PEER Life Science Ecosystems Environmental Protection Notes Outline

**Why It Matters**

* Name three causes of habitat destruction:
  + Industrial pollution
  + Mining
  + Farming
  + Transporting species into habitats where they had not been
* A change in one niche is likely to affect other niches and their occupant species.
* Dumping toxins into our lakes and oceans can concentrate in food webs like mercury in fish.
* A species arises only when there is a great deal of genetic diversity in a population that matches the opportunities provided by a unique and unoccupied niche.
* Human activity is eliminating/removing/destroying many niches by making habitats for our own species. Our selective breeding of plants and animals creates uniformity in gene pools which decreases the rate of evolution of new species.
* Dr. Norman Borlaug was the “father of the Green Revolution” and promoted making the land we already use for farming more efficient rather than destroying more ecosystems for farmland.

**How We Know**

* Farms and lakes that drain from heavily fertilized farm fields can cause overgrowth of certain plants and limit species diversity.
* After being placed in a warm oven (incubator), bacteria will grow over every part of a culture plate except around discs with antibiotics that are effective/ineffective at killing the bacteria. Over time more/fewer antibiotics are losing their effectiveness.
* Rivers carry rich soil at can enrich fields when rivers flood. However, much of this good soil does not settle out until reaching the ocean.
* Name a way to prevent oil spills.
  + Replace old, leaky pipelines
  + Avoid human errors in handling oil cargo
  + Prevent accidents of tankers and barges
  + Prevent leaks and spills from offshore drilling rigs
* Overfishing can lead to extinction because by decreasing the population, you reduce the chances for successful reproduction.

**What We Know**

* Deliberate introduction of species into new environments can lead to unintended consequences. These non-native organisms are called invasive species.
* Goats are an invasive species in the Galapagos Islands that have displaced iguanas and turtles as the primary plant-eating animals, leaving almost no food for these species.
* While fertilizer can help crops grow better and help combat starvation, overfertilization can cause plant life to explode. This overgrowth can choke of waterways or rob the water of oxygen as they rot.
* Overuse of the same antibiotic can act as a natural selection force that could select for the creation of a new species or strain of bacteria that is resistant to that antibiotic.
* Overfishing threatens human food supply but also that of other species. For example, the Russian Brown Bear.
* Oil/gasoline is/is not a renewable resource.
* Give two examples of endangered species that have recovered after conservation efforts:
  + American Bald Eagle
  + Whooping crane
  + Kemp’s Ridley Sea Turtle
* A possibility for reducing fossil fuel use is to add alcohol, made from fermenting grain or crop residues, to gasoline.