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Commentary

Setting research priorities at Wildlife Services' National Wildlife Research Center

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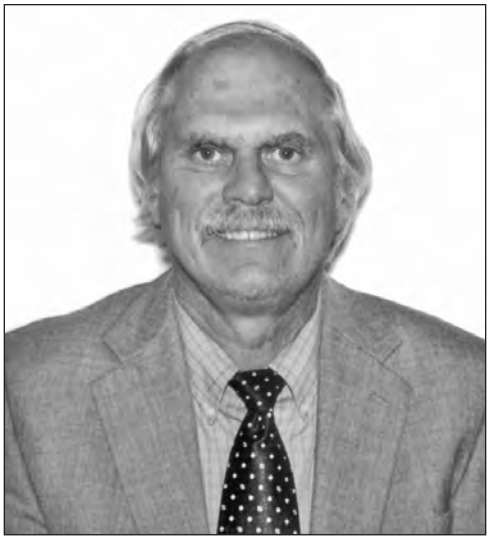
As director of the Wildlife Services' National Wildlife Research Center (NWRC), I frequently have been asked how the NWRC determines, prioritizes, and implements its research agenda. To answer this question, I will start by giving both a historical overview and an update of the NWRC. The mission of the NWRC is to provide science-based tools and information to resolve human–wildlife conflicts.



Richard L. Bruggers

History of National Wildlife Research Center

Research conducted by the federal government to resolve conflicts between wildlife and human endeavors dates back to 1885 in the early days of the U.S. Department of Agriculture's Bureau of Biological Survey (Curnow 1996). In the early 1900s, research on methods to control damage to agriculture by wildlife was based at the Control Methods Research Laboratory in Denver, Colorado. Investigations of the food habits of wildlife and some wildlife diseases, particularly botulism, were initiated in the 1920s. These activities became a part of the Food Habits Laboratory, which was established in 1931 at Denver, to study the food habits and economic relationships of predators and other mammals and birds in the West. The U.S. Department of Agriculture's (USDA) enabling legislation for this program, the Animal Damage Control Act of 1931, authorized USDA to conduct activities to control injurious animals, but it also placed considerable emphasis on research programs to develop new control methods at government laboratories (Fall and Jackson 1998). With this legislation, the USDA/Animal and Plant Health Inspection Service Wildlife Services program has direction to "provide federal leadership in managing problems caused by wildlife" (USDA 1998).

In 1940, the USDA's Bureau of Biological Survey and the Bureau of Fisheries merged to form the new Fish and Wildlife Service (FWS), within the U.S. Department of the Interior. The Control Methods Research and Food Habits Laboratories combined to form the Denver Wildlife Research Laboratory (later named the Denver Wildlife Research Center [DWRC]) under the FWS. About 15 years later, Congress authorized the reorganization of the FWS into the Bureau of Commercial Fisheries and Bureau of Sport Fisheries and Wildlife. The mission of the DWRC was expanded to include the study of relationships between wildlife populations

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and their habitats on public lands and the effects of grazing, timber management, and other land uses (Curnow 1996).

In 1985, Congress transferred USDI's Animal Damage Control Program, including DWRC and some of its field stations, from the FWS to the USDA's Animal and Plant Health Inspection Service (APHIS). The current name, Wildlife Services (WS), was established in 1997. DWRC's research responsibilities were redefined to place emphasis on maintenance of existing tools and development of new and alternative methods and information to resolve wildlife damage problems. In 1991, APHIS and Colorado State University (CSU) signed a memorandum of understanding to relocate the Center to the university's Foothills Research Campus in Fort Collins, Colorado, and build out the NWRC's master plan on 17 ha of CSU land. Due to the national and international scope of research conducted in this new research center, the name was changed to the National Wildlife Research Center (NWRC). The DWRC was officially closed and the NWRC established in August 1997 (Curnow 1996).

Today, the NWRC continues its mission to develop science-based tools to resolve human–wildlife conflicts. It is the federal institution devoted to resolving problems caused by the interaction of wildlife and people in the areas of agriculture, human health and safety (including wildlife disease), and invasive species. It also is devoted to protecting threatened and endangered species. At its headquarters campus in Fort Collins and its 8 field stations, NWRC scientists and collaborators conduct research in several unique facilities, including outdoor animal research pens, outdoor flight aviaries, an animal research building, an invasive species research building, a wildlife science building, and a biosecurity-level-3 suite specially designed for the study and diagnostics of wildlife diseases. The NWRC's 8 field stations are strategically located throughout the United States and are critical to addressing the human–wildlife conflict mission of the WS program. These field stations focus on invasive species; problems to the sunflower, timber, livestock, and aquaculture industries; wildlife-aviation impacts; pseudorabies and feral hogs; chemical sensory perception in wildlife; and overabundant birds.

Identifying NWRC research priorities

The research program of NWRC is based primarily on nationwide research needs assessments and Congressional directives. However, input by the NWRC's director, WS deputy administrator, and WS management team leadership is also incorporated in the prioritization of wildlife damage management issues.

To aid in addressing these priorities and managing research projects, NWRC established a formal research project management system in 1996. Each process in this system ensures appropriate input by and strengthens effective transfer of information among NWRC, WS operations, and other NWRC customers, including wildlife managers outside WS. The research project management system includes the components listed and explained below.

Research needs assessment process

Every 5 to 6 years, beginning in 1989, WS state directors and NWRC scientists are requested by the WS deputy administrator to identify the most pressing research needs facing them as scientists and biologists dealing with wildlife conflict resolution (Packham and Connolly 1992). This national assessment is designed also to incorporate the needs and values of WS customers and cooperators.

Research Needs Assessments (RNA) have been conducted in 1989 (Packham and Connolly 1992), 1996 (Bruggers et al. 1996), 2001 (Bruggers et al. 2002), and 2006 (Clark 2007). The 2001 RNA included input from the WS National Advisory Committee (WSNAC) to the Secretary of Agriculture. The 2006 RNA included input from both the Association of Fish and Wildlife Agencies and the WSNAC. The result of this input is an identification and prioritization of the many important national wildlife damage management issues requiring research attention. Research needs assessments provide recommendations to the NWRC for

planning new projects and focusing human and financial resources on important priorities of the WS program and its customers.

Research project management system

NWRC research projects are established for 3- to 5-year time periods and are reviewed at least twice during their duration: once about midway into the project and again near the termination date for the project. WS state directors and other operations employees, as well as critical stakeholders, participate in establishing and reviewing each project. This affords the WS program immediate access to the findings of each project, direct feedback to NWRC researchers regarding the success of the research project in meeting the needs of the wildlife biologists and managers, and recommendations for continuing, reorienting, and terminating research on the specific research needs being addressed.

Joint NWRC/WS operations research proposals

The WS program often funds joint NWRC and WS operations research projects as funding is available. The purpose is to stimulate collaboration and information transfer among WS research and operations employees, to accomplish short-term research on particular topics of immediate importance to WS, and to gain efficiency and economy in specific research areas.

Implementing these processes has allowed WS to be flexible and responsive to the changing research needs and priorities of its employees and stakeholders. For instance, since the 1989 RNA, several new wildlife damage areas of concern have emerged while other areas have declined in priority (Bruggers et al. 2002). In general, these areas of concern have involved birds rather than mammals. For example, the research priorities identified in the 1989 assessment related to fruits (berries), gardens, and forage crops. More recent assessments have shifted some of the research focus to studies relating to ecosystem health, water quality, wildlife contraception, and rare species. Similarly, research identified in 1996 that related to the impacts of passerine birds on crops have been replaced by research related to crows, ravens, vultures, and pelicans. In the 2006 RNA, new areas of concern emerged relating to population modeling; wildlife disease sampling, surveillance, and mitigation; economic evaluations; and invasive species.

Links to the Jack H. Berryman Institute's research grants program

The WS program has strong ties to the Jack H. Berryman Institute (BI) located at both Utah State University and Mississippi State University. The BI mission is to support and conduct science-based research and outreach programs aimed at addressing wildlife damage management issues and human–wildlife conflicts.

The BI funds research grants to undergraduate and graduate students and university faculty at universities across the United States. Research proposals are evaluated by a technical committee composed of university, federal, and stakeholder representatives. Projects are selected and funded by the BI based upon their capability to address issues identified in the WS research needs assessments, yet also are reflective of the BI mission.

To date, BI has supported >150 research, education, and outreach projects at universities in 26 states. NWRC scientists often serve on the graduate committees of students working on these projects. The findings from BI studies have assisted the WS program and led to the development of new information for use in wildlife damage management. Projects have addressed issues such as beaver damage management, impacts of feral hogs, deer–vehicle collisions, reforestation, depredation at aquaculture facilities, wildlife disease, effective communication skills, and coyote control.

As our interaction with wildlife continues to increase, expand, and diversify, the issues and challenges faced by our wildlife managers will change and grow. I am confident that many of the current and emerging wildlife damage management issues will successfully be addressed and resolved, and am certain that many new challenges will arise. Wildlife Services' NWRC and its many university, state, federal, and private national and international partners are well-positioned to address these new issues.

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