

THE NEGATIVE IMPACTS PUBLIC OPINION CAN HAVE ON WILDLIFE
MANAGEMENT PLANS

by

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ABSTRACT

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Key Words: wildlife, management, public, opinion, hunting, culls, controversy, black bear, double-crested cormorant, white-tailed deer, feral horses, wolves, research, conservation

Certain wildlife management plans are in place to balance overpopulated species. Years of scientific research and monitoring are done to come up with the most beneficial way of maintaining a healthy ecosystem. Wildlife managers have a single goal of trying to maintain a balanced ecosystem to ensure the ecosystem is healthy. Some wildlife management plans are controversial, with annual culls or extra hunting seasons needed to bring over-abundant populations back down to a sustainable number. This controversy is caused from strong public opinion not in favour of killing animals. In most cases, these opinions are from people that are not directly affected by the species in question or the wildlife management plan. This thesis looks at many different examples where a management plan either changed or received a lot of backlash because public opinion strongly disagreed with the wildlife management plan in place. This thesis will show the negative impacts that public opinion can have on wildlife management plans.

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INTRODUCTION

Wildlife management is an important discipline that deals with protecting threatened and endangered species and their habitats (Anderson 2002). It can be defined “as the manipulation of wildlife populations and habitat to achieve a goal” (Sargent and Carter 1999). The goal of wildlife management is to increase populations, but it may also include decreasing or simply sustaining current populations (Anderson 2002). A wildlife management plan uses both applied and basic research in wildlife ecology, management, and education (Manfredo et al. 1995).

Wildlife management plans look at the ecological principles such as carrying capacity of the habitat, preservation and control of habitat, reforestation, predator control, re-introduction of extinct species, capture and re-allocation of abundant species. (Anderson 2002). Management often aims at balancing the benefits for both wildlife and humans in terms of habitat and land use. Improving habitat is a common manipulation technique used to improve a species’ population (Anderson 2002). In order to do this, managers need to understand what an animal needs to live as well as how changing the habitat to benefit one species might affect other species that are found in the same habitat.

The profession of wildlife management was established in the United States from 1920 to 1930 by Aldo Leopold and others (Anderson 2002). The wildlife profession defines wildlife as free-living plants and animals of major significance to humans (Krausman 2002). The habitats that support these plants and animals are equally

important because a species and its habitat are interlocked. The institutional foundations of the profession of wildlife management were established in 1993 when Leopold was granted professorship in wildlife management at the University of Wisconsin, Madison (Anderson 2002). Aldo Leopold eventually developed the first graduate game management program for wildlife biologists at the University of Wisconsin.

In order for wildlife management plans to be executed successfully, different elements come into place. One main element that has a great impact on wildlife management plans is public support and awareness. Since most wildlife belongs to the public, the public has every right to voice their opinions and be a part of wildlife management plans (Krausman 2002). It is important to make local people accept the idea and importance of wildlife protection. Public interaction can help make local people responsible, and allows them to cooperate in enforcement of wildlife management laws and regulations. Their feedback should also be taken into consideration for effective functioning of wildlife management. People need to understand the concept of conservation of natural resources and be aware of the basic concepts behind wildlife management (Manfredo et al. 1995). Sometimes, unfortunately, the public is not fully educated on different aspects of wildlife management and their opinion can change management plans. Public opinion can sometimes be positive for conservation efforts, however for the most part, this causes many drawbacks in the plans. Many people view some forms of wildlife management to be cruel even though they might be necessary to save the focal species trying to be protected.

This thesis looks at different wildlife management plans in place in North America. These management plans all have examples of how public opinion either

completely changed or interfered with a wildlife management plan. The primary purpose is to show how public opinion can negatively change wildlife management plans which, in turn, can negatively affect the focal species involved with the management plan. The public has a right to their opinion since the lands that wildlife is found on is considered to be on public land, however sometimes the public allows their emotions to cloud their judgment and understanding on why certain elements of wildlife management plans need to occur. Since the public play an important part in wildlife management plans, it is important to ensure that they are educated and aware of certain elements that are crucial to certain plans in order for the plans to be successful.

LITERATURE REVIEW

The following topics found in this literature review provide context and background information necessary to understand this thesis. Topics include management plans and objectives, different management plan examples currently in Ontario, and the public opinion towards wildlife management techniques.

MANAGEMENT PLANS AND OBJECTIVES

There are many different ways to interpret a wildlife management plan. Every wildlife management plan has their differences but there are three main ideas found in all of them. These ideas include “efforts directed toward wild populations, relationship of habitat in those wild animal populations, and manipulation of habitats or populations that are done to meet some specified human goal” (Yarrow 2009).

When wildlife management was in its early days, many wildlife biologists viewed wildlife management as the art of making land produce adequate game for recreational use (such as hunting, fishing or trapping) (Yarrow 2009). This view then changed to that of using science to manipulate animal populations and their habitats for specific human goals (Yarrow 2009). Now, definitions stress that wildlife management is applied animal ecology that benefits the habitat and both wildlife and human populations (Yarrow 2009).

Wildlife management is a very complex process. The landowner or biologist must conduct habitat and wildlife population inventories and evaluations as well as determine

what people desire from the wildlife resource and direct management efforts to meet this goal (Yarrow 2009). In order to establish the desired outcome of management goals one must manipulate the habitat, manipulate the wildlife population or manage people (Yarrow 2009).

Wildlife management is very commonly mistaken for wildlife preservation, however they are two very different things. The three main words used in terms of protecting wildlife are conservation, preservation and management (Anderson 2002). Conservation is an effort to maintain and use natural resources wisely in an attempt to ensure that those resources will be available for future generations (Anderson 2002). Wise use of resources can vary from managing black bear populations by hunting, to preserving and protecting woodland caribou habitat.

Preservation is a component of conservation where natural systems are left alone without human disturbance or manipulation (Anderson 2002). People that believe in preservation believe that resources should be protected and untouched by humans. Management is also a component of conservation that usually means controlling, directing or manipulating wildlife populations and/or their habitats (Yarrow 2009). Wildlife managers usually seek to increase a population, decrease a population, or to stabilize a population (Anderson 2002). This is so that individuals can be removed on a continuing basis, making sure that enough members remain in the population to replace those that are removed (Yarrow 2009).

There is also a management strategy known as a passive management strategy. This strategy is used in wildlife management when wildlife populations decrease to the point that they are in danger of extinction (Yarrow 2009). When dealing with wildlife

management in this sense it is important to note that an undisturbed ecosystem is not always a stable one. Natural changes in the plant community constantly create different habitats for different species of wildlife. As systems change over time, conditions may not remain suitable for certain species of wildlife. The key to all wildlife management is that all resource management decisions are based on creating and maintaining sufficient habitat (Yarrow 2009)

MANAGEMENT PLAN EXAMPLES

Management decisions are sometimes directed at individual species, but they will still reflect the needs of whole ecosystems. Since humans and wildlife can come into conflict, wildlife management must be flexible in considering ecological, social and economic factors (OMNRF 2012-2017). In Ontario, a landscape-based adaptive approach to wildlife management is used. This includes “population monitoring, harvest planning and allocation, hunter activity, harvest monitoring, research, habitat conservation and planning, input from the public and policy regulation” (OMNRF 2012-2017). Many different management plans are currently in place using this approach. These plans include *Alces alces* (North American moose), *Ursus americana* (black bear), *Canis lupus* (gray wolf) management plans.

The first plan mentioned is the moose management plan. Moose are icons in Ontario’s northern forests. Moose contribute substantial social, economic and ecological benefits to the people of Ontario (OMNRF 2009b). The moose management plan aims to contribute to the conservation of moose and their habitat and will assist Ontario in

achieving biodiversity conservation goals. The goal of the moose management plan is to “ensure sustainable moose populations as well as the ecosystem on which they rely. Doing so allows for the continuous provision of ecological, cultural, economic and social benefits for the people of Ontario” (OMNRF 2009b). In order to achieve this goal, five strategies have to be executed. These strategies include “developing and maintaining legislation and policy, creating population objectives (finding the desired range for the moose), maintaining population management (maintaining sustainable moose populations by hunting), performing population assessments (understanding the abundance of moose) and finally managing the moose habitat” (OMNRF 2009b). All these factors make up the moose management plan.

The second plan mentioned was the black bear management plan, Black bears are highly valued and unique members of Ontario’s wildlife heritage; they are symbols of the wilderness and are an integral part of a functioning ecosystem, as well as a key component in Ontario’s biodiversity (OMNRF 2009a). The black bear management plans’ goal is similar to the moose management goal as they both are in place to maintain sustainable populations and ecosystems (OMNRF 2009a). The plans, however are still slightly different. The black bear management plan has a few more difficult challenges that make it harder to manage than moose. These challenges include “the black bears slow rate of recovery from low population levels, the difficulty to estimate black bear population levels, various human and bear conflicts, the wide range and diversity of interest and opinion across Ontario in the understanding of black bears and their role in their ecosystem, and that black bears are opportunistic predators and competitors” (OMNRF 2009a). The Ontario black bear management plan has six main

objectives it addresses which are; “maintain sustainable black bear populations on the landscape, provide the quality and quantity of black bear habitat, provide socio-economic benefits through the allocation of the black bear resource, enhance public awareness and understanding of black bear management and biology, reduce human-bear conflicts through prevention, education and awareness, and finally provide an effective policy and legislative framework” (OMNRF 2009a). This framework will provide for the ecologically-based sustainable management of Ontario’s black bears (OMNRF 2009a).

The third plan mentioned was the wolf conservation strategy plan. Wolves are intriguing members of Ontario’s forests because, just like the black bear, they are symbols of wilderness and play an integral part in a functioning ecosystem. Their population numbers have been decreasing due to changing land use, resource management practice and climatic factors (OMNRF 2005). The wolf conservation strategy plan goals are the same as both the moose and black bear management plan; “to ensure ecologically sustainable populations for each aforementioned species” (OMNRF 2005). Just like for the black bears, Ontario faced many challenges when developing a strong wolf strategy plan. These challenges included “difficulty estimating their population numbers, identifying appropriate scale and quantity of information, managing a top predator that may be seen as a competitor with humans, understanding the cumulative effects of other conservation actions, and the considerable range in understanding about wolves and their role in an ecosystem” (OMNRF 2005). The Ontario Ministry of Natural Resources has added three objectives to come out of this management plan and they are to “ensure ecologically sustainable wolf populations,

provide for social, cultural and economic benefits based on ecologically sustainable wolf populations and to increase public awareness and understanding” (OMNRF 2005).

It is clear that all these management plans have their similarities and differences. Hunting is a shared aspect between all three management plans. They also, all have the same goal of trying to conserve a species for the benefit of not only said species’ but for humans as well.

PUBLIC OPINION ON WILDLIFE ISSUES

Wildlife management plans all across North America have one common factor that is to be evaluated. This factor is public opinion and awareness. Current wildlife management planning teams try to incorporate as much public opinion as they can before they implement management plans.

The management of wildlife ultimately depends on public acceptance of management actions and policies (Zinn et al. 1998). Public opposition can lead to long-term policy changes that redefine the options available to managers. For example, public sentiment led to a legislative ban on relocating bears in Colorado as well as ballot initiatives banning mountain lion hunting in California (Zinn et al. 1998). Widespread public involvement in wildlife management issues appears to be a product of changing demographics, more diverse values and the rise of politically effective interest groups. The public increasingly demands and expects participatory decision making. However, these broad social changes have not changed much in wildlife management as they are still based mainly off biological information and professional judgement (Zinn et al. 1998). The combination of social change and the associated change in values toward

wildlife and its use creates the importance for concentrated effort in the human dimension's aspects of wildlife management. The nature and rate of changes in people's beliefs and attitudes about human-environment relations and especially people-wildlife interactions contribute greatly to the challenge of wildlife management (Decker and Enck 1996).

The public's feelings on many wildlife management solutions can also affect wildlife management plans. A survey conducted in Washington, USA wanted to get the public's opinion on different wildlife management plans including hunting. One question that was on the survey was whether people were in support of or opposed to hunting. About 82% of the Washington residents approved of legal, regulated hunting and only 12% disapproved. Most of the approval was considered to be strong approval (51%) (Responsive Management 2008). Those who disapproved of hunting typically gave an animal rights answer or that they did not agree with killing animals. People who disapproved of hunting also made note that nothing would change their mind even though hunting could possibly be for controlling populations. Another interesting question asked in this article was about the public's opinions on predator management in general. The survey asked whether people supported or opposed the reduction of predators. 65% said they were in support of reducing predators for the health of threatened or endangered species, 62% for human safety and 50% supported it for protecting pets and domestic animals (Responsive Management 2008). The researchers continued to ask questions about how the public felt about different species of animals. One important question they asked was how did people obtain sources of information on wildlife management. Unfortunately, just under a third (only 31%) of Washington

residents had seen or heard information about how Washington manages its wild animal populations; about 69% of Washington residents had not seen or heard of any information at all (Responsive Management 2008).

Gender can also have an impact on the opinions formed toward wildlife management plans. Studies conducted by Kellert et al. (1987) found that gender was the most significant indicator of people's viewpoints about animals (Kellert et al. 1987). Women typically wanted to protect animals from suffering and had little interest in (or a dislike for) killing wildlife and controlling animals through intensive training. Men typically wanted direct contact with wildlife and the outdoors and accepted killing wildlife for meat, fur and predator control. These types of views were consistent with the views between people that worked with animals and the rest of the public (Kellert et al. 1987).

Wildlife professionals of different genders have different views on wildlife management. In the studies conducted by Sanborn and Schmidt (1995), they noted that pest management had been dominated by concern for reducing problems in a cost-effective manner, which often means using lethal management techniques (Sanborn and Schmidt 1995). Male wildlife professionals had more of a traditional attitude toward wildlife management issues and techniques than women. Male respondents were more likely to consider lethal techniques like shooting and trapping to be acceptable tools for wildlife management. Women, on the other hand, had a less traditional way of thinking towards wildlife management. Women respondents still believed that shooting was an acceptable form of lethal management, however, they believed much less strongly than that of men (Sanborn and Schmidt 1995).

MATERIALS AND METHODS

This thesis discusses how public opinion can negatively impact wildlife management plans. In order to demonstrate this, this thesis discusses three aspects. These aspects include current management plans in Ontario, public opinion about wildlife management techniques, and five case studies. The five case studies include the Ontario spring bear hunt, Point Pelee National Park's annual cull of double-crested cormorants, Point Pelee National Park's annual cull of white-tailed deer, feral horses in the western United States and attitudes toward wolves in the United States and Canada.

The first topic discussed in this thesis is three lists of management plans found in Ontario. These management plans include the moose management plan, the black bear management plan, and the wolf conservation strategy plan. These three plans were chosen to be discussed because they are all very similar. They all introduce the reader to the types of management plans found in Ontario. All three management plans are found on the Ontario government website. In order to choose which management plans were relevant to this thesis, every management plan available on the Ontario government website was assessed. Once all the management plans on the website were read, the top three most similar management plans were chosen as three plans was a reasonable number to gather enough information.

The second topic discussed in this thesis is about the public opinion towards wildlife management techniques. This thesis discusses why public opinion is important and how social changes have contributed to the public being more involved in wildlife

management decisions. In order to gather information on the public becoming more involved, academic journals from the data base JSTOR were looked at using keywords such as public, opinion, wildlife management, social, and involvement in order to narrow the search. Differing views from the public on hunting is also discussed. These views demonstrate the negative opinions some people have towards hunting. To gather information on the negative opinions people have towards hunting, a study conducted for the Washington Department of Fish and Wildlife was read and evaluated. Additional information was gathered from active organizations that regularly voice their opinions on wildlife issues. The final topic discussed, which involved negative public opinion towards wildlife management techniques, was the role gender played in the thoughts of people. This topic was chosen because it was proved to have an influence on the public's opinions towards wildlife management techniques, specifically towards hunting. In order to gather information on the roles that gender can play on public opinion, academic journals from the database JSTOR were looked up using keywords such as public, opinion, wildlife, management, impacts, hunting, and gender which narrowed the search.

The final topic discussed in this thesis were the five case studies. The purpose of these case studies was to examine the different ways the public views management plans.

The first three case studies that were examined were all located in Ontario. These case studies included the Ontario spring bear hunt, Point Pelee National Park's annual cull of double-crested cormorants, and Point Pelee National Park's annual cull of white-tailed deer. These case studies were all chosen because of their shared aspect of an overabundant population that is currently undergoing a drastic management plan in order

to reduce population numbers. Each case study also demonstrates that there is a negative public stance towards the chosen management plan in place.

In order to narrow the search to find these three case studies, key words such as overabundant, populations, wildlife, management, hunting, cull, public, opinion, negative and Ontario were used. After careful consideration of a variety of different examples, the three relevant case studies were chosen for this thesis. These three case studies all demonstrated strong similarities to one another in terms of the management plan in place and the negative public opinion expressed towards the management plan.

For the Ontario spring bear hunt case study, information was gathered using multiple resources. Academic journals found from search engines such as google scholar were used as well. These journals were discovered using key words such as Ontario, spring bear hunt, overabundant, black bear, impacts, public, and opinion. Data that explored the opinions of the public were found from online news articles.

For the Point Pelee National Park's annual cull of double-crested cormorants case study, information was mainly gathered from the Point Pelee National Park of Canada Middle Island Conservation Plan which is found on the Parks Canada, Government of Canada web page. This information was used to understand the implications of the overabundant population of the double-crested cormorant. Additional information gathered on the negative public opinion towards the management plan came from active organizations that are currently attempting to disrupt the management plan. These organizations were discovered through an internet search using keywords such as double-crested cormorants, cull, public, opinion, government, and animal rights.

The final Ontario case study discussed was Point Pelee National Park's annual cull of white-tailed deer. Information gathered for this case study came directly from Point Pelee National Park in the form of an informational pamphlet. This pamphlet discusses the negative effects the deer have on the ecosystem and the management techniques required to bring populations to balanced numbers. Information gathered about the negative public opinion toward the management plan was gathered from news articles found online as well as from an organization known as the Peaceful Parks Coalition, whom is actively petitioning against the management plan.

The final two case studies discussed in this thesis were located in the United States. The two American case studies chosen were the feral horses in the western United States and the attitudes toward wolves in the United States. These two studies were chosen because they both tied to the idea of killing a species that is considered to be overabundant.

In order to gather information on the feral horses found in the western United States, academic journals from the database JSTOR were examined. Key words such as feral horses, overabundant, damage, ecosystem health, BLM, and species at risk were used to narrow the search. Information from the National Horse and Burro Rangeland Management Coalition (the management team) was also gathered.

The information from the wolf case study was gathered from a study conducted by Houston et al. (2010) which was found on the Lakehead University Library web database. Key words used to narrow the search included wildlife, public, opinion, management, study, and United States.

This thesis discusses different management plans currently in place in Ontario, different public opinions towards wildlife management techniques and a variety of case studies. The current management plans that are discussed in this thesis provide the reader with examples of management plans currently in place in Ontario that are in place to control and balance populations. The moose, black bear, and wolf management plans all share a similar goal of keeping balanced populations for healthy ecosystems. These plans all involve hunting as a means for management purposes. The public opinion component of this thesis is important to discuss as it demonstrates the negative thoughts the public has towards hunting. It also provides examples of how the public can impact wildlife management techniques. The case studies discussed in this thesis all demonstrate a management plan that is currently in place in order to balance the overabundant populations of the species in question, due to the damaging effects they have on their ecosystems. They all share a similar management plan which includes hunting or an annual cull.

RESULTS

Hunting and culls have always been surrounded by controversy with much of the public not agreeing with them. The public, in general, has a limited knowledge of hunting (Andelt et al. 1999). In a survey conducted by the Missouri Department of Conservation, only 22-42% of the survey respondents indicated their support for hunting (Andelt et al. 1999). In general, the public has negative attitudes towards hunting; the same can be said for annual culls (Andelt et al. 1999).

Even though there is a lot of negative opinions directed towards hunting and culls, they are of vital importance for wildlife management plans. Hunting is important for several reasons:

- 1) to protect natural habitat, farmland, roads and other property from wildlife damage;
- 2) for disease control (such as rabies);
- 3) to maintain or improve biodiversity of both animals and plants;
- 4) to protect vulnerable species from over-abundant predators or competing species;
- 5) for public safety;
- 6) to safely remove wildlife in urban and suburban areas;
- 7) for reintroducing species to their historical territories;
- 8) for conservation research;
- 9) for environmental and wildlife monitoring;
- 10) for furs and food. (MSIA 2015)

Five case studies were examined for this thesis, all of which involved hunting, or an annual cull as a way of a wildlife management technique. All five case studies also involved a lot of controversy involving public feelings towards the selected management plan. The first three case studies discussed are currently in place and located in Ontario. They included the Ontario spring bear hunt, Point Pelee National Park's annual cull of double-crested cormorants and Point Pelee National Park's annual cull of white-tailed deer. The two case studies following the Ontario case studies are more of a long-term management approach and are located in the United States. Each of the five case studies demonstrate the importance of the selected wildlife management method as well as opposing opinions from the public and the changes this controversy made to the management plans.

ONTARIO SPRING BEAR HUNT

The Ontario spring bear hunt provides individual, social, cultural, economic and biological benefits (Hristienko and McDonald 2007). It is an example of sustainable development in practice, where the benefits from a renewable natural resource are maximized and the costs to society are minimized (Hristienko and McDonald 2007).

In 1999, the black bear hunt was cancelled by Progressive Conservative Premier Mike Harris (Reeves 2014). In 2014, a 6-week pilot project was initiated in only eight wildlife management units around Timmins, Sudbury, Thunder Bay, North Bay and Sault Ste. Marie. Each Ontario resident would be allowed to hunt and kill one black bear in either the spring or fall season (Reeves 2014).

The spring bear hunt has successfully reduced bear densities, particularly male bears (LeCount 1987). The high rates of cub orphaning and mortality is also decreased with the spring bear hunt. About 20,000 bear cubs are born every year in Ontario and less than half these cubs will die before the age of one, for reasons that have nothing to do with hunting (LeCount 1987). The most frequent causes of cub mortality are from starvation and cannibalism by male bears (LeCount 1987).

There are many benefits to bringing back the spring bear hunt. Darrel Sydney, a resident from Dryden, Ontario, wrote a 'letter to the editor' article for the Chronicle Journal. He believes there are two strong reasons for bringing back the spring black bear hunt. These include the fact that it provides economic value and has a positive social effect. (Sydney 2015). The first reason is for the economic benefits. The hunt puts millions of dollars into Ontario's economy directly through the sale of licenses, tourist accommodations, guide fees, restaurant meals, souvenirs and gas sales. The second being that it will have a positive social effect because it helps to create hundreds of part-time jobs and it will probably help to lower the number of nuisance bears in rural areas. This in turn alleviates the stress of having to worry about bear damage to properties or unwanted encounters between humans and bears (Sydney 2015).

The controversy with the spring bear hunt began with animal rights activist organizations that claim over 270 bear cubs are orphaned by hunters every year in the spring. However, this is a deliberate misrepresentation of government data, and even caused the Ministry of Natural Resources and Forestry to issue a statement clarifying that accidental cub orphaning by hunters is extremely rare and that the number used by anti-hunters is grossly exaggerated (Reeves 2014). Shooting cubs or mothers

accompanied by cubs has always been illegal under the Fish and Wildlife Conservation Act and methods do exist to further minimize accidental cub orphaning by hunters (Fish and Wildlife Conservation Act 1997).

In April of 2014, two animal rights groups were planning to take the Ontario government to court to stop the spring bear hunt pilot program before it began, alleging it amounted to animal cruelty (Jones 2014). The two groups, known as Animal Alliance of Canada and Zoocheck Canada said that mother bears will be killed during the hunt which will leave their orphaned cubs to starve or be killed by predators. The animal rights groups filed an application for judicial review and a notice of constitutional question and were set to head to court on April 29, days before the start of the program. The activists were hoping the courts would at least delay the start of the hunt (Jones 2014). Even celebrity environmentalist and former *The Price is Right* game show host, Bob Barker, showed his dislike for the hunt by lashing out at the Ontario government. In a statement issued by Barker he said, “I’m shocked that Ontario would return to the barbaric, unethical practice of hunting bears in the spring, a move that will most certainly result in tiny cubs starving to death. It’s not sport, its legislated cruelty.” (Reeves 2014).

Natural Resources Minister at the time, David Oraziotti, was a strong supporter of the spring bear hunt as he believed in the safety of public residents as well as for a strong management method. He made points to say that in northern Ontario, it is not responsible for a provincial government to ignore the concerns of thousands of residents who are concerned about their public safety (Jones 2014). The bears are such a problem in northern Ontario that young children cannot go out for recess and teachers must wear

bear whistles. Almost 50 mayors and city councils across northern Ontario had passed resolutions calling for their participation in the program. Out of 95 wildlife management units in Ontario, the pilot program was in eight (Jones 2014). Oraziatti also made a point to say that some people who are completely unaffected by this issue and whose children may be perfectly safe in the schools they attend truly have no understanding of the implications and the safety challenges in communities in northern Ontario (Jones 2014). The public that is most against the spring bear hunt are the ones that do not have a strong understanding of its benefits or of the true threat an overpopulation of bears can pose to humans.

POINT PELEE NATIONAL PARK ANNUAL DOUBLE-CRESTED CORMORANT CULL

In 1999, the Nature Conservancy of Canada purchased Middle Island because of its significant native Carolinian vegetation communities, including rare and endangered species (Dobbie 2008). Ownership was transferred to Parks Canada and the island became part of Point Pelee National Park in 2000.

The island supports a large colony of various water birds, and a wide diversity of plant species. The island is home to many rare and endangered species including nine that are nationally recognized as species at risk (Dobbie 2008). Middle Island is an important resting stopover during bird and butterfly migrations during the spring and fall seasons. These birds and butterflies, often called migratory pollinators, need the food and shelter provided on the island to survive their long journey. Many other species,

spread over large areas, depend on migratory pollinators for their own continued health. Protecting the species at risk on Middle Island will help maintain biodiversity on the island and preserve an important part of Canada's natural and cultural heritage for future generations (Dobbie 2008).

Middle Island is also home to an excessive population of *Phalacrocorax auritus*, the double-crested cormorant (refer to Figure 2 in the appendix) (Dobbie 2008). These birds physically damage trees through their nesting habits (refer to Figure 3 in the appendix) and deposit large amounts of guano on both the trees and vegetation below. The nesting habits of this over-abundant nesting colony is altering Middle Island's ecosystem, making it difficult for the species at risk to survive (Dobbie 2008).

The double-crested cormorant is a relatively large, migratory water bird and is the most abundant of the six cormorant species nesting in North America (Dobbie 2008). Double-crested cormorants nest across the continent in numbers estimated between one and two million birds. Population levels of the cormorants have fluctuated over the years, however they are currently experiencing a dramatic increase. There are four main events that are believed to have caused this increase; "banning of the organochlorine pesticides (e.g. DDT), the reduced hostility when the species was included in the Migratory Birds Treaty Act, changes in fish populations in the Great Lakes and an increased overwinter survival linked to abundant food sources" (Dobbie 2008). The total population in the Canadian and U.S. Great Lakes region was 113,000 pairs in 2005 (Dobbie 2008).

Research and monitoring provides clear evidence that the current nest density of the double-crested cormorant colony poses a significant and ongoing threat to the

ecological integrity of Middle Island, including the nine species at risk protected under the federal Species at Risk Act (Dobbie 2008). Double-crested cormorants impact trees with the deposition of guano on trees, leaves and soil, which can affect photosynthesis and soil chemistry. They also impact trees in their breeding colonies through physical breaking of branches and stripping of foliage for nesting material and through the combined weight of the birds and their nests. Roosting and loafing activities of double-crested cormorants can also cause impacts to vegetation, especially in the late summer and fall when the numbers of birds can increase dramatically with the arrival of migrants and the addition of fledglings (Dobbie 2008).

This research and monitoring has concluded that the nesting population of double-crested cormorants of Middle Island is hyper-abundant. Between 1995 and 2006, a 41% loss of dense forest canopy had been recorded on Middle Island through a study to quantitatively assess the relationship between the distribution of double-crested cormorant nests and forest health (Dobbie 2008). Further studies and inventories have shown that cascading effects of the nesting activities of the double-crested cormorant have changed the structure, composition and function of Middle Island's native Carolinian ecosystem. Documented impacts included the elimination or reduced diversity of understory vegetation assemblages, changes in the distribution and/or composition of native fauna species, and changes to soil chemistry (Dobbie 2008).

These ecological impacts emphasize the need for an effective management program to manage the number of double-crested cormorant nests on Middle Island (Dobbie 2008). The option of doing nothing is inconsistent with Parks Canada's legislative mandate to maintain and restore ecological integrity in national parks. The

Middle Island Conservation Plan is a five-year plan that describes the science, research, and outlines the goals for saving the island from the effects of the hyper-abundant nesting population of double-crested cormorants (Dobbie 2008). The Middle Island Conservation Plan includes a cull of adult double-crested cormorants, placement of scarecrows in trees as deterrents, and nest removals in order to reduce the number of nesting double-crested cormorants to a level the island's ecosystem can support (Dobbie 2008).

Even though valid research and monitoring prove that the over-abundant double-crested cormorants are impacting the forests on Middle Island, there has been a great deal of public outcry. Animal activist group Zoocheck Canada has an entire page on the cormorant issue and attacks wildlife managers for their decision to kill the birds. Zoocheck believes that wildlife managers are spreading a "great deal of misinformation about cormorants" (Zoocheck 2017). They also believe that the most significant threat to double-crested cormorants are the very agencies charged with their protection; these agencies being Point Pelee National Park, Parks Canada and the Ontario Ministry of Natural Resources and Forestry. Zoocheck gives false information in their article, indicating that Point Pelee National Park is planning on wiping out the birds on the island and that thousands of birds were targeted for the cull. They said that the Park does not plan to stop, although the plan for the cull is to only be for five years. The activists state that the birds pose no threat to the endangered species found on the island, despite the scientific evidence collected by wildlife managers and scientists that have worked on the island (Zoocheck 2017). Zoocheck believes that "slaughtering a native water bird species is unscientific, unethical and unnecessary and not the best way to use the limited

budgets of fish and wildlife departments”, however countless studies have indicated the over populated species is destroying the natural ecosystem (Zoocheck 2017).

Many media outlets are taking a negative stance towards the cull of the cormorants. A lot of news articles are portraying the government as the antagonist and praise the “remarkably resilient bird” (Walkom 2016). The articles do not seem to address the growing concern that scientists feel towards the species at risk that the cormorants, an over-abundant species, are impacting. The media and animal activist groups have a strong voice and can influence people into believing what they feel is right; whether science backs their opinion or not. Petitions have been turned in to the Ontario government to try and stop the double-crested cormorant cull with signatures from all over Ontario, even from areas nowhere near Point Pelee National Park. In 2008, a legal challenge was made at the federal court level to delay the cull. This resulted in less birds being killed causing the plan to not meet the requirements to allow the cormorants to be at a healthy population (Zoocheck 2017). With more of the public turning their backs on the cull of these birds, more interferences in their respective wildlife management plan is likely to come in the future.

POINT PELEE NATIONAL PARK ANNUAL WHITE-TAILED DEER CULL

Point Pelee National Park was established in 1918 and is located in Essex County where less than 6% of the country’s native forest cover and only 3% of its original wetlands remain (PPNP n.d). As one of Canada’s smallest national parks at just 15.5

square kilometres, this park is home to diverse ecosystems including rare Carolinian forest and savannah and over forty species at risk, including the *Celtis tenuifolia* (Dwarf Hackberry) and *Morus rubra* (Red Mulberry) trees (PPNP n.d). Park researchers believe that the over-abundance of *Odocoileus virginianus*, white-tailed deer (refer to Figure 4 in the appendix), in the area are damaging the unique forest found here. When an ecosystem, such as forest or a savannah is healthy, its community of plants, animals and other organisms are also healthy, and its biological and physical processes function naturally for the long-term (PPNP n.d). At Point Pelee National Park, the forest and savannah ecosystems are at risk for a variety of reasons. Research and monitoring since the 1980's have shown that large populations of white-tailed deer are having a significant impact on the natural regeneration of plant communities in the park. This monitoring shows that high population numbers of deer are seriously damaging these fragile ecosystems and are further endangering species at risk (PPNP n.d).

White-tailed deer are a native species to Southwestern Ontario and to Point Pelee National Park. However, because of the abundance of leafy canopy to eat, mild winters and most importantly, a lack of natural predators such as wolves, bears and cougars; deer numbers in the park have increased dramatically since the 1960's (PPNP n.d). Over time, an overabundance of deer can change the composition of the forest, as deer eat young trees and shrubs (Pendergast et al. 2016). These trees and shrubs are home to a wide variety of animals. If their habitat is lost, park animal populations could be seriously affected. *Taxus Canadensis* (Canada yew) is a native shrub that is a preferred food choice for deer. It was once found at Point Pelee National Park but disappeared once the deer population numbers rose.

The current high deer population is also jeopardising the success of Point Pelee National Park's restoration objectives, including the recovery of the globally rare Lake Erie Sand Spit Savannah ecosystem that sustains 25% of the species at risk in the park (PPNP n.d). Restored savannah areas with thousands of newly planted native species are irresistible to deer. A high deer population will quickly undo the hard work of hundreds of local volunteers from schools, businesses and First Nations who have worked diligently to collect seeds, grow and plant native savannah species, and pull invasive exotic species in restoration areas. The deer population in the park will continue to grow and impact the park unless the population is properly managed (PPNP n.d).

At Point Pelee National Park, many species at risk depend on the different plant communities, particularly in the forest and savannah ecosystems (PPNP n.d). The optimal number of deer that can be maintained in the park without damaging the health of these ecosystems has been estimated through research, monitoring and literature review to be at approximately twenty-four to thirty-two deer, which is far less than the current deer population. In order to solve this problem, Parks Canada and Caldwell First Nation are collaborating to reduce the deer population in Point Pelee National Park in order to maintain sustainable population levels. The deer that are culled will be used by Caldwell First Nation for personal, community and ceremonial purposes, and will not be sold for profit (PPNP n.d).

The deer reduction program in the park is planned for 2015 to 2018 and will bring the deer herd population down to a target density of six to eight per square kilometre (PPNP n.d). Once deer numbers are close to this target, detailed vegetation monitoring will be used to determine the optimal deer density for the park. Parks

Canada's goal is to have a balanced ecosystem at Point Pelee National Park where healthy vegetation communities thrive alongside smaller deer populations (PPNP n.d).

Even though the deer cull will most likely allow the forests to replenish themselves and become healthy again, a strong majority of the public is against the idea of killing deer and find it to be a form of animal cruelty. Many people have shown their disapproval towards the deer cull, with many writing letters to the Ontario government. The organization known as the peaceful parks coalition has an email online that is pre-written and all a person has to do is sign and send it in. The letter explains the horror one may feel towards Ontario Park's for the proposed killing program of white-tailed deer. The letter mentions that parks are supposed to be a safe haven for wildlife and not a "slaughter of native wildlife based on the discretion of government wildlife managers" (Peaceful Parks Coalition n.d). The letter addresses that the park staff have ruined the populations of white-tailed deer and that since they are native, they play a vital role in the ecological stability. The letter mentions that Ontario Parks has no scientific evidence that wildlife populations can exceed natural limits. This letter can be faxed or mailed straight to the government and clearly proves the lack of knowledge on the subject. The organization also has its disagreements on other wildlife management plans such as the spring bear hunt and the annual cormorant cull.

The media has also had a more negative take on the white-tailed deer problem. Many articles written seem to show a negative bias towards to culls. The articles put key words in quotation marks like "overabundant" and "population reduction" almost as if to mock what the professionals are saying (The Canadian Press 2017). The negativity is working however, with many people commenting on the articles showing their disgust in

what Parks Canada is planning. As of right now, no changes have been made to the plan to cull the deer, however, public concern is growing rapidly with this issue and may very easily shut down the management plan before its effects can be seen. It is clear sign of emotion coming between what is best for an ecosystem.

FERAL HORSES IN THE WESTERN UNITED STATES

Feral horses in the Western United States are a serious management problem. The range in which they live on can support about 27,000 individual horses, however, there are currently 67,000 individuals (NHBRIC 2015). Their population numbers tend to double every four years. There are about 46,000 individuals in holdings but it costs about \$50 million per year in tax payer's dollars to hold them there. Feral horses have a negative impact on the native wildlife found in the area. Species such as elk, mule deer, sage-grouse, bighorn sheep and other small mammals and reptiles depend on the habitat that the feral horses are destroying (NHBRIC 2015). The feral horses compete with other species for food and water and they tend to be more dominant (Glover 2001). Studies show that bighorn sheep will not approach watering sites if feral horses are present. Feral horses trample over vegetation as well, which is a serious problem for greater sage-grouse (NHBRIC 2015). The grouse depends on long grasses to hide their nests, but since the feral horses are destroying the grass, a lot of nests are exposed. Ants are also affected by their grazing habits. Ants act as decomposers and soil aerators, however they are not noticeably present when feral horses are around. Ant mounds are 2.2-8.4 times more abundant with no horses around (NHBRIC 2015). Feral horses are

also at risk of starvation because they must compete with each other for food (Glover 2001). Different management plans have been attempted but each have their own negative outcomes. The most obvious choice with the least amount of consequences would be to remove the feral horses until they are at stable population levels. However, the Bureau of Land Management (BLM), as well as general public opinion, does not agree with euthanasia as a humane management option (NHBRIC 2015). It has been identified as an appropriate management tool, but the BLM chooses to use alternative options that are not very effective (NHBRIC 2015).

ATTITUDES TOWARD WOLVES IN THE UNITED STATES AND CANADA

A study done by Houston et al. (2010) shows the attitudes the public has towards wolves. They focused their study on the gray wolf. They mentioned that research indicated that experience with wolves and proximity to wolf territories are negative toward the predator (Houston et al. 2010). Many negative expressions that they found people had were the beliefs that wolves negatively impact human activities and the judgement that wolves should be killed or controlled. About 27.9% of people felt this way whereas 9.7% of people felt that wolves were overabundant and 2.3% said wolves negatively impact ecosystems. Only 14.9% of people believed that wolves should be protected.

A lot of the public's attitude towards the wolf population was influenced by the media. Between 1999 and 2008, the media presented concerns on the impacts wolves had on human activities and whether humans should kill them to control their negative

impacts (Houston et al. 2010). In April of 2009, the Fish and Wildlife Service decided to delist the gray wolves in the Northern Rocky Mountains region from protection.

Houston et al. (2010) concluded that the attitudes towards wolves had changed without thorough research. All in all, the study proved that public opinion played a vital role on the feelings towards wolves and how the management plan was to be dealt with.

DISCUSSION

This thesis has covered many topics involving wildlife management plans. Topics covered include current wildlife management plans in Ontario, public opinion towards management plan techniques and five cases studies in North America.

One of the first topics discussed in the thesis was the current management plans in Ontario. The purpose of the management plans chosen, was to demonstrate similar management plans that use hunting as a management technique. The management plans that were discussed included the moose management plan, the black bear management plan and the wolf conservation strategy plan. Each of these management plans share a similar goal to “ensure sustainable populations as well as the ecosystem on which the animal relies. Doing so allows for the continuous provision of ecological, cultural, economic and social benefits for the people of Ontario.” (OMNR 2009a).

The second topic discussed in this thesis is the public opinion towards wildlife management techniques. It was found that the public seemed to take a more negative stance towards hunting or culls as management techniques. Public opinion is a standard step in wildlife management plans as it is in all natural resource projects (Andelt 1999). The public has every right to be involved in wildlife management plans as they pay for most of them through tax payer’s dollars. Wildlife lives on public land so the public cannot be neglected and all information on different management strategies must be made available for anyone to see if requested (Andelt 1999). It is, however important to note that just because the public is entitled to speak their mind does not mean that they

will win over science. The problem comes down to the fact that if the public cause a big enough commotion and interfere enough, they can cause changes to wildlife management plans, which in some cases is not always beneficial to different ecosystems (Responsive management 2008).

The third topic discussed in this thesis was five different case studies. The first three case studies discussed are currently in Ontario. These case studies all include hunting or culls as a management technique. The case studies also demonstrate a lot of negative public opinion towards the management plans. In the Ontario examples, it seems that the public is strongly influenced by animal activist groups as well as media outlets. Many people are quick to believe what these organizations are saying before they read what the scientists and wildlife managers are saying. It is also important to note that a lot of people that voice their opinions negatively towards a management plan might be people that could potentially not be affected by the animal in question (Reeves 2014). For example, the spring bear hunt had a lot of controversy surrounding it, however the negative opinions were from a majority of people in southern Ontario whom do not deal with bears (Reeves 2014). The double-crested cormorant cull deals with the same controversy, with people being against the cull that do not visit Middle Island regularly so they do not see the damaging effects the birds cause to the ecosystem (Walkom 2016). The deer culls that occur at Point Pelee National Park are protested against, even though most people protesting are not local to the area (The Canadian Press 2017). Many people, in all three cases in Ontario, do not see the impacts the over-abundant species are causing to their ecosystems; they only see the fact that these animals are being killed.

The final two case studies in this thesis are located in the United States. Both case studies were very similar as they both discussed killing as a management techniques and expressed the negative views from the public.

In the case study with the feral horses, the horses are damaging the soils and vegetation (NHBRMC 2015). They are depleting the water resources because of their need to drink so much water in a dry area. They compete with other native species for resources and space, driving other species to lower in population numbers. They even compete with themselves, with many on the verge of starvation (NHBRMC 2015). One of the best management strategies to be discussed would be to have a cull to remove some of the horses since the population is exploding. The public, however, has demanded that this not happen as it is inhumane and cruel (NHBRMC 2015). What the public does not seem to understand is the science and research behind the decision and the fact that an over-abundant horse population is not only hurting the fragile ecosystem but their own species as well.

The United States of America is also having problems with wolves, with many conflicting public opinions. Some believe the wolves to be a nuisance and wanted to be able to hunt freely while others believe they should be protected and not be allowed to be hunted (Houston et al. 2010). With this type of management, it is important to have a balance. Having an over-abundant predator in an area is dangerous to an ecosystem as well as to people. In this instance, hunting is an important tool to make sure that the wolf population in these areas do not exceed their sustainable amount, however restrictions are put on to make sure that hunters do not go over board as well (Houston et al. 2010).

Even with this equal balance between conflicting opinions, there is still controversy involving this wildlife management plan.

Every topic discussed in this thesis demonstrate that sometimes crucial management techniques are not fully supported by the public.

CONCLUSION

In conclusion, this thesis shows that public opinion can have a negative impact on wildlife management plans. In all five cases discussed in this thesis, the overall public opinion seems to be against the wildlife management plan. Wildlife management plans take years of scientific research and monitoring before they are put into place. Many professionals are involved in the process of a wildlife management plan and only want, in the end, what will be best for the overall health of an ecosystem, including the species in question. Many people do not seem to think of the time and effort put into a plan or the scientific studies that prove a wildlife management decision must be made. The public needs to understand that sometimes in order to save a species, especially species at risk, drastic measures have to be made. This can even be said about trying to protect the same species the management plan is about. In the case of the spring bear hunt, not only was this hunt brought back because of fear for human safety, but it was also to protect the bears from their over-populated numbers.

All in all, the public needs to understand that wildlife management plans have solid research and monitoring behind them, as well as professionals that truly want what is best for ecosystems. Wildlife managers are in the field they are in so they can keep a balance within nature while still allowing humans to continue their productive ways with our natural resources. If we, as humans, wish to use natural resources for our benefit, then it is important that ecosystems are balanced. Over-populations of species are mostly due to lack of predators or human interference, so it is important that wildlife managers do their research and carry out the best management plan that will balance the ecosystem

once more. With more knowledge and understanding, the public opinion on wildlife management plans might change which could allow plans to be carried out without interruptions and healthy ecosystems will be more abundant.

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APPENDICES



Figure 1. *Ursus americana* – The American black bear (WWO 2017).



Figure 2. *Phalacrocorax auritus* – double-crested cormorant (CLO 2015).



Figure 3. Over-populated nesting area of the double-crested cormorant (Tommy Thompson Park n.d.).



Figure 4. *Odocoileus virginianus* – white-tailed deer (Fulbright and Ortega 2006).