Science Fair

Preliminary Annotated Bibliography

Student Name
Date
Title of the Project must be noted in bold on the first line.

List at least five good sources for information. Sources need to be valid sources. For each bibliography source you must include a summary of the information you uncovered in the article. Examples:


In an effort to determine if low pH is a limiting factor in the use of ponds in the Florida panhandle, the authors (from the Department of Biology, Penn State University) examined 115 ponds varying in pH from 3.46 to 8.69. The study and report were funded by and written for the Florida Game and Fresh Water Fish Commission. The ponds on the barrier islands or in coastal areas were the most variable. Ten species of embryonic amphibians were tested for their tolerances to low pH, in contrast to Bradford and Gordon who tested only four species. Their hypothesis that the competitive hierarchy would be reversed at low pH was tested. Two mesocosm experiments were conducted to examine the relative importance of alteration of pH on population and community-level interactions. As predicted, Hyla femoralis, the pinewoods treefrog, was better at the lower test pH, but complex interactive effects also existed. Able to survive and reproduce within a median pH 3.35, this species may be the most tolerant amphibian yet known.


The effects of mine drainage have been studied in a variety of aquatic ecosystems. In this report the authors have examined St. Kevin Gulch, a headwater stream of the Rocky Mountains that receives acid mine drainage and maintains low pH, high heavy metals and high rates of metal hydroxide deposition. Their study focused on plant life (an acid-tolerant alga, Ulothrix sp.,) within the ecosystem versus many of the other authors who focused on amphibians. Data revealed that as pH decreased, structural changes occur within the periphyton communities, as acid-tolerant forms become dominant. The effect of metal hydroxides on periphyton varies by type, with a lower deposition rate of aluminum hydroxides versus iron hydroxides.


To contrast the other reports, and for my own curiosity, this article has been included. Instead of focusing on aquatic plants or animals, the paper zeros in on terrestrial plants, trees to be exact. The authors of this report have conducted research of six different species of trees in a forest in northwestern Connecticut following up on circumstantial evidence that acid rain was responsible for the significant decline in net production at the Hubbard Brook Experimental forest. Sampling locations were established near the base of each tree and pH samples were taken at each horizon. The pH decreased in order with the size of the species suggesting that a species-related pattern was associated with depth. The results of their study suggest that if the sugar maple replaces the hemlock (after the wooly adelgid forces it into extinction) significant changes in soil chemistry including pH levels should follow. This change in soil chemistry could create natural and anthropogenic disturbances on nutrient cycling.