

Aquatic Freshwater Ecosystems

AP Biology 2016-2017

Lacawac Sanctuary and Biological Field Station

Funded by grants from the Pennsylvania Association of School Retirees
and Lacawac Sanctuary

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Western Wayne High School Advanced Placement Biology Comparative Analysis of Aquatic Ecosystems.

On May 22, 2017 the AP Biology class arrived at Lacawac Field Station. We were greeted by Jamie Reeger an Environmental Educator & Naturalist. Jamie provided students a history Lacawac Sanctuary and Field Station. Students then broke up into groups of three and we headed to Lake Lacawac to begin our research. Students were accompanied by the very knowledgeable educational staff at Lacawac.



Lake Lacawac

Lake Lacawac is a fifty-two-acre lake and is the heart of the sanctuary. It has been called “the southernmost unpolluted glacial lake in North America.”

Studying in the Lacawac Sanctuary and Biological Field Station is a rare opportunity to analyze ecosystems that are largely untouched by pollution and human disturbance.



Macroinvertebrate collection and testing

Students learned to collect macroinvertebrates and classifying them using dichotomous keys. The types of macroinvertebrates that thrive in aquatic ecosystems are good indicators of water quality.

Students documented the macroinvertebrates found and scored the water quality based on these organisms.



Collecting Macroinvertebrates



Macroinvertebrate evolutionary adaptations

Mrs. Reeger helped students to identify and classify the macroinvertebrates. She also pointed out evolutionary adaptations that allow these organisms to survive and reproduce in their environment.



Chemical Testing

Students collected and tested water samples from both Lake Lacawac and the pond. These samples were tested for phosphates, nitrates, pH and dissolved oxygen.

A discussion of the importance of chemical balance within the water of an ecosystem followed a comparison of the lake and pond.



Water Testing

Students discussed the factors that would change the quality of water and how to prevent those factors from effecting the ecosystem. Students reflect that running chemical tests, although tedious, gave them a good indication of the health of the aquatic ecosystems.



Analyzing Pond Characteristics



Water depth collection and Water Clarity

Students used equipment such as a secchi disk to determine water clarity.

Students used thermometers to compare the water temperature at the top and the bottom of the lake and were able to relate this data to dissolved oxygen.



Plankton Collection

One of the highlights of the trip was the opportunity to take row boats out on Lake Lacawac to collect plankton. Students learned to use the collection tools and brought back zooplankton to analyze in the laboratory. Although students had conceptual knowledge of the importance of plankton in an ecosystem food web, they were excited to collect the plankton in the environment and view the plankton in the lab.



Plankton Collection



Analyzing Aquatic Characteristics



Learning from Professionals in the Field of Ecology and Environmental Science

In between research sessions students had an opportunity to hear from Dr. Sarah DeVaul Princiotta, the Director of Research and Education at The Lacawac Sanctuary and Biological Field Station. Dr. Princiotta shared her pathway to her degree and career as well as an overview of her research on protistan dynamics and diversity.



Follow-up opportunities

- Students are working with their groups in class to develop a laboratory report that will present their data and conclusions.



- The professionals at Lacawac have encouraged students to return as they are able and utilize the sanctuary in senior projects, volunteer opportunities and as a potential research center as they continue their education in the sciences.

Thank you!

- Mrs. Jamie Reeger
- The staff at Lacawac Sanctuary
- PASR (Pennsylvania Association of School Retirees) who generously provided a grant to fund this trip.
- Mr. Paul Gregorksi, HS Principal
- Dr. Matthew Barrett, WWSD Superintendent
- Ms. Ellen Faliske, WWSD Assistant Superintendent
- Mrs. Kristen Donohue, WWSD Director of Curriculum
- The Western Wayne School Board