

Overexploitation

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WHAT'S COVERED

In this lesson, we will cover the topic of overexploitation of natural resources. We will explore the various types of overexploitation and their impacts on an ecosystem. We will understand conservation biology and its role in conserving biodiversity. We will discuss the tools used to address overexploitation. Specifically, this lesson will cover the following:

1. What is Overexploitation?

Overexploitation, the key term for today, is the use of a natural resource by humans to a point that is unsustainable.



HINT

Overharvesting is another word that can be used in place of overexploitation. The following factors contribute to overexploitation:

- Increase in human population
- Human overconsumption of natural resources
- Inadequate practices of conservation and management of natural resources



TERM TO KNOW

Overexploitation

The use of a natural resource by humans to a point that is unsustainable.

2. Types of Overexploitation

There are many different types of overexploitation. The table below describes a few of them with examples.

Types of Overexploitation	Description	Example
		At the beginning of the 1900s, squirrels and minks were becoming

Fur trade	In the past, when one animal would become rare for use, another animal source would then be used.	rarer and harder to find for use in clothing. In response, the sea otter was heavily hunted and harvested as a replacement, but it nearly became extinct in the process.
Fishing industry	Rates at which fish are harvested through current commercial fishing practices exceed the rates at which fish populations recharge and reproduce. The majority of the big predatory fish at the top of the food chain have been overharvested so much that they can no longer be fished. Now, fish lower down on the food chain are being harvested.	In the Great Lakes, sturgeon populations have declined from overfishing.
Overharvesting of amphibians and reptiles	Amphibians and reptiles are overharvested for food, skin, souvenirs, and medicines. Many amphibians and reptiles have long lifespans, slow growth, and low reproductive rates, which makes it even harder for them to recover from overexploitation.	Snakeskin boots are still popular today, and many snake populations are in danger because of these fashionable accessories.
Pet trade	Exotic animals are sold as pets. Some are even sold to be stuffed as collectors' items.	Some animals, like the loris, sell for extremely low prices in impoverished countries. The illegal traders then sell the wild animals in developed nations for thousands of dollars.

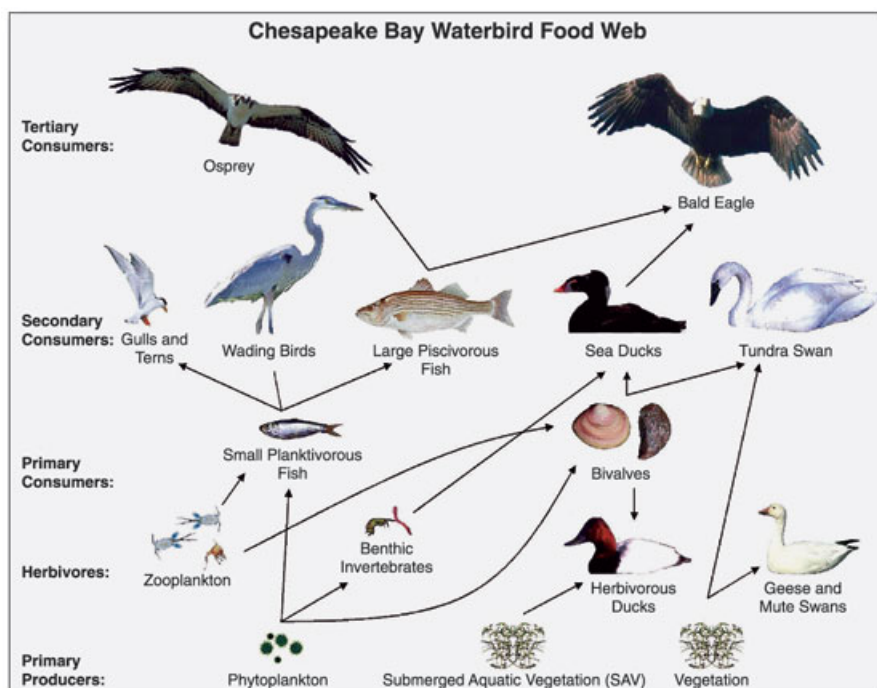


Other types of overexploitation can include the overuse of forests and overgrazing by pasture animals.

3. Impacts of Overexploitation

Overexploitation of one species can have repercussions for the rest of the ecosystem. The decline in population of one species, which is food for another, will result in the decline of population of the second species as well.

This interdependent relationship is illustrated in the food web shown below.



Another instance illustrating the impact of overexploitation occurs when two competing species balance each other in an ecosystem, and one is overexploited. In turn, the second species' population could skyrocket and cause further effects in the ecosystem.

4. Conservation Biology

Conservation biology is the study of impacts on biodiversity with the intention of protecting biodiversity. The physical structure of a landscape can play a large role in the health of biodiversity. Habitat fragmentation, a result of developing land for human use, causes habitats to shrink in size and creates more boundaries and edges between ecosystems.



An important idea to remember is that as edge area increases, biodiversity tends to decrease. Conservation biologists attempt to mitigate this problem by creating corridors of land between habitat areas that allow ecology to be more mobile and can stabilize biodiversity. Conservation biologists study the dynamics of ecology to establish protected areas and slow the loss of biodiversity.

A challenge to conserving species is that it often requires resolving conflicts between the habitat needs of species and human desires. Sustainability seeks to provide for human needs while conserving biodiversity.

5. Counteracting Overexploitation

The following table includes some tools used to address and mitigate the impacts of overexploitation.

Tool	Purpose
National laws	Regulate trade in endangered species

International agreements	Restrict overexploitation of species
Hunting restrictions	Restrict hunting based on annual quotas
Economic incentives	Discourage overexploitation through both positive and negative incentives. Positive incentives include compensation in the form of cash, goods, or services to encourage particular conservation practices, while negative incentives include fines and penalties for poaching.

It is important to note that even advanced scientific knowledge and the best of practices to manage exploitation can be challenging to implement, and they often fail because of institutional difficulties.



SUMMARY

In this lesson, we learned about **overexploitation**, which is the use of a natural resource by humans to a point that is unsustainable. We learned about the various **types of overexploitation** and its **impacts** upon an ecosystem. We also learned about **conservation biology**, the study of impacts to biodiversity with the intention of conserving biodiversity, and the tools that are used in **counteracting overexploitation**.

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TERMS TO KNOW

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