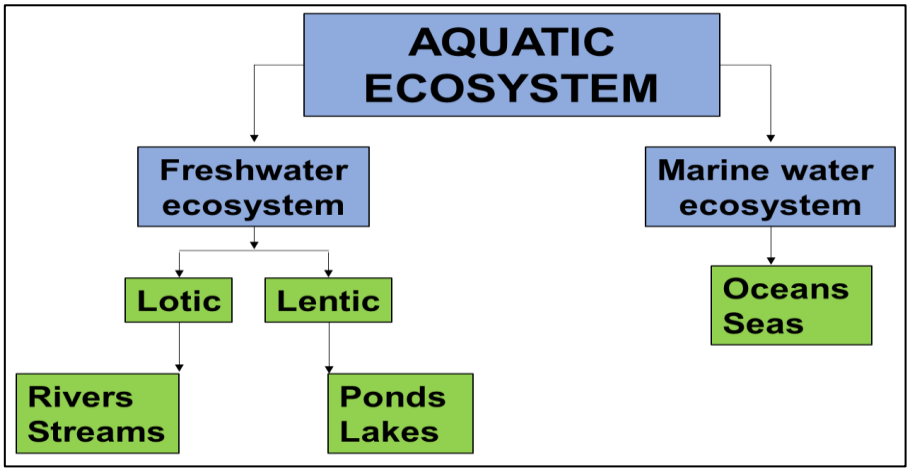
Notes

Introduction:

- An Aquatic ecosystem is a habitat comprising of living organisms residing withing a water body.
- Communities of organisms are dependent on each other and on their environment in aquatic ecosystems.
- The two main types of aquatic ecosystems are **marine ecosystems** and **freshwater ecosystems**.



- **Freshwater Ecosystem**

- Freshwater ecosystems are non-saline.
- They include lakes, rivers, streams, and ponds.
- Fresh water systems are classified as **lentic ecosystems** and **lotic ecosystems**.

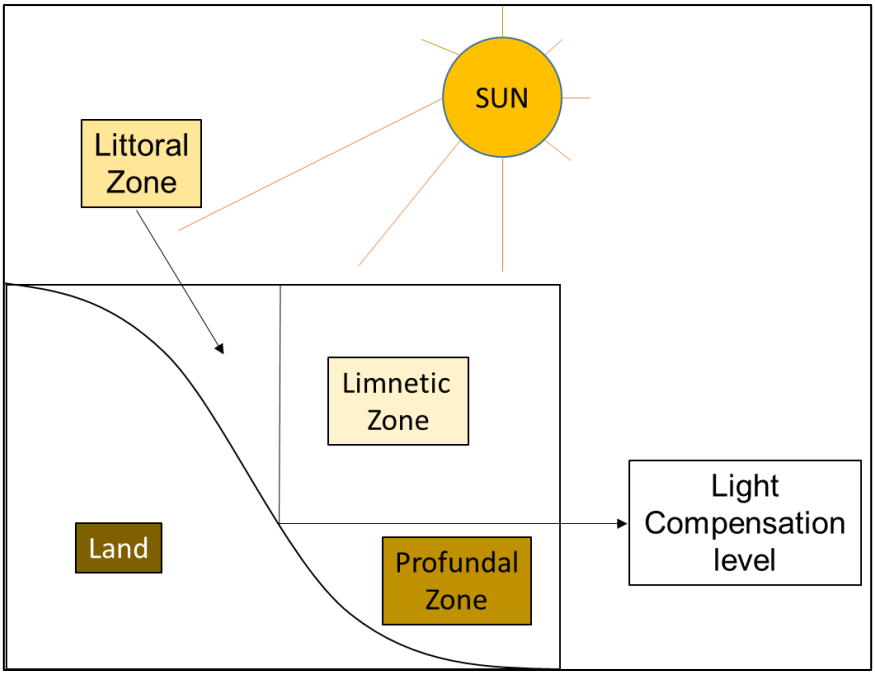
Lotic or running water ecosystems:

- They are referred to as the swift flowing water that move unidirectionally.
- River and streams are examples which shelter numerous species of insects, crustaceans, snails, slugs and fishes.
- Crayfish, crabs, clams and limpets, crocodiles and fishes are very common in streams and rivers. Lotic mammals include beavers, otters and river dolphins.

Lentic ecosystem or standing ecosystem

- Immobile, still or stagnant water such as lakes and ponds.
- Ponds are usually of shallow depth.
- Ponds and lakes support a wider variety of organisms such as algae, rooted plants, floating plants, protozoans, crabs, shrimps, crayfish, clams, frogs, salamanders, alligators and water snakes.

- Lentic waters are divided into 3 zones:
- **Littoral zone**
- **Limnetic zone**
- **Profundal Zone**



Types of lakes:

1. Oligotrophic lakes – with less nutrient content
2. Eutrophic lakes – with very high nutrient content due to fertilizer contamination
3. Desert salt lakes – that contains high saline water due to over evaporation
4. Volcanic lakes – formed by water emitted from magma due to volcanic eruptions
5. Dystrophic lakes – that contains highly acidic water (low pH)

➢ **Marine Ecosystem**

- Includes diverge habitats ranging from coral reefs to estuaries, open pelagic sea to the deep benthic and abyssal region.

Common species found in marine ecosystems include:

- Marine mammals such as seals, dolphins, whales and manatees.
- Different species of fish including halibut, sea horse, marcels, sardine, flounder, salmon, dog fish and sea bass etc.
- Organisms such as brown algae, diatoms, corals, mollusk, echinoderms. etc.

- **Examples of marine ecosystem are:**
- **Oceans and seas:**

Characterized by the presence of salt water

- **Two zones:**

1. Coastal zone – warm, nutrient rich, shallow – high sunlight – high primary productivity.
2. Open sea – away from continental shelf – vertically divided in to 3 zones.

- **Euphotic zone** – abundant sunlight
- **Bathyal zone** – dim sunlight
- **Abyssal zone** – dark zone.

Intertidal Zone:

- The area which remains under the water at high tide conditions and transform in to terrestrial habitat at low tide is referred to as the intertidal zone.
- Rocky cliffs and sandy beaches all fall under intertidal zone.

Estuaries:

- Areas lying between riverine and marine environments, which are vulnerable to tide and in fall of both fresh water and saline water.
- They are extremely rich and diverse as it is an ecotone.
- The constant mixing of water due to in flow of both fresh and marine water, shows high levels of nutrients and exhibits high biodiversity.
- Organisms are tolerant to temperature and salinity.
- They are rich in migratory fishes such as salmon, eels etc.