

NCERT Solutions for Class 12 Biology Chapter 13: By practicing the NCERT Solutions for Class 12 Biology Chapter 13 Biodiversity and Its Conservation, students can gain a deeper understanding of the importance of biodiversity and the methods used to protect it.

It also helps in understanding the causes of biodiversity loss and the steps needed to preserve different species and ecosystems. Moreover, practicing these solutions can improve problem-solving skills, boost retention of information, and prepare students for exams by providing clarity on complex topics and fostering a better understanding of how human activities impact the environment.

NCERT Solutions for Class 12 Biology Chapter 13 Overview

Chapter 13 of Class 12 Biology Biodiversity and Its Conservation focuses on the importance of biodiversity, its significance, and the efforts required to conserve it. Biodiversity refers to the variety of life forms on Earth, including the diversity of species, ecosystems, and genetic variations. The chapter explains the various levels of biodiversity species diversity, genetic diversity, and ecosystem diversity and their roles in maintaining ecological balance.

The chapter highlights the threats to biodiversity, such as habitat destruction, pollution, over-exploitation, and climate change. It also discusses the consequences of biodiversity loss, which can disrupt ecosystems and affect human life. Conservation methods such as in-situ conservation (protecting biodiversity within its natural habitat) and ex-situ conservation (preserving species outside their natural habitat) are explored in detail.

The chapter introduces the concept of protected areas like national parks, wildlife sanctuaries, and biosphere reserves. It also covers international efforts, such as the Convention on Biological Diversity (CBD), aimed at protecting global biodiversity. Through this chapter, students gain an understanding of the need for sustainable development and the importance of preserving biodiversity for the health of the planet and future generations.

NCERT Solutions for Class 12 Biology Chapter 13 PDF

For easy access, you can find the NCERT Solutions for Class 12 Biology Chapter 13 Biodiversity and Its Conservation PDF link below. Simply click on the link to download or view the solutions:

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NCERT Solutions for Class 12 Biology Chapter 13 Biodiversity and Its Conservation

Here are the NCERT solutions for Chapter 13 Biodiversity and Its Conservation from Class 12 Biology.

1. Name the three important components of biodiversity.

Solution:

Biodiversity includes the variety of living organisms in ecosystems, and it can be divided into three key components:

- (i) **Species Diversity** – This refers to the variety of different species in an ecosystem.
- (ii) **Genetic Diversity** – This is the variation of genes within a species, which ensures adaptability and survival.
- (iii) **Ecosystem Diversity** – This refers to the variety of ecosystems, such as forests, wetlands, deserts, and oceans, that exist on Earth.

2. How do ecologists estimate the total number of species present in the world?

Solution:

Ecologists estimate the number of species on Earth using statistical models. They often begin by studying well-known species in regions like the tropics, which have high biodiversity. By comparing species richness in tropical and temperate regions, ecologists extrapolate this data to estimate the total species count, which is believed to be around seven million.

3. Give three hypotheses for explaining why tropics show the greatest levels of species richness.

Solution:

Three common hypotheses for the high species richness in the tropics are:

- (i) **More Solar Energy** – Tropical regions receive more sunlight, which supports higher productivity and species diversity.
- (ii) **Stable Climate** – The tropical regions have less seasonal variation, leading to stable environmental conditions that promote specialization and a greater number of species.
- (iii) **Glaciation Theory** – During ice ages, temperate regions experienced glaciation, which wiped out species, whereas tropical regions remained stable, allowing for greater species evolution and survival.

4. What is the significance of the slope of regression in a species-area relationship?

Solution:

The slope of regression in the species-area relationship helps to understand how species richness changes with an increase in the area of habitat. In smaller areas, the slope is generally

consistent across different regions and taxa, but in larger areas, the slope tends to be steeper, indicating a greater increase in species diversity as the area grows.

5. What are the major causes of species losses in a geographical region?

Solution:

The major causes of species loss include:

- (i) **Habitat Loss and Fragmentation** – Human activities like deforestation and urbanization destroy habitats, affecting species populations.
- (ii) **Co-extinction** – The extinction of one species can lead to the extinction of another species that is dependent on it.
- (iii) **Over-exploitation** – Excessive hunting and fishing, and overuse of natural resources can lead to the depletion of species.
- (iv) **Alien Species Invasions** – Introducing non-native species into new habitats can lead to the extinction of native species due to competition for resources.

6. How is biodiversity important for ecosystem functioning?

Solution:

Biodiversity is crucial for ecosystem stability and functioning because:

- (i) Ecosystems with more species are generally more stable and resilient to disturbances.
- (ii) High biodiversity increases productivity and allows ecosystems to withstand disruptions like floods or invasive species.
- (iii) Biodiversity helps maintain ecological balance by supporting food webs and nutrient cycles.

7. What are sacred groves? What is their role in conservation?

Solution:

Sacred groves are forest areas protected by local communities due to religious or cultural beliefs. These groves are important for conserving rare and endangered species. In many regions, deforestation is prohibited in sacred groves, helping to preserve biodiversity and contribute to conservation efforts.

8. Among the ecosystem services are control of floods and soil erosion, how is this achieved by the biotic components of the ecosystem?

Solution:

Plants play a significant role in preventing soil erosion and managing floods. Their roots bind the soil, preventing it from being washed away by wind or water. Additionally, plants allow water to infiltrate the soil, reducing surface runoff and helping to avoid floods. Thus, plants maintain the ecosystem's health and stability.

9. The species diversity of plants (22 per cent) is much less than that of animals (72 per cent). What could be the explanations for how animals achieved greater diversification?

Solution:

There is a huge difference in the percentage of species diversity of plants (22%) and the species diversity of animals (72%). It is due to the following reasons:

(i) Adaptation of animals to changing environments for survival. For instance, animals and insects have grown to develop a complex nervous system for coordinated and controlled body movements. Also, insects have grown to be versatile and developed the potential to survive in different habitats in comparison to other life forms, as they possess repeated body segments with external cuticles and paired appendages.

(ii) Plants are immobile, while animals can move around. Hence, animals have achieved more diversity as they have moved and adapted to different habitats.

10. Can you think of a situation where we deliberately want to make a species extinct? How would you justify it?

Solution:

Yes, one situation where we might want to deliberately make a species extinct is when that species poses a significant threat to the environment or human health. For example, certain invasive species can cause extensive damage to native ecosystems, disrupt food chains, and endanger local species. An example of this is the Nile perch introduced into Lake Victoria in Africa, which led to the extinction of hundreds of native fish species. Similarly, some disease-causing microorganisms, such as those responsible for smallpox or polio, have been eradicated through vaccination programs to protect human populations. In such cases, the intentional extinction or eradication of harmful species can be justified as a way to protect biodiversity, public health, and ecosystem stability.

Benefits of Solving NCERT Solutions for Class 12 Biology Chapter 13

- **Concept Clarity:** By practicing these solutions, students can strengthen their understanding of important concepts like biodiversity, conservation methods, and factors affecting biodiversity. This clarity helps in grasping difficult topics more easily.
- **Better Exam Preparation:** The NCERT solutions cover all the essential topics and frequently asked questions. This ensures that students are well-prepared for exams, as they can easily refer to the answers for a better understanding of the topics.
- **Improved Problem-Solving Skills:** Working through various questions in the solutions enhances critical thinking and problem-solving skills, helping students analyze complex biodiversity-related problems more effectively.

- **Concept Reinforcement:** The solutions help reinforce concepts related to biodiversity conservation, the importance of various species, and human impact on ecosystems, which are crucial for competitive exams as well.
- **Enhanced Writing Skills:** Solving NCERT questions helps students improve their writing style by practicing how to structure answers, use appropriate terminology, and present information concisely and clearly.
- **Time Management:** By practicing with the NCERT solutions, students learn how to manage their time efficiently during exams. It helps them develop the ability to solve questions quickly without compromising on accuracy.
- **Holistic Understanding:** NCERT Solutions encourage a deeper understanding of ecological concepts and how they are interlinked with real-world conservation efforts, helping students gain insights into both theoretical and practical aspects of biodiversity.