GS Mains Daily Answer Writing

Week 5 - Day 2

Model Structures

1. Discuss the causes of depletion of corals and explain their importance in the marine ecosystem. (10 marks)

Model Structure

Introduction

- Coral Reefs are the most diverse ecosystems on the planet and also considered the medicine cabinets of the 21st century because several medicines are developed to treat cancer, arthritis, human bacterial infections, Alzheimer's disease, heart disease, viruses, and other diseases.

Main Body

- Depletion of corals is known as coral bleaching. Its reasons are-
    - Change in temperature - above average seawater temperatures
    - Stress induced in corals
        - Epizootics- diseases
        - Excessive sedimentation
        - Xenobiotics (external substances) such as Cu, herbicide, oil, etc.
    - Runoff and Pollution -
    - Extreme low tides
    - Overexposure to sunlight
    - Subaerial Exposure: Sudden exposure of reef flat corals to the atmosphere during events such as extreme low tides, El Nino Southern Oscillation (ENSO) - related sea level drops or tectonic uplift can potentially induce bleaching.
    - Sedimentation
- Importance of corals -
    - Protect coastlines from the damaging effects of wave action and tropical storms
    - Provide habitats and shelter for many marine organisms such as fishes, starfish, sea anemones, etc.

- Source of nitrogen and other essential nutrients for marine food chains
- Assist in carbon and nitrogen fixing
- Help with nutrient recycling.
- Provide revenue and employment through tourism and recreation.
- They are used in jewellery.
- Coral blocks are used for buildings and road construction.
- The lime supplied by corals is used in cement industries.

Conclusion

- The Coral Ecosystem is an important biodiversity area that needs to be protected and promoted urgently.

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2. What are the various factors that affect the formation of the Savanna type of climate? (15 marks)

Introduction:

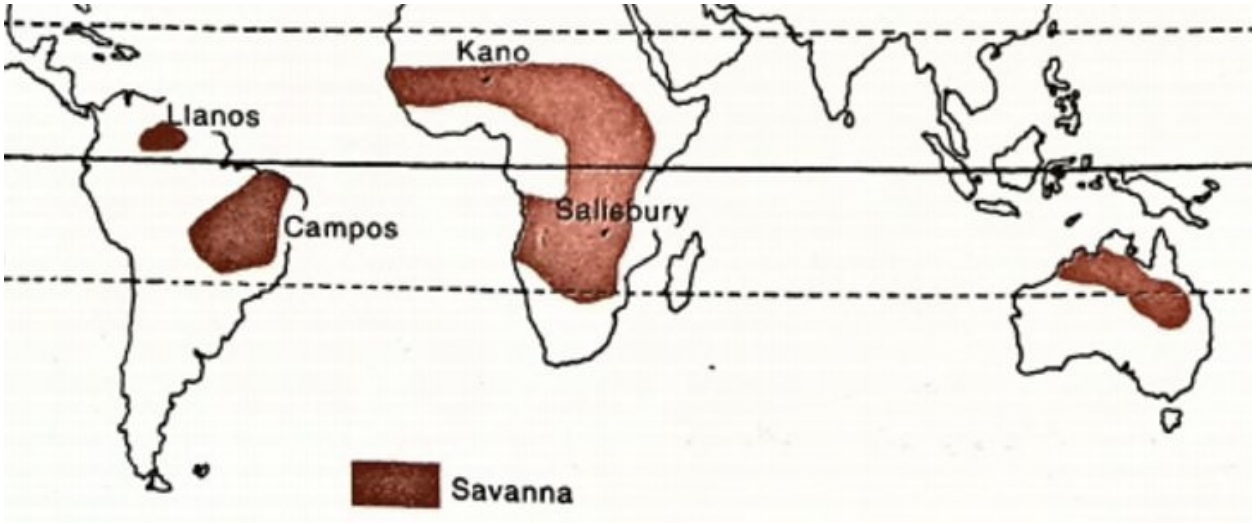
Savanna regions have two distinct seasons – **a wet season and a dry season**. There is very little rain in the dry season. In the wet season vegetation grows, including lush green grasses and wooded areas.

Main Body

Savanna biomes

Savannas – also known as tropical grasslands – are found to the north and south of tropical rainforest biomes. The largest expanses of savanna are in Africa, where much of the central part of the continent, for example **Kenya** and **Tanzania**, consists of tropical grassland. Savanna grasslands can also be found in **Brazil** in South America.

Distribution of savanna



Various factors that affect the formation of Savanna type of climate

- The Savanna type of climate is located betw**een 10°-20° latitudes** on either side of the equator.
- **It is a transitional type of climate found between the equatorial rainforests and hot deserts.**
- located between equatorial low pressure belt or rain producing intertropical convergence and sub tropical high pressure belt.
- **Changing pressure belts**: Due to northward migration of the sun during summer solstice (21 June) the equatorial low pressure belt and doldrum are shifted northward and thus Savanna climate comes under the influence of Inter Tropical Convergence (ITC) which is associated with atmospheric disturbances (cyclones) which yield rains.
- Due to southward migration of the sun during winter solstice (23 December) Savanna climatic zone comes under the influence of subtropical high pressure belt and thus anticyclonic conditions dominate the weather and bring dry conditions.
- The descending stable winds under anticyclonic conditions cause dry conditions.
- **Winds**: On shore winds in summer bring rains. Off-shore winds in winter keep the climate dry.
- The prevailing winds of the region are the **Trade Winds**, which bring rain to the coastal districts. They are strongest in the summer [favourable position of ITCZ] but are relatively dry by the time they reach the continental interiors or the western coasts .

- Besides, the coastal areas are affected by local winds and sea breezes.
- Eastern coasts are influenced by trade winds. Strong and high velocity tropical cyclones dominate the weather conditions during the warm season.

Conclusion:

- Due to its climatic conditions the savanna is said to be the **natural cattle country** and many of the native people are pastoralists.