

An experimental and modeling approach to predator-prey dynamics: identifying limitations of predator performance in high desert impoundments.

Dates:

2010-2012

Abstract:

The lands of the Uintah and Ouray Reservation in northeastern Utah are home to a series of small, high desert impoundments. These waters have been stocked with a variety of fishes annually with little understanding of biotic or abiotic conditions that limit fish growth and performance. During summer 2010, we undertook a pilot study of seven small impoundments on the reservation, and completed comprehensive field monitoring of fisheries and limnological information, in order to design a greater study of predator-prey interactions. Results from this pilot study indicated several predator-prey interaction hypotheses which we tested during the 2011 field season. A controlled field experiment was implemented using lake divider curtains and forage fish additions to examine limitations of predator growth and performance. We are also developing a foraging model to investigate and quantify visual foraging efficiency of predators between stable and dynamic systems. This suite of work will improve our overall understanding of aquatic predator-prey interactions with the specific goal of assisting the Ute Tribe Fish and Wildlife Department in establishing an improved sampling protocol, a more cost and biologically efficient stocking program, and a better overall understanding of the waters on the Uintah and Ouray reservation.



Funding:

Ute Indian Tribe Fish and Wildlife Department, US Geological Survey – UCFWRU (in-kind), USU Ecology Center, USU Graduate Student Senate

Investigators:

Phaedra Budy, Principle Investigator, US Geological Survey – UCFWRU, USU- Dept. of Watershed Sciences

Gary P. Thiede, Fishery Biologist, USU- Dept. of Watershed Sciences

Stephen Klobucar, Graduate Research Assistant (M.S.) USGS – UCFWRU, USU- WATS {expected graduation, Fall 2012}