**Limiting Factors Homework**

Below is a list of scenarios related to the topic of limiting factors. Answer the questions in regards to these environmental disasters in complete sentences on a separate sheet of paper:

1. In the Northeastern United States, coal mining is a staple industry for power. The smoke burned from coal enters the atmosphere and alters the composition of clouds. While rainfall usually has a pH close to 6.5, the pH in the Northeastern United States is much lower, which can consequently have adverse affects on the chemistry of the soil in the forests of this region.
   1. Name the three abiotic factors discussed in this scenario. What is causing the damage and what is affected?
   2. As the pH of the rainfall gets lower, what happens to the acidity of the rain?
   3. In this example, what is the limiting factor? How do you know?
   4. Once the soil starts to have a pH of about 5.0, researches noticed a stark decline in worm populations. Using vocabulary you have acquired in today’s lecture, what seems to be going on in this particular ecosystem? Represent this in a bell curve similar to what was used in lecture.
2. Coral reefs are an essential part of an aquatic ecosystem. Aside from serving as homes to a plethora of fish species, they also help regulate ocean temperatures. As more coral reefs die due to human activity, the levels of carbon dioxide (CO2) rise in oceans, causing temperatures to increase.
   1. How are CO2 levels and ocean temperature related in this example? What purpose do coral reefs serve?
   2. What abiotic factors are negatively affected by the decline in coral reefs? How are they affected?
   3. Once the temperature rises about 10o C, researches notice that certain species of clown fish begin to die off. Using vocabulary you have acquired in today’s lecture, what seems to be going on in this particular ecosystem? Represent this in a bell curve similar to what was used in lecture.
   4. While the fish mentioned in Part C seem to be dying, scientists see a dramatic increase of another species of clown fish. Why does this change seem to be occurring? Why do you think the population of this species was not high before coral reefs started dying?
3. The Everglades are an essential part of the coastal Floridian ecosystem. It is a strip of lush vegetation between freshwater rivers and the Atlantic Ocean. Human activity has caused the size of the Everglades and the Mangrove Trees that inhabit it to drastically decrease, posing a potential disastrous effect on this ecosystem.
   1. The Everglades are an example of a \_\_\_\_\_\_\_\_\_ Zone. Why is this type of zone important to protect?
   2. The Everglades are also an example of an estuary. What is an estuary?
   3. Why does destroying the Everglades and its Mangrove Trees have an adverse effect on this coastal ecosystem?
   4. What is the limiting factor in this particular example? How do you know?
   5. Using your notes, what is one unique property that Mangrove trees have? If these trees are wiped out, what affect do you think this will have on the freshwater species in the river ecosystems?
4. Southern California does not experience a tremendous amount of rainfall. It is mostly concentrated in the months of December and January. Not surprisingly, this is also the time when many landslides, caused by the erosion of soil, are often seen.
   1. How are landslides caused?
   2. What are the abiotic factors mentioned in this scenario? How are they affected?
   3. What is erosion? What effect does it have on the soil?
   4. What is the limiting factor in this particular example? Explain how it is the limiting factor.
   5. Predict what will happen to the soil in the months following December and January. What effect do you think this will this have on the overall ecosystem?
5. Hawaii is known for its lush vegetation. However, journey up to the top of the Big Island’s active volcano and you will notice a portion of the island totally devoid of life.
   1. What is the limiting factor preventing life from existing in this particular area? How does it pose as a limiting factor?
   2. Aside from your answer in Part A, what other ways can a volcano pose as a problem for life? What abiotic factors are negatively affected in the example you are using?
   3. What needs to happen in order for life to prosper in this particular region of Hawaii? What abiotic factors need to be taken into consideration?
6. The disaster in the Minimata Bay was an environmental catastrophe we have discussed in class.
   1. Briefly discuss what occurred in Minimata. Why did this problem have such a significant impact on the people of Japan?
   2. What was the main abiotic factor affected? How was it affected?
   3. Given the fact that this disaster occurred in a bay, why do you think the effects of this disaster were seen for far longer than would be seen in, say, an ocean for example?
   4. How did this abiotic factor negatively affect the biotic (living) factors around it?
   5. In this example, what is the limiting factor? How do you know?