

Crash Course – Climate Change

- People's love of cars, the need for farmland, and the use of plastics are harming the Earth's ecosystems.
- People's activities have resulted in the extinction of thousands of species of plants, animals and insects.
- Ecosystems work hard everyday to produce the air we breathe, produce the food we eat, and filter the water we drink.

The Top 5 Human Impacts on the Environment and the Importance of Ecosystems

1 – **Support Services:** Healthy ecosystems provide support services that create & replenish the foundation of the Earth's biological systems. Healthy ecosystems help recycle compounds that are necessary for life, including water, carbon, new soil, and oxygen. Some ecosystems do more work than others, but none can function properly without being intact.

2 - **Provisioning Services:** give us the resources we require to survive

- Food: fish, animals, vegetables, fruits, plants, grains & nuts
- Water: from fresh streams, rivers and lakes, also oceans provide aquatic environments for fish and other creatures
- Fiber: Animals and plants provide materials for shelter and clothing
- Fuel: grass, wood, hydro power (from water) and fossil fuels

3 - **Regulating Services:** help control ecosystems to keep other ecosystems operating properly so that they don't become dangerous.

- *Fungi & other decomposers:* help breakdown and decompose dead things.
- *Plants and trees:* help clean and filter the air, absorb water, and protect the soil from erosion. They also help reduce the amount of carbon in the air, which affects the climate.

4 – **Cultural Services:** (aka Enjoyment & Quality of Life)

Healthy ecosystems give people, plants and animals a better quality of life. For humans, it provides places for inspiration, rest and enjoyment.

If humans could, and had to, do all the services that are performed by healthy ecosystems, it would cost the world 46-trillion dollars/year...which is 70% of the global economic output.

5 – **Biodiversity Intact:** Healthy ecosystems are more resilient to change. Ecosystems with high biodiversity (many different organisms in the ecosystem) are better able to handle changes, whereas ecosystems with less biodiversity are more likely to collapse.

Humans have had severely negative affects on the most biodiverse ecosystems in the world.

Deforestation: the mass cutting down of trees, for the purpose of clearing the land for other uses, or the harvesting of lumber. For example, people are cutting down approximately 8000 hectares of Amazonian rain forest every day to make room for cattle pasture.

Desertification: the loss of land to deserts. When land is no longer agriculturally viable. (The Gobi Desert has grown by over 3600km every year.)

Global Warming: Due in part to humans producing more greenhouse gases, and increased deforestation, the Earth's overall temperature continues to increase. This results in decreased habitats for some animals, and increased competition for resources. There are also more forest and grass fires due to hotter and drier conditions.

Nonnative Species: Humans introduce different species of animals or plants to new ecosystems, and those nonnative species cause an imbalance in the ecosystem.

Overharvesting: People are overfishing in rivers, lakes, and oceans. People are also eliminating predators (like wolves) to protect livestock, which causes problems with the delicate balance in ecosystems.