A call for citizen scientists

Boyne River experiment asking for help with data collection

Lindsay Gingrich (231) 439-9353 - lgingrich@petoskeynews.com   Jul 28, 2017

Lindsay Gingrich/News-ReviewDamon Hall Ph.D, an assistant professor for the Center for Sustainability at Saint Louis University texts in the Boyne River water level to the CrowdHydrology network on Thursday, July 27.

Lindsay Gingrich/News-Review

BOYNE CITY — Researchers are using technology to make everyday-citizens scientists by asking them to observe and collect data, using their cell phones, along the Boyne River.

The Boyne River will be the subject of a National Science Foundation study for the next two years as researchers collect data on the rivers fluctuating height and temperature, while also capturing data on crowd sourcing.

"We propose to develop and evaluate a methodology that integrates citizen-collected data with high performance super computers to simultaneously advance both the science of hydrological modeling and engagement research approaches for increased data collection," according to the research proposal.

Currently, citizens have the opportunity to head along the river and locate five different data collection sites. The sites are located in Boyne City's Old City Park at the East Street Bridge, at the Boyne River Nature Area at Boardwalk 1, Dam Road downstream of the crossing, down Spring Brook Road under the bridge, and down Boyne Mountain Road downstream of the crossing, according to Damon Hall, a researcher on the project and assistant professor for the center for sustainability at Saint Louis University.

There will soon be an additional three sites that are controlled automatically, and send data to the server at 15 minute intervals, and the sites will receive an attached thermometer for the collection of water temperatures.

The sites are easily identified and feature a large ruler sticking in the water with a plaque located nearby with information on how to input the data. Participants simply have to input the water height and few minutes later, it will be recorded and live for viewing, according Darren Ficklin, one of the researchers and an assistant professor in the department of geography at Indiana University.

In addition to collecting important information on river flow data such as rising and falling levels and temperatures of the river, the researchers will also be able to deduce certain habitats and health of the waterways.

"We're using field fish sampling to try and figure out what some of the habitat niches are within this stream, it could help people predict two to three days of what the out flow and temperatures will be like," Hall said.

The grant backed study will ultimately showcase innovative ways to collect data, store it, and evaluate it all while utilizing crowd sourcing. The information will be sent to a network called CrowdHydrology, a data collecting platform.

"These citizen science data will then be transformed and input into an eco-hydrological model of real-time simulations of streamflow, stream temperature, and aquatic species habitat," the proposal said.

Participants can look for the sites as though they are out geocaching, having a fun time while helping to collect important data on their waterway and local community.

"This is obviously an important river for the community. We don't have a baseline data like this, it's something we haven't known before so understanding how the levels are changing through time is very important," said Christopher Lowry, one of the researchers and assistant professor with hydrology for University at Buffalo, the State University of New York. "Knowing what's going on now, let's us have a pulse of what's going on later and these are great conditions in a very important habitat in a large watershed."

The scientists are looking for help from the local community in order to collect as much data as possible to give the network as many readings as possible to collect correct data.

Data collected can potentially give a forecast to the community information on when certain fish species may be present, what temperatures may be or if water levels may rise or fall. For example, pending success of these trials, the system can be beneficial to areas prone to flooding such as the Mississippi River, or areas that see drought like California.

The Little Traverse Bay Bands of Odawa Indians and Friends of the Boyne River have been working closely with the researchers, as well as Tip of the Mitt Watershed Council, University at Buffalo Department of Geology, USGS Michigan Water Science Center, and Trout Unlimited.

Originally, the sites were placed in 2014 to correlate information along the river to figure out what the outflow into Lake Charlevoix was due to excessive water usage along the river and fracking practices, according to Ed Strzelinski, member of the Friends of Boyne River.

"Now, with the grant, they've moved from just outflow predictions to being able to predict aquatic species habitat, and that's all using citizen scientist collected data," Strzelinski said. "The more information we (citizens) feed into these computers the better the model will be."

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