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Wildlife Services Program Highlights

Fiscal Year 1999

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INTRODUCTION

Federal leadership for managing wildlife damage to America's agricultural, industrial, and natural resources has been centralized since 1985 in the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS). APHIS' Wildlife Services (WS) program works with State and other Federal agencies, branches of the military, and the public to minimize negative impacts caused by wildlife on crops and livestock, human health and safety, property, and natural resources including threatened and endangered wildlife and other native fauna and flora.

This report highlights the accomplishments of WS during fiscal year (FY) 1999. Making this report available is one way WS is working to keep the public and our State and local customers better informed about the many diverse activities conducted by WS. Although WS research activities are highlighted in this report, you are encouraged to request a copy of the National Wildlife Research Center (NWRC) Highlights Report, Fiscal Year 1999 (USDA Miscellaneous Publication 1565) to learn more about our research activities. Write to USDA–APHIS–NWRC, 4101 LaPorte Avenue, Fort Collins, CO 80521–2154. For details about the overall WS program, please write to:

USDA–APHIS–WS
Operational Support Staff
4700 River Road, Unit 87
Riverdale, MD 20737–1234

You may also visit the WS home page at www.aphis.usda.gov/ws on the World Wide Web.

PROGRAM HIGHLIGHTS

Program Development Activities

During FY 1999, total funding that WS received from cooperators increased by approximately $2.6 million. The FY Federal appropriation included $1.5 million for rabies control, $3.5 million for construction of a support structure for the National Wildlife Research Center (NWRC) Animal Research Building in Fort Collins, CO, $450,000 to continue the national trap testing program, and $115,000 for managing coyote damage in West Virginia.

WS expanded services to aquaculture producers in Arkansas using $162,500 in new funding provided by the Arkansas Game and Fish Commission. Two wildlife specialists were hired to establish programs in east-central and southeastern Arkansas to assist catfish, bait fish, and ornamental fish producers in managing losses caused by fish-eating birds. The programs include onsite technical assistance and emphasize nonlethal management strategies. Efforts were also initiated to increase producer awareness of Federal depredation permit requirements and the new double-crested cormorant depredation order, which allows commercial aquaculture facilities to take cormorants without a Federal permit when they are committing or about to commit depredations.

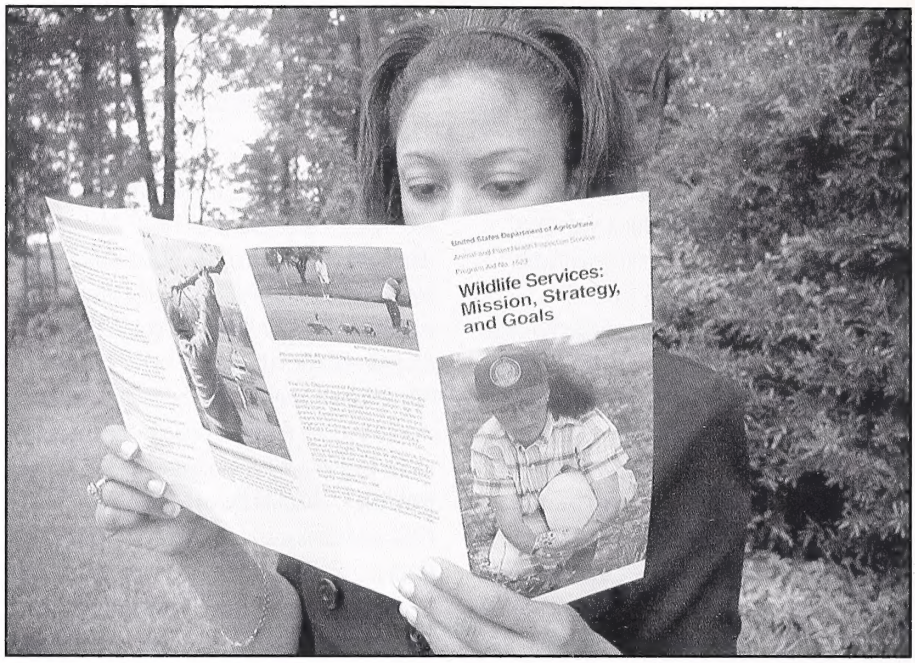
The Oklahoma State legislature appropriated $120,000 for WS to begin a pilot program to assist Oklahoma pecan and peanut producers with managing crop damage caused by crows.

A wildlife biologist was hired to implement and coordinate the program, which uses a variety of management techniques. Funding for the integrated crow damage management program started in July 1999. This is the first time cooperative funding has been provided in Oklahoma for the management of crow damage.

The State of Texas increased cooperative funding by $532,130 for the purchase of State-owned vehicles for WS use in Texas and $450,000 for three new State positions. An increase in the assessment to counties and cooperators will bring in an additional $500,000 annually to the cooperative Texas–WS program. This increase was necessary to maintain the program at its current level.

Indiana residents now have access to a toll-free wildlife damage management hotline. WS established the hotline through a cooperative funding agreement with the Indiana Department of Natural Resources. Through the hotline, WS personnel are responding to calls on a wide range of human–wildlife conflicts. The number of calls received has increased steadily as more people find out about this new service.

Overall, WS experienced an 8.58-percent increase in total cooperative funding from FY 1998 to FY 1999.



Government Performance and Results Act

The Government Performance and Results Act (GPRA), passed by Congress in 1993, requires Federal agencies to develop: (1) a 5-year strategic plan identifying the vision and mission of the agency and general goals and objectives, (2) an annual performance plan identifying specific programmatic goals and quantitative targets that support the strategic plan, and, for the first time in 1999, (3) an annual performance report of the agency's accomplishments, to be distributed to Congress.

Congress is to use this information when considering Federal budget allocations and other resource requests. This information is also to help program managers monitor and track data, refine program policies, and achieve more through greater efficiency.

The APHIS Strategic Plan consists of five broad goals, all aimed at protecting American agriculture. These goals focus on programs and activities designed to (1) prevent foreign animal and plant pests and diseases from entering this country, (2) monitor those pests and diseases that have entered the country, (3) manage certain plant and animal pests and diseases and wildlife damage, (4) protect animal welfare, and (5) develop new scientific tools, methods, products, or other technologies to help the agency in carrying out activities under the first four goals. In total, APHIS set 55 targets and measured its performance against them.

GPRA has provided WS an opportunity for the program to pay greater attention to the impact it is having on a variety of resources it protects. In FY 1999, WS program activities are reflected in goals 3 and 5 of the APHIS Strategic Plan. Under goal 3, WS set targets and measured itself on five criteria:

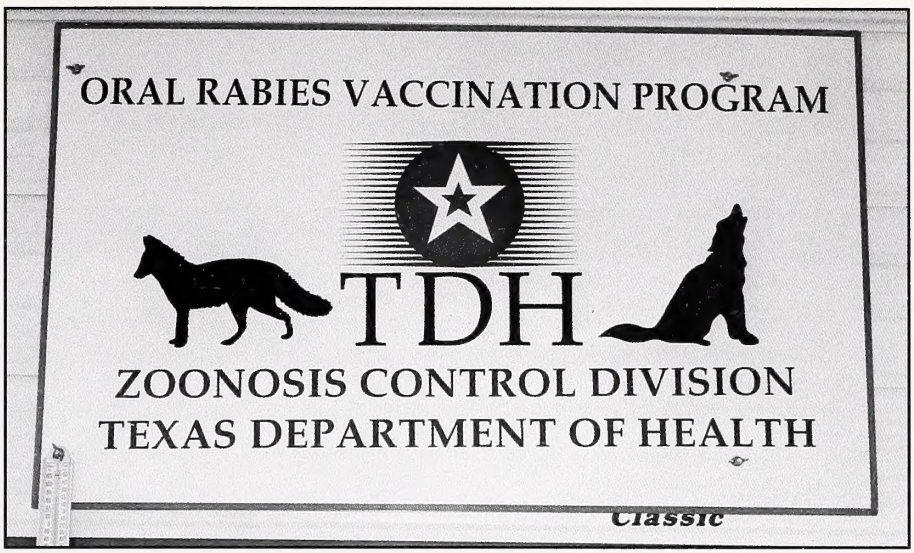
- Its ability to increase air passenger safety by reducing the risk of aircraft striking wildlife;
- Its ability to protect human health by reducing the prevalence of canine rabies in the parts of Texas where WS provided oral vaccination of wild canids;
- Its ability to satisfy its customers who need assistance in reducing livestock depredation by wildlife;

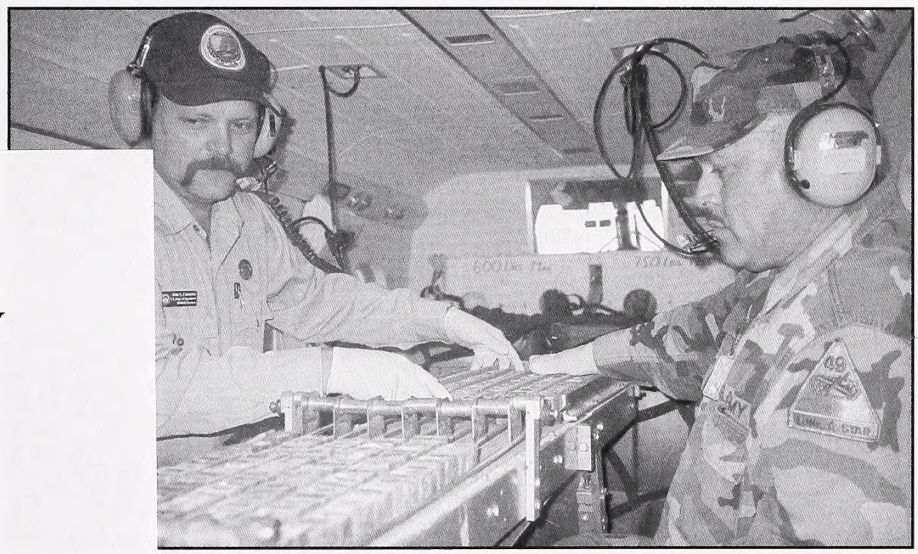
- Its ability to protect property, natural resources, and crops from damage caused by beaver; and

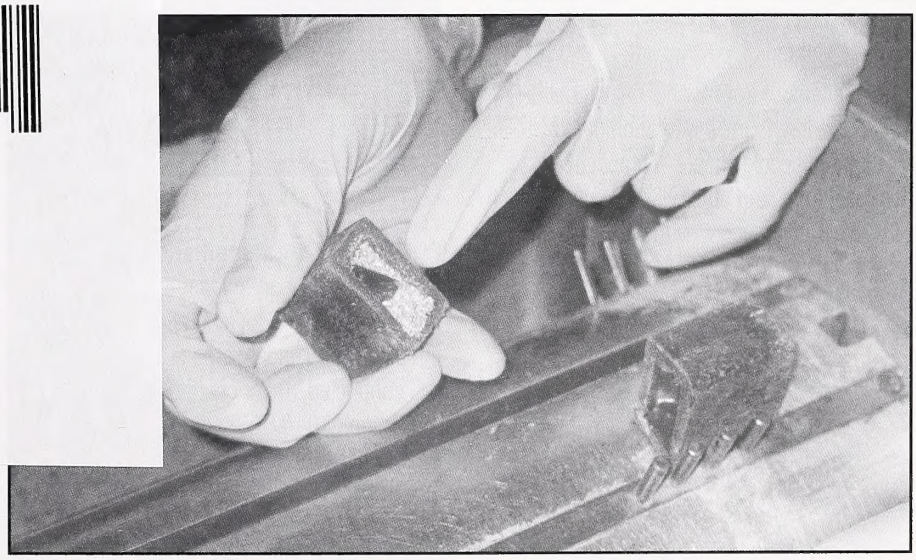
- Its ability to protect threatened or endangered species.

Under goal 5, WS will be measured by the number of new and improved wildlife control methods tested by NWRC.

For the five measures summarized below, WS exceeded its established targets for all items. Here is a brief summary of these WS program results.







cases were reported. The WS program has been a key contributor in distributing the oral baits (as shown in the photograph) throughout the barrier zone and in collecting disease surveillance samples.

Livestock Customer Satisfaction— USDA's National Agricultural Statistics Service (NASS) was commissioned to conduct a survey of WS livestock customers in FY 1999. More than 11,700 surveys were sent out, and almost 75 percent of the surveyed customers responded. The results showed that, for the 24 States surveyed, 76 percent of those receiving direct assistance from WS gave a satisfaction rating of either a 4 or 5 (based on a 5-point scale with 1 being "not satisfied" and 5 being "very satisfied"). An additional 13 percent gave WS a satisfaction rating of 3, for a total of 89 percent of livestock customers who were satisfied with the direct assistance provided by WS. In addition, more than 85 percent of all customers gave the WS program an effectiveness rating of 3, 4, or 5 (using a similar 5-point scale).

Protecting Property, Crops, and Natural Resources From Beaver Damage—For years, WS personnel have collected data on the actual damage that beaver cause to various resources in their States. However, these data have not adequately portrayed the value of WS work in preventing further damage from occurring. For FY 1999, WS cooperated with other agencies and used past experience to develop estimates of the resources saved (losses avoided) from further beaver damage. A number of resources were included in developing these estimates: timber, roads, bridges, crops, and other wildlife species such as trout. The target set by the program for its beaver work was $8 million in avoided losses. Thirteen States participated in this measurement effort, and the results showed that a conservative estimate of the resources saved amounted to almost $22 million.

Protecting Threatened and Endangered Species—WS continued to play a critical role in the recovery of federally listed threatened and endangered (T&E) species. WS conducted 104 cooperative projects for the protection of 84 T&E species in 26 States, Puerto Rico, and the Virgin Islands in FY 1999. The WS program had set a target that 90 percent of the T&E species projects it participated in would result in localized populations of the targeted species increasing, or, at a minimum, remaining the same. WS exceeded this goal and had an actual result of 93 percent (97 of 104 projects) where the target population was reported increased or maintained.

Developing Wildlife Damage Management Methods—NWRC is the only research center in the world exclusively dedicated to developing biologically sound, socially acceptable methods of reducing or eliminating wildlife damage. In FY 1999, NWRC set a goal of testing 13 new or improved wildlife damage management methods. The Center was able to fully fund more than 18 research projects, however, and tested 18 new or improved wildlife damage control methods.

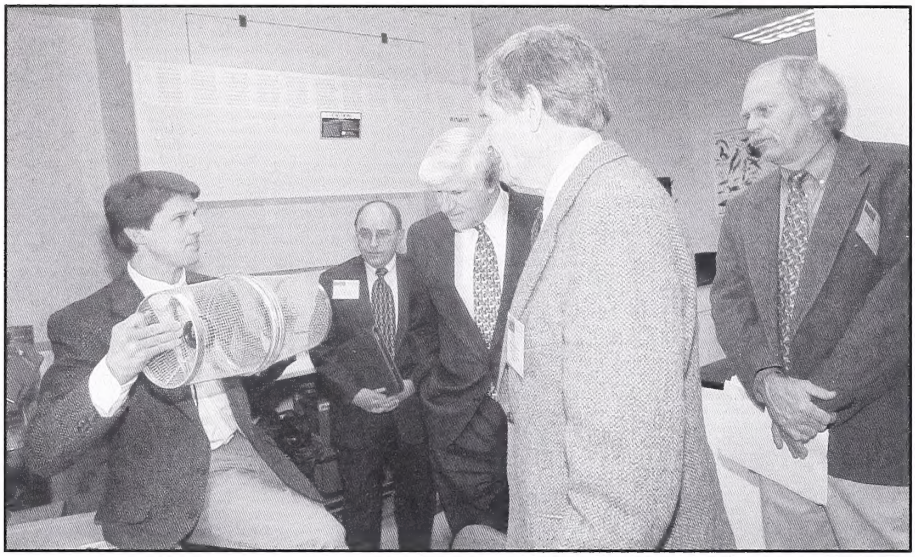
More detailed information about actual program results can be found in the remainder of this report and in the APHIS FY 1999 annual performance report.

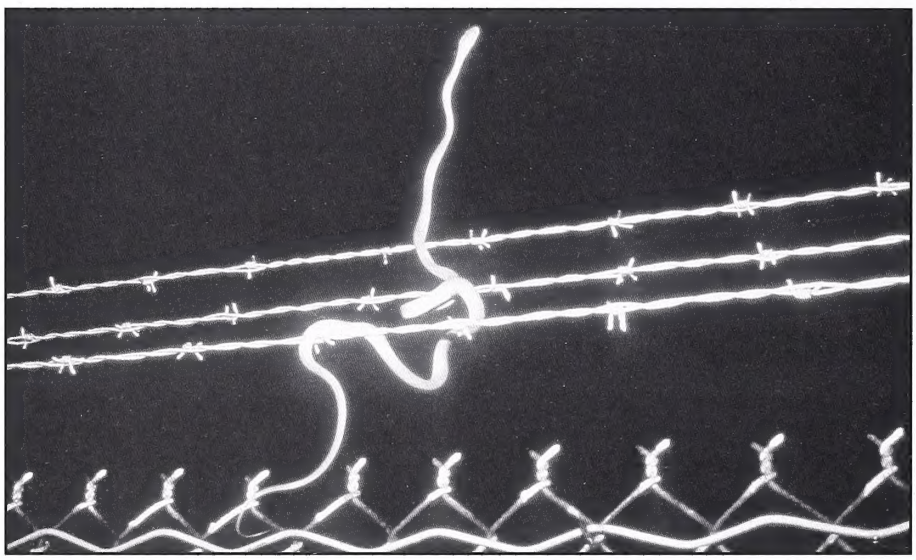
Pesticide Certification Program

To ensure that WS personnel are well trained and appropriately certified to use a wide range of tools and techniques, WS initiated development of a national pesticide training and certification program. The program will operate in conjunction with existing State pesticide certification programs and requirements. The national WS pesticide certification program will ensure that WS employees are trained specifically in the use of vertebrate pesticides.

National Environmental Policy Act

WS State programs use the National Environmental Policy Act (NEPA) process as a planning and project management tool. The national WS program operates under a programwide environmental impact statement, the Animal Damage Control Program Final Environmental Impact Statement completed in 1994. WS routinely develops environmental assessments to analyze the potential impacts of proposed actions and to provide the best environmental information available for planning and decisionmaking. In FY 1999, WS developed 24 environmental assessments for proposed WS wildlife damage-management activities throughout the country. Also in 1999, a NEPA coordinator was hired to assist State programs in the Eastern Region in planning and developing NEPA documents and processes. The new position, located in the Raleigh, NC, State office, brings the national staffing dedicated to NEPA compliance to a total of six people.





Invasive Species Control

WS conducted a number of direct and technical assistance projects in 1999 to help control damage, threats to human health and safety, and impacts on natural resources caused by invasive, nonnative wildlife. The most significant of these is WS' brown tree snake (BTS) program on the island of Guam.

The BTS is a major threat to wildlife diversity in the Pacific region. The snake has already eliminated 9 of the 12 species of forest birds on Guam since its accidental introduction there 50 years ago. Most of the island's terrestrial vertebrates have also been killed by the snake. The mildly venomous snakes have bitten many children and killed many pets. Well over a thousand electric power outages from short circuits caused by snakes have occurred, and Guam's agricultural interests, primarily poultry, have been severely damaged by this species. The BTS is also an enormous impediment to outbound cargo and U.S. military operations in the region because of the potential for accidentally moving this invasive pest to other Pacific islands and the U.S. mainland when it hides in cargo or in surface vehicles and aircraft.

Since 1993, WS has conducted a BTS damage management program on Guam in cooperation with the Department of Defense (DoD) and Department of the Interior, and in partnership with the governments of Guam and Hawaii. The focus of this program is to control BTS damage on Guam and prevent the snake's introduction to other Pacific islands and the U.S. mainland. Wildlife specialists make extensive use of snake traps and canine detection teams to accomplish that mission. Specialists also manage the snake's prey base, including rats and nonnative birds, to establish snake-free zones around civilian and military airports and Guam's shipping ports to reduce the attractiveness of these areas to the snakes.

In FY 1999, WS received $1.286 million in cooperative funding ($1 million from DoD and the remainder from Interior) for BTS work on Guam. Additionally, DoD provided $408,000 for research to develop effective methods for BTS control. WS expended $47,097 more of federally appropriated funds in support of the BTS program in Guam.

Measurable benefits resulting from direct management and methods development by WS include

- An established islandwide line of defense on Guam;
- Snake reduction in high-risk areas, achieved through increased public and media understanding of the problem and support for management strategies. (This outreach initiative includes two BTS training videos, an information poster, and wallet-sized cards);
- Identification and implementation of a chemical toxicant and registration of a new cargo fumigant; and
- Identification and evaluation of potential attractants to replace live mice in operational trapping.

In addition to the BTS work in Guam, WS provides training and snake-control supplies to emergency snake-control teams in Hawaii and the Commonwealth of the Northern Mariana Islands and, on request, provides personnel to monitor DoD training sites on Saipan and Tinian during DoD exercises. In cooperation with the State of Hawaii and DoD, WS is the lead agency for investigating reported BTS sightings in the State.

WS also conducted work in a number of States to reduce damage caused by other nonnative species including nutria, feral pigeons, feral swine, starlings, and English sparrows. In Maryland, WS is involved in a large-scale, multiagency project to manage nutria damage to coastal marshes (see section on Protecting Other Natural Resources).

Helping Small Farms

WS has a long history of supporting rural Americans by providing assistance to thousands of the Nation's small farm and property owners. Today's active WS program lends strong support to USDA's commitment to help small farm interests. Small farms, many struggling economically, depend on the vital services WS provides to help protect their livelihood. By providing assistance through cooperative agreements, WS helps minimize the negative impacts that wildlife cause on agriculture, property, and natural resources.

Small farms, as defined by the National Commission on Small Farms, are described as farms generating less than $250,000 in gross annual receipts. Based on this information and on data provided by NASS, APHIS determined that farms with $250,000 or more in gross annual receipts are generally at least 1,100 acres in size. WS used these data to estimate that, in the Western States, 74 percent of WS FY 1999 cooperative agreements were undertaken with entities meeting the definition of small farms. In the Eastern States, WS activities are more varied, and agreements with agricultural producers make up a smaller proportion of the work accomplished there than in the West. NASS data show it is unlikely that the mean average farm size in any Eastern State is greater than 1,100 acres. Therefore, most, if not all, of WS agreements with farmers and ranchers in the East are likely to be with small farms and ranches.

Food Donation

WS donates wild game taken during field activities to food banks and charitable organizations to help feed the hungry after the game is appropriately inspected and processed. In 1999, WS contributed to food banks 48,896 pounds of edible meat, which included 38,118 pounds of venison. Organizations receiving donations included the Salvation Army in Iowa, the Greater Chicago Food Depository, and Bethlehem Food Charity in Illinois, the Lighthouse Mission, the Upper Skagit Indian Tribe in Washington, the Food Bank of Alaska, the South-Central Foundation Elder's Program, the Brother Francis Shelter in Alaska, the Second Harvest Food Bank of Coastal Georgia, and the Low Country Food Bank in South Carolina.

Preparing for the Year 2000 (Y2K)

To prepare for potential Y2K problems, all WS offices tested their electronic equipment and facilities during FY 1999 to ensure continued operation through the year 2000 rollover date. Equipment determined not to be Y2K compliant was replaced so that WS customers would experience no disruption of services when the year 2000 arrived. The WS national computerized reporting system, the Management Information System (MIS), also underwent a significant conversion to ensure continued operation into the new year and to prepare for the upcoming changeover to a new, third-generation reporting system, MIS 2000.

Information Services

WS public outreach efforts continued to increase in FY 1999. WS conducted 54,933 public outreach projects during the year. This work included media interviews, exhibits, instructional sessions, public presentations, radio and television appearances, and providing information for newspaper and magazine articles.

Also during FY 1999, WS launched a public service announcement (PSA) initiative about the "Nature of Our Business." The 30- to 60-second PSA's target urban audiences and focus on WS' commitment to protect human health and safety, pets, urban and natural resources, agriculture, and T&E species. WS operates 1–800 telephone hotlines in Maryland, Vermont, Wisconsin, and Indiana. Through this popular communication medium, WS received and responded to 11,003 inquiries regarding a wide diversity of wildlife–human conflicts. Cooperator interest in establishing toll-free hotlines in other States is increasing.

WS sponsored public information booths on avoiding wildlife hazards at airports at the Experimental Aircraft Association annual fly-in near Oshkosh, WI, and at the aerospace industry's foreign object damage conference in Long Beach, CA. Approximately 100,000 people visited the display area at the fly-in, and over 900 people attended the damage conference, which was sponsored by the Boeing Corporation.

Living With Wildlife—The WS public outreach campaign, "Living With Wildlife," is designed to educate the general public—especially young people—about the importance of balancing the needs of wildlife with the needs of people. The campaign is about the responsible management of conflicts between wildlife and people and emphasizes the leadership role of WS in finding environmentally safe and socially acceptable solutions to wildlife problems.

The campaign includes providing educational materials to schools. Since 1995, more than 40,000 teachers nationwide received the Living With Wildlife video, posters, activity sheets, brochures, pens, pencils, and rulers. In cooperation with the Ag in the Classroom program, WS distributed Living With Wildlife educational readers to more than 5,000 teachers in Colorado, North Dakota, Nebraska, and Nevada. WS also operated a BTS Website in 1999.

Research Information Exchange—In February, WS' NWRC hosted the annual review of USDA research of interest to DoD. USDA research was presented by scientists representing the Forest Service, Agricultural Research Service, and APHIS–WS. Participating NWRC scientists focused on research involving chemical repellants, reproductive inhibitors, integrated pest management, bird–aircraft interactions, chemical registration, and BTS control. About 80 representatives from USDA, DoD, the Centers for Disease Control and Prevention (CDC), and the U.S. Geological Survey attended this symposium, the first such meeting held at the new NWRC Wildlife Science Building in Fort Collins, CO.

NWRC began planning for a conference on economic issues related to human–wildlife conflicts to be held in August 2000. The conference will feature invited expert speakers to present discussions on a variety of topics, such as methods for quantifying resource damage caused by wildlife, case studies of damage caused by wildlife to agricultural commodities, costs and the implementation of management programs to control the spread of wildlife-related diseases to humans and domestic livestock, costs associated with damage caused by wildlife to nonagricultural activities of humans, optimization models for allocating resources in the development of management plans, the impact of "problem" wildlife on other wildlife, and the economic impact of humans on wildlife relative to management issues.

Bird Strike Committee–USA (BSC–USA) Conferences—Every year, lives are endangered worldwide and billions of dollars are wasted when birds and other wildlife damage aircraft. BSC–USA was formed to meet this challenge by providing a forum for increasing communication and professionalism among the diverse groups addressing wildlife issues at airports.

WS biologists helped plan a joint conference between BSC–USA and BSC–Canada that was held in Vancouver, BC, in May 1999. The conference was attended by 250 military and civilian air field operators, Federal Aviation Administration (FAA) airport inspectors, wildlife and land-use planners, university researchers, engineers, pilots, and aviation industry representatives. In all, 40 technical papers were presented on topics related to reducing wildlife collisions with aircraft.

WS biologists also served on the BSC–USA Steering Committee and assisted with the planning for a second U.S.–Canadian conference scheduled for Minneapolis, MN, in August 2000. This conference will feature a strike-reduction training session, field demonstrations on wildlife hazard management techniques, new technologies, and habitat management.

Investing in Our Employees

Three WS employees completed the APHIS Leadership for Today and Tomorrow program. This intensive 18-month program provides participants with the tools to take positive leadership action and make improvements in the overall performance and effectiveness of the organization. Participants were also encouraged to take responsibility for leading change.

The WS Leadership Excellence Program II was initiated in September 1999. The goal of this program is to build on leadership potential and enhance leadership skills of midlevel employees. Nineteen employees from different WS units are participating in the program, which consists of four weeklong training workshops plus a variety of individualized developmental assignments and activities. Participants will complete an action learning project on a current WS leadership issue and a 30- to 60-day developmental assignment to strengthen and use targeted leadership skills before graduating in March 2000.

The WS program in Utah, with assistance from the western regional office, continued to support a graduate student position in wildlife science at Utah State University. This ongoing position is designed for current WS employees and provides both graduate-level education and exposure to various wildlife damage management issues and strategies.

Research Activities

NWRC's new headquarters laboratory and office building, located on the Foothills Research Campus of Colorado State University, was completed in November 1998. NWRC personnel moved into this state-of-the-art research facility next door to the NWRC Animal Research Building in January 1999. The 82,000-square foot building houses specialized laboratories for research on chemistry, product development, birds, and mammals. Space is also allocated to the Center's research library, record and tissue archives, a conference center, and office space for 100 staff, visiting scientists, and students. The new Wildlife Science Building was dedicated on April 16, 1999, by USDA Deputy Secretary of Agriculture Richard Rominger. This was a historic day for WS and the NWRC.

Plans are under way to begin construction in FY 2000 of outdoor animal holding and testing facilities and a support wing for the Animal Research Building.

NWRC's work is underwritten by appropriated funds ($10.365 million in FY 1999), and that figure is annually supplemented by additional money coming to the program from outside cooperators. In FY 1999, another $1.2 million was made available for NWRC through 31 cooperative agreements.

In 1999, the Center addressed the research needs of the WS program and its customers through 18 multiyear research projects focusing on development research including reproductive inhibitors and immunocontraceptives, innovative live-capture devices, improved traps and snares, and maintenance of minor-use chemical pesticides, repellants, and attractants. The projects involved bird damage to crops and aquaculture; mammal damage to timber, rangeland, and livestock; and wildlife threats to aviation safety and T&E species.

The NWRC annual performance report to Congress for FY 1999 reported the Center's accomplishments in meeting its goal under the GPRA. The goal was to test a variety of new or improved wildlife damage-management methods in an effort to develop useful, appropriate methods for solving wildlife damage problems.

The Center's research is organized by multiyear, multidisciplinary projects that last 3–5 years. Project managers submit annual progress reports that contain lists of studies undertaken and highlight advances made by the scientists. For FY 1999, NWRC reported the development of 18 new or improved methods to manage wildlife damage. The following are examples of work by NWRC in 1999:

National Trap Testing Program—This program to develop Best Management Practices for important furbearing species continues to advance. A national program is a major undertaking, and participants include the International Association of Fish and Wildlife Agencies, 17 State wildlife management agencies, private trappers, and two Federal agencies (APHIS and the U.S. Department of the Interior's U.S. Fish and Wildlife Service [FWS]). Working together, these agencies and organizations are accomplishing the commitments made by the United States to the European Union to improve animal welfare in State and federally sanctioned trapping programs in the United States. During 1999, NWRC scientists tested 28 different kinds or variations of traps on 8 furbearing species in support of this important program.

Airport Safety—NWRC's Sandusky, OH, field station continued an active research program focusing on aviation hazards caused by birds.

- Biologists from the Sandusky field station, in cooperation with the FAA, completed a summary of all wildlife strikes to civil aircraft in the United States for 1991 through 1997. During this 7-year period, 16,949 wildlife strikes were reported. Birds were involved in 97 percent and mammals (mostly deer) in 3 percent of the strikes. The average cost per year to U.S. civil aviation from these strikes was estimated to be $315 million. Information documenting the hazards of wildlife presence in airport environments is critical for developing wildlife hazard management plans for airports.

- A technical paper written by NWRC for the FAA on research and management programs to reduce wildlife hazards at airports was presented by FAA officials at the United Nations Conference of the Directors of Civil Aviation in Hanoi, Vietnam, in September 1999. The paper summarized WS research and management assistance to improve aviation industry safety.

Beaver Damage Research—NWRC scientists and WS wildlife specialists from across the Southeast worked together in 1999 to develop objectives for beaver damage-management research emphasizing the development of methods to address regional management problems. Many potential improvements in existing methods and strategies are under investigation.

A wildlife biologist position was established at NWRC's field station at Mississippi State University to coordinate and conduct studies to improve beaver impoundment water-control devices and examine the feasibility of frightening devices to reduce beaver activity. Studies on the efficacy of textural repellants to reduce beaver gnawing and tension-adjustable trap triggers to reduce nontarget captures are also planned.

Aquaculture Research—Investigations of problems that birds cause in the aquaculture industry are the primary focus of NWRC's field station at Mississippi State University. Here are some examples of projects conducted in 1999:

- Predation on commercial catfish stocks by wading birds, primarily great blue herons and great egrets, is a major threat to catfish stocks. Surveys of these species revealed that their populations have increased at least threefold in the last 5 years. A year-long field investigation by NWRC scientists revealed that only 8 percent of the diet of great egrets was comprised of live catfish, and heron predation had a negligible impact on catfish stocks. The researchers concluded that herons were inefficient foragers on healthy catfish, and that most live catfish captured by herons from commercial catfish farms are diseased.

- NWRC biologists also investigated the role of great blue herons as a vector of catfish diseases. The findings of a cooperative investigation between NWRC and the Mississippi State College of Veterinary Medicine indicate that wading birds are not significant vectors of enteric septicemia, one of the most economically significant catfish diseases.

- White pelicans have become a concern for the catfish industry. Larger numbers of pelicans are wintering in catfish production areas, and white pelicans were recently responsible for transmitting a potentially serious trematode parasite to catfish stocks at several fish farms in Louisiana. Impact studies are continuing.

Blackbird Damage to Rice—Redwinged blackbirds and related species cause millions of dollars' worth of damage to ripening rice in Southeastern States during the late summer and early fall.

- During 1999, NWRC scientists evaluated a bird repellant for ripening rice. Field trials in southwestern Louisiana indicate that the repellant can protect ripening rice from blackbird depredation for at least 7 days. Additional trials are planned to evaluate the cost effectiveness of different application rates and patterns in an effort to extend the protection period to 2–3 weeks.

New Solutions for Wildlife Problems— NWRC scientists are currently testing a number of new methods for managing wildlife damage to agriculture, property and natural resources, and threats to human health and safety.

- New and improved methods to deter predators from killing livestock. With assistance from FWS and a grant from the Defenders of Wildlife, NWRC scientists developed a radio-activated Electronic Guard frightening device that activates when animals approach the device. This concept is a vast improvement over conventional randomly activating light and sound stimuli, which have limited effectiveness because predators quickly become habituated to them. In Montana field tests, the radio-activated Electronic Guard performed well in harsh weather conditions. Development of an improved prototype is under way, and additional field trials are planned for FY 2000. This approach has potential for reducing predation by wolves and coyotes on domestic livestock in small areas such as calving pastures and may be applicable to a variety of other problems involving carnivore predation on T&E species.

- Investigations of llamas as an alternative to guard dogs for protecting sheep flocks from coyotes and other predators. While guard dogs are often effective for this purpose, they are expensive to buy and maintain and shortlived, and sometimes they attack sheep. The presence of dogs can also interfere with the use of other integrated management methods and the conduct of a well-rounded, efficient predation management program. NWRC completed a 2-year study in 1999 examining the effectiveness of llamas as livestock guardians. Loss rates were compared for sheep flocks with and without llamas present. During the first year of the study, 50 percent fewer losses occurred in flocks with llamas. During the second year, losses remained constant for flocks with llamas. Although data are incomplete, producers who participated in the study considered llamas to be effective or very effective in reducing predation. Most of the producers purchased llamas for continued use.

- Development of methods to control the BTS. Between 1995 and 1998, NWRC conducted research to identify chemicals (toxicants, fumigants, attractants, and repellants) to control the BTS. Beginning in 1999, the Center initiated field tests on a number of chemicals, including acetaminophen, on Guam. Acetaminophen was determined to be an effective toxicant for the BTS. In two field trials, preliminary analysis suggested that snake populations in multiple study plots were reduced by 50 to 80 percent. Under WS' Emergency Use Permit from the Environmental Protection Agency, acetaminophen can now be used on a limited scale by WS for 3 years to control the BTS.

- New strategy and rodenticide registration for managing roof rat depredation in macadamia orchards in Hawaii. Up to 10 percent of the Hawaiian macadamia nut crop is damaged by roof rats each year. Research by scientists at NWRC's Hilo, HI, field station into the biology of roof rats recently aided the Hawaii macadamia industry in obtaining a State registration for a new use of the anticoagulant rodenticide diphacinone. The new registration allows producers to place bait boxes in trees rather than having to rely on broadcast baiting of rodenticides on the ground. This new registration provides producers with a more effective damage control tool since the rats forage primarily in trees and also reduces the risk of hazards to nontarget animals.

APHIS Technical Mission to Turkey—An NWRC scientist participated in an APHIS mission to Turkey to help evaluate agriculture-related problems resulting from the devastating earthquake that struck northwestern Turkey on August 17, 1999. The visiting team of scientists also identified ways for APHIS to assist with recovery efforts and made recommendations to the Turkish Ministry of Agriculture. Rat infestations were identified as a public health concern, primarily in areas around temporary tent camps for earthquake survivors. NWRC prepared a plan for Turkish officials to address immediate rodent control around tent cities and long-term rodent management to reduce impacts to agricultural production.

PROTECTION OF AGRICULTURAL RESOURCES

WS plays a leadership role in cooperative efforts with the States and agriculture producers across the country to protect farm crops, livestock, and aquaculture and forest resources from damage caused by wildlife. NASS has documented annual depredation losses to selected agriculture commodities in the United States. These losses include more than $110 million for corn, blueberries, and sunflower and more than $14 million for farm-raised catfish and trout. Wildlife damage to agriculture in the United States, excluding forest resources, is estimated at between $600 million and $1.6 billion annually.

Although many species of wild animals cause damage to farm crops, birds and deer cause the most damage. Each year, for example, blackbirds severely damage sunflower crops in the Dakotas and Minnesota and rice in the Southeastern States. Scientific surveys show sunflower damage to be $4 million to $11 million each year in Minnesota and the Dakotas. WS personnel provide assistance to farmers through cooperative programs designed to reduce damage to tolerable levels through habitat management, behavioral modification, and population management. Technical assistance provided to producers requesting assistance includes literature and recommendations based on research findings, demonstrations or training, and the loaning of specialized equipment.

In some situations, WS conducts direct management assistance through cost-effective, integrated wildlife damage-management programs that use a variety of nonlethal and lethal approaches to minimize damage. WS uses the most selective methods available when lethal removal is necessary and continues to improve on methods selectivity through research. The number of nontarget animals taken by WS nationwide is typically less than one-half of 1 percent of the total number of all animals removed by lethal means.

Predator damage management continues to be an important focus in Western States. All Western States except Hawaii, Alaska, and Kansas have major cooperative livestock protection programs. Statistics compiled by NASS estimate annual cattle, sheep, and goat losses to predators in the United States at more than $65 million.

WS commissioned NASS to conduct a customer satisfaction survey of livestock producers in 24 States who received direct assistance from WS to manage wildlife livestock predation on their farms or ranches. WS customers reported losses of cattle, sheep, and goats caused by predators valued at $17.5 million during 1998. Predators accounted for 64 percent of WS customer livestock losses in 1998, and coyotes were responsible for 58 percent of all predator losses. Almost 75 percent of the 11,777 producers contacted in early FY 1999 responded to the survey. Overall, more than 89 percent of the respondents were satisfied with the services received from WS. Customers also gave high marks on WS program effectiveness, with more than 85 percent rating the services received as effective.

In Utah, for example, livestock sales total more than 75 percent of all agricultural cash receipts. WS provides protection from predator losses for about 95 percent of the State's domestic sheep and 20 percent of newborn calves. Increasingly, WS is providing protection for domestic turkey flocks, goats, and exotic livestock, including ostrich and emu in Utah. Major predators include coyotes, mountain lions, and black bears. In 1999, the Utah WS program was able to keep cooperator predation loss for sheep at below 5 percent for lambs and below 3 percent for adult sheep. WS monitors the predator management methods practiced by Utah livestock producers and provides technical assistance to producers regarding nonlethal management strategies.

As wolf populations continue to expand their range in Montana, Wyoming, Idaho, Minnesota, Wisconsin, and Michigan, management of wolf predation continues to be a concern for livestock producers. In Minnesota, WS responded to 78 requests for assistance that were verified to be wolf damage and captured 106 wolves in 1999. WS also continues to play an important role in the recovery of the gray wolf in the northern Rocky Mountains. Since the reintroduction of 66 wolves in Idaho and Yellowstone National Park in 1995 and 1996, wolf numbers increased to 340 animals by August 1999. Wolf–human conflicts have increased substantially as has the demand for assistance by WS. WS wildlife specialists have verified wolf predation, captured problem wolves, helped to mediate conflicts between agencies and livestock owners, and disseminated information about predator damage management to producers and the general public. APHIS contingency funds were again required to accomplish damage management activities in FY 1999. Many wolves are expected to disperse from both the Idaho and Yellowstone recovery areas in 2000 and cause further discontent among ranchers in surrounding areas. As a result, demands for WS support are expected to increase.

Livestock herds in Michigan were placed at great risk from an outbreak of bovine tuberculosis. The disease was confirmed in a confined deer herd on a private ranch. The Michigan Department of Agriculture issued a depopulation order to help slow the spread of the disease to cattle and free-ranging deer. WS developed a depopulation plan and completed the depopulation in March 1999, 18 months ahead of schedule.

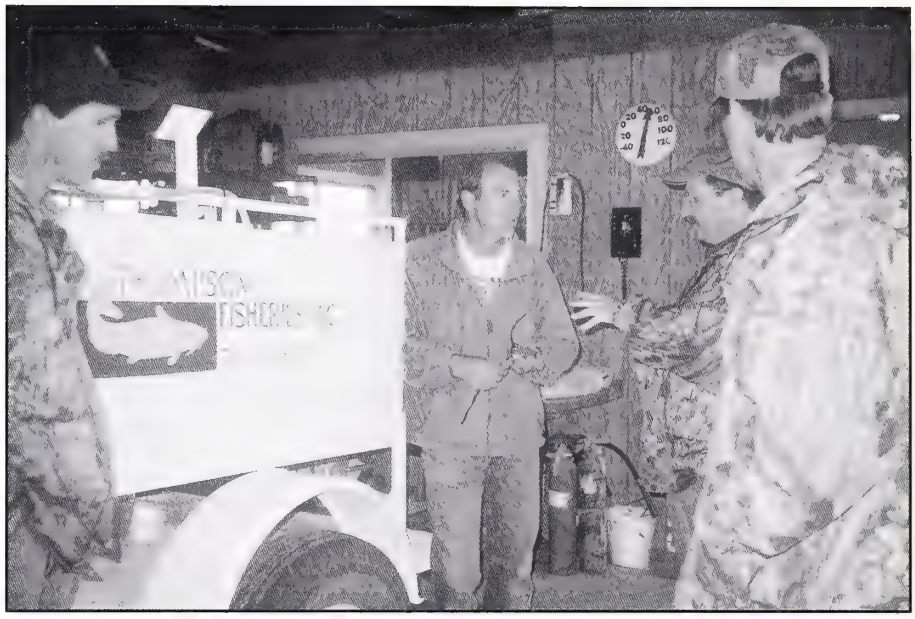
The Need for and Results of Aquaculture Protection

A 1998 NASS survey of producers in the 15 largest catfish-producing States in 1996 revealed that 69 percent of the respondents reported some wildlife-caused losses. Overall, the producers lost $11.5 million worth of catfish to wildlife depredation. The losses and damage control expenditures totaled $17 million, or 4 percent of all catfish-generated revenue.

The average cost of wildlife-caused loss from all States was $13,700 per farm reporting a loss, and an average of $6,200 was spent to reduce losses. The highest loss rate was in Mississippi. Birds, primarily the double-crested cormorant, were most frequently cited as the cause of losses.

WS personnel provided technical and/or direct management assistance to fish producers reporting losses in 41 States through cooperative programs to minimize bird depredation on commercial fish stocks.

WS coordinated a cooperative cormorant roost-dispersal program across the primary catfish production region of the Mississippi Delta designed to reduce cormorant depredation at catfish farms. Beginning in November, several hundred aquaculture producers, Federal and State employees, sportsmen, and interested citizens participated in monitoring and dispersing cormorants from 75 night roosts near fish production areas. This nonlethal management strategy, developed by WS and used successfully for the past several years, has been effective in reducing damage and is well accepted by producers. Cormorant populations were reduced in the region by as much as 75 percent.



WS took a proactive role when a trematode parasite surfaced at several catfish farms in Louisiana. Transmitted to commercial catfish stocks by white pelicans, the parasite weakens the immune system of infected fish. WS promoted research to answer management questions and assisted in bird collections and surveys to determine the extent of the problem. Studies on parasitic trematodes in white pelicans have now been elevated to priority status by aquaculture researchers in Mississippi, Louisiana, North Dakota, and Arkansas. WS also provided personnel to band pelicans in North Dakota as part of an ongoing NWRC study to investigate the impact of white pelicans on the commercial catfish industry.

PROTECTION OF ENDANGERED SPECIES AND OTHER NATURAL AND CULTURAL RESOURCES

WS continued to play a critical role in the recovery of federally listed T&E species around the country. Many organizations, including other Federal agencies, State and local governments, and even private conservation groups, turned to WS to minimize the impacts of predation and other problems that wildlife cause to T&E species. In FY 1999, WS conducted 104 cooperative projects for the protection of 84 T&E species in 26 States, Puerto Rico, and the Virgin Islands. Of WS' T&E species direct protection and recovery-enhancement projects, 93 percent benefitted target species. Success is defined as increasing or maintaining populations of T&E species.

In addition to direct protection of these species, WS plays an important role in the recovery efforts of certain T&E species that periodically cause damage to crops, livestock, and private property. For example, program specialists assisted with the capture and relocation of grizzly bears in Montana, Louisiana black bears in Louisiana and Mississippi, and gray wolves in Montana, Idaho, Wyoming, Minnesota, and Wisconsin. By resolving conflicts caused by T&E species, landowners and producers are more likely to tolerate their presence.

WS worked closely with FWS in managing five family groups of Mexican wolves reintroduced on the Apache National Forest in southeastern Arizona. WS wolf recovery assistance included participating in public outreach programs, responding to wolf–human conflicts (depredation on livestock and pets), and monitoring and capturing problem wolves. The WS wolf specialist stationed in Arizona played a critical role in Mexican wolf recovery efforts in 1999, and livestock producers and FWS biologists relied heavily on the specialist for damage management expertise.

As an integral part of the recovery plan for black-footed ferrets, WS removed coyotes around new release sites for this federally listed species in Utah and Arizona and assisted in disease monitoring and surveillance in areas targeted for ferret releases in Utah and Colorado. Another listed species, the Utah prairie dog, was afforded the same protection.

WS also worked with FWS and other State and Federal agencies to develop an interagency management plan for the black-tailed prairie dog. This plan will provide a framework for addressing agricultural conflicts as well as conservation and management issues throughout the range of the prairie dog, which is under consideration for listing as a federally protected threatened species.

FWS, the National Park Service (NPS), the Florida Department of Environmental Protection, and several private conservation organizations relied on WS to protect 10 T&E species, including sea turtles, endemic beach mice, shorebirds, and one fish species from other wildlife on public lands in the Florida panhandle. WS efforts to protect endangered sea turtles in one area resulted in an all-time low in nest depredation. In FY 1999, 170 sea turtle nests were successful, and only 1 nest predation incident occurred.

A new WS program was initiated with the NPS to protect endangered sea turtles, least terns, brown pelicans, and native vegetation on Buck Island National Monument in the Virgin Islands. WS is controlling black rat infestations on the island to reduce impacts on native fauna and flora under a funded cooperative agreement with the NPS.

WS participated in an interagency meeting in Utah to finalize WS' role in the Gunnison's Sage Grouse Conservation Plan and conducted coyote removal activities in grouse-occupied areas in accordance with the plan. The Gunnison's sage grouse, a candidate for endangered species listing, is threatened by shrinking habitat and coyote predation.

The Utah State Director traveled to the Mexican State of Coahuila to assess predation problems associated with their pronghorn antelope transplant program. The pronghorn antelope is an endangered species in Mexico.

Protection of Other Natural Resources

Predator damage management by WS extends beyond livestock protection and protection of T&E species. In Montana, Texas, Arizona, Idaho, Oregon, and Utah, State agencies and private game ranches are looking for help from WS to revive declining deer herds. In Utah, WS reduced coyote numbers in critical mule deer fawning areas for the second year in a row, and the herds in three of the areas have rebounded significantly to surpass State management plan objectives. Managing deer predation in Western States is expected to become a higher priority issue in the near future.

WS continued a project initiated in 1998 with the New York Department of Conservation and the New York Cooperative Fish and Wildlife Research Unit at Cornell University to investigate nonlethal techniques for reducing stopover time of migrating cormorants on Oneida Lake in central New York, where these birds have been affecting the local fishery. This year, project efforts resulted in lowering migrating cormorant populations on the lake by up to 97 percent and reducing fish consumption by about 30 percent.

A cooperative program for managing nutria damage to coastal marshes along the eastern shore of Maryland was authorized and planned by WS, the Maryland Department of Natural Resources, the FWS, and the University of Maryland Cooperative Fish and Wildlife Research Unit. The 3-year pilot nutria damage-management program, to be conducted on the Blackwater National Wildlife Refuge in Maryland, is scheduled to begin in FY 2000, pending the allocation of Federal, State, and private funding.

PROTECTION OF PROPERTY

Wildlife sometimes causes damage to public and private property, including buildings and landscaping, roads and utilities, industrial structures, water management facilities, and forest resources. These damages can be relatively minor or may be of such severity as to result in significant economic losses or threats to public health or safety.

Beaver throughout their North American range are responsible for tens of millions of dollars in damage annually to public roads and highways, agricultural and forest resources, soil and water conservation districts, municipal water treatment and sewer systems, and other property. In the Southeastern United States alone, researchers have estimated the economic damage caused by beaver to have exceeded $4 billion over a 40-year period.

With dramatic increases in beaver populations in recent decades and low demand for fur and other beaver products, it is not surprising that the need for WS assistance in managing beaver damage has been increasing significantly. In Oklahoma, for example, the number of requests to WS for assistance in handling beaver damage has increased almost 300 percent since 1985. The same is true in North Carolina. Since 1993, the number of beaver damage-management projects completed by North Carolina's WS program has risen from less than 200 annually to almost 1,000 in 1999.

Traditionally, WS has recorded reported information on the damage caused by beaver to various resources without taking into account the value of work by the program in preventing further damage from occurring. For FY 1999, WS collected data on these resources saved from further damage. Thirteen WS State programs provided estimates for resources saved that included timber, roads and bridges, and other natural resources. For its GPRA performance assessment, WS set an $8 million target for this work area. The information collected on resources saved during FY 1999 indicates almost $22 million in further damage was averted by WS beaver damage-management projects. Based on this conservative estimate and WS expenditures for beaver work in these States, the benefit–cost ratio is approximately 5.6 to 1: for every $1 spent to reduce further beaver damage, $5.60 is saved.

More specific examples of resources saved include the North Carolina program, where WS personnel averted an estimated $3.5 million in beaver-caused damage to forest and agricultural resources, waterways, highway infrastructures, and other property such as sewer and water treatment facilities.

In Oklahoma, beaver activity resulted in downed trees and flooded roads and property in many areas. Shawnee, OK, officials estimated beaver damage in one residential area at $20,000. In Blaine County, flooding caused by beaver resulted in lost oil production when access roads became impassable. During April 1999, County commissioners from five counties requested assistance when beaver flooded numerous roads. State health officials became concerned when beaver tunneled into dikes at the wastewater treatment facilities for Copan and Towson, OK, causing sewer lagoons to leak. WS assisted county work crews in removing the problem beaver dams and provided technical and direct assistance in beaver damage management to affected landowners.

Conflicts with urban waterfowl continue to grow with the increased expansion of the Phoenix metropolitan area. WS worked in conjunction with the Arizona Humane Society,

Arizona Society for the Prevention on Cruelty to Animals, and For the Birds to reduce property damage and nuisances caused by waterfowl in the Phoenix area. Under the "Adopt a Duck" program, about 2,000 nuisance waterfowl were removed from city parks, golf courses, and housing developments in 1999 and "adopted" by qualified residents as an alternative to lethal control.

PROTECTION OF HUMAN HEALTH AND SAFETY

WS protects U.S. residents and visitors from threats to human health and safety arising from wildlife-borne diseases, wildlife collisions with aircraft and automobiles, and other hazards caused by wildlife.

Increasing conflicts between deer populations and expanding suburban development have resulted in increased requests for WS assistance from State wildlife agencies, residential communities, airports, businesses, and individual property owners. In many suburban areas across the country, expanding deer herds and human populations are resulting in automobile–deer collisions, safety hazards at airports, and concerns over the transmission of Lyme disease to people. WS continued a successful deer conflict management program in a large residential community on Skidway Island in Georgia and implemented a similar program in a residential area near Charleston, SC.

Disease Surveillance and Control

WS serves a crucial role in the area of disease surveillance. Wildlife-borne diseases spread by birds and mammals through direct and indirect contact pose a threat to humans, pets, and domestic livestock. To protect human interests, WS personnel provided both direct and technical assistance in FY 1999 to suppress wildlife-borne diseases including rabies, plague, Lyme disease, histoplasmosis, and bovine tuberculosis.

The most active disease WS surveillance and control efforts in 1999 were conducted to slow the spread of rabies. The WS role in these efforts includes distribution of bait and collection of information on rabies vector populations and surveillance samples to evaluate program effectiveness. Rabies in coyotes and foxes in Texas and raccoons in the Northeast have emerged as significant public health and wildlife management problems. The social and financial costs associated with rabies increase dramatically as wildlife become infected in new or broader geographic regions of the United States. The WS Wildlife Rabies Management Team, formed in 1999, coordinated cooperative rabies programs in Ohio, New York, Texas, and Vermont. The primary cooperators include the State health departments, Cornell University, CDC, University of Georgia (Southeastern Cooperative Wildlife Disease Study), University of Wyoming, Ontario Ministry of Natural Resources, and the respective State wildlife agencies.

Canine Rabies—WS continued to provide assistance to the Texas Department of Health in 1999 in an effort to halt the spread of canine rabies in South Texas. The cooperative Texas Oral Rabies Vaccination Project was implemented in 1995 using available APHIS contingency funding in an attempt to contain the epizootic and reduce human exposure. A 96-percent reduction in canine rabies has been reported in Texas since the first oral vaccine airdrop in South Texas in 1995. Results from surveillance programs conducted in March 1999 have shown that more than 70 percent of coyotes tested from South Texas were positive for the biomarker included in the bait material, and more than 89 percent tested from the primary surveillance area have shown evidence of immune response to the vaccine. Canine rabies cases in South Texas have declined from 166 reported in 1994 to 7 in 1998 and 8 from mid-March through November 1999. Similar success has been observed in the gray fox, with the number of rabies cases reported dropping from 188 in 1995 to 43 in 1998 and 42 from mid-March through November 1999. Even with increases reported in gray fox populations in 1998 and 1999, a positive serologic response to the vaccine was detected in 70 percent of foxes tested in 1999, and 52 percent tested positive for the bait biomarker. A total of 2.7 million rabies vaccine baits were distributed over a 42,000-square-mile area in South Texas involving 198 aerial bait drop operations.

Raccoon Rabies—In Ohio, New York, and Vermont, WS assisted in the distribution of almost 1.8 million oral raccoon rabies vaccine baits in FY 1999, distributed over more than 4,500 square miles. This program was designed to stop the westward spread of the raccoon strain of rabies by creating buffer zones where the rabies virus will die out. Cooperative monitoring and surveillance has shown good uptake of the vaccine baits by raccoons, resulting in a substantial reduction in the number of rabies-positive raccoons in the treated areas.

West Nile Virus—West Nile virus (WNV)—a virus with enormous potential to damage human health, livestock, and wildlife—was first documented in the United States in the late summer of 1999. The disease spread quickly and was responsible for the deaths of 7 of 61 people diagnosed with WNV-caused encephalitis and 9 of 23 horses in the New York City area. The virus also infected a variety of captive birds at the Bronx Zoo and thousands of wild crows along the east coast. Birds serve as the natural host for the virus, which is transmitted to humans and other animals through the bite of mosquitoes.

In response, WS prepared for a collaborative effort in FY 2000 to conduct surveillance for WNV in wild bird populations along the Atlantic coast to determine which species were infected and if the virus could be carried to other States through southerly fall migrations. This information assists local health and agriculture agencies in preparing for and responding to WNV outbreaks. Other participating agencies were the U.S. Geological Survey's National Wildlife Health Center and the U.S. Department of Health and Human Services' CDC. Blood samples collected by WS from crows, house sparrows, and feral pigeons in New York, Pennsylvania, Connecticut, Delaware, New Jersey, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida will be provided to the National Wildlife Health Center and some State health laboratories for testing. WS will collect samples and collaborate with cooperating Federal, State, and local agencies through FY 2000.

Other disease surveillance work conducted by WS in FY 1999 included the collection of blood samples from predators for bubonic plague titer monitoring by health departments in Nevada, Texas, California, and Colorado and hantavirus monitoring in several Western States.

Airport Safety

WS provides assistance in reducing human safety risks and property damage associated with wildlife–aircraft strikes at civil and military airports. The demand for WS assistance to reduce wildlife hazards in airport environments is increasing rapidly as the number of reported strikes has increased over 104 percent during the period 1990–98. A total of 3,600 reported wildlife strikes were recorded for FY 1999 in the FAA National Wildlife Strike Database. Experts estimate that wildlife strikes cost the U.S. civil aviation industry more than $300 million annually.

During 1999, cooperative funding was provided to WS by the FAA, DoD, airports, counties, municipalities, and waste-handling facilities to conduct direct assistance activities on civil and military airports. Technical assistance provided by WS to airport managers and military airbase commanders in 1999 included 210 initial consultations and the development of 42 wildlife hazard assessments, 17 wildlife hazard management plans, and 7 environmental assessments. WS provided direct hazard management assistance to 110 airports and technical assistance to 316 airports and military air bases in 47 States and Guam. On airports and military airfields where WS operational projects were conducted, the presence of wildlife was reduced by up to 95 percent. WS also provided training to 410 airport personnel in recognizing and managing wildlife hazards to air traffic safety and, with the FAA, WS coauthored a wildlife hazard-management manual for airport personnel. The partnership formed by WS and FAA to improve aviation safety provides an outstanding model of cooperation and efficiency between Federal agencies.

In 1999, WS completed its ninth year of assisting John F. Kennedy International Airport (JFKIA) with reducing the number of gull–aircraft collisions. This joint WS operational and research program has lowered the number of bird strikes at rates varying year to year between 75 and 90 percent below pre-1990 levels. While effectively increasing air passenger safety at JFKIA, the program has allowed a nearby gull nesting colony on National Park Service land to remain viable and has not caused a decline in the regional breeding population. Relocation of the colony away from the airport is not possible because the colony is located on a fully protected wildlife refuge.

In 1996, WS initiated a training program to prepare WS biologists for working effectively in airport environments. Training courses are conducted annually and focus on wildlife survey and management techniques to minimize wildlife hazards to airport safety and on working effectively in unfamiliar, often complex organizational environments. The program's third training course was held in Seattle, WA, in October 1998 and was attended by 48 WS wildlife biologists and specialists. The 34 biologists who attended have been certified to supervise WS airport projects and prepare airport wildlife hazard assessments and management plans. WS now has a total of 104 personnel trained to conduct wildlife hazard management work at airports, of whom 89 are certified biologists.

Customer Service and Program Evaluation

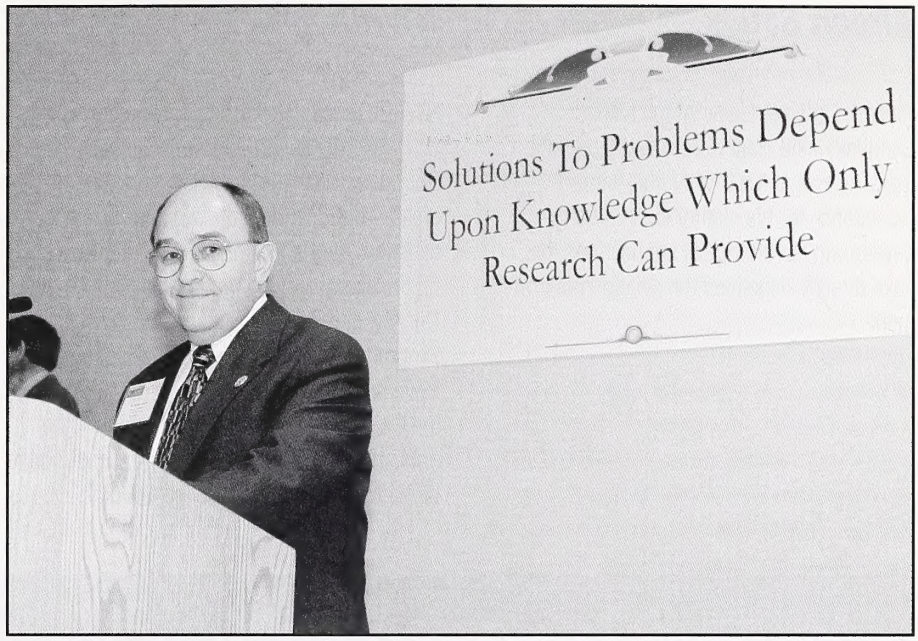
The WS program is a customer-driven organization. Because the program is cooperative in nature with clients paying for services, it has always been part of the WS culture to focus on the satisfaction of these paying customers. In the past, WS has conducted several customer satisfaction surveys, including one in 1993 on direct management assistance and one in 1994 on technical assistance. For both sets of customers, the results were high. Satisfaction ratings ranged between 87 percent and 97 percent. In 1999, WS commissioned NASS to survey U.S. livestock producers served by WS in 24 States. More than 89 percent of the survey respondents were at least "satisfied" with direct assistance received from WS while slightly over 85 percent said that WS direct management assistance had been effective.

In 1993, WS established an evaluation committee to improve customer services. The committee conducts yearly evaluations of individual State programs with regard to program operation, service delivery, customer satisfaction, procurement, and relationships with key cooperators including State and other Federal agencies. During 1999, program evaluations were conducted in Washington, Alaska, Guam, and Hawaii. These evaluations help to increase proficiency and maintain a high level of customer service throughout the program.

AWARDS AND PUBLIC RECOGNITION

Meritorious Executive Award

Bobby R. Acord, Wildlife Services' Deputy Administrator from 1990 through August 15, 1999, received the Meritorious Executive Award, a Governmentwide award honoring outstanding achievement. The award was in recognition of Acord's outstanding contributions to the mission of WS, which include improvements in work efficiency and customer service, strategic planning initiatives, innovative funding approaches, workforce planning and diversity, professional standing of the program, and construction of the new NWRC in Fort Collins, CO.



Outstanding Service

At their annual convention, the Catfish Farmers of America presented outstanding service awards to representatives of the WS programs in Alabama, Arkansas, Louisiana, and Mississippi and to NWRC for their efforts in helping to reduce fish-eating bird depredation at commercial aquaculture farms.

Secretary's Honor Award

The Secretary's Honor Award was presented to WS research and operations personnel involved in the BTS program for their efforts in developing methods and implementing safe and effective operational control strategies to exclude this invasive species from Hawaii and the U.S. mainland. This prestigious USDA award recognized 21 WS employees.

Disaster Assistance

On May 3, 1999, the town of Mulhall, OK, was devastated by a tornado. At the request of the Logan County Sheriff's Department, WS sent six employees to help remove debris from roadways, direct traffic, and keep sightseers out of the devastation area. The sheriff commended the employees for their long hours of work over a period of 5 days. All six employees received a Certificate of Appreciation for the exemplary way in which they represented the agency.

Employees in the North Dakota WS program were recognized with the USDA Unsung Heroes Award for their dedication, hard work, and assistance to the citizens of North Dakota following a severe blizzard in April 1997. The WS employees were honored for providing critical assistance in protecting water supplies throughout the State by helping remove more than a thousand carcasses of cattle killed by the storm from farm ponds, lakes, and rivers.

Airport Safety

Richard Dolbeer, leader of the NWRC Sandusky field station, received recognition from the FAA at the 22d Annual Airport Conference for his skillful leadership in developing technological applications that have directly benefitted the aviation environment.

NWRC

NWRC Director Richard Curnow received a USDA Certificate of Merit from Richard Rominger, USDA Deputy Secretary, for creativity and leadership in planning and establishing the new research center located on the campus of Colorado State University. Curnow and William Dusenberry, NWRC Program Manager for Facilities Planning and Development, also received recognition from the General Services Administration for their outstanding dedication during the construction of the NWRC Wildlife Science Building.

Educating Tomorrow's Leaders

Directors of the 93d National Western Livestock Show held in Denver recognized the WS Colorado program for providing an opportunity for about 96,000 school children and teachers to participate in an interactive exhibit. The students learned how to identify wild animal tracks, participated in a "mystery animal" contest, and received factsheets on interesting wildlife species.