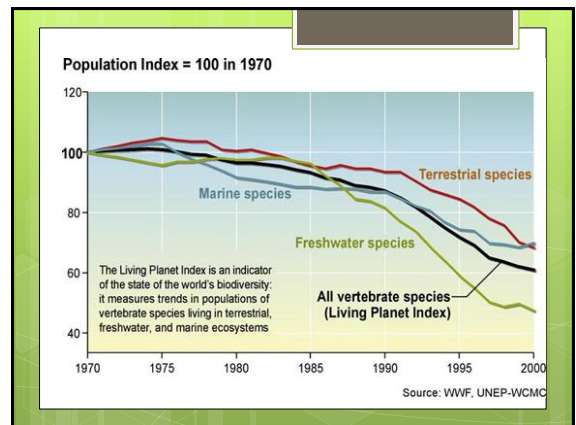
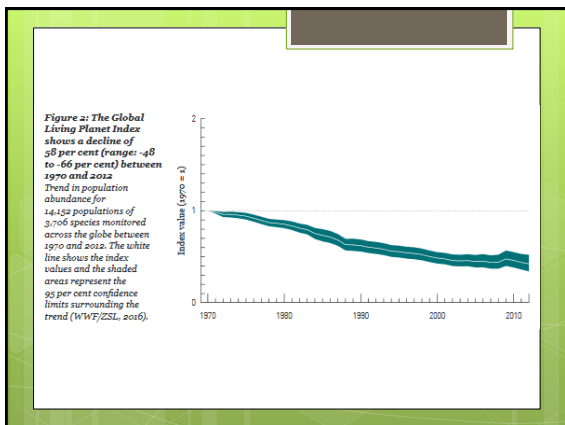
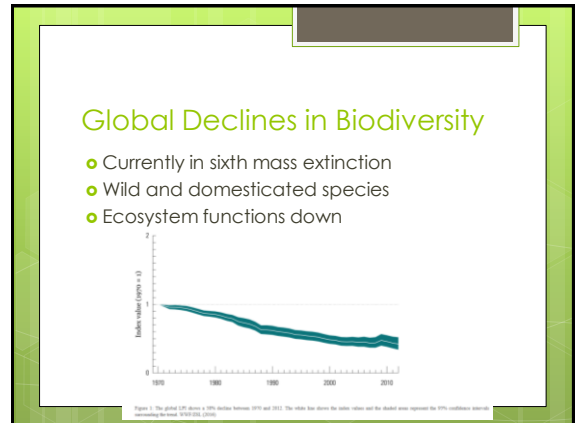
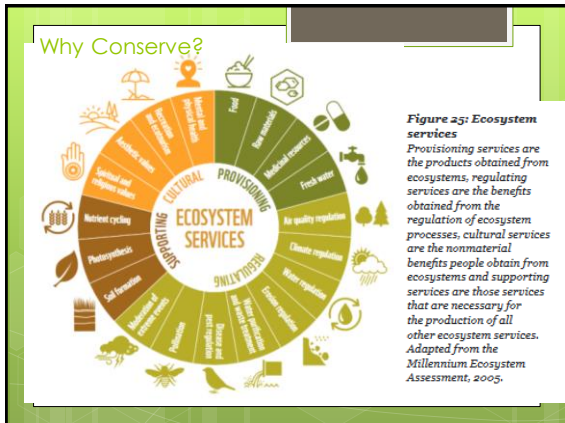
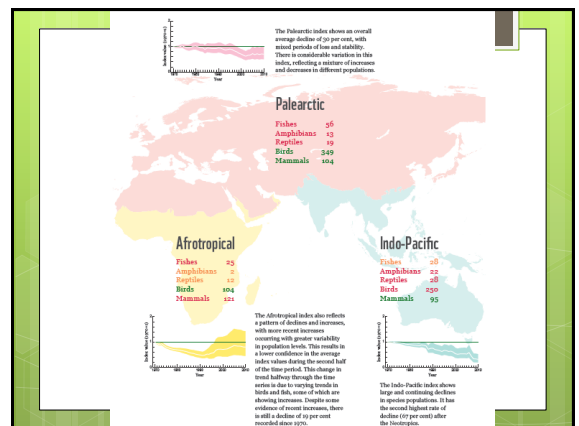
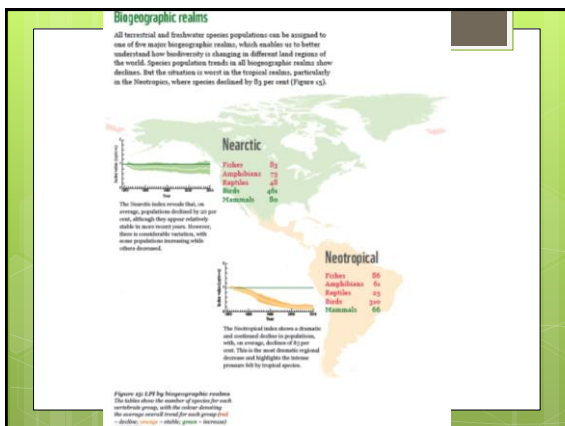
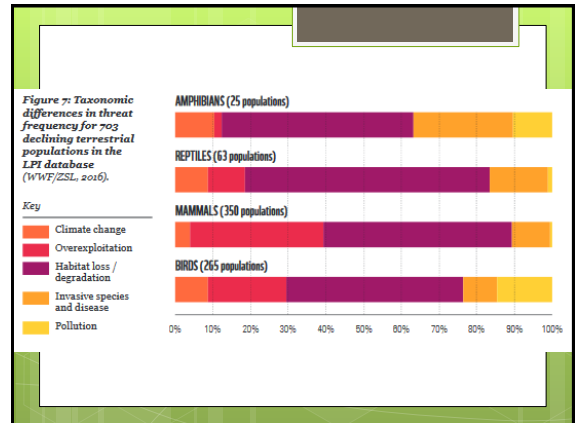
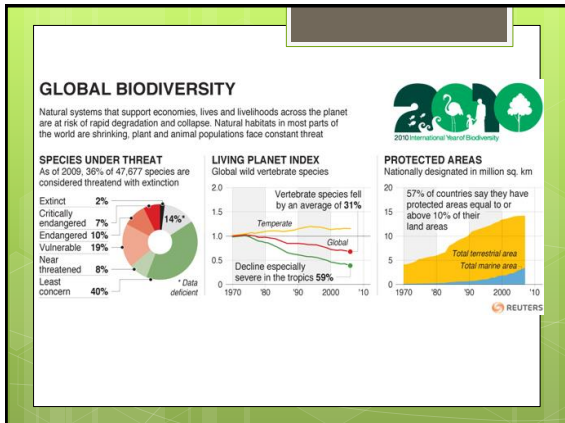
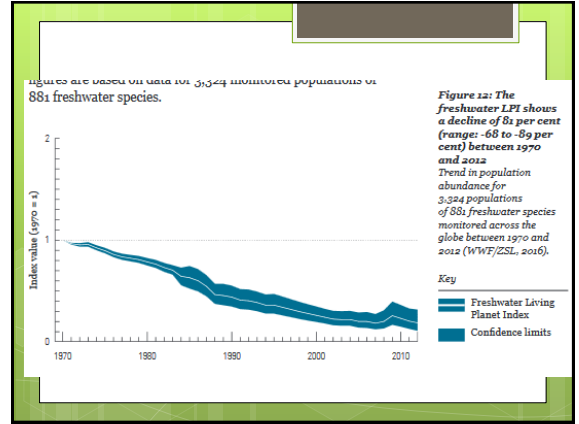
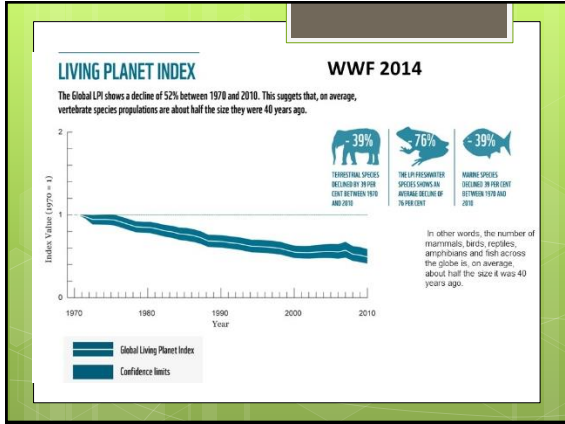


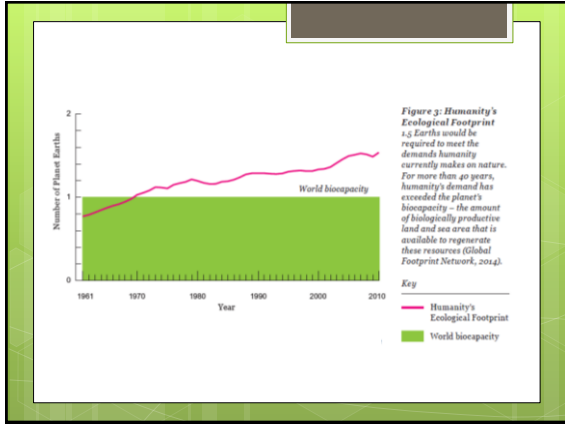
Conservation of the Biosphere

Chapter 18

- ## Conservation efforts often center around...
- Protecting **biodiversity**: the sum total of all living things on Earth
 - Biodiversity has been steadily decreasing
 - Source of...
 - Intrinsic beauty
 - Knowledge
 - Potential technology and innovation







THREATS

Habitat loss and degradation
 This refers to the modification of the environment where a species lives, by either complete removal, fragmentation or reduction in quality of key habitat characteristics. Common causes are unsustainable agriculture, logging, transportation, residential or commercial development, energy production and mining. For freshwater habitats, fragmentation of rivers and streams and abstraction of water are common threats.

Species overexploitation
 There are both direct and indirect forms of overexploitation. Direct overexploitation refers to unsustainable hunting and poaching or harvesting, whether for subsistence or for trade. Indirect overexploitation occurs when non-target species are killed unintentionally, for example as bycatch in fisheries.

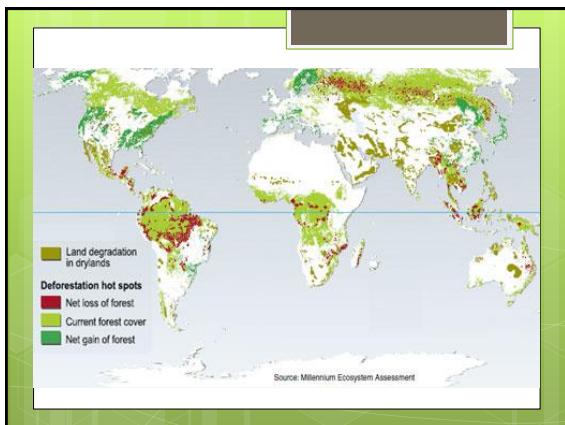
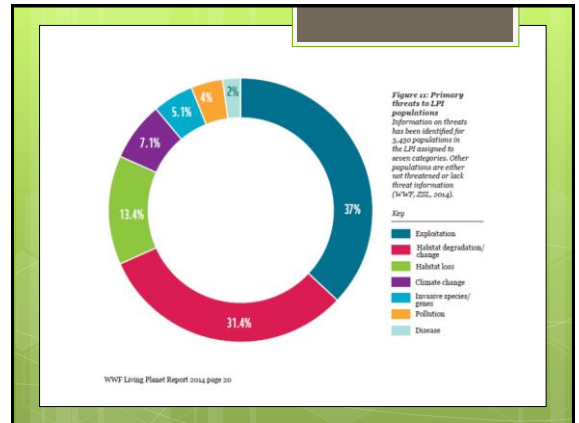
Pollution
 Pollution can directly affect a species by making the environment unsuitable for its survival (this is what happens, for example, in the case of an oil spill). It can also affect a species indirectly, by affecting food availability or reproductive performance, thus reducing population numbers over time.

Invasive species and disease
 Invasive species can compete with native species for space, food and other resources, can turn out to be a predator for native species, or spread diseases that were not previously present in the environment. Humans also transport new diseases from one area of the globe to another.

Climate change
 As temperatures change, some species will need to adapt by shifting their range to track suitable climate. The effects of climate change on species are often indirect. Changes in temperature can confound the signals that trigger seasonal events such as migration and reproduction, causing these events to happen at the wrong time (for example mistiming reproduction and the period of greater food availability in a specific habitat).

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Habitat loss intense



Invasive Species

Overharvesting

Whales
Overharvesting of plankton-eating whales may have caused an increase in plankton-eating pollock populations.

Nutritious fish
Populations of nutritious fish like ocean perch and herring declined, likely due to overfishing, competition with pollock, or climate change.

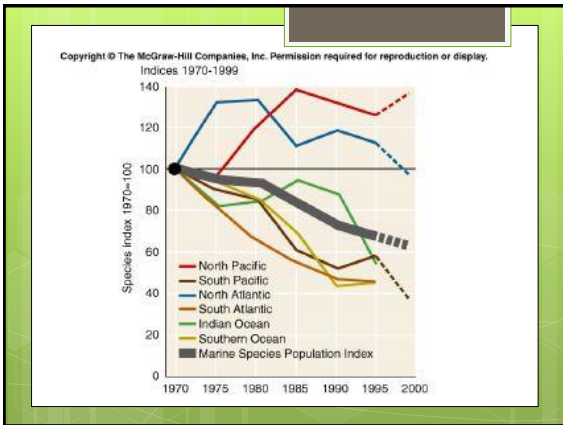
Sea lions and harbor seals
Sea lion and harbor seal populations drastically declined in Alaska, probably because the less-nutritious pollock could not sustain them.

Killer whales
With the decline in their prey populations of sea lions and seals, killer whales turned to a new source of food: sea otters.

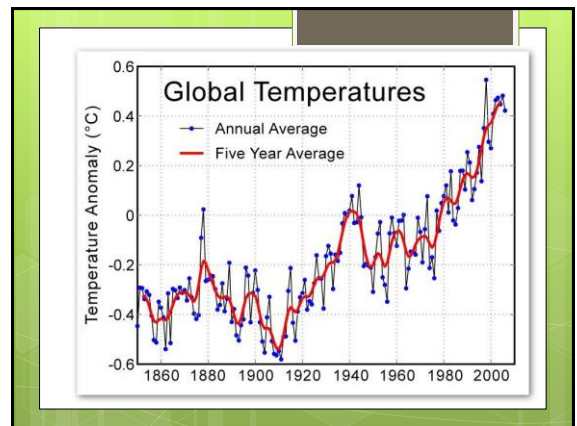
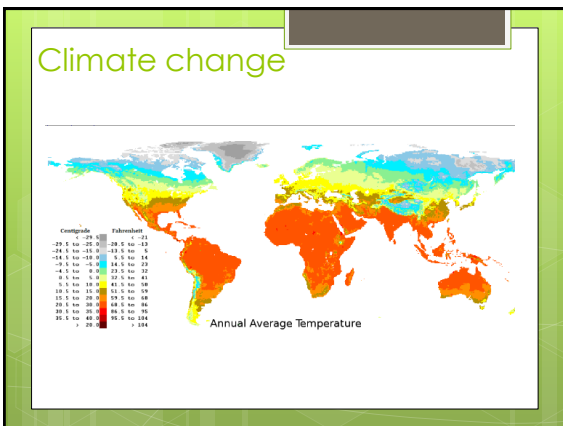
Kelp forests
Overly thinned by the sea urchins, the kelp beds no longer support a diversity of fish species, which may lead to a decline in populations of eagles that feed on the fish.

Sea urchins
Usually the preferred food of sea otters, sea urchin populations now explode and feed on kelp.

Sea otters
Sea otter populations declined so drastically that they disappeared in some areas.



Pollution



What's been done?

- US Legislation:
 - Marine Mammal Protection Act – 1972: cannot kill ANY marine mammals in US or import body parts or products
- Global agreements

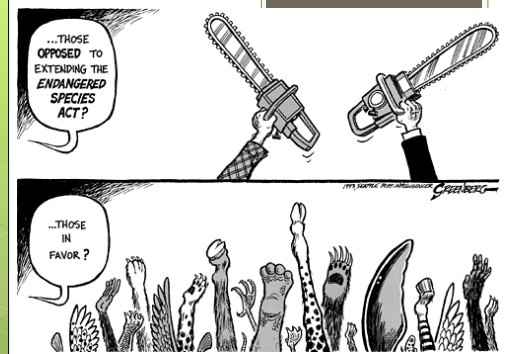


CITES

- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- 1973 to control international trade
- Signed by 175 countries
- **Red list:** list of organisms with either strict limitations or some limitations on trade

Endangered Species Act – 1973

- Implemented CITES
- US Fish and Wildlife determine what's endangered, threatened, at risk
- Government can purchase habitat for these organisms
- Restricts certain human activities in places where endangered organisms live



Umbrella Species

- Organism that when protected, ends up providing protection for many others
- "High-profile"



Protecting Regions

- Protecting resources, tracts of land, etc.
- National Parks, preserves, etc.



Biosphere Reserves

- Protected land that allows some permissible human activity
- Range from no activity to recreation to sustainable harvesting

