

Effects of Environmental pH Change on Wetland Microbial Communities

Andy M. Le, Emily K. Massingill, Ally M. Wimberly
Department of Biology, Baylor University

Abstract

The Waco Wetlands serves as a habitat to many different plant and animal species native to Waco while also acting as a source of bioremediation for the water flowing in from the North Bosque. Plants and microbes (such as bacteria) are responsible for filtering this water of unwanted chemicals. Bacterial proteins and enzymes perform best in certain pH conditions. Our objective is to find the optimal environmental pH for the Wetlands microbes. By finding the optimal environmental pH for these microbes, we can possibly, safely alter the pH of the Wetland water to make bioremediation by bacteria more efficient.

The students will go about this by, first, obtaining pounds of soil samples and a few Liters of water from the Waco Wetlands. The Nitrogen Concentration and pH level of the Wetland water will be tested. Then, 5 different environments will be created in different containers (2 containers for each environment) varying in pH level. There will be a control environment with the pH of the Wetland water. There will be 2 different environments with a pH lower than the control and 2 with a pH higher than the control. Soil (containing microbes) will be added to each container and the Nitrogen level of each container will be tested. Record Nitrogen levels of each containers every week for the duration of the research project.

The environments that showed the most drastic decrease in Nitrogen content will possess the optimal pH for these wetland microbes. This is due to the increased Nitrogen uptake by the bacteria and the increase in bacteria reproduction.