



## HULL SPRINGS 2017

### RESEARCH

Longwood's Hull Springs is dedicated to models of conservation, environmental education, and improving water quality and bio-diversity in the Northern Neck/Chesapeake Bay area. In the spirit of this mission, a number of faculty members in the Department of Biological and Environmental Sciences have launched research projects at the Farm focused on the following:

1. Longwood Environmental Observatory (LEO) employs a network of smart sensors to improve the collection of environmental data, which is wirelessly streamed back to the Farmville campus and broadcast to the public.

This project marries the Department of Biological and Environmental Sciences with the Department of Mathematics and Computer Science, bringing remote sensing technology to environmental studies while improving the collection and dissemination of data.

The sensors monitor soil, water, and air quality. Temperature, turbidity,

dissolved oxygen, algal concentration, and dissolved organic carbon concentration are measured in the water.

A weather station, located at the Yellow House, has a sensor that measures air temperature, wind speed, solar radiation and precipitation levels.

2. The quantity and quality of dissolved organic matter (DOM) exported from Hull Springs before and during Wetland restoration also is being monitored. Increased nutrient loading from agricultural runoff is one of the main causes of hypoxia in the Chesapeake Bay, but excessive loading of labile dissolved organic matter to streams, rivers, and estuaries may also be a contributor. Currently,

there is a lack of data on the quality and quantity of DOM coming off agricultural croplands, which make up about 30 percent of the land in the Chesapeake Bay watershed. Results of this research can lead to better land use planning for the future.

3. The student-centered, long-term monitoring of wetland restoration at Hull Springs examines the benefits of the Farm's restored wetlands. It can take 100-plus years for reconstructed wetlands to function like a natural wetlands, so research began pre-construction and continues through the construction phase and in perpetuity. The idea is to have students train students, so that the research continues into the next century and beyond.



Longwood Environmental Observatory

**WETLANDS MITIGATION BANK**

Our wetlands bank consultant, Angler Environmental, planted 38,650 trees in association with the nutrient bank on March 20-21. There were various, hardwood species planted, including black cherry, white oak, chestnut oak, hazelnut, dogwood, and sycamore, creating a lovely range of color to look forward to each spring and fall! The wetlands mitigation and nutrient bank construction should be completed mid-to late-July depending on weather.

**LUCEE**

The Longwood University Camp for Environmental Exploration (LUCEE) is being held for the second year, July 10-20, 2017. The camp is a successful partnership between Westmoreland County Public Schools (WCPS) and Longwood’s Hull Springs. Designed for rising 4th and 5th graders, the day camp offers a hands-on learning experience for the WCPS students, with a goal of sparking their interest in science “naturally.” This year’s camp is being led by Barrett Nicks, a May Longwood graduate with a degree in Environmental Science, joined by 6 other LU students volunteering as



LUCEE Participants

teachers/counselors. These camp leaders will be working side-by-side with certified WCPS teachers for the two weeks of activities, which include lesson plans that address SOLs. At least 60 children are expected to attend the camp.

**SUMMER BRIDGE PROGRAM**

The first cohort of thirteen LIFE STEM Scholars will arrive on the Longwood campus this August and will engage in a week-long summer bridge program at Hull Springs. Through a week of guided inquiry and explorations with their faculty mentors at Hull Springs and other locations around the Chesapeake Bay, in-

cluding a trip to Tangier Island and an excursion with a working waterman, these new students will gain insights into the issues facing the health of the Bay. At the same time, they will be practicing skills and habits of mind that will serve to pave the way for a successful college career. Hull Springs is an ideal location for these new students to bond as a group and be introduced to college life. Longwood University’s LIFE STEM Program is funded through the National Science Foundation, and offers wrap-around support to talented science students. Through innovative coursework, dedicated faculty mentors, and financial assistance, LIFE STEM Scholars will grow as scientists and citizen leaders.

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