Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Scenario Analysis Using Climate Knowledge for Fish and Wildlife Managers: Exploring and Integrating Artificial and related Probabilistic Graphical Methods

Discipline: Natural
Type of Project: Technical Assistance
Funding Agency: USGS
Other Partners/Cooperators: Montana State University
Effective Dates: 3/15/2012 – 3/14/2013
Funding Amount: $44,944

Investigators and Agency Representative:
USGS Contact: Northern Rocky Mountain Science Center, 2327 University Way, Suite 2, Bozeman, MT 59715; 406-994-4293

Investigator: John Sheppard, Associate Professor, Computer Science, Montana State University, Lewis Hall 301B, Bozeman, MT 59717; 406-994-4293; john.sheppard@cs.montana.edu

Project Abstract: The MSU and USGS investigators will explore scenario analysis in which they will apply domain knowledge to predict effects of various conditions, both controlled and uncontrolled, on a set of variables associated with a landscape-scale problem. Regularly, conditions and situations being predicted is to identify the nature of uncertainty as related to dynamic conditions to guide decision making. To date, few computational approaches have been brought to bear on the scenario analysis issue other than statistical and simulation-based approaches. Recent advances in artificial intelligence (i.e.) probabilistic graphical models, fuzzy systems, neural networks, and biologically-inspired algorithms) now offer alternative for providing computational tools to support scenario analysis with an emphasis on decision support. In exploring this subject area, the goal is to determine if there is a core of scientist that can compromise a research and extension team to foster decision analysis and support related to climate change and fish and wildlife management. Explore and identify decision of fish and wildlife field managers that have a nexus and need for climate information and examined how those decisions are made. Once these two items have been addressed, would then develop computational scenario analysis methods and tools of use to fish and wildlife field managers for integrating climate information into their activities.

Outcomes with completions dates: September 30, 2016

Keywords: computation approaches, artificial intelligence, climate, decision making, fish and wildlife managers, USGS, Montana State University