Strategy for Preventing and Managing Human-Deer Conflicts in Southern Ontario

Cette publication hautement specialisée n'est disponible qu'en Anglais en vertu du Règlement 411/97 qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec Michael Gatt au ministère des Richesses naturelles au Michael.Gatt@Ontario.ca

1.0 Introduction

Background

In 2005, the Ontario Government initiated the development of a strategy to prevent and manage human-wildlife conflicts. A component of that strategy was the development of a more specific approach to address human-deer conflicts in southern Ontario. Both initiatives were developed as part of a collaborative approach involving several provincial Ministries and a diverse group of interested stakeholders.

White-tailed deer (*Odocoileus virginianus*) are among our most valued wildlife in Ontario. This species is an important natural heritage feature that contributes to Ontario's rich biodiversity. Deer are appreciated by many as a valued renewable resource, providing special enjoyment for recreational viewing and hunting. Deer contribute significant economic benefits for tourism and related businesses. However, to some Ontarians, deer may also be viewed as destructive when they damage agricultural crops or create hazards on our roadways. These differing views present challenges for finding solutions for managing human-deer conflicts.

Since 1980, when the selective harvest system was introduced, deer populations have increased substantially in most of southern Ontario south of the French and Mattawa Rivers (see Appendix 1). Changes in habitat that favour deer survival and less severe winter weather conditions have contributed to significant increases in deer abundance. As deer populations grew over the past three decades, Ontario's human population increased almost by 50 percent. Urban encroachment on natural areas, increased traffic volumes, and changes in agricultural land use practices have resulted in greater human-deer interactions and increased reports of crop damage, vehicle collisions and urban deer problems. Other concerns include human health issues and the impacts of extensive deer browsing resulting in impacts to natural heritage and biodiversity features.

This strategy is intended to identify and address the range of issues related to human-deer conflicts. It acknowledges the varied views of those who value nature, the need to manage resources sustainably, and the desire of citizens to protect their property and safeguard their health. While this strategy is focused on southern Ontario, it is recognized that many of the issues and possible solutions would apply across Ontario wherever residential, commercial, or industrial development overlaps with areas with healthy deer populations.

This document provides a goal statement, guiding principles, objectives and a range of strategies to help prevent and manage human-deer conflicts. The

appendix provides background information that will assist in better understanding the nature and management of human-deer conflicts.

Context and Scope

Wildlife is held in trust by the Crown for all residents of the province. The Ministry of Natural Resources (MNR) has the mandate to manage wildlife in Ontario. The Ontario government has two broad strategic documents that provide direction on the management of wildlife and other natural resources. *Our Sustainable Future* provides MNR's long-term strategic directions and current priorities. That document is founded on a commitment to the conservation of biodiversity and the use of natural resources in a sustainable manner. This direction is expanded in *Protecting What Sustains Us - Ontario's Biodiversity Strategy*. The biodiversity strategy adopts two goals:

- Protect the genetic, species and ecosystem diversity of Ontario, and
- Use and develop the biological assets of Ontario sustainably, and capture benefits from such use for Ontarians.

This human-deer conflict strategy recognizes and adheres to the directions provided in those government strategies. It is also consistent with and extends the direction being provided in the provincial strategy for *Preventing and Managing Human-Wildlife Conflicts in Ontario*. That strategy identifies six primary approaches towards the management of conflicts. They include:

- Establish leadership roles
- Commit to collaborative action
- Develop a comprehensive "toolbox" of management practices to address immediate and long-term issues
- Build community-based solutions
- Establish a practical knowledge base and use that knowledge to evaluate and improve on management strategies
- Educate to effect change

While conforming to these strategic directions, this document includes more specific actions for addressing human-deer conflicts. This strategy recognizes the need to proceed immediately with priority actions, while acknowledging that some actions will require further work for effective implementation.

2.0 Challenges

It is important to recognize that human-deer conflicts can occur not only when deer are abundant across the landscape, but also when small concentrations of deer exist on a single property. Also, the different perspectives and values that people

place on deer will influence whether those individuals perceive an interaction with deer as being a conflict.

Conflicts with deer can be organized into three general categories: economic, environmental, and social. The major conflicts that are of concern in southern Ontario include:

- Economic
  - Crop damage
  - Vehicle collisions
  - Abatement and mitigation expenses
- Ecological
  - Intensive foraging in natural areas that affects forest regeneration, species at risk and other biodiversity objectives
- Social
  - Public safety risks from vehicle collisions
  - Potential health concerns associated with deer diseases
  - Damage to gardens and landscape vegetation in the urban environment

Additional details on these issues are provided in Appendix 1.

A number of underlying factors create challenges that should be addressed if conflicts between humans and deer are to be prevented.

- There is a diversity of values that people place upon wildlife that influences whether they can agree on
  - the existence and severity of problems and how they are to be addressed; and
  - the philosophical question of whether deer populations need to be managed to reduce conflict.

  These values encompass a wide spectrum of beliefs held by those with animal welfare concerns, those who support the sustainable harvest of deer populations through hunting, and landowners who feel they should be able to manage and defend their property.

- There is a need to promote the prevention of conflicts while recognizing that conflict is a very subjective assessment; there will always be a range of opinions on whether and how prevention can be achieved.

- There is a wide range of factors that affect deer abundance, such as climate and landscape-scale alterations to habitat. In some situations, these factors may currently have a greater impact on human-deer interactions than the direct management of deer populations and conflicts. Some of these factors are beyond human control (e.g., weather).

- Deer management is dynamic in nature. Programs should be periodically evaluated and improved where possible.

Human-deer issues have developed over a long period of time and finding solutions to these problems will also take time. These challenges occur not only in Ontario, but also across a very significant portion of the North American continent. No jurisdiction has been completely successful at resolving conflicts. In Ontario, as in other jurisdictions, it will take time, patience and cooperative action for progress to occur.

3.0 Guiding Principles

The following principles, established in the provincial strategy for *Preventing and Managing Human-Wildlife Conflicts in Ontario*, provide the framework for implementation of this strategy:

- The people of Ontario recognize that wildlife has intrinsic, ecological, economic, social and cultural values
- Ontarians desire healthy and sustainable wildlife populations
- All residents of the province share responsibility for preventing and managing human-wildlife conflicts
- Effectiveness of prevention and management strategies is dependent on implementation of a variety of practical solutions through collaboration and discussion among stakeholders
- Actions to address human-wildlife conflicts, or decisions not to take action, should be ecologically sound and should not negatively impact the survival and recovery of species at risk
- Sound scientific and applied technical knowledge can enhance human-wildlife conflict prevention efforts and mitigate risk to human health and safety
- Mechanisms to address human-wildlife conflict must be adaptable to both public and private land ownership (e.g., cost effectiveness and affordability are factors to be considered)
- Effective outreach and education are important for mitigating human-wildlife conflicts
- Prevention is achieved through proactive efforts and an adaptive management approach
- Management of human-wildlife conflicts should build on successful approaches demonstrated in Ontario and other jurisdictions (i.e., Best Management Practices)

4.0 Goal and Objectives

The goal of the strategy is to prevent and manage human-deer conflicts while maintaining public appreciation of white-tailed deer in southern Ontario.

It is recognized that conflict cannot be eliminated, but appropriate management can be effective at preventing many conflicts from occurring and mitigating the severity of their impacts. Effective conflict resolution will take time, and a variety of approaches will be needed to address all of the issues.

The objectives of the strategy are to:

1. Take collective and effective action with the dedicated support and involvement of government agencies and stakeholders.

2. Develop and implement a prevention program that incorporates effective tools, co-coordinated delivery and the achievement of timely results.

3. Increase the awareness of Ontario residents of the value of white-tailed deer, issues related to human-deer interactions, and the role individuals can play in preventing conflicts.

5.0 Strategies

Objective 1: To take collective and effective action with the dedicated support and involvement of government agencies and stakeholders.

Stakeholder involvement in the development of this strategy has been beneficial. This strategy will build on that interest and source of knowledge and encourage stakeholders to be actively involved in the development and implementation of management tools.

Strategy 1. Commit to a policy support framework that leads efforts by:

- working together with other agencies and stakeholders to develop implementation plans;
- engaging other interested stakeholders and private partnerships;
- examining opportunities to secure support to assist with actions;
- ensuring that land-use planning authorities and those developing other government initiatives are aware of the implications of their actions on deer and deer-related conflicts.

Strategy 2: Define the issues and establish solutions at the appropriate geographical scale

- identifying areas of conflict, including “hot spots” of particular concern;
- ensuring that approaches to resolve problems are developed at the following geographic scales:
  - the landscape (Wildlife Management Unit [WMU] or aggregations of WMUs),
  - community (multiple landowners) and
  - individual property;
- establishing deer population objectives at landscape, and where feasible, community levels that reflect ecological, social and economic considerations and objectives;
- communicating with local stakeholders in areas with extensive conflict, to review the causes of conflict and methods available to mitigate or eliminate those conflicts;
- promoting community-based stewardship as an approach towards mitigating conflict.

It is acknowledged that conflicts can occur when there are abundant deer at the landscape level or when concentrations of deer exist temporarily on one property. The management of these conflicts is very different and the strategy needs to be robust in its ability to deal with the full range of issues at various geographical scales.

Objective 2: To develop and implement a prevention program that incorporates effective tools, coordinated delivery and the achievement of timely results.

There are three general approaches to address conflicts between humans and deer:

- modify the factors that created the problem;
- increase public tolerance so the conflict is reduced or eliminated; and
- alter deer population densities.

Effort can be directed to influence the factors creating the problems, especially in the area of habitat modification. Several approaches can be taken to alter public tolerance, particularly in the form of abatement and mitigation, and initiatives to reduce the economic impacts of deer conflicts. A change in public attitudes may only be possible in the long term. While it would be desirable to resolve conflicts with these approaches, deer population management may be the most appropriate strategy in some situations. Population management may be required at the WMU level (or aggregations of WMUs) to reduce deer densities, and in some cases at more site-specific locations to address particular conflicts. Recreational hunting is the most commonly employed tool to manage deer abundance.

Strategy 3: Develop Best Management Practice (BMP) approaches, and abatement and mitigation techniques that will be effective in resolving most conflicts by:

- creating ways to provide timely and knowledgeable advice on techniques and procedures and administering regulatory requirements in a consistent and efficient manner;
- developing a catalogue of practical and cost-effective techniques based on Ontario experience and proven solutions from other jurisdictions and monitoring their effectiveness at resolving problems;
- providing information on the Internet and developing BMP documents and other literature on techniques to identify, prevent and mitigate deer conflicts.

Strategy 4: Investigate and improve methods of reducing the economic impacts of deer damage to the agricultural industry by:

- increasing awareness of funding programs available to farmers to address deer conflict issues (e.g., the Canada-Ontario Environmental Farm Plan);
- evaluating the feasibility of offering incentives to use site-specific deterrents and prevention measures, such as fencing or chemical or biological deterrents;
- investigating mechanisms for producers to gain economic benefits from the recreational users of deer;
- exploring options to improve cost recovery of damage through insurance programs (e.g. improved coverage for wildlife-related damage in addition to losses related to catastrophic weather events).
- exploring opportunities for compensation or abatement for significant agricultural losses resulting from deer activity.

Strategy 5: Improve and apply site-specific tools to deal with landowner and community problems by:

- reviewing the Deer Removal Authorization policy and amending where necessary to ensure a timely and effective means of dealing with critical issues on agricultural lands and on high-risk sites such as airports;
- investigating improved mitigation measures to prevent deer-vehicle collisions;
- reviewing, and where necessary modifying, practices associated with supplemental winter feeding of deer and other activities that concentrate animals;
- providing municipalities and landowners with information on viable options to manage suburban deer conflicts;
- reviewing and refining the use of site-specific additional deer seals as a tool to manage local deer populations during deer hunting seasons.

Strategy 6: Review MNR's current deer harvest management program to determine its contribution to the reduction of human-deer conflicts by:

- evaluating the effectiveness of recreational hunting in reducing deer population growth and in reducing the frequency of human-deer conflicts in areas with high deer population levels;
- assessing regulatory tools available to deal with conflicts, including but not limited to:
  - hunting measures such as an increased harvesting of female deer, expanded non-resident deer hunting opportunities and incentives for increased harvest rates;
  - specific mitigation measures to address “hot spots” for human-deer conflict situations such as crop damage and vehicle collisions;
- applying the results of these evaluations to refine regulatory tools and improve the effectiveness of recreational hunting in reducing human-deer conflicts;
- assessing the level of human-deer conflicts in areas where there is limited access to the land base for hunting and working with municipalities, landowners, hunters and other conservationists to resolve issues and conflicts.

Objective 3: To increase the awareness of Ontario residents of the value of white-tailed deer, issues related to human-deer interactions, and the role they can play in preventing conflicts

The success of a prevention strategy depends on the willingness of Ontario residents to improve their understanding of human-deer interactions, to change some of their habits and to adopt different approaches in responding to conflict situations. Ontarians are privileged to enjoy abundant wildlife and productive ecosystems; they will need to reflect on the extent to which human interactions with deer are conflicts that can’t be tolerated. Education and awareness is critical if a prevention strategy is going to be successful in increasing public understanding and tolerance of human-deer conflicts in the long-term. Equally critical is the need to have current information upon which management decisions can be based.

Strategy 7: Government agencies to work with partners to develop and implement public education and awareness programs by:

- providing educational materials through schools, community- based stewardship, and outreach programs to raise awareness of human-deer conflicts within a broader ecological context;
- informing motorists through driver training, brochures and public service advertisements of the methods to avoid wild animal collisions.

Strategy 8: Develop research, monitoring and reporting mechanisms to assemble timely and accurate information that can be shared with the public, and used to better manage conflict issues by:

- conducting a literature review and jurisdictional scan to obtain the best information on Best Management Practices and abatement techniques;
- obtaining timely and accurate data, including:
    - deer harvests, and levels of recreational hunting activity,
    - wildlife-vehicle collisions by species; road density and traffic patterns;
    - crop damage
    - other reported occurrences of human-deer conflict;
- preparing a state of the resource report on the status of deer in southern Ontario;
- evaluating research needs and directing efforts at critical information gaps such as:
    - determining the effectiveness of mitigation and abatement techniques;
    - evaluating and refining the effectiveness of harvest management as a tool to influence changes in deer populations relative to other variables.

6.0 Implementation

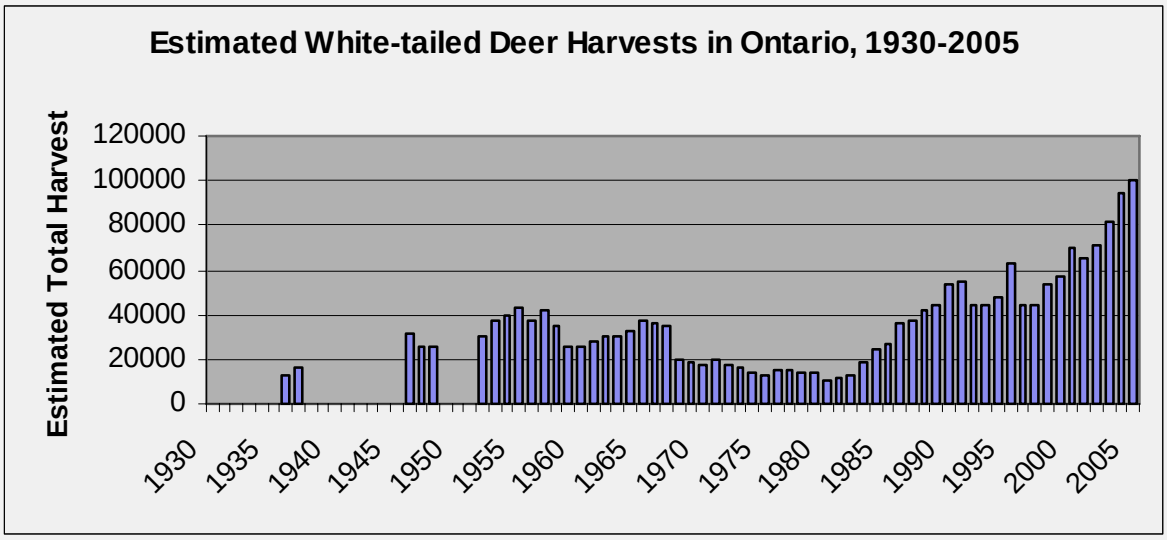
This document reflects the strong commitment among government and non-government agencies, interested stakeholders and affected communities in Ontario to work together to address and understand issues contributing to human-deer conflicts in southern Ontario.

The strategies presented set the stage for implementation and action plans to meet the established objectives. Action plans will be developed through collaboration with interested stakeholders to address human-deer conflict issues that occur at varying spatial and temporal scales in southern Ontario. Objectives and strategies will continue to be revised and updated as Ontarians move forward in addressing the challenging issues associated with human-deer conflicts.

Appendix 1. Background Information

A1. Deer population trends

White-tailed deer are at the northern limit of their continental range in Ontario and occupy all parts of southern Ontario south of the French-Mattawa Rivers. They are an extremely difficult species to inventory accurately and for that reason most North American jurisdictions use hunter harvests as an index of deer abundance. Ontario's deer harvest increased from under 20,000 deer in the early 1900s to about 40,000 in 1955. A series of severe winters, loss of habitat and the lack of effective harvest controls caused a series of population declines over the next 25 years, and the harvest reached a low of about 10,000 in 1980. Harvests have risen steadily since then to approximately 100,000 deer in 2005.



The increase in deer numbers since the 1980s has been the result of several factors. The selective harvest system was instituted in 1980 and it was highly effective at controlling the harvest of adult females by protecting antlerless deer. The protection of adult females allowed for improved reproductive rates and the subsequent recovery of deer herds. A long series of milder winters over the past 25 years has reduced winter mortalities and allowed for higher rates of fawn production and survival.

This period has also seen a number of events that resulted in improved habitat conditions for deer. Changes in the agricultural industry through the 1980s resulted in greater acreages planted in small grains, corn and beans. Through this period, there was also a movement towards improved soil conservation, which resulted in reduced fall tillage. This had the effect of leaving more residue and waste grains on the fields through the winter. Deer have capitalized on this valuable source of winter food. Other factors such as the eastern Ontario ice storm and growing rates of participation in land restoration programs have resulted

in a general improvement in deer habitat across the southern Ontario landscape. Through this period there was also a growing number of properties where landowners prohibited hunting activities. This created a large number of refuge areas and constrained the effectiveness of hunting in controlling deer population growth in some parts of the province. Enforcement efforts have also been more successful at controlling illegal harvesting of deer.

The population trends described above would apply to most jurisdictions throughout the mid-west and northeastern portion of the United States. Changing land use patterns have benefited deer throughout much of North America, and other jurisdictions have faced even greater challenges in dealing with abundant deer populations.

A number of factors may have an impact on deer abundance in Ontario in the future. Government initiatives to achieve healthier ecosystems include *Natural Spaces*, *Source Water Planning*, and the *Biodiversity Strategy*. In some areas, these initiatives may result in improved wildlife habitats that could sustain even higher populations of deer. In other areas, development pressures may reduce habitat and affect local deer populations.

Climate change is another factor that may have an influence, although its effects are less predictable. Generally, winter conditions for deer may continue to improve and it is likely that deer populations will either continue to increase in abundance, or at least remain at their current high levels.

A.2 Why have conflicts with deer arisen?

Through the 1960s and 1970s, deer occurred at very low densities in most of southwestern Ontario, and at low to medium densities elsewhere in southern Ontario. These deer population levels caused very few problems and the public generally viewed deer as a highly valued resource. As deer populations increased through the 1980s and 1990s, Ontario's human population increased from about 8.5 million in 1980, to 12.4 million in 2004. These trends resulted in an increasing number of interactions between humans and deer and a growing level of intolerance to conflicts such as agricultural crop damage and vehicle collisions.

Conflicts with deer can be organized into three general categories: economic, environmental, and social. It is important to recognize that conflicts can occur not only when deer are abundant across the entire landscape, but also when only a few deer exist on a single property. Also, the different perspectives and values that people place on deer will influence whether they perceive an interaction as being a conflict. For example, a landowner may feed and "protect" deer on his or her property, while neighbours may experience negative impacts such as deer

damage or increased traffic hazards. This adds to the challenge of preventing and managing conflicts.

A.3 Challenges and Issues

White-tailed deer were an important resource to Ontario's native peoples and to the early European settlers of the province. The resource provided abundant food, and products with which to create clothing, shelter and tools. The social, economic and ecological value of the resource remains of considerable significance today. It is estimated that in 2001, 158,000 deer hunters spent over one million days hunting deer; deer hunting expenditures exceeded $84 million and sustained 1800 person-years of employment. In fiscal year 2002/03 the Ministry of Natural Resources collected revenue totaling $5.6 million from the sale of licences and permits associated with deer hunting. Unfortunately, deer can also create economic, ecological and social conflicts that may exceed public tolerance levels.

Historic deer densities in pre-settlement times in the eastern US have been estimated at 3-4 deer/km^2 (McCabe and McCabe, 1984). Due to more severe winter effects, Ontario's historic densities were probably somewhat lower. Social issues such as crop damage, and high vehicle collision rates are usually associated with deer densities in the range of 5-15 deer/km^2. At densities of 10 deer/km^2 or more, deer may exceed the carrying capacity of their habitat. It is then common to have problems with forest regeneration, loss of plant diversity, and impacts on other wildlife species. In suburban areas, densities over 50 deer/km^2 may cause extensive damage to gardens and ornamental/landscaping vegetation. Densities of 100 deer/km^2 or more have been experienced in suburban areas of the U.S. (Curtis, Pers Comm. 2005)

In recent years, Ontario's deer densities have increased into the "problem" ranges referred to above. Many agricultural regions in southern Ont. have between 4-10 deer/km^2 of deer habitat, while shield units south of Lake Nipissing have densities between 1-5 deer/km^2. Densities over 25-30 deer/km^2 have been experienced in some provincial parks (e.g., Pinery and Rondeau Provincial Parks). A density of >100 deer/km^2 has been noted at the Sifton Bog in London, Ontario.

Specific issues are highlighted in the following sections.

Agricultural Issues

The increasing abundance of deer in recent years is a concern to agricultural producers in Ontario. A report submitted by the Ontario Soil and Crop Improvement Association (OSCIA) estimated that wildlife damage amounted to $41 million in 1998, and the annual cost of abating wildlife damage was $7.5

million and growing (OSCIA, 2000). Annual data on wildlife damage is not collected, so a quantitative assessment of the trends in economic loss is not possible. However, many agricultural producers feel the magnitude of the problem has increased as deer populations have grown over the last decade. It's important to note that some agricultural areas in Ontario are much more directly impacted by deer damage than are others and that human-deer conflicts vary at the landscape, community and site level.

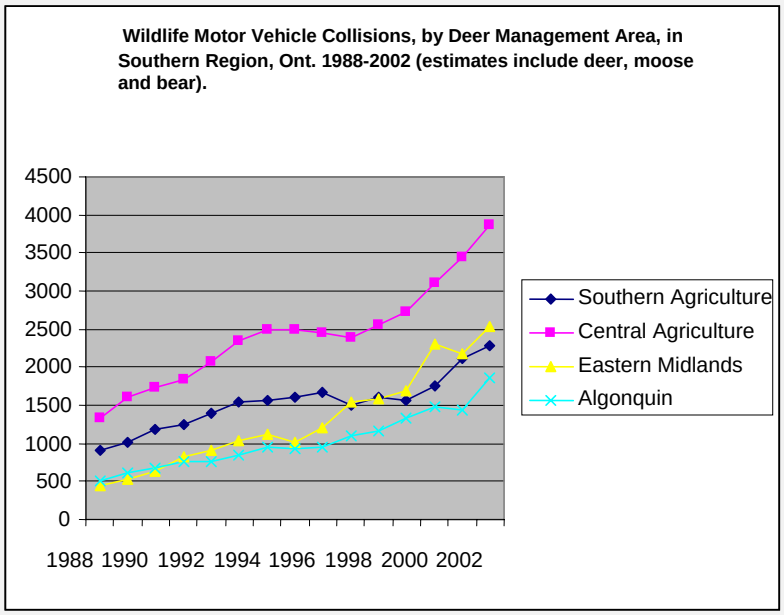
Economic losses cannot be recovered from the provincial crop insurance program because the system is geared towards providing relief from heavy or catastrophic loss in a single year rather than the regular, annual loss of a portion of the crop. As a result, crop damage by deer is a direct loss to the earnings of agricultural producers.

Deer will usually feed on the most nutritious forage they can encounter. In spring this may include newly emerged seedlings. As crop growth proceeds, damage can occur to the flowering parts of plants, and through late summer and fall, the ripened crops are usually selected. In winter, deer will also browse on the woody tips of fruit trees, which can damage the trees' production for years into the future. Other damage can include the trampling of crops (e.g., winter wheat) and antler rubbing on fruit and nursery trees.

Another concern is the potential risk of disease transmission between wild and farmed deer (deer and elk). High densities of wild deer increase the possibility that a disease in either wild or farmed deer could be transmitted to or from the wild. The diseases of greatest concern to the deer farming industry include Chronic Wasting Disease, Foot and Mouth Disease, Bovine Tuberculosis and Epizootic Hemorrhagic Disease. At present, there is no evidence that any of these diseases exist in wild deer in Ontario.

Vehicle Collisions

Throughout southern Ontario, the number of collisions with wildlife has been increasing since 1988. Data collected from wildlife-vehicle collisions do not identify the species of animal, but the frequency of wild animal collisions is very high: on average there is a motor vehicle-wild animal collision every 38 minutes, and one out of every 18 motor vehicle collisions involves a wild animal. In 2003, there were 13,729 reported wild animal collisions.



Most deer collisions occur during the months from October-December and to a lesser extent in May-June, and during early morning (5-7 am) or after sunset (5-11 pm). These periods coincide with the heightened activity of deer during the autumn breeding season, the spring and fall migration periods and the daily movement cycle during hours of darkness and at dawn and dusk.

Most vehicle collisions with deer result in the death of the animal. Collisions with deer can result in serious vehicle damage, personal injury or even human mortality. In addition to the cost of vehicle repairs, considerable expense is incurred through increased costs of insurance, investigative costs by police, carcass removal by road departments, medical costs and the costs of education and abatement directed at preventing vehicle collisions.

There are also concerns about vehicle collisions at airports. A number of deer-plane collisions have been reported across North America and several problem areas have developed in Ontario. Airports and private runways without appropriate deterrent mechanisms that are located in close proximity to deer habitat are at risk.

Environmental Impacts

Deer are large herbivores that have the ability to profoundly impact natural plant communities on which they feed. Intensive foraging can reduce species diversity and richness, and affect other wildlife dependent upon the forest community. In extreme cases, regeneration of some species is threatened. The impacts of intensive foraging are often visible as a browse line at a height of about two meters.

White-tailed deer reach carrying capacity at about 20 deer/km2 at the 44 degree latitude (McCaffery and Rolley, 2001). Impacts can be readily detected above 10-15 deer/km2 and can be severe above 20 deer/km2 (DeCalesta, 1997; Healy, 1997). Intensive browsing and foraging can have an affect on:

- biodiversity
- species at risk (SAR)
- forest regeneration
- sensitive ecological communities and
- habitats of other wildlife species

Damage to natural environments has occurred at several locations in Ontario over the past 20 years, for example in provincial and national parks at Pinery, Rondeau and Point Pelee.

Residential and Suburban Issues

As urban expansion extends into the natural landscape, human-deer interactions take on a different form of conflict. A lack natural food sources in suburban areas can result in deer resorting to foraging on planted vegetation, causing havoc with vegetable and flower gardens, and ornamental shrubs. Even where natural foods are available, deer sometimes show a preference for planted vegetation. Deer can also be unwelcome visitors when feeding at birdfeeders.

In addition to feeding conflicts, deer can also do damage by trampling lawns, antler rubbing on landscape trees, and disturbing traffic. There are even periodic reports of deer jumping through windows of homes or businesses, causing property damage as the animal panics while trying to escape.

Public Safety Issues

The greatest threat that deer pose to human health is the risk of injury or death from vehicle collisions. Another problem associated with high deer densities is the potential for a deer population to contract and spread a transmittable disease. Chronic Wasting Disease (CWD), Lyme disease, and tuberculosis are recent examples of diseases that have caused human health concerns in Canada and the United States.

Winter Feeding of Deer

In some areas of central and eastern Ontario, where deer commonly congregate in winter deer yards, MNR has conducted emergency deer feeding programs when severe winter conditions have placed herds at risk.

It is also a common practice for private individuals to deposit food for deer during the winter to attract them for viewing purposes and with the intention of assisting their survival. This practice often affects an animal's normal migration to a deer wintering area and congregates deer in locations they would normally not inhabit. Supplemental feeding can contribute to localized traffic hazards, damage to crops and ornamentals, and an increased potential for disease transmission. Widespread supplemental feeding can reduce the rate of normal winter mortality and contribute to deer population growth.

A4. Ontario government programs

The Ontario government's programs that relate to the management of deer conflicts include:

- development and distribution of educational materials and programs on abatement techniques and best management practices (Ontario Ministry of Agriculture and Food [OMAF], MNR, Ontario Stewardship);
- highway route planning and the management of deer-vehicle collisions through signage, driver education and awareness, and the reporting and removal of animals hit on the road (Ministry of Transportation [MTO], Ministry of Justice, and MNR);
- monitoring of chronic wasting disease in free-ranging and farmed deer, and development of a response plan should an occurrence be detected (MNR, OMAF and Ministry of Health [MOH]);
- management of natural areas (e.g., wildlife corridors) and protection of deer habitat through land use and forest management planning (Ministry of Municipal Affairs and Housing [MMAH] and MNR); and
- direct management of deer populations (MNR).

Deer population management

The principal components of MNR's deer population management program are:

- inventory, monitoring and assessment;
- managing to provide sustainable recreational opportunities (e.g., hunting, viewing);
- managing deer densities to alleviate social concerns, through regulated hunting;
- authorizing the site-specific removal of deer in protection of property; and
- enforcement of legislation and regulations.

Deer are currently managed as discrete populations at the Wildlife Management Unit (WMU) level, with southern Ontario's land base segregated into 49 management units. Annually, deer managers evaluate current population conditions within each WMU and assign:

- A population trend;

- An indication of hunter demand;
- An indication of winter carrying capacity; and
- An indication of social tolerance to deer issues (e.g., concerns about agricultural damage, vehicle collisions, environmental impacts)

A management goal and population objective is then established and a harvest plan is developed.

The relative age and sex of deer can be visually determined during the fall when hunting seasons occur, because adult males carry antlers, and other deer are antlerless. This allows for the controlled harvest of adult females, which directly influences the future reproductive rate of the herd. When it is desired to let the herd grow, adult females can be protected through an allotment of antlerless deer tags. When herd reduction is desired, the harvesting of adult females can be encouraged by providing antlerless deer tags to recreational hunters.

As deer populations have increased in recent years, the manager's toolkit to allow for more responsive harvest management has been expanded to allow for additional and longer hunting seasons and for the opportunity for individual hunters to take several deer. Beginning in 2001, additional deer seals were made available in some WMUs (to take one deer/seal), with WMU specific conditions on firearm type, antlered versus antlerless, and location within a WMU. By 2004, limited numbers of hunters could obtain up to six game seals in specified WMUs. In 2005, most agricultural WMUs in southern Ontario offered additional game seals. This tool has expanded provincial deer harvests by over 20% since it became available in 2001.

Where localized deer conflicts occur, deer managers have an additional tool to deal with problem situations that arise outside of deer hunting seasons. When farmers experience deer damage, they may apply to MNR for an authorization to destroy deer to protect their property. The Deer Removal Authorization (DRA) has been developed as a site-specific tool to allow for the removal of problem deer in agricultural settings and at airports.

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