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Top down Effect

Top-Down Effect • Effect flows down through a trophic chain • From apex predator to lower trophic levels

Name 2 effect of habitat fragmentation on species?

• Habitat needs to be an intact body. • Least interference is required to protect niches of organisms. • Many species are too sensitive to tolerate changes in their niches. • e.g. insects

Name of stages of foraging?

• These stages form a foraging Cycle. 1. Search 2. Assessment 3. Capture 4. Handling

Sources of wastewater

Wastewater is a byproduct of domestic, industrial, commercial or agricultural activities

Properties of r-selected species

• High growth rates • Typically exploit less crowded ecological habitats • Produce many offspring • Relatively low probability of surviving to adulthood

Acid Rain

• Unpolluted rain has an acidic pH, but usually no lower than 5.7. • This low pH is due to carbonic acid $\text{H}_2\text{O} + \text{CO}_2 \rightleftharpoons \text{H}_2\text{CO}_3(\text{aq})$ • Nitric acid is produced as result of lightening.

Global Warming

• There is a gradual increase in the average temperature of the Earth's atmosphere in the last 100 years. • It has risen about 1°C since 1900. • Sources: Greenhouse effect, pollution, deforestation

Types of Succession

• Primary Succession

Occurring in an environment in which new substrate devoid of vegetation and other organisms usually lacking soil

• Secondary Succession

An event reduces already established ecosystem.

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Microorganisms fixing Nitrogen

• Azobacter • Beijerinckia • Azospirillum • Clostridium • Cyanobacteria • Require the enzyme nitrogenase • Inhibited by oxygen • Inhibited by ammonia (end product)

Name factor that limit population growth

• Rate of Birth • Rate of Death/mortality • Dispersal • Food Resources • Space to grow • Environmental factors

First Atmosphere Composition

• First Atmosphere Composition of gases like solar nebula (disc of dirt and gases) Aged 4 billion years ago • Hydrogen • Methane • Helium • Ammonia • Water vapors

How can mimicry different from camouflage

1. Camouflage

• Use of any combination of materials, coloration, or illumination • Concealment from predators • Also known as cryptic coloration

2. Mimicry

• The resemblance of one species to another for protective or aggressive purposes • Different from camouflage

Flow of Energy in Ecosystem Feeding Levels

• Food energy passes through different sequence. • Example: plants → grass hopper → frog → snake → hawk • Many plant species eaten by insects • Many insects species eaten by frogs • this complexity is organized by ecologists. • Recognized limited number of feeding or trophic levels

In Food Chain • Food energy passes through different sequence. • Level 1: Primary producer Level 2: Primary consumer Level 3: Secondary consumer Level 4: Tertiary Consumer Level 5: Apex Predator

Effects Noise Pollution

• Noise pollution can damage physiological and psychological health. • High blood pressure, stress related illness, sleep disruption, hearing loss, and productivity loss • It can also cause memory loss, severe depression, and panic attacks.

Types of air pollution

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1. Primary Air Pollutant
2. Secondary Air Pollutants

Primary Air Pollutant

- Harmful substance that is emitted directly into the atmosphere

Secondary Air Pollutant

- Harmful substance formed in the atmosphere
- Primary air pollutant reacts with substances normally found in the atmosphere or with other air pollutants.

Types of Parasites

1. Micro parasites: reproduce inside host Bacteria, viruses
2. Macro parasites: release juvenile outside host E.g. trematodes
3. Endo parasites Examples: Liver fluke, tapeworm, nematodes
4. Ectoparasites Examples: Ticks, mites, fleas, mosquito, lice

Sources of Nitrogen

- Lightning
- Inorganic fertilizers
- Nitrogen Fixation
- Animal Residues
- Crop residues
- Organic fertilizers

Autotrophs

- Synthesis of the organic compounds of their bodies from inorganic precursors such as: - CO_2 , H_2O , NO_3
- using energy from an abiotic source through inorganic oxidation reactions

Carbon Cycle

- Carbon is main component of living organism.
- 20% of human body is carbon by weight.
- CO_2 is major source of carbon.
- Atmosphere contains about 750 billion metric tons of carbon in form of CO_2 .
- CO_2 released in air is again variable for plants.
- In aquatic ecosystem, CO_2 reacts with the water to form bicarbonate ions.
- Dissolved CO_2 and bicarbonates are used by algae and aquatic plants in photosynthesis.

Consumer-Resource system

- Direct or indirect balance between resources and consumption
- Predators indirectly increase plant growth. They prevent overgrazing by suppressing herbivores.
- The net effect of direct and indirect relations is called trophic cascades.

Layers of atmosphere

1. Exosphere: 700 to 10,000 km (440 to 6,200 miles)
2. Thermosphere: 80 to 700 km (50 to 440 miles)
3. Mesosphere: 50 to 80 km (31 to 50 miles)
4. Stratosphere: 12 to 50 km (7 to 31 miles)
5. Troposphere: 0 to 12 km (0 to 7 miles)

Fundamental Niche

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The entire niche that a species is capable of using, based on its physiological tolerance limits and resource needs

Tropospheric Ozone

Man- made pollutant in the lower atmosphere – Secondary air pollutant – Component of photochemical smog

Invasive Species

• Colonization, a natural process by which a species expands its geographic range, occurs in many ways. Examples: • Seed dispersal by birds • Lowering of sea levels join two isolated land masses • Flooding

Stages of Water cycle

1. Evaporation
2. Transpiration
3. Condensation
4. Precipitation
5. Surface Run off
6. Infiltration

VU Biologist (Public)