

**Idaho Water Resources Research Institute
University of Idaho**

**Annual Technical Report
2018**

General Information

Products

Puri, Roshan (2019) Evaluating the Sensitivity of Residential Water Demand Estimation to Model Specification and Instrument Choices. Master's Thesis

Maas, Alexander and Koroles Awad (2019) Consumer Preferences for Alternative Water Supply Projects. Working Paper Series

Bean, Alycia, 2018, Ph.D. Dissertation, Understanding Idaho's Adaptive Capacity to Future Water Resource Change: A Legal and Political Analysis of Climate Informed Drought Planning in Idaho, University of Idaho

Information Transfer Program

Maas, Alexander and Koroles Awad (2019) Consumer Preferences for Alternative Water Supply Projects in the Palouse. Presentation to the Palouse Aquifer Basin Committee

Puri, Roshan (2019) Evaluating the Sensitivity of Residential Water Demand Estimation to Model Specification and Instrument Choices. Presentation at Western Agricultural Economics Association Annual Meeting

Puri, Roshan (2019) Evaluating the Sensitivity of Residential Water Demand Estimation to Model Specification and Instrument Choices. Presentation at University Council on Water Resources Annual Meeting

Maas, Alexander (2019) Interviewed for "In need of water, an Idaho town turns to its neighbors" by Emily Benson, in High Country News

Project has involved interaction with the Idaho Department of Water Resources. Three additional graduate students were also funded.

Student Support

Funding was provided for 2 MS students and 1 PhD student. Additional funds for these students were provided by the Agricultural Economics and Rural Sociology Department.

A total of \$15,254 was matched through salary.

Notable Achievements and Awards

The 104b grant received by this PI served as seed money for a successful grant to the Idaho Higher Education Research Council. The project, entitled "Sustaining the Competitiveness of the Food Industry in Southern Idaho: Integrated Water, Energy, and Waste Management" was funded for \$2.1M for three years (July 2018-June 2021). This project involves 3 institutions in our state and supports 10 graduate students and 10 undergraduates each year.

Projects

Autonomous Robotic Submarine for Data Collection

Project Type: Annual Base Grant **Project ID:** ?

Project Impact: The goal of the Catfish Autonomous Robotic Submarine Project is to enable automated geolocated data collection from lakes and rivers from a variety of depths and to enable geolocated sample retrieval. During the past year, we have had three undergraduate students working on this project during the school year and two undergraduate students during the summer on a research fellowship from the University of Idaho. We have two papers published by the summer students in the research forum associated with the fellowships. Our major accomplishments over the past year have been: Acquisition of two additional submarines We now have: • The Catfish – Good for 6 hours of data acquisition and able to dive to 2000 ft • The Sunfish – Good for 6 hours of data acquisition and able to dive to 300 ft – includes robotic arm • The Minnow – Powered by cable – able to dive to 50 feet – easily launched by hand All three of these submarines use the same hardware and software architecture so we can develop in parallel and with redundancy in the system. Autonomous Software Library for the Catfish Architecture We have now developed an Application Programming Interface (API) that allows us to programmatically control and recover sensor data in real-time and for storage aboard the submarine. This API allows us to write software that will do data collection in grid formats that will be geolocated and at programmable depths. First Automated Geolocated Data Collection We have taken our first sets of water column sensor data and entered into ARCGIS.