United States Department of Agriculture
Animal and Plant Health Inspection Service
August 2010

Wildlife Services
NWRC
National Wildlife Research Center

Reducing Urban Wildlife Conflicts

Wild animals in our city parks, open spaces, and neighborhoods contribute to our enjoyment of nature and to the health of our ecosystems; however, these animals can also sometimes spread disease, threaten human health and safety, and damage property.

Researchers at the National Wildlife Research Center (NWRC)—the research arm of the U.S. Department of Agriculture's (USDA) Wildlife Services (WS) program—help reduce urban wildlife conflicts through the development of wildlife damage management tools and techniques. Researchers strive to find solutions that balance the needs of both humans and wildlife, while considering conservation, human health and safety, economic, and social factors.

Urban wildlife is a precious natural resource; however, sometimes wild animals can threaten human health or cause damage to property and other resources. Below are some examples of NWRC efforts to reduce urban wildlife conflicts related to disease, human health and safety, and property.

Preventing Disease

Rabies is one of the oldest known viral diseases, yet today it still remains a significant challenge to wildlife management and public health. Rabies is caused by a virus that infects the central nervous system in mammals and is almost always transmitted through the bite of a rabid animal. The majority of rabies cases in the United States occur in wildlife, including raccoons, skunks, foxes, and bats.

Although human deaths caused by rabies are now rare in the United States, the estimated annual public health costs associated with rabies have risen to more than $300 million. This includes costs associated with medical examinations, post-exposure treatments, and animal testing.

Rabies is fatal, but fortunately effective vaccines are available to protect people, pets, and livestock. NWRC research supports efforts by the WS' national rabies program to halt the spread and eventually eradicate rabies in North America. In ongoing studies with captive raccoons, skunks, coyotes, and foxes, NWRC scientists evaluate the effectiveness of candidate rabies vaccines and develop effective ways to deliver the vaccines to wild animals.

Additionally, NWRC scientists are exploring the potential of a combined rabies and wildlife contraceptive vaccine for reducing raccoon densities, and subsequent rabies transmission, in urban areas. The technology may also be applicable for reducing stray dog populations and rabies in developing countries.

NWRC scientists are also developing new monitoring and surveillance tools for vector-borne diseases, such as West Nile virus. For example, studies involving cliff swallows has led to the use of these birds as early warning indicators for the presence of West Nile virus. West Nile virus is passed to birds, horses, and humans through mosquito bites. Cliff swallows often nest in large numbers near water where mosquitoes are present. In cooperation with Larimer County, CO, scientists from NWRC sampled cliff swallow nests, birds, and their

NWRC scientists sampled cliff swallow nests, birds, and their associated parasites for the presence of West Nile virus. (Photo by USFWS)

associated parasites in Larimer County for the presence of the virus. This information allowed health officials to predict where human outbreaks of the disease were likely to occur and led to targeted insecticide applications in the spring and direct mosquito spraying in high-risk areas.

Protecting People

Aircraft collisions with birds and other wildlife pose a substantial safety and financial threat to civil and military aviation worldwide. Such collisions, known as wildlife strikes, have jumped significantly over the past two decades. According to a 2009 joint report by USDA and the Federal Aviation Administration (FAA), there were 1,759 reported bird strikes in 1990; in 2008, there were 7,516 reported strikes—an increase by greater than a factor of four. Between 1990 and 2008, wildlife strikes cost the civil aviation industry in the United States about $614 million per year.

WS airport biologists working at more than 820 U.S. airports nationwide rely on NWRC research for science-based strategies to prevent wildlife strikes. For example, NWRC researchers are evaluating the effectiveness of various habitat modifications and dispersal techniques, as well as methods to detect and predict wildlife movements and behaviors. These researchers are collaborating with university and private partners to learn more about how birds detect and respond to approaching objects. Efforts could lead to the development of new lighting systems on airplanes to enhance bird detection and avoidance.

NWRC researchers have also worked with WS airport biologists to guide airports on the design and location of stormwater management facilities, which can attract waterfowl, blackbirds, doves, raptors, and other bird species. Results indicate that stormwater pond perimeters should be reduced via circular or linear designs and stormwater retention ponds should be located a minimum of 1 kilometer from other water resources.

As an increasing number of people live and play in areas that are home to large predators, such as bears, mountain lions, and coyotes, the potential for conflicts and adverse interactions increases. NWRC scientists are working with numerous State and local agencies to develop management strategies to reduce such conflicts and balance the needs of humans and predators. For example, NWRC scientists in Colorado are studying the movement, behavior, and ecology of black bears in mountain communities to identify specific attractants and landscape features associated with feeding behavior of the bears. The results will be used to educate the public about how to reduce the availability of food sources derived from human activities (e.g., bird feeders, trash, pet food) that attract black bears. NWRC scientists are also evaluating the effectiveness of relocating problem bears away from densely populated areas.

Similarly, NWRC scientists are partnering with Colorado State University colleagues to investigate the ecological, economic, and human-related issues involved with managing coyotes in urban and suburban areas, an increasingly common challenge. In 2009 alone, 11 incidents of coyote aggression towards people in the Denver-Metro area of Colorado were reported to the Colorado Division of Wildlife.

NWRC scientists are studying the ecology and population of urban coyotes in order to prevent human-coyote conflicts. (Photo by USDA/APHIS/WS)

Over the next several years, researchers will work to better understand coyote-human conflicts and the public's attitudes and beliefs about coyotes and coyote management. Researchers plan to conduct economic analyses of the costs of human-coyote conflicts and management. They also will carry out behavioral, ecological, and population studies of urban coyotes and will study the effectiveness of nonlethal and lethal management methods for reducing human-coyote conflicts.

Preventing Property Damage

People admire the industrious beaver. However, when beavers take up residence near people, their dams can cause flooding that damages valuable timber stands, roadways, drainage culverts, and agricultural land. Excessive beaver activity can also cause damage to wetland plants from foraging, cut or girdled trees, burrows, and runways. In the southeastern United States, beavers cause an estimated $100 million in damage annually to public and private property.

A recent cost-benefit analysis conducted by NWRC indicates that for every dollar spent on WS' beaver management activities in Mississippi, the State saves between $39.67 and $88.52 from reduced beaver damage to timber and saves between 151 and 282 jobs in the State's economy. NWRC researchers continue to study beavers to learn more about their habitats, survival rates, movements, and impacts to other species. Studies also focus on nonlethal tools such as repellents and exclusion devices for preventing beaver damage.

Vulture species cause considerable damage in urban areas. They often rest on the roofs of houses and businesses damaging vinyl, plastic, and other synthetic construction and insulation products. Additionally, their feces and regurgitations create unwholesome and unsanitary conditions. Many problems associated with vultures can be successfully resolved by dispersing the birds from their roosts.

NWRC research has demonstrated that proper installation of a vulture effigy almost always causes abandonment of the roost within 3 to 5 days. The effigy is either a taxidermic mount of a vulture or a commercially available artificial likeness. To further convince vultures to leave, it is sometimes necessary to use pyrotechnics or handheld lasers in addition to the effigy. The bright beams of the lasers do not cause physical harm to the birds, but irritate the birds and cause them to move to other locations. Research has shown that lasers can cause vultures to leave a roost for a night, but lasers alone will not result in permanent abandonment of the roost. NWRC scientists are also evaluating a variety of commercial perch deterrents, including electric track, rotating cylinder, and motion-activated sprinkler. If shown to be effective against vultures, such devices could readily be used in integrated management strategies.

Since the early 1900s, U.S. wildlife conservation efforts have focused on restoring, protecting, and managing populations of many wildlife species. In some cases, such as the white-tailed deer and Canada goose, these efforts have been so successful that their numbers have increased

to historically high numbers, often resulting in conflicts with local communities. Conflicts range from minor nuisance issues to serious destruction of natural habitats and crops, transmission of livestock and human diseases, and collisions with vehicles and aircraft.

Traditional methods such as hunting and trapping for managing wildlife populations are often legally restricted, impractical, or socially undesirable in urban and suburban areas, where most human-wildlife conflicts occur. Wildlife contraception is one method—when used as part of an integrated approach with other methods—that can potentially help manage locally overabundant wildlife populations in these settings.

Large populations of resident Canada geese and feral pigeons are often considered a nuisance in urban areas and can be a potential health risk because they foul land and water with their droppings and can collide with and damage aircraft. Scientists at NWRC in cooperation with Innolytics, LLC, developed an oral contraceptive bait that reduces the hatchability of eggs laid by these species. OvoControl® can be used in office parks, recreational parks, golf courses, schools, hospitals, restaurants, airports, and commercial and industrial sites. NWRC has also developed and registered an immunocontraceptive vaccine called GonaCon™ for use with female white-tailed deer. Scientists hope to expand its registration for use with other mammal species, such as prairie dogs, feral horses, feral dogs and cats, and ground squirrels.

NWRC researchers are studying different vehicle-mounted lighting systems for warning deer of approaching vehicles. (Photo by USDA/APHIS/WS)

In addition to damaging ornamental plants and backyard gardens, overabundant urban deer populations can spread Lyme disease and cause deer-vehicle collisions. One study by a major insurance company estimated that more than 1.2 million deer-vehicle collisions (or one every 26 seconds) occur annually in the United States, resulting in more than 150 human fatalities and $1.1 billion a year in vehicle damages. Researchers are studying different vehicle-mounted lighting systems for warning deer of approaching vehicles. They have found that a combination of standard tungsten-halogen lamps and constant illumination of high-intensity discharge lamps increased the distance in which white-tailed deer reacted to an approaching vehicle, on average by as must as 20 meters.

Additional Information

For more information, please contact:
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You may also call NWRC at (970) 266-6000 or visit our Web site at http://www.aphis.usda.gov/wildlife_damage/nwrc/.