

## 2017 Abbott Marshlands Wetlands Award – March 14, 2017

The 2017 **Abbott Marshlands Wetlands Award\*** was won by **Sonja Michaluk**, a 9<sup>th</sup> grader from Hopewell Valley HS, whose research involved Jacobs Creek. Her project title was: “Networked Measurement of Ionic Strength to Monitor Waterway Health: The STONE Stream Observation and Networking Equipment”.



*Sonja Michaluk with an unidentified interviewer.  
(Photo by Peter Borg, Rider University)*

### **Abstract**

Stream health is critical to our environment. Monitoring helps inform decisions and warns of environmental incidents and degradation. However monitoring can be costly and time consuming, requiring expensive equipment and personnel on site to operate it. By creating remote monitoring systems that are cost effective we can better make decisions. The SStream Observation and Networking Equipment (STONE) is a device intended to be low cost enough units to be left in the field, with the capability to upload data to a web site. The STONE measures Ionic strength, which is the sum of cations and anions in the water, and an indicator of a broad range of freshwater problems. Ionic strength can be due to nitrate, phosphate, sodium, calcium, or magnesium, and can indicate problems such as nutrient pollution and road salt runoff. A \$35 raspberry pi computer with wifi capability combined was combined with an analog to digital controller and components salvaged from an ohmmeter. Resistance measurements are used to calculate ionic strength. Sensor controls were programmed in Python. Information is posted to a web site to inform the public on ecosystem status.

**\*Abbott Marshlands Wetland Award** – is given to the Mercer County science fair project that best addresses: wetland ecology, wetland organisms, wetland issues and/or was carried out at the Abbott Marshlands. This award, given for the first time in 2015, is intended to raise awareness of the unique opportunities offered for science study at the Abbott Marshlands and is a collaboration between the Friends for the Abbott Marshlands and the Tulpehaking Nature Center.

The Mercer County Science and Engineering Fair is held in March at Rider University. The 2017 award ceremony was canceled due to the snowstorm.

NOTE:

Interested high school students, science teachers, and parents see:  
[www.abbottmarshlands.org](http://www.abbottmarshlands.org) for information about the marshlands; for suitability and information about possible projects, contact [info@abbottmarshlands.org](mailto:info@abbottmarshlands.org).

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