

Sustaining Aquatic Biodiversity Chapter Eleven

Human Impacts: Species Loss

- Species Loss and Endangerment
 - Many marine species are disappearing due to _____, pollution and habitat destruction and degradation
 - Freshwater species are more at risk: 33-50% are threatened with _____
 - Aquatic invertebrates and amphibians are also at great risk

Human Impacts: Habitat Loss

- Marine Habitat Loss and Degredation
 - Half of the worlds coastal _____ have disappeared since 1800
 - 70% of coral reefs could be gone by 2050
 - _____ habitats the combined size of Brazil & India are being disturbed or destroyed by trawling and dredging every year (150 times larger than annual forest clear cut)

Human Impacts: Overfishing

- Freshwater Habitat Loss and Degredation
 - 60% of the worlds large rivers are strongly or moderately fragmented by dams, diversions, or canals
- Overfishing
 - Tragedy of the _____ (Hardin, 1968)
 - _____: unintentionally caught species
 - Trawling, Drift Nets & Longlines are particularly destructive

Human Impacts: Pollution

- Nonnative Species
 - Displacement of native species by exotic species
- Pollution
 - 80% of marine pollution comes from _____
 - Ocean Acidification as a result of CO₂ absorption

Important Examples of Freshwater Biodiversity Loss

- Florida _____ due to water diversion, development, agricultural runoff and introduced species (burmese python)
- The Great Lakes due to introduced species (zebra mussel & sea lamprey)
- Lake _____, in east Africa, due to introduced species (Nile Perch), agricultural runoff and overfishing.

Sustaining Wetlands, Lakes, and Rivers

- In order to protect and sustain waterways, several strategies may be used
 - Use comprehensive land-use planning
 - Prevent and control invasion of _____ species
 - Minimize disruption of water flow
 - Protecting and creating _____ sites

Fishing Sustainability

- Methods for using fisheries more sustainably
 - Fishery regulations: set, monitor, and enforce _____
 - Economic approaches: reduce or eliminate _____
 - Bycatch: reduce bycatch levels
 - Protected areas: establish no-fishing marine areas
- Methods for using fisheries more sustainably continued
 - Nonnative invasions: reduce invasions by exotic species
 - Consumer information: use labels that allow consumers to identify fish that have been harvested sustainably
 - Aquaculture: restrict location of fish _____ to reduce damage to coastal environments

Fisheries

- The major fisheries are concentrated in the waters overlying the continental shelves around the world. This occurs for several reasons:
 - inshore waters have much higher _____
 - shallow waters are more accessible to humans
 - _____ waters cannot sustain large fish populations
- The largest catches of fishes occur on the continental shelves of northwest Europe, western South America and Japan.

Major Commercial Species

- Among the thousands of species of marine fishes, only a very few make up the majority of catches in fisheries throughout the world.
- The herrings, sardines, and anchovies account for the largest tonnage of fishes, accounting for almost half the catch. Why?

Maximum Sustainable Yield

- The maximum sustainable yield is the largest number of fishes that can be harvested year after year without diminishing the _____. Over 80% of the world's fisheries are overexploited and the global fishing fleet is 250% larger than needed to catch what the oceans can sustainably produce.

Magnuson-Stevens

- U.S. fisheries are governed by the Magnuson-Stevens Fishery Conservation and Management Act of _____. It states that "Conservation and management measures shall prevent over fishing while delivering optimum yield from each fishery on a continuing basis. _____ in the maximum sustainable yield modified by any relevant economic, social or ecological factors."

Major Commercial Fishing Methods

Bycatch

- Another source of destruction in fisheries is the bycatch. Bycatch refers to _____ organisms and undersized target organisms that are captured by the fishing gear.
- In the shrimp industry, up to 10 pounds of bycatch are discarded for every pound of shrimp caught.

Ghost Fishing

- A largely overlooked problem that contributes to the death of huge numbers of marine organisms is lost fishing gear. Lost _____ or _____ may continue to capture in what is termed ghost fishing. As an example, in the North Pacific, some 30,000 to 40,000 km (~20,000 mi.) of nets are set per day with a daily loss rate of 20%.

Aquaculture

- Aquaculture is the rearing of selected aquatic plants and animals under controlled conditions to increase the amount of food available to humans. The term for marine aquaculture is _____.
 - Fish farming involves cultivating fish in a controlled environment
 - Fish ranching involves holding _____ species (live part of their lives in fresh water and part in salt water) in captivity for the first few years, releasing them, and then harvesting them as adults.

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