



Habitat loss

Description

Habitats are the places where organisms live and find resources they need to survive (such as food, water, and shelter). Examples of habitats include forests, grasslands, wetlands, and oceans. **Habitat loss** occurs when habitats are destroyed, degraded, or divided into smaller parts. This makes it harder for many species to survive and maintain their populations.

Habitat loss is commonly caused by human activities that change or damage habitats. These activities include agriculture, urbanization (building cities), deforestation (cutting down trees), and infrastructure development (developing structures like roads, dams, and buildings).

General solutions

Protected areas

One way to protect habitats is to establish **protected areas** that restrict certain human activities — for example, a national park or nature reserve where people are not allowed to disturb the plants or animals. Protected areas may be created by governments or organizations that purchase those areas for conservation.

Deciding where to put a protected area involves many factors, such as whether to preserve as many species as possible or prioritize specific organisms. Involving local communities in the creation and management of protected areas can help ensure their long-term success.

Restoring or creating habitats

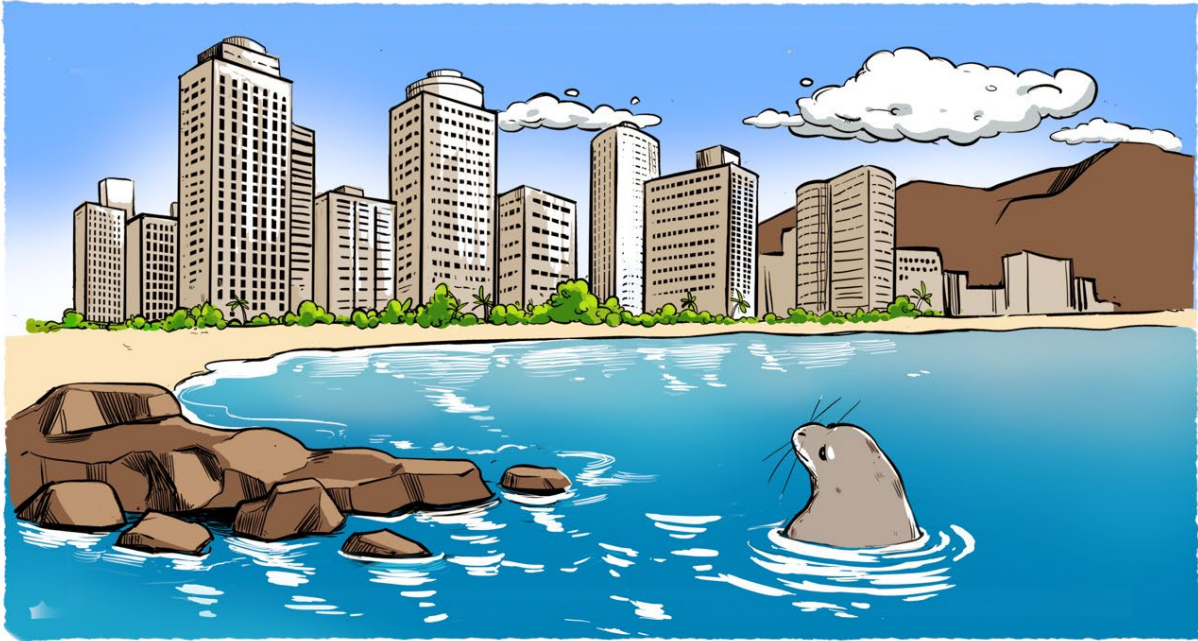
Restoring habitats may involve reintroducing native species, removing invasive species, and cleaning polluted areas. It can also include replacing important features of the habitat that were lost – for example, adding more nesting sites or increasing water flow for aquatic organisms.

In some cases, a new habitat may be created in a place where it did not previously exist — for example, planting a new garden that supports local wildlife.

Creating corridors

A “corridor” is a passageway, such as a strip of forest or a tunnel, that connects pieces of a habitat. Building and protecting corridors can help wildlife move safely into new places, so that they have more space and resources.

How does habitat loss impact the Hawaiian monk seal?



The Hawaiian monk seal's habitat consists of beaches, shallow nearshore areas like reefs, and deeper offshore waters. About 75% of the monk seals are found on the Northwestern Hawaiian Islands, and about 25% are found on the main Hawaiian Islands.

Loss of beach habitats

Hawaiian monk seals use beaches to rest, raise their pups, and avoid ocean predators like sharks. However, beaches on the main Hawaiian Islands are being used and developed by humans, which limits where the monk seals can go. Humans on the beaches may also disturb monk seals and cause them to abandon their pups. On the Northwestern Hawaiian Islands, where the monk seals are more common, sea level rise is also eroding the shoreline and covering the beaches in water, which reduces the areas available for the monk seals to rest and raise pups.

Changes in ocean habitats

Hawaiian monk seals find most of their food in the ocean. But due to changes in the ocean currents, which may be linked to climate change, there has been less prey near the Northwestern Hawaiian Islands. The lack of food has made it harder for the monk seals on these islands to survive and raise healthy pups.

Invasive species

Description

Invasive species are organisms that spread into and harm a habitat that they weren't originally from. Invasive species may compete with or kill local species, change the characteristics of the habitat, or disrupt ecological processes. For example, some invasive species are, or can carry, microbes or parasites that cause disease.

Invasive species often spread through human activities. Some invasive species are intentionally released by humans for food, hunting, or as unwanted pets. Others are unintentionally brought into new areas by trade and transportation.

General solutions

Prevention

The best way to protect against invasive species is to prevent them from spreading in the first place. This could include:

- making laws to prevent the spread of invasive species (for example, banning people from bringing certain pets or plants into your area)
- using only local plants and animals for gardening, fishing, etc.
- cleaning things (such as shoes, packing materials, and boats) that could unintentionally carry organisms into new areas

Education and outreach programs can also help increase people's awareness of invasive species and motivate them to change their behaviors.

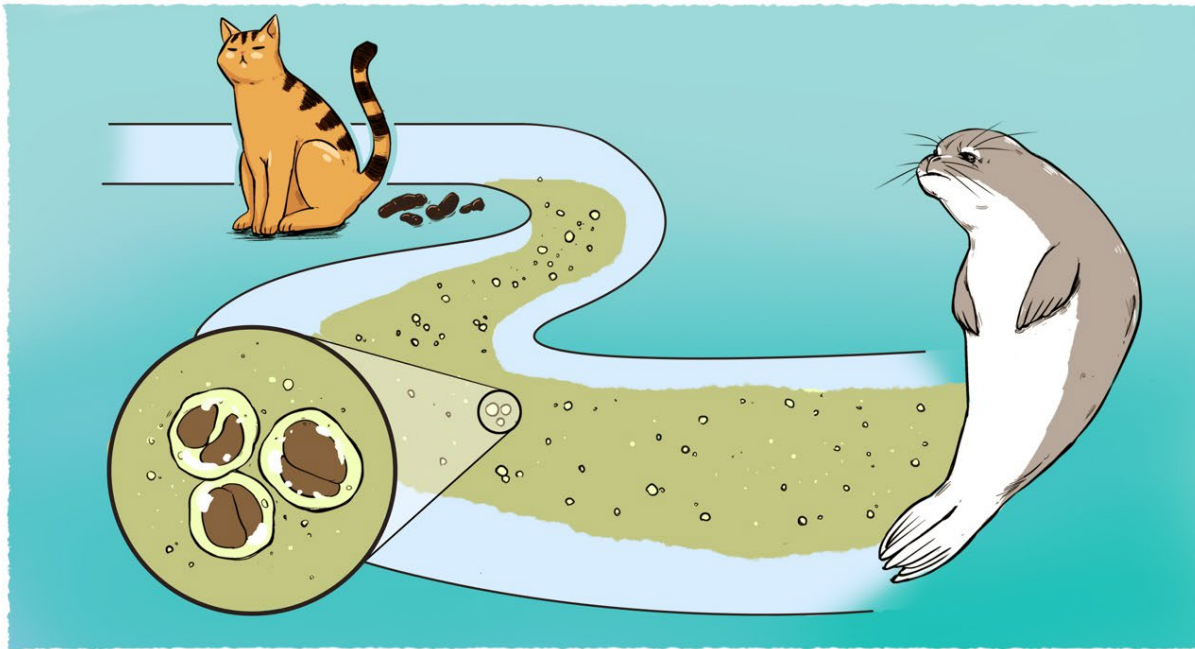
Early detection and rapid response

Government agencies, local organizations, and community members can set up monitoring programs to quickly detect when invasive species enter the area. They can also develop coordinated response strategies to remove these species before they spread. Education and outreach programs can teach people how to identify and track invasive species, so that they can find and respond to them more quickly.

Reducing impact

If an invasive species cannot be removed from an area, efforts may focus instead on reducing its impacts. This could include controlling the size of the invasive species' population, preventing further spread, or helping organisms harmed by the invasive species.

How do invasive species impact the Hawaiian monk seal?



Parasitic disease

A major invasive species that threatens Hawaiian monk seals is *Toxoplasma gondii*, a parasitic protozoan (type of single-celled organism). This parasite causes a disease called toxoplasmosis, which is one of the leading causes of death for adult monk seals. The disease is almost always lethal for monk seals, as it causes organ and reproductive failure, as well as brain damage.

Toxoplasma gondii is released into the environment through cat feces (“poop”). It can be transmitted to the monk seals through sewage (e.g., when humans flush contaminated cat feces down the toilet) or when feces from outdoor cats contaminate the water (e.g., through runoff from rain).

The parasite is found in both pet and feral cats across the main Hawaiian Islands. As there is no vaccine for toxoplasmosis and it is extremely difficult to treat, most efforts to protect the monk seals focus on stopping the spread of the disease.

Pollution

Description

Pollution occurs when humans add things (called “pollutants”) to the environment that cause harm. Examples of pollutants include trash, chemicals, and even noise and light. Pollution can impact the atmosphere and habitats that organisms rely on. Pollution can also harm many organisms (including humans) directly by poisoning them, disrupting their development, or making it harder for them to navigate or communicate with each other.

Human activities that can cause pollution include the use of factories, mining, power plants, vehicles and other types of transportation, and agricultural and livestock practices. Pollution is also created by waste from products that people use.

General solutions

Reducing pollutants

There are different strategies for reducing different types of pollutants. Switching to organic or sustainable agricultural practices, for example, can reduce chemical pollutants from pesticides and fertilizers. Using renewable materials, recycling, and products that are safer for the environment can reduce trash and harmful waste. Passing laws and promoting education and outreach programs may also help motivate people to reduce pollution.

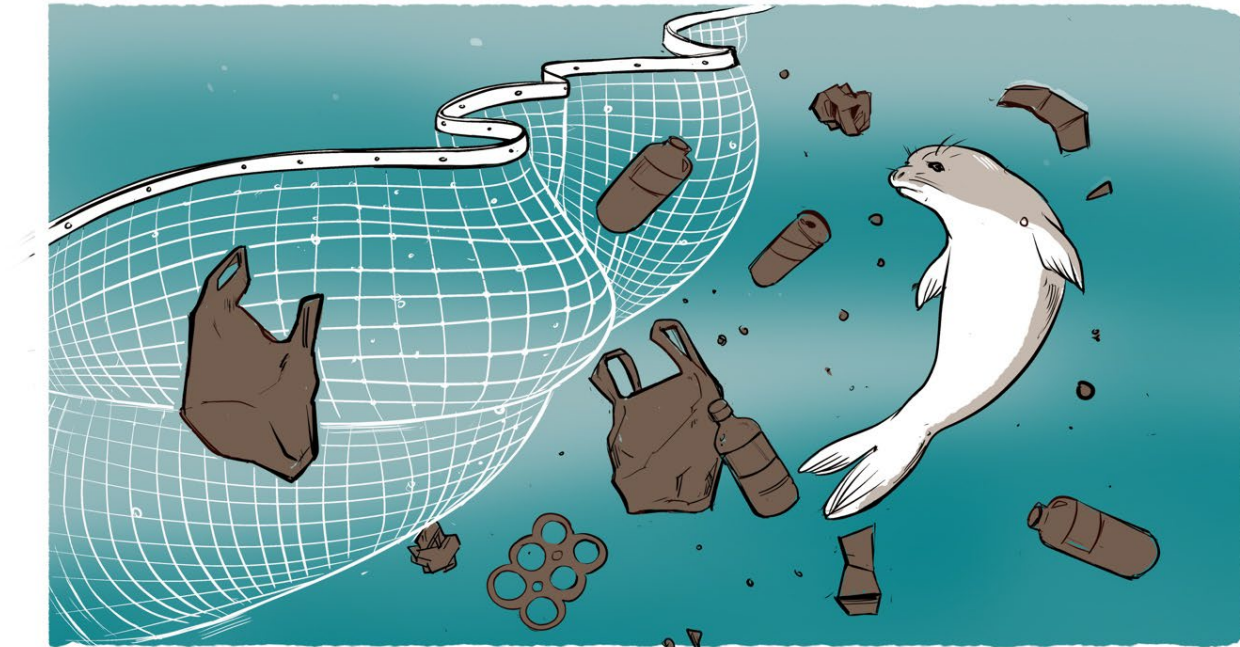
Renewable energy and efficient energy use

Switching from fossil fuels to renewable energy sources — including solar, hydrothermal, and wind — can reduce harmful environmental impacts like pollution. It is also helpful to reduce overall energy use by using public transportation and energy-efficient homes and products.

Waste disposal and cleanup

Proper waste disposal practices can reduce the amount and impact of pollutants. These practices can be established by laws and promoted through education and outreach programs. Cleaning up areas contaminated by pollutants can also help habitats and species recover.

How does pollution impact the Hawaiian monk seal?



Marine debris

One type of pollution is **marine debris**: solid, often humanmade, trash that ends up in the oceans. Examples of marine debris include discarded fishing nets, ropes, and a variety of plastic materials.

Hawaiian monk seals, most often pups and juveniles, can become tangled up in marine debris. This is known as “entanglement,” and it can cause injuries, reduced mobility, and even death. Hawaiian monk seals have one of the highest entanglement rates of any seal species. Monk seal entanglement is a particular concern in the Northwestern Hawaiian Islands, as marine debris often reaches these remote islands.

Other types of pollution

Many other types of pollution can also impact monk seals. Examples include water pollution from chemical runoff and plastics that accumulate on beaches.

Population growth

Description

In this context, **population growth** refers to the growth of the human population. In 2000, there were 6 billion people on Earth. By 2050, it is predicted that there will be 9.8 billion people.

As the human population grows, humans may take over more land, build more roads and buildings, use up more natural resources (such as food, water, and materials), and produce more pollution. These changes will impact many habitats and species.

General solutions

Conservation and urban planning

One way to reduce growing human impacts is to protect and restore important habitats. For example, cities and towns can be designed to preserve wild areas (such as wetlands, forests, and prairies) and include “green spaces” (such as parks) that support biodiversity.

Cities can also include infrastructure to better manage water and energy use, as well as support for sustainable transportation options (such as walking and public transit). Efficient city planning may also help reduce how much area is needed to support a growing population.

Sustainable practices

Adopting sustainable practices can reduce human impacts on the environment. They include:

- reducing consumption of natural resources
- using renewable energy sources
- using more energy-efficient homes and products
- using more efficient agricultural practices
- reducing and managing waste

Economic development and education

Investing in economic and educational development can reduce people’s reliance on local environmental resources and often leads to smaller family units. Research, community engagement, and education programs can also raise awareness about environmental issues and encourage people to work together to create laws, policies, and social change.

How does population growth impact the Hawaiian monk seal?



Humans on beaches

Hawaiian monk seals use beaches to rest, raise their pups, and avoid ocean predators like sharks. But as more people go to the beaches — especially on the main Hawaiian Islands — they may (intentionally or unintentionally) disturb, hurt, or even kill the monk seals. Some beachgoers may also bring their dogs, which can disturb, chase, or harm the monk seals.

Other human impacts

As the human population grows, humans are using more coastal areas, which reduces habitats for the monk seals. Humans may also produce pollution that harms the monk seals — such as chemicals from boats, runoff, fishing nets, and plastics — or accidentally hook and drown monk seals while fishing.

Overharvesting

Description

Overharvesting is when humans “harvest” (e.g., consume or take) a natural resource, such as a specific species, faster than it can recover or replenish itself. Examples include cutting down too many trees or catching too many fish. Overharvesting a species can significantly decrease its populations or even make it go extinct. This can disrupt food webs and ecological processes and make it harder for ecosystems to recover from natural disturbances. It can also negatively affect the human communities that depend on these species and ecosystems.

Human activities that lead to overharvesting include overfishing, deforestation (cutting down trees), poaching (illegal hunting), and wildlife trafficking (illegally selling wildlife or wildlife products).

General solutions

Protected areas and species

One way to reduce overharvesting is to establish **protected areas**, such as national parks or nature reserves, where people are restricted from removing natural resources. Laws and policies may be used to restrict people’s access to the protected areas.

Specific species could also be protected, especially if they are in danger of going extinct. Laws could ban people from killing/taking threatened or endangered species. There could also be efforts to help the species recover from overharvesting.

Sustainable harvesting practices

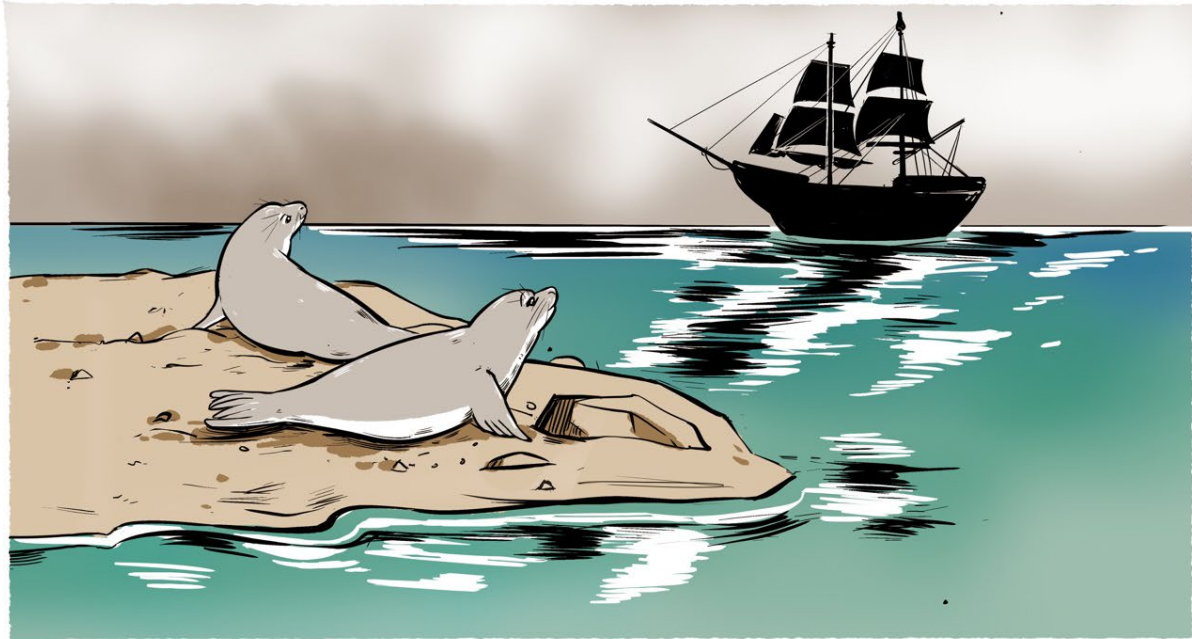
Sustainable harvesting practices may involve policies and laws that limit when and how much of a species can be harvested. They can be informed by local communities that have effectively managed these species in the past. Education and outreach programs can help spread awareness and teach these practices.

Sustainable practices can also include replenishing overharvested species (for example, replanting trees or adding more fish to rivers) or finding alternatives that people can use instead (for example, raising plants and animals on a farm instead of removing them from the wild).

Efficient use of resources

We can use fewer natural resources overall by using them more efficiently. This could include switching to renewable energy sources or materials and foods that require fewer resources to develop.

How does overharvesting impact the Hawaiian monk seal?



Monk seal hunting

From the 1800s to the early 1900s, hunting expeditions led by Europeans and others harvested hundreds of Hawaiian monk seals for their oil, skin, and meat. This significantly reduced the size of the monk seal population and nearly drove the monk seals extinct.

In 1976, the Hawaiian monk seal was classified as a “depleted stock”: a species below its optimal sustainable population size. That same year, the monk seal was also classified as an endangered species, meaning that it was considered to have a very high chance of going extinct. Since then, laws such as the Endangered Species Act and the Marine Mammal Protection Act have helped protect the monk seals from being killed, captured, or harassed and also added protections for the monk seals’ habitats.

However, the monk seal population is still relatively small. It’s estimated that there are only about 1,600 Hawaiian monk seals in the wild as of 2022. Most of the monk seals are currently found on the Northwestern Hawaiian Islands, but the populations on the main Hawaiian Islands have been growing.