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|  | Succession In Nature  I chose the topic of succession of life in adverse conditions. The topic was chosen because I have a great concern as to the recovery rate of life after we destroy or otherwise affect the area. I saw what could possibly happen to the environment when we changed the water in our koi pond in our backyard. The water, as we found out later, had a much higher chlorine level that had become toxic to many things in the pond. Many of the plants died and many of the fish did as well. The pond took several months as well as many filters (which would not be present in nature) to recover. This is not an isolated incident of man made wastes having bad effects on the environment around them. Near the turn of the twentieth century, logging in the Appalachians depleted the forest as well as killing off several unique species. After 90 years of slow recovery and regeneration, the loggers have returned again, putting the area under fire again. With a sudden boom in urban sprawl and new coal mines being built, air borne pollutants kill trees and acidify streams (http://korrnet.org/fgs/sabp/indes.html). Even a subtle change in the pH can kill many species of plant and animal alike. On the same token, some environmental agencies say that some of the concerns are not anywhere near as dangerous as others would have people believe. According to the people at the Science and Environmental Policy Project, the issue of the hole in the ozone layer isn�t an issue at all. They claim that the hole would have hardly raised the UV radiation at all. They also claim that the raised level would be the equivalent of driving south from Washington, D.C. to Virginia (http://www.sepp.org/keyissue.html). Still, far more web sites and phone numbers are dedicated to educating the nations of the world about the poor state of our environment. After seeing what had happened to my pond and the quotes of several environmental organizations, I decided to take a look at the results of actual field research to see what the effects were.  I decided that it would be a good idea to see if our actions were having any major effects on the world level. This study of rivers in China over a five year period clearly shows that there is an effect. There are drastic changes all across the board due to pollutants from chemical plants. The pH has risen or dropped one quarter to one half in many of the rivers. It has no doubt had an effect on the plants and animals in the area. The Chinese government responds to over 100,000 complaints of pollution in these areas per year. With a clear continued trend, it seems as though there will be many more complaints coming (http://www.worldbank.org/nipr/data/china/status.html). What does the data mean though? The column next to pH is Suspended Solids. This indicates that there has (per year) been a severe increase in the non-dissolved tonnage of sediment. The next column is Dissolved Oxygen. It represents the amount of oxygen present in the water. High levels would help support more complicated and larger ecosystems. However, most rivers are demonstrating a decrease over the five year period. Clearly, the rivers will be able to support less and less life as time passes. The final column is ammonia in the water. It would be important to have ammonia as it is critical in the nitrogen cycle. However, once again, it is clear that many of the rivers show a drop in ammonia levels. All of these rivers are used as chemical dumping sites somewhere along their bodies. It is clear that the chemical dumping is having effects on the life support of the rivers.  river year PH SS DO COD BOD NH3-N  songhua 1990 7.4 77.2 7.04 128.05 71.82 2.08  songhua 1995 7.43 113.55 7.98 7 2.78 0.293  daliao 1990 7.54 277.9 3.24 33.71 13.24 5.24  daliao 1995 7.09 190.05 6.75 9.65 6.25 4.189  Yellow River 1990 8.26 7088.7 10.2 10.78 2.93 1.43  Yellow River 1995 7.98 4506.6 7.75 6.5 2.75 1.861  Yangze River 1990 7.61 329.75 2.92 0.37  Yangze River 1995 8.05 497.4 7.95 5.4 1.5 0.154  Pearl River 1990 3.92 33.68 2.15 1.8  Pearl River 1995 7.64 64.55 4.65 3.85 2.7 1.648  Huai River 1990 8 91. 3 6.01 7.4 2.78 1.87  Huai River 1995 7.59 65.35 5.9 6.45 6.05 1.992  It is easy to see that these problems are clearly not confined to Pleasanton or the United States. How is succession faring against the onslaught of chemicals and other environmental changes that are occurring so frequently? Not well it would seem. Hardly any species that become depleted ever return to healthy numbers. For instance, the blue whale. It is the largest living mammal on earth. However, it is reported to be in reproductive extinction. This means that, although many are still alive, their birth rate is smaller than their mortality rate, eventually leading to their extinction. How did this occur? Blue whales were once a prize of the hunt on the seas until they were protected. Many other species, like those in the rainforest, will not ever be returning, since they are extinct. But then the question was, "is anything being done to protect the environment and aid in its succession?"  I found that many people and organizations were aiding the recovery and protection of the world�s fragile habitats. The EPA, or Environmental Protection Agency, is a federally funded defender and law enforcer in the United States. They have headed up such research projects as the Action Plan for Beaches and Recreational Waters as well as the Research Project for Fresh Water. After reading about all of the damage that has been done, I wanted to see for myself how life was being effected and if looking to succession was the answer like so many industries suggest.  I was eager to see what the recovery rates, if they even recovered, would be on a lush pond ecosystem under several adverse conditions. I was hoping to learn of how fragile ecosystems are and how close we come to absolutely obliterating them. Is succession successful enough to stave off the environmental changes or is it just too slow? | |
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