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 Ecosystem

Module Name: Introduction, types, features, structure and functions of

Grassland ecosystem

Module No: 35

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Notes

The Grassland Ecosystem is also called transitional landscape because grassland ecosystems are dominated by the grass with few or no trees in the area. An ecosystem with huge open lands where the vegetation includes different types of grasses with very few numbers of trees is known as the grassland ecosystem. The Grassland Ecosystem covers about 10% of the Earth's surface. They are found where rainfall is about 15-75 cm per year.

The grasslands are known by different names in different region of the world like prairies in North America, steppes in Europe and Asia, pampas in South America, Veldt in Africa and Downs in Australia.

In India, the grasslands are found in semi-arid pastures in Deccan Peninsula, humid semi-waterlogged grasslands of Terai belt and on the hilltops of Western Ghats to the high-altitude pastures of the Himalaya.

Types of Grassland Ecosystem

The two main divisions are:
    A) Tropical grasslands or Savanna (Savannah)
    B)   Temperate grasslands

A) Tropical grasslands or Savanna (Savannah):

Features of Tropical grasslands or Savannah:

• Precipitation: average rainfall is 76.2 to 101.6 cm (30 - 40 inches).

• Seasons: have both dry and rainy season. Series of violent thunderstorms (October), followed by dry wind (onset of dry season). Prevalence of fire (January), i.e., height of the dry season.

• Soil: porous, with rapid drainage of water. Thin layer of humus which serves as nutrients.

• Flora: predominantly grasses and forbs (small broad-leaved plants that grow with grasses).

• Fauna: Giraffes, zebras, buffaloes, wildebeest, antelopes, kangaroos, mice, moles, gophers, ground squirrels, snakes, worms, termites, beetles, lions, leopards, hyenas, and elephants.

B) Temperate grasslands:

Features of Temperate grasslands:

• Temperature: Large temperature range over the year, -40º C (winter) to 38º C, (summer).

• Seasons: Hot summers and cold winters, seasonal drought and occasional fires.

• Precipitation: Rainfall is moderate. Annual average is about 50.8-88.9 cm (20-35 inches).

• Canopy: Amount of rainfall influences the height of the grassland vegetation, with taller grasses in wetter regions.

• Flora: Grasses as the predominant vegetation. Trees and large shrubs are absent.

• Fauna: Gazelles, zebras, rhinoceroses, wild horses, lions, wolves, prairie dogs, jack rabbits, deer, mice, coyotes, foxes, skunks, badgers, blackbirds,

grouses, meadowlarks, quails, sparrows, hawks, owls, snakes, grasshoppers, leafhoppers, and spiders.

Structure of Grassland Ecosystem

I. Abiotic components: These include non-living components. These include basic inorganic and organic compounds present in the soil and atmosphere. The climate (temperature, rainfall), soil (minerals) vary from forest to forest.

II. Biotic components-

i) Producers: The grasslands are characterised by treeless, herbaceous plant cover dominated by variety of grass species.

ii) Consumers:

Primary consumers- The herbivores feeding on grasses are mostly cows, buffaloes, deer, sheep, rabbit, giraffes, zebras, gazelles, elephants, certain insects etc.

Secondary consumers- These consumers are the carnivorous animals such as snakes, lizard, jackal, foxes, frogs etc. which feed on the primary consumers.

Tertiary consumers- Hawk, eagles, vultures, lions, leopards, cheetah, hyenas, wild dogs, snakes constitute the tertiary consumer in the grassland ecosystem which preys upon the secondary and primary consumer.

iii) Decomposers: Several fungi, bacteria decay the dead organic matter of different forms and bring back nutrition to the soil and make it available for producers.

Functions of Grassland Ecosystem

1. The grasslands prevent soil erosion.
2. The fungi, bacteria and other microbes clean up and restore nature by decomposing dead organic matter.
3. Grasslands provide food for grazing animals which in turn provides food, milk, wool to man.
4. Provides habitat for the wildlife.