NPTEL Wildlife Ecology Practice Exam (Sample)

Study Guide

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Questions

1. Who amongst these is considered the father of Biogeography?

A. Theophrastus

B. Linnaeus

C. Malthus

D. Humboldt

2. After mining, a deciduous forest in Madhya Pradesh had soil filled in and species replanted. This is an example of what?

A. Recovery

B. Restoration

C. Enhancement

D. Replacement

3. What does the study of wildlife ecology primarily focus on?

A. The conservation of endangered species

B. The relationships between species and their environments

C. The management of wildlife resources

D. The impact of climate change on wildlife

4. Which of the following is NOT considered a climatic forcing for Earth?

A. Changes in plate tectonics

B. Changes in Earth's orbit

C. Changes in sun's orbit

D. Changes in sun's strength

5. What sequence correctly illustrates the process of habitat fragmentation and loss?

A. Original forest → dissection → perforation → fragmentation → attrition

B. Original forest → dissection → attrition → fragmentation → perforation

C. Original forest → dissection → perforation → attrition → fragmentation

D. Original forest → dissection → fragmentation → perforation → attrition

6. How does temperature affect wildlife distribution?

- **A. It is not a significant factor**
- **B. It influences reproductive cycles and food availability**
- **C. It determines the coloration of species**
- **D. It regulates migration patterns**

7. In the Greek word root of Ecology, logos refers to?

- **A. household**
- **B. preservation**
- **C. environment**
- **D. study**

8. What does carrying capacity mean in the context of ecology?

- **A. The maximum number of species possible in an ecosystem**
- **B. The largest area a species can inhabit**
- **C. The maximum number of individuals of a species that an ecosystem can sustainably support**
- **D. The minimum critical size of a population**

9. Which of the following best describes ecosystem services?

- **A. The breakdown of organic matter into simpler forms**
- **B. The socio-economic benefits humans obtain from natural ecosystems**
- **C. The process of photosynthesis in various species**
- **D. The karyotype analysis of different species**

10. Which factor is critical in maintaining biodiversity?

- **A. Habitat destruction**
- **B. Invasive species introduction**
- **C. Sustainable resource use**
- **D. Monoculture farming practices**

Answers

1. D
2. B
3. B
4. C
5. A
6. B
7. D
8. C
9. B
10. C

Explanations

1. Who amongst these is considered the father of Biogeography?

A. Theophrastus

B. Linnaeus

C. Malthus

D. Humboldt

The title of the "father of Biogeography" is attributed to Alexander von Humboldt due to his pioneering work in understanding the geographical distribution of plants and animals. Humboldt's extensive travels and meticulous observations led him to recognize the intricate relationships between climate, topography, and biodiversity. He emphasized how physical environments influence the distribution of species, laying the foundational concepts for the field of biogeography. His seminal work, "Kosmos," integrated observations from various disciplines, weaving together ideas about ecology, geology, and climate. Humboldt's insights into how ecosystems vary with geography, along with his emphasis on the interconnectedness of nature, helped to establish biogeography as a scientific discipline. While Theophrastus made significant contributions to botany, Linnaeus is known for his taxonomic classification systems, and Malthus is famous for his theories on population growth. However, none of these figures addressed the geographical distribution of organisms in the systematic and holistic manner that Humboldt did, which is why he holds the distinction of being the father of biogeography.

2. After mining, a deciduous forest in Madhya Pradesh had soil filled in and species replanted. This is an example of what?

A. Recovery

B. Restoration

C. Enhancement

D. Replacement

The scenario described involves the process of taking a disturbed area, specifically a deciduous forest that was impacted by mining, and reintroducing soil and replanted species. This is a clear example of restoration, which refers to the efforts made to return an ecosystem to its original state or to a state that is as close as possible to its natural characteristics and functionality. Restoration differs fundamentally from other concepts related to ecosystem management. Recovery typically signifies the natural process by which an ecosystem heals itself without human intervention, while enhancement would involve improving an existing ecosystem's conditions or resources, also not strictly about returning it to its original state. Replacement would imply that one ecosystem is entirely substituted for another. In this case, since the goal is to bring back the deciduous forest ecosystem through human efforts after disturbances caused by mining, the term that most accurately describes this effort is restoration.

3. What does the study of wildlife ecology primarily focus on?

A. The conservation of endangered species

B. The relationships between species and their environments

C. The management of wildlife resources

D. The impact of climate change on wildlife

The study of wildlife ecology primarily focuses on the relationships between species and their environments. This field examines how different species interact with one another, as well as how they are influenced by their physical surroundings, including both biotic (living) and abiotic (non-living) factors. Understanding these relationships is crucial for comprehending ecosystem dynamics, species behaviors, habitat requirements, and the overall health of wildlife populations. While conservation of endangered species, management of wildlife resources, and studying the impact of climate change are all important aspects related to wildlife ecology, they are more specific applications or outcomes derived from a foundational understanding of ecological relationships. By investigating how species coexist, compete, and adapt to their environments, wildlife ecologists can gather critical insights that inform conservation practices, resource management, and strategies to mitigate climate impacts on ecosystems. This holistic approach is essential for developing effective wildlife management policies and conservation efforts.

4. Which of the following is NOT considered a climatic forcing for Earth?

A. Changes in plate tectonics

B. Changes in Earth's orbit

C. Changes in sun's orbit

D. Changes in sun's strength

Climatic forcing refers to factors that can cause a change in the climate system. Among the options provided, changes in Earth's orbit and changes in the sun's strength are known climatic forcings. These factors can significantly influence the Earth's climate over long periods. Changes in plate tectonics, while not directly related to short-term climate variations, can impact climate on geological timescales by altering ocean currents and creating or extinguishing landmasses. On the other hand, changes in the sun's orbit are not generally referenced in the context of climatic forcing. The sun itself is fixed in its orbit and does not change in a manner that affects Earth's climate on significant timescales. This is why the answer identifying changes in the sun's orbit as not being a climatic forcing is accurate, as it does not align with recognized factors that influence the Earth's climate system.

5. What sequence correctly illustrates the process of habitat fragmentation and loss?

A. Original forest → dissection → perforation → fragmentation → attrition

B. Original forest → dissection → attrition → fragmentation → perforation

C. Original forest → dissection → perforation → attrition → fragmentation

D. Original forest → dissection → fragmentation → perforation → attrition

The sequence that correctly illustrates the process of habitat fragmentation and loss starts with the original forest, which serves as the baseline for understanding how habitats change over time due to human or environmental impacts. Dissection occurs first, where roads, agriculture, or other developments start to break the forest into distinct patches. Following this, perforation takes place, where portions of the forest are removed, leading to holes or gaps within the remaining habitat. The next stage is fragmentation, whereby the once continuous habitat is divided into smaller, isolated patches. Finally, attrition refers to the ongoing decline or loss of these habitat patches, often due to further development or degradation over time, which leads to a reduction in the overall forest area. This sequence effectively captures the progressive states of habitat change, going from an intact ecosystem to a series of disconnected and declining habitats, thus providing a clear picture of habitat fragmentation and loss. Understanding this process is crucial in wildlife ecology, as it helps illustrate the impact of human activities on ecosystems and highlights the need for conservation strategies.

6. How does temperature affect wildlife distribution?

A. It is not a significant factor

B. It influences reproductive cycles and food availability

C. It determines the coloration of species

D. It regulates migration patterns

Temperature plays a crucial role in influencing wildlife distribution, particularly through its effects on reproductive cycles and food availability. Many species have specific temperature ranges that are optimal for reproduction; variations in temperature can lead to shifts in breeding seasons, success rates, and the timing of life cycle events. For instance, warmer temperatures might trigger earlier breeding in some species, which can affect population dynamics. In addition, temperature directly impacts the availability and growth of plants, which are vital food sources for herbivores and subsequently for carnivores that rely on them. Changes in temperature can influence primary productivity, leading to alterations in the abundance and distribution of both flora and fauna. Consequently, animals may expand their ranges into new areas where temperatures are more favorable for their survival and reproduction, while potentially retreating from areas that become less suitable. This interplay between temperature, reproduction, and food supply underscores its significance as a determining factor in wildlife distribution. It showcases the intricate relationships within ecosystems and how temperature can create cascading effects through various trophic levels.

7. In the Greek word root of Ecology, logos refers to?

A. household

B. preservation

C. environment

D. study

The term "ecology" is derived from the Greek roots where "oikos" means "household" or "home," and "logos" translates to "study" or "discourse." Therefore, the word "logos" specifically refers to the concept of study or a field of knowledge. In the context of ecology, it represents the scientific study of interactions among organisms and their environment. This indicates that ecology is not just about the organisms themselves, but also about understanding the complex relationships and dynamics within ecosystems. The focus on "study" underscores the scientific approach taken in ecology to analyze, understand, and manage the natural world.

8. What does carrying capacity mean in the context of ecology?

A. The maximum number of species possible in an ecosystem

B. The largest area a species can inhabit

C. The maximum number of individuals of a species that an ecosystem can sustainably support

D. The minimum critical size of a population

Carrying capacity in ecology refers to the maximum number of individuals of a particular species that an ecosystem can sustainably support over time. This concept takes into account the availability of resources such as food, water, and space, as well as the impacts of factors like competition, predation, and disease. When a population exceeds its carrying capacity, it risks depletion of resources, leading to a decline in population health and numbers, and potentially causing environmental damage. Understanding carrying capacity is crucial for wildlife management and conservation efforts, as it helps to inform practices that ensure populations remain stable and ecosystems remain balanced. Managing a population within its carrying capacity can prevent over-exploitation and allow for healthy ecosystem functioning, fostering biodiversity and resilience. In contrast, the other choices do not accurately represent the concept of carrying capacity. While some may touch on aspects related to species and habitats, they do not encapsulate the core idea of sustainable support within ecosystem limits.

9. Which of the following best describes ecosystem services?

A. The breakdown of organic matter into simpler forms

B. The socio-economic benefits humans obtain from natural ecosystems

C. The process of photosynthesis in various species

D. The karyotype analysis of different species

Ecosystem services refer to the various benefits that humans derive from natural ecosystems, which are crucial for maintaining human well-being. This encompasses a wide range of services that can be categorized into provisioning (such as food and water), regulating (such as climate regulation and disease control), cultural (such as recreational and spiritual benefits), and supporting (such as nutrient cycling and soil formation) services. Option B accurately captures this concept by emphasizing the socio-economic benefits that arise from the functions and processes of ecosystems, highlighting the integral relationship between human societies and natural environments. Understanding ecosystem services is essential for effective natural resource management and conservation efforts, as it underscores the importance of preserving biodiversity and ecosystem health for the future.

10. Which factor is critical in maintaining biodiversity?

A. Habitat destruction

B. Invasive species introduction

C. Sustainable resource use

D. Monoculture farming practices

Sustainable resource use plays a vital role in maintaining biodiversity because it ensures that natural resources are utilized in a manner that does not compromise the ecological balance or deplete the resources over time. This practice includes strategies like responsible forestry, regulated fishing, and the conservation of water resources, which allows ecosystems to flourish without being overstressed. By maintaining diverse habitats and the species that inhabit them, sustainable resource use helps preserve the interactions between different organisms and their environments, promoting resilience against environmental changes. Additionally, by fostering a balanced use of resources, it mitigates the risks of overexploitation and habitat degradation, which can lead to declines in biodiversity.