COOPERATIVE RESEARCH UNITS 2007

PROGRAM YEAR IN REVIEW

For the majority of Fiscal Year (FY) 2007, the Cooperative Research Units Program (CRU) operated under a continuing resolution, and the program faced significant uncertainty regarding the FY 2008 budget process. The principal focus of budget planning continued to be the large number of unfunded vacancies, along with a critical analysis of operational expenses, program support activities, and support for CRU minority development programs.

The omnibus appropriations act that was signed by the President early in FY 2008 provided additional funding for CRU. The increased funding brought with it additional opportunities to provide operational support to the Units and invest in program activities. Further details on priority activities to be supported with the additional funding are outlined below.

FY 2008 OMNIBUS APPROPRIATIONS ACT

As FY 2007 came to an end and FY 2008 began, President Bush signed the FY 2008 Omnibus Appropriations Act, which included a Congressional add for CRU of $1 million above the President's FY 2008 request. However, the Act also included a negotiated funding reduction across the Department of the Interior (DOI), including $0.25 million for CRU. After accounting for funds to cover uncontrollable but mandatory cost increases, this left CRU with a budget for FY 2008 of $16.174 million. That represents a $1.41 million increase over the FY 2007 enacted budget (see table below).

The additional funding for FY 2008 allows CRU to:

- initiate and complete the hiring of an Assistant Unit Leader to fully staff (for the first time) the Nebraska Unit at the University of Nebraska, Lincoln;
- initiate a second hiring action to bring another unit to full staffing;
- increase the ability to refill existing positions when they become vacant through retirements;
- partially restore federal operational funds to the Units to leverage existing state and university cooperator contributions; and
- forestall the erosion of critical internal program functions, such as support to minority and diversity training programs and capital investments in research equipment.

FY 2009 PRESIDENT'S BUDGET REQUEST

The FY 2009 President's budget request of $15.41 million is $0.764 million less than the FY 2008 enacted budget. Based on this request, current CRU planning anticipates a continuation of restrictions on Unit staffing and operational support. Contingencies have been built into the existing FY 2008 operational budget to maintain program solvency, should the President's budget request be enacted by Congress.

CRU BUDGET 2007 – 2009

FY 2007	
Enacted	$14,764
FY 2008	
Fixed costs	+$666
President's request	$15,430
Congressional increase	+$1,000
DOI reduction	-$256
Enacted	$16,174
FY 2009 (*proposed action*)	
Fixed costs	+$275
Eliminate Congressional increase	-$984
Travel reduction	-$55
President's request	$15,410

Figures shown in thousands.

FY 2007 PROGRAM PERFORMANCE

In FY 2007, CRU continued to be highly productive in scientific, academic, and outreach activities, even in the face of reduced scientific staffing and operational capacity. The program regularly delivers about 200 scientific publications and over 30 workshops and training courses. CRU continues to provide ongoing training for over 500 students, graduating about 90 students with advanced degrees in fish and wildlife conservation and natural resources science. The program activities also involve Unit sponsorship of education programs for minorities that are underrepresented in the federal workforce.

For FY 2007, over 1,000 research projects were ongoing, representing a mix of research, monitoring, and technical assistance to federal and state partners. In FY 2008 and beyond, CRU expects to continue this strong record of research and service to state and federal natural resource agencies.

Dana Winkelman/CO Unit

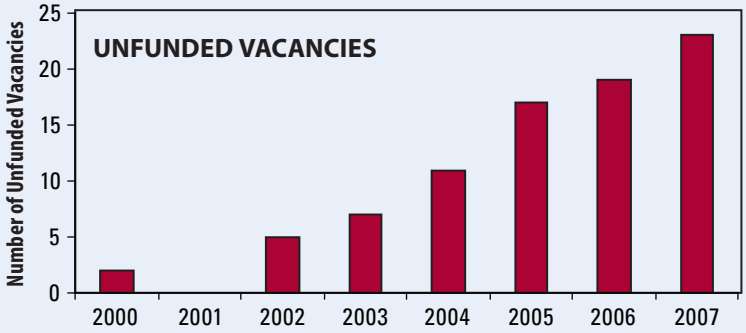
Colorado Unit technician Mary Pearl Murphy, Colorado Division of Wildlife biologist Kevin Thompson, and Unit Leader Dana L. Winkelman prepare *Tubifex tubifex* worms for an experiment in Spring Creek, Colorado.

Ellen Martinsen/VT Unit

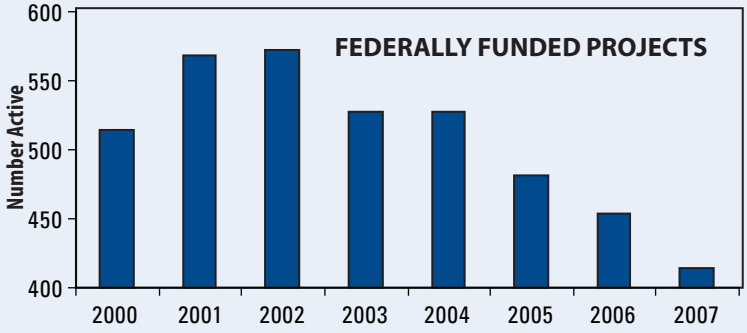
Savannah sparrow captured in grassland bird study led by Therese Donovan and Noah Perlut of the Vermont Coop Unit.

UNFUNDED VACANCIES

Under the constraints of the FY 2007 enacted budget, the number of unfunded vacancies in the CRU program increased from 19 to 23 between 2006 and 2007. These vacancies in FY 2007 represent about 20% of the CRU scientific workforce. Over the next several years, many CRU scientists will be eligible for retirement, so the number of open vacancies will continue to fluctuate, and the number of unfunded vacancies may well increase depending on out year appropriations.



Though overall productivity has remained high, as unfunded vacancies have increased over time, the number of federally funded projects has declined.



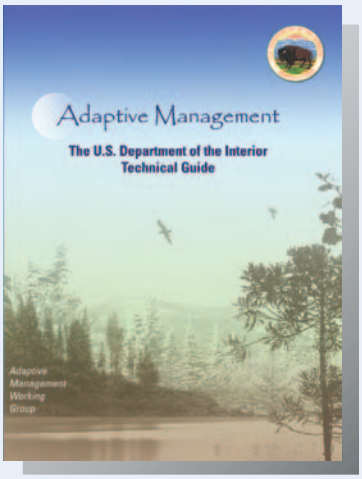
When combined with the data above on unfunded vacancies this points to a correlation between the number of active federal projects and the number of unfunded vacancies between 2000 and 2007. This association is reinforced by patterns at individual Units: where staff levels have increased (Nebraska Unit), the number of active federal projects has increased. Conversely, where staff levels have decreased (Wyoming Unit), the number of active federal projects has declined. Though customer surveys indicate satisfaction by partners with the quality and timeliness of research products, the long-term decreasing trends in CRU staff levels are clearly affecting the overall capacity of the program to conduct and deliver research for its customers.

CONTENTS

PROGRAM PRIORITIES

ADAPTIVE RESOURCES MANAGEMENT

The Cooperative Research Unit program remains uniquely positioned to support the Department of the Interior's strategic goal of linking science to decision making through Adaptive Management. Program scientists provide ongoing consultative and technical services on a suite of key elements identified in the Department's recently published Adaptive Management Technical Guide. These services include conducting primary research on intensively managed high priority species and populations, developing structured decision support models to minimize uncertainty in decision making, and establishing new pathways for communications with partners. Improving the efficiency of decision making through the explicit use of science to support objective-driven management are hallmarks of the Adaptive Management framework as well as the CRU program. CRU will continue to provide leadership to achieve the Secretary's vision for Adaptive Management in DOI.



CRU Program scientists provide ongoing consultative and technical services on a suite of key elements identified in the Department's recently published Adaptive Management Technical Guide.

Elise Irwin/AL Unit

Alabama Unit staff monitor fish population parameters to determine effects of experimentally manipulated flow regimes below a privately owned hydroelectric dam.

The Alabama Unit is engaged in an adaptive resource management (ARM) project to establish effective flow criteria for a regulated southeastern river. A decision support model (DSM) was used to evaluate the effects of flow regimes on several stakeholder defined variables, e.g., fish recruitment, boating use, and power production, and to determine an initial flow prescription. Monitoring was initiated coincident with flow manipulation to estimate the effects and the data were subsequently used to update the DSM. Stakeholder satisfaction with the ARM framework is high because individual stakeholder objectives are considered and scientists are able to simultaneously evaluate multiple hypotheses of how the ecosystem responds to experimental flow manipulation.

SUPPORT TO THE USGS SCIENCE STRATEGY – GLOBAL CLIMATE CHANGE RESEARCH

In FY 2006, USGS Director Mark Myers unveiled a new USGS Science Strategy "Facing Tomorrow's Challenges: USGS Science in the Coming Decade" which highlighted a key strategic focus on Climate Variability and Change. Director Myers strongly supports the need for USGS to be at the forefront of Global Climate Change (GCC) research. CRU scientists have historically been involved in both domestic and international research activities focused on GCC.

In FY 2007, Mike Scott of the Idaho Unit and Brad Griffith and Dave McGuire of the Alaska Unit participated in a special project to summarize adaptation options for climate sensitive ecosystems and resources of the USFWS National Wildlife Refuge System (NWRS). This effort, completed in conjunction with the USFWS, not only highlights key challenges of managing the NWRS with a changing climate, but identifies key research areas and issues necessary for the USFWS to make cogent decisions on future management. This synthetic work highlights the type of explicit role the CRUs will play in supporting the DOI's management (and other) bureaus in forecasting effects of climate change on trust species, such as migratory birds and threatened and endangered fish and wildlife. Global climate change research and science support will continue to be a program focus in the coming years, especially as the DOI bureaus and state fish and wildlife management agencies are confronted with interpreting complex information arising from multiple sources.

In addition to these efforts, CRU scientists remain engaged in a host of GCC research issues, including identifying key response thresholds for climate based ecosystem change. Charles Birkeland of the Hawaii Unit is involved with identifying thresholds in climate change for coral-reef building ecosystems. Coral reefs are considered to be key sentinel indicators of climate change processes.

Charles Birkeland's research near American Samoa involves staining coral with Alizaran Red bone stain before initiating field experiments to measure coral growth.

Charles Birkeland/HI Unit

Ron Niebrugge/AK Unit

Alaska Unit master's student Julie Morse bands a black oystercatcher at Kenai Fjords National Park, Alaska.

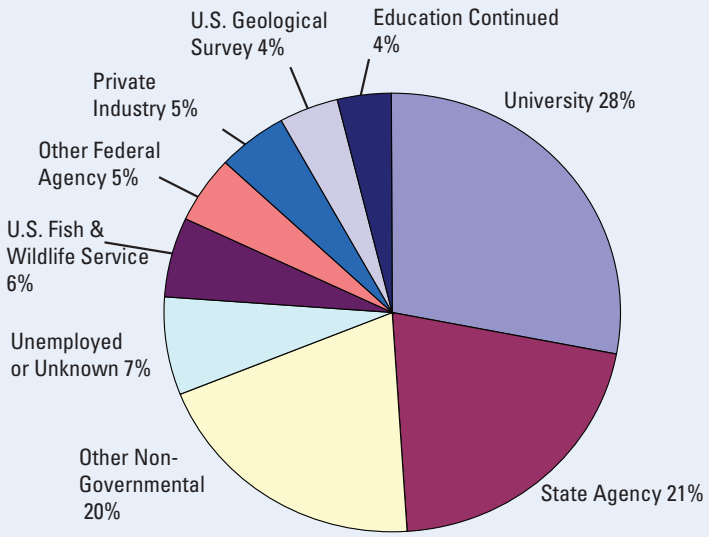
Phil Bettoli/TN Unit

Tennessee Wildlife Resources Agency biologist George Scholten, Tennessee Unit master's student Janice Kerns, and commercial fisherwoman Deb Blackwelder show two paddlefish specimens. Kerns is a master's student studying bycatch mortality in a commercial paddlefish fishery on the Tennessee River, with funding provided by the U.S. Geological Survey.

STUDENT EDUCATION AND TRAINING

In FY 2007, CRU developed a Graduate Student Orientation Manual in response to recommendations identified through the 2006 Graduate Student Survey. In the survey, former students identified opportunities to improve program orientation. Through follow up interviews, several former students suggested that a basic program orientation overview would have helped them to be more effective as graduate students. The Graduate Student Orientation Manual will provide new students a general overview of key program functions and elements, and is expected to be available in early 2008.

CRU students continue to be employed by a variety of agencies and entities, both public and private. The chart below represents the recent trend in student hiring. The professional careers of CRU graduates are well distributed among state, federal, university, and non-governmental organizations.



EMPLOYMENT OF UNIT STUDENTS BY AGENCY

PERSONNEL

RETIREMENTS AND NEW PERSONNEL

FY 2007 saw the retirement of two long time CRU staff, Bob Carline, Unit Leader, Pennsylvania Unit, and Jim Congelton, Assistant Unit Leader, Idaho Unit. In addition, anticipated retirements in FY 2008 included Rich Malecki, Assistant Unit Leader, New York Unit. Hiring actions to replace staff at the Pennsylvania and New York Units was initiated late in FY 2007, and Dr. Tyler Wagner, fisheries biologist, is expected to join the Pennsylvania Unit in April, 2008. Tyler comes to the program after completing his Ph.D. at Michigan State University, with a focus on developing decision tools for inland lake management through field sampling and statistical models.

FY 2007 also saw the retirement of Mike Van Den Avyle, Supervisor of units mostly located in the southeastern and south central United States. Mike spent his entire 30 year career in the CRU program. Jim Fleming assumed supervisor responsibilities for Mike's units, and Kevin Whalen took over Deputy Chief functions as of October, 2007.

TECHNICAL OUTREACH AND SCIENCE SUPPORT TO CUSTOMERS

CRU scientists provide science support and consultative technical services to a host of cooperators and partners; below are two recent examples.

LOWER MISSISSIPPI VALLEY JOINT VENTURE

In FY 2007, Sammy King, Unit Leader, Louisiana Unit, was recognized for his outstanding service to cooperators as he played a key editorial and authorship role on the final report for the Lower Mississippi Valley Joint Venture (LMVJV) Forest Resource Conservation Working Group (2007). The LMVJV report provided detailed information on factors that should be considered in future inventories to improve the knowledge base upon which management actions are based, e.g., geomorphology of sites as it relates to forest development.

CRU STAFF WEBINARS

During FY 2007, Bill Fisher, Assistant Unit Leader, Oklahoma Unit, worked with CRU headquarters and the National Conservation Training Center, USFWS, to begin development of a series of live, web-based seminars targeting topics of interest to USFWS and others. CRU scientists have signed up to be subject matter experts in a format that combines a brief web-based presentation on selected topics, with follow-up discussions among program participants linked via a conference call system. This effort is a true partnership with USFWS, which handles seminar registration, seminar advertisement, and IT support for this project. It is anticipated that more than 15 live seminars will be held by CRU during FY 2008.

Carl Schreck/OR Unit

Oregon Unit Leader Carl Schreck, right, and students examine trout tissue samples taken from trout caught in high-altitude lakes in Sequoia National Park, California.

STAFF RECOGNITION

In November, 2007, Carl Schreck, Unit Leader, Oregon Unit, was named the recipient of a Meritorious Presidential Rank Award. Dr. Schreck helped pioneer the use of genetics in managing fish species and his research into physiological stress on fish has led not only to better scientific understanding, but new management practices.

For the past 35 years, Dr. Schreck has made major contributions in understanding the biology of fishes. He developed a "performance concept" of stress in fish that outlines how genetics dictate fish response to environment stressors including contaminants, water temperature, and oxygen levels. He also was one of the first researchers to link stress from environmental conditions to decreases in fishes' reproductive success. Poor habitat conditions – whether in hatcheries or in the wild – include low water quality, over-crowding and poor nutrients. Dr. Schreck has served as major professor for more than 70 graduate students at OSU, and hosted 14 post-doctoral fellows from the United States, Japan, Norway, France and Canada. He has written three books, 250 scientific articles and several hundred outreach publications. He received a Meritorious Service Award from the Secretary of the Interior in 2003 and he was named Educator of the year in 2000 by the American Fisheries Society. The Meritorious Presidential Rank Award is given to only a handful of senior executives and leaders by the President each year.

RESEARCH HIGHLIGHTS

Mary Freeman

Georgia Unit Ph.D. student Colin Shea maps topographic features of the Flint River, Georgia.

DECISION SUPPORT SYSTEMS

Jim Peterson, Assistant Unit Leader, Georgia Unit, is helping resource agencies to meet the challenge of balancing human needs for water resources with protecting aquatic ecosystems in the Upper Flint River Basin, Georgia.

His research involves large, multi-disciplinary, collaborative efforts with water resources scientists and state and federal agencies to develop science-based information for modeling and understanding linkages between hydrologic alteration and ecological integrity.

Anna Senecal

Coalbed methane development in the Powder River Basin, Wyoming.

BALANCED ENERGY DEVELOPMENT

Wayne Hubert, Unit Leader, Wyoming Unit, is studying the influences of enhanced summer flows on habitat of small fishes in the Powder River, Wyoming, a high priority energy extraction area. Initial findings suggest that summer flow enhancement resulting from coalbed methane well water discharge may improve the quality of habitat for small native fishes. But, this discharge may also enhance habitat for exotic fish and allow invasion by piscivores that may alter native fish communities.

Matt Kauffman, Assistant Unit Leader, Wyoming Unit, is studying mule deer habitat use, migration, and population performance in developing gas fields of western Wyoming. Goals of the project include: (1) provide scientific insight on how mule deer respond to different development strategies, (2) quantify the fidelity and space-use patterns of migration routes, and (3) evaluate how mule deer population performance is affected by large scale gas development.

Therese Donovan

Vermont Unit researchers use remote cameras to estimate probability of bear occurence.

SUPPORT TO STATE WILDLIFE ACTION PLANS

Therese Donovan, Assistant Unit Leader, Vermont Unit, and researchers from the state of Vermont are working together to analyze monitoring and population trend data for species of special concern identified in the Wildlife Action Plan using statewide monitoring sites. These data are being used to evaluate the effects of land use and development on population distribution and abundance for species important to the state of Vermont.

The objectives of the study are to: (1) conduct assessments of black bear occurrence, (2) develop mathematical models to predict the probability of occurrence of black bears, and (3) identify how projected changes (year 2020) in housing density will alter the distribution and occurrence of black bears.

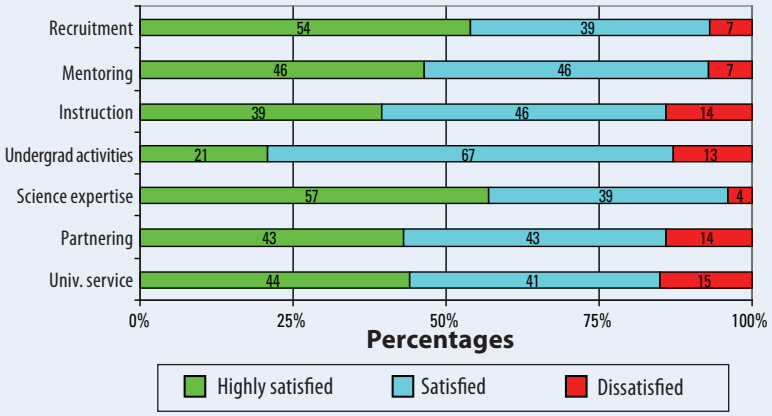
CUSTOMER SURVEYS

CHECKING IN WITH PROGRAM COOPERATORS AND PARTNERS TO ENSURE HIGH QUALITY PROGRAM DELIVERY

In FY 2006, CRU instituted customer surveys to support performance activities. In FY 2007, University Cooperators were surveyed regarding the contribution of CRU scientists to each department's graduate education, training, and mentoring efforts. Overall survey data showed that as a whole, University cooperators were strongly satisfied with the CRU association and activities within their departments (see figure below). University cooperators also confirmed the important role the Units play in recruiting high quality graduate students, and the value-added Unit scientists bring to the graduate curriculum.

As part of the survey results, CRU is expanding efforts to develop undergraduate education and training opportunities. In FY 2007, CRU developed new guidance for Research Work Orders to enhance educational and training opportunities for undergraduates involved with federal research projects. The new guidance will provide opportunities for undergraduate technicians and assistants to engage more extensively with graduate students and postdoctoral researchers in learning key elements of conducting research and communicating results to partners.

REPORTED SATISFACTION



UNITS

Alabama Cooperative Fish and Wildlife Research Unit
Alaska Cooperative Fish and Wildlife Research Unit
Arizona Cooperative Fish and Wildlife Research Unit
Arkansas Cooperative Fish and Wildlife Research Unit
California Cooperative Fishery Research Unit
Colorado Cooperative Fish and Wildlife Research Unit
Florida Cooperative Fish and Wildlife Research Unit
Georgia Cooperative Fish and Wildlife Research Unit
Hawaii Cooperative Fishery Research Unit
Idaho Cooperative Fish and Wildlife Research Unit
Iowa Cooperative Fish and Wildlife Research Unit
Kansas Cooperative Fish and Wildlife Research Unit
Louisiana Cooperative Fish and Wildlife Research Unit
Maine Cooperative Fish and Wildlife Research Unit
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Oklahoma Cooperative Fish and Wildlife Research Unit
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South Carolina Cooperative Fish and Wildlife Research Unit
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Utah Cooperative Fish and Wildlife Research Unit
Vermont Cooperative Fish and Wildlife Research Unit
Virginia Cooperative Fish and Wildlife Research Unit
Washington Cooperative Fish and Wildlife Research Unit
West Virginia Cooperative Fish and Wildlife Research Unit
Wisconsin Cooperative Fishery Research Unit
Wisconsin Cooperative Wildlife Research Unit
Wyoming Cooperative Fish and Wildlife Research Unit

Georgia Unit Ph.D. student Colin Shea, right, and USGS water discipline scientists prepare to map topographic features at Flint River, Georgia, study site.

Mary Freeman

The Cooperative Fish and Wildlife Research Units Program would like to thank each of our cooperators for their continued support.

U.S. GEOLOGICAL SURVEY

WILDLIFE MANAGEMENT INSTITUTE

U.S. FISH AND WILDLIFE SERVICE

UNIVERSITY COOPERATORS

Auburn University
Clemson University
Colorado State University
Cornell University
Humboldt State University
Iowa State University
Kansas State University
Louisiana State University
Mississippi State University
Montana State University
New Mexico State University
North Carolina State University
Oklahoma State University
Oregon State University
The Pennsylvania State University
South Dakota State University
Tennessee Technological University
Texas Tech University
University of Alaska, Fairbanks
University of Arizona
University of Arkansas
University of Florida
University of Georgia
University of Hawaii
University of Idaho
University of Maine
University of Maryland, Eastern Shore
University of Massachusetts
University of Minnesota
University of Missouri, Columbia
University of Montana
University of Nebraska, Lincoln
University of Vermont, Aiken Center
University of Washington
University of Wisconsin, Madison
University of Wisconsin, Stevens Point
University of Wyoming
Utah State University
Virginia Polytechnic Institute and State University
West Virginia University

STATE NATURAL RESOURCE AGENCY COOPERATORS

Alabama Department of Conservation and Natural Resources
Alaska Department of Fish and Game
Arizona Game and Fish Commission
Arkansas Game and Fish Commission
California Department of Fish and Game
Colorado Division of Wildlife
Florida Game and Fish Commission
Georgia Department of Natural Resources
Hawaii Department of Land and Natural Resources
Idaho Department of Fish and Game
Iowa Department of Natural Resources
Kansas Department of Wildlife and Parks
Louisiana Department of Wildlife and Fisheries
Maine Department of Inland Fisheries and Wildlife
Maryland Department of Natural Resources
Massachusetts Division of Fisheries and Wildlife
Massachusetts Division of Marine Fisheries
Minnesota Department of Natural Resources
Mississippi Department of Wildlife, Fisheries, and Parks
Missouri Department of Conservation
Montana Department of Fish, Wildlife, and Parks
Nebraska Game and Parks Commission
New Mexico Department of Game and Fish
New York Department of Environmental Conservation
North Carolina Wildlife Resources Commission
Oklahoma Department of Wildlife Conservation
Oregon Department of Fish and Wildlife
Pennsylvania Fish and Boat Commission
Pennsylvania Game Commission
South Carolina Department of Natural Resources
South Dakota Department of Game, Fish, and Parks
Tennessee Wildlife Resources Agency
Texas Parks and Wildlife Department
Utah Division of Wildlife Resources
Vermont Department of Fish and Wildlife
Virginia Department of Game and Inland Fisheries
Washington Department of Ecology
Washington Department of Fish and Wildlife
Washington Department of Natural Resources
West Virginia Division of Natural Resources
Wisconsin Department of Natural Resources
Wyoming Game and Fish Commission

COOPERATIVE RESEARCH UNITS PROGRAM

Byron K. Williams, Chief
Kevin Whalen, Deputy Chief

W. James Fleming, Unit Supervisor
Bern Shanks, Unit Supervisor
Mike Tome, Unit Supervisor

U.S. Geological Survey
12201 Sunrise Valley Drive, Mail Stop 303
Reston, Virginia 20192
Phone: 703-648-4260 Fax: 703-648-4269

Cover photo: Black oystercatcher at Kenai Fjords National Park, Alaska, where Alaska Unit Assistant Leader Abby Powell and master's student Julie Morse study the effects of human disturbance on this species. Photo by Julie Morse/AK Unit.