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Animal Damage Control Program Highlights, 1996

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Introduction

Since 1985, the Federal Government's efforts to manage wildlife damage to agricultural and other resources have been centralized in the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS). APHIS' Animal Damage Control (ADC) program works to minimize the effects of wildlife on livestock and crops, property, and natural resources, including threatened and endangered species. Along with our traditional responsibilities, we also protect human health and safety from wildlife damage.

This report documents ADC's accomplishments during fiscal year (FY) 1996. They include identification of four new strategic goals; the completion and analysis of a customer satisfaction survey regarding ADC's technical assistance services; the continuation of two workforce planning initiatives; and ADC's continuing research on innovative approaches to lessen wildlife damage. Additionally, ADC's recently completed indoor animal research building in Ft. Collins, CO, became fully operational.

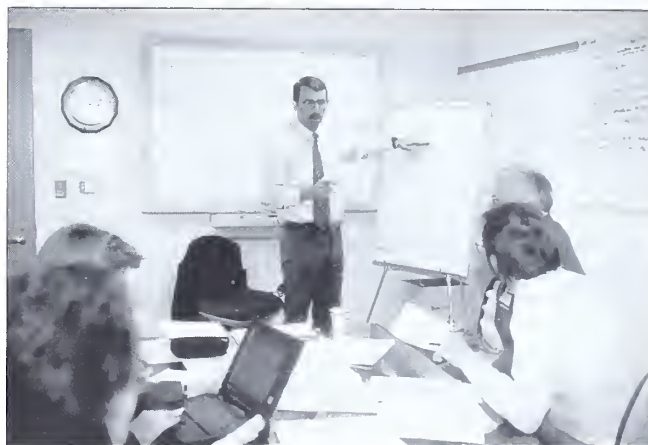
Preparing the 1996 highlights report is one way we are working to keep the public and our State and local cooperators better informed about ADC activities. To learn more about our research activities, you are encouraged to request a copy of the National Wildlife Research Center Highlights Report, Fiscal Year 1996. Write to USDA/APHIS/NWRC, 1201 Oakridge Drive, Ft. Collins, CO 80525, and ask for Miscellaneous Publication 1541. For more details about the overall ADC program, please write to:

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Program Highlights

Strategic Planning

In 1994, the program published Animal Damage Control: Mission and Strategy, which presented a new strategic vision for ADC—a vision focused on improving the coexistence of people and wildlife. Since that time, ADC has continued to strategically move toward a future in which wildlife damage is reduced to lowest possible levels at the same time that wildlife mortality is also reduced. After employees, stakeholders, and public representatives validated that this is still an appropriate strategic direction for the program, in FY 1996, ADC identified four programwide goals. Employees representing all levels of the program participated in workshops across the United States to finalize these goals and supporting strategies. These goals include (1) providing wildlife services, (2) developing methods, (3) valuing and investing in people (i.e., our workforce), and (4) providing enhanced information and communication to our publics. The goals and strategies were designed to help all employees and managers as they conduct their daily activities in a manner that supports ADC's strategic vision for the program.



Workforce Planning Initiatives

ADC continued with two workforce planning initiatives during the year. One initiative—the ADC Leadership Excellence Program (LEP)—is an 18-month leadership development program designed to help ADC meet anticipated vacancies in some of its top leadership positions in the near future. Ten ADC employees with demonstrated leadership potential will graduate from the rigorous program in July 1997. Participation in the LEP has given these employees an opportunity for leadership skills assessment, a contracted learning agreement, individually and group-tailored learning curriculum, developmental work details, mentoring from a senior-level manager, small- and large-group work projects, and networking with the ADC management team.

The second initiative—ADC Critical Skills Development—focuses on increasing the pipeline of employees for supervisory and managerial positions in the future. With this initiative, 12 leadership skills (e.g., conflict resolution, communication, teamwork, and coalition building) have been identified as critical to the success of all ADC employees regardless of their placement in the organization. Developmental funds are made available to employees to encourage them to develop these skills. The goal of this program, in addition to enhancing employee performance, is to provide an opportunity for nonsupervisory personnel to see themselves as future supervisors and managers.

National Agricultural Statistics Service (NASS) Survey

ADC has continued its interagency agreement with NASS to determine the magnitude and extent of wildlife damage to various agricultural resources. In May 1996, NASS released the results of its survey to determine losses to the cattle industry due to predators. Results indicated that predators killed 96,200 calves and 21,200 adult cattle valued at \$39.5 million. Coyotes and dogs continued to be the largest predators of cattle.

Program Development Activities

During 1996, total cooperative funding provided to the ADC program increased by approximately \$2.3 million. Most of this funding was allocated for beaver control and human health and safety projects. Examples follow.

- A grant of \$50,000 a year to ADC from the Nebraska Department of Agriculture for general wildlife damage-management activities.
- An additional \$86,000 from the Wisconsin Department of Natural Resources to control beaver damage on trout streams in Wisconsin.
- A grant of \$84,000 to ADC from 20 counties and 7 water resource districts in North Dakota specifically to manage damage caused by beavers.
- A \$60,000 increase in the FY 1997–99 Oregon Department of Fish and Wildlife budget for ADC to handle depredation situations involving mountain lions, beavers, black bear, and other abundant wildlife species.
- A \$375,000 grant to ADC from the Mississippi Department of Wildlife, Fisheries, and Parks for more control of beaver damage. (The Beaver Control Assistance Program in Mississippi will be expanded to 8 new counties, bringing the total to 58 counties.)



Through cooperative toll-free telephone services ADC provided to the public in Maryland, Wisconsin, and Vermont, phone bank personnel handled more than 22,000 wildlife damage-management calls, including 18,693 relating to nuisance wildlife in Maryland and Wisconsin and 3,356 calls about rabies in Vermont. Cooperators in this service include the Maryland and Wisconsin Departments of Natural Resources and the Vermont Departments of Fish and Wildlife, Health, and Agriculture.

During FY 1996, ADC personnel helped State officials in North Carolina plan and implement a new program for training and certifying nuisance-wildlife control operators. Certified wildlife control operators will be authorized, as agents of the State, to issue wildlife depredation permits and conduct nuisance-wildlife control activities. The certification program for the operators was developed for the North Carolina Wildlife Resources Commission by the North Carolina Chapter of the Wildlife Society's Wildlife Damage Control Committee.

Brown Tree Snake (BTS) Control Program

During FY 1996, the Department of Defense (DoD) allocated \$1 million to help fund the BTS program at nine military locations in Guam and Hawaii. Since the program first began in 1993, the BTS control program on Guam has nearly doubled the size of its field staff. The program currently has 1 ADC district supervisor, 1 support wildlife biologist, and 21 ADC specialists. ADC personnel in Guam are assisted in their BTS control efforts by 10 Jack Russell terriers, which are used to detect and control the snakes in military and civilian cargo at transportation facilities. During 1996, ADC personnel removed 5,240 brown tree snakes from high-risk areas on Guam. The Commonwealth of the Northern Marianas and ADC are currently negotiating to establish an operational BTS control program on the island of Saipan to control an burgeoning population of the snakes there.



BTS control methods at present include traps, glue boards, fencing, electrical barriers, detection dogs, habitat modification, and prey-base removal. With funding from DoD, scientists at the National Wildlife Research Center (NWRC) in Ft. Collins, CO have been working to develop toxicants and fumigants for BTS control. Several toxicants and fumigants have proved to be effective.

Public Information

ADC continued its "Living With Wildlife" public information campaign during 1996. ADC began this outreach program in January 1994 to better inform the general public and future generations about wildlife, wildlife damage, and the goals, mission, and objectives of the ADC program. During 1996, more than 100 positive news items were placed in national and regional publications. There were articles on the BTS program in Guam, the Texas and New England rabies programs, guarding dogs, aquaculture, urban wildlife problems, and new research techniques.

An active campaign to place ADC educational materials in classrooms has also continued. Since January 1995, more than 5,000 teachers nationwide have received "Living With Wildlife" posters, activity sheets, factsheets, brochures, pens, pencils, and rulers. In addition, ADC is conducting outreach efforts through Project Wild and Ag in the Classroom. Specific information regarding ADC's "Living With Wildlife" campaign can be found on the ADC home page. Point your Web browser to

<http://www.aphis.usda.gov/adc>

to access it. On a per-week basis during 1996, ADC received between 25 and 30 requests for further information through the Internet.

ADC cohosted the Seventh Eastern Wildlife Damage Management Conference held in Jackson, MS, in November 1995. The conference was attended by about 180 Federal and State officials and various private interests. A highlight of the conference was a field trip to a large catfish farm where ADC personnel from Mississippi and NWRC demonstrated equipment for bird depredation management and strategies for muskrat and beaver damage abatement.

Several informational materials were developed in 1996, including the "Animal Damage Control Program Highlights, 1995," a new factsheet entitled "The Rabies Management Challenge," and a new NWRC video. The video describes the mission and research program of the NWRC and how the center provides scientific information and methods for wildlife damage management.

Information about the ADC Livestock Guarding Dog program was presented at seven district sheep schools held throughout Kansas during February. About 185 farmers, ranchers, and lamb feeders attended the sessions, which were sponsored by the Kansas State University Cooperative Extension Service. In addition, the ADC Livestock Guarding Specialist made visits to farms and ranches where managers requested personalized assistance on ways to use dogs to reduce predation problems.

DWRC/NWRC Activities

Throughout 1996, staff at the Denver Wildlife Research Center (DWRC) continued to work on the design and building plans for the NWRC, located on the foothills research campus of Colorado State University in Ft. Collins. When completed, the state-of-the-art NWRC facility will include offices, laboratories, a conference and technology-transfer center, maintenance shops, and outdoor animal-holding and research facilities for a variety of mammal and bird species. About 35 employees now occupy temporary office and laboratory space at the Ft. Collins facility, and indoor animal research is being conducted in the animal research building, which was completed in 1995. When the new NWRC headquarters and laboratory facilities are completed in 1998, operations at DWRC will officially cease.

During the year, ADC entered into several new cooperative research agreements:

- An agreement with the U.S. Air Force/Elmendorf Air Base to enhance research efforts to determine the effects of hazing and habitat modifications on Canada geese. This information will be used to develop and implement management practices and technologies to reduce the potential of bird/aircraft strikes.
- An agreement with the Texas Sheep and Goat Raisers Association to study the immunological and behavioral effects of immunocontraceptive technology on coyotes in facilities at Utah State University.
- An agreement with the University of Wyoming to plan research to examine candidate chemosterilants for coyotes.
- An agreement with the States of Washington and Oregon and the USDA's Forest Service to better understand the reasons behind bear damage to the timber industry and identify ways to reduce this damage.



- An agreement with the California Department of Food and Agriculture to develop new chemical methods for rodent control.
- An agreement with the University of California to determine whether pasture characteristics and the availability of alternative prey for coyotes influence the effectiveness of llamas as guard animals.

ADC received authorization from the Food and Drug Administration for experimental use of propiopromazine—a drug suitable for use in calming coyotes and other trapped animals. Previous testing of this product has been done by DWRC personnel. ADC is currently determining how to make this material available and developing guidelines for operational use in trapping programs.

Protection of Agricultural Resources

DWRC is continuing research into the feasibility of using immunocontraception as a method to manage some mammal populations. DWRC has completed 4 years of immunocontraceptive research on white-tailed deer, in cooperation with The Pennsylvania State University, to determine the long-term effects of immunocontraceptive vaccines on the fawning rate of the contracepted deer. In the 4-year study, the fawning rate was reduced in treated deer by 88 percent. No health problems developed in the vaccinated deer.

DWRC is completing its second year of funding by the DoD's Legacy Program to develop chemical methods for managing brown tree snakes. DWRC scientists have been working on Guam nearly continuously to conduct field evaluations of attractants, oral and dermal toxicants, activity patterns using radiotelemetry relative to implementing a baiting strategy, and operational trapping strategies.

Bird and other wildlife strikes to aircraft are a serious, but largely unquantified, economic and safety problem for civilian aircraft in the United States. For the first time, DWRC, working through an interagency agreement with the Federal Aviation Administration (FAA), has completed an analysis of all wildlife strikes reported for an entire year. The analysis of 1994 revealed 2,220 nonduplicate strikes to civilian aircraft reported to FAA. Gulls (30 percent) and waterfowl (13 percent) were the most common species striking aircraft. Mammal strikes included 57 deer and 9 coyotes. Damage was reported for 519 aircraft, including 118 incidents of engine damage.

DWRC biologists estimated that less than 20 percent of known strikes were reported to FAA. If this estimate is accurate, nationwide economic losses from strikes to civilian aircraft in 1994 exceeded \$100 million. Losses from strikes to U.S. military aircraft are estimated to average \$112 million per year. Thus, bird and other wildlife strikes are probably costing the U.S. military and civilian transport industry more than \$200 million per year.



Every year, birds and mammals of many species cause several hundred million dollars' worth of damage to food crops and livestock. Blackbirds and starlings regularly consume grain crops in all stages of growth, from sprouting seeds to mature crops. Affected crops include wheat, corn, rice, sorghum, and sunflowers. Ducks and geese trample, eat, and foul swathed grain and seeds. Fish-eating birds cause serious losses to catfish and other fish grown at aquaculture facilities. Mammals such as deer, prairie dogs, gophers, and raccoons also cause damage to a wide variety of food crops. Certain predators cause significant damage to the livestock industry by killing or injuring sheep, goats, cattle, poultry, and other kinds of livestock.

Here are some specific examples of ADC's accomplishments in protecting U.S. agriculture in 1996:

- During 1996, ADC personnel involved with the Cattail Management Project in North Dakota removed about 5,500 acres of dense cattails in wetland areas in the State. Since the program began in 1991, more than 17,000 acres of cattails in North Dakota have been treated with an aquatic herbicide. This type of wetland restoration offers the additional benefit of providing improved habitat for waterfowl and other wildlife species. Historically, in North Dakota blackbirds have caused a considerable amount of crop damage because their nesting and roosting habitats have been located very close to sunflowers and other farm crops that the birds eat. Removing enough of the blackbirds' nesting and roosting habitat forces them to seek suitable habitat in other areas.
- An avocado farmer in San Luis Obispo County, CA, reported an estimated \$50,000 in damage to his trees caused by feral hogs. Feral hogs in the area have been implicated in the spread of root fungus that kills the trees when the roots are exposed as a result of the hogs' digging activities. With the help of dogs, ADC removed several hogs from the area and put a stop to the damage.



- ADC responded to more than 1,175 complaints about black bears in Wisconsin during FY 1996. In response to requests for assistance, ADC personnel trapped and relocated 480 problem bears. About half of the bears trapped had caused damage to some type of agricultural resource.

- A rancher from Chambers County, TX, requested help from ADC when four of his calves were killed by vultures. ADC specialists investigated the site and confirmed that black vultures had caused the damage. The rancher had tried various harassment techniques to scare the vultures from the area but was not successful. Texas ADC personnel helped the rancher in obtaining a migratory bird depredation permit from the U.S. Department of the Interior's U.S. Fish and Wildlife Service (FWS) to selectively remove a limited number of the birds.

- The Iowa State University's McNay Research Farm lost three research lambs to coyote predation in August 1996 after coyotes continued to find ways to crawl under the high-tensile electric fence surrounding the research station. ADC

personnel removed one coyote, and the predation stopped. Research officials at the station also purchased two livestock-guarding dogs as part of an integrated management program recommended by ADC to keep future losses at a minimum.

- A cattle rancher in Muskogee County, OK, contacted ADC for help after losing 10 calves to predators. ADC specialists visited the ranch and determined that coyotes were responsible for the losses. The ADC specialist responding to the complaint used snares and M-44 devices and removed several coyotes from the area, thereby stopping the loss of calves.

- An aquaculture operation in Scotts Bluff, NE, reported \$50,000 in losses caused by great blue herons feeding on trout at the facility. ADC personnel provided propane cannons and pyrotechnics to help scare the birds away. The aquaculture producer then applied to FWS to obtain a migratory bird depredation permit to selectively remove a limited number of the herons causing the problems.

Protection of Endangered Species and Other Natural Resources

- ADC specialists in Texas received a request for assistance from officials at a research farm at Texas A&M University at Kingsville after coyotes killed 13 research goats, valued at about \$12,000. University students had been conducting genetic studies on the goats before they were killed. An ADC specialist placed out M-44 devices in the immediate area and removed six coyotes. No further predation has been reported.

- In late summer, two sheep ranchers from Montana requested assistance after they discovered the carcasses of at least 50 of their sheep. An investigation showed that damage was caused by a grizzly bear. ADC captured the offending bear with a foot snare, and personnel from the Montana Department of Fish, Wildlife and Parks then relocated the bear to another area to resolve the problem.

- An aquaculture facility in Imperial County, CA, requested assistance from ADC after cormorants, great blue herons, and black-crowned night herons had consumed about \$82,000 worth of catfish. ADC investigated the situation and provided technical assistance to reduce the damage. ADC personnel also helped the producer obtain a migratory-bird depredation permit from FWS, allowing him to remove a small number of the birds causing the damage.

Specific Endangered Species Protection Efforts

During the year in California, 17 ADC specialists worked full time on cooperative projects aimed at the protection of threatened and endangered species: the western snowy plover, California least tern, California clapper rail, light-footed clapper rail, black rail, San Clemente loggerhead shrike, salt-marsh harvest mouse, and island lizard. In cooperation with FWS, the U.S. Navy and Air Force, the California Department of Fish and Game (CDFG), and other county and private organizations, ADC specialists worked to protect these species from a host of avian and mammalian predators such as feral cats, red foxes, coyotes, striped skunks, opossums, raccoons, Norway rats, ground squirrels, Great-horned owls, various hawks, and ravens.

For 16 consecutive years, DWRC has cooperated with FWS in trapping cowbirds in Michigan to protect the endangered Kirtland's warbler from nest parasitism. About 100,000 cowbirds have been removed from warbler nesting areas since the trapping program began in 1972. During this time, nest parasitism by cowbirds has decreased from over 50 percent to less than 5 percent of nests, and the nesting populations of warblers has increased from about 180 nesting pairs to more than 600.

Biological research has indicated that aggressive behavior by gulls excludes terns and plovers from potential nesting habitat. Knowing that, ADC cooperated with FWS at the Monomoy National Wildlife Refuge on Cape Cod, MA, to provide a gull-free zone for nesting roseate terns and piping plovers. Following this intervention, reports indicate that 19 bird species are now nesting on about 175 acres previously dominated by herring and black-backed gulls. There are three roseate tern nests, the first such nests found on the refuge since 1990. Also, 21 pairs of piping plovers were observed on the refuge in 1996, 14 more pairs than were observed the prior year.

During the summer, ADC biologists, State of Florida park personnel, and members of FWS's Sea Turtle Recovery Team met at St. Joseph Peninsula State Park to assess an area where coyotes were preying on sea turtle nests. This area is a major nesting site that attracts loggerhead, green, and leatherback sea turtles. In the initial nesting period in 1996, it was determined that coyotes destroyed 40 percent of the nests. ADC personnel conducted a preliminary assessment of the site, but since the nesting season had already ended, no control activities were implemented. However, State park officials requested that ADC conduct a coyote control program during the 1997 nesting season to protect the nests.



ADC continued to monitor the growth of white pelican populations and the resulting damage the birds cause to aquaculture in the Southeast. During the summer months, ADC biologists captured, banded, and radio-collared more than 1,000 pelicans on their nesting grounds in North Dakota. The pelicans' movements and migration patterns are now being monitored.

During the year, in cooperation with FWS and the Montana Department of Fish, Wildlife and Parks, ADC removed coyotes from a site in Montana where black-footed ferrets were to be released. The coyote control program was designed to provide protection for the ferrets in the 2-week period immediately following their release into the wild. In the previous reintroduction, coyotes killed 40 percent of the released ferrets within 4 weeks of their release. To prevent a similar occurrence, FWS requested a coyote control program and also constructed an electric fence around the release site. As a result of these activities, only 3 of the 40 ferrets were killed by coyotes within the first 90 days following release.



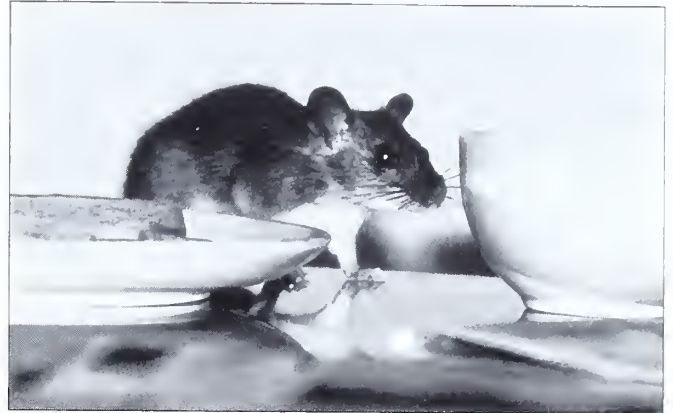
ADC has been working cooperatively with FWS in Alaska for the protection and restoration of the Aleutian Canada goose. Fur trappers introduced the nonindigenous Arctic fox onto many of the islands in the Aleutian chain in the late 1800's. The islands are the primary breeding and nesting sites for a host of seabirds and marine mammals, and were not previously inhabited by mammalian land predators. Fox predation caused a dramatic decrease in the number of Aleutian geese, which are now considered threatened as a species. During the year, ADC and FWS began a cooperative program to eradicate the Arctic fox from two islands in the Aleutian chain. By the end of the summer, the fox control program was completed, and now that the predators have been eliminated, FWS plans to reintroduce Aleutian geese to these islands.

ADC has been cooperating with Federal, State, and local agencies to protect threatened and endangered salmon smolt from predation as they migrate downstream in the Columbia and Snake Rivers in Washington State. A series of dams on these rivers concentrates the young salmon as they attempt to pass through. Many of the smolts are briefly stunned as they wash through the dams. Gulls, other fish-eating birds, and northern squawfish prey heavily on the stunned fish before they can recover and swim away. To help protect the young salmon, ADC has installed overhead wires over the past several years to exclude gulls from critical water pools. ADC personnel have also conducted control activities with noisemaking and other scare tactics to keep birds away from these areas. Additionally, during 1996, ADC continued the northern-squawfish control project below two dams on the upper Columbia River. About 9,000 squawfish were captured and removed in those areas where severe predation was occurring.

Other Natural Resources Protected

ADC is negotiating with the Department of Interior's National Park Service (NPS) to develop a deer damage-management program at Gettysburg National Military Park in Pennsylvania. Overpopulation by white-tailed deer at the park has caused significant problems to much of the native vegetation at Gettysburg. This vegetation has historical significance, and NPS officials are looking at ways to reduce the impact of deer on the plants.

Beavers have seriously hurt trout survival in many streams in Wisconsin. By damming up streams, beavers prevents trout from moving upstream to spawn. Beaver dams also hamper the flow of streams, thereby reducing the oxygen levels in the water and causing the trout to die. The Wisconsin Department of Natural Resources provided ADC with an additional \$86,000 to control beaver damage on trout streams. Revenues for Wisconsin's beaver control program came from sales of the State's trout stamp. Currently, ADC helps protect more than 700 miles of streams in Wisconsin.



A rat removal program began in the summer of 1996 on Sand Island, part of Midway Atoll. The 1,205-acre Sand Island is the last of the atoll's three islands to have rats. In 2 previous years, ADC controlled rats on Eastern Island and Spit Island. The Sand Island project is being funded by the U.S. Navy and is part of the cleanup effort being made before the island is handed over to FWS as a wildlife refuge. Midway Atoll is home for numerous seabirds, including the largest Laysan albatross colony in the Pacific. Seabirds are not the only beneficiaries of rat eradication: hatching green sea turtles, a threatened species, have a better posthatch survival rate without rats. ADC has succeeded in eliminating rats on a number of other atolls, including Kure Atoll in Hawaii and Rose Atoll in American Samoa.

In April, employees at a high-rise hotel in Reno, NV, notified local television stations that a Canada goose was nesting on the ledge of the 21st floor. The goose got considerable attention and media coverage, but then the hotel's managers realized that the soon-to-be hatched goslings would not likely survive a fall to the ground. To ensure the hatchlings' safety, hotel personnel asked ADC to remove the nest. The ADC biologists used the chemical immobilizing agent alpha-chloralose to tranquilize the goose and then collected her eggs. The goose and eggs were then turned over to a local bird rehabilitator. All the eggs hatched, and the birds were eventually released.

ADC provided assistance to the local humane society in Lee County, AL, to help capture a wolf that had escaped from captivity. The wolf had been purchased from an exotic animal dealer in Florida and moved to Auburn, AL, where it escaped and began preying on livestock. Members of the local humane society asked ADC for assistance after their efforts to capture the animal were unsuccessful. ADC provided soft-catch foothold traps and onsite training to humane society personnel. The wolf was trapped and returned to the owner a short time later.

Protection of Property

ADC and the Forest Service are cooperating in a comprehensive wetland management plan for the Delta National Forest in Mississippi. This forest contains one of the most significant bottomland hardwood ecosystems in the United States. Water quality and distribution in the forest are affected by beaver activity. Excessive flooding caused by beaver dams kills trees on between 250 and 500 acres each year. Timber losses alone are estimated at \$750,000 annually. ADC is managing damage caused by beavers and installing water control structures to restore natural water regimes in the forest.

A ranger from the Santa Fe National Forest in New Mexico contacted ADC for assistance at a large Indian ruin where a badger was digging up human bones and Indian artifacts. An ADC specialist used a soft-catch trap to capture the badger for relocation to another area of the forest.

A major chemical manufacturing corporation in Johnson County, KS, contacted ADC after urban Canada geese caused \$60,000 in damage by grazing and trampling crops treated with experimental chemicals. ADC recommended that the corporation use scare tactics to prevent further damage, and this method proved successful. To guard against future losses, ADC recommended an integrated damage-management program that incorporates overhead netting, taste repellants, and scare tactics such as noisemaking devices.



Protection of Human Health and Safety

An oil and gas refinery in Nueces County, TX, requested assistance from ADC to resolve a problem with roosting birds. A power substation had been adopted as a roosting site by about 1,000 grackles. The birds' droppings onto the transformers caused a power outage at the refinery, resulting in an estimated production loss of \$10 million. Parts of the plant had to be shut down to repair the substation. ADC recommended harassment techniques to frighten the birds from the area, and these proved successful in resolving the problem.

About 1,000 coots caused considerable damage to a golf course in Santa Barbara, CA, by feeding on the greens and tee areas and by defecating on and digging up the greens. ADC had previously provided technical assistance to golf course officials in the past on various harassment techniques to frighten the birds away, but the coots became accustomed to these efforts. ADC specialists used the chemical immobilizing agent alpha-chloralose to tranquilize and remove a number of the birds to prevent further damage.

At the request of city officials in West Des Moines, IA, ADC prepared a beaver management plan for the city after beavers damaged numerous trees along a greenbelt managed by the city's Parks and Recreation Department. In addition, ADC conducted beaver control activities and removed seven problem beavers. ADC personnel also interviewed with local television reporters on four occasions to help inform the public about the control project.

ADC has been active in its role to protect human health and safety through the control of animal-borne diseases and wildlife hazards to aircraft. We have removed a number of dangerous animals, such as black bears and mountain lions, from public areas. ADC biologists assist State and local health departments in controlling animals in areas where wildlife disease outbreaks threaten public health. We also conduct programs at airports, where collisions between wildlife and aircraft pose a serious safety hazard to passengers.

Public Safety

A resident of San Luis Obispo County, CA, was in his backyard barbecuing with several guests when a small mountain lion ran into the yard and attacked the family dog. The lion dropped the dog and retreated into a canyon after the homeowner and several of the guests grabbed sticks and tools and hit the lion. The homeowner contacted the CDFG about the incident and then took the dog to a veterinarian's office, where it was treated. About 2 hours later, the host and his guests went outside again and witnessed the family's pet cat running through the yard with the mountain lion in close pursuit. This time, the people used lawn chairs to force the lion to retreat. The homeowner called CDFG, and the warden contacted ADC. The local ADC specialist arrived at the scene a short time later and used dogs to quickly locate the lion.



The ADC program continues to play an active role in reducing the spread of rabies in Vermont and Texas. The ADC rabies information hotline in Vermont, established to address public concerns regarding the northward spread of the mid-Atlantic strain of raccoon rabies, completed its fourth year of operation. The 1-800 rabies information hotline provides service to the public 7 days a week. In Texas, ADC personnel assisted the Texas Department of Health (TDH) in two oral rabies vaccination projects involving bait drops. TDH was the lead agency in this effort, which involved aerial distribution of 2.5 million vaccine latent baits over 41,000 square miles. The baits were used to battle both the canine rabies outbreaks in south Texas and the gray fox rabies outbreaks in central and southwest Texas. Afterwards during 1996, the south Texas canine rabies strain of the virus did not occur north of the northern boundary of the vaccine bait drops.

ADC specialists assisted city employees in Durant, OK, in moving about 100,000 blackbirds and starlings from a roosting site in a residential/business area. Local business owners and residents complained of a strong odor and noise when the birds returned to the roost each night. Health hazards and loss of business were also cited as problems created by the birds. ADC personnel used pyrotechnics and other frightening tactics to scare the birds to another location, where their presence will have less impact on the community.

During 1996, the Cedar Lakes Conference Center, operated by the West Virginia Department of Education, requested that ADC help with sanitation and nuisance problems caused by 400 resident Canada geese. Guests complained about goose droppings on sidewalks, athletic fields, and other public-use areas. ADC developed and implemented a longrange integrated harassment plan that greatly reduced the conflicts by dispersing the geese to more suitable areas.

In early 1996, ADC officials in Montana assisted APHIS Veterinary Services personnel in collecting coyotes for tuberculosis testing. This project was a followup to an earlier one in which both coyotes and deer tested positive for tuberculosis. The information gained from this round of testing will be used to develop management plans to protect livestock from potential exposure to tuberculosis.

In Arizona, ADC personnel have been providing continuing service to the Arizona Department of Human Health Services in monitoring pneumonic plague. In 1996, ADC personnel collected blood samples from various kinds of wild animals in the Flagstaff area to help map the extent of the disease. This activity was a direct response to the death of a local man who had contracted pneumonic plague. As a result of the work of the ADC specialists, the plague has been identified near the Blue Range in eastern Arizona, an area previously not known to host the disease.

After three rabies-positive bat carcasses were found inside a Murphysboro, IL, church during late summer, the Illinois Department of Public Health notified ADC and issued a public health order requiring the church to eliminate the bat colony in the church attic. ADC installed bat funnels at entrances into the attic, captured the remaining 12 bats, and sent them to the health department for rabies testing. Contractors who had undergone pre-exposure rabies treatment then closed the attic entrances to prevent other bats from returning, thus ending the problem.

Airports

Around airports, birds and mammals present a threat to public safety when they collide or get sucked into engines. As a result, U.S. aviation regulations (Title 14, Code of Federal Regulations, Part 139) require airports experiencing wildlife-aircraft conflicts to develop and implement wildlife management plans.



Because most airport employees lack the technical expertise to identify the causes of wildlife hazards, FAA and ADC entered into a cooperative agreement in 1989 to resolve wildlife hazards at airports. At the request of either FAA or airport management, ADC specialists provide technical and/or operational assistance to reduce or control wildlife hazards to aircraft. During 1996, ADC personnel provided such assistance to hundreds of airports throughout the United States. ADC also conducts an agency-developed training program for airport managers and other airport employees regarding bird identification and available control methods. (ADC provides the same service to the U.S. Air Force as well.)

In September 1996, ADC conducted an airport training and certification program for wildlife biologists within the program. Thirty ADC wildlife biologists from across the country received specialized training in identifying and managing wildlife hazards to air-traffic safety and in operational program administration. Of the nine instructors who taught the course, six were ADC biologists, two were with FAA, and one was from the U.S. Air Force Bird-Aircraft Strike Hazard Team. The training program was conducted at the FAA Technical Center at the Atlantic City International Airport in New Jersey.

The following accounts highlight a variety of problems reported during 1996 and describe the action taken by ADC to resolve wildlife-aircraft hazards.

- ADC continued to provide assistance to John F. Kennedy (JFK) International Airport in New York City to reduce bird strikes to aircraft. As a result of this program, where laughing gulls crossing JFK airspace are removed by shooting, bird strikes have been reduced by about 75 percent. ADC also conducted training sessions on nonlethal bird-control techniques for JFK personnel and assisted in reviewing landscaping plans to ensure that bird attractants are excluded.

- At the request of Philadelphia city officials, ADC completed environmental assessments and conducted operational control programs during FY 1996 to remove problem white-tailed deer at both the Philadelphia International Airport and the Northeast Regional Airport. The resulting venison was donated by airport officials to a local food bank.

- In June 1996, a Northwest Airlines jet struck two Canada geese during departure from the Memphis International Airport in Tennessee. At the request of airport officials, ADC conducted an assessment of wildlife conditions onsite and relocated 52 Canada geese from adjacent property. ADC further recommended habitat modifications to reduce the potential for future conflicts.

- At the request of Anchorage International Airport officials in Alaska, ADC initiated an extensive bird-deterrent campaign to help reduce bird strikes. The bird-strike deterrent program consists of a team of ADC specialists collectively working 24 hours a day, 7 days a week starting in the spring and ending in late October, when the migratory birds fly south for the winter.



Environmental Compliance

- The manager of the Las Cruces International Airport in New Mexico requested assistance from ADC regarding flocks of horned larks and crows frequenting airport runways and adjacent areas. In December 1995, a private jet ingested about 30 horned larks on takeoff and was forced into an emergency landing. The engine was destroyed, with damage estimated at \$500,000. ADC recommended various harassment methods, as well as a permit from FWS for nest destruction to discourage crows from nesting in the area.

- ADC continued to assist airport officials at Chicago's O'Hare International Airport. In 1994 and 1995, ADC removed approximately 80 deer from airport property after numerous deer-aircraft strikes occurred. In 1996, ADC personnel helped install a wire-grid system more than a mile long to keep Canada geese away from airport property in an effort to prevent bird-aircraft strikes.

- ADC personnel also provided assistance at Dulles International Airport in northern Virginia. During the year, airport officials reported wildlife-aircraft strikes caused by Canada geese, coyotes, and deer. ADC biologists trapped and removed 49 Canada geese and were also involved in an egg-oiling program to reduce the nesting success of resident geese on airport property.

- At the request of officials at Minot International Airport in North Dakota, and after consultation with the State's game and fish department, ADC personnel took action to reduce the threat to public safety caused by a small but persistent herd of white-tailed deer. During the first 6 months of 1996, airport personnel tried various scare tactics to move the deer away from the runways and other areas without success. ADC then conducted two deer-removal projects and removed a total of eight deer. ADC continued to work with airport officials until the public-safety threat was eliminated. Long-term recommendations made by ADC include habitat alterations and improved fencing around the airport's perimeter.

During the year, the program completed 33 environmental analyses on site-specific projects throughout the country. In addition, ADC's three National Environmental Policy Act (NEPA) coordinators attended training in Texas conducted by the National Association of Environmental Professionals. Twenty-five other ADC employees received NEPA training conducted by a private contractor.

Customer Service and Program Evaluation

In an effort to provide quality service, ADC program managers decided to ask ADC's technical assistance customers about their expectations for service delivery. In November 1995, officials from APHIS' Policy and Program Development staff surveyed recipients of ADC's technical assistance to determine their level of satisfaction. More than 2,000 customer surveys were mailed. Results from the surveys returned were very positive:

- 87.2 percent of clients said they were satisfied with ADC services.
- 95.6 percent stated that they received courteous service from ADC.
- 93.4 percent said the information provided by ADC was understandable.
- 92.8 percent stated that the equipment provided was in good working order.
- 75 percent said that the information and/or equipment provided to them was effective in resolving their wildlife problem.

Awards and Public Recognition

During FY 1996, several ADC employees received awards or other recognition from cooperators and stakeholders.

- In December 1995, the general manager of airport operations at Chicago's O'Hare International Airport presented Mark Jensen, ADC wildlife biologist, with a certificate of appreciation recognizing his efforts, as well as those of the entire ADC Illinois staff, in reducing threats caused by many species of wildlife at the airport. In addition to Jensen, the ADC staff in Illinois involved in this project were Andy Montoney, Todd Grimm, and Kirk Gustad.
- In May, the group manager at the Department of Energy's Argonne National Laboratory facility in Chicago recognized the efforts of 11 ADC employees for helping to reduce deer-vehicle safety hazards and improve environmental conditions at the facility. The Department of Energy estimated that at least \$175,000 in savings occurred as a result of this project because of fewer deer-vehicle collisions and reduced damage to ornamental shrubs and trees. Recognized employees included Ed Hartin, Mark Jensen, Todd Grimm, Kirk Gustad, Kevin Sullivan, Scott Beckerman, Dan McMurtry, Andy Montoney, Maury Bedford, Brenda Scott, and Barbara Mariott.
- In July, Charles L. Gray, wildlife specialist with the ADC program in North Carolina, received the "Trapper of the Year East Award" from the National Trapper Association. Gray was recognized for his outstanding contributions to wildlife management and conservation.
- In August, USDA Assistant Secretary of Marketing and Regulatory Programs Mike Dunn presented eight ADC employees with the National Performance Review's "Hammer Award" for their efforts to reinvent ADC's system to bill cooperators for their services. The new system has reduced the payment time from 4 months to as little as 3 days, and in salaries alone, the cost savings from this improvement amount to \$90,000 annually. Recognized employees included Diana Rangel, western regional administrative officer; Kay Johnson, eastern regional administrative officer; Mariette Amundson, budget analyst, Wisconsin; Patricia Poteete, budget analyst, Tennessee; Virginia Broyles, budget analyst, California; Cindy Carney, budget analyst, Washington; Maggie Rayls, budget analyst, Oregon; and Jeanne Swick, budget analyst, Montana.

- Richard Dolbeer, Project Leader of the NWRC's Ohio Field Station, received the Jack Berryman Institute's 1996 "Outstanding Wildlife Professional Award" from Utah State University. The Jack Berryman Institute is a national organization that conducts wildlife damage-management research and whose goal is to reduce adverse impacts from human-wildlife interactions on both people and animals.
- Gary Larson, eastern regional director, received the Jack Berryman Institute's 1996 Communications Award for helping to edit the "Prevention and Control of Wildlife Damage Handbook." The new handbook is a significant revision of the previous edition, published in 1984. This book is a comprehensive reference to more than 75 North American vertebrate species that can cause economic damage or become a nuisance and to the methods available to resolve wildlife conflicts.
- NWRC's Kathleen Fagerstone and Edward Schafer, Jr., received the "USDA Unsung Heroes Award." These employees were recognized for their leadership, ingenuity, and resourcefulness in implementing a number of unique processes and innovative funding partnerships to ensure continued EPA registration of more than 100 pesticides. This award is sponsored by the USDA Public Service Employees Roundtable and recognizes the valuable contributions made by USDA employees to the American public.



