



Ecosystem Science for Now and the Future: Cooperative Fish and Wildlife Research Units Address Real-World Issues

Coop Units are a stellar example of beneficial state and federal cooperation *and* saving money. This program not only leverages, by more than 3-fold, each federal dollar invested in it, but it also provides solid science to solve real-world issues while training graduate students in wildlife and fisheries.

This 75-year-old program is highly regarded by the states (98 percent of those who use the Coop Units said they'd use them again) and other cooperators because they work closely with the units to identify and prioritize research that is important to them and the issues they face every day. Consequently, the Coop Units are a win-win for everyone: local, state, federal and nongovernmental agencies receive, at a low cost, scientifically credible answers to their challenging research questions (about 1,000 projects are active now); 500 graduate students a year receive outstanding training by USGS scientists; and local, state, and federal wildlife agencies end up hiring these highly trained and sought after wildlife and fisheries professionals into their workforce.

How is Coop Unit research used? A 2010 survey of cooperators said that they use Coop Unit research to manage habitat and species, to monitor key species, and to plan for the future. For example, Coop Unit science is vital in the cooperative state and federal management of sport hunting for waterfowl. The Units played a major role in developing a science-based approach to harvest management that has led to a streamlined and more effective coordination among federal, state, and public management groups.

Research Examples

How Best to Manage Elk? Elk are an iconic species in the West and an important game species as well. As part of a large multi-state, multi-agency project, scientists and graduate students at the Montana Wildlife Unit are investigating the importance of different factors that contribute to elk mortality across five states in the northwestern U.S. The results of this in-depth collaborative work will be used by state management agencies to help them better evaluate trade-offs among different elk-management strategies, including harvest and predator and habitat management.



Elk in Wyoming (Jake Powell, WY Coop Unit).



A PIT antenna located at a notched dam will record movements of tagged fish in the river (Josh Raabe; NC Coop Unit).

How do Fish Respond to the Removal of Old Dams?

Dams and other barriers are widely thought to have caused migratory fishes to decline in abundance because of lack of access to their spawning and rearing habitats. However, the extent to which these declines can be reversed by removing derelict dams is largely unknown. Coop Unit scientists in North Carolina and Maine are helping state and federal governments answer this question by assessing how fish communities respond to large-scale restoration efforts, including the removal of dams. Initial results from the North Carolina study provide strong evidence that migratory fish populations benefit from the removal of dams. This information will be used by state and federal agencies along the east coast that are responsible for restoring populations of migratory fishes and for making decisions on removing or re-licensing aging or obsolete dams.



A Louisiana Coop Unit graduate student conducting research on oyster reefs (Megan LaPeyre, LA Coop Unit).

How Should We Manage a Devastating Rainbow Trout Disease? *Myxobolus cerebralis*, the parasite responsible for whirling disease, has caused widespread population collapses in economically important wild rainbow trout populations throughout the intermountain West. Researchers developed disease-resistant rainbow trout, which are being considered as a potential alternative for stocking in places where whirling disease is present. However, little is known about how these strains will survive and reproduce when stocked in streams and rivers. Consequently, the state of Colorado asked scientists from the Colorado unit to evaluate the success of resistant rainbow trout introductions in Colorado and evaluate brown trout removal as an additional management option for the disease. The state agency will use these results to make decisions on how to best manage waters infected with whirling disease.

How Did and Will the Gulf Oil Spill Affect Wildlife and Fisheries? After the 2010 Gulf of Mexico oil spill, Coop Unit scientists and graduate students were immediately on the scene, providing much-needed scientific expertise and assis-



The Colorado Unit is evaluating survival and growth of stocked rainbow trout that are resistant to whirling disease (Dana Winkelman, CO Unit).

tance to their partners in the Gulf States and the Department of the Interior. Louisiana Unit scientists immediately collected data to document oyster population health, the status of resident reef fish communities, and the species that inhabited the reef. The researchers also collected baseline information to use in future assessments by the state to document short- or long-term changes in these economically and ecologically important species or in the entire reef system. In cooperation with state and federal agencies, the Florida Unit began a research project on nesting loggerhead turtles to collect physiological data and tracking information, which will be important for assessing possible effects of the oil spill on turtle health, migratory pathways, and foraging areas in the Gulf of Mexico. Lastly, South Carolina Coop Unit scientists are assessing potential effects of the oil spill on colonial waterbirds such as black skimmers, brown pelicans, and great egrets. This research will not only provide DOI with estimates of survival of colonial waterbirds that are exposed to oil in the Gulf of Mexico, but it will also help managers predict future trends in these bird populations.



Satellite tracking will allow the state of Arkansas manage mallard ducks (David Kremetz, AR Coop Unit).

How Can We Better Manage Declining Mallard Populations? The mallard harvest in Arkansas peaked in the late 1990s and has declined since. In response to hunter concerns and questions, the Arkansas Game and Fish Commission (AGFC) began a long-term satellite telemetry project on mallards in 2004. Scientists from the Arkansas Unit are working closely with the AGFC on a project to describe the seasonal distribution, movements and habitat use of migrating mallards. Results from these analyses will enable the state game commission to identify the likely causes for the decline in mallard harvest and to pinpoint changes in migration and wintering locations that will be used for developing future harvest management strategies.

For more information

visit <http://www.coopunits.org/Headquarters/> or contact

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