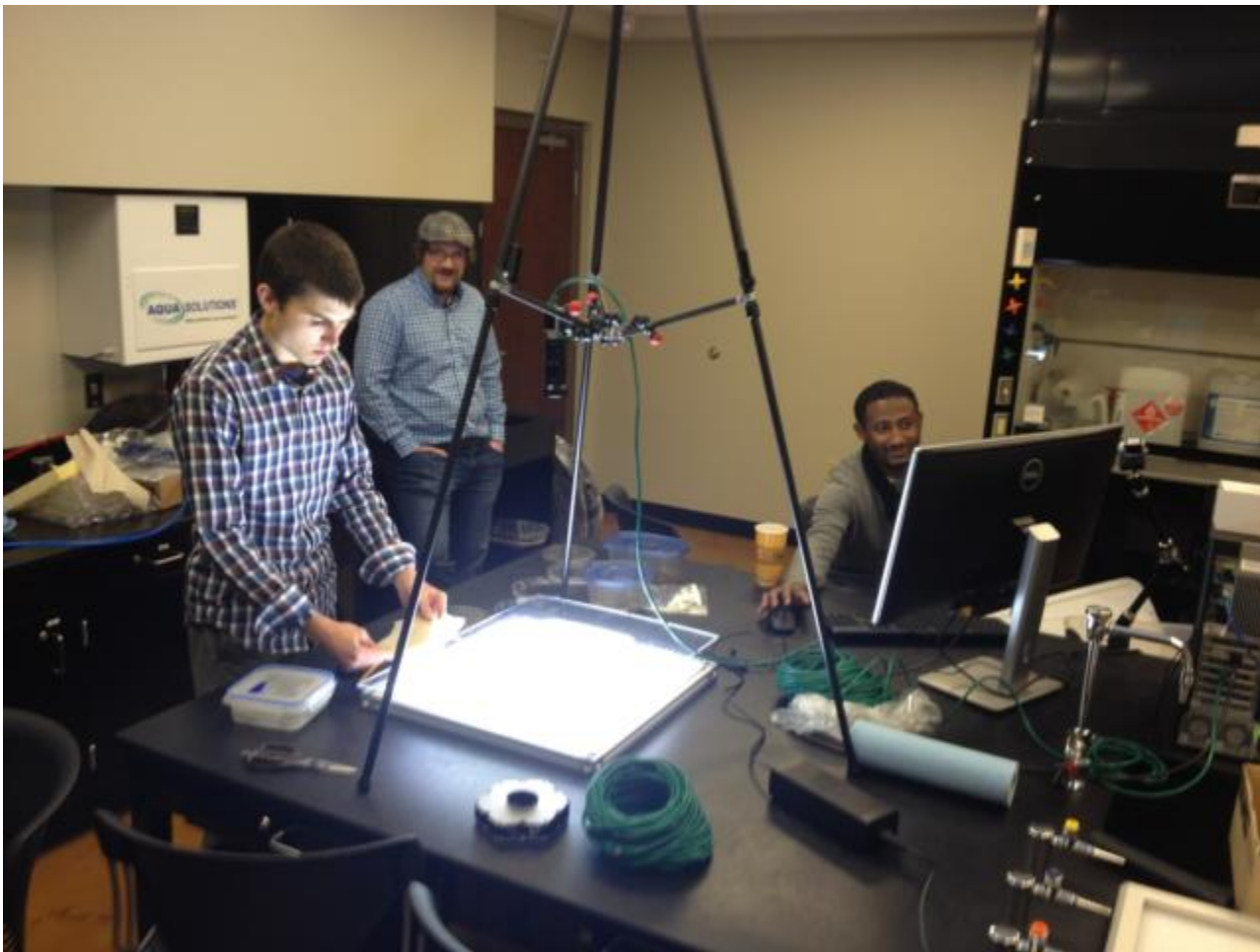


# Dell Ecology Lab and Fab Lab team up for innovative research

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**GODFREY – The National Great Rivers Research and Education Center (NGRREC)** has completed renovating space for Community Ecologist Anthony Dell's new, state-of-the-art ecology lab.

Research in the Dell Ecology Lab addresses basic and applied questions in ecology, with a particular interest in species interactions and the role of the physical environment.

Dell's lab focuses on the interaction between human and natural systems, particularly in the context of large river ecosystems, with the goal of producing science that informs policy and management.

A range of research methods are being used in the lab, including field observations and experiments, analysis of existing published data, and laboratory experiments. The scientists are particularly interested in utilizing emerging technologies to address problems in ecology, such as using computers to automatically identify species from videos and to determine what species are doing in the video, such as foraging, migrating, sleeping, etc.

"Such approaches promise to revolutionize the science of ecology," Dell said.

For example, the lab contains a large walk-in chamber with five smaller reach-in chambers in which different environmental conditions can be controlled, such as temperature, light, and humidity. These chambers allow scientists to study how variations in environmental conditions, such as temperature, can affect how species move, behave and interact. This type of research is especially important given the current human-induced climatic changes that are being observed around the globe.

Fortunately, Lewis and Clark Community College's St. Louis Confluence Fab Lab opened just in time to help Dell and his team of researchers develop prototypes for experimental equipment, and create adaptations for existing equipment.

The 5,000-square-foot Fab Lab, located at L&C's N.O. Nelson Campus in Edwardsville, is comprised of industrial grade design, fabrication, finishing and assembly tools for many different materials and processes. Faculty, students, businesses and community members can become members and utilize the lab to explore and innovate.

"The Fab Lab is a state-of-the-art facility," Dell said. "It is a great place to design and develop prototypes and modifications for our research. Usually this process would be very expensive, but the Fab Lab makes it affordable."

Dell Ecology Lab Post-Doc Carl Cloyed worked with the Fab Lab to create modifications for tracking stations, which will be utilized in upcoming field work to study how freshwater species acclimate to rapidly changing temperatures.

"The Fab Lab is not only great as a physical resource but also as an intellectual one," Cloyed said. "The staff was really helpful, curious and interested in what we are doing and suggested materials and processes."

Cloyed's tracking stations will allow him to study the species and habitats of geothermal streams in Iceland this summer. He is particularly interested in predator/prey activity and the effects of temperature on the ecology of aquatic organisms.

Dell Ecology Lab Researcher Post-Doc David Daversa has also been working with the Fab Lab, which has already helped create two prototype arenas for studying the behavior of salamanders. Daversa said they may be one prototype away from perfecting the product, which eventually will be mass produced.

"The Fab Lab is bringing our concepts to life," Daversa said. "The professionals and students there bring a different perspective and expertise to the table. Having these new technologies at our fingertips allows us to address questions in ecology that would not be possible otherwise."

Daversa's arenas will help him study the dispersal process of young salamanders in ponds around the Mississippi River. His research aims to help inform decisions on which areas to conserve and how to manage land in a way that ensures the species survival.

The Dell Ecology Lab scientists are looking forward to working even more with students in the Fab Lab.

"My goal is to get even more students involved, especially at the undergraduate level and from Lewis and Clark Community College, which supports both NGRREC and the Fab Lab," Dell said. "Essentially, we would be their customers, where by students can help us design prototypes, choose quality materials and develop the most inexpensive processes while furthering their engineering expertise."

For more information on the Dell Ecology Lab, visit [www.dellecologylab.org](http://www.dellecologylab.org) or [www.ngrrec.org](http://www.ngrrec.org). To learn more about the St. Louis Confluence Fab Lab, visit [www.lc.edu/fablab](http://www.lc.edu/fablab).