

LIVING WITH WILDLIFE

Human-wildlife interactions describe relationships between people and animals that can result in negative or opposing impacts on people, natural resources, and habitat. These interactions occur in a variety of contexts, including hunting, transportation, passive-appreciation activities, land use, and recreation. Some human-wildlife interactions are uneventful and do not have negative results. Others, especially those noted in case studies of whitetail deer (*Odocoileus virginianus*) in my home state of Michigan and black bear (*Ursus americanus*) in New Jersey and Colorado can be significant and have negative results. I also want to thank Bruce Leopold, of the department of wildlife, fisheries, and aquaculture, at Mississippi State University and Michael R. Conover, editor of *Human-Wildlife Interactions* and professor of wildland resources at Utah State University, for their insights regarding human-wildlife conflicts and the natural resource issues resulting from these conflicts.

DEALING WITH DEER

Hunting for waterfowl, upland game, deer, bear, and elk in Michigan is a significant pastime for both residents and non-residents. The variety of habitat in the Lower Peninsula, which ranges from dense forests and lake systems in the north to flat farmland and urban areas in the south, provides habitat—some better than others—to many animals throughout the

state. Whitetail deer hunting, particularly during rifle season, is truly an annual event in Michigan. The season lasts from November 15 to November 30, during which approximately 700,000 residents log many miles and hours in the field hoping for a shot to fill their freezers. In fact, for many, November 15 is treated as just another day off work or school.

Like other states, Michigan controls its whitetail deer populations through hunting. Normally, people hunt deer in their natural habitat; however, with rapid development, habitat loss, urbanization, and human population growth, people can now find deer in their own backyards. As a result, human-wildlife interactions occur between people and deer in suburban areas, especially in Detroit, Michigan. For example, surrounding areas of Detroit fall into the Huron-Clinton Metropark, a system of 13 parks that are spread across 25,000 acres in southwest Michigan. The metro parks are considerably large, covering thousands of acres, and they encompass woods, lakes, golf courses, and picnic areas in which people like to frequent and spend time. The metro parks are also an exceptional sanctuary for whitetail deer as they provide food and cover in the woods, on the golf courses, and in the adjacent neighborhoods where the deer graze on hostas, daylilies, and homeowners' vegetable gardens. Thus, deer tend to encroach upon habitat that is normally occupied by people. Due to the human population density near the Detroit metro parks,

hunting for deer is appropriately not allowed, and as a result, human-wildlife interactions occur. In order to control deer populations in this area, the Michigan Department of Natural Resources (MDNR) relies periodically on sharpshooters (e.g., police officers) and organized, supervised hunts. After the hunt, the meat from the animals is donated to food pantries. Residents have, for the most part, agreed with this control methodology because it protects their plants and vegetable gardens from future attacks.

Interestingly, each organized, supervised hunt has been followed by a decrease in highway deer-vehicle collisions (DVCs) around the parks. While deer in this area are a nuisance to the nearby residents and drivers, they do not often present a threat to the larger human population. However, deer-human conflicts can be very dangerous, especially in regard to the number and frequency of DVCs throughout the country. In Michigan, for example, there are approximately 50,000 reported DVCs with an estimated \$130 million in damages every year. DVCs have the potential to cause damage to the driver and passengers, not to mention the animal itself. According to the *Insurance Journal*, DVCs throughout the United States cost \$4 billion every year, and this rate has been rising. The nocturnal habits of deer contribute to this problem; deer are not always easily identified when crossing the highway at night—until it is too late. These unfortunate

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Morrison Stevens, Sr.
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circumstances present yet another reason why controlling deer populations is a prudent thing to do to minimize costs and negative human-wildlife interactions.

THE BEAR TRUTH

We can find other examples of human-wildlife interactions in case studies of black bears in New Jersey and Colorado. We tend to think of New Jersey as an urban eastern environment, but, in fact, it has black bears in every county in the state. In June of 1953, the New Jersey Fish and Game Council declared that the American black bear is a game animal. In 1971, wildlife management dictated that the hunting season for black bears be closed because the population was threatened. Over time, the moratorium on hunting allowed the black bear population to rebound. Thus, as the human population continued to grow, so did the number and frequency of bear-human interactions. New Jersey residents in all counties have experienced black bears rifling through their garbage bins and walking through their yards. Black bears, which have an acute sense of smell and a fantastic memory, habitually return to places where they have found food—people food, pet food, garbage, birdseed, small mammals, and livestock—successfully.

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Because black bears and humans often come into contact in New Jersey, the state has developed and implemented educational programs to discourage people from feeding birds and to secure their garbage in bear-tight containers in suburban areas where bears are encountered frequently. Successful seasonal educational programs include posters that are plastered around campgrounds and on the Internet, with catchy phrases such as "Be Bear Aware" and "Know the Bear Facts". In 2010, in an attempt to further cut down on bear-human interactions, New Jersey reinstated a hunting season for black bears. During the 2015 black bear season, which was extended, 510 black bears were harvested.

Another prime area for bear-human conflict is Colorado, which has experienced rapid human population growth—from 2.9 million in 1980 to over 5.3 million in 2015. The majority of the growth has occurred on the I-25 corridor, the west side of which coincides with prime bear habitat. In the 1990s, the Colorado Parks and Wildlife Commission (CPWC) estimated the population of black bears in Colorado to be between 10,000 and 12,000. Now, the population is estimated at 17,000 to 20,000 bears. In Colorado, unlike in New Jersey, black bears have

significant variation in their habitat and food sources due to the lack of rainfall. When their habitat is destroyed, they seek out alternative food sources and will often travel to the suburbs to find them. Black bears are highly mobile, have large home ranges, and benefit from human foods; thus, black bears have been aided by human population growth and development within or near black bear habitat. In 1992, due to reasons of ethics, a citizen referendum cancelled the spring bear-hunting season between March 1 and September 1, during which hunters would normally use bait or dogs to support the hunt. Black bear hunting declined significantly in 1993 as a result. Today, there is still a fall season that is in place to control the black bear population.

A situation I found myself in with my oldest son, Morrie Jr., and his 6-year-old daughter, Grace, brings the human-wildlife interactions discussion closer to home. We have a summer home in Grayling, Michigan, on a small lake, which is well within the range of black bears. Last August, we were enjoying an evening with a bonfire on the beach, when I looked over the shoulder of my son and saw what I thought was a black lab walking down the shoreline. I soon realized it was a mature black bear boar, and when he got



within 150 yards, I advised my son to quietly take his daughter into the house. Thankfully, my son responded immediately. The black bear walked through our backyard, and he sat on our sea-wall along the creek that drains the lake. Though the situation was harrowing at first, in the end, all of the kids got to enjoy a real wildlife experience. Why was the bear there? The neighbors had been feeding the birds regularly, and this bear appeared to have successfully located the bird feeders. We experienced several incidences of bears knocking the feeders over to get to the bird feed. The lake association and the MDNR strongly suggested we cease feeding the birds. We all did, but since black bears have excellent memories, we worried that this black bear would be back for another lunch.

The above story and comments reinforce the North American Model of

Wildlife Conservation that we, as members of the Boone and Crockett Club, all embrace. At its core, hunting is a management tool that results in healthy wildlife populations. Obviously, in the suburban areas where hunting is not allowed, other control methodologies must be considered. Our hunting heritage and belief in the North American Model is important in controlling wild game populations to minimize dangerous human-wildlife interactions.

Every year when I go out to Cody, Wyoming, to visit friends and go fishing, we always carry bear spray. The cliché is that you only need to be the second slowest runner to be safe! I thought that was humorous until this past year when I had a bad case of gout, and now I think I am the slowest runner in the group! ■

HUMAN-WILDLIFE CONFLICTS—THE NATURAL RESOURCE ISSUE OF THE 21ST CENTURY

BRUCE LEOPOLD

DEPARTMENT OF WILDLIFE,
FISHERIES AND AQUACULTURE,
MISSISSIPPI STATE UNIVERSITY

MICHAEL R. CONOVER

EDITOR, HUMAN-WILDLIFE INTERACTIONS
PROFESSOR, WILDLAND RESOURCES
DEPARTMENT, UTAH STATE UNIVERSITY

Wildlife provide great benefits to individuals and to society. Consider the white-tail deer (*Odocoileus virginianus*). Over 10 million people in the United States hunt big game, and deer is the most popular big game species. Deer hunting in the U.S. is an important economic benefit, with an estimated \$33.7 billion in expenditures annually. Many deer hunters find the opportunity to be out-of-doors and hunting deer to be one of the greatest pleasures in their life. Other people (76 million in the U.S.) enjoy watching wildlife and many people (23 million) visit public parks to view or photograph wild animals. Deer are among the most awe-inspiring mammals in North America due to their grace, size, and role they have played in our history. Another role of deer, an ecological one, is to provide a food source for populations of wolves and cougars.

On the negative side, wildlife can harm a person or society. That harm might be economical when someone suffers a financial loss due to wildlife, including damage to physical property, such as when a vehicle needs to be repaired or replaced after striking a deer or a loss of future income when wildlife damage reduces profitability of farms, ranches, timber production, or other professions. Conflicts arise when people are injured or killed by wildlife, or their health is threatened by a disease pathogen that thrives in a wildlife species and then is transmitted to humans. Harm can occur to other wildlife species or their habitat, other natural resources, or to landscapes or ecosystems. For all native wildlife species, the benefits they provide society far outweigh the problems they cause (i.e., human-wildlife conflicts). It is for this reason that we have a positive opinion of wildlife and worry when we hear that a wildlife population is declining. But while this is true for society, it is not true for every individual because the problems caused by wildlife do not fall evenly upon every individual; many

farmers whose crops are destroyed by deer consider them a pest, and a family whose child is killed by a cougar often does not look kindly on the species. This creates conflicts among members of society about how wildlife populations should be managed.

Human-wildlife conflicts have been increasing in frequency and intensity over the last several decades for several reasons. Human populations have been increasing, of course, but so have many wildlife populations. During the 1800s, wildlife populations were at historic lows due to unregulated hunting and efforts to eradicate predator populations. When hunting was regulated and laws passed to protect predators and migratory birds, wildlife populations began to rebound. With more people and more wildlife, conflicts between the two were bound to proliferate, but increasing populations was not the only factor in the increase in human-wildlife conflicts. Many wildlife species moved into metropolitan areas seeking areas where food was abundant; hence, we now have deer, rabbits, raccoons, opossum, Canada geese, red foxes, coyotes, and black bears living in our neighborhoods. While wildlife have moved into our habitat, we have been spending time in theirs. Wildlife recreation has increased several fold, and people hike and camp in remote wilderness areas. This commingling of humans and wildlife has also heightened human-wildlife conflicts. However, much of the increase in human-wildlife conflicts has resulted from behavioral changes in wildlife and humans. Many wildlife have lost their fear of humans due to habituation; rather than fleeing when they see a person, many animals will either ignore the person or approach. People's

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perceptions of wildlife have also changed over time. Predators, once viewed as evil, vicious, and terrifying, are now seen as magnificent creatures that have important ecological roles. Hence, humans have lost their fear of animals and many get themselves in dangerous situations because of their ignorance. In Yellowstone National Park, dozens of tourists are injured or killed when they get too close to bison while taking a selfie.

Conflicts with white-tail deer and feral hogs illustrate current human-wildlife conflicts and the reasons why these conflicts have become so serious in recent years.

Wild hogs were introduced to North America by Hernando de Soto to establish a reliable food source. Additionally, swine were domesticated and raised on farms for food. However, viewed as an important game species, wild hog populations were valued and their range expanded by transporting hogs and releasing them. Today, wildlife biologists are gravely concerned about the wild hog. Wild hogs pose one of the greatest threats to humans, wildlife, and their habitats. To date, wild hogs have been identified as transmitters of 30 diseases and 37 parasites, with at least 11 of these being directly transmitted to humans. Additionally, water supplies may be impacted. One study showed that in the watershed with hogs, *E. coli* was found in water sources, whereas in the watershed without hogs, no *E. coli*. Wild hogs are prolific breeders, producing two litters per year, with litter sizes of 10-14. Wildlife biologists are concerned because hogs are invading North America. In 1982, 17 states reported having hogs; by 1998, 26 states; and in 2012, 40 states. An individual hog eats between 3-5 percent of its body weight daily, and those foods are the same foods

needed by native wildlife. Thus, hogs are competing with our native wildlife. Studies show that by consuming large amounts of hard mast (e.g., acorns, hickory nuts), wild hogs are changing the composition of our forests, many to the detriment of native wildlife. Lastly, wild hogs impact greatly our agricultural resources, causing almost \$1 billion annually in crop damage and loss. Thus, the wild hog in North America has the potential to affect many resources, including human health and safety, disease transmission to native wildlife, water resources, agricultural operations, and competition with native wildlife.

Whitetail deer populations were believed to number between 9 and 20 million prior to European settlement of North America. With the arrival of European colonists in the New World during the 1600s, deer populations began to drop due to overharvest, and by 1900, fewer than 500,000 remained. Today, there are 30 million whitetail deer in North America—more than has existed at any time in the past. This vast recovery represents one of the great achievements of wildlife management.

But this plethora of deer also leads to a plethora of problems. In the U.S., there are over 1 million deer-vehicle collisions a year, resulting in 15,000 human injuries and 50 human fatalities. Deer damage to timber exceeds \$1.6 billion annually, agricultural losses total \$600 million, and losses to household gardens and yards average \$500 million each year. Deer also serve as a reservoir for several human diseases that are transmitted from wildlife to humans via ticks including Lyme disease, anaplasmosis, ehrlichiosis, and deer tick virus.

It is estimated that there are approximately 50,000 foreign species in the

U.S. that cause \$120 billion in damages annually. There is a unified effort to address this profound issue. A federal agency called the Animal and Plant Health Inspection Service (APHIS), through its Wildlife Services (WS) program, is part of the U.S. Department of Agriculture, and it is at the center of addressing these issues. The mission of WS is "...to provide Federal leadership and expertise to resolve wildlife conflicts to allow people and wildlife to coexist." WS has a daunting task as invasive species appear at a rate faster than funding to address eliminating these species. WS biologists are not just dealing with invasive species, but also overabundant species including starlings, blackbirds and cormorants. WS biologists also are working to make our airports safer by minimizing bird-plane collisions. Rabies is being held in check by a very effective WS program. At its research center located in Fort Collins, Colorado, WS biologists are testing new techniques to control species. Fortunately, every state agency has a program to address invasive and overabundant wildlife, as well as wildlife creating damage to personal property (e.g., deer eating gardens, etc.).

There are many challenges when addressing human-wildlife conflicts. We cannot discuss them all. One major challenge is the process of animal removal: killing the animal or animals causing the conflict. What do you do with a black bear that has become accustomed to humans at a campground and has become aggressive? Relocate it to a more remote area or euthanize it? Wildlife biologists across the nation are being limited in what tools they may use to address invasive and overabundant species by the actions of animal rights

groups. Solutions promoted by the latter include non-lethal strategies such as mass sterilization and establishing protected colonies (e.g., feral cats). However, research is showing that these are not viable options. Another challenge is to provide adequate funding to state and federal agencies. As we stated, there are 50,000 exotic species in the U.S., and WS, with approximately 600 biologists in the field, is not staffed to adequately address all issues.

Human-wildlife conflicts will only increase as new species are accidentally introduced into the U.S., humankind expands into natural environments adjacent to urban areas, and existing species expand their numbers. Education at all levels will be critical. Providing effective educational programs to legislators, municipal leaders and the general citizenry is critical if resolution of human-wildlife conflicts is to be successful. All citizens must understand that regardless of their inherent beauty or their value as game animals, exotic, invasive, and overabundant native species pose serious ecological, health, sociological, and economic threats to our native wildlife and ecosystems, and to humankind. Educational programs also must include modules to sensitize the citizenry to the need for lethal and non-lethal methods of removing individual animals.

Resolving human-wildlife conflicts has become a major agenda item for federal, state, and private conservation organizations. Trends indicate that it will only grow as a major issue regarding sustaining our natural wildlife species and their habitats. Given that such conflicts inevitably impact every citizen in some way, it is imperative that people become actively involved. ■