Potential Costs of Losing Hunting and Trapping as Wildlife Management Methods

Updated: May 25th, 2005

Produced by the

Animal Use Issues Committee of the
International Association of Fish and Wildlife Agencies

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Acknowledgements

This report was developed for the Animal Use Issues Committee of the International Association of Fish and Wildlife Agencies (IAFWA). Funding was provided by the Wildlife Restoration Program through Multistate Conservation Grant DC M-35-O awarded to the International Association of Fish and Wildlife Agencies by the U.S. Fish and Wildlife Service. This report was authored by Rob Southwick, Ashley Woolley and Donna Leonard of Southwick Associates, Inc., Fernandina Beach, FL., and Sharon Rushton of Killingworth, CT. The project was conceived and championed by Bob Carmichael, Manitoba Department of Natural Resources, and guided in part by Bruce Taubert, Arizona Game and Fish Department; Gordon Robertson, American Sportfishing Association; Don MacLauchlan and Jen Mock, IAFWA; and Mike S. O'Brien, Nova Scotia Department of Natural Resources. A special thank you goes to Rob Cahill, Fur Institute of Canada, for ensuring Canadian data and issues were a part of this report. Data was provided by many state, provincial, federal and private agencies and sources, with special mention to Martin Mendoza of the USDA's Animal and Plant Health Inspection Service (APHIS). Stephanie Kenyon and Carol Wynne, Point to Point Communications, Leesburg, Va., provided invaluable editorial and strategic guidance. Reviews and expertise were provided by Alan Clark, Utah Division of Wildlife Resources; Buddy Baker, South Carolina Department of Natural Resources; Gordon Batchellor, New York Department of Environmental Conservation; and John Erb of the Minnesota Department of Natural Resources. Thanks goes to the many other state wildlife agency professionals and representatives of wildlife organizations, too numerous to list here, who took time to return surveys regarding wildlife trends and materials explaining the need for hunting and trapping as wildlife management tools. Despite the many suggestions and edits provided by reviewers and wildlife experts, the authors remain responsible for the contents herein.

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Background and Purpose

This document was prepared in response to the many inquiries regularly received by state and provincial wildlife agencies regarding hunting and trapping. Wildlife professionals with resource management agencies want the public to understand that, besides being a legitimate and closely regulated activity, hunting and trapping are also important wildlife management tools that help them maintain healthy ecosystems and wildlife populations. Professionally managed hunting and trapping are key tools helping them achieve an acceptable balance between wildlife populations and human tolerance for the problems sometimes caused by wildlife. As long as people value wildlife and accept existing levels of associated problems, wildlife will remain a true national treasure in Canada and the United States.

To help reporters and the public understand the need for regulated public hunting and trapping, this report presents trends on nuisance wildlife and associated damages with explanations on how hunting and trapping can help maintain healthy and acceptable wildlife populations. Examples are provided as estimates on the potential damages if public hunting and trapping were lost. The social and economic damages which might be incurred from the loss of hunting and trapping, by aboriginal peoples or other persons directly or indirectly involved in hunting, trapping or guiding for all or part of their livelihood, while potentially very significant, are not addressed in this report.

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The Importance of Public Hunting and Trapping as Wildlife Management Methods

Communities across North America are learning that wildlife management is a complex science. Even those who have questioned hunting and trapping in the past are now encouraging hunters and trappers to help control growing populations of certain wildlife species. They have found that by eliminating proven wildlife management practices through ballot boxes and "bumper sticker" management, unforeseen negative consequences can follow.

Unfortunately, many well-meaning people are still trying to pass laws limiting wildlife managers' ability to use hunting and trapping as a means to manage wildlife. But who pays the price? Wildlife, native habitats, farmers, homeowners, families, communities, insurance companies/premiums are all affected when these management tools are lost.

Communities have learned hunters and trappers will come for free and even help pay for wildlife management. The local economy also receives a boost. According to U.S. Fish and Wildlife Service data, hunters and trappers contributed $847 million in 2002 to state wildlife management agencies via hunting and trapping licenses and excise taxes[1]. Hunters and trappers help local economies across the U.S. by spending an estimated $5.2 billion in 2001 just for hotels, restaurants and other travel-related items.[2] If hunters and trappers don't come, the cost to control populations via other avenues will come from local taxes, which for some communities has cost hundreds of thousands of dollars annually. If they don't control populations at all, many communities face untold dollars in damages.

The following are just a few of the examples of wildlife/human conflicts *(All data presented are for the U.S. unless otherwise noted):*

- Deer-automobile accidents result in over $1 billion in damage annually.[3]
- Wildlife damage to households amount to $633 million (includes money spent by households to prevent wildlife damage). [4]
- Beavers, woodchucks and other species cause millions of dollars in damage each year to roads, bridges, dams, water drainage systems and electrical utilities in both the U.S. and Canada.[5]
- Crops and livestock losses from wildlife in the U.S. totaled $944 million in 2001.[6]

[1] $659 million in license revenues (U.S. Fish and Wildlife Service), plus $188 million in excise taxes (U.S. Fish and Wildlife Service).
[2] International Association of Fish and Wildlife Agencies, Southwick Associates, Inc.
[3] General Accounting Office. Information on Activities to Manage Wildlife Damage. 2001.
[4] Resolving Human-Wildlife Conflicts: The Science of Wildlife Damage Management. Michael Conover, Ph.D, CRC Press, August 2001, 440pp
[5] General Accounting Office. Information on Activities to Manage Wildlife Damage. 2001.
[6] U.S. Department of Agriculture, National Agricultural Statistics Service. U.S. Wildlife Damage. 2002.

- Wildlife cause close to $750 million in damage to the timber industry. However, the timber industry projected that with *no* animal damage management, the loss to the timber industry would be approximately $8.3 billion.[7]

A goal of wildlife management professionals is to manage wildlife as a valuable natural resource. Wildlife provides immeasurable ecological, recreational and social benefits. However, when wildlife populations exceed human tolerance limits, people tend to label wildlife as pests. This is not good news for wildlife. Many wildlife species, such as deer, bear, beaver, wolf and cougar reached their lowest levels in history when they were viewed as pests and/or could be taken legally without regard to season or limit.

What has worked well to re-establish populations and keep wildlife populations at a healthy level is the North American conservation model. This model uses regulated hunting and trapping seasons and bag limits, which allows wildlife managers to adjust the days or bag limits according to wildlife needs, the health of the habitat and the conflict between wildlife and humans. Game-animal status protects wildlife from indiscriminate killing, which stabilizes the population. Public hunting provides food for the tables of thousands, not only the families and friends of hunters, but also those in need through programs like Hunters for the Hungry. Hunting and trapping are sustainable uses of wildlife resources and they do not in any way threaten the continued existence of any wildlife population.[8]

When wildlife populations reach their cultural and natural carrying capacity, hunting becomes even more important. However, wildlife managers don't see hunting and trapping as their only tools to reduce human/wildlife conflicts. There are other tools, too.

One of the first tools managers use is to help people learn about wildlife and how to live with wildlife in harmony. But harmony only goes so far. When the density of a particular species of wildlife such as deer, elk, moose, bear or beaver exceeds their carrying capacity —the environment's ability to sustain them or the public's tolerance to welcome them— trouble begins.

A survey of state fish and wildlife agencies in 2004 indicated that, over the last five years, nuisance wildlife complaints across the country have increased over 20 percent for deer, beaver and bear, yet populations of these same species have increased just over 11 percent. Similar results were found in Canada, with bear complaints estimated by provincial wildlife managers growing three times faster than the bear population.

Part of the reason is that wildlife habitat, such as natural areas, forest and farmlands, and riparian zones, is increasingly lost to development. Excess populations of wildlife have nowhere else to live but in our backyards, thus setting the stage for conflicts.

This emphasizes the point that wildlife populations need some control measures. Well-funded protest groups would have people believe that there are other methods to control

[7] Dale L. Nolte and Mike Dykzeul. Wildlife Impacts on Forest Resources. National Wildlife Research Center. Fort Collins, CO. 2002.

[8] International Association of Fish and Wildlife Agencies.

growing populations of wildlife besides hunting and trapping. These efforts confuse the public into thinking that hunting and trapping don't belong in the 21st century. However, numerous studies have shown that not only are other methods such as "birth control" and live trapping very costly, they are *not* effective in most situations. (See "Alternatives to hunting and trapping and their limitations.")

All wildlife management tools must be available to wildlife professionals for them to maintain a balance between wildlife, people, vegetation and people's different interests. All state, provincial and federal agencies across North America responsible for the well being of wildlife agree that, when you eliminate hunting and trapping as management tools, no amount of money can effectively make up the difference.

Hunters and trappers are true conservationists and have actively worked with wildlife managers to help restore several species that were almost extinct a century ago. In the U.S., for the past hundred years, hunters and trappers not only help to manage the resource, they pay approximately $847 million annually for the privilege to do so. These revenues are used to fund wildlife management programs throughout the country.

Wildlife managers say that budgets could not be increased enough to make up for the loss of hunting and trapping as management tools. Local taxes would have to be raised significantly to pay for professionals to make up for the loss of millions of licensed hunters who currently pay a fee to provide the same service. Such tax and budget increases are not likely, and the cost of increased wildlife damage would likely fall to property owners and consumers.

This report helps to describe the importance of hunting and trapping to the public and to the current and future well-being of North America's wildlife. Within this report, deer, bear and beaver case studies are presented along with examples of various wildlife management issues at the state/provincial level. This report also provides a comparison of costs and effectiveness of alternative methods of population control, and speculates on the potential impacts to the public and wildlife if hunting and trapping were lost as wildlife management tools.

The Potential Costs If Hunting And Trapping Were Lost As Wildlife Management Tools

If hunting and trapping were lost, what would be the potential economic, human and property consequences? This question is impossible to accurately answer. No one knows for certain how large certain wildlife populations could grow if their largest natural predator—people—were removed from the equation. However, we do have information that helps provide insights into this difficult question.

Note that the damage projections provided in this section are only estimates. Without spending millions of dollars on scientific research, which is money vitally needed for more pressing conservation issues, exact answers regarding damage levels and health impacts resulting from a loss of hunting and trapping are not possible. Therefore, we have combined data from reliable sources and experts to help develop a picture of the damage that could occur if hunting and trapping were no longer allowed as legitimate public activities and used as wildlife management tools.

Several general sources provided data for this report. The first was a survey of state and provincial wildlife agencies undertaken in 2004 and 2005 by the International Association of Fish and Wildlife Agencies inquiring about current levels of nuisance wildlife problems and potential trends if hunting and trapping were lost. The second was the USDA Wildlife Services program, the U.S. federal agency charged with curbing damage by wildlife. Various data were provided, with the most coming from a 2001 GAO report to Congress regarding Wildlife Service's activities, programs and benefits. A third source was a compilation of academic reports and news articles gleaned from media across North America.

All dollar figures presented in this document are in U.S dollars unless stated otherwise.

Human Health, Transportation and Safety:

Potential Damages Should Hunting and Trapping Be Lost as a Wildlife Management Tool

* An additional 50,000 injuries per year from wildlife-auto collisions
* $3.8 billion in auto repair costs after such collisions
* $1.45 billion in health care and disease control costs just for rabies alone
* $128 million in additional aircraft damage, and potentially many more lives lost in airplane-wildlife collisions.
* In 2003, insurance payouts in Manitoba for wildlife-auto collisions equaled $20 for every provincial resident.

Vehicle collisions

In the U.S., 4 percent of the nation's 6.1 million auto accidents reported to the police—or 247,000 incidents—involved direct collisions with animals, as reported during a 12-month period in 2001 and 2002 by the Center for Disease Control and the National Highway Traffic Safety Administration. Of these accidents, 26,647 people required treatment for injuries in a hospital emergency room. Deer were involved in 86.9 percent of these injury cases. In addition, an estimated 200 lives were lost in accidents where the driver either collided with an animal or tried to avoid a collision.

The problem is just as significant in Canada. For example, in Manitoba, with a population of 1.1 million people, 10,475 wildlife collisions were reported to Manitoba Public Insurance in 2003. As a result, a record $20.1 million in insurance claims was paid out in 2003, or $20 for every Manitoba resident. 2003 marked the fourth consecutive year payouts for wildlife-auto collisions had risen.

If hunting were lost as a wildlife management tool, state wildlife agencies estimate that deer-related damages could increase 218 percent. Such an increase could result in an additional 50,000 injuries per year, and a proportional increase in highway fatalities.

Dr. Michael Conover of Utah State University estimated that each year in the U.S. there are approximately 729,000 deer-auto collisions, including those not reported to police, based on data provided by state authorities. He estimates only half of all collisions are recorded and that the average accident required a $1,644 repair bill. Based on the estimated 729,000 deer-auto collisions annually, U.S. drivers are paying $1.2 billion annually for repairs.[9] This estimate is matched by similar estimates reported by the Government Accounting

[9] Resolving Human-Wildlife Conflicts: The Science of Wildlife Damage Management. Michael Conover, Ph.D, CRC Press, August 2001, 440pp.

Office in their audit of the USDA Wildlife Services program by reporting each year there are more than one million deer-auto collisions resulting in over $1 billion in damages.

Based on the IAFWA survey, if hunting were lost as a deer management tool, estimates of increases in deer damage levels average 218 percent. Therefore, costs associated with car accidents could increase to $3.8 billion, an amount equal to $13.32 for every person in the U.S.

According to the U.S. General Accounting Office, cases of rabies among fox, coyote and raccoon are increasing, with associated costs estimated over $450 million annually for healthcare, education, vaccinations and animal control. Trapping is often the only way to manage populations of these wary, primarily nocturnal animals. State wildlife agencies estimate that in the absence of hunting and trapping, wildlife damages would increase 221 percent. This translates into a potential increase of $995 million in health care and control costs—or $1.445 billion annually. This amount, which is associated with just one of the many diseases affecting people, is more than the amount given by the U.S. Department of Health and Human Services to local communities in 2003 for terrorism preparedness.

The GAO also reports nearly $400 million in aircraft damages are reported each year from collisions with wildlife. It was estimated that only about 20 percent of all collisions are reported. Many of these collisions are with geese and other species, when deer cross runways, and other similar events. Even if only a quarter of all species involved in such collisions are managed in part by hunting or trapping, if hunting or trapping were lost as management tools, total reported aircraft damages could increase by an additional $128 million, or to $528 million in total. It is impossible to speculate on the additional number of injuries and fatalities that could result.

Government Control of Wildlife Populations:

Potential Damages Should Hunting and Trapping Be Lost as a Wildlife Management Tool

* $934.2 million to $9.3 billion of taxpayer's money annually to control whitetail deer
* $132 million to $265 million of taxpayer's money annually to control furbearers, and
* $16 million to $32 million of U.S. taxpayer's money annually to control just beaver ($8 million ($ CAN) to $15 million ($ CAN) in Canada).
* $17 million (CAN $) to $34 million ($ CAN) in new private or public sector expenditures to remove problem furbearers in Canada.

Predators help keep a balance between wildlife and their habitat and food supply. In the absence of predators, overpopulated wildlife typically suffer from slowly debilitating diseases, starvation, and often move into human communities potentially causing myriad problems. Without hunting and trapping, the public would demand government step in and control problematic wildlife populations. This has already happened in places such as New Jersey (see the deer case study section). Even in much less densely populated jurisdictions like Nova Scotia, localized concentrations of residential development, in otherwise quite

rural areas, has resulted in reduction of opportunity/access for hunting and trapping and consequently local increases in wildlife populations and incidence of human /wildlife conflict and call for government action. In many cases, state and provincial wildlife agencies are not able to step in to help because their budgets are severely limited. People are left no choice but to hire private wildlife control companies to reduce the problem, or pay for the costs associated with repairing animal damage.

Deer

The species causing the most problems is the whitetail deer. Ideally suited to landscapes altered by people through agriculture, suburban landscapes that provide winter forage, and more, deer populations grow despite current levels of hunting activity. However, if not for hunting, deer populations would be much larger. In 2001, according to the U.S. Fish and Wildlife Service, deer were hunted by 10.3 million Americans, more people than the population of Michigan. Deer hunters spent over 133 million days in the field in 2001, taking 6.23 million deer out of a population of 34 million, according to the U.S.'s Quality Deer Management Association. An estimate of the number of deer harvested annually in Canada was not available. Hunters can be viewed as defacto deer control specialists, not only unpaid for their services, but who pay for the privilege of hunting. Hunters spend approximately $453 million[10] each year in the U.S. on licenses—money that becomes the primary source of revenue for state wildlife agencies and conservation efforts.

Deer populations are not increasing in all areas of the country. Many areas of the western U.S. have seen population decreases, though mule deer continue to move into many western urban and suburban neighborhoods. However, if hunters were not in the field, state wildlife agencies estimate damage related to increased deer herds would grow 218 percent. Canadian authorities project an average growth rate of 80 percent if hunting was lost. Recognizing deer complaints in the U.S. over the past five years have increased 50 percent faster than deer populations, a small change in local deer populations, if the population is already near or exceeds capacity, can translate into large increases in negative impacts.

To control deer populations in areas where hunting is not possible, the cost to government ranges from $300 for each deer for lethal methods, such as shooting, and up to nearly $3,000 to relocate a deer. In the 1980s, an overpopulation of deer led to a relocation effort from Angel Island in the San Francisco Bay area. Deer were captured and relocated at a cost of $431 per deer. Most deer died due to stress of relocation, bringing the final cost to $2,876 for each deer that survived one year.[11] Relocation methods are costly, result in high mortality, and can only be used in limited situations. There are few areas to release deer where survival rates will be adequate. Many relocated deer often endure a slow death due to the stress of being captured and moved to unfamiliar locations or areas already at maximum capacity.

[10] U.S. Fish and Wildlife Service states received $659 million in hunting license revenues in 2002 from 15 million hunters. The nation's 10.3 million deer hunters represent 68.7 percent of all hunters, which translates to $453 million in license revenues.

[11] Heart and Blood, R. Nelson, 1997 - describes the multi-year efforts to control the population of deer on Angel Island, San Francisco Bay, CA.

No one knows how many deer currently taken by hunters would have to be removed by government if hunting was no longer permitted, but 50 percent of the current hunter harvest is regarded as a reasonable, conservative estimate by the IAFWA.[12] Therefore, U.S. wildlife agencies may be asked to handle 3,114,000 deer annually, at a cost of $934.2 million to $9.3 billion of taxpayer's money annually.[13] This amount represents the typical annual federal taxes for 106,400 to 1.06 million U.S. households.[14] Additional money will still be needed in both countries to control habitat damage from deer not moved or culled. In addition to the dollars needed to manage just deer, further funds would be needed to manage other similar species now managed largely by hunting, including moose and elk.

Furbearers

Most furbearer species are not pursued by hunters. Furbearers, including beaver, raccoon, skunk, and many other species, are typically nocturnal and do not lend themselves to traditional hunting techniques. Trapping is the only practical means to capture furbearer species.

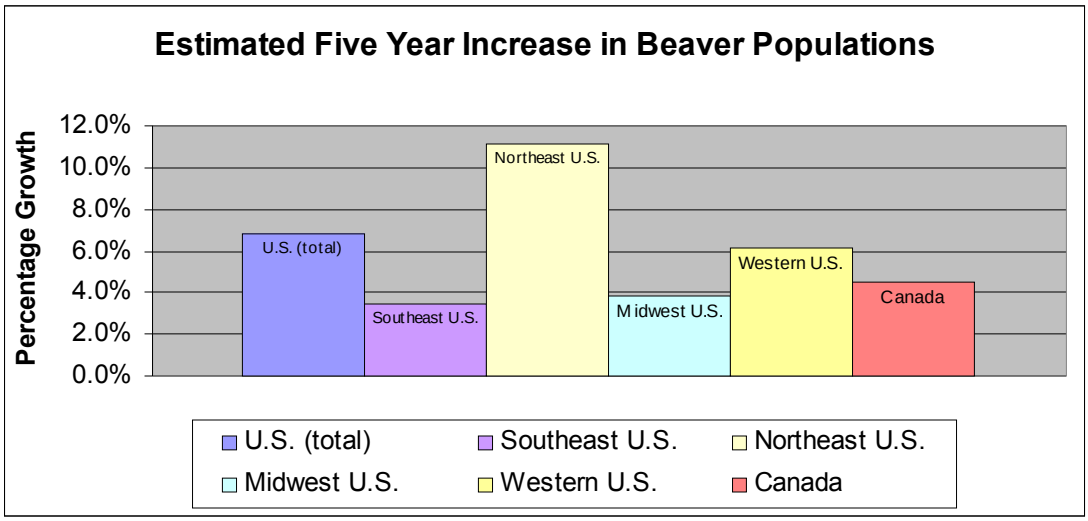
Beaver can be regarded as the most damaging of furbearers. The recent survey of state and provincial wildlife agencies estimates beaver populations have increased 6.8 percent over the past five years in the U.S. and 4.5 percent in Canada. In the table below, New England has experienced the fastest growth in beaver populations, most likely a result of lower fur prices in recent years, which has made trapping less profitable, and increased restrictions on trapping in some states.[15] The West has experienced the second greatest growth rate, also likely due to similar reasons.

[12] The IAFWA's Animal Use Issues (AUI) Committee, when queried at their 2004 annual meeting, reported 75-80 percent to be an acceptable number. The rate would vary significantly from location to location. The overall range could be 20-150 percent. The AUI Committee recommended using 50 percent to help ensure any errors remain on the conservative side.

[13] To remain conservative, this figure does not include the expected 145 percent increase in the deer herd expected if hunting was stopped, which would raise the estimated cost for government removal programs to $2 billion to $20 billion.

[14] The average U.S. household had an income of $42,228 in 2001. Federal tax rates for this income level was $3,390 plus 27.5% of all taxable dollars over earned over $22,600, standard deductions included. Therefore, the average tax paid per household was $8,780.

[15] Over the past five years, prices have declined, but with an increasing trend seen in the last two years. According to the Fur Information Council of America, these increases are in part attributed to an increase for fur and fur fashion plus recent colder than average winters.



** From the 2004/05 survey of state and provincial wildlife agencies*

The level of trapping activity is influenced by prices, weather and regulations. Fur prices, as with any traded commodity, fluctuate with world demand. When prices are high, more people are willing to take to the woods and trap. Cold winters and deep snow reduce trapping activity. Regulations can be liberalized to encourage additional trapping to reduce populations, or in some jurisdictions, has been restricted based on public perception of trapping.

Regardless of the reasons why people can and cannot trap, trappers provide a valuable public service by helping wildlife agencies maintain a balance between wildlife populations and public acceptance. All trapping is highly regulated by state and provincial wildlife agencies to ensure sustainable harvests and healthy wildlife populations. In 1998, the latest year in which data were collected, U.S. trappers culled 429,000 beaver from an ever-growing population. On average, U.S. trappers earned $15.97 for each beaver pelt sold, which represents payments by the private sector to help manage wildlife for the common good. Just like the deer example provided previously, if trapping was lost as a wildlife management tool, states would face demands to remove problem animals and control beaver populations. As of 2004, the typical cost to remove a problem beaver was $75 to $150, based on estimates from Massachusetts (see the State Summaries). No one knows how many beaver will have to be annually removed by wildlife agencies if public trapping were no longer permitted, but 50 percent of current harvest levels is regarded as a reasonable, conservative estimate by the IAFWA.[16] Therefore, state and local governments may be required to handle 214,500 beaver each year, at a cost of $16.1 million to $32.2 million in taxpayer dollars annually, to maintain beaver populations and damages at publicly-acceptable levels.[17]

[16] The IAFWA's Animal Use Issues Committee, when queried at their 2004 annual meeting, reported the actual rate would vary significantly depending on location. The committee recommended using 50 percent to help ensure any error is on the conservative side.

[17] To remain conservative, this figure does not include the expected increase in beaver populations should trapping cease. Beaver numbers easily could double, based on state estimates that beaver damages could increase over 100 percent in the absence of trapping. With a greater population of beaver, greater levels of government removal programs would be needed, potentially costing $32 million to $64 million annually.

In Canada, Statistics Canada reports at least 164,500 beaver were harvested during the 2002-2003 season at a total value of $3,718,902 ($ CAN), or $22.61 ($ CAN) per pelt.[18] If trapping was lost, and 50 percent of these beaver needed removing as estimated by the IAFWA, and assuming the cost per beaver removed is $75 to $150 ($ US) each, then private businesses, homeowners and other expected to suffer the damages from increased beaver populations would pay an additional $7.68 million ($ CAN) to $15.47 million ($ CAN) annually.[19]

Given the current condition of most government agency budgets, increases in funding to handle the extra costs and workload resulting from a loss of trapping are not possible. Government programs are not likely to fill the void left by a loss of trapping. Much of the additional work would fall to private-sector wildlife control companies. The bottom line would be the same—people will experience greater levels of wildlife damage and have to personally bear the burden of higher costs. The costs would be in the form of cash paid for services rendered by homeowners, businesses and farms to control or remove problem animals, and to repair greater levels of damage.

Beaver are just one of many furbearer species that can cause damages. The table below lists 1998 harvest figures for the top species harvested in the U.S. The total harvest and value figure includes all 24 species tracked by the IAFWA. The typical trapper earned $8.50 per pelt in the late 1990s, and all trappers collectively received $60 million annually for their services. In the recent survey of state wildlife agencies, states reported that in the absence of hunting or trapping, increased wildlife populations would result in 221 percent greater damage. If public trapping as it occurs today were no longer permitted, governments would be called upon to control or remove nuisance wildlife. This is already occurring in some areas (see the Beaver section of this report). Depending on the species, the IAFWA estimates 25-100 percent of current harvest levels for many trapped species may have to be taken by some form of government program if public trapping were lost, just to maintain current damage levels and prevent additional increases. To remain conservative, it is assumed that local, state and federal governments would be required to remove a number of furbearers equal to 25 percent of current harvest levels. Based on the 1998 harvest (the latest year in which data are available), this would equal 1.765 million animals per year.[20] Based on the Massachusetts estimate of $75 to $150 per beaver removed, government agencies may have to spend $132 million to $265 million in taxpayer funds annually to provide basically the same services currently provided by private sector trapping.

Top 10 U.S. Harvested Furbearers, 1998

	Total Number Harvested	Value	Per Pelt
Raccoon	2,896,089	$31,040,197	$10.72

[18] Harvest data for Saskatchewan were unavailable and therefore not included in this estimate.
[19] This estimate is based on May 2005 currency conversion rates ($1 US = $1.254 CAN).
[20] To remain conservative, this estimate does not include the expected increase in many furbearer populations that would result once trapping ceased. Government removal programs would be needed to minimize damages and to control the spread of diseases affecting both wildlife and human populations.

Muskrat	2,183,201	$6,405,140	$2.93
Beaver	429,249	$6,856,354	$15.97
Nutria	398,037	$2,060,088	$5.18
Opossum	321,651	$391,897	$1.22
Mink	190,221	$2,131,668	$11.21
Red Fox	164,487	$2,118,307	$12.88
Coyote	159,043	$1,523,478	$9.58
Skunk	101,911	$241,468	$2.37
Gray Fox	76,666	$4,051,230	$52.84
ALL SPECIES:	*7,061,607*	*$60,031,835*	*$8.50*

Source: International Association of Fish and Wildlife Agencies

Estimates are possible for Canada. From the survey of provincial wildlife agencies, it is estimated that damages from problem wildlife would increase 58.3 percent if trapping was no longer available.[21] The IAFWA estimates 25-100 percent of current harvest levels for many trapped species may have to be taken by some form of government program if public trapping were lost, just to maintain current damage levels and prevent additional increases. Assuming the 25 percent estimate is correct for Canada, combined with fur harvest data reported by Statistics Canada, an additional 223,677 problem animals would need removal annually if trapping was lost.[22] At $75 to $150 ($ US) cost per animal, the cost to remove problem furbearers could increase from current levels by another $16.76 million to $33.55 million (CAN $) annually.[23] Provincial wildlife managers reported that this additional cost would likely fall on private households and businesses as expansion of government budgets for such activities is very unlikely.

Canadian Wild Fur Production, All Species; 2002-2003
(Ranked by total $ CAN value)

	Total Number Harvested	Value ($ CAN)	Per Pelt ($ CAN)
Ontario	243,246	$5,829,596	$23.97
Quebec	185,014	$4,829,607	$26.10
Manitoba	86,839	$2,998,184	$34.53
Alberta	106,872	$2,522,176	$23.60
Saskatchewan	85,530	$1,907,720	$22.30
British Columbia	39,589	$1,278,067	$32.28
Newfoundland/Lab.	20,599	$963,716	$46.78
New Brunswick	44,333	$903,626	$20.38
Northwest Terr.	31,848	$751,349	$23.59
(Continued)			
Nova Scotia	26,663	$672,552	$25.22
Nunavut	10,957	$648,954	$59.23
Yukon	8,263	$208,582	$25.24
Prince Edward Is.	4,953	$96,856	$19.56

[21] Most areas of northern Canada are vast, sparsely populated wildernesses. Wildlife populations are expected to increase if trapping ceased. However, damages to human property would be lower than in the U.S. as much larger percentages of Canadian wildlife seldom comes into contact with humans.
[22] Harvest data for Saskatchewan were unavailable and therefore not included in this estimate.
[23] This estimate is based on May 2005 currency conversion rates ($1 US = $1.254 CAN).

ALL SPECIES:	*894,706*	*$23,610,985*	*$26.39*

Data source: Statistics Canada, Fur Statistics 2004, Vol 2, no.1

Ironically, any government-operated furbearer control program will most likely require the use of traps, but only under direct government supervision and permits. In addition, government trapping often results in the waste of the pelt due to its inability to prepare and sell pelts to offset the cost of removal. Government substitutes are much more costly than the regulated market-based approach now used. In some cases, government trapping programs are necessary and required to provide assistance in areas where traditional trapping activity is not enough. The USDA Wildlife Services program is a good example of government needing to step in to help prevent a publicly-owned resource (wildlife) from placing too large a burden on individuals and their businesses. A recent audit by the Government Accountability Office reports that the benefits of USDA's Wildlife Services wildlife control efforts outweighed costs by 3:1 to 27:1.

Agriculture:

Potential Damages Should Hunting and Trapping Be Lost as a Wildlife Management Tool

* $3.027 billion in annual damages to U.S. crops and livestock, and $35.7 million annually in Canada.
* A potential increase of $10.62 in the average U.S. consumer's annual food bill.
* A loss of nearly $1 billion annually in farm and rural landowner income from lost hunting leases and fees.

Problems faced by agriculture are far removed from the thinking of many people in our nation's suburban and urban regions. However, negative impacts to farmers directly affect food prices paid by everyone. Wildlife, left uncontrolled, can affect agriculture coast-to-coast.

Based on a survey of 12,000 agriculture producers, the USDA's National Agriculture Statistics Service estimated the following damages to U.S. agriculture from wildlife in 2001:

Field crops	=	$619 million
Livestock & poultry	=	$178 million
Vegetables, fruits and nuts	=	$146 million
TOTAL	=	$944 million

These losses include destruction or damage to crops in the field and death or injury to livestock. Primary species involved were deer (58% of reported damage to field crops, and 33% of damage to vegetables, fruit and nuts). Over half of all farmers and ranchers experienced some type of wildlife–related damage each year—for example, the value of corn lost exceeds $90 million, 147,000 cattle lost valued at $51.6 million, and 273,000 sheep lost valued at $16.5 million.

State wildlife agencies expect wildlife damages would increase on average by 221 percent nationally should hunting and trapping be lost as wildlife management tools. This level of damage would not suddenly appear in the year after any hunting and trapping moratorium, but would be the expected maximum level of damages after several years of increases. Based on a 221 percent increase, total agricultural damages after a loss of hunting and trapping could reach:

Field crops	=	$1.987 billion
Livestock & poultry	=	$571 million
Vegetables, fruits and nuts	=	$469 million
TOTAL	=	$3.027 billion

If the agricultural damages projected above were realized, the costs would be passed along to consumers. In the U.S., annual food costs could increase $10.62 per citizen (assuming all production were shipped to U.S. consumers), which would increase production costs enough to put many marginal producers out of businesses. Either way, as with any increase in production, the consumer will always foot the final bill.

Estimates are available regarding crop damage in Canada from wildlife. A 1998 report released by the Canadian Federation of Agriculture and Wildlife Habitat Canada[24] reported wildlife damages to agriculture by region:

Province:	Estimate Annual Damage:
Newfoundland	$ 25,000
Prince Edward Island	$ 60,000
Nova Scotia	$ 554,000
New Brunswick	$ 185,000
Quebec	$ 1,356,000
Ontario	$ 5,155,000
Manitoba	$ 1,352,000
Saskatchewan	$ 7,798,000
Alberta	$ 1,908,000
British Columbia	$ 4,205,000
CANADA	$22,598,000

Provincial wildlife agencies expect wildlife damages would ultimately increase, on average, by 58 percent nationally should hunting and trapping be lost as wildlife management methods. Based on a 58 percent increase, annual agricultural damages after a loss of hunting and trapping could reach $35,705,000.

In addition, hunting and trapping provide farmers and rural landowners with an additional source of much-needed income. According to the U.S. Fish and Wildlife Service, $995.4

[24] Proposal for a National Agricultural Stewardship Program: A Wildlife Damage Prevention and Compensation Program for Farmers. Prepared by the Canadian Federation of Agriculture and Wildlife Habitat Canada. April, 1998.

million were paid to landowners by hunters in 2001 to access private land, an amount equivalent to Montana's top source of agricultural income, cattle and calves. In the absence of hunting and trapping, landowners would loose this income, and for many, the ability to maintain their farms and land. The loss of hunting and trapping would also result in increased financial damages to many agricultural operations, diminish the value landowners hold for wildlife, and reduce their tolerance for wildlife and its associated damages.[25]

Dwellings & Infrastructure

Potential Damages Should Hunting and Trapping Be Lost as a Wildlife Management Tool

* $972 million in damages to homes annually

According to Utah State University (Conover), metropolitan households nationally incurred $4.4 billion dollars in wildlife-related damages annually in the mid-1990s. Almost half of the homes in his random household survey (42 percent) incurred wildlife damage in some form or another costing $38 in often-unsuccessful attempts to ameliorate the problems.[26] Recognizing damages to households are often caused by species that cannot be hunted due to either their non-game status (woodpeckers, etc.) or their inaccessible location in suburban and urban neighborhoods, some of the culprit species in many areas can be trapped or hunted (squirrel, opossum, raccoon, skunk, etc.). The IAFWA regards 10 percent to be a reasonable estimate of the percentage of wildlife damage incidents affecting houses caused by species subject to trapping or hunting. State wildlife agencies on average estimated damages would increase 221 percent, if trapping - the form of wildlife control for most home-damaging species - and hunting were lost as a means to control nuisance and overpopulated wildlife. Altogether, this translates into an additional $972 million in damages to homes annually, an amount equivalent to the total damages suffered in the U.S. during the 2002 hurricane season. While no data was available for Canada, one might reasonably expect proportionately similar and significant levels of increased annual damage to homes in Canadian jurisdictions.

Overall Wildlife-Related Damages

Potential Damages Should Hunting and Trapping Be Lost as a Wildlife Management Tool

[25] Economic Importance of Hunting In America. Southwick Associates, Inc. IAFWA. 2002. Montana livestock data obtained from the USDA Economic Research Service, 2001.
[26] Resolving Human-Wildlife Conflicts: The Science of Wildlife Damage Management. Michael Conover, Ph.D, CRC Press, August 2001, 440pp.

* $70.5 billion from all forms of health, structural, agricultural and other forms of wildlife-related damages annually
* This amount equals $247 for every U.S. citizen, and represents an economic loss with these dollars going to expenditures for items we already had, instead of to new economic growth.
* Significant decreases in public tolerance for wildlife, reducing public concern and stewardship for wildlife and natural habitat.

What is the cost of wildlife damage nationally? Developing an overall estimate is extremely difficult. For Canada, too little data exists to develop an educated estimate. Many instances of wildlife damage are never reported. Quantifying the costs of many known damages is difficult, too. Local governments do not have the resources to record damages to highways and infrastructure from burrowing animals or beaver, or to report the cost of maintaining parks in the face of overpopulated wildlife and discarding road kill. Wildlife experts have contemplated the cost of problem and nuisance wildlife. Dr. Michael Conover, a wildlife expert at Utah State University specializing in human-wildlife interactions, has estimated total damages at $22 billion annually, excluding costs related to human illness and injuries.[27] Hunting and trapping are the primary tools used by professional wildlife managers to control animal populations. In the recent IAFWA survey of state and provincial (can we say this?) wildlife agencies, 80.6 percent of the responding agencies reported no amount of increase in their budgets could replace the ability to regulate wildlife populations if hunting and trapping were lost as wildlife management tools. Wildlife agencies also reported current levels of wildlife damages would increase an average of 221 percent if hunting and trapping were halted. This would yield a total damage figure of $70.5 billion annually, an amount equal to 1.58 percent of the annual income for all U.S. households, or $247 for each person in the U.S.[28] Seventy billion dollars represents a major social loss. Instead of being available for investment in new jobs, technologies, education, entertainment or other places that enhance our quality of life, these funds would go towards replacing homes, crops, infrastructure and other items previously paid for. From a social standpoint, it is important to manage wildlife populations and their related damages within levels acceptable by the public. Hunting and trapping are a vital part of this complex balancing act.

Losing hunting and trapping can also affect public tolerance for wildlife. When wildlife populations exceed human tolerance limits, people tend to label wildlife as pests. For landowners and farmers, this problem is worsened when they can no longer earn income from hunting and trapping fees. Instead of remaining a public treasure, wildlife can become a public target. Already, there are some signs that some wildlife populations are coming closer to the limit of public tolerance.

In the 2004 survey of state and provincial agencies, wildlife managers were asked their opinion about the public's level of tolerance of overpopulated wildlife. The results are presented in the table below, and indicate public tolerance might be lessening, but has not

[27] Ibid.
[28] 105.5 million households in the U.S., per the U.S. Census Bureau. Annual household income in 2001 = $42,228, per the U.S. Census Bureau yields household income of $4.455 trillion annually. U.S. population = 285.318 million in 2001.

necessarily reached the public's tolerance limits. To ensure the public's limits are not reached, hunting and trapping remain important wildlife management tools.

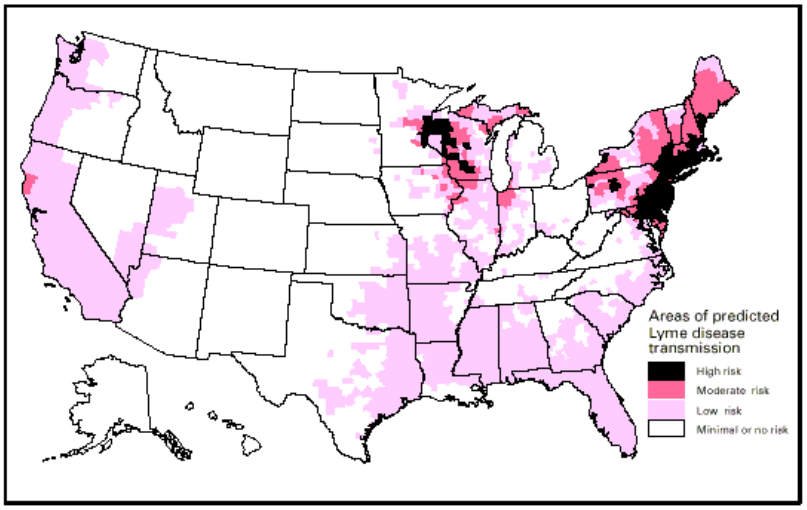
Percentage of States and Provinces Reporting their Public is Becoming More Tolerant or Less Tolerant of Wildlife Overpopulation Issues

	U.S.	SE States	NE States	MW States	W States	Canada
Less Tolerant	75.7%	84.6%	88.9%	70.0%	53.8%	72.7%
Stable	18.9%	7.7%	11.1%	30.0%	30.8%	0.0%
More Tolerant	5.4%	7.7%	0.0%	0.0%	15.4%	27.3%

Case Study #1: Hunting Helps Maintain Deer as a Valued Public Resource

Deer are a precious natural resource. They spellbind us with their grace. Their freedom to roam wild without boundaries reaches to our inner soul. But deer can spring without warning into the paths of oncoming vehicles, causing accidents resulting in over $1 billion annually in damages in the U.S. alone. They extend their grazing into suburban yards, nurseries, orchards and farms. They harbor the ticks that transmit pathogens that cause disease such as Lyme disease, with 23,763 cases reported in 2002 to the U.S. Centers for Disease Control and Prevention. They'll even over-eat their own food supply and face starvation themselves. Deer will browse woodlands to the point that they threaten the future of the woodland forests and therefore all other wildlife that depend on that habitat for survival.

National Lyme disease risk map with four categories of risk

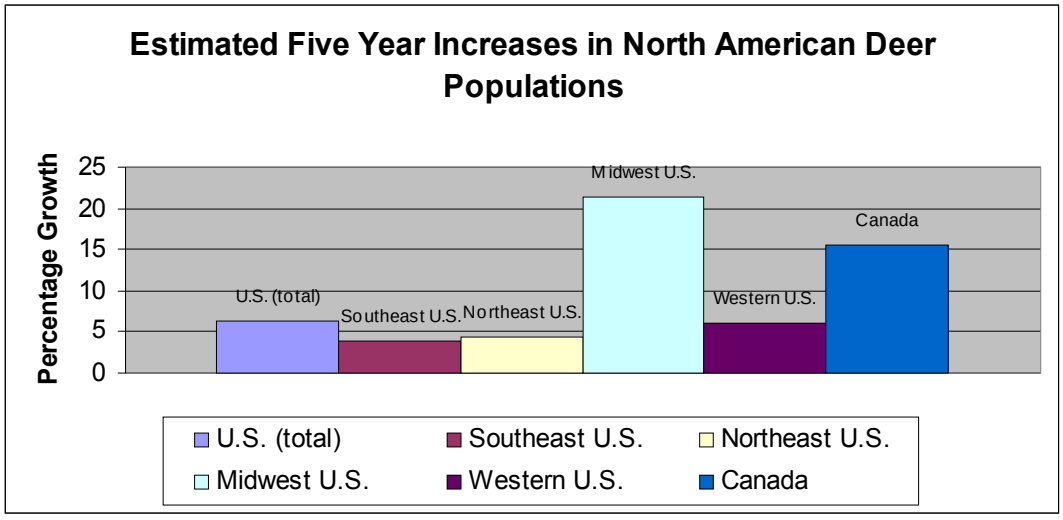


Note: This map demonstrates an approximate distribution of predicted Lyme disease risk in the United States. The true relative risk in any given county compared with other counties might differ from that shown here and might change from year to year. Risk categories are defined in the accompanying text. Information on risk distribution within states and counties is best obtained from state and local public health authorities.

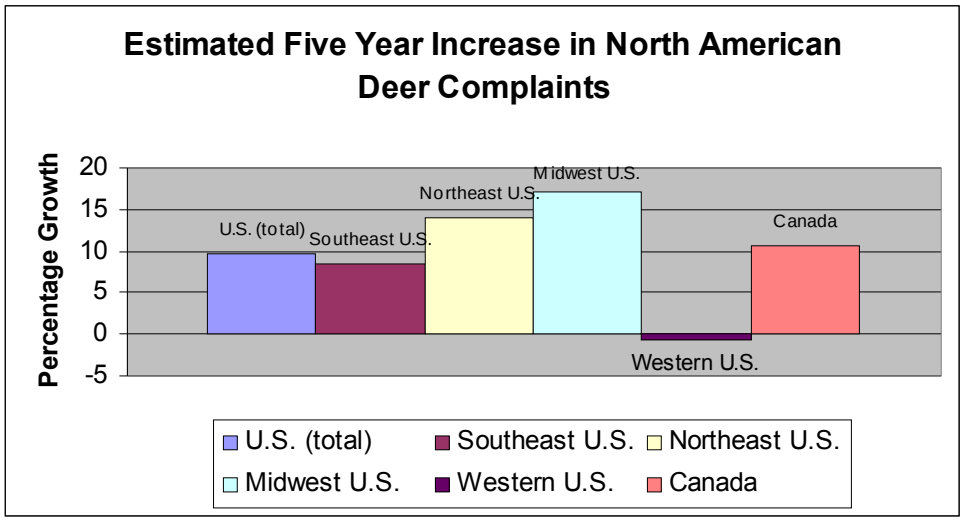
Source: U.S. Center for Disease Control (http://www.cdc.gov/ncidod/dvbid/lyme/).

With some exceptions, such as western areas of the U.S. with mule deer, deer populations are at record levels. According to a survey of states in 2004, a majority of states report deer damage complaints are increasing more than twice as fast as deer populations. During the past five years, state agencies' expenditures to address deer damage have increased by an average of 23 percent, with 57 percent of the states reporting budget increases during a time when most states' overall budgets have seen drastic cuts. Personnel-hours assigned to control deer damage have increased 22 percent. In addition, nearly 76 percent of wildlife agencies fear the public is becoming less tolerant of wildlife overpopulation issues. In Canada, over the past five years, provincial wildlife agencies' have spent 6 percent more to address deer damage, even while budgets remained static or in some cases have been drastically cut. Man-hours spent to control deer damage have increased 7.9 percent, and overall deer damage complaints have risen 10.7 percent. While the pattern of increase is

similar in both countries, the lower numbers reported for Canada may in part reflect the dampening effect of more northerly climate on deer population increases in some areas, and of course the combination of the significant northern areas of many provinces and territories where deer are not present and /or where human populations are sparse.



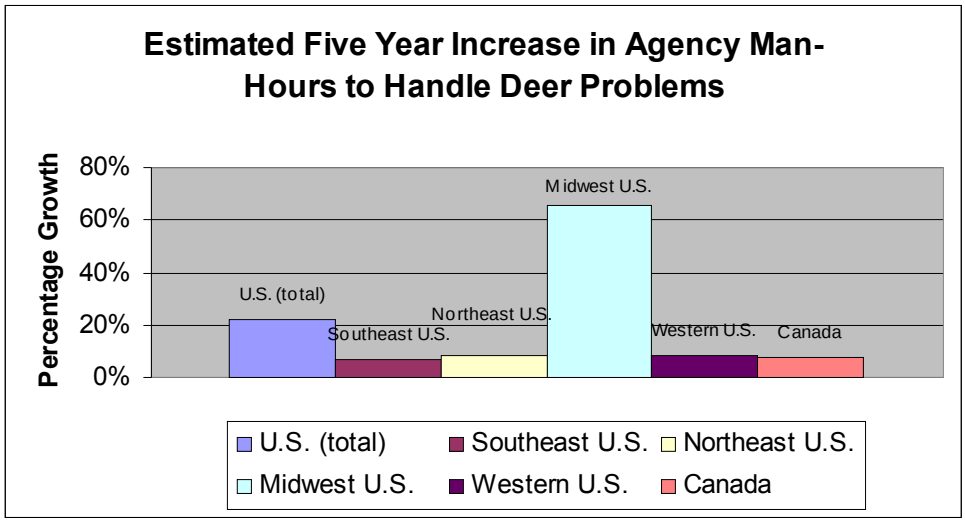
** From the 2004/05 survey of state and provincial wildlife agencies*



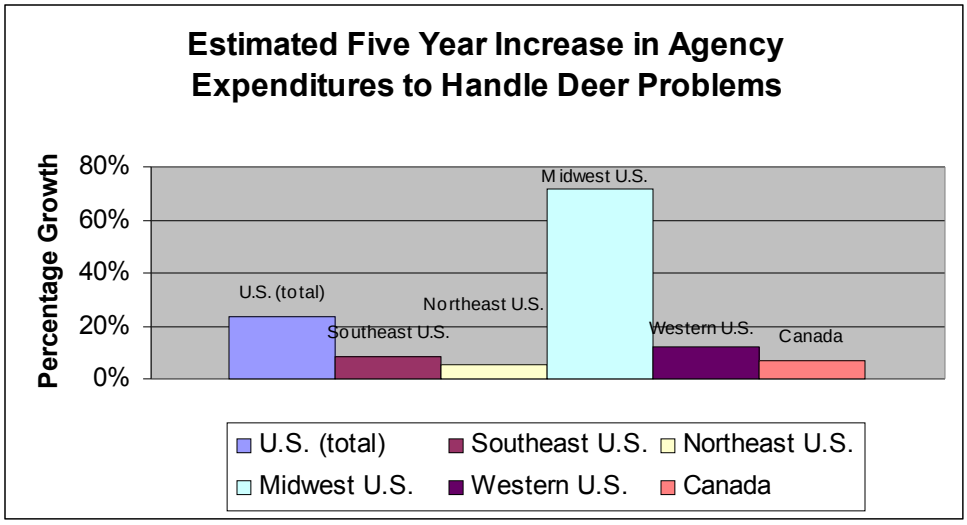
** From the 2004/05 survey of state and provincial wildlife agencies*

Wildlife managers report that the greatest increases in deer populations are where hunting is not allowed or public access to land is limited, such as urban and suburban communities. Wildlife managers consider both biological and cultural elements when managing deer populations. Biologically, they try to keep deer populations at levels where habitat or other wildlife are not negatively affected. Culturally, they try to keep deer populations at acceptable levels where nuisance and human health issues are minimized. Through educational outreach efforts, wildlife agencies try to work with and listen to the public and help them understand ways to minimize damages from deer. But when hunting is not

allowed or public access to land is limited, populations continue to increase and so do the complaints.

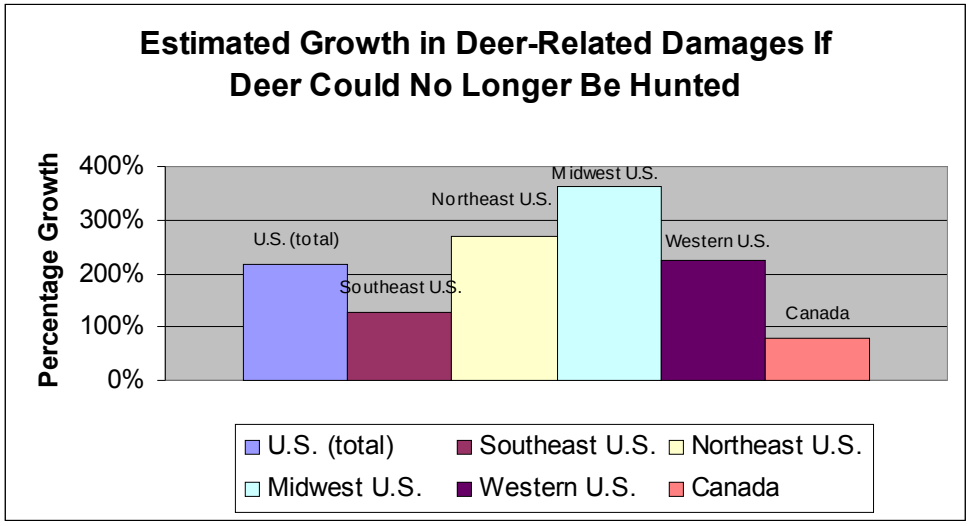


** From the 2004/05 survey of state and provincial wildlife agencies*



** From the 2004/05 survey of state and provincial wildlife agencies*

Left alone with no population control (wild predators, hunting, disease, etc.), deer will eventually destroy their own habitat. Excessive browsing of understory vegetation and elimination of saplings of many desirable tree species in woodlands also reduces the population of ground-dwelling animals and birds. Deer damage to a forest ecosystem can become so great that the forest ecosystem will not recover in a normal person's lifetime. In a Canadian study (Martin/Baltzinger), researchers concluded that the regeneration of western red cedar is drastically reduced in presence of unregulated, high deer populations. Cedar regeneration is better and browsing stress lower in areas where deer are more exposed to hunting. Wildlife managers agree that hunting is the most important management tool to control deer populations.



** From the 2004/05 survey of state and provincial wildlife agencies*

Typically, in areas where managers want deer populations to expand, they limit hunters to bucks (males) only. However, once biologists need to stabilize or reduce deer populations, they decide on a number of does (females) that must be removed from the population. Therefore, many agencies continually increase the amount of does hunters can take and lengthen hunting seasons in order to bring deer in line with their habitat.

Some communities have found out the hard way that you cannot let deer populations remain uncontrolled. There are hundreds of examples of places where an area at one time in its history did not allow hunting and the whitetail deer multiplied until they caused ecological disaster. Places like Harriman State Park in New York, Bluff Point Coastal Reserve in Connecticut, Ryerson Conservation Area in Illinois, Fontenelle Forest in Nebraska, Thousand Hills State Park in Missouri, Boulder Mountain Park in Colorado, and the coastal area of near Lunenburg and Bridgewater in Nova Scotia have each experienced the effects of overpopulated whitetail deer.

Unfortunately, protest groups continue to confuse the public into thinking that there are substitutes for hunting. In the meantime the controversy drags on and on, and communities lose the things they were trying to protect; the deer die of starvation or disease or the habitat is destroyed.

The following is a list of other methods to deal with deer overpopulation, but each is limiting despite the significant costs associated with each.

- **Trap and Transfer:** Trap and transfer (or translocation) is literally what it says. The deer are trapped, often tranquilized and taken to another location. While this method was a viable option at one time for selected populations, it is no longer a viable option because deer are now abundant and there is no suitable place for excess deer to be released. Also, wildlife agencies at present are concerned about transporting deer across state lines because of the danger of spreading Chronic Wasting Disease. Studies

have shown that about half of all deer trapped and relocated die from capture-related stress and from wandering extensive distances after release resulting in road mortality. Translocation is expensive with costs ranging from $400 to $3,000 per deer.

- **Contraception/birth control:** To date, birth control has not been effective in controlling population growth in free-ranging deer herds, and no birth control products are commercially available for managing wildlife populations. They are currently approved for research purposes only. A three-year study (1997-1999) evaluating the effectiveness of birth control (immunocontraception) was conducted by the Humane Society of the United States in cooperation with the Connecticut Wildlife Division and University of New Hampshire. The study, conducted on a deer herd in Groton, Conn., cost approximately $1,100 per deer treated during the first two years. Despite the cost, the study demonstrated that even with good access to a relatively small isolated deer population (about 30 females), an adequate number of female deer could not be successfully treated to limit population growth.

- **Sharp shooting:** Many state laws prevent the use of sharpshooters. Sharp shooting has been successful in addressing small-scale deer problems, but would be impractical to manage free-ranging deer populations over large areas. Sharp shooting involves hiring an expert marksman who has special authorization from the state wildlife agency to remove overabundant deer. Costs for recent sharp shooting programs have averaged about $300 per deer removed. To remove the 500,000 deer taken annually by hunters in Pennsylvania with sharp shooting techniques, the state would have to pay $150 million annually, an amount nearly twice as large as the Pennsylvania Game Commission's current budget.

New Jersey is one state that will provide permits to communities to utilize sharpshooters. About six communities in New Jersey use sharpshooters. Princeton Township uses a combination of methods to control its deer population, with costs in previous years that involved sharp shooting ranging $100,000 to $150,000 annually. Other communities within New Jersey are welcoming hunters to their neighborhoods to prevent assuming additional costs. Communities can actually generate additional revenue by charging a special access permit to hunters.

Connecticut's suburban communities are also welcoming deer hunters. In Mumford Cove, a combination shotgun/archery hunt was conducted in 2000. Of the 39 landowners approached by a Mumford Cove volunteer resident committee, 39 agreed to waive the 500-foot firearms discharge restriction to increase the amount of land available to firearms hunters. Over six days, hunters removed the number of deer the community requested. No hunting accidents occurred, and there were no reports of wounded deer in the community. A post-hunt survey indicated that residents were satisfied with the success of the hunt, observed fewer deer in the community and reported less damage to plantings. In addition, the number of residents who contracted Lyme disease in the community was greatly reduced the following year. The following year, areas open to hunting increased.

The Fontenelle Forest Nature Area in eastern Nebraska had maintained a "hands-off" policy with wildlife and basically let nature take its course for 30 years until it was

ultimately recognized that a burgeoning population of whitetail deer was severely degrading native plant communities. In 1995, members of a community task force implemented a hunting season and estimated that deer densities exceeded 28 deer per kilometer. Then, a regulated hunting plan was implemented and proved effective for deer population management. Population models predicted that densities would have increased to 55 deer per kilometer in five years if hunting was not allowed in that area.

The North American conservation model uses regulated deer hunting seasons and bag limits to help maintain a sustainable population of deer and minimize conflicts with humans. Hunting allows deer to remain a valued public resource instead of a pest. Hunters help bring millions of dollars into management programs instead of management programs requiring millions of taxpayer dollars for other control methods. The general consensus of wildlife agencies that completed the 2004 survey said that if hunting were ever lost as a management tool, deer populations would increase by over 200 percent and no increase in agency budgets could effectively replace the loss of hunting as the primary deer management tool.

Controlled hunting termed effective in areas that it is permitted

By: Jill Matthews, Staff Writer; 06/04/2004
Princeton Packet, New Jersey

MONTGOMERY — The deer-management program the township uses is effective in the areas it is permitted, according to the township's Wildlife Management Committee, but it needs to expand in order to be more effective.

The program, which is managed by the committee, permits deer hunting, mostly during winter months, on some public and private lands by hunters who meet safety guidelines set forth by the township.

"In the areas that we have been monitoring every year, there are less deer now than there was four years ago when we started the program," said Frank Drift, Wildlife Committee chair. "The program is very effective in the areas where we are allowed to hunt."

Mr. Drift estimated that the deer-management program has reduced the overall number of deer in the areas where it has been implemented by about 10 percent.

The Wildlife Management Committee report states that during the 2003-2004 deer-management program, the pickup road kill yielded 291 deer; the deer harvest program yielded 316 deer; one private group of hunters yielded 52 deer; and deer collected from state-owned property was 36. That is a total of 695 deer.

"Our program saves the town money and doesn't cost the taxpayer any money," said Mr. Drift.

The program in place for the 2003-2004 hunting season sold 76 out of 78 available permits at a cost of $75 each for total revenues of $5,700, according to the report. The program sent 49 deer at a cost of $60 per deer to a company to be processed as food for the needy. In total, the program has a surplus of $2,760.

But the program's success, great in the areas hunters are allowed, is limited by the number of places it can be implemented, said Mr. Drift.

"The deer population is certainly still a problem but I think the hunting program is successful and what we would like to see is the program expanded," said Gwen Farley, Environmental Commission co-chair. "It works so well, we would like to see it operating on more properties."

The Environmental Commission will work with the Wildlife Committee to reach out to private property owners, including corporations and residents, in an attempt to see if they would be willing to open their land to the program, said both Ms. Farley and Mr. Drift in separate interviews. They will also work on an expanded residents' education program to let them know about the environmental harm of a deer population too large for its ecosystem.

In addition to being effective, the program is one of the safest in the state, they said.

Montgomery has several requirements for participants entering its program, including a 10-year background check by the police department; participation in required safety programs given by the township and the state; familiarization with the boundaries of hunting property; and requirements to send in a hunting report at the end of the season.

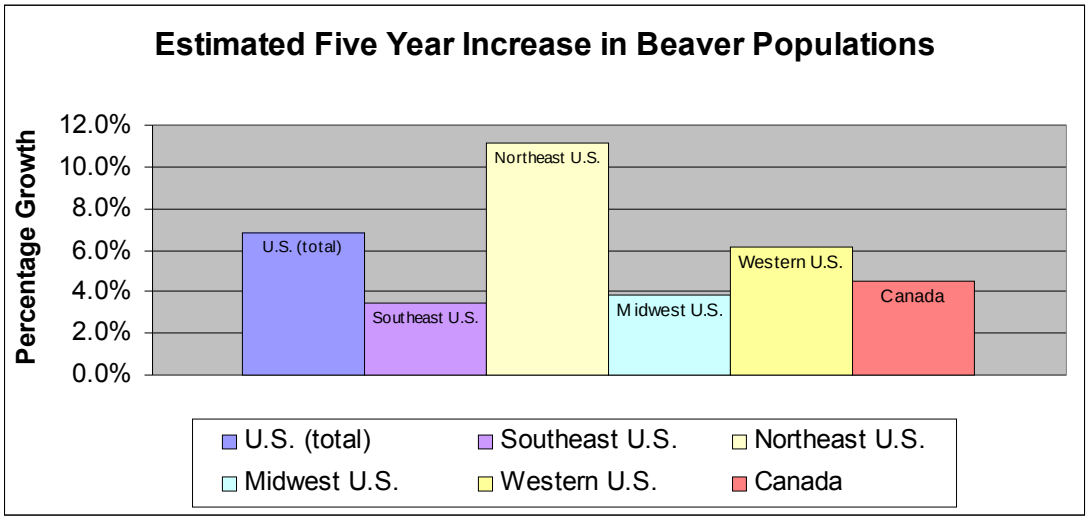
The Township Committee was expected to pass an ordinance amendment to its deer-management program Thursday that would set the number of permits available, types of hunting allowed and hunting locations for the program. This renewal process is completed annually.

Township Administrator Donato Nieman said he has seen fewer deer while driving through the township, but that the township would need to consider completing a deer census to know the number of deer within its borders.

The last infrared deer census by the township was completed in 2001 and determined Montgomery's deer population was approximately 90 deer per square mile, towering above the environmentally sustainable number of about 20 deer per square mile.

Case Study #2: Eliminating Trapping Escalates Beaver Complaints and Costs to the Public

Beaver populations are healthy and well established across North America after being nearly eliminated during the previous 200 years due to unregulated harvests. According to a 2004/05 survey of state and provincial wildlife agencies, a majority of states and provinces report beaver populations are stable or slightly increasing. However, the loss of trapping can upset the current balance. For example, in Massachusetts, a trapping ban was passed through a public ballot referendum. With the inability to utilize effective quick-kill traps and leg-hold and other live-restraining devices during regulated harvest seasons, beaver populations have increased significantly. Along with that increase in the population came an even greater amount of beaver complaints from homeowners, farmers and communities. All experienced varying degrees of economic loss.



** From the 2004/05 survey of state and provincial wildlife agencies*

Beaver are natural environmental engineers. On one hand, impoundments and cutting by beavers can add diversity and enhance habitats for other species. On the other hand, beavers' action can also have the opposite affects and cause tremendous damage to infrastructure, agriculture and wildlife:

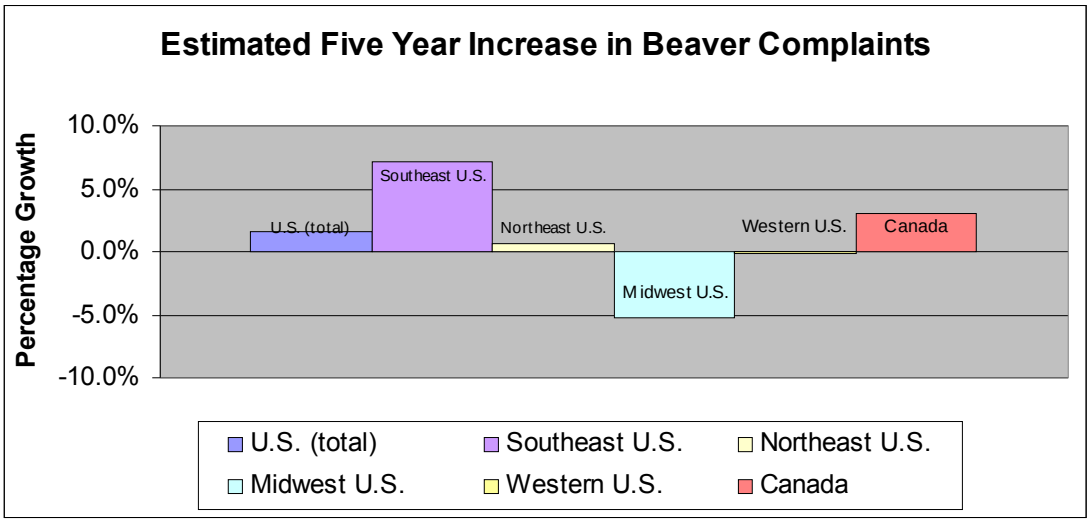
- Beaver damage to roads is a widespread problem for highway departments through much of North America. When beaver occupy roadside areas, they can seriously damage the highway by plugging culverts or constructing dams nearby that flood the road or cause water to impound against the road base. This can result in the formation of potholes and generally destabilize roads. Beaver also cause millions of dollars in damage to other types of infrastructure, including dams, electric utility installations, railroad lines, and water drainage systems.

- Beaver cause damage to timber and is the primary wildlife species that causes damage to southern U.S. timber causing an estimated $1.1 billion loss annually. Beaver impoundments flood hundreds of thousands of hectares of timber and beaver also fell and gnaw on valuable commercial and residential trees.

- Homeowner's pocketbooks are affected when beaver cut their trees, flood cellars, basements, sewer systems, wells and driveways.

- Beaver dams can restrict access to spawning grounds for many fish, such as cutthroat trout in western states, Atlantic salmon, alewives, sea-run brook trout and other anadromous fishes on the east coast of North America, and many other examples.

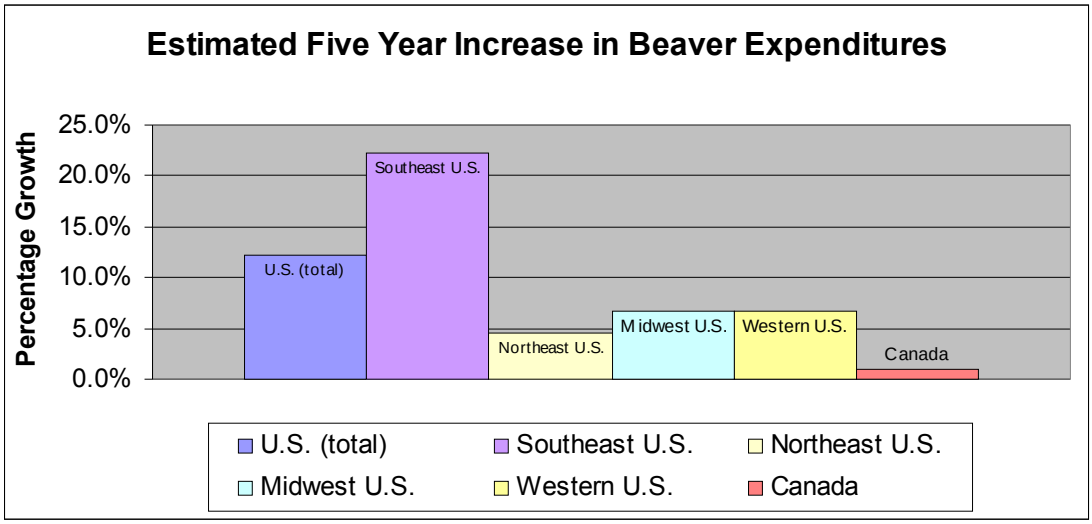
Wildlife managers utilize a variety of tools to maintain a balance between beavers and the public's tolerance level. However, alternative methods only go so far. When traditional trapping is essentially eliminated, beaver populations increase significantly as do complaints, damages and control costs. The public's attitude toward beaver becomes negative, causing beaver to be labeled as pests. Wildlife managers want to maintain beaver as a valuable resource with healthy populations that are in line with the human tolerance level. Without trapping, that may not be possible.



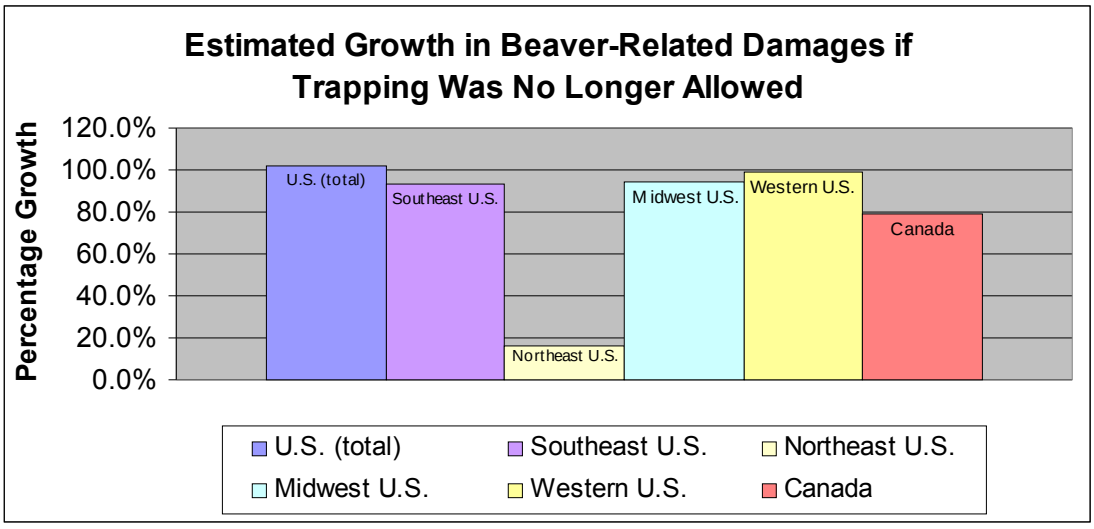
** From the 2004/05 survey of state and provincial wildlife agencies*

The 2004/05 state and provincial wildlife agency survey reported that, during the past five years, agency expenditures to address beaver damage increased by 12 percent in the U.S. In Canada, expenditures increased only 0.9 percent, but drastic cuts in provincial budgets prevented any additional increases that may have been merited, some survey respondents reported. The costs of addressing increased beaver problems have often been passed down either to municipal governments or directly to private sector property owners who are experiencing the problems. In addition, wildlife agencies report that without trapping, beaver could increase an additional 102 percent in the U.S. and 78.8 percent in Canada, potentially resulting in significant increases in beaver damage. Beavers are not a growing problem in all regions. In some areas, populations have stabilized, and nuisance complaints

and related agency expenditures have decreased. In wild areas across Canada, a very small human presence results in minimal conflicts. Agency expenditures and man-hours have fluctuated as agency budget cuts, matched with increasing demands to address other wildlife concerns, has impacted the amount of funds and/or man-power agencies can expend on beaver problems.



** From the 2004/05 survey of state and provincial wildlife agencies*



** From the 2004/05 survey of state and provincial wildlife agencies*

When Massachusetts passed a law in 1996 to prohibit or restrict (by permit only) many types of traps, the beaver population exploded from approximately 24,000 beaver in 1996 to more than 70,000 today, and growth is expected to continue rapidly. The statewide beaver harvest dropped from 2,083 beaver in 1995 to 98 beaver in 1998. Complaints related to beaver activity rose from an average of 310 per year prior to 1996 to 615 per year after trapping restrictions went into effect. In 2000, in response to an increasing number of beaver-related complaints, the Massachusetts legislature made changes to the trapping restrictions to allow for the use of conibear traps by permit only for threats to human health

and safety, but this change has done little to stop the economic loss to communities. For example, in 2001, beaver-related debris cost the Spence Highway Department $25,000. Infrastructure damage to a water reservoir in Leicester cost the town $80,000. Worcester County's highway department's beaver-related expenses increased from $4,000 in 1998 to $21,000 in 2002. Estimates for removing a nuisance beaver range from $150 a beaver to $1,000 a colony. Many residents want to change the law and welcome trappers back.

In contrast, in states like Kansas, farmers, landowners and communities have always welcomed trappers and provided them access to their lands. Trapping regulations in Kansas allow beaver populations to be controlled at stable, healthy levels while also keeping human/beaver conflicts at a minimum. Kansas Department of Wildlife and Parks furbearer biologist Matt Peek said, "It's a mutually beneficial relationship between the trapper and landowner." Trappers assist landowners at no cost to the landowner and the trappers benefit by the satisfaction of diverse motivations and the actual monetary value of pelts. As a result, beaver are considered a valuable resource.

Colorado has experienced an increasing number of beaver problems. In 1996, the voters of Colorado passed an amendment banning the use of leg-hold and kill traps. The agricultural exemption of the Amendment allows farmers to trap beavers one 30-day period a year, but most residents cannot do anything to control damage. The most problematic animals are lone male beavers living along the stream banks, making them difficult to trap (compared to colonies living in lodges or dens. Non-lethal methods involve wrapping individual trees, using electrified fencing, and applying paint and sand to bark. These methods are time consuming and are only partially effective. Alternative methods in Colorado include live trapping and shooting. These are not permanent solutions considering the ever-increasing number of beavers and related problems.[29]

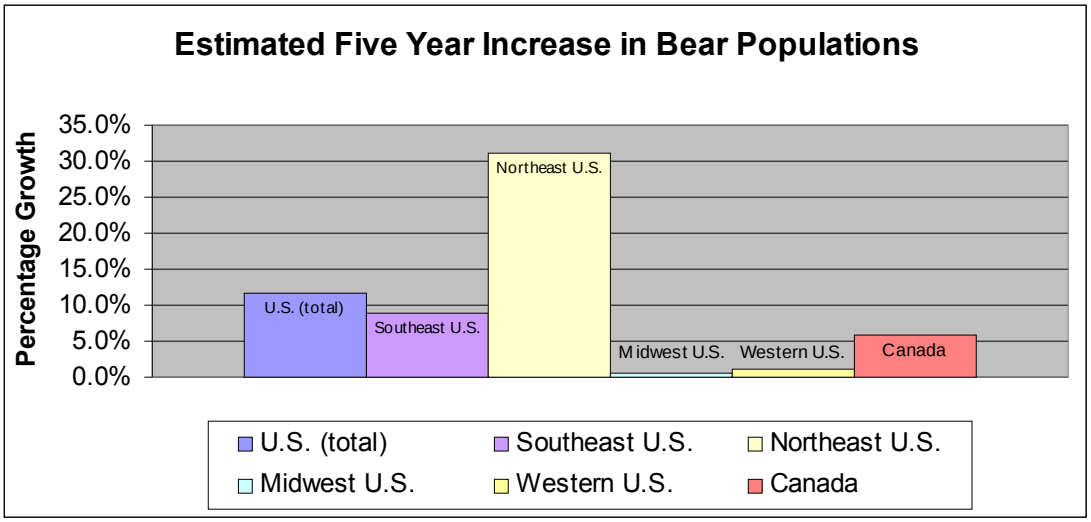
"The beaver over-population problem can be solved by trapping." (Ted Williams, Management by Majority, Audubon, 1999)

[29] Colorado State University. Coexisting with Wildlife. 2003.

Case Study #3: Expanding Bear Populations Bring New Wildlife Management Challenges

In the 1800s, bear were almost eliminated in much of North America because they were seen as a threat to humans and livestock and were labeled as pests. Now, bear populations are growing and becoming more widely dispersed across North America. Their populations are increasing and continually extending into new territories, including suburban areas. Suburban developments are also expanding into already established bear territory. This helps to explain that while wildlife managers estimate bear populations have increased 12 percent during the past five years, bear complaints have increased 19 percent, personnel-hours to resolve complaints have increased 22 percent, and agency expenditures to control bear damage have increased 45 percent.

In the U.S., the northeast region has experienced the fastest increase in bear populations with a 31 percent growth rate. As a result, complaints have increased 36 percent, and personnel-hours and expenditures have increased 63 percent and 56 percent respectively. If hunting and trapping were eliminated, northeastern states estimate the bear population could increase an additional 166 percent. In Canada, not one province reported a declining bear population. One half of the provinces reported increased populations while another half reported stable populations. Most of the bear population increases, along with the corresponding increases in related expenses and man-hours to address bear problems, are occurring in the eastern provinces. Bears are reported to have been a nuisance issue in some of the western provinces for some time, where populations remain high, but steady.



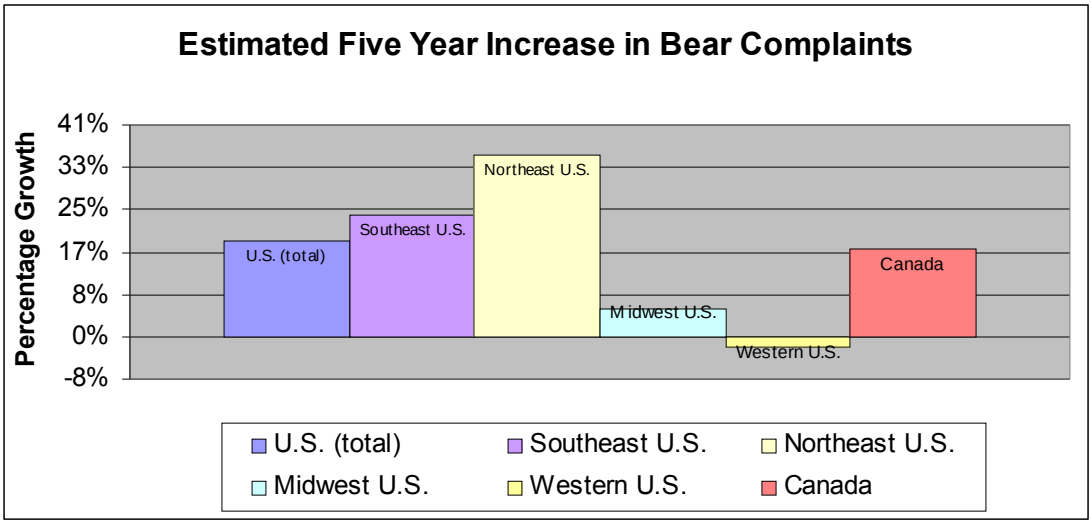
** From the 2004/05 survey of state and provincial wildlife agencies*

In 2003, William Siemer and Daniel Decker from Cornell University conducted a survey of people with an interest or concern about black bears and people who can affect or are affected by the black bear management program. This was done to help the Bureau of Wildlife in the New York State Department of Environmental Conservation develop a black bear management plan. In all geographic areas, 80 percent of respondents agreed

with the statement, “I enjoy having black bears in New York State.” However, about a third of respondents in each geographic area also agreed with the statement, “I worry about problems that bears may cause.”

Today, wildlife managers work with residents in bear country to help them understand how to live with bear and in many areas conflicts have been reduced. Education does help individuals to become more comfortable living with bears, but a certain amount of conflict is still going to occur. During times of increased bear populations and/or decrease in the availability of natural foods, the likelihood of human-bear conflicts increase substantially. Human-bear conflicts are also likely to occur when bears become conditioned to things such as garbage, birdseed and dog food. Occasionally, direct contact with bears can result in physical harm and even death to humans.

Typical residential complaints include destruction of bird feeders, consumption of pet foods, raiding and damaging of trash containers and dumpsters, digging in compost piles, breaking into sheds and outdoor structures, damaging grease-stained grills and barbecues, and begging food from backyard picnickers. Occasionally, people report that bears have entered their homes.



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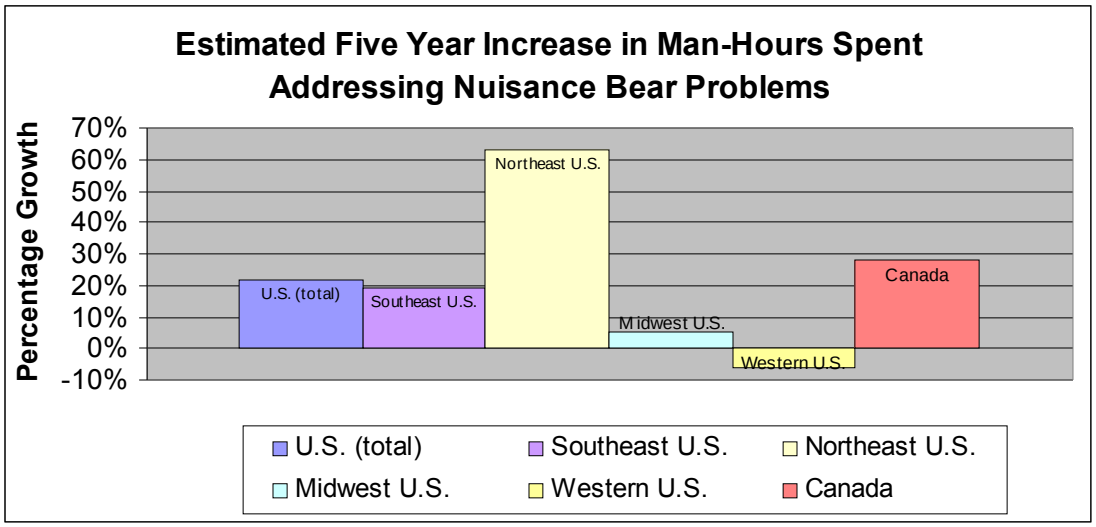

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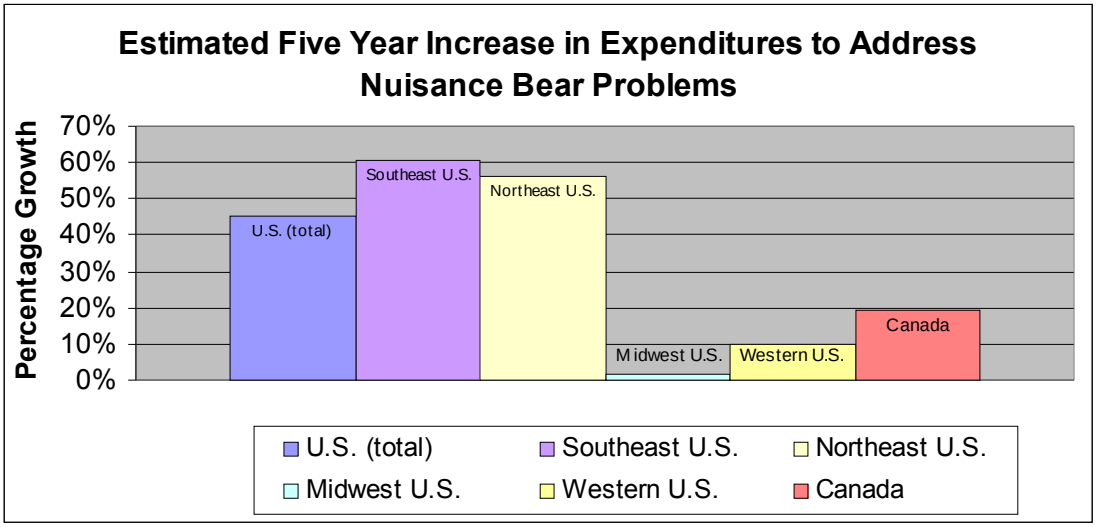


** From the 2004/05 survey of state and provincial wildlife agencies*

Bear can cause a wide range of economic damages:

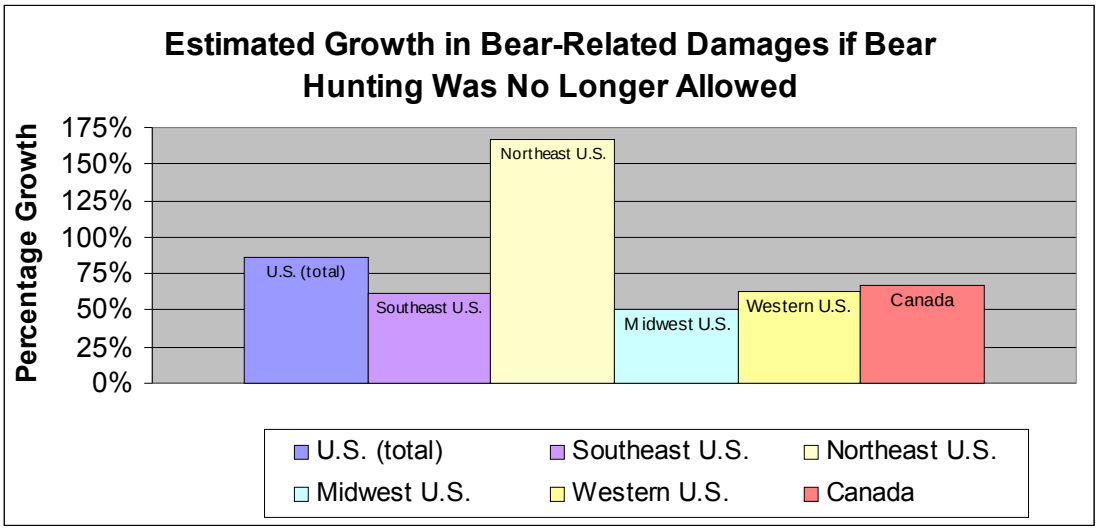
- Bears can also have an impact on timber. Bears feed on trees by removing the bark with their claws and scraping the sapwood from the heartwood with their incisors. Any age tree is vulnerable and bears occasionally strip entire trees. A single foraging bear may peel bark from as many as 70 trees a day. Damage inflicted through this behavior can be extremely detrimental to the health and economic value of a timber stand.

- Black bears find artificial beehives a treat and eat the honey and larvae. Beehive damage from bears is substantial in many areas of the United States and Canada and losses have exceeded $200,000 U.S. annually in some states and provinces.

- Black bears cause damage to agriculture, particularly corn. Corn is not only consumed but stalks are flattened, hindering mechanical harvesting.

- Bears kill various livestock and poultry, including sheep, goats, swine, cattle, rabbits, turkeys, and chickens.

To slow the growth of bear populations and reduce conflicts, over half of all states and most provinces have established regulated bear hunting seasons. Many wildlife agencies in jurisdictions without bear seasons, but where bear populations are close to reaching the cultural carrying capacity (the limit that human populations are willing to accept), are beginning to put hunting seasons in their plans. The primary goal is to keep bear populations healthy yet keep their populations within cultural tolerance limits. Wildlife managers do not want bears returning to a nuisance/pest status. Therefore, managers need all of the tools available to them, hunting being one of the most important methods for controlling populations.



** From the 2004/05 survey of state and provincial wildlife agencies*

New Jersey, which is the most densely populated state in the nation and the fifth smallest in land area, has a growing bear population that has created a major public debate. Increasing human development in rural northwestern counties of New Jersey, the coincident increase of bear populations within these counties and resulting expansion south and east has resulted in an increase in bear-human conflicts.

Although black bear occurred statewide in New Jersey through the 1800s, by the mid-1900s, less than 100 existed. Since 1953, the New Jersey Division of Fish and Wildlife and the Fish and Game Council have managed black bear as a game animal. Game animal status protected bears from indiscriminate killing, which stabilized the population. Limited hunting was legal in 10 seasons from 1958 to 1970. Based upon data gathered through regulated hunting seasons, the bear population status was assessed and the bear-hunting season closed in 1971. Since the 1980s, the black bear population has increased and its range has expanded due to the protection afforded them by a closed season, coupled with

bear population increases in adjacent states (Pennsylvania and New York) and improved habitat from the maturation of forested areas (increased food supplies).

The 1997 Black Bear Management Plan recognized that cultural carrying capacity had been reached in northern New Jersey and the bear population was large enough to sustain a limited, regulated hunting season. However, in response to a lawsuit, then-Governor Whitman suspended the hunt.

Incidents involving bear damage to property and livestock remained high in frequency and severity. The DFW's Wildlife Control Unit received 1,096 complaint calls in 2001, 1,412 calls in 2002, and 1,308 calls in 2003. These complaints included raids on garbage bins and birdfeeders, attacks on humans, entering homes, killing livestock and pets, and destroying beehives and agricultural crops. Damage estimates are in excess of $100,000 annually. It is important to note that since 2001 there have been four aggressive contacts with humans reported to the DFW. Of the four, two took place in 2003. Only minor injuries were reported in all instances.

In 2003, the Fish and Game Council decided on a conservative approach to the first bear hunt in over 30 years. Bear hunting was limited to a selected area of New Jersey where the population of black bears was estimated to be 1,777 adult bears. Prior to the season, seven lawsuits regarding the hunt were filed but all lawsuits were decided in favor of the bear hunting season. Although opponents to the bear season speculated that the bear hunt would create trespass and safety problems, no specific landowner complaints involving bear hunters and no hunter accidents were reported. The hunt successfully established that hunters could safely harvest bears in a controlled manner, with 328 bears harvested that year.

Alternatives to Hunting and Trapping and Their Limitations

The causes of wildlife conflicts can be complex. They relate to the type of species and site-specific environmental factors. Once problems develop, wildlife managers must apply the best solutions for resolving the conflict. Often hunting and trapping are the most effective and cost-efficient methods relied on by professional biologists. However, the public often misunderstands the seriousness of the problem, finding the solution to be unacceptable. Wildlife professionals are constantly researching new ways to protect livestock and endangered species from predators. They also have relied on a combination of methods based on the complexity of the specific wildlife problem.

"Letting nature take its course" is not always an acceptable alternative. For example, if certain animal populations were on the decline, it would be unacceptable to allow these species to become endangered. In every case, the public would insist that wildlife professionals step in and find ways to protect the species and its habitat. What if the opposite occurred and a certain animal population had actually exceeded its carrying capacity? Once again, it would be irresponsible to sit by and let these animals destroy the habitat of other species. In fact, this scenario has often led to declines in other animal populations, cases of starvation, and the spread of transmittable diseases such as Lyme disease or rabies.

Obviously, banning hunting and trapping does not end the need to manage wildlife populations, so alternatives will be needed to help professionals maintain a healthy balance between wildlife, habitat and man. What are the options and why are they not always the best solution to problem wildlife?

- **Animal Contraception:** Animal contraception is the subject of much study and misunderstanding. Though some research is promising for a few species, it doesn't address all problem animals and is not always effective when implemented in the field. Where threatened and endangered species are at risk and don't have the benefit of time on their side, controlling population growth of competing species is extremely important. The future cost of such programs is extraordinary, requiring millions of dollars that would severely impact the budgets of fish and wildlife agencies.

  For example, the Department of Natural Resources at Cornell University conducted a study during a four-year period in Irondequoit, New York where contraceptive vaccines were used for treating an overpopulation of whitetail deer. The cost of capturing and inoculating 531 deer was more than $250,000. It would be extremely expensive to treat enough individual deer to successfully regulate their growth. Furthermore, the FDA and wildlife veterinarians have concerns about the long-term genetic and physiological well-being of wildlife populations treated with contraceptive vaccines. See the first case study presented in this document for more examples and cost information.

- **Relocation:** Relocation of animals is relatively ineffective for most species although it has sometimes been successful for some species such as bear and moose. However,

many individuals may try to return to their original homes. Relocation results in the death for many animals due to stress, starvation, predation, intra-species strife, or other factors related to placing an animal in a new habitat. One can hardly say such an ordeal is humane. Other species that have been relocated end up disrupting their new ecosystem, causing many of the same problems as before. Most states and provinces limit the relocations of certain wildlife due to the risk of transmittable diseases such as rabies, distemper, and Chronic Wasting Disease. In addition, relocation efforts are often not feasible because very little unoccupied habitat is available.

- **Guard Dogs:** Some sheep ranchers with hopes of reducing predation by coyotes have employed livestock guard dogs. Though effective in some situations, guard dogs don't always carry out their protective role. This may be a result of ineffective training. Guard dogs, like any animal can become ill, may wander away from the flock, or become overly aggressive causing harm to the livestock they were trained to protect. In the western U.S., guard dogs have been killed by wolves re-colonizing ranges occupied by domestic sheep.

- **Scare Tactics:** Ranchers often use certain "scare" tactics to ward off predators (aversive conditioning). Old-fashioned scarecrows, bells and noisemakers have been replaced by electronic sound and light devices. These techniques include sirens and strobe lights during the night when predation is most likely to occur. Scare devices are also used to chase deer and other species out of agricultural fields. Unfortunately, this tool alone cannot be used in the long term since most animals learn to ignore them after a short period of time.

- **Landscaping:** Some plants, shrubs and trees attract certain types of wildlife. Often homeowners use vegetation and foliage to bring wildlife into their backyards. The opposite approach can also be used to keep nuisance animals away from urban and home landscaping. This approach can reduce consumption of plants but it is generally not effective as many of the nuisance species have lost their habitat and may be starving. In many cases they will eat anything to stay alive, including the flora that was planted to keep them away. Other alternatives, such as repellant sprays, soaps and fertilizers have had a short-term or limited effect in keeping unwelcome animals away.

- **Fencing:** One alternative to protecting crops, domestic pets, or small animals such as chickens, ducks, rabbits or young livestock is fencing. Though costly, fencing will keep some predators out. Unfortunately, coyotes and foxes tend to be skillful climbers, making a roof of netting or wire necessary over small enclosures. Fencing in a limited way can be effective. However, keeping deer or elk out of one's crops or backyard often requires a structure at least eight feet high that includes electric fencing. This is often unaffordable for many farmers and most homeowners. An additional cost relates to maintenance, which is required regularly for fencing methods to remain effective.

Wildlife professionals always consider a number of management options when faced with depredating or overpopulated wildlife. In North America, millions of tax dollars are spent each year on habitat modification, research and new alternatives. Even so, hunting and trapping have proven to be highly effective and cost efficient in many cases. Often, they are

the best methods available to wildlife managers responsible for maintaining a healthy balance between people and wildlife.

State and Province-Specific Examples Regarding Hunting, Trapping and Their Importance as Wildlife Management Tools

States and provinces are experiencing a wide range of problems with wildlife that can, in part, be minimized and managed through professionally regulated hunting and trapping seasons. This section is intended to provide media and others with local examples of human-wildlife conflicts plus examples of how hunting and trapping are important and effective wildlife management tools.

Alabama

Comparing deer, bear and beaver in Alabama, beaver are winning the population growth race. According to Keith Guyse of the Alabama Department of Conservation and Natural Resources, beaver populations have increased by 10 percent over the past five years causing a direct increase in beaver nuisance complaints. The deer population has only increased by six percent, but continues to inflict damage at the same growth rate as beaver. Canada geese have popped up on the radar screen with large population growth over the last five years and a 25 percent increase in damage complaints. So far, man-hours and expenditures to control animal damage has only slightly increased but, if hunting and trapping were no longer available as management tools, that could change. Guyse believes that if hunting and trapping were banned, damage levels could triple for deer and double for geese with beaver adding considerable additional damage as well. In Guyse's opinion, no budget increase could compensate for the loss incurred should Alabama lose hunting and trapping.

Alaska

Alaska has a variety of wildlife species occurring at a range of natural densities in large expanses of basically undisturbed habitats, but no significant overpopulation issues. Generally the species include deer, black bear, brown bear, polar bear, beaver, caribou, Dall sheep, moose, mountain goat, musk ox, wolves, other furbearers and a variety of marine mammals. Populations have remained roughly the same over the past five years, although low densities of some important ungulate populations have led to declines in hunting opportunity. However, nuisance complaints have continued to increase in western and northern Alaska especially for beaver and bear according to estimates from the Alaska Department of Fish and Game. Examples of nuisance complaints include wolves invading communities and taking pets, beavers building dams with associated flooding in/near settlements, and bears invading camps or neighborhoods seeking food. Taking black bears with bait contributes substantially to harvest in some parts of the state with dense forest habitat, and seems to keep nuisance bear numbers down.

California

California Department of Fish and Game (DFG) has recorded 12 bear attacks on humans in recent years. According to the DFG's guidelines, a wild animal attack is defined as "physical contact, injury or death." Other common problems include bears killing livestock, destroying beehive boxes, and breaking into buildings and automobiles in search of food. Without hunting, bears can quickly lose their wariness of people. That wariness is a necessity to minimize unfortunate encounters and conflicts.

Wild pig densities would be unacceptably high on public land in California without hunting. Most pigs in California are on private land due to hunter pressure on public lands. This is greatly appreciated by other land agencies (e.g., BLM) as they typically don't have the pig-related disturbances so familiar to private landowners and parks.

In September 2003, the California Senate passed legislation that created a "Shared Habitat Alliance for Recreational Enhancement" program. The program, once fully established, could benefit sportsmen by encouraging property owners to open their land to hunting and other wildlife-related recreation. Obviously, this could help keep nuisance species populations in check and consequently reduce negative encounters.

Connecticut

Deer populations and nuisance complaints in Connecticut have been stabilized in areas where hunting is allowed, but in areas where hunting is not allowed, such as some suburban communities, deer populations and complaints are increasing dramatically. Biologists estimate that between 15,000 and 20,000 deer/auto collisions occur annually with the greatest incidents occurring in urban and suburban communities. When considering the significance of these figures, remember that Connecticut is the third smallest state in land area. Connecticut has an extensive program that works with suburban areas to implement deer management programs; as a result many of these communities have started allowing special deer hunts. Many residents report the hunts have been very successful in helping to control populations and damages caused by the deer.

Beaver populations are increasing at a healthy rate partially due to fewer and fewer trappers in the state. As a result, beaver nuisance complaints and costs to the agency have increased significantly statewide as well.

Bear are fairly new to Connecticut, with populations moving in from bordering states. The estimated population is approximately 500 bears. Currently the state does not allow hunting, but biologists report that they will need to consider it in the near future recognizing bear nuisance complaints have increased about 300 percent. Agency costs and man-hours assigned to control bear damages have increased about 500 percent.

In areas of the state where there is no hunting, resident Canada geese populations are increasing dramatically. Geese populations have stabilized in areas where hunters have access to private lands. Coyote populations are increasing but agency officials say it is hard to estimate how much. They report the bigger issue is that coyotes are dispersing into heavily populated areas. Nuisance complaints on coyotes and geese have increased an estimated 100 percent over the past five years and the agency's expenses and man-hours assigned to control damages have increased about 30 percent for geese and 75 percent for coyote.

Moose is considered to be the species of concern for the future. Like the bear, they are moving in from neighboring states. One moose was on I-95, one of the nation's most heavily traveled roads, near Old Lyme, Conn. It cost the Connecticut Department of Environmental Protection about $10,000 to move that one moose.

The DEP says that, if hunting and trapping were lost as management tools, their agency would not exist because all funding for wildlife management comes from hunter's licenses, fees and excise taxes. Plus, no increase in the state budget could make up for the loss of hunting and trapping as management tools to maintain wildlife at current populations.

Delaware

Over the past six years, the Delaware Division of Fish and Wildlife (DDFW) has liberalized its deer hunting regulations to control increasing deer populations that have less and less natural habitat available to them. DDFW Wildlife Administrator Greg Moore said, "The human population is increasing substantially every year and we are continually loosing woodlands and farmlands to shopping centers and neighborhood developments. Although we've only had an approximate increase of 15 percent in the deer population, complaints from deer damage have increased 50 percent."

On what habitat Delaware has left, they are seeing some ecological damage from deer browsing. With deer consuming almost all under-story vegetation (the lower branches and bushes that deer can reach), the future of the woodlands is impacted, negatively affecting other wildlife species as well. From a human safety standpoint, deer-vehicle collisions are increasing as are deer on airport runways.

The DDFW is in the process of developing a long-range deer management plan that will allow greater accuracy in deer density figures, and improve management for problems related to deer and increased urban development. For the 2004 hunting season, the agency has liberalized the season and the number of deer hunters. Previously, hunters were allowed two antlerless deer per hunting license, now they're allowed two doe and two antlerless deer for a total of four. Plus they can purchase a permit to take an antlered buck. They've also added extra firearm days in October to allow hunters to take more antlerless deer. The annual deer harvest is currently taking approximately 51 percent does and they would like to increase that to a 60 or 65 percent doe-to-buck ratio.

Moore says hunting is the only true alternative to control deer populations and said that the loss of hunting as a management tool would result in an ecological disaster.

Public encroachment on beaver habitat has also resulted in a 25 percent increase in beaver nuisance complaints when the beaver population has increased only an estimated 15 percent. Delaware's trapping season helps to control the beaver population and, when necessary, the agency issues permits to landowners to take beaver out of season.

Nuisance wildlife complaints have also increased for nutria, resident Canada geese and snow geese in Delaware.

Florida

Florida reports minor increases in deer and beaver populations over the past five years but says wildlife complaints have increased about 10 percent for deer and 5 percent for beaver. The Florida Fish and Wildlife Conservation Commission's expenditures for controlling damages caused by deer and beaver have increased between 5 and 10 percent. FWC indicates that no level of increase in their budget would be sufficient to make up for loss if hunting and trapping were lost as management tools.

The Florida black bear is state listed as an endangered species. The populations are fragmented and are at varying levels of population viability. In certain areas, FWC reports that there has been an increase in the number of nuisance bear-related complaints since 1976 (average of 48 calls/year during 1976-1995 and 559 calls/year during 1996-2001). From 1976 to 2003, the most common

bear-related complaints were seeing a bear in an area or yard (40 percent) and bears feeding on garbage (19 percent). Other complaints such as bears feeding on feeders (4 percent), depredating on beehives (4 percent), damaging buildings (2 percent), and threatening or killing animals (2 percent) were far less common. The number of bears killed from vehicle-bear collisions has increased from an average of 24 per year from 1976 to 1995 to 86 per year during 1996-2001. Through education efforts and increased awareness of the threatened status of bears by Florida residents, reporting rates of black bear activity have increased in efficiency in recent years. In addition, during this same time period Florida has experienced a dramatic increase in human population and related urban development, which has implications for the fragmented bear populations in Florida.

Illinois

During the past five years, deer populations have increased slightly in some areas, but overall have primarily stabilized throughout most of Illinois due to harvest liberalization by the Illinois Department of Natural Resources implemented in the 1990s. The IDNR continues to receive limited complaints of deer-related damage/problems statewide. Most complaints have been associated with damage to agricultural crops. However, more special deer-removal permits were issued to airports in 2001 than before. Often, complaints of deer- related damage are received for properties where little or no hunting is allowed, or properties adjacent to unhunted or under-hunted lands.

Over the past five years, beaver populations have increased at a greater rate than deer populations . Beaver nuisance complaints have increased at basically the same pace. This has caused IDNR expenditures and man-hours assigned to control beaver damage to increase about 10 percent.

IDNR biologists say that if hunting or trapping were lost as management tools, no increase in the agency's budget could make up for that loss.

In a survey of greater Chicago metropolitan region homeowners conducted in 2001, 16 percent of the respondents reported coyotes as the most severe threat to human health and safety, whereas raccoons were the species most frequently mentioned as posing a moderate threat, and birds as the least. Raccoons were viewed as the greatest threat to property damage, followed by skunks, squirrels, and Canada geese. When presented with a list of species, homeowners stated Canada geese presented the most problems, followed by raccoons, squirrels and rabbits. Overall, respondents were unaware of the role public agencies play in controlling wildlife.

Iowa

According to Dale Garner of the Iowa DNR, the deer population in Iowa has increased by 25 percent over the last five years and nuisance complaints have followed suit. Consequently, personnel-hours assigned to control the damage and the cost to the agency has increased by 500 percent. Limited hunting access to deer herds perpetuates the problem associated with controlling deer numbers. In most cases, 'private refuges'—where individuals are overprotective of their own hunting opportunities—and public refuges such as state parks or incorporated communities are the primary examples where extra work is needed to solve future chronic deer complaints related to overabundance. It is felt that 40 percent of deer complaints, or much of the complaint volume not associated with these 'refuge' situations, can eventually be solved when more-informed and goal-oriented hunters and landowners work together. In Garner's opinion, if hunting and trapping were no longer available as management tools, the damage levels caused by deer would increase 1,000 percent and no increase in the agency's budget could make up for the loss.

While the deer population is rapidly growing in Iowa, beavers seem to be maintaining a consistent level both in population and damage control expenditures. However, if hunting and trapping were no longer available, he estimates a 30 percent increase in damage levels due to beaver.

Another species causing damage and consequently an increase in wildlife nuisance complaints in Iowa are Canada geese. Garner estimates a 20 percent increase in Canada geese population over the last five years causing the number of man-hours and expenditures to control the damage to double. Again, if hunting and trapping were no longer available, there would be a significant increase in wildlife damage levels, likely 200 percent due to geese alone.

Kansas

In 1998, the Kansas Department of Wildlife and Parks (KDWP) significantly increased antlerless permits issued during the hunting season to control the deer population. Until that time, the deer population had continued to increase and the crop damage complaints and deer vehicle collisions increased significantly. The increased antlerless permits helped to lower the deer population and as a result also significantly reduced crop damages. Unfortunately, deer vehicle accidents have only moderately declined. Insufficient levels of deer hunting have occurred in parts of the state, primarily due to a lack of hunting access. Deer populations continue to increase in those areas.

Trapping regulations in Kansas are liberal to allow for the control of abundant furbearer species. Farmers, landowners and even communities rely upon trappers to control furbearers. KDWP furbearer biologist Matt Peek said "It's a mutually beneficial relationship between the trapper and landowners. The trapper gains access, whereas the landowner benefits from the removal of potential problem animals."

In Kansas, from cutting trees to flooding uplands, beavers are an important source of wildlife damage, but no animal makes people appreciate trapping more than the raccoon. Enough Kansans have had trouble with raccoons getting into their sweet corn, buildings and even homes that most people understand the need to control their numbers and therefore realize the importance of hunting and trapping.

If hunting and trapping were eliminated as management tools in Kansas, problems associated with the deer, beaver and raccoon populations would rise dramatically and no increase in the budget of KDWP would make up for the loss of hunters and trappers.

Louisiana

The Louisiana Department of Wildlife and Fisheries (LDWF) estimates deer populations have increased about 8 percent over the past five years and deer nuisance complaints have increased about 10 percent. Deer damage to crops, orchards, nursery enterprises, forest regeneration and urban landscapes would increase significantly if hunting were not allowed. Additionally, vehicle damage and human injury (as a result of deer/vehicle collisions) would also increase.

Bear complaints in Louisiana have increased approximately 135 percent during the past five years, even though population numbers are still low and bear are only found in three small discontinuous areas of Louisiana. The LDWF does not allow bear hunting. LDWF estimates that the agency's expenditures to control animal-damage for bear have increased by 500 percent. In general, the majority of bear/human conflicts arise when bears become garbage habituated and lose their fear

of people. Bear-vehicle collisions are currently one of the factors keeping bear populations at a low level.

Nutria is a species of major concern in Louisiana. Prior to 2002, the agency had no expenditures for nutria control. However, as of 2004, the agency annually spends approximately $1.8 million in funds provided by the Coastal Wetlands Planning Protection and Restoration Act to control nutria and their damages to the state's unique and valuable coastal wetlands.

Maine

The Maine Department of Inland Fisheries and Wildlife (MDIFW) reports that over the past five years, deer and bear populations have increased slightly, with turkey populations growing more steadily than deer and bear. As a result, turkey nuisance complaints have increased slightly, while deer, beaver and bear complaints have remained about the same during the past five years.

Maine's deer population has increased to an estimated 255,000 wintering deer. The department's objective is to reach maximum sustained harvests, while remaining productive and reasonably available for wildlife viewing. Objectives include about 10 deer per square mile. In some the northern and eastern areas of the state, MDIFW are managing the population to allow for increases. As expected, the Department has had more success in achieving set goals for deer populations in central and southern Maine, where wintering habitat and other factors are more favorable. Some locations, where access for deer hunters has been limited or denied entirely, support populations of 40 to 100 deer per square mile. These latter areas are substantially above desired population levels and are the source of the most deer/people conflicts in the state.

Of great concern to the MDIFW is a bear referendum initiative that will be on the ballot November 2, 2004. National animal rights groups have organized and funded the ballot initiative that would ban the three traditional methods of bear hunting in Maine. Maine's bear population is an estimated 23,000. MDIFW states that bear nuisance activity will definitely increase if 4,000 bears are not taken annually by hunters. *(Note: at press time, the bear hunting referendum failed, thus allowing the continued use of the three traditional hunting methods).*

MDIFW states that if hunting and trapping were lost as management tools, no increase in the state's budget could make up for this loss in ability to maintain wildlife at current population levels.

Manitoba

Over the past five years, the deer, beaver and elk populations in Manitoba have increased moderately, while the bear population has remained stable, albeit at already high levels. However, Manitoba Conservation has reported that nuisance wildlife complaints have increased 20 percent for both deer and bear. During this time period, there has been an estimated 20 percent increase in man-hours assigned to control animal damage, while expenditures have mostly remained constant.

It is estimated that if hunting and trapping were no longer available as a management tool, wildlife damage levels in Manitoba would increase substantially, with an expected increase of 200 percent for deer and bear, and an increase of 300 percent for waterfowl. A nuisance index reported by the Manitoba Crop Insurance Program, Manitoba Agriculture and Agrifoods, reports the number of agricultural claims for deer was highest in 2001 and in 1998 for bear.

Beaver complaints have increased steadily for the past five years. Since 1991, a beaver removal program has removed troublesome beavers damaging private lands, crops and public property. Conservation Minister Stan Struthers stated damage caused by beaver activity to provincial and municipal infrastructure and private property exceeds a million dollars annually. This program employs trappers experienced in humane trapping methods to deal with problem beaver.

In addition, with a population of 1.1 million people, Manitoba experienced 10,475 wildlife collisions in 2003 (Manitoba Public Insurance). As a result, a record $20.1 million in insurance claims was paid out, the fourth consecutive year payouts for wildlife-auto collisions had risen.

Massachusetts

The primary wildlife issues in Massachusetts are beaver and coyotes. In 1996, a trapping ban known as the Wildlife Protection Act or "Question 1" was passed in Massachusetts through a public ballot referendum. The inability to utilize effective quick-kill and live-restraining devices, such as conibear traps and foot-hold traps, during regulated harvest seasons has affected the harvest of many furbearing species. Since 1996, cage-type traps are the only trap type allowed in Massachusetts during the regulated trapping season.

It is difficult for the Division of Fisheries and Wildlife to respond to questions regarding complaints related to beaver due to the change in legislation in 2000, which gives the emergency trapping permit process to local boards of health. Therefore, the total economic impacts of restricted trapping and increased wildlife population levels are widely unknown and very difficult to estimate. However, the following provides some of the human conflict issues and examples surrounding furbearing species when they are at high population levels.

Beaver: The traps used to harvest beaver prior to 1996 included the conibear trap and foothold live-restraining devices. After the 1996 ballot referendum passed, statewide harvests of beaver dropped from 2,083 beaver in 1995 to 98 in 1998. Complaints related to beaver activity rose from an average of 310 per year prior to 1996 to 615 per year after trapping restrictions went into effect. Subsequently, population levels grew from an estimated 22,000 in 1994 to 65,000 in 2001. In 2000, in response to an increasing number of beaver related complaints, the Massachusetts legislature made changes to the trapping restrictions to allow for the use of conibear traps by permit only for threats to human health and safety. As a result, licensed problem animal control agents have increased due to the demand for the removal of wildlife species outside of harvest seasons.

Expenses of beaver related issues are incurred by highway and road departments through road and highway flooding, and by homeowners who experience flooded septic systems, wells and basements. Estimates of beaver-related expenses for several town highway departments in Worcester County ranged from $4,000 to $21,000 per year from 1998-2002. Infrastructure damage to a water reservoir in Leicester cost the town $80,000. Keeping surface water drainage systems (culverts) free of beaver-related debris cost the Spencer highway department $25,000 in 2001. Towns reported an average of $1,000 per beaver colony to hire trappers to remove individual colonies in specific areas. A 2004 survey of 100 Massachusetts towns by the Department of Public Works, as reported by the Division of Fisheries and Wildlife, estimated that $500,000 was spent by these municipalities for road and infrastructure repairs related to beaver activity. Not included were the additional costs associated with contamination of public water supplies, flooding of private property, breaching dams, removing nuisance beaver, etc. Therefore, this estimate is only a minor part of the costs related to beaver problems. Homeowners face similar

expenses when wells, septic systems and basements are flooded. Residents must also pay for removal of beaver and/or the installation of water flow devices. Estimates for trapping beaver can range from $150 a beaver outside of the beaver harvest season and $75 a beaver during the harvest season, to $1,000 a colony. Installation of a water flow device ranges from $500-$700 depending on the site and design.

Coyotes: The harvest of coyotes was also affected by trap restrictions. Statewide harvests of coyotes during the trapping seasons of 1995 and 1996 with soft-catch traps were 53 and 47 respectfully. After 1996, only 3 coyotes have been harvested with box-type traps statewide. The difficulties of trapping a coyote in a box-type trap, coupled with the decreasing amount of land open to coyote hunting in Massachusetts, has decreased the coyote harvest. This has allowed for accelerated expansion and growth of the coyote population in Massachusetts to all areas except for the islands of Martha's Vineyard and Nantucket. Areas with coyotes include some of the most densely human populated areas of the Commonwealth. Common complaints related to coyotes include the depredation of pets, safety of children, and general nuisance issues.

Once the public incurs excessive levels of wildlife damage, the responsible species begin to be considered "pests" and the inherent value associated with this species declines. Instead, it is important to maintain wildlife species as valued natural resources by relying on professional wildlife managers and trusting them to effectively employ hunting and trapping methods along with other management tools.

Since Massachusetts is the third most densely populated state in the country, many people are surprised to hear that the state's black bear population is healthy and growing. Black bears were once considered to be varmints and agricultural pests, but have been regulated as a game animal in Massachusetts since 1952. Since substantial changes were made in the 1970 hunting season, the black bear has become prized among Massachusetts sportsmen. In response to well-managed hunting seasons, changes in forest structure and composition and increased availability of supplemental fall foods, the bear population has grown from about 100 in the early 1970s to about 2,000 in 2002.

Nevada

The Nevada Department of Wildlife (NDW) estimates population increases over the past five years of approximately 15 percent for beaver and 30 percent for elk and pronghorn antelope. Over the past five years, despite a decrease in the deer population, there have been a growing number of deer nuisance complaints. Beaver and bear nuisance complaints have also increased slightly but elk and pronghorn nuisance complaints have increased dramatically. NDW man-hours and expenditures to control damages from these species have increased proportionally, and elk-related expenditures have increased 1,000 percent as a result of legislative approval of an elk damage/compensation fund. In the last couple of years, Nevada has fenced agriculture to a much greater extent than in the past. The funding for this program comes from sportsmen access fees. Without hunting license revenue and federal matching dollars, Nevada would have no money to deal with depredation problems for any of the species.

New Hampshire

New Hampshire Fish and Game wildlife biologist Mark Ellingwood states that generally speaking, wildlife complaint rates appear to be increasing as a result of increasing human populations. Increasing human populations tend to reflect population urbanization that is characterized by decreasing wildlife tolerance and increasing demand for public services. These trends coupled

with the urban adaptability of deer and bears in particular, but other species as well, make future increases in complaints likely, despite pro-active resource investments by agencies. Opposition to baiting and hounding of bears will further complicate bear management, with likely negative social impacts.

New Hampshire Fish and Game (NHF&G) works in close partnership with USDA APHIS Wildlife Services (WS) in New Hampshire. NHF&G has a cost-share animal damage control program with shared staff. While NHF&G investments and staff resources have been stable or modestly increasing, WS has added substantially to their budget (+$150,000 per year) and personnel (+2 full-time additional staff) to strengthen their partnership, and in response to growing demands.

WS estimates the following increase in person-hours over the past 5 years: deer = 25 percent, beaver = 0 percent, bear = 50 percent, geese = 15 percent, all other species combined = 15 percent. WS estimates the same percentage increase in dollar expenditures for each species, respectively.

In some regard, trends in complaints likely reflect the establishment of a cost-shared fencing program (deer), enhanced public educational efforts (bears), and creation of licensed nuisance wildlife control operators (beaver), all of which impact complaint rates. Consequently, wildlife population status, agency resource expenditures, and complaint rates may not correlate in predictable fashion.

Ellingwood says that in the absence of hunting and trapping programs, wildlife populations and damage complaints could be expected to escalate rapidly. It would be impractical to assume that additional resources could be found to address problems that would result in the absence of hunting and trapping.

New Jersey

Despite being the most densely populated state in the nation and the fifth smallest in land area, New Jersey provides habitat for an incredible number and diversity of wildlife species. Wildlife management in the state is not without challenges, but even with the threat of habitat loss confronting many species, proper management has allowed New Jersey wildlife to thrive.

Bear**:** Bear tend to get the most political attention in New Jersey. Increasing human development in rural northwestern counties of New Jersey, the coincident increase of the bear populations within these counties, and resulting expansion south and east has resulted in an increase in bear-human conflicts.

Although the black bear occurred statewide in New Jersey through the 1800s, by the mid-1900s, less than 100 existed. Since 1953, the New Jersey Division of Fish and Wildlife (DFW) and the Fish and Game Council have managed black bear as a game animal. Game animal status protected bears from indiscriminate killing, which stabilized the population. Limited hunting was legal in 10 seasons from 1958 to 1970. Based upon data gathered through regulated hunting seasons, the bear population status was assessed and the bear-hunting season closed in 1971. Since the 1980s the black bear population has increased and its range has expanded due to the protection afforded them by game animal status, coupled with bear population increases in Pennsylvania and New York and improved habitat in New Jersey provided by the maturation of forested areas (increased food supplies).

The 1997 Black Bear Management Plan recognized that cultural carrying capacity had been reached in northern New Jersey and the bear population was large enough to sustain a limited,

regulated hunting season. However, in response to a lawsuit, then-Governor Whitman suspended the hunt.

Incidents involving bear damage to property and livestock remain high in frequency and severity. The DFW's Wildlife Control Unit received 1,096 complaint calls in 2001 and 1,412 complaint calls in 2002 and 1,308 complaint calls in 2003. These complaints ranged from raids on garbage bins and birdfeeders to bears attacking humans, entering homes, killing livestock and pets or destroying beehives and agricultural crops. Damage estimates are in excess of $100,000 annually. It is important to note that since 2001 there have been four aggressive contacts with humans reported to the DFW. Of the four, two took place in 2003. Only minor injuries were reported in all instances.

In 2003, the Council decided on a conservative approach to the first bear hunt in over 30 years. Bear hunting was limited to a selected area of New Jersey where the population of bear was estimated to be around 1,777 adult bears. Prior to the season, seven lawsuits regarding the hunt were filed but all lawsuits were decided in favor of the bear hunting season. Although opponents to the bear season speculated that the bear hunt would create trespass and safety problems, no specific landowner complaints involving bear hunters and no hunter accidents were reported. The hunt successfully established that hunters could safely harvest bears in a controlled manner.

New Jersey Division of Fish and Wildlife wants the black bear to remain a public asset rather than a cost liability to the citizens of the state. Hunting is therefore considered one element of an integrated approach to manage bear populations.

New York

Over the past five years, Canada geese populations have grown faster than any other wildlife species in the state of New York. However, the greatest increase in wildlife nuisance complaints during the past five years concern bear and deer. While beaver complaints have remained about the same during this period, beaver complaints still exceed that of bear and deer. In 2003, the Department of Environment Conservation's Bureau of Wildlife received 1,922 beaver nuisance complaints, 1,573 deer nuisance complaints and 985 black bear nuisance complaints.

New York's growing deer herd of approximately one million animals, coupled with slowly declining numbers of deer hunters, results in growing concerns about meeting future deer management needs. In 2000, the reported financial loss due to deer damage had reached more than $3 million. The peak of deer-vehicle collisions came in the 1990s with 34 human fatalities as a result of deer/vehicle accidents with eight of those occurring in 1998. The Bureau of Wildlife initiated an effort in spring of 2000 to consider changes to help maintain an effective deer management program. Part of those changes included liberalized issuance of anterless permits and bag limits.

In recent years, black bears have become more widely distributed across the state, and interactions between people and bears have increased. These developments prompted DEC staff to develop a new framework for making decisions about black bear management. DEC conducts wildlife management in a way that achieves a range of outcomes that people desire: continued existence of wildlife; opportunities to utilize wildlife in sustainable ways; and relief from problems related to wildlife. Their bear management programs have included public education, habitat protection and bear population management. New York had a record bear harvest in 2003 of 1,854 bears. In line with their plan, the Bureau of Wildlife has proposed expanding the area opened to bear hunting.

Beaver populations have increased in New York due to changes in land use patterns across the state. Abandonment of farmland and a subsequent increase in the amount of forest cover has provided more beaver habitat.

The Bureau of Wildlife stated that if hunting and trapping were lost as management tools, no increase in the agency's budget would be sufficient to cover the additional demands of managing growing wildlife populations.

North Carolina

For the past five years, North Carolina has seen an increase in wildlife nuisance complaints concerning bear, beaver, and deer. The North Carolina Wildlife Resources Commission reports that the deer population has remained stable during this time period, but beaver populations have increased in many areas. Reports of deer damage to crops have declined while more agency technical guidance efforts have been directed to urban/suburban deer issues. Bear populations have reached modern highs in the coastal region and may have stabilized while mountain bear populations appear to be experiencing continued growth. The increase in bear complaints has occurred because of increasing bear-human conflicts in mountain counties while coastal complaints have remained constant over the last decade. Managing bear-human conflicts in both regions has required more effort and expenditures to educate the public and deal with public concerns. If deer and bear hunting were no longer available as a management tool, the subsequent public outcry from perceived and real nuisance issues most likely would elevate to a level where no agency budget increase could offset the losses. Additionally, if beaver trapping were no longer available, significant monetary losses would occur statewide from damage to timber, crops and highways.

Nova Scotia

Over the past five years, deer and raccoon populations in Nova Scotia have decreased, while coyote and bear populations have increased. Beaver populations have remained constant. Nuisance wildlife complaints have only slightly risen for bear while complaints for most other species have remained stable or slightly decreased. The person-hours assigned to control animal damage has increased 100 percent for bear but decreased 40 percent for deer. Most nuisance control work is completed by private nuisance wildlife operators, and the Department of Natural Resources is involved for special situations intervention like bear, beaver and coyote. Over the past five year period, expenditures on controlling animal damages have increased 60 percent for bear, while expenditures have decreased 40 percent for deer. Hunting and trapping is credited for helping keep populations of many potentially damaging species in check. However, if hunting and trapping were no longer available as a management tool, wildlife damage levels in Nova Scotia would be expected to increase 150 percent for both beaver and bear. Raccoon damage estimates would also be expected to increase 100 percent. Deer populations and damage estimates are typically affected by the severity of the winter.

The Nova Scotia Department of Natural Resources states that the public reacts to wildlife issues mostly when it impacts humans. For example, the Canadian National Railway has reported beaver flooding of rail beds has created significant safety issues and, despite the overall decline in deer numbers, residential developments in rural communities have experienced a significant rise in damage plus an increase in deer-auto collisions. Special harvest measures have been implemented to encourage increased harvest to keep wildlife-related damages at publicly-acceptable levels.

Oklahoma

In Oklahoma, deer, bear and Canada geese populations have increased and nuisance complaints for bear and Canada geese have increased as well. Beaver damage concerns more landowners than damage caused by any other wildlife species in Oklahoma. It is hard to believe that beaver were considered nearly extinct as recently as 1920 and then reached an estimated all-time high in 1991. As populations of beaver increased, beaver damage complaints also became more numerous with agencies responsible for handling animal damage complaints receiving more than 1,000 reports of beaver damage annually. If hunting and trapping were lost as management tools, Oklahoma reports that no increase in the state budget would make up for the loss.

Pennsylvania

The Pennsylvania Game Commission reports that deer, beaver, bear and geese populations have remained relatively stable over the past five years, but bear and geese nuisance complaints continue to increase. The Commission has had to increase person-hours and expenditures 15 percent for bear damage control and 20 percent for geese damage control.

During the mid 1970s, Pennsylvania's bear population ranged between 3,000 and 4,000 animals. Today it is estimated to be around 15,000. This distribution of bears in Pennsylvania has also expanded with 49 counties reporting bear harvests by the year 2000. Bear harvest reached approximately 3,000 during the past two years (2002 and 2003). The agency's Nuisance Black Bear Management Committee reported that feeding bears was a leading cause in both nuisance complaints and in the chance of bears injuring humans. As a result, in January of 2003 the Pennsylvania Board of Game Commissioners approved a regulatory change that bans the intentional and unintentional feeding of bears.

Pennsylvania joined a growing list of states that expanded antlerless deer and doe permits to reduce the population of approximately 1.6 million deer to reduce the number of damage complaints and to obtain a better balance between the doe and buck harvest.

Saskatchewan

Saskatchewan Environment, in a twenty-one year period from 1980 to 2000, paid $57.8 million (CAN $) to townships as compensation for waterfowl damage. In a five-year period from 1996-2000, Saskatchewan Environment paid more than $8.1 million (CAN $) respectively to townships as compensation for damage from big game species. When hunters and hunting are available, such damages can be minimized. The five-year payout was limited by the amount of funds available and could have been greater if more funds were available.

South Carolina

South Carolina reports that the bear population has increased slightly over the past five years while deer populations have decreased slightly and beaver populations have remained relatively the same. However, nuisance complaints for deer, beaver and bear have each increased moderately. Bears have resulted in the greatest cost to the agency in person-hours and expenditures to control animal damages.

The social cost of South Carolina's deer herd has grown substantially over the past two decades. Reported deer vehicle accidents have grown from a minimum of 592 in 1975 to a high of over

5,000 in recent years, an increase of more than 900 percent. Although there has not been a corresponding nine-fold increase in the deer herd, there has been a substantial increase in vehicle miles driven and miles of roadways. As South Carolina continues to develop, traffic will increase. Deer-vehicle accidents could increase even with a decrease in the state's deer population.

Farmers also report substantial deer damage to crops. The number of deer depredation permits issued by the SCDNR has increased from 68 in 1982 to over 800 in recent years. This represents an increase of over 1,000 percent. Again, this problem is not due solely to a change in the deer population. Over the past 15 years, the acreage of soybeans has declined by 60 percent while the total acreage of summer row crops has suffered similar declines. SCDNR says the harvest will require a greater percentage of does each year until the deer management needs of each community are met.

Tennessee

The Tennessee Wildlife Resources Agency receives hundreds of wildlife damage complaints each year, which is in addition to complaints handled by animal damage control agents. The largest increase in nuisance wildlife complaints in Tennessee over the past five years has been attributed to river otters. Randy Huskey of TWRA estimates only a slight increase in bear and beaver related complaints but at least a 50 percent increase for river otters. This is likely due to the estimated 40 percent growth in the river otter population. The beaver population has grown by an estimated 10 percent and bear appears to have remained stable over the last five years. The TWRA has been compelled over the past five years to increase person-hours and expenditures by ten percent to control animal damage for all species combined.

Just a few of the problems Tennessee officials have had to deal with include roads that have become impassible due to flooding caused by beaver dams, fish ponds completely wiped out by river otters, gardens destroyed by deer, and black bear breaking into individual residences.

The raccoon population has steadily increased in the past 15 years. Raccoon hunters and trappers on the other hand have decreased at a rapid rate. Raccoon strain rabies was first documented in Tennessee in June, 2003 and remains a concern.

If hunting and trapping were no longer available as management tools, the TWRA says that it would be impossible to increase the state budget enough to control damage from escalating wildlife populations.

Utah

Over the past five years, beaver and bear populations have increased in Utah, but deer and elk populations have actually decreased. Cougar have had the highest increase of nuisance complaints followed by elk and bear. Big game damage to agriculture crops, mostly caused by mule deer, elk and pronghorn, is compensated annually in the amount of $450,000 and increases with inclement weather patters such as drought, heavy snow and colder temperatures. Human safety issues receive priority where cougar and bear issues occur, and incidents are increasing, drawing personnel away from other valuable duties.

An unusually hard winter in 1992-93 and the ongoing drought have impacted Utah's big game animals. The statewide mule deer population slowly increased after the disastrous 1992-93 winter. However, the mule deer population is again on a decrease due to five years of extended drought. Utah recorded the driest year on record and the hottest month on record in July, 2002, and broke it

again in July of 2003. The drought has resulted in poor fawn production and damage to vegetation on many critical deer winter ranges. As a result, deer have turned to agricultural crops and are more frequently found in urban and suburban areas.

Another impact on deer herds results from growing cougar populations. In August of 2004, the Utah Wildlife Board approved changes that could result in more cougars being taken by hunters in different areas of the state. Under the rules approved by the Board, the Utah Division of Wildlife Resources (UDWR) is projecting that 500 cougars might be taken in Utah this season, which begins in late November. As deer populations increase in urban areas, cougars "follow the deer to town" resulting in increases in cougar problems.

The UDWR currently spends $1.5 million on wildlife complaints, $1.1 million on livestock and crop depredation, and $0.4 million on nuisance wildlife issues annually. The UDWR said that if hunting and trapping were lost as management tools, they simply would not be capable of addressing damages and could not satisfy legal mandates.

Virginia

The Virginia Department of Game and Inland Fisheries reports that, over the past five years, deer and beaver populations have increased slightly, while the bear population has increased an estimated 30 percent. Deer nuisance complaints have increased proportionately with the population, beaver nuisance complaints have increased twice as fast as the population, and bear nuisance complaints are slightly below the percentage increase in the population. Beaver have caused the greatest increase in agency person-hours and damage-control expenditures over the past five years.

During the 2003 season, hunters harvested 237,035 deer and 1,510 black bear, representing an increase of 62 percent over the previous year's bear harvest of 932.

The Virginia DGIF reported that if hunting and trapping were lost as management tools, no increase in their budget could make up for the loss of these tools to maintain wildlife at safe and acceptable population levels.

Washington

The Washington Department of Fish and Wildlife (WDFW) reports that as the human population continues to grow and wildlife habitat is lost, human conflicts with wildlife grow in proportion. Cougar have received the most attention in Washington over the past five years.

Washington's cougar population went unchecked between 1996 and 2000 after voters passed a ballot measure banning cougar hunting with hounds. The WDFW has responded to an average of one or two non-fatal attacks per year over the past decade. As a result of the increasing number of conflicts between people and cougars, the 2000 legislative session passed a bill that amended the 1996 measure and directed the Fish and Wildlife Commission to authorize the use of dogs for the removal of cougar for the purpose of meeting a demonstrated public safety need. Following passage, the WDFW expanded general hunting seasons for cougars, which have helped to control the state's cougar population. According to WDFW enforcement records, the number of complaints filed about cougars has dropped steadily from an all-time high of 955 in 2000 to 255 in 2003. In addition to written complaints, many more calls are received. WDFW's goal is to reduce the number of cougars in areas where they are causing the most trouble, not reduce populations everywhere.

Overall, Washington's deer populations have decreased in the past five years. Washington has three species of deer. Whitetail deer are actually on the increase because they adapt well to human encroachment. However, the mule deer population has declined the most primarily from loss of habitat, fire impacts and the severe winter of 1997. The black-tailed deer is maintaining its population, but is also facing a loss of habitat due to fewer clear cuttings by the timber industry. Clear cuts provide for new vegetation and food sources while old growth timber provide adequate habitat, but intermediate stage timber (20-30 years growth) limits understory vegetation leaving little food for wildlife. Disease, thought to be an exotic louse, is also causing added loss to the black-tailed deer population. This disease causes deer to rub off their hair, then die of exposure in the winter.

Over the past five years, the agency's expenditures to control animal damages have increased. If hunting and trapping were no longer available as management tools, the agency reports that no increase in the agency's budget would make up for the loss of this tool to maintain beaver, deer, elk bear and cougar at current population levels.

West Virginia

In West Virginia, over the past five years bear and coyote populations have been on the increase as well as the amount of associated nuisance complaints. Coyote nuisance complaints have increased in relationship to the increase in populations, but bear nuisance complaints are increasing almost as twice as fast as the bear population. The West Virginia Division of Natural Resources reports that the person-hours assigned to control animal damage have increased about 50 percent for bear during the past five years and the expenditures to control bear damage have increased 100 percent. In 1999, black bear damage claims amounted to $36,900; in 2003 that figure jumped to $112,843.

West Virginia's deer population has been relatively stable over the past five years. Antlerless deer seasons and bag limits have been increased in much of the state to stabilize or reduce the deer herd.

Wyoming

Over the past five years, deer and antelope populations have increased slightly while elk have decreased. However, the Wyoming Game and Fish Department reports that nuisance damage complaints have increased between 24 and 39 percent for each of these species. The primary cause is two fold. Wyoming has experienced several years of drought which has affected the food supply for wildlife, driving wildlife to developed areas searching for food and water, while people continue moving into areas that previously were rural wildlife habitat.

Yukon

The information below was provided directly by the Yukon provincial wildlife agency. Comments are added in parenthesis when needed for clarification:

"The Yukon Territory has a very low density human population, with approximately 31,000 people in a space of 483,500 sq km. (1 per 15 sq.km.). The (natural) productivity of the Yukon is also low, which means we generally have low densities of wildlife. Consequently, our wildlife/human encounters are minimal by any measure (which makes it difficult to answer some of the survey questions posed by the researchers of this project). In Yukon, we typically regulate hunting to ensure there isn't an over exploitation of our

healthy wildlife populations. The exception to this is the recent introduction of hunting to regulate our wood bison population, which has increased favourably since the re-introduction in the 1980's. Another successful management tool has been the use of electrical fences for the control of bears, specifically in remote camps, and landfills or dumps.

We included bison, wolves and coyotes as species that are involved in wildlife damage in Yukon. We also included moose and caribou, especially caribou, the species most frequently hit by vehicles. In some areas, highway fatalities of caribou consume the entire annual growth in the herd.

Bears (black and grizzley): About 10 years ago the Yukon government began a strong initiative to reduce bear/human encounters and problems, through the use of electrical fencing. Electrical fences were installed at all community landfill sites. Also businesses with remote camps, such as mining exploration camps were advised to install their own electrical fences as needed for the same reasons. Solar panels are used to power these fences. This effort has been a great success, and significantly reduced bear/human encounters and/or damage. An interesting note is that as more people are out in the back-country, the potential for encounters increases.

Bison: In 1998, hunting of wood bison in the Aishihik herd was opened up due to strong growth in the population and a high incidence of damage or encounters. Hunting this herd has resulted in the numbers remaining at a sustainable level, and the bison are less likely to frequent populated areas and highways.