

**ENVIRONMENTAL ASSESSMENT**

**MANAGING CANADA GOOSE DAMAGE IN THE  
STATE OF NEW YORK**

**Prepared by:**

**United States Department of Agriculture  
Animal and Plant Health Inspection Service  
Wildlife Services**

**In cooperation with:**

**New York State Department of Environmental Conservation,  
Fish and Wildlife**

**United States Department of the Interior, Fish and Wildlife Service**

**New York State Office of Parks, Recreation and Historic Preservation**

**City of New York, Department of Environmental Protection**

**City of New York, Department of Parks and Recreation**

**Port Authority of New York and New Jersey**

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## EXECUTIVE SUMMARY

Wildlife Services (WS) prepared this Environmental Assessment (EA) to facilitate planning, interagency coordination and the streamlining of program management, and to clearly communicate with the public the analysis of individual and cumulative impacts in managing Canada goose damage across the State of New York. The EA describes the need to manage resident Canada geese to reduce and prevent damage associated with these animals in New York; the potential issues associated with managing damage caused by Canada geese; and the environmental consequences of conducting different management alternatives.

Canada geese have many positive values, and they can also cause damage to property, impact agricultural resources, affect natural resources, and pose risks to human health and safety. This EA analyzes the potential environmental impacts of alternatives for United States Department of Agriculture, Animal and Plant Health Inspection Service, WS' response to goose conflicts in New York. Actions proposed in the EA could be conducted on public and private property when the resource owner (property owner) or manager requests assistance, a need for action is confirmed, and agreements specifying the nature and duration of the goose damage management activities to be conducted are completed. This analysis is prepared in cooperation with the New York State Department of Environmental Conservation; the U.S. Department of the Interior, Fish and Wildlife Service; New York State Office of Parks, Recreation and Historic Preservation; City of New York, Department of Environmental Protection; City of New York, Department of Parks and Recreation, and the Port Authority of New York and New Jersey.

In New York, Canada geese have been responsible for an average of \$510,354 per year in reported damage to property, agriculture, human health and safety and natural resources from Fiscal Year (FY) 2011 to FY 2015. In many instances, damage by Canada geese goes unreported. Resident Canada geese, as described in the EA, are the most prevalent damage-causing group responsible for over 75% of damage reports.

Alternatives examined in the EA include an alternative in which WS continues the current Canada goose damage management program (the "no action" alternative and proposed action alternative); an alternative in which WS provides non-lethal Canada goose damage management only; and an alternative in which no Canada goose damage management is conducted by WS. The first alternative, the preferred alternative, evaluates continuation of an integrated goose program that includes use of the full range of non-lethal and lethal bird damage management techniques (Appendix B). WS would use an Integrated Wildlife Damage Management approach including the WS Decision Model to select and apply these techniques, singly or in combination, to meet requester needs to reduce conflicts with geese. Cooperators requesting assistance would be provided with recommendations and information regarding the use of effective non-lethal and lethal techniques. Non-lethal methods recommended and used by WS may include resource management, physical exclusion, human behavior modification, repellents, reproductive control, frightening devices, and other deterrents. Lethal methods recommended and used by WS may include the use of shooting, live capture and transportation to a state - or USDA - regulated poultry processing facility (birds donated for human consumption) and live capture and euthanasia, and nest/egg oiling or removal. All WS activities would continue to be conducted in accordance with applicable state, federal, and local laws and regulations. The EA provides a detailed analysis of the impacts of each alternative on target goose populations; non-target species including state and federally-listed threatened and endangered species; human health and safety, and socio-cultural resources.

An overview of the purpose and need for action related to damage Canada geese could cause to New York's resources are described in Chapter 1. Issues which may affect the implementation of a management program involving federal resources, as well as detailed descriptions of the specific management alternatives are provided in Chapter 2. Environmental consequences for issues analyzed in detail, including direct, indirect, and cumulative impacts, are provided in Chapter 3.

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## LIST OF ABBREVIATIONS

AF	Atlantic Flyway
AFRP	Atlantic Flyway Resident Population
AP	Atlantic Population
APHIS	Animal and Plant Health Inspection Service
AVMA	American Veterinary Medical Association
BBS	U. S. Department of Interior, Geological Survey, Breeding Bird Survey
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
CBC	National Audubon Society, Christmas Bird Count
CDC	Centers for Disease Control and Prevention
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
FAA	Federal Aviation Administration
FDA	U.S. Food and Drug Administration
FEIS	Final Environmental Impact Statement
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FONSI	Finding of No Significant Impact
FR	Federal Register
FY	Federal Fiscal Year
HPAI	Highly Pathogenic Avian Influenza
JFK	John F. Kennedy
LGA	LaGuardia International Airport
MBTA	Migratory Bird Treaty Act
MIS	Management Information System
MOU	Memorandum of Understanding
NAP	North Atlantic Population
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NWRC	USDA, APHIS, Wildlife Services, National Wildlife Research Center
NYCDEP	New York City Department of Environmental Protection
NYSDAM	New York State, Department of Agriculture and Markets
NYSDEC	New York State Department of Environmental Conservation
OPRHP	New York State Office of Parks, Recreation and Historic Preservation
PANYNJ	Port Authority of New York and New Jersey
ROD	Record of Decision
SEIS	Supplemental Environmental Impact Statement
SOPs	Standard Operating Procedures
SJBP	Southern James Bay Population
T&E	Threatened and Endangered
USDA	U.S. Department of Agriculture
USFWS	United States Fish and Wildlife Service
WS	Wildlife Services

## CHAPTER 1: NEED FOR ACTION AND SCOPE OF ANALYSIS

### 1.1 INTRODUCTION

Canada geese migrating in formation have been a harbinger of changing seasons for decades. In the last 30 years, changes to Canada goose populations and the occurrence of non-migratory resident geese have changed people's perceptions of these birds. Geese are now resident throughout much of the Atlantic Flyway, and the problems they create are numerous and create impacts on property, human health and safety, natural resources and agriculture. This Environmental Assessment (EA) will evaluate WS' involvement in managing Canada goose damage and the potential environmental effects of doing so.

Across the United States, wildlife habitat has been substantially changed as human populations expand and land is used for human needs. These human uses and needs often compete with the needs of wildlife which increases the potential for conflicting human/wildlife interactions.

Wildlife damage management is the science of reducing damage or other problems associated with wildlife, and is recognized as an integral part of wildlife management (The Wildlife Society 2015). Human/wildlife conflict issues are complicated by the wide range of public responses to wildlife and wildlife damage. What is unacceptable damage to one person may be the normal cost of living with wildlife to someone else. An individual person will have a unique definition of damage. However, the use of the term *damage* will consistently be used to describe situations where the individual person has determined the losses associated with wildlife is actual damage requiring assistance (i.e., has reached an individual threshold).

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) program is the federal agency authorized to protect American resources from damage associated with wildlife (the Act of March 2, 1931 (46 Stat. 1468; 7 U.S.C. 8351-8352) as amended, and the Act of December 22, 1987 (101 Stat. 1329-331, 7 U.S.C. 8353)). The mission of WS is to provide federal leadership and expertise to resolve wildlife conflicts to allow people and wildlife to coexist (USDA 2015). WS conducts program delivery, research, and other activities through its Regional and State Offices, the National Wildlife Research Center (NWRC) and its Field Stations, as well as through its National Programs. WS' activities are conducted to prevent or reduce wildlife damage to agricultural crops and livestock, private and public property and lands, industrial and natural resources, and threats to public health and safety on private and public lands in cooperation with federal, state and local agencies, tribes, private organizations, and individuals. The WS program uses an integrated wildlife damage management approach (WS Directive 2.105<sup>1</sup>) in which a combination of methods may be used or recommended to reduce wildlife damage. These methods may include non-lethal techniques like public education, changing public perception of wildlife, alteration of cultural practices, habitat management, repellents, frightening devices, and physical exclusion to prevent or reduce damage. The reduction of wildlife damage may also require removal of individual animals, reducing the local animal populations through lethal means. Program activities are not based on punishing offending animals but are conducted to reduce damage and risks to human and livestock health and safety, agriculture, property, and natural resources and are used as part of the WS Decision Model (Slate et al. 1992).

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<sup>1</sup>The WS Program Directives ([https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/sa\\_ws\\_program\\_directives/ct\\_ws\\_dir\\_ch2](https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/sa_ws_program_directives/ct_ws_dir_ch2)) provides guidance for WS personnel to conduct wildlife damage management activities. WS Directives referenced in this EA can be found in the manual but are not referenced in the Literature Cited Appendix.

WS is a cooperatively funded, service-oriented program that receives requests for assistance with wildlife damage management from private and public entities, including tribes and other governmental agencies. As requested, WS cooperates with land and wildlife management agencies to reduce wildlife damage effectively and efficiently in accordance with applicable federal, state, and local laws and Memoranda of Understanding (MOUs) between WS and other agencies.

## **1.2 WILDLIFE SERVICES' LEGISLATIVE AUTHORITY**

WS conducts its programs under the statutory authority found in two acts of Congress: The Act of March 2, 1931 (46 Stat. 1468; 7 U.S.C. 8351-8352) as amended, and The Act of December 22, 1987 (101 Stat. 1329-331, 7 U.S.C. 8353). The Act of March 2, 1931 provided broad authority for investigation, demonstrations, and control of mammalian predators, rodents and birds. It also allowed the Secretary of Interior to conduct a program of wildlife services with respect to injurious animal species and to take any action the Secretary considers necessary in conducting the program. Public Law 99-19, approved December 19, 1985, transferred administration of the Act from the Secretary of the Interior to the Secretary of Agriculture.

The Act of December 22, 1987, authorized the Secretary of Agriculture, with the exception of urban rodent control, to conduct activities and to enter into agreements with states, local jurisdictions, individuals, and public and private agencies, organizations, and institutions in the control of nuisance mammals and birds and those mammal and bird species that are reservoirs for zoonotic diseases. The Act also allows the Secretary of Agriculture to deposit any funds collected under any such agreement into the appropriation accounts that incur the costs, to be available immediately, and to remain available until expended for Animal Damage Control Activities.

## **1.3 METHODS OF FUNDING FOR WILDLIFE SERVICES' PROGRAMS**

Funding for damage management activities would be derived from federal appropriations and through cooperative funding. Activities conducted for the management of damage and threats to human safety, property, agriculture and natural resources from Canada geese would be funded through cooperative service agreements with individual property owners or managers. A minimal federal appropriation is allotted for the maintenance of a WS program in New York. The remainder of the WS program is entirely fee-based. Technical assistance and some direct assistance is provided to requesters as part of federally funded activities, but generally, direct assistance in which WS' employees perform damage management activities is funded through cooperative service agreements between the requester and WS.

## **1.4 CANADA GOOSE POPULATIONS INCLUDED IN THIS ENVIRONMENTAL ASSESSMENT**

### **Atlantic Flyway Canada Goose Populations**

New York State lies within the seasonal migratory path used by Canada geese known as the Atlantic Flyway (Figure 1). The Atlantic Flyway follows the North American East Coast and includes the states of Maine, Vermont, New Hampshire, Connecticut, Massachusetts, New York, Rhode Island, New Jersey, Pennsylvania, West Virginia, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida. There are four distinct populations of Canada geese that utilize the Atlantic Flyway, three of those populations, the Atlantic Population (AP), North Atlantic Population (NAP), and the Southern James Bay Population (SJB) are all migratory (USFWS 2005). The Atlantic Flyway Resident Population (AFRP) of Canada geese are geese that hatch or nest in any Atlantic Flyway (AF) State, or in Canada at or below 48° N latitude and east of 80° W longitude, excluding Newfoundland (Atlantic Flyway Council 2011), and are not



migratory in the traditional sense. It is this population that causes the most Canada goose conflicts in the Atlantic Flyway and in New York (USFWS 2005).

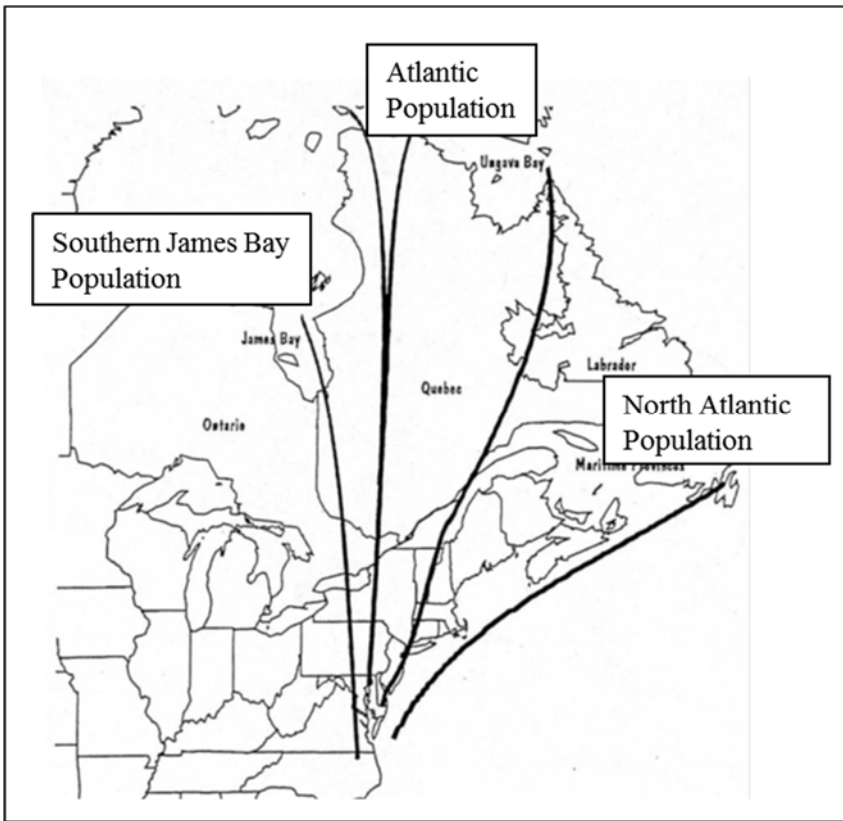


Figure 1. Origins of the migratory populations of geese in the Atlantic Flyway.

**Migratory Canada geese:** All three distinct populations of migratory Canada geese (NAP, AP, and SJB) inhabit New York during some part of the year. These migratory geese nest in localized aggregations throughout eastern Canada and migrate annually to the conterminous United States in the late days of September through November to over-winter. These geese migrate northwards to the nesting grounds in March and April. Migratory populations of geese are closely monitored by the United States Fish and Wildlife Service (USFWS) and generally only cause damage in New York from the months of September to April.

#### **A Description of these Canada Goose Populations:**

**Atlantic Population** – The AP of Canada geese makes up the northernmost group of interior Canada geese and nest north of 48° latitude in northern Québec along Ungava Bay, the northeastern shore of Hudson Bay (where 80% of the breeding birds are found), and within the Ungava Peninsula (Davies and Hindman 2008). The AP of Canada geese were once considered the largest Canada goose population in North America, but now Atlantic Flyway Resident Population of Canada geese make up the largest population (Davies and Hindman 2008). The AP of Canada geese migrate in September from the Hudson Bay Coast in Canada, pass through western Quebec, south through central New York and eastern Pennsylvania to winter by mid to late October in New Jersey, Maryland, Delaware, and Virginia in the proximity of the Chesapeake and Delaware Bays (Malecki et al. 2001). During 2015, spring surveys estimated 161,300 breeding pairs (USFWS 2015a).

**North Atlantic Population** – The NAP of Canada geese are defined as all Canada geese breeding in Labrador, Newfoundland, western Greenland, and portions of eastern Québec (Atlantic Flyway Technical Section 2008). Historically the NAP of Canada geese migrated down the Labrador coast and along the coast for New England, across Long Island and south to the New Jersey shore, Maryland and North Carolina. Recently, however, the NAP of Canada geese seem to winter in the New England and Long Island areas and winter band recoveries further south have greatly diminished (Atlantic Flyway Technical Section 2008). In New York, the NAP of Canada geese are typically located on Long Island during the late fall and winter. During 2015, biologists estimated 133,864 total birds within the NAP of Canada geese range (Roberts 2015).

**Southern James Bay Population** – The SJBP of Canada geese nest on the southwestern James Bay coast and interior lowland muskeg of Ontario and on Akimiski Island, Nunavut (Abraham et al. 2008). Canada geese in the SJBP migrate through western Pennsylvania and winter in the Piedmont regions of western North and South Carolina (Abraham et al. 2008). They are managed jointly by the states and provinces of the Mississippi and Atlantic Flyway Councils, in partnership with the U.S. and Canadian federal governments (Abraham et al. 2008). The SJBP of Canada geese can be found in western New York during their fall migration. During 2015, biologists recorded 54,347 breeding pairs (108,694 individual birds) and 6,337 non-breeding birds, for a total population of 115,031 Southern James Bay geese (Roberts 2015).

**Atlantic Flyway Resident Population:** The AFRP of Canada geese are geese that hatch or nest in any Atlantic Flyway state, or in Canada at or below 48° N latitude and east of 80° W longitude, excluding Newfoundland (Atlantic Flyway Council 2011) (Figure 3). Although not migratory in the traditional sense, resident geese are still protected and managed by the USFWS under the Migratory Bird Treaty Act.

The USFWS and the Atlantic Flyway states estimated the resident Canada goose population at 3.2 million in the United States; about 30% to 35% above the number states believe to be acceptable based on their needs to manage conflicts and problems caused by resident Canada geese (USFWS 2005). The population management goal is to reduce AFRP Canada geese to 700,000 (spring estimate) by 2020, distributed in accordance with levels prescribed by individual states and provinces (Atlantic Flyway Council 2011). The plan calls for maintaining and further refining, to the extent practical, hunting regulations (seasons, bag limits and zones) for special and regular hunting seasons to maximize the hunter harvest of AFRP (Atlantic Flyway Council 2011). During much of the year, the majority of Canada geese present in New York are AFRP of Canada geese, not migratory geese.

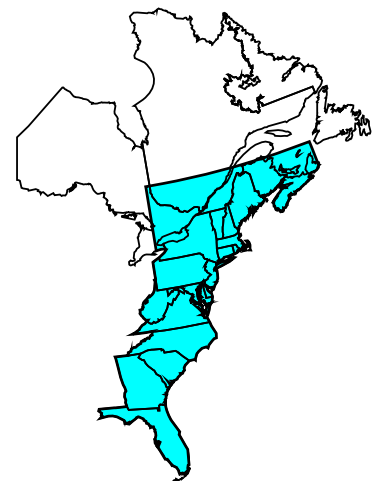


Figure 2. Breeding range of Atlantic Flyway Resident Population Canada Geese (USFWS 2005).

Resident Canada geese become sexually mature and breed at two to three years of age and have a relatively high nesting success compared to migratory Canada geese (USFWS 2005). Resident Canada geese typically experience fecundity rates of 2.4 young per nesting female and 80% adult survival, which have resulted in an annual growth rate of 15% per year based on population estimates of the Atlantic Flyway Council (2011). However, spring population estimates of resident Canada geese based upon the Atlantic Flyway Breeding Waterfowl Plot Survey have leveled off since 1997 after special hunting seasons were established throughout the AF (Atlantic Flyway Council 2011). Resident geese nest along shorelines, on islands and peninsulas (in both fresh and salt water environments), small ponds, lakes and reservoirs, as well as in parking lots, playgrounds, planters, and rooftops. They molt (replace their feathers) and are flightless from mid-June through mid-July each year. Non-breeding resident Canada geese which have failed nesting attempts sometimes move to other areas in late spring prior to molting (Nelson and Oetting 1998, Sheaffer et al. 2007). This movement is also

called a molt migration. Most resident geese only make seasonal movements when severe winter weather makes it necessary to find open water and feeding areas (Atlantic Flyway Council 2011). During 2015, there was an estimated breeding population of 963,809 birds in the AFRP range (Roberts 2015).

Table 1. Breeding Canada goose population estimates in New York and estimates of the three sub-populations that migrate through New York reported as individual birds.

Year	NY Resident Population <sup>1</sup>	AP Estimate <sup>1</sup>	NAP Estimate <sup>1</sup>	SJBP Estimate <sup>1</sup>	AFRP Estimate
2003	231,718	349,884	133,298	196,752	1,126,731
2004	164,398	383,578	197,238	167,687	1,073,096
2005 <sup>2</sup>	182,011	351,358	129,934	88,484	1,167,075
2006	230,637	372,218	118,032	289,309	1,143,951
2007	249,702	414,524	166,768	160,850	1,127,987
2008	213,758	348,014	108,367	202,741	1,024,914
2009	216,761	373,688	179,721	146,776	1,006,133
2010	257,391	330,150	156,598	163,605	977,085
2011	232,360	432,064	152,798	185,839	1,015,076
2012	206,003	380,680	229,034	172,444	879,793
2013 <sup>3</sup>	209,915	-	-	124,938	951,936
2014	298,482	382,468	183,583	159,473	1,084,900
2015	230,510	322,604	133,864	115,031	963,809

<sup>1</sup>Population data obtained from the USFWS Atlantic Flyway Waterfowl Harvest and Population Survey Data (Roberts 2015).

<sup>2</sup> Survey flown with different aircraft and during late incubation for Southern James Bay Population.

<sup>3</sup> Survey not flown to count Atlantic Population and North Atlantic Population geese in 2013.

### Resident Canada Geese in New York

The resident Canada goose population in New York is different from the population that historically nested in the area (USFWS 2005). The original pre-Colonial population likely was primarily the subspecies *Branta canadensis*, but these birds were eventually extirpated from the state. The current population was introduced in the early 20th century and came from a variety of sources including state agency release programs started in 1919 using imported game farm stock (USFWS 2005). Additional domestic and semi-domestic birds were released by private individuals and hunt clubs in 1935 when the use of live decoys was banned. Consequently, the current resident Canada goose population in New York is a mix of various subspecies including *B. c. maxima*, *B. c. moffitti*, *B. c. interior*, and *B. c. canadensis* (USFWS 2005). However, resident geese are still protected and managed by the USFWS under the Migratory Bird Treaty Act.

In New York, Canada geese are classified as a migratory game bird species and are regulated by state law. New York is divided into seven Canada goose hunting zones in order to maximize the efficacy of the hunting seasons based on population distribution of geese throughout the State (NYSDEC 2016). Under regulations in New York, Canada geese can be harvested during a regular season which extends from October through December depending on which zone of New York is being hunted (NYSDEC 2016). An additional spring season targeting resident Canada geese was added in 2009, and extends from March 4 to March 10 with a 5-bird/day limit (NYSDEC 2016). Canada goose hunting seasons are regulated by the New York State Department of Environmental Conservation (NYSDEC) and the USFWS. Banding studies have confirmed that resident Canada geese are not AP geese that simply stopped migrating north to breed; they are

distinct populations with different management needs (Atlantic Flyway Council 2011). The 2015 population estimate of resident geese in New York was 230,510 (standard error = 36,414) (Table 1).

## **1.5 CANADA GOOSE DAMAGE MANAGEMENT AS A COMPONENT OF WILDLIFE DAMAGE MANAGEMENT**

Canada geese are ubiquitous across much of the North American landscape. Migratory geese breed in every Canadian province, and resident geese now breed in all 48 contiguous states (Baldassarre 2014). In the Atlantic Flyway, which includes New York, resident Canada goose populations are at record highs of nearly one million birds (USFWS 2015a). With these high numbers also comes an elevated prospect of negative interactions with Canada geese. It has become a common occurrence to encounter Canada geese at beaches, golf courses, cemeteries, reservoirs, fish hatcheries, airports, prisons, salt marshes, agriculture properties, apartment complexes, business parks and on various other properties that are adjacent to water bodies. The primary complaint that arises from these interactions is the amount of feces that an abundance of geese leave behind.

## **1.6 NEED FOR ACTION**

### ***Canada Goose Damage to Agriculture***

The most common way that Canada geese damage agriculture is by crop consumption (loss of the crop and revenue) mostly by grazing on emergent seedlings; but damage also can consist of unacceptable accumulations of feces on pastures, trampling of emerging crops, and increased erosion and runoff from fields where the cover crop has been grazed. Resident Canada geese are primarily responsible for this damage in New York.

The USDA APHIS WS program in the State of New York has documented Canada goose damage to corn, wheat, rye, blueberries, spinach, and hayfields. Canada geese bite off the ends of spinach leaves, making them unmarketable. Winter wheat is frequently used by farmers in New York to prevent soil erosion and provide nitrogen to harvested corn fields and is excessively grazed by Canada geese in the fall, winter, and spring. Winter wheat is also harvested and is often used in cakes, cookies, and crackers (USDA 2016b). Newly planted corn fields are often targeted by Canada geese feeding on corn seedlings (Atlantic Flyway Council 2011, USFWS 2005). Additionally, Canada geese have been known to feed on grass that is intended to be used as hay for horses, alpacas, and llamas.

Canada geese may also affect agriculture through the spread of diseases to livestock. Since December 2014, the USDA has confirmed several cases of highly pathogenic avian influenza (HPAI) H5 in the Pacific, Central, and Mississippi flyways (or migratory bird paths). The disease has been found in wild ducks and geese, as well as in a few backyard and commercial poultry flocks. WS has both an international and a domestic role in controlling the spread of avian influenza (AI) and reducing its effects on agriculture. The nature of the influenza virus is such that mutations occur easily. Therefore, new strains can occur naturally at any time within avian hosts. The concern is whether the changes would impart the potential to cause severe disease or increase transmissibility between birds or mammals (USDA 2016a).

### ***Canada Goose Damage to Human Health and Safety***

Aviation is our primary human health and safety need for action. Nationally, geese represent one of the top three most hazardous species groups involved in wildlife strikes with aircraft (FAA 2007). Resident Canada geese are of particular concern to aviation because of their large size (typically 8-15 lbs. which exceeds the 4-lb. bird certification standard for engines and airframes), flocking behavior, attraction to grassy areas in airports for grazing, and by their year round

presence in urban environments near airports (Seubert and Dolbeer 2004). Birds struck by aircraft, especially when ingested into engines, can lead to structural damage to the aircraft or even to engine failure. On January 15, 2009 U.S. Airways Flight 1549 ingested four Canada geese in both the left and right engines and lost all power. The plane made an emergency landing in the Hudson River. No lives were lost, but the incident served to raise public awareness regarding the risks of large birds such as geese within aircraft departure and arrival paths. In response, New York City and the Port Authority of New York and New Jersey initiated a Canada goose hazard management program for New York City airports (NTSB 2010).

Generally, bird collisions occur when aircraft are near the ground either taking off or landing, and are unable to maneuver due to the low altitude. During an 18 year period, approximately 60% of reported bird strikes to United States to civil aviation occurred when the aircraft was at an altitude of 100 feet above ground level or less (Dolbeer and Wright 2008). Additionally, 73% occurred less than 500 feet above ground level and about 92% occurred under 3,000 feet above ground level (Dolbeer and Wright 2008). Waterfowl (geese and ducks) were involved in the greatest number of damaging strikes (31%) in which the bird species was identified when compared to all other bird groups (Dolbeer and Wright 2008).

At John F. Kennedy (JFK) airport in New York, Canada geese are the second most damaging species involved in bird strikes. During a 15 year period, there were 15 strikes with geese reported, causing a reported \$10,500,200 million in damage (Seamans et al. 2009). As part of a study examining the threat of resident geese to aircraft, 300 flightless Canada geese were captured within 8.7 km of JFK and LaGuardia International Airports (LGA). Alpha-numeric neck collars and USFWS leg bands were placed on the geese. An additional 32 geese received leg bands only. The geese were then observed for a duration of 104 weeks. At the conclusion of the study, 45% of the original 300 collared geese remained within an 8-km radius of JFK airport. Of the 323 geese shot during wildlife control operations at JFK airport, 1.2% were geese banded during this study. Based on observations and reports from the Bird Banding Laboratory, 78% of the locations used by geese within 8 km of JFK airport could support geese that would travel onto or over JFK. The study concluded that the population of geese within 8.7 km of JFK airport was a direct threat to aircraft and to human health and safety.

In an effort to reduce the hazard posed by Canada geese to aircraft at LGA, WS began conducting a Canada goose removal program in 2004. Removal efforts were focused at Rikers Island, which is located adjacent to the runway at LGA. Fewer Canada geese have been removed annually in the past few years compared to when the project first began (2004,  $n = 514$ ; 2005,  $n = 288$ ; 2006,  $n = 200$ ; 2007,  $n = 167$ ; 2008,  $n = 77$ ; 2009,  $n = 112$ ; 2010,  $n = 32$ ; 2011,  $n=55$ ; 2012,  $n=47$ ; 2013,  $n=51$ ; 2014,  $n=33$ ; 2015,  $n=45$ ). After the first 12 years of the removal program, from 2004 to 2015, there was a 65% decrease in goose strikes at LGA compared to the previous 12 years (1992 through 2003) (FAA 2016). To date, yearly removals have not resulted in an influx of geese from other areas as suggested by critics of round-up and removal programs.

Canada geese can also impact human health and safety through the transmission of potentially harmful pathogens in goose feces, aggressive behavior by nesting geese, fecal loading in water and on beaches, disrupting traffic when crossing roads, accumulations of feces creating slippery surfaces on docks and walkways, and the possibility for strikes with aircraft that could cause loss of human life.

There are several pathogens involving Canada geese which may be contracted by humans; however, the risk of infection is believed low. One recent human health and safety disease risk involving Canada geese is highly pathogenic avian influenza (HPAI) H5. The Centers for Disease Control and Prevention (CDC) considers the risk to people from HPAI H5 infections to be low and to date, no human cases of these HPAI H5 viruses have been detected in the United States. The public health concern is due to the ability of influenza virus' to mutate.

A number of hazards associated with Canada goose droppings were identified by Fleming and Fraser (2001), including water quality degradation, nutrient loading, and transmission of pathogens. Alderisio and DeLuca (1999) found that in

Westchester County, the average wet weight of a single goose dropping on a summer day was 9.98 g or .02 lb. The USFWS has documented threats to public health from geese and their droppings and has authorized the Public Health Control Order (section 1.16, Laws and Orders Related to this Environmental Assessment) to reduce this threat (USFWS 2005).

While transmission of disease or parasites from waterfowl to humans has not been well documented, the potential exists (Luechtefeld et al. 1980, Wobeser and Brand 1982, Hill and Grimes 1984, Pacha et al. 1988, Blandespoor and Reimink 1991, Graczyk et al. 1998, Saltoun et al. 2000), but the probability is believed to be small. In worst case scenarios, infections may even be life threatening for immune-compromised and immune-suppressed people (Graczyk et al. 1998).

*Escherichia coli* (*E. coli*) are fecal coliform bacteria associated with fecal material of warm blooded animals. There are over 200 specific serological types of *E. coli* with the majority of serological types being harmless (Sterritt and Lester 1988). Waterfowl, including geese, can distribute *E. coli* into swimming areas and pools (CDC 2016b). Recent research has demonstrated that Canada geese can disseminate *E. coli* into the environment which can elevate fecal coliform densities in the water column (Cole et al. 2005).

Many communities monitor water quality at swimming beaches and lakes, but lack the financial resources to pinpoint the source of elevated fecal coliform counts. When fecal coliform counts at swimming beaches exceed established standards, the beaches are temporarily closed which can adversely affect the human quality of life, even though they may not have been able to determine the serological type of the *E. coli*. New York State Department of Health and New York State Office of Parks, Recreation and Historic Preservation monitor water quality following guidelines established by the Environmental Protection Agency (EPA), and when *E. coli* densities exceed threshold levels, these agencies close swimming beaches and treat drinking water.

Unfortunately, linking the elevated bacterial counts to frequency of waterfowl use and attributing the elevated levels to human health threats has been problematic until recently. Advances in genetic engineering have allowed microbiologists to match genetic code of coliform bacteria to specific animal species and link these animal sources of coliform bacteria to fecal contamination (Simmons et al. 1995, Jamieson 1998). Simmons et al. (1995) used genetic fingerprinting to link fecal contamination of small ponds on Fisherman Island, Virginia to waterfowl. Microbiologists were able to implicate waterfowl and gulls as the source of fecal coliform bacteria at the Kensico Watershed, an important water supply for New York City (Klett et al. 1998, Alderisio and DeLuca 1999). Also, fecal coliform bacteria counts coincided with the number of Canada geese roosting at the reservoir. Cole et al. (2005) found that geese may serve as a vector of antimicrobial resistance genes, indicating that they not only harbor and spread zoonotic diseases like *E. coli* but may spread strains that are resistant to current control measures.

*Cryptosporidiosis* is a disease caused by the parasite *Cryptosporidium parvum* and was not known to cause disease in humans until as late as 1976 (CDC 2015). A person can be infected by drinking contaminated water or direct contact with the droppings of infected animals (CDC 2015). The public is advised to be careful when swimming in lakes, ponds, streams, and pools, and to avoid swallowing water while swimming (Colley 1996). The public is also advised to avoid touching stools of animals and to drink only safe water (Colley 1996). *Cryptosporidium* can cause gastrointestinal disorders (CDC 2015) and produce life threatening infections in immune-compromised and immune-suppressed people (Graczyk et al. 1998). Canada geese feces can disseminate infectious *Cryptosporidium parvum* oocysts through their feces in aquatic environments (Graczyk et al. 1998). Kassa et al. (2010) found that *Cryptosporidium* was the most common infectious organism found in 77.8% of sample sites comprised primarily of parks and golf courses, indicating that occupational exposure to this pathogen is plausible although the risk to humans is relatively low.

*Campylobacteriosis* is an infectious disease caused by bacteria of the genus *Campylobacter*. In persons with compromised immune systems, *Campylobacter* occasionally spreads to the bloodstream and causes a serious life-threatening infection, but normally causes diarrhea and severe abdominal pain and is one of the most common diarrhea illnesses in the United States (CDC 2016a). Canada geese have been found to be a carrier of *Campylobacter* (39% of 18 samples) and can spread the bacteria in their feces (Kassa et al. 2010). It is spread when cattle, sheep and ducks defecate into a water source (Savill et al. 2003).

### ***Canada Goose Damage to Property***

Canada geese may cause damage to aircraft, landscaping, piers, yards, boats, beaches, shorelines, parks, golf courses, driveways, athletic fields, ponds, lakes, lawns, rafts, porches, patios, gardens, foot paths, swimming pools, play grounds, school grounds, and cemeteries (USFWS 2005). Property damage most often involves goose fecal matter that pollutes and contaminates recreational areas, landscaping and walkways, and property with waterfront or water features. Business complexes with high numbers of geese experience excessive droppings and grazing of grass, affecting the business appearance to clients and guests. Costs associated with property damage include labor and disinfectants to clean and sanitize fecal droppings, implementation of non-lethal wildlife management methods, loss of property use, loss of aesthetic value of flowers, gardens, and lawns consumed by geese, loss of customers or visitors irritated by walking in fecal droppings, repair of golf greens, and replacing grazed turf. Due to an increase in the number of complaints involving property owners and nuisance waterfowl, several studies have been conducted examining the best management practices available to reduce conflicts. These studies focused on methods available to deter Canada geese where geese relocated in response to hazing, effort required to keep geese away, and duration of success from hazing events.

The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) has been concerned how overabundant Canada geese affect park attendance and the use of public swimming areas since the 1990s. A 2003 survey of facility managers ranked Canada geese as second out of 60 species reported as causing the most damage. OPRHP has developed a comprehensive Canada goose management program to address the impacts geese are having on state parks.

### ***Canada Goose Damage to Natural Resources***

Excessive numbers of geese can also add large quantities of nitrogen and pathogens to lakes, ponds, and storm-water and waste-water treatment sites (Fleming and Fraser 2001, Olson et al. 2005). In 2015, the Environmental Protection Agency under the Great Lakes Restoration Initiative (GLRI) financially supported WS through issuance of an interagency agreement to reduce non-point source pollution associated with resident Canada Geese in the Lake Erie and Lake Ontario watersheds of New York. Information regarding defecation rates in geese can be variable (Kear 1963, Manny et al. 1975, French and Parkhurst 2009, NH Department of Environmental Services 2012). Using the conservative estimate of 1/2 lb. of fecal material produced per resident Canada goose per day, the removal of 1,275 Canada geese during the project resulted in a daily reduction of 638 pounds of fecal matter and a yearly reduction of 116 tons of fecal matter into the Lake Erie and Lake Ontario watersheds.

Geese can be attracted to waste water treatment plants because of the available open water, particularly during the winter when other water sources may be frozen (Manny et al. 1994). Sewage treatment plants in New York are required to test water quality of effluents before release from finishing ponds into the environment. Some treatment plants find that coliform bacteria, nitrogen, and phosphorus counts increase when large numbers of waterfowl are present and decline when the waterfowl leave (Hussong et al. 1979, Kitchell et al. 1999). Coliform bacteria causes acidic pH levels in the water and lowers dissolved oxygen which kills aquatic organisms (Mallin et al. 2002). Also, fecal contamination

increases nitrogen levels in the pond resulting in algae blooms. Oxygen levels are depleted when the algae dies resulting in the death of aquatic invertebrates and vertebrates.

Nutrient loading has been found to increase in wetlands in proportion to increases in the numbers of roosting geese (Manny et al. 1994, Kitchell et al. 1999). In studying the relationship between bird density and phosphorus and nitrogen levels in Bosque Del Apache National Wildlife Refuge in New Mexico, Kitchell et al. (1999) found an increase in the concentration of both phosphorus and nitrogen correlated with an increase in bird density. Scherer et al. (1995) stated that waterfowl metabolize food rapidly and most of the phosphorus contributed by bird feces probably originates from sources within the lake being studied. In addition, assimilation and defecation converted the phosphorus into a more soluble form, and therefore, was considered a form of internal loading. Waterfowl have contributed substantial amounts of phosphorus and nitrogen into lakes through feces creating excessive aquatic macrophyte growth and algae blooms (Scherer et al. 1995) and accelerated eutrophication through nutrient loading (Harris et al. 1981).

The Jamaica Bay Wildlife Refuge covers 9,100 acres and has been designated as a Significant Coastal Fish and Wildlife Habitat as well as being state and nationally recognized as an important bird area (JBWPPAC 2006). From 1989 – 2003, the amount of tidal wetlands lost within Jamaica Bay is estimated at 33 acres per year (Gateway National Recreation Area 2007). According to Jamaica Bay Damages Account Reports, the cost to restore five acres of wetland is approximately \$646,380 (NYSDEC 2010). During 2003, a pilot study was conducted to examine effective and long-lasting methods for saltmarsh restoration at Big Egg Marsh. During the study, 20,000 peat pots of smooth cordgrass (*Spartina alterniflora*) were replanted to stabilize the marsh (Frame 2003, Frame et al. 2005). Canada geese and snow geese pulled out smooth cordgrass by the roots during the winter and grazed on new growth during the growing season. During 2003, to protect the restoration site, 700 meters of fence and 260 wooden posts were installed to deter geese, as well as an overhead wire grid to keep geese from landing in the zone (Frame et al. 2005). By 2004, geese had become habituated to the fencing and swam through breaks to feed. Damage by snow geese, Atlantic brant and Canada geese were documented, with the Canada geese damaging the restoration site year round. By September of 2004, there was almost a complete loss of both the potted plants and seedlings that had germinated on site outside of fenced areas due to the area being 100% damaged by geese (Frame et al. 2005). It was concluded that the restoration site would need a rigorously maintained goose-detering fence or alternative goose hazing methods. The results of the pilot study were used to provide guidance for a \$16 million marshland restoration project (Gateway National Recreation Area. 2007).

From 1994 to 1999, Jamaica Bay experienced losses to coastal marsh at a rate 18 ha/yr.; previous losses were due to dredging and filling, but recent losses have been unexpected and unexplained (Hartig et al. 2002). A biologic factor attributing to die-off of *Spartina alterniflora* and resulting loss of Jamaica Bay salt marsh is herbivory by waterfowl, including Canada geese (Frame et al. 2005).



## 1.7 PRESENT DATA ON WILDLIFE DAMAGE BY RESOURCES AFFECTED

In New York, WS conducted a total of 1,057 individual technical assistance projects from federal fiscal year (FY) 2011 thru FY 2015 (Table 2). Damage to property accounted for nearly 66% of all technical assistance requests.

Table 2. Number of Technical Assistance Projects conducted by Wildlife Services to alleviate Canada goose damage to resources in New York.

Fiscal Year	Agriculture	Human Safety	Property	Natural Resources	Total
2011	15	41	132	1	189
2012	15	28	147	2	192
2013	15	40	167	1	223
2014	3	82	99	1	185
2015	7	117	141	3	268
<b>Yearly Average</b>	<b>11</b>	<b>61.6</b>	<b>137.2</b>	<b>1.6</b>	<b>211.4</b>

A breakdown of damage in New York that has been reported to or verified by WS is shown in Table 3. These reports come from conversations with cooperators regarding damage or from site visits of locations where damage has been reported.

Table 3. Canada geese damage by resource type reported to Wildlife Services in New York.

Fiscal Year	Agriculture	Human Safety	Property	Natural Resources	Total
2011	\$248,650	\$26,050	\$345,407	\$20,000	\$640,107
2012	\$100,427	\$27,550	\$461,814	\$0	\$589,791
2013	\$266,337	15,405	\$347,099	\$55,404	\$684,245
2014	\$10,000	\$50,700	\$313,974	\$0	\$374,674
2015	\$17,950	\$56,461	\$188,544	\$0	\$262,955
Total	\$634,364	\$176,166	\$1,656,848	\$75,404	\$25,517,772
<b>Yearly Average</b>	<b>\$128,673</b>	<b>\$35,233</b>	<b>\$331,368</b>	<b>\$15,081</b>	<b>\$510,354</b>

From FY 2011 through 2015, Canada geese were responsible for an average of \$128,673 in agriculture damage according to information reported to WS (Table 3). In 2015, there was \$13,000 in damage to hayfields, \$1,500 in damage to spinach, \$400 in damage to blueberries, \$3,000 in damage to livestock feed, and an additional \$50 in miscellaneous damage reported to WS.

The New York City Department of Environmental Protection (NYCDEP) consults with WS to manage geese at NYC reservoirs and their associated watersheds. There are three systems that cover an area of almost 1,972 square miles. The Croton system is located in Westchester, Putnam, and Dutchess Counties, and has 12 reservoirs and three controlled lakes. The Catskill system is located in parts of Greene, Ulster, and Schoharie Counties and has two reservoirs. The Delaware System is located in parts of Delaware, Ulster, and Sullivan Counties and includes four reservoirs (City of New York 2016). Monitoring and management of waterbirds, including Canada geese, takes place throughout the year on specific reservoirs, and an estimated \$1,790,000 is spent annually in keeping geese off the reservoirs to protect human health and safety and the quality of the drinking water (C. Nadareski, personal communication 2017).

From FY 2011 through FY 2015 there was an average of 331,368 dollars in economic losses to private property reported to WS due to Canada geese in the State of New York (Table 3). In 2015, golf courses reported \$102,900 in damage or

economic losses caused by Canada geese. An additional \$85,644 in damage related to beach property, recreation fields, and various other personal property were reported to WS.

In FY 2011 and 2013, a combined total of \$75,404 in natural resource damage related to Canada geese in the State of New York was reported to WS (Table 3). In 2014 and 2015, additional damage to watersheds was reported to WS, but no monetary amount was assigned to this damage. In 2013, \$54,000 in damage to NYC watersheds was reported to WS.

## **1.8 NATIONAL ENVIRONMENTAL POLICY ACT**

All federal actions are subject to the National Environmental Policy Act (NEPA) (Public Law 9-190, 42 USC 4321 et seq.), including the actions of WS. The WS program follows the Council on Environmental Quality (CEQ) regulations implementing the NEPA (40 CFR 1500 et seq.) along with USDA (7 CFR 1b) and APHIS Implementing Guidelines (7 CFR 372) as part of the decision-making process. NEPA sets forth the requirement that all federal actions be evaluated in terms of their potential to significantly affect the quality of the human environment for the purpose of avoiding or, where possible, mitigating and minimizing adverse impacts. In part, the CEQ regulates federal activities affecting the physical and biological environment through regulations in 40 CFR 1500-1508. The NEPA and the CEQ guidelines generally outline five broad types of activities that a federal agency must accomplish as part of projects they conduct. Those five types of activities are public involvement, analysis, documentation, implementation, and monitoring.

Pursuant to the NEPA and the CEQ regulations, WS is preparing this EA to document the analyses associated with proposed federal actions and to inform decision-makers and the public of reasonable alternatives capable of avoiding or minimizing adverse effects.

This EA will serve as a decision-aiding mechanism to ensure that WS infuse the policies and goals of the NEPA and the CEQ into the actions of each agency. This EA will also aid WS with clearly communicating the analysis of individual and cumulative impacts of proposed activities to the public. In addition, the EA will facilitate planning, promote interagency coordination, and streamline program management analyses between WS and its interagency partners. Section 1.11 discusses the roles of each agency. This EA was prepared by integrating as many of the natural and social sciences as warranted, based on the potential effects of the alternatives. The direct, indirect, and cumulative impacts of the proposed action are analyzed.

WS initially developed the issues and alternatives associated with Canada goose damage management in consultation with agency partners. To assist with identifying additional issues and alternatives to managing damage, WS will make this EA available to the public for review and comment prior to the issuance a Decision (either a Finding of No Significant Impact (FONSI) or a Notice of Intent to prepare and Environmental Impact Statement).

## **1.9 DECISIONS TO BE MADE**

Based on agency relationships, MOUs, and legislative authorities, WS is the lead agency for this EA, and therefore, responsible for the scope, content, and decisions made. The USFWS is a cooperating agency in the development of the EA and provided input throughout the EA preparation process to ensure an interdisciplinary approach according to NEPA and agency mandates, policies, and regulations. The New York State Department of Environmental Conservation, U.S. Fish and Wildlife Service, New York State Office of Parks, Recreation and Historic Preservation, NYC Department of Environmental Protection; NYC Parks and Recreation; and the Port Authority of New York and New Jersey have also reviewed the EA to identify issues, alternatives, and to ensure compliance with state laws and regulations.

Based on the scope of this EA, the decisions to be made are: 1) how can WS and cooperating agencies best respond to the need to reduce Canada goose damage in New York, and 2) do the alternatives have significant cumulative impacts meriting an Environmental Impact Statement (EIS)?

## **1.10 SCOPE OF ANALYSIS**

The State of New York has approximately four million acres of land available for public use, and these lands are managed by federal, state, and municipal entities (NYSDEC 2010). The rest of the roughly 30 million acres is held within a broad spectrum of private ownership. New York State ranks 27<sup>th</sup> among states in terms of size, and has the 3<sup>rd</sup> largest population in the United States (Census Bureau 2014). With 17 different watersheds and increasing populations of both, Canada geese and private property owners can come into conflict (<http://www.dec.ny.gov/lands/26561.html>.) (Census Bureau 2014).

Canada goose damage or threats potentially occur statewide in New York, wherever geese exist. Canada goose damage management would only be conducted by WS when requested by a landowner or manager and only on properties where a cooperative service agreement or other comparable document has been signed between WS and a cooperating agency, business, organization, or landowner.

### **1.10.1 GEOGRAPHICAL AREA AND TYPES OF LAND DESIGNATIONS AND OWNERSHIPS INCLUDED IN THIS ENVIRONMENTAL ASSESSMENT**

Canada goose damage management activities could be conducted on federal, state, tribal, municipal, and private properties in New York. The areas of the proposed action include (but are not limited to) property on or adjacent to airports, golf courses, athletic fields, agricultural fields, livestock operations, natural areas, communally-owned homeowner/property owner association properties, recreational areas, swimming beaches, parks, corporate complexes, subdivisions, businesses, industrial parks, military bases, fish hatcheries, government properties and facilities, schools, agricultural areas, landfills, wildlife sanctuaries, wetlands and other water bodies, restoration sites, cemeteries, and reservoirs.

### **1.10.2 SITE SPECIFICITY OF INFORMATION AND ANALYSIS USED AND HOW IT IS USED FOR SUBSEQUENT WILDLIFE SERVICES DAMAGE MANAGEMENT DECISIONS**

This EA analyzes the potential impacts of Canada goose damage management based on previous activities conducted on private and public lands in New York where WS and the appropriate entities entered into a MOU, cooperative service agreement, or other comparable document. The EA also addresses the potential impacts of Canada goose damage management in areas where additional agreements may be signed in the future. It is conceivable that additional damage management efforts would occur when operating within the constraints of available funding and staffing levels. Thus, this EA anticipates those additional efforts and analyzes the impacts of those efforts as part of the alternatives.

Although some locations where Canada goose damage would occur can be predicted, not all specific locations or times where such damage would occur in any given year can be predicted. In addition, the threshold triggering an entity to request assistance from WS to manage damage associated with Canada geese is often unique to the individual; therefore, predicting where and when such a request for assistance would be received by WS is difficult.

Chapter 2 of this EA identifies and discusses issues and alternatives relating to Canada goose damage management in New York. The standard WS Decision Model (Slate et al. 1992) would be the site-specific procedure for individual actions conducted by WS (see Chapter 2 for a description of the Decision Model and its application). Decisions made

using the model would be in accordance with WS' directives and Standard Operating Procedures (SOPs) described in this EA as well as relevant laws and regulations.

The analyses in this EA are intended to apply to any action that may occur in any locale and at any time within New York. In this way, WS believes it meets the intent of the NEPA with regard to site-specific analysis and that this is the only practical way for WS to comply with the NEPA and still be able to accomplish its mission.

## **1.11 AGENCIES INVOLVED IN THIS ENVIRONMENTAL ASSESSMENT AND THEIR ROLES AND AUTHORITIES**

### **United States Fish and Wildlife Service**

The USFWS mission is to conserve, protect, and enhance fish and wildlife along with their habitats for the continuing benefit of the American people. Responsibilities are shared with other federal, state, tribal, and local entities; however, the USFWS has specific responsibilities for the protection of Threatened and Endangered (T&E) species under the Endangered Species Act (ESA), migratory birds, inter-jurisdictional fish, and certain marine mammals, as well as for lands and waters that the USFWS administers for the management and protection of those resources. The USFWS also manages lands under the National Wildlife Refuge System.

The USFWS is responsible for managing and regulating take of bird species that are listed as migratory under the Migratory Bird Treaty Act (MBTA) and those that are listed as T&E under the ESA. The take of migratory birds, outside of regulated hunting seasons, is prohibited by the MBTA. However, the USFWS can issue depredation permits for the take of migratory birds when certain criteria are met pursuant to the MBTA. Depredation permits are issued to take migratory birds to alleviate damage and threats of damage. Under the permitting application process, the USFWS requires applicants to describe prior non-lethal damage management techniques that have been used. In addition, the USFWS can establish orders that allow for the take of potentially damaging migratory birds without the need for a depredation permit.

The USFWS authority for migratory bird management is based on the MBTA of 1918 (as amended), which implements treaties with the United States, Great Britain (for Canada), the United Mexican States, Japan, and the Soviet Union. Section 3 of this Act authorized the Secretary of Agriculture:

“From time to time, having due regard to the zones of temperature and distribution, abundance, economic value, breeding habits, and times and lines of migratory flight of such birds, to determine when, to what extent, if at all, and by what means, it is compatible with the terms of the convention to allow hunting, taking, capture, killing, possession, sale, purchase, shipment, transportation, carriage, or export of any such bird, or any part, nest, or egg thereof, and to adopt suitable regulations permitting and governing the same, in accordance with such determinations, which regulations shall become effective when approved by the President.”

The authority of the Secretary of Agriculture, with respect to the MBTA, was transferred to the Secretary of the Interior in 1939 pursuant to Reorganization Plan No. II. Section 4(f), 4 FR 2731, 53 Stat. 1433.

## **New York State Department of Environmental Conservation**

The NYSDEC was created on July 1, 1970 to combine into a single agency all state programs designed to protect and enhance the environment. NYSDEC has statutory authority pursuant to the New York State Environmental Conservation Law Article 11 and 13, and their mission is “To conserve, improve and protect New York’s natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the State and their overall economic and social well-being” (NYSDEC 2015).

Canada geese are protected by federal and state laws and regulations. It is illegal to hunt, kill, sell, purchase, or possess migratory birds or their parts, except as permitted by regulations adopted by USFWS and NYSDEC.

## **New York State Office of Parks, Recreation and Historic Preservation (OPRHP)**

The OPRHP is a state agency charged with the operation of over 250 facilities including state parks, historic sites, boat launches, parkways and trails within New York. Their mission is to “provide safe and enjoyable recreational and interpretive opportunities for all New York State residents and visitors, and to be responsible stewards of valuable natural, historic, and cultural resources” (OPRHP 2014). As of 2013, the OPRHP manages nearly 335,000 acres (136,000 ha) of public lands and facilities that are visited by almost 70 million visitors each year. Among OPRHP's properties is Niagara Falls State Park, the first state park established in the United States.

## **New York State Department of Agriculture and Markets**

The New York State Department of Agriculture and Markets (NYSDAM) carries out the Agriculture and Markets Law, the Soil and Water Conservation Law, and executes inspections for the United States Department of Agriculture and Food and Drug Administration. Its mission is to foster a competitive New York State food and agriculture industry to benefit producers and consumers. The Division of Food Safety and Inspection is the Department’s largest Division, with a staff of approximately 200 full-time employees including approximately 115 food inspectors. The Division has jurisdiction over approximately 28,000 food handling establishments.

The goals of the Department are to:

1. Encourage economic development in the State's agricultural and food industry;
2. Assure consumer safety and protection with relation to food, milk, and other commodities sold in the state;
3. Encourage the appropriate use of agricultural resources to protect the environment and preserve productive agricultural land.

## **New York City Department of Parks and Recreation**

The New York City Department of Parks and Recreation is the steward of nearly 30,000 acres of land which amounts to about 14 percent of New York City, and includes more than 5,000 individual properties. The NYC Department of Parks and Recreation operates more than 800 athletic fields and nearly 1,000 playgrounds, 1,800 basketball courts, 550 tennis courts, 67 public pools, 51 recreational facilities, 15 nature centers, 14 golf courses, and 14 miles of beaches, and cares for 1,200 monuments and 23 historic house museums. The NYC Department of Parks and Recreation looks after 600,000 street trees, and two million more in parks.

Their vision is to create and sustain thriving parks and public spaces for New Yorkers, and mission is to plan resilient and sustainable parks, public spaces, and recreational amenities, build a park system for present and future generations, and care for parks and public spaces.

### **New York City Department of Environmental Protection (NYCDEP)**

The NYCDEP is a municipal agency of nearly 6,000 employees that manages and conserves New York City's water supply; distributes more than one billion gallons of clean drinking water each day to nine million New Yorkers and collects wastewater through a vast underground network of pipes, regulators, and pumping stations; and treats the 1.3 billion gallons of wastewater that New Yorkers produce each day in a way that protects the quality of New York Harbor. To achieve these mandates, DEP oversees one of the largest capital construction programs in the region. As the agency responsible for NYC's environment, DEP also regulates air quality, hazardous waste, and critical quality of life issues, including noise.

The NYCDEP, along with the Port Authority of New York and New Jersey (PANYNJ), is also responsible for the initiation of the program to reduce resident Canada goose population in portions of NYC and associated strike hazards to aircraft using airports in the NYC area. The program was developed in response to the January 15, emergency landing of Flight 1549 in the Hudson River after a strike involving multiple Canada Geese and a subsequent evaluation of recent Canada goose strikes in the NYC area.

### **Port Authority of New York and New Jersey (PANYNJ)**

The PANYNJ administers JFK International Airport pursuant to Federal Aviation Administration (FAA) guidelines that include Federal Aviation Regulation 14 CFR Part 139.337 ("Wildlife Hazard Management"). Part 139 mandates that airport authorities assess wildlife hazards at their airports and develop and conduct plans to reduce or eliminate these hazards in the interest of human safety. Since the 1960s, the PANYNJ has evaluated and conducted management plans to reduce hazards from wildlife, and it created the Bird Hazard Task Force (now Wildlife Hazard Task Force) in 1985 to monitor, improve, and guide PANYNJ actions regarding the wildlife hazards at JFK.

## **1.12 DOCUMENTS RELATED TO THIS ENVIRONMENTAL ASSEMENT**

### **New York Wildlife Services Canada Goose Damage Management in the State of New York Environmental Assessment 2004**

WS developed an EA that analyzed the need for action and impacts when managing damage associated with Canada geese in New York (USDA 2004). The EA identified the issues and analyzed alternative approaches to meet the specific needs related to managing geese in New York. Since activities conducted under the 2004 EA will be re-evaluated under this EA to address the current need for action (as described in section 1.6) and the associated affected environment, the 2004 EA that addressed Canada geese will be superseded by this analysis and the outcome of the Decision issued.

### **Bird Hazard Reduction Program: John F. Kennedy International Airport**

WS prepared a supplemental environmental Impact Statement (SEIS) entitled *Bird Hazard Reduction Program: John F. Kennedy International Airport* (USDA 2012). The SEIS updates and expands upon the 1994 Final Environmental Impact Statement, *Gull Hazard Reduction Program: John F. Kennedy International Airport*. The SEIS provides information on

the nature of the bird strike hazard program at JFK, reviews six alternatives for reducing birdstrikes, and evaluates environmental consequences of each alternative. Actions to address risks from resident Canada geese have been proposed for a seven-mile radius around JFK.

## **USFWS Resident Canada Goose Management FEIS**

The USFWS has issued a Final Environmental Impact Statement (FEIS) addressing the need for and potential environmental impacts associated with goose damage management activities titled *Resident Canada Goose Management* (USFWS 2005). The FEIS also contains detailed analyses of the issues and methods used to manage Canada goose damage. A Record of Decision (ROD) and Final Rule were published by the USFWS on August 10, 2006 (Federal Register Vol. 71, No. 154: 45964- 45993). On June 27, 2007, WS issued a ROD and adopted the USFWS FEIS (Federal Register Vol. 72, No. 123: 35217). Information in USFWS (2005) has been incorporated by reference into this EA.

### **1.13 PUBLIC INVOLVEMENT**

Issues related to Canada goose damage management as conducted by WS in New York were initially developed by WS in consultation with agency partners. Issues were defined and preliminary alternatives were identified through the scoping process. As part of this process, and as required by the Council on Environmental Quality (CEQ) and APHIS' NEPA implementing regulations, this Environmental Assessment will be noticed to the public for review and comment. The public will be informed through legal notices published in local print media, via a notice on the APHIS stakeholder registry, and by posting this EA on the APHIS website at <http://www.aphis.usda.gov/wildlifedamage/nepa>.

WS will provide for a minimum of a 30-day comment period for the public and interested parties to provide new issues, concerns, and/or alternatives. Through the public involvement process, WS will communicate to the public and interested parties the analyses of potential environmental impacts on the quality of the human environment. New issues or alternatives raised after publication of public notices would be fully considered to determine whether this EA should be revisited and, if appropriate, revised prior to issuance of a final decision or publication of a notice of intent to prepare an Environmental Impact Statement (EIS).

### **1.14 RATIONALE FOR PREPARING AN ENVIRONMENTAL ASSESSMENT RATHER THAN AN ENVIRONMENTAL IMPACT STATEMENT**

Wildlife damage management falls within the category of federal or other regulatory agency actions in which the exact timing or location of individual activities cannot usually be predicted well enough ahead of time to accurately describe such locations or times in an EA or EIS. Although WS can predict some of the possible locations or types of situations and sites where some kinds of wildlife damage would occur, the program cannot predict the specific locations or times at which affected resource owners would determine a damage problem has become intolerable to the point that they request assistance from WS. WS has the discretion to determine the geographic scope of their analyses under the NEPA. The intent in developing this EA is to determine if the proposed action would potentially have significant individual and/or cumulative impacts on the quality of the human environment that would warrant the preparation of an EIS or a FONSI. In terms of considering cumulative effects, one EA analyzing impacts for the entire state will provide a more comprehensive and less redundant analysis than multiple EAs covering smaller areas.

## **1.15 ENVIRONMENTAL STATUS QUO**

As defined by the NEPA implementing regulations, the “human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment” (40 CFR 1508.14). Therefore, when a federal action agency analyzes their potential impacts on the “human environment,” it is reasonable for that agency to compare not only the effects of the federal action, but also the potential impacts that occur or would occur in the absence of the federal action by a non-federal entity. This concept is applicable to situations involving federal assistance to reduce damage associated with wildlife species.

WS’ decision-making ability would be restricted to one of three alternatives. WS would take the action using methods as decided upon by the non-federal entity, provide technical assistance only, or take no action. If no action were taken by WS, the non-federal entity would take the action anyway using the same methods during the hunting season, or through the issuance of a permit by the NYSDEC. Under those circumstances, WS would have virtually no ability to affect the environmental status quo since the action would likely occur in the absence of WS’ direct involvement.

## **1.16 LAWS AND ORDERS RELATED TO THIS ENVIRONMENTAL ASSESSMENT**

Several laws or statutes authorize, regulate, or otherwise would affect WS’ activities. WS would comply with those laws and statutes and would consult with other agencies as appropriate. WS would comply with all applicable federal, state, and local laws and regulations in accordance with WS Directive 2.210. Those laws and regulations related to activities conducted to reduce Canada goose damage in the state are addressed below.

### **New York State Agriculture and Markets Law**

Administered by the NYSDAM, these laws allow the NYSDAM to execute and carry into effect the laws of the state and the rules of the department relative to agriculture; horticulture; farm; fruit and dairy products; aquaculture; and the production, processing, transportation, storage, marketing and distribution of food.

### **Soil and Water Conservation Law**

The Soil and Water Conservation Law allows for the preservation of soils and water resources in New York. Under this jurisdiction it calls for the improvement of water quality, for the control and prevention of soil erosion, and for the prevention of floodwater and sediment damage. It also outlines furthering the conservation, development, utilization and disposal of water, and seeks to preserve natural resources, control and abate non-point sources of water pollution, assist in the control of floods, assist in drainage and irrigation or agricultural lands, prevent impairment of dams and reservoirs, assist in maintaining navigability of rivers, preserve wildlife, protect the tax base, protect public lands, and protect and promote the health, safety and general welfare of the people of New York State.

### **Migratory Bird Treaty Act of 1918 (U.S.C. 703711: 40 Stat. 755), as amended (MBTA)**

The Migratory Bird Treaty Act makes it unlawful to pursue, hunt, take, capture, kill, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase or barter, any migratory bird, or their parts, nests or eggs (16 USC 703-711).



The MBTA provides the USFWS regulatory authority to protect families of migratory birds. A complete list of bird species afforded protection under the MBTA can be found at 50 CFR 10.13. The law prohibits any “take” of migratory bird species by any entities, except as permitted by the USFWS. Under permitting guidelines in the Act, the USFWS may issue depredation permits to requesters experiencing damage caused by bird species protected under the Act (see 50 CFR 21). All actions conducted in this EA will be in compliance with the regulations of the MBTA, as amended. The law was further clarified to include only those birds considered migratory and native to the United States by the Migratory Bird Treaty Reform Act of 2004. Under the Reform Act, the USFWS published a list of bird species not protected under the MBTA (70 FR 12710-12716).

Due to an increasing resident Canada goose population and an increase in damage complaints received, the USFWS developed an EIS that analyzed issues and alternatives associated with managing resident goose populations (USFWS 2005). Based on the analyses in the FEIS, several depredation orders were established to address goose damage which allow for the take of geese (see 50 CFR 21.49, 50 CFR 21.50, 50 CFR 21.51, and 50 CFR 21.52). These depredation orders are outlined below and are referenced throughout this EA:

**Control Order for Resident Canada Geese at Airports and Military Airfields (50 CFR 21.49):** This order authorizes managers of commercial, public and private airports (or their employees or agents) and military air operation facilities (and their employees or agents) to take Canada geese, including nests or eggs, on or within three miles of the airport boundaries, without a federal permit. Nests and eggs may be taken between March 1 and June 30, and live birds may be taken only between April 1 and September 15. Take of geese outside of these dates (except for take in accordance with hunting regulations) requires a federal permit. To be authorized to participate in this program, an airport must be part of the National Plan of Integrated Airport Systems and have received federal grant-in-aid assistance, or be a military airfield, meaning an airfield or air station that is under the jurisdiction, custody, or control of the Secretary of a military department. Airport managers acting under authority of the Airport Control Order do not need to register with USFWS in advance, but they must submit a report of activities (including the dates, numbers and county of birds, nests and eggs taken) to USFWS by December 31 annually.

**Depredation Order for Resident Canada Geese Nests and Eggs (50 CFR 21.50):** This order authorizes any landowner, homeowners’ association or local government (and their employees or agents) to take nests or eggs of Canada geese without a federal permit. Nests and eggs may be taken between March 1 and June 30. However, all persons wishing to operate under authority of this Depredation Order (including employees or agents working on behalf of a landowner, association or local government) must register with USFWS at <https://epermits.fws.gov/eRCGR> before any nests or eggs are taken. All persons acting under authority of this order should review all the requirements as they appear in federal regulations to ensure compliance.

**Depredation Order for Resident Canada Geese at Agricultural Facilities (50 CFR 21.51):** This order allows the NYSDEC to authorize landowners, operators, and tenants who are actively engaged in commercial agriculture (agricultural producers or their employees or agents) to take Canada geese, including nests or eggs, from lands that they personally control and where geese are committing damage to agricultural crops, without a federal permit. Nests and eggs may be taken only between March 1 and June 30, and live birds may be taken only between May 1 and August 31. Take of geese outside of these dates (except for take in accordance with hunting regulations) requires a federal permit. Agricultural producers acting under authority of this order do not need to register with USFWS, but they must annually obtain written authorization from NYSDEC prior to taking any geese, nests or eggs.

**Public Health Control Order for Resident Canada Geese (50 CFR 21.52):** This order allows the NYSDEC to authorize take of Canada geese, including nests or eggs, without a federal permit, wherever a federal, state or local public health agency has determined that Canada geese pose a specific, immediate human health threat by creating conditions conducive to the transmission of human or zoonotic pathogens. The NYSDEC has determined that only managers (or their employees or agents) of drinking water supplies or swimming areas that are subject to regular testing for bacteria by a federal, state or local health agency, will be authorized to conduct activities under this order. Nests and eggs may be taken only between March 1 and June 30, and live birds may be taken only between April 1 and August 31. Take of geese outside of these dates (except for take in accordance with hunting regulations) requires state and federal depredation permits.

### **Bald and Golden Eagle Protection Act (16 USC 668)**

Populations of bald eagles showed periods of steep declines in the lower United States during the early 1900s attributed to the loss of nesting habitat, hunting, poisoning, and pesticide contamination. To curtail declining trends in bald eagles, Congress passed the Bald Eagle Protection Act (16 USC 668) in 1940 prohibiting the take or possession of bald eagles or their parts. The Bald Eagle Protection Act was amended in 1962 to include the golden eagle and is now referred to as the Bald and Golden Eagle Protection Act. Certain populations of bald eagles were listed as *endangered* under the Endangered Species Preservation Act of 1966, which was extended when the modern Endangered Species Act (ESA) was passed in 1973. The *endangered* status was extended to all populations of bald eagles in the lower 48 states, except populations of bald eagles in Minnesota, Wisconsin, Michigan, Washington, and Oregon, which were listed as *threatened* in 1978. As recovery goals for bald eagle populations began to be reached in 1995, all populations of eagles in the lower 48 states were reclassified as *threatened*. In 1999, the recovery goals for populations of eagles had been reached or exceeded and the eagle was proposed for removal from the ESA. The bald eagle was officially de-listed from the ESA on June 28, 2007 with the exception of the Sonora Desert bald eagle population. Although officially removed from the protection of the ESA across most of its range, the bald eagle is still afforded protection under the Bald and Golden Eagle Protection Act.

Under the Bald and Golden Eagle Protection Act (16 USC 668-668c), the take of bald eagles is prohibited without a permit from the USFWS. Under the Act, the definition of “take” includes actions that “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb” eagles. The regulations authorize the USFWS to issue permits for the take of bald eagles and golden eagles on a limited basis (see 74 FR 46836-46837, 50 CFR 22.26, 50 CFR 22.27). As necessary, WS would apply for the appropriate permits as required by the Bald and Golden Eagle Protection Act.

### **Endangered Species Act**

Under the ESA, all federal agencies will seek to conserve T&E species and will utilize their authorities in furtherance of the purposes of the Act (Sec.2(c)). WS conducts Section 7 consultations with the USFWS when appropriate to use the expertise of the USFWS to ensure that "any action authorized, funded or carried out by such an agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species . . . Each agency will use the best scientific and commercial data available" (Sec.7 (a)(2)). Evaluation of the alternatives in regards to the ESA will occur in Chapter 3 of this EA.

## **Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds**

Migratory birds are of great ecological and economic value to this country and to other countries. They contribute to biological diversity and bring tremendous enjoyment to millions of Americans who study, watch, feed, or hunt these birds throughout the United States and other countries. The United States has recognized the critical importance of this shared resource by ratifying international, bilateral conventions for the conservation of migratory birds. Such conventions include the Convention for the Protection of Migratory Birds with Great Britain on behalf of Canada in 1916; the Convention for the Protection of Migratory Birds and Game Mammals with Mexico in 1936, the Convention for the Protection of Birds and Their Environment with Japan in 1972 and the Convention for the Conservation of Migratory Birds and Their Environment with the Union of Soviet Socialist Republics in 1978.

These migratory bird conventions impose substantive obligations on the United States for the conservation of migratory birds and their habitats, and through the Migratory Bird Treaty Act, the United States has implemented these migratory bird conventions with respect to the United States. Executive Order 13186 directs executive departments and federal agencies taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement, within two years, a MOU with the USFWS that shall promote the conservation of migratory bird populations. An MOU between WS and USFWS (2012) is currently in effect, and is available at: <https://www.fws.gov/migratorybirds/pdf/management/mouaphis.pdf>.

### **Federal Insecticide, Fungicide, and Rodenticide Act**

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and its implementing regulations (Public Law 110-426) requires the registration, classification, and regulation of all pesticides used in the United States. The EPA is responsible for implementing and enforcing FIFRA. All chemical methods integrated into the WS program in New York are registered with and regulated by the EPA and the NYSDEC Bureau of Pesticides, and would be used by WS in compliance with labeling procedures and requirements.

### **Federal Food, Drug, and Cosmetic Act (21 USC 360)**

The law places administration of pharmaceutical drugs, including those used in wildlife capture and handling, under the Food and Drug Administration.

### **National Historic Preservation Act of 1966, as amended**

The National Historic Preservation Act (NHPA) of 1966, and its implementing regulations (see 36 CFR 800), requires federal agencies to: 1) determine whether activities they propose constitute “undertakings” that have the potential to cause effects on historic properties and, 2) if so, to evaluate the effects of such undertakings on historic resources and consult with the Advisory Council on Historic Preservation, as appropriate. Actions on tribal lands are only conducted at the tribe’s request and under signed agreement; thus, the tribes have control over any potential conflict with cultural resources on tribal properties.

Each method described in this EA that might be used operationally by WS does not cause major ground disturbance, does not cause any physical destruction or damage to property, does not cause any alterations of property, wildlife habitat, or landscapes, and does not involve the sale, lease, or transfer of ownership of any property. In general, such methods also do not have the potential to introduce visual, atmospheric, or audible elements to areas in which they are used that could result in effects on the character or use of historic properties. Therefore, the methods that would be used by WS under the

proposed action are not generally the types of activities that would have the potential to affect historic properties. If an individual activity with the potential to affect historic resources is planned under an alternative selected as a result of a decision on this EA, then site-specific consultation as required by Section 106 of the NHPA would be conducted as necessary.

There is potential for audible effects on the use and enjoyment of a historic property when methods such as pyrotechnics, firearms, and other noise producing methods are used at or in close proximity to such sites for purposes of resolving damage caused by Canada geese. However, such methods would only be used at a historic site at the request of the owner or manager of the site to resolve a damage or nuisance problem, which means such uses would be to the benefit the historic property. A built-in mitigating factor for this issue is that virtually all of the methods involved would only have temporary effects on the audible nature of a site and can be ended at any time to restore the audible qualities of such sites to their original condition with no further adverse effects. Site-specific consultation as required by Section 106 of the NHPA would be conducted as necessary in those types of situations.

### **The Native American Graves and Repatriation Act of 1990**

The Native American Graves Protection and Repatriation Act requires federal agencies to notify the Secretary of the Department that manages the federal lands upon the discovery of Native American cultural items on federal or tribal lands. Federal projects would discontinue work until a reasonable effort has been made to protect the items and the proper authority has been notified.

### **Coastal Zone Management Act of 1972, as amended (16 USC 1451-1464, Chapter 33; P.L. 92-583, October 27, 1972; 86 Stat. 1280)**

This law established a voluntary national program within the Department of Commerce to encourage coastal states to develop and implement coastal zone management plans. Funds were authorized for cost-sharing grants to states to develop their programs. Subsequent to federal approval of their plans, grants would be awarded for implementation purposes. In order to be eligible for federal approval, each state's plan was required to define boundaries of the coastal zone, identify uses of the area to be regulated by the state, determine the mechanism (criteria, standards or regulations) for controlling such uses, and develop broad guidelines for priorities of uses within the coastal zone. In addition, this law established a system of criteria and standards for requiring that federal actions be conducted in a manner consistent with the federally approved plan. The standard for determining consistency varied depending on whether the federal action involved a permit, license, financial assistance, or a federally authorized activity. As appropriate, a consistency determination would be conducted by WS to assure management actions would be consistent with New York's Coastal Zone Management Program.

### **Environmental Justice in Minority and Low-Income Populations (Executive Order 12898)**

Environmental Justice has been defined as the pursuit and equal protection under the law for all environmental statutes and regulations without discrimination based on race, ethnicity, or socioeconomic status. Executive Order 12898, promotes the fair treatment of people of all races, income levels and cultures with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Environmental justice is the pursuit of equal justice and protection under the law for all environmental statutes and regulations without discrimination based on race, ethnicity, or socioeconomic status. Executive Order 12898 requires federal agencies to make environmental justice part of their mission, and to identify and address disproportionately high and adverse human health and environmental

effects of federal programs, policies, and activities on minority and low-income persons or populations. All activities are evaluated for their impact on the human environment and compliance with Executive Order 12898.

WS activities are evaluated for their impact on the human environment and compliance with the Order to ensure Environmental Justice. WS personnel would use methods in as selective and environmentally conscious a manner as possible. All chemicals used by WS would be regulated by the EPA through FIFRA, NYSDAM, by MOU's with federal land management agencies, and by WS' Directives. The WS operational program properly disposes of any excess solid or hazardous waste. WS' assistance is to provide on a requested basis, in cooperation with state and local governments and with discrimination against people who are of low income or in minority populations. The nature of WS' damage management activities is such that they do not have much, if any, potential to result in the disproportionate environmental effects on minority or low-income populations. Therefore, no such adverse or disproportionate environmental impacts to such persons or populations are expected.

### **Protection of Children from Environmental Health and Safety Risks (Executive Order 13045)**

Children may suffer disproportionately for many reasons from environmental health and safety risks, including the development of their physical and mental status. WS and cooperating agencies makes it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children. WS and cooperating agencies have considered the impacts that this proposal might have on children. The proposed activities would occur by using only legally available and approved methods where it is highly unlikely that children would be adversely affected. For these reasons, WS concludes that it would not create an environmental health or safety risk to children from implementing this proposed action. Additionally, since the proposed Canada goose damage management program is directed at reducing human health and safety risks at locations where children are sometimes present, it is expected that health and safety risks to children posed by Canada geese would be reduced.

### **Controlled Substance Act of 1970 (21 USC 821 et seq.)**

This law requires an individual or agency to have a special registration number from the federal Drug Enforcement Administration to possess controlled substances, including those that are used in wildlife capture and handling.

### **Occupational Safety and Health Act of 1970**

The Occupational Safety and Health Act of 1970 and its implementing regulations (29 CFR 1910) on sanitation standards states that, "Every enclosed workplace shall be so constructed, equipped, and maintained, so far as reasonably practical, as to prevent the entrance or harborage of rodents, insects, and other vermin. A continuing and effective extermination program shall be instituted where their presence is detected." This standard includes birds that may cause safety and health concerns at workplaces.

### **Possession, Transportation, and Release of Wildlife by Authorized Persons (NYSDEC)**

Under the New York Administrative Code (NYSDEC), "...U.S. government agencies' employees whose responsibility includes fisheries and wildlife management...will be deemed to be permitted...to capture, temporarily hold or possess, transport, release, and when necessary humanely euthanize wildlife, provided that the methods of and documentation for the capture, possession, transport, release and euthanasia shall be in accordance with board policy."

## **CHAPTER 2: ISSUES AND ALTERNATIVES**

### **2.1 INTRODUCTION**

Chapter 2 contains a discussion of the issues and alternatives, including the issues that will receive detailed environmental impacts analysis in Chapter 3 (Environmental Consequences) and those issues that will not be considered in detail with rationale. Issues are concerns of the public and/or professional community raised regarding potential environmental problems that might occur from a proposed action. Such issues must be considered in the NEPA decision process. Issues relating to the reduction of goose damage were raised during the scoping process for WS and for the USFWS FEIS on the management of resident Canada geese, which was considered in the preparation of this EA and in consultation with the NYSDEC. The issues analyzed in this Environmental Assessment are:

Issue 1 – Effects of Damage Management Activities on Canada Goose Populations

Issue 2 – Effects on Non-target Plant and Wildlife Species, including Threatened and Endangered Species

Issue 3 – Effects of Damage Management on Human Health and Safety

Issue 4 – Effects on Socio-Cultural Elements of the Human Environment

### **2.2 EXPLANATION OF HOW ISSUES AND ALTERNATIVES ARE USED IN NATIONAL ENVIRONMENTAL POLICY ACT DOCUMENTS**

NEPA is a "process-forcing" statute. In order to comply with NEPA, federal agencies must prepare a detailed statement on the environmental impacts of any major federal action. An EA provides evidence and analysis for determining whether the action will cause significant impacts. When it is determined that there will be no significant impacts as a result of the proposed action, an EA fulfills the agency's compliance with NEPA. If it is determined that there will be significant (positive and/or negative) impacts, an EA facilitates preparation of an Environmental Impact Statement.

As part of the scoping process, WS worked with the public, non-governmental organizations and municipal, state, and federal agencies to identify issues regarding Canada geese. The goal is to define the scope of the issues that will be addressed in depth in the analyses included in this EA. Issues that are not significant or those that have been covered in prior environmental documents are eliminated from detailed review. Significant issues are analyzed thoroughly in the document using research, current data, and other means of information.

The alternatives are developed to help the public understand what WS is proposing, allow for the public to offer their thoughts on alternative ways for WS to accomplish what it is proposing, and for the public to offer comments on WS' analysis of the environmental effects of the proposed alternative as well as the standard operating procedures put in place to mitigate potential harmful effects of the proposed alternative. WS is obligated to evaluate all reasonable alternatives in enough detail so that the reader can compare and contrast the environmental effects of each one (Council on Environmental Quality (CEQ) 2007).

### **2.3 ISSUES USED TO DEVELOP THE ALTERNATIVES**

#### **2.3.1 ISSUE 1 EFFECTS OF DAMAGE MANAGEMENT ACTIVITIES ON CANADA GOOSE POPULATIONS**

A common issue when addressing damage caused by geese are the potential impacts of management actions on Canada goose populations. Methods used to resolve damage or threats of damage involve altering the behavior of Canada geese and may require the use of lethal methods when appropriate. Under the proposed action, WS would incorporate both non-

lethal and lethal methods described in Appendix B in an integrated approach to resolve a request for assistance. WS would recommend both non-lethal and lethal methods, as governed by federal, state, and local laws and regulations.

Non-lethal methods can disperse or make an area unattractive to the Canada geese causing damage. Non-lethal methods may reduce the presence of Canada geese at the site and the immediate area around the site. Lethal methods would be employed to remove an individual or those individuals responsible for causing damage or threats to human safety. The use of lethal methods would therefore result in local population reductions in the area where damage or threats are occurring. The number of Canada geese removed from the total population using lethal methods under this alternative would be dependent on the number of requests for assistance received, the number of individuals involved with the associated damage or threat, and the efficacy of methods employed.

The species specifically addressed in this EA is Canada geese (*Branta canadensis*), and the magnitude of WS lethal removal will be evaluated in this section. WS describes magnitude as a measure of the number of animals killed in relation to their abundance. Magnitude may be determined either quantitatively or qualitatively. Quantitative determinations are based on population estimates, allowable harvest levels, and actual harvest data. Qualitative determinations are based on population trends and harvest data when available. Generally, WS only conducts damage management on species whose population densities are high and usually only after they have caused damage. WS' lethal removal is monitored by comparing numbers of geese killed with overall populations or trends in populations to assure the magnitude of lethal removal is maintained below the level that would cause significant adverse impacts to the viability of goose populations. All lethal removal of Canada geese by WS would occur at the requests of a cooperator seeking assistance and only after the removal of Canada geese has been permitted by the USFWS or under depredation orders, both pursuant to the Migratory Bird Treaty Act.

WS' proposed action alternative incorporates an adaptive approach to resolve damage and reduce threats of damage by targeting Canada geese using either lethal or non-lethal methods after applying the WS' Decision Model (Slate et al. 1992) to identify possible techniques. Lethal methods may be used to reinforce non-lethal methods to reduce damage to a level that is more acceptable to the requester. The effects on target Canada goose populations in New York from implementation of the identified alternatives, including the proposed action, are analyzed in Chapter 3. Information on goose populations and trends are often derived from several sources including the USFWS' Atlantic Flyway Waterfowl Harvest and Population Survey Data, the Breeding Bird Survey (BBS), the Christmas Bird Count (CBC), the Partners in Flight Landbird Population database, the Northeast Breeding Waterfowl Plot Survey, published literature, and harvest data. Further information on the sources used by WS to determine the impact of management actions to goose populations is provided below.

#### ***Atlantic Flyway Waterfowl Harvest and Population Survey Data***

Since 1961, estimates of waterfowl harvest and hunting activity and success in the United States have been derived from the USFWS' Waterfowl Harvest Survey. This is a two part survey including (1) a questionnaire survey and (2) a waterfowl-parts collection survey. Each administrative Flyway, including the Atlantic Flyway, summarizes their own report or data book that contains a collection of State-Federal Cooperative Harvest Information Program hunter and harvest data and population survey results. Although data books detail estimates for their respective flyway, all books contain summarized data for the other 3 flyways. These books serve as a reference for providing responses to inquiries from agency personnel, the media, and public. They are published annually.

## ***Breeding Bird Survey***

Bird populations can be monitored by using trend data derived from data collected during the BBS. Under established guidelines, observers count birds at established survey points for a set duration along a pre-determined route. Surveys were started in 1966 and are conducted in June which is generally considered as the period of time when those birds present at a location are likely breeding in the immediate area. The BBS is conducted annually in the United States, across a large geographical area, under standardized survey guidelines. The BBS is a large-scale inventory of North American birds coordinated by the Patuxent Wildlife Research Center under the United States Geological Survey (Sauer et al. 2017). The BBS is a combined set of over 5,000 roadside survey routes primarily covering the continental United States and southern Canada. The primary objective of the BBS has been to generate an estimate of population change for all breeding birds. Populations of birds tend to fluctuate, especially locally, as a result of variable local habitat and climatic conditions. Trends can be determined using different population equations and statistically tested to determine if a trend is statistically significant.

Estimates of population trends from BBS data are derived primarily from route-regression analysis (Geissler and Sauer 1990) and are dependent upon a variety of assumptions (Link and Sauer 1998). The statistical significance of a trend for a given species is reflected in the calculated P-value (i.e., the probability of obtaining the observed data or more extreme data given that a hypothesis of no change is true). The level of statistical significance (e.g., 0.01, 0.05, 0.10) can vary and is often set by those conducting the analysis. Often BBS or other geographically large survey data is not statistically significant at the local level because of relatively smaller sample size (i.e., fewer routes surveyed), more routes with zero observations of a particular bird species which results in larger statistical variance, and low P-values set for statistical significance. The data reported from the BBS has a statistical level of significance set at  $P < 0.05$ .

## ***Christmas Bird Count***

The CBC is conducted in December and early January annually by numerous volunteers under the guidance of the National Audubon Society. The CBC reflects the number of birds frequenting a location during the winter months and is based on birds observed within a 15-mile diameter circle around a central point ( $177 \text{ mi}^2$ ). The CBC data does not provide a population estimate, but can be used as an indicator of trends in the population over time.

## ***Partners in Flight Landbird Population Estimate***

To develop a general estimate of the size of bird populations. Using relative abundances derived from the BBS, Rich et al. (2004) extrapolated population estimates for many bird species in North America as part of the Partners in Flight Landbird Population Estimate database. The Partners in Flight system involves extrapolating the number of birds in the 50 quarter-mile circles (total area/route =  $10 \text{ mi}^2$ ) along routes surveyed during the BBS to an area of interest. The model used by Rich et al. (2004) makes assumptions on the detectability of birds, which can vary for each species. Some species of birds that are more conspicuous (visual and auditory) are more likely to be detected during bird surveys when compared to bird species that are more secretive and do not vocalize often. Information on the detectability of a species is combined to create a detectability factor which may be combined with relative abundance data from the BBS to yield a population estimate (Rich et al. 2004).

Applegate et al. (2011) found that the detectability of bird species does not always follow current assumptions of population modeling or distance sampling theory. Point counts are dependent on an observer experience (Rappole et al. 1998), and is one of the most important sources of bias in Breeding Bird Survey routes. Increases in ambient noise,



changes in breeding seasons due to climate change, and age and ability of surveyors can affect detection rates (Simons et al. 2007). Changes in vegetation density and structure over time can also introduce bias in count data (Simons et al. 2007). Simons et al. (2007) found that the addition of 10 decibels of background noise, can introduce a negative bias exceeding 40% for counts of some species, suggesting that detection bias can seriously compromise the quality of point-count data.

### ***The Northeast Breeding Waterfowl Plot Survey***

The Northeast Breeding Waterfowl Plot survey has been conducted by NH, VT, MA, RI, CT, NY, NJ, PA, DE, MD and VA since 1993 (Heusmann and Sauer 2000). Survey plots (1 km<sup>2</sup>; n = 1,500) are distributed by strata, based on waterfowl densities as determined through the Breeding Bird Survey.

### ***Annual Harvest Estimate***

The populations of several migratory bird species are sufficient to allow for annual harvest seasons that typically occur during the fall migration periods of those species. Migratory bird hunting seasons are established under frameworks developed by the USFWS and implemented in the State by the NYSDEC. For geese, lethal removal can also occur under several depredation orders established by the USFWS. Therefore, the lethal removal of Canada geese can occur during annual hunting seasons and under depredation orders that allows geese to be taken to alleviate damage and to alleviate threats of damage. The number of Canada geese harvested each season is reported by the USFWS and/or the NYSDEC in published reports.

## **2.3.2 ISSUE 2 EFFECTS ON NON TARGET PLANT AND WILDLIFE SPECIES, INCLUDING THREATENED AND ENDANGERED SPECIES**

A common concern among members of the public and wildlife professionals is the possible impact of damage management methods and activities on non-target species, including pets and T&E species. Methods available to resolve damage or threats of damage can be categorized as lethal and non-lethal. Non-lethal methods disperse or otherwise make an area where damage is occurring unattractive to the species (target species) causing the damage, thereby reducing the presence of those species in the area. However, non-lethal methods also have the potential to inadvertently disperse non-target wildlife. Lethal methods remove individuals of the species (target species) causing the damage, thereby reducing the presence of those species in the area and the local population. However, lethal methods also have the potential to inadvertently capture, injure, or kill non-target wildlife.

The Endangered Species Act makes it illegal for any person to ‘take’ any federally listed endangered or threatened species or their critical habitat. The ESA defines take as, "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC 1531-1544). Critical habitat is a specific geographic area or areas that are essential for the conservation of a threatened or endangered species. The Act requires that federal agencies conduct their activities in a way to conserve species. It also requires that federal agencies consult with the appropriate implementing agency (either the USFWS or the National Marine Fisheries Service) prior to undertaking any action that may take listed endangered or threatened species or their critical habitat pursuant to Section 7(a)(2) of the ESA.

Additionally, New York State listed threatened and endangered species, as determined by the NYSDEC, are fully protected under New York State ECL 11-0535. New York State special concern species have Protected Wildlife Status under ECL 11-0103. WS consults with NYSDEC regarding New York State threatened and endangered species pursuant to these statutes.

### **2.3.3 ISSUE 3 EFFECTS OF DAMAGE MANAGEMENT METHODS ON HUMAN HEALTH AND SAFETY**

This issue responds to the concern that some people may have about the effects of using select registered pesticides, and whether they may adversely affect public health or safety. Additionally, this section addresses consumption of Canada goose meat and possible introduction of lead into the environment through lethal Canada goose removal. Both chemical and non-chemical methods have the potential to have adverse effects on human safety.

#### ***Safety of Chemical Methods Employed***

The issue of using chemical methods as part of managing damage associated with wildlife relates to the potential for human exposure either through direct contact with the chemical, or exposure to the chemical from wildlife that have been exposed. Under the alternatives identified, the use of chemical methods would include reproductive inhibitors and repellents.

Alpha-chloralose, a sedative, is also being considered as a method that could be employed under the alternatives to manage damage associated with geese. Alpha-chloralose could be used to sedate geese temporarily and lessen stress on the animal from handling and transportation from the capture site. Drugs delivered to immobilize geese would occur on site with close monitoring to ensure adequate dosing and proper care of the animal. This drug is administered by hand via baits laced with the sedative. Alpha-chloralose is fully reversible with a full recovery of sedated animals occurring.

Methods are further discussed in Appendix B of this EA. The use of chemical methods is regulated by the EPA through the FIFRA, and by WS directives.

#### ***Safety of Non-Chemical Methods Employed***

Most methods available to alleviate damage and threats associated with birds are considered non-chemical methods (e.g., cannon nets, firearms, pyrotechnics, lasers, remote control vehicles), dogs (such as border collies), or are passive live-capture methods (e.g., walk-in style live-traps), or are passive harassment methods (e.g., exclusion). Non-chemical methods employed to reduce damage and threats to safety caused by geese, if misused, could potentially be hazardous to human safety. Methods are also discussed in detail in Appendix B. Many of the non-chemical methods are only activated when triggered by attending personnel.

The primary safety risk of most non-chemical methods occurs directly to the applicator or those persons assisting the applicator. However, risks to others do exist when employing non-chemical methods, such as when using firearms, cannon nets, or pyrotechnics. Most of the non-chemical methods available to address goose damage would be available for use under any of the alternatives and could be employed by any entity, when permitted. Risks to human safety from the use of non-chemical methods will be further evaluated as this issue relates to the alternatives in Chapter 3.

#### ***Safety of Consuming Donated Canada Goose Meat***

As recently as 2010, 6.4 million households were classified as having low food security, and in some cases the food intake of some family members is reduced due to limited resources (Horak et al. 2014). Soup kitchens, food pantries and shelters often step in to assist in feeding nutritious meals to those people in need. Often, the demand for food assistance is high and frequently greater than the available donated food supply (Horak et al. 2014). To better meet the needs of soup kitchens and food banks, several organizations have established a link with wild game hunters and providers to supply protein to people in need. Wild game has become a sought after alternative for protein rich meals, and more than 10,000,000 meals are provided nation-wide that are made up of wild game each year. Nationwide, WS donates more than 60 tons of wild game (geese, deer, feral hogs, goats, and ducks) to a variety of charitable organization each year (Horak et

al. 2014). Although small, there is a potential risk to human health and safety that the meat could contain lead or other contaminants. This issue is further evaluated in Chapter 3.

### ***Safety of Introducing Lead into the Environment***

The use of small caliber rifles to lethally remove Canada geese could lead to human health and safety risks if lead bullet fragments enter the environment. This risk would only occur if the bullet passes through the goose, in the cases of missed shots, or if a goose carcass is not retrieved. Lethal removal of geese through the use of small caliber firearms occurs infrequently in New York and every effort is made to retrieve goose carcasses as discussed in Chapter 3.

## **2.3.4 ISSUE 4 EFFECTS ON THE SOCIO-CULTURAL ELEMENTS OF THE HUMAN ENVIRONMENT**

One issue is the concern that the proposed action or the other alternatives would result in the loss of aesthetic benefits of Canada geese to the public, resource owners, or neighboring residents. Wildlife generally is regarded as providing economic, recreational, and aesthetic benefits (Decker and Goff 1987), and the mere knowledge that wildlife exists is a positive benefit to many people. Aesthetics is the philosophy dealing with the nature of beauty, or the appreciation of beauty. Therefore, aesthetics is truly subjective in nature, dependent on what an observer regards as beautiful. Some of the different concerns that have been expressed include loss of ability to see geese swimming or walking nearby; lack of opportunity to experience feeding geese, especially with children or grandchildren; loss of ability to watch geese fly, or listen to them honk; loss of a bird that is used as an indicator of seasonal change.

For much of the 20<sup>th</sup> century, migrating Canada geese have been a harbinger of the changing seasons. Resident Canada geese provide distinctly different aesthetic benefits, especially in urban settings where opportunities to view wildlife are limited. The tolerance resident geese have towards people and their year round presence has made them a popular subject for wildlife observation, especially for young, elderly and amateur bird watchers. They are an ideal subject for nature study and environmental education due to inhabiting landscapes in close proximity to people. Despite growing conflicts associated with resident Canada geese, most people enjoy hearing or seeing some geese, and would not want the population to disappear completely.

The human attraction to animals has been well documented throughout history and started when humans began domesticating animals. The American public shares a similar bond with animals and/or wildlife in general and in modern societies, a large percentage of households has indoor or outdoor pets. However, some people may consider individual wild animals and birds as “pets” or exhibit affection toward those animals, especially people who enjoy viewing wildlife. Therefore, the public reaction is variable and mixed to wildlife damage management because there are numerous philosophical, aesthetic, and personal attitudes, values, and opinions about the best ways to manage conflicts/problems between people and wildlife.

American hunting tradition holds that wildlife is held in trust for the benefit of all people as well as for future generations, and that every citizen, regardless of wealth, social standing, or land ownership, can hunt or fish as long as it is done responsibly (LePelch 2014). Hunting has evolved from providing food and shelter essential to survival, to what is today primarily an avocational activity, although providing naturally harvested food is still an important reason to hunt (North Carolina Wildlife Resources Commission (NCWRC) 2007). Hunting is a means of harvesting wild game for the table where the hunter knows intrinsically where that animal came from, the food it’s been consuming, the habitat it lives in, and the health and appearance of the meat as it’s prepared for consumption.

Public attitudes toward wildlife vary considerably. Some people believe that all wildlife should be captured and translocated to another area to alleviate damage or threats to protected resources. Some people directly affected by the problems caused by wildlife strongly support removal. Individuals not directly affected by the harm or damage may be supportive, neutral, or totally opposed to any removal of wildlife from specific locations or sites. Some people totally opposed to wildlife damage management want WS to teach tolerance for damage and threats caused by wildlife, and that wildlife should never be killed. Some of the people who oppose removal of wildlife do so because of human-affectionate bonds with individual wildlife or escaped domestic animals. Those human-affectionate bonds are similar to attitudes of a pet owner and result in aesthetic enjoyment.

Some individuals are offended by the presence of overabundant Canada geese or are frightened by their aggressive behaviors. To such people geese represent pests that are nuisances. Their overall enjoyment of other animals is diminished by what they view as a destructive presence of such species. They are offended because they feel that Canada geese proliferate in such numbers and appear to remain unbalanced.

## **2.4 DAMAGE MANAGEMENT STRATEGIES AVAILABLE FOR CANADA GEESE**

Once a request for assistance is received, WS evaluates the actions that could be taken to resolve the damage or conflicts. Below is a list of strategies that WS could employ to resolve issues with Canada geese in New York.

### **2.4.1 INTEGRATED WILDLIFE DAMAGE MANAGEMENT STRATEGIES**

The philosophy behind adaptive integrated wildlife damage management is to implement the best combination of effective management methods in a cost-effective manner while minimizing the potentially harmful effects on natural resources, target and non-target species, and the environment. Adaptive management strategies may change methods and techniques used to manage goose damage based on information learned through monitoring. Adaptive integrated damage management may incorporate habitat modification (e.g., exclusion, vegetation management), goose behavior modification (e.g., scaring, roost dispersal), removal of individual, offending geese (e.g., trapping and shooting), local population reduction (e.g., egg oiling), monitoring, or any combination of these, depending on the circumstances of the specific damage problem.

An adaptive integrated approach to manage geese would be implemented to reduce damage activities to property, human health and safety, agriculture, and natural resources. Damage management would be conducted on public and private property when the resource owner (property owner) or manager requests WS' assistance after an agreement for such actions has been signed. An adaptive integrated damage management strategy would be recommended and used consisting of a combination of non-lethal and lethal methods as deemed appropriate and a description of those methods is available in Appendix B.

### ***TECHNICAL ASSISTANCE/EDUCATION AND OUTREACH***

Technical assistance is the provision of information, recommendations, and demonstrations on available and appropriate methods. It may also include the provision of assistance in the acquisition of supplies or materials not readily available. The implementation of these methods to resolve damage and threats from Canada geese is entirely the responsibility of the requester with no direct involvement by WS. Technical assistance involves collecting information about the nature and extent of the damage, the species involved, number of geese involved and previous actions taken to address the problem. Using the WS Decision Model, WS then provides information on appropriate methods that the requestor may consider to resolve damage or threats. This process may include visits to the location where damage or threats are

occurring, written information, telephone conversations, presentations, or demonstrations. Generally, more than one management strategy is described to the requestor for short and long-term solutions to manage the damage. These strategies are based on the level of risk, need, and the practicality of their application. In some instances, the provision of information about the wildlife results in tolerance and/or acceptance of the situation. In other instances, management options are discussed and recommended. Only those methods legally available for use by the appropriate individual would be recommended by WS.

An important component of technical assistance is education. Education is important because wildlife damage management is about finding compromise and coexistence between the needs of people and needs of wildlife. This is challenging as nature has no balance, but rather is in continual flux. In addition to the dissemination of information and recommendations to those persons requesting assistance with reducing damage or threats, WS provides lectures, courses, and demonstrations to producers, homeowners, state and county agents, colleges and universities, and other interested groups on damage management. Additionally, technical papers are presented at professional meetings and conferences so that other natural resource professionals are kept up to date on recent developments in damage management technology, programs, agency policies, laws and regulations.

### ***OPERATIONAL ASSISTANCE***

Operational assistance would include damage management activities that WS' personnel conducted directly or activities that WS' employees supervised. Initiation of operational damage management could occur when a problem was unable to be effectively resolved through technical assistance alone. Operational assistance occurs when there is a written MOU, work initiation document, or other comparable document signed between WS and the entity requesting assistance. The investigation by WS' personnel would define the nature, history, and extent of the problem; species responsible for the damage, and the methods available to resolve the problem. The professional skills of WS' personnel could be required to resolve the problems effectively, especially if the problem is complex.

## RESEARCH AND DEVELOPMENT

The National Wildlife Research Center functions as the research unit of WS. NWRC uses scientific expertise to develop methods to resolve conflicts between humans and animals while maintaining the quality of the human environment. NWRC research biologists work closely with wildlife managers, researchers, and others to develop and evaluate damage management techniques. NWRC biologists have authored hundreds of scientific publications and reports, and are respected worldwide for their expertise.

### 2.5 WILDLIFE SERVICES DECISION MAKING PROCESS

The WS Decision Model (see WS Directive 2.201) described by Slate et al. (1992) depicts how WS' personnel would use a thought process for evaluating and responding to damage complaints. WS' personnel would assess the problem and then evaluate the appropriateness and availability (legal and administrative) of strategies and methods based on biological, economic, and social considerations. Following this evaluation, WS' employees would incorporate methods deemed practical for the situation into a damage management strategy. After WS' employees implemented this strategy, employees would continue to monitor and evaluate the strategy to assess effectiveness. If the strategy were effective, the need for further management would end. In terms of the WS Decision Model, most efforts to resolve Canada goose damage consist of continuous feedback between receiving the request and monitoring the results of the damage management strategy. The Decision Model is not a written documented process, but a mental problem-solving process common to most, if not all, professions, including WS.

### COMMUNITY-BASED DECISION MAKING

The WS program in New York follows the "co-managerial approach" to solve wildlife damage or conflicts as described by Decker and Chase (1997). Within this management model, WS could provide technical assistance regarding the biology and ecology of Canada geese and effective, practical, and reasonable methods available to the local decision-maker(s) to reduce damage or threats. This assistance could include non-lethal and lethal methods. WS and other state and federal wildlife management agencies may facilitate discussions at local community meetings when resources are available. Resource owners and others directly affected by Canada goose damage or conflicts have direct input into the resolution of such problems. They may implement management recommendations provided by WS or others, or may request management assistance from WS, other wildlife management agencies, local animal control agencies, or private businesses or organizations. In the case of private property owners, the decision-maker is the individual that owns or manages the affected property. The decision-maker has the discretion to involve others as to what occurs or does not occur on property they own or manage.

By involving decision-makers in the process, damage management actions can be presented to allow decisions to involve those individuals that the decision-maker(s) represents. Requests for assistance to manage birds often originate from the decision-maker(s) based on community feedback or from concerns about damage or threats to human safety. As representatives, the decision-maker(s) are able to provide the information to local interests either through technical assistance provided by WS or through demonstrations and presentations by WS on activities to manage damage. This process allows decisions on activities to be made with consideration of local input.

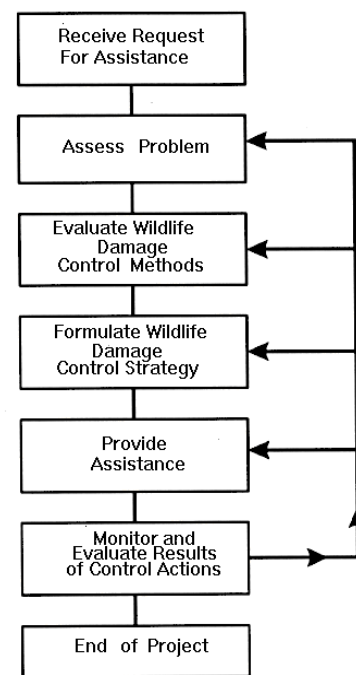


Figure 3. Decision Model as presented by Slate et al. (1992) for developing a strategy to respond to a request for assistance with human-wildlife conflicts.

## ***TRIBAL PROPERTY DECISION MAKERS***

The WS program in New York would only conduct damage management activities on Native American lands when requested by a Native American Tribe. Activities would only be conducted after a MOU, cooperative service agreement, or other agreement had been signed between WS and the Tribe requesting assistance. Therefore, the Tribe would determine when WS' assistance was required and what activities would be allowed. Because Tribal officials would be responsible for requesting assistance from WS and determining what methods would be available to alleviate damage, no conflict with traditional cultural properties or beliefs would be anticipated. Those methods available to alleviate damage associated with geese on federal, state, county, municipal, and private properties under the alternatives analyzed in this EA would be available for use to alleviate damage on Tribal properties when the use of those methods had been approved for use by the Tribe requesting WS' assistance. Therefore, the activities and methods addressed under the alternatives would include those activities that would be employed on Native American lands, when requested and when agreed upon by the Tribe and WS.

## **2.6 STANDARD OPERATING PROCEDURES FOR CANADA GOOSE MANAGEMENT**

Standard Operating Procedures (SOPs) improve the safety, selectivity, and efficacy of those methods available to resolve or prevent wildlife damage. The WS program uses many such SOPs that are incorporated into activities when addressing bird damage and threats.

Some key SOPs pertinent to the proposed action and alternatives include the following:

- ◆ The WS Decision Model, which is designed to identify effective wildlife damage management strategies and their impacts, is consistently used and applied when addressing Canada goose damage.
- ◆ EPA-approved label directions are followed for all pesticide use. The registration process for chemical pesticides is intended to assure minimal adverse effects occur to the environment when chemicals are used in accordance with label directions.
- ◆ Applicable Material Safety Data Sheets and site safety protocols are provided to all WS' personnel involved with specific damage management activities.
- ◆ Reasonable and prudent measures are established through consultation when necessary with the USFWS and the NYSDEC and implemented to avoid adverse impacts to T&E species.
- ◆ Carcasses of birds retrieved after damage management activities have been conducted would be disposed of in accordance with WS Directive 2.515.

Several additional SOPs are applicable to the alternatives and the issues identified, including the following:

### **Issue 1 – Effects of Damage Management Activities on Canada Goose Populations**

- ◆ Management actions are directed toward specific Canada geese causing damage.
- ◆ The removal of Canada geese occurs under conditions permitted or allowed by the USFWS, NYSDEC, and local

ordinances.

- ◆ Lethal removal of birds by WS would be monitored by WS and reported to the USFWS to evaluate population trends and the magnitude of WS' removal of birds in the state.
- ◆ Preference would be given to non-lethal methods, when practical and effective. If practical and effective non-lethal control methods are not available and if lethal control methods are available and appropriate for WS to implement, WS may implement lethal methods.

#### **Issue 2 – Effects on Non-target Plant and Wildlife Species, including Threatened and Endangered Species**

- ◆ Only non-toxic shot is used when employing shotguns to scare or remove Canada geese.
- ◆ Any non-target animals captured in cage traps, nets, or any other restraining device would be released whenever it is possible and safe to do so.
- ◆ WS will consult the USFWS iPaC website and NYSDEC Environmental Resource mapper as necessary to check for indication or presence of threatened and endangered species.

#### **Issue 3 – Effects of Damage Management on Human Health and Safety**

- ◆ All personnel who use chemicals or firearms are trained according to WS Directives.
- ◆ Damage management via shooting would be conducted during times when public activity and access to the control areas are reduced/restricted.
- ◆ WS employees who use alpha chloralose would participate in approved training courses concerning immobilizing drugs.
- ◆ WS would adhere to all established withdrawal times (the amount of time that must pass before an animal can enter the food supply) when using immobilizing drugs for the capture of geese that are agreed upon by WS, the USFWS, the NYSDEC, and veterinarian authorities. Although unlikely, in the event that WS is requested to immobilize geese either during a period of time when harvest of geese is occurring or during a time where the withdrawal period could overlap with the start of a harvest season, WS would euthanize the animal or mark the animal as not safe for human consumption.

#### **Issue 4 – Effects on Socio-Cultural Elements of the Human Environment**

- ◆ Damage management activities would be conducted professionally and in the safest manner possible. Damage management activities would be conducted away from areas of high human activity. If this were not possible, then activities would be conducted during periods when human activity is low (e.g., early morning) whenever possible.
- ◆ All methods or techniques applied to resolve damage or threats to human safety would be agreed upon by entering into a cooperative service agreement, MOU, or comparable document prior to the implementation of those methods.



## 2.7 ALTERNATIVES

Alternatives were developed for consideration based on the need for action and issues using the WS Decision model (Slate et al. 1992). The alternatives will receive detailed environmental impacts analysis in Chapter 3 (Environmental Effects).

### 2.7.1 ALTERNATIVE 1 CONTINUE THE CURRENT CANADA GOOSE DAMAGE MANAGEMENT PROGRAM (NO ACTION/PROPOSED ACTION)

The proposed action/no action alternative would continue to implement an adaptive integrated approach incorporating non-lethal and lethal techniques, as deemed appropriate, to reduce damage and threats caused by Canada geese in New York. This approach would integrate the most practical and effective methods available to resolve Canada goose damage as determined by a site-specific evaluation for each request. Funding could occur through federal appropriations or from cooperative funding. City/town managers, agricultural producers, property owners, and others requesting assistance would be provided with information regarding the use of appropriate non-lethal and lethal techniques.

The adaptive approach to managing damage associated with Canada geese would integrate the use of the most practical and effective methods to resolve a request for damage management as determined by site-specific evaluation to reduce damage or threats to human safety for each request after applying the WS Decision Model. To be most effective, damage management activities should begin as soon as Canada geese begin to cause damage. Goose damage that has been ongoing for some time can be difficult to resolve using available methods since geese are conditioned to feed, roost, loaf, and are familiar with a particular location. Subsequently, making that area unattractive through the use of available methods can be difficult to achieve once damage has been ongoing. WS would work closely with those entities requesting assistance to identify situations where damage could occur and to implement damage management activities under this alternative as early as possible to increase the likelihood of those methods achieving the level of damage reduction requested by the cooperator.

Non-lethal methods recommended and used by WS may include resource management, physical exclusion, human behavior modification, repellents, reproductive control, frightening devices, and other deterrents. Lethal methods recommended and used by WS may include the use of shooting, live capture and transportation to a state -or USDA-regulated poultry processing facility (birds donated for human consumption), and live capture and euthanasia, and nest/egg destruction (see Appendix B for a complete list and description of potential methods). WS would employ humane methods of euthanasia recommended by the American Veterinary Medical Association (AVMA) such as, cervical dislocation or carbon dioxide to euthanize target birds once those birds were live-captured using other methods. Carbon dioxide is an acceptable form of euthanasia for birds while cervical dislocation is a conditionally acceptable method of euthanasia (AVMA 2013). The use of firearms could also be used to euthanize birds live-captured; however, the use of firearms for euthanasia is considered a conditionally acceptable method for wildlife (AVMA 2013).

Lethal and non-lethal methods are intended to be short-term attempts at reducing damage occurring at the time those methods are employed. Long-term solutions to managing bird damage would include limited habitat manipulations (e.g. shoreline riprap) and changes in cultural practices that are addressed further below and in Appendix B.

Under this alternative, WS would respond to requests for assistance in three ways: 1) taking no action if warranted, 2) providing only technical assistance to property owners or managers on actions they could take to reduce damages caused by geese, or 3) providing technical assistance and operational assistance to property owners or managers experiencing damage.

Property owners or managers requesting assistance would be provided with information regarding both the use of effective and practical non-lethal as well as lethal techniques available to achieve their goals. Property owners or managers may choose to implement WS' recommendations on their own under a permit (i.e., technical assistance), use contractual services of private businesses, use volunteer services of private organizations, use the contractual services of WS (i.e., operational assistance), or take no action.

The removal of geese can only legally occur as authorized by the USFWS through the issuance of a depredation permit, and only at levels specified in the permit, unless a depredation/control order has been established by the USFWS, in which case no permit for removal is required. When applying for a depredation permit, the requesting entity submits with the application the number of geese requested to be taken to alleviate the damage. Therefore, under this alternative, the USFWS could: 1) deny an application for a depredation permit when requested to alleviate goose damage, 2) could issue a depredation permit at the removal levels requested, or 3) could issue permits at levels below those removal levels requested.

### **2.7.2 ALTERNATIVE 2 NON-LETHAL CANADA GOOSE MANAGEMENT ONLY**

Under this alternative, WS would implement only non-lethal methods to resolve damage caused by Canada geese. Lethal methods could continue to be used under this alternative by those persons experiencing damage without involvement by WS. In situations where non-lethal methods were impractical or ineffective to alleviate damage, WS could refer requests for information regarding lethal methods to the state, local animal control agencies, or private businesses or organizations. Property owners or managers may choose to implement WS' non-lethal recommendations on their own or with the assistance of WS, implement lethal methods on their own via the permitting process through the USFWS as outlined above, or request assistance (non-lethal or lethal) from a private or public entity other than WS.

### **2.7.3 ALTERNATIVE 3 NO CANADA GOOSE DAMAGE MANAGEMENT CONDUCTED BY WILDLIFE SERVICES**

This alternative precludes any and all activities by WS to reduce Canada goose damage or threats to human health and safety, agriculture, property, or natural resources. WS would not be involved with any aspect of Canada goose damage management in the state. All requests for assistance received by WS to resolve damage caused by geese would be referred to the USFWS, the NYSDEC, or to private entities. This alternative would not deny other federal, state, and/or local agencies, including private entities from conducting damage management activities directed at alleviating damage and threats associated with birds.

Despite no involvement by WS in resolving damage and threats associated with Canada geese in the state, those persons experiencing damage caused by Canada geese could continue to resolve damage by employing those methods legally available. Most of the methods described in Appendix B would be available for use by those persons experiencing damage or threats. In some cases, use of pyrotechnics may be precluded by regulatory burden, and shooting may be precluded by local ordinances. Canada geese could be lethally removed by entities other than WS through the issuance of depredation permits by the USFWS, by hunting for Canada geese, and under depredation and control orders for geese.

## **2.8 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL**

In addition to those alternatives analyzed in detail, several alternatives were identified by WS and the USFWS; however, those alternatives will not receive detailed analyses in this EA for the reasons provided. Those alternatives considered, but not analyzed in detail include:

### **2.8.1 NON-LETHAL METHODS IMPLEMENTED BEFORE LETHAL METHODS**

This alternative would require that all possible non-lethal methods or techniques described in Appendix B be applied to all requests for assistance to reduce damage and threats to safety from Canada geese in New York. If the use of all non-lethal methods failed to resolve the damage situation or reduce threats to human safety for each damage situation, lethal methods could be employed to resolve the request. Non-lethal methods would be applied to every request for assistance regardless of severity or intensity of the damage or threat until deemed inadequate to resolve the request. Verification of the methods used would be the responsibility of WS. No standard exists to determine requester diligence in applying these methods nor are there any standards to determine how many non-lethal applications are necessary before the initiation of lethal methods. Thus, only the presence or absence of non-lethal methods can be evaluated. The proposed action described in section 2.7.1 is similar to a non-lethal before lethal alternative because the use of non-lethal methods is considered before lethal methods by WS (WS Directive 2.101). Adding a non-lethal before lethal alternative and the associated analysis would not add additional information to the analyses in the EA.

### **2.8.2 CAPTURE AND RELOCATE CANADA GEESE**

Relocation is a method of capturing geese and transporting them to other areas where they would be released into the wild or free-living state. Although this seems like a benign and humane method, relocation of wildlife is a biologically unsound management practice and could actually be considered inhumane, especially when the wildlife species being relocated is considered a human health and safety threat. Relocated wildlife must be able to find new food and shelter in an unfamiliar environment, while at the same time learning to avoid predators in the area, and they must be able to do that adequately before the onset of winter (Craven et al. 1998). Relocating individuals of an overabundant species is not recommended based on a review of information on carrying capacity, habitat degradation, historical population trends and reported levels of damage. Public attitudes that promote relocation tend to focus on the well-being of an individual or group of individuals without consideration for the abundance of that species as a whole (Craven et al. 1998). Relocating damaging wildlife typically only relocates the problem, as nuisance animals that are acclimated to a particular food source, such as handouts from people, may seek out familiar situations in the new environments they find themselves in, thus perpetuating the problem (Craven et al. 1998).

Canada geese that were relocated 150 km (93 miles) from their capture site in New York were harvested at a higher rate (23%) during the hunting season than geese that were not relocated (6.6%) (Holevinski et al. 2006). Of the 177 Canada geese that were relocated, 25% returned to their original capture site less than 10 months after they were released (Holevinski et al. 2006).

Finally, the NYSDEC does not routinely authorize the relocation of Canada geese causing damage (J. Stiller, NYSDEC, pers. comm. 2016). Consequently, WS will not relocate Canada geese captured during operational assistance, unless agreed to in consultation with NYSDEC.

### **2.8.3 SHORT TERM ERADICATION AND LONG TERM POPULATION SUPPRESSION**

Eradication as a general strategy for managing goose damage was not considered in detail because all state and federal agencies with interest in or jurisdiction over wildlife oppose eradication of any protected wildlife species. Long term suppression of Canada goose populations on a statewide scale is not realistic or practical to consider as the basis of the WS program. Typically, WS activities in the State would be conducted on a small portion of the sites or areas inhabited or frequented by problem geese.

### **2.8.4 USE OF BIRD DETECTION RADAR ONLY**

Tools to improve aviation safety have received high scrutiny since the ditching of Flight 1549 in the Hudson River of New York after the plane experienced multiple bird strikes with Canada geese during January of 2009 (Nohara 2009). One tool that is frequently proposed to solve Bird Aircraft Strike Hazards is bird detection or avian radar (Herrick 2009, Uhlfelder 2013, Geringer 2013). While there have been advancements in avian radar technology, the use of avian radar to manage aircraft in a 'sense-and-avoid' alert type of system is premature (Herrick 2009). As such, WS will not analyze in detail any option that purports to use only avian radar to manage geese at airports. A review of the Flight 1549 bird strike concluded that even if commercially available avian radars had been deployed at LaGuardia Airport where the flight originated from, a delay or flight path alteration would not have been justified because of the difficulty in predicting a bird strike at 5 km beyond the airport and the limitations with 3-dimensional bird location information (Nohara 2009).

Large scale deployment of avian radar at civil airports has not yet occurred due to limitations with the technology. During periods of rainfall, radar can have a large number of false detections, making it difficult to determine which detections are threats and which are not. When tracking birds exhibiting circling behavior, (such as those exhibited by raptors and vultures) the percentage of time horizontal scanning bird radar able to track the circling pattern was generally under 30% (Geringer 2013). For example, a total of 190 turkey vultures were observed while horizontal scanning radar was evaluated. Of the 190 vultures observed, only 96 were tracked by the radar (Geringer 2013). In summary, testing revealed that radar tracking performance for single large bird targets is fairly poor. Tracking flocking birds resulted in much better detection by the radar, and flocks were tracked much more reliably than single birds (Geringer 2013).

Additionally, the type of radar antenna used can pose limitations to the radar's ability to track targets. Array antennas provide poor altitude resolution of targets (birds), while dish antennas provide more accurate height information, but the computed height information is less reliable as the distance from the antenna increases (Brand et al. 2011). Location of the radar also determines how efficiently the radar can track targets. Buildings, topography, vegetation and other manmade structures may all prevent adequate coverage of some areas (Brand et al. 2011). Structures around an airport, such as tall buildings in the case of urban airports, can create a radar shadow, which is an area where the radar is prevented from detecting targets because the radar waves are unable to reach them due to the obstruction (McGraw 2003).

Center of Excellence for Airport Technology determined that the inherent latency associated with target tracking was the major factor producing validation variability. If the target was at short range, a relatively fast moving bird could be far from the position called by the radar operator and would be missed by the observer. If the target was at a greater range and flying across the observer's field of view, the observer was typically able to verify the bird target and even match the sighting to the continuing track on the radar. Because the radar operates with a time delay while establishing the track of a target (which is based on update intervals of two or more seconds depending on antenna rotation), a plane can move thousands of feet before the bird target movement updates and the final position is confirmed (Herrick 2009). This means that there is a very limited window for the bird target information to be interpreted and relayed to the aircraft in order to prevent a strike.

Clutter is produced when radar beams are reflected from non-target surfaces. These surfaces may be buildings, waves in water, rain, or any particles that may be present in the atmosphere (FAA 2014). Multipath is produced when radar beams propagate from large reflectors, such as aircraft. Some of these reflections are detected by the radar receiver, producing false targets (FAA 2014). Thus, after radar installation and following a period of use, it is possible to develop a better sense of the reliability of target detection. Where there is little or no clutter, targets are readily detected. Where multipath or side-lobe interference exists, target detection is less reliable (FAA 2014). Radars produce large quantities of data, so a major component of avian radar systems is data processing and analysis.

The principle use of avian radar technology at civil airports would be to allow resource managers to respond to events the radar has detected in a timelier manner. The common belief that bird detection radar will allow real-time information for pilots to make split-second decisions to avoid birds and flocks is not realistic (Herrick 2009, Geringer et al. 2016). Ultimately, the purpose of any avian radar system is to support airport wildlife hazard management and contribute to improved safety in an airport's operational environment. Because the use of avian radar alone will not completely solve bird threats at airports, it is currently not an option to use avian radar as the only management tool on airport, instead, it is better suited to support integrated wildlife management efforts.

### **2.8.5 USE OF REPRODUCTIVE INHIBITORS ONLY**

Under this alternative, the only method available to resolve requests for assistance would be the recommendation and the use of reproductive inhibitors to reduce or prevent reproduction in the geese responsible for causing damage. Reproductive inhibitors are often considered for use where wildlife populations are overabundant and where traditional hunting or lethal programs are not publicly acceptable (Muller et al. 1997). Use and effectiveness of reproductive control as a population management tool is limited by population dynamic characteristics (e.g., longevity, age at onset of reproduction, population size, and biological/cultural carrying capacity), habitat and environmental factors (e.g., isolation of target population, cover types, and access to target individuals), socioeconomic factors, and other factors.

Reproductive control for geese could be accomplished through sterilization (permanent) or contraception (reversible). Sterilization could be accomplished through surgical sterilization (vasectomy, castration, and tubal ligation), chemosterilization, or gene therapy. Contraception could be accomplished through hormone implantation (synthetic steroids such as progestins), immunocontraception (contraceptive vaccines), or oral contraception (progestin administered daily).

Although male Canada geese have been successfully sterilized to prevent production of young (Converse and Kennelly 1994), this method is only effective if the female does not form a bond with a different male. The female goose is not always faithful and may produce viable eggs through copulation with other males (N. Clum, Bronx Zoo pers. comm. 2009). Additionally, pair bonds in resident Canada geese only last four to five years (N. Clum, Bronx Zoo pers. comm. 2009) after which the male and female will seek different mates. The ability to identify breeding pairs for isolation and to capture a male bird for vasectomization becomes increasingly difficult as the number of birds increase (Converse and Kennelly 1994). Geese have a long life span once they survive their first year (Cramp and Simmons 1977, Allan et al. 1995); leg-band recovery data indicate that some waterfowl live longer than 20 years. The oldest reported Canada goose was reportedly 30 years and 4 months old, but the average lifespan is 10-24 years (Johnson 2012, Jansson, et al. 2008, Robinson 2005).

The sterilization of resident geese would not immediately reduce the damage caused by the overabundance of the goose population, if ever, as the population would remain stable for many years. Furthermore, Keefe (1996) estimated sterilization of a Canada goose to cost about \$100 per bird.

Population modeling indicates that reproductive control is more effective than lethal control only for some rodent and small bird species with high reproductive rates and low survival rates (Dolbeer 1998). Additionally, the need to treat a sufficiently large number of Canada geese, the need for multiple treatments, and the population dynamics of free-ranging goose populations place considerable logistic and economic constraints on the adoption of reproductive control technologies as a management tool for Canada geese.

Currently, the only reproductive inhibitor registered with the EPA and NYSDEC is nicarbazin (EPA 2005), which is not registered for use with Canada geese.

#### **2.8.6 A LOSS THRESHOLD SHOULD BE ESTABLISHED BEFORE ALLOWING LETHAL METHODS**

One issue identified through WS' implementation of the NEPA processes is a concern that a threshold of loss should be established before employing lethal methods to resolve damage and that wildlife damage should be a cost of doing business. Some damage and economic loss can be tolerated by cooperators until it reaches a threshold where damage becomes an economic burden. That tolerance or threshold level before lethal methods are implemented would differ among cooperators and damage situations. In human health and safety situations establishing a threshold would be difficult or inappropriate because human lives and health could be at stake and attributing a cost to human life or health is unethical.

## **CHAPTER 3 ENVIRONMENTAL EFFECTS**

Chapter 3 provides information needed for making informed decisions in selecting the appropriate alternative to address the need for action described in Chapter 1 and the issues and alternatives described in Chapter 2. This chapter analyzes the potential significant environmental consequences of each alternative as that alternative relates to the issues identified. Other than minor uses of fuels for motor vehicles and other materials, there are no irreversible or irretrievable commitments of resources.

Direct impacts are caused by the action and occur at the same time and place. Indirect impacts are caused by the action and are later in time or farther removed in distance. Indirect impacts may include effects related to induced changes in population density, ecosystems, and land use changes.

Cumulative impacts, as defined by CEQ (40 CFR 1508.7), are impacts to the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts may result from individually minor, but collectively significant, actions taking place over time.

The potential cumulative impacts analyzed below would occur from either WS' damage management program activities over time or from the aggregate effects of those activities combined with the activities of other agencies and private entities. Through ongoing communication among WS, the USFWS, and the NYSDEC, the activities each agency is conducting and its level of harvest are disseminated. WS does not typically conduct direct damage management activities during the same period other federal, state, or private entities are working at a location, but may conduct damage management activities at adjacent sites within the same period. WS would monitor management activities each year in order to evaluate and analyze program activities to ensure they are within the scope of analysis of this EA.

### **3.1 ISSUES CONSIDERED IN DETAIL AND THEIR ASSOCIATED IMPACTS BY ALTERNATIVE**

The proposed action/no action alternative serves as the baseline for the analysis and the comparison of expected impacts among the alternatives. The analysis also takes into consideration mandates, directives, and the procedures of WS, the USFWS, and the state.

#### **3.1.1 ISSUE 1 - EFFECTS ON CANADA GOOSE POPULATIONS**

##### **Population Impact Analyses of the Alternatives**

The issue of the potential impacts of the alternatives on the populations of target geese is analyzed for each alternative below.

##### **Alternative 1 - Continuing the Current Canada Goose Damage Management Program (No Action/Proposed Action)**

The resident Canada goose population in New York was estimated by the USFWS at 230,510 birds in 2015 (standard error 36,414) (Roberts 2015). Based on observations and complaints related to the overall growth of the resident population, NYSDEC biologists believe that a more acceptable number of resident geese in New York is at or below 85,000 birds, with a uniform distribution of 0.8 geese/km<sup>2</sup> (Atlantic Flyway Council 2011). More information about the NYSDEC Canada goose population goal can be found at <http://www.dec.ny.gov/animals/67311.html>.

Under the proposed action, WS would continue to provide both technical assistance and operational assistance using methods described in Appendix B to those persons requesting assistance with managing damage and threats associated with Canada geese. Non-lethal methods can disperse or otherwise make an area unattractive to geese causing damage, thereby, reducing the presence of geese at the site and potentially in the immediate area around the site where non-lethal methods are employed. However, geese responsible for causing damage or threats are moved to other areas with minimal impact on those populations. Non-lethal methods are not employed over large geographical areas or applied at such intensity that essential resources (e.g., food sources, habitat) would be unavailable for extended durations or over a wide geographical scope that long-term adverse effects would occur to the impacted population. Non-lethal methods are generally regarded as having minimal impacts on overall populations of wildlife as individuals are unharmed. The use of non-lethal methods would not have adverse impacts on goose populations under any of the alternatives.

WS' lethal removal is permitted by state and federal regulatory agencies to ensure that the magnitude of removal is maintained below the level that would cause adverse impacts to the viability of Canada goose populations. Further, WS compares the numbers of geese killed with overall state populations or trends in populations. Unless noted otherwise, the state population estimate listed for geese was obtained from the USFWS (Roberts 2015). Additional data used for analysis was the BBS population trends from 1966 to 2013 for New York, population surveys conducted by the USFWS, hunter harvest reports, Second Atlas of Breeding Birds (McGowan and Corwin 2008), and Christmas Bird Counts.

#### **WS' proposed annual lethal removal of Canada geese:**

- ◆ Up to **7,000** geese
- ◆ Up to **500** nests

#### **Canada goose population estimates**

- ◆ New York resident population estimate for 2015: **230,510**
- ◆ BBS New York: **8.7%** population increase from 1966 – 2013
- ◆ Second Atlas of Breeding Birds in NY State (2000-2005): **345%** increase in number of blocks with confirmed nesting geese compared to the first atlas (1980-1985)

#### **Impacts to New York Canada goose populations**

- ◆ WS proposed removal as percent of New York population: **3%**
- ◆ NY average hunter harvest estimate for 2011-2015: **126,500**
- ◆ Cumulative removal as percent of resident breeding population: **27.6%**

Landowners, property managers, state agencies, and federal agencies such as WS are required to obtain migratory bird depredation permits with specified limits on the take of Canada geese. In New York, Canada geese are classified as a migratory game bird species and are regulated by state law. Resident Canada geese still fall under the jurisdiction of the USFWS even if they rarely migrate. Canada goose hunting seasons are regulated by the NYSDEC and USFWS. To manage damage associated with migratory bird species, depredation permits are issued by the USFWS.

The number of Canada geese lethally removed by all known sources is shown in Table 4. Most requests for assistance received by WS to address damage caused by Canada geese occur April through July, when geese present in New York are considered resident geese. The minimal number of migrant Canada geese lethally removed by WS is not expected to have any significant impact on regional or flyway goose populations.



Distinguishing resident geese from migratory geese is not possible through visual identification. However, based upon requests received and the type of damage occurring, Canada goose damage addressed by WS from FY 2009 through FY 2015 was likely caused by resident geese (i.e., present in New York year round).

Table 4. Number of Canada geese lethally removed by all sources in New York during calendar years 2011 through 2015.

Year	WS' Lethal Removal <sup>1</sup>	Hunter Harvest <sup>2</sup>			Removal by Depredation Permit <sup>3</sup>	Removal by Depredation and Control Orders <sup>4</sup>	Total Lethal Removal <sup>5</sup>
		September	Regular	Late			
2011	3,224	53,100	73,500	0	890	934	131,648
2012	5,236	58,200	77,700	0	837	1,645	143,618
2013	3,379	69,400	64,900	2,000	729	1,732	142,140
2014	3,050	70,900	67,400	0	669	1,290	143,309
2015	3,042	32,000	63,400	NE <sup>6</sup>	407	1,254	100,103

<sup>1</sup> WS' lethal removal is reported to USFWS by fiscal year, but for the purposes of this chart is being reported by calendar year. For 2012, the number of geese lethally removed by WS increased due to the number of geese lethally removed under the Airport Control Order.

<sup>2</sup> Data from Atlantic Flyway Waterfowl and Population Survey Data (Roberts 2015).

<sup>3</sup> Data Provided by USFWS (C. Dwyer, personal communication 2017).

<sup>4</sup> Data Provided by NYSDEC (J. Stiller, personal communication 2017).

<sup>5</sup> Total lethal removal is reported by calendar year and includes WS' lethal removal.

<sup>6</sup> Not estimated (Roberts 2015).

In the Atlantic Flyway, capture and lethal removal of Canada geese during the summer molt, also known as roundups, are becoming a more common method to manage burgeoning resident Canada goose populations. The number of roundups conducted has increased each year. From FY 2011 to FY 2015, WS removed an average of 3,586 geese each year for the protection of human health and safety. As the WS program in New York potentially expands to work with more airports, lethal removal of migratory Canada geese may also increase. Based upon past requests for assistance and potential increases in future requests for services, it is anticipated that no more than 7,000 Canada geese (mostly resident geese) would be killed by WS annually under the proposed action, subject to permit limitations.

Table 5. Number of Canada geese lethally removed by WS in each month in 2015 (Migratory Canada geese are not typically present between the shaded months from May to August). Shaded area represents months where only resident Canada geese are believed to be present in New York.

<b>Month</b>	<b>Lethally Removed</b>
January	2
February	6
March	1
April <sup>1</sup>	24
May	30
June	2,592
July	361
August	18
September	6
October	0
November	0
December	2
<b>Total</b>	<b>3,042</b>

<sup>1</sup> The majority of geese present in April are resident geese; however, some migratory Canada geese are present in April

Management actions by WS that may result in the lethal removal of migratory Canada geese would be due to the protection of human health and safety at airports and drinking water reservoirs. Canada goose management at these facilities is conducted throughout the year whenever the threat arises, and although non-lethal means are used when possible to reduce threats from Canada geese, lethal control is sometimes necessary. While the potential to lethally remove migratory Canada geese may increase, minimal lethal control combined with extensive non-lethal measures should minimize the lethal removal of migratory geese. Additionally, although it is possible that geese lethally removed between September and March are migratory Canada geese, it is just as likely that these geese are resident individuals.

WS does not expect to have a substantial impact on the three populations of geese that migrate through New York. In 2015, WS lethally removed 3,042 geese in New York State; only 41 geese were lethally removed during months when migratory geese were potentially moving through the state (Table 5). However, if all 7,000 Canada geese lethally removed were migratory birds, the total number would represent 6.1% of the SJB, 5.2% of the NAP, or 2.2% of the AP populations. As previously noted though, WS' lethal removal during this migratory period is extremely low. WS typically manages geese during the molting season when those three migratory populations are not in New York. While populations of migratory Canada geese may be locally reduced, applicable state and federal laws and regulations authorizing lethal removal of Canada geese ensure that migratory populations would not be reduced below Atlantic Flyway population goals.

Canada goose nests are authorized to be destroyed (which may involve treatment of eggs by oiling, puncturing, or adding to inhibit reproduction) by the USFWS through depredation permits issued to WS. WS' nest removal numbers from 2011 through 2015 are shown in Table 6.

Table 6. All known treatment of Canada goose nests in New York from 2011 through 2015. Total does not include an unknown number of nests that were destroyed under the Public Health Depredation Order.

Year	WS' Nests <sup>1</sup>	Depredation and Control Order Nests <sup>2</sup>	Total Nests Removed in NY
2011	189	25	214
2012	291	27	318
2013	265	35	300
2014	305	20	325
2015	292	47	339

<sup>1</sup> Data from WS MIS reported by fiscal year.

<sup>2</sup> Data provided by Chris Dwyer, USFWS 2016. Data incomplete for years 2011 – 2015.

### ***Effects on Hunting***

WS' goose damage management activities would primarily be conducted on populations where hunting access is restricted (e.g., airports, urban and suburban areas) or has been ineffective (e.g., urban and suburban areas). In these areas, Canada goose survival rates are high due to the lack of natural predators and limited exposure to hunting, and therefore round-ups and vehicle collisions are the most common cause of mortality (Conover 1998). The use of some management methods may even disperse geese from areas where damage is occurring to areas outside the damage area, which could serve to move geese from those less accessible areas to places accessible to legal hunters.

Further, according to information from the USFWS, the majority of hunter harvested geese are likely resident birds from the Atlantic Population as evidenced by banding data acquired during the Special Early Hunting Season (September), Regular Hunting Season (October-November), and Late Hunting Season. A concern that is sometimes raised by interested parties is that WS would affect the ability of licensed citizens to harvest geese during the regulated goose hunting seasons since WS' Canada goose damage management activities would reduce local goose populations.

The recent 5-year average of total geese harvested by hunters is 126,500 geese per year with an average of 56,720 for September (resident) goose season harvests alone (Roberts 2016). WS' average lethal removal of 3,586 geese per year is made up of greater than 99% resident Canada geese. Therefore, for consistency, we compare WS' lethal removal to the average hunting resident goose removal which takes place during the September resident goose season. WS' average represented 6.3% of this average September goose season harvest. WS' proposed lethal removal of 7,000 birds would represent 12.3% of the average September goose season harvest.

### ***Direct, Indirect, and Cumulative Effects:***

WS' proposed removal level will have no adverse direct or indirect effects on the local Canada goose populations. WS' proposed removal level only represents 3% of the estimated state population. WS does not typically remove geese during the migratory goose hunting period; however, as indicated above, minimal numbers of geese are occasionally removed during this period, at airports for the protection of human safety. This minimal removal is not expected to have adverse direct or indirect effects on migratory goose populations.

As with the lethal removal of geese, the destruction of nests and/or eggs (which may involve treatment of eggs by oiling, puncturing, or adding to inhibit reproduction) must be authorized by the USFWS through depredation permits or control orders. Therefore, the number of geese removed and the number of nests destroyed by WS annually would occur at levels permitted by the USFWS pursuant to the MBTA.

WS's annual lethal removal of Canada geese will have no effect on the sport hunting community's opportunity to harvest geese. While WS' proposed removal of 7,000 individuals represents 12.3% of the average annual harvest in New York during the September season, most of these birds are not accessible to hunters due to their location in non-hunting areas. Further, the population trend for resident Canada geese has been increasing substantially for the past several years (Sauer et al. 2017).

The total of the potential lethal removal by all non-WS entities, WS' proposed removal, and the annual harvest is not expected to create significant impacts to Canada goose populations. While the cumulative lethal removal represents 27.6% of the resident population, state goose populations are still far exceeding the recommended population level of 85,000 birds. Additionally, the removal of Canada geese by WS would only occur at levels authorized by the USFWS and NYSDEC, which ensures WS' removal and removal by all entities, including hunter harvest, would be considered to achieve these agencies' desired population goals for Canada geese. Provided that the goose population remains at levels that would sustain an annual harvest, WS' removal is of low magnitude when compared to the number of geese harvested by sport hunters.

### **Alternative 2 – Non-lethal Canada Goose Damage Management Only**

Under this alternative, WS would not use lethal methods to resolve goose damage problems. Although some unintentional mortality might result from the use of goose capture devices like air cannons, these incidents are likely to be rare and would have negligible impacts on goose populations. Individuals, agencies and organizations would still be able to obtain permits for lethal bird removal from the USFWS and NYSDEC. The number of geese lethally removed would be variable, but not likely to exceed the level in Alternative 1. Impacts to hunter harvest would likely be similar as well.

#### ***Direct, Indirect, and Cumulative Effects:***

Depending upon the experience, training and methods available to the individuals conducting the management, potential direct and indirect effects on target goose populations would likely be the same as or less than Alternative 1 (i.e. less experienced individuals may not be able to lethally remove or disperse as many geese as trained WS biologists/technicians). However, for the same reasons shown under Alternative 1, it is unlikely that significant adverse direct or indirect effects would occur to goose populations by implementation of this alternative. Because WS would be able to provide assistance with non-lethal Canada goose management, risks of adverse cumulative impacts from actions by non-WS entities may be less than with Alternative 3.

### **Alternative 3 – No Canada Goose Damage Management Conducted by Wildlife Services**

Under this alternative, WS would not conduct Canada goose damage management activities. WS would have no direct involvement with any aspect of addressing damage caused by geese and would provide no technical assistance. No removal of geese by WS would occur. Geese could continue to be lethally removed to resolve damage and/or threats occurring either through depredation permits issued by the USFWS, under depredation orders, or during the regulated hunting seasons. Management actions taken by non-federal entities would be considered the *environmental status quo*.

#### ***Direct, Indirect, and Cumulative Effects:***

Local goose populations could decline, stay the same, or increase depending on actions taken by those persons experiencing goose damage. While WS would provide no assistance under this alternative, other individuals or entities

could conduct lethal damage management resulting in direct or indirect impacts similar to the proposed action. Since geese would still be removed under this alternative, the potential direct, indirect, and cumulative effects on the populations of geese in New York would be similar among all the alternatives for this issue.

### **3.1.2 ISSUE 2 - EFFECTS ON NON-TARGET PLANT AND WILDLIFE SPECIES, INCLUDING THREATENED AND ENDANGERED SPECIES**

#### **Alternative 1 - Continuing the Current Canada Goose Damage Management Program (No Action/Proposed Action)**

The potential adverse effects to non-target plant and wildlife species occurs from the employment of methods to address goose damage. Under the proposed action, WS could provide both technical assistance and direct operational assistance to those persons requesting assistance. WS personnel are experienced and trained in wildlife identification and to select the most appropriate methods for taking targeted animals and excluding non-target species. To reduce the likelihood of capturing non-target wildlife, WS would employ the most selective methods for Canada geese, and determine placement of methods to avoid exposure to non-target animals. Standard operating procedures to prevent and reduce any potential adverse impacts on non-target wildlife are discussed in Chapter 2 of this EA. Despite the best efforts to minimize removal of non-target species during program activities, the potential for adverse impacts to these animals exists when applying both non-lethal and lethal methods to manage damage or reduce threats to safety. From 2012 to 2016, no non-target wildlife or plant species were removed by WS while Canada goose management was taking place in New York.

The WS program does not attempt to eradicate any species of native wildlife in the state. WS operates in accordance with international, federal, and state laws and regulations enacted to ensure species viability. WS operates on a small percentage (<1%) of the 54,555 sq. mi. of the land mass in New York. Additionally, when utilizing kayaks or boats on a body of water, WS will follow the state guidelines on boat cleaning for water bodies of concern. Therefore, those activities that would occur under any of the alternatives that involve Canada goose damage management would not adversely affect biodiversity.

Special efforts are made to avoid jeopardizing T&E species through biological evaluations of the potential effects of goose damage management methods, and through implementing special protocols when necessary (see Appendix C). Wildlife Services' SOPs to avoid T&E effects are described in Chapter 2 of this EA.

**Federally Listed Species** - The list of species federally designated as threatened and endangered in New York as determined by the USFWS and the National Marine Fisheries Service was obtained and reviewed during the development of this EA. After review of the T&E species listed in New York and the activities described in this EA, WS had determined that activities conducted pursuant to the proposed action would either have a "No Effect" determination, or a "May affect but not likely to adversely affect" determination on T&E species listed in New York or their critical habitats (Appendix C and D).

The 1988 amendment to the Fish and Wildlife Conservation Act mandates the USFWS to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973." Birds of Conservation Concern (BCC) 2008 is the most recent effort to carry out this mandate (USFWS 2008). Migratory bird species which are included on the BCC list for the Northeast Region can be found in Table 44 (page 62) of the report, available at: <https://www.fws.gov/migratorybirds/pdf/management/BCC2008.pdf>.

**New York State Listed Species** - The list of T&E species designated by the New York State Department of Environmental Conservation was also obtained during the development of this EA. Based on the methods and scope of activities proposed under this alternative, activities conducted within the scope of analysis would not adversely affect any species listed as threatened and endangered in the State of New York (Appendix E).

***Direct, Indirect, and Cumulative Effects:***

While every precaution is taken to safeguard against taking non-target or threatened and endangered plants and wildlife during operations, the use of such methods can result in the incidental removal of unintended species or take of threatened and endangered wildlife. Those occurrences are rare and should not affect the overall populations of any species under the proposed action. WS' removal of non-target species during activities to reduce damage or threats to human safety associated with geese is expected to be extremely low to non-existent. WS would monitor the potential for removal of non-target or threatened and endangered plants to ensure program activities or methodologies used in Canada goose damage management do not create direct effects on those populations. Methods available to resolve and prevent goose damage employed by trained, knowledgeable personnel are highly selective for target Canada geese. WS would annually report to the USFWS and/or the NYSDEC any non-target removal to ensure removal by WS is considered as part of management objectives established. The potential impacts to non-target or threatened and endangered plants and wildlife are similar to the other alternatives and are considered to be minimal to non-existent. In the unlikely event that a threatened or endangered species is taken by WS, the event would be reported immediately to USFWS.

Non-lethal methods have the potential to cause adverse direct effects to non-target or threatened and endangered wildlife primarily through exclusion, harassment, and dispersal. The use of auditory and visual dispersal methods used to reduce damage or threats caused by geese could also disperse non-targets in the immediate area the methods are employed. Therefore, non-target wildlife may be dispersed from an area while employing non-lethal dispersal techniques. Like target species, the potential direct impacts on non-target species are expected to be temporary with target and non-target species often returning after the cessation of dispersal methods. WS will make every reasonable effort to avoid impacting threatened and endangered species when applying these methods.

Non-lethal methods would not be employed over large geographical areas or applied at such intensity that essential resources (e.g., food sources, habitat) would be unavailable for extended durations or over a wide geographical scope and would be unlikely to cause any harm to affected species. Non-lethal methods are generally regarded as having minimal direct impacts on overall populations of wildlife since individuals of those species are unharmed. Any exclusionary device erected to prevent access of geese also potentially excludes species that are not the primary reason the exclusion was erected. The larger the treatment area, the more species could likely be affected; therefore, if the area is large enough, adverse indirect effects on non-target species may occur, but these are expected to be minimal. Additionally, WS will not be conducting work in or adjacent to sensitive habitats. Therefore, the use of non-lethal methods would not have significant impacts on non-target populations under any of the alternatives.

Other non-lethal methods available for use under this alternative include live traps, nets, trained dogs, and repellents. Live traps (e.g., cage traps, walk-in traps, decoy traps) and nets restrain geese once captured and are considered live-capture methods. Live traps do have the potential to capture non-target species but it is an extremely rare occurrence because these traps are highly selective and are monitored by WS employees while in place. Therefore, no direct effects are expected on non-targets. Due to the habitats where work will be conducted, impacts to non-target species would be insignificant, discountable, and/or beneficial. For example work will not be conducted in areas where many T&E species exist, such as the ocean, cliffs, gorges, ledges, pine barrens, sand dunes, and forests.

Only those repellents registered with the EPA pursuant to the FIFRA and registered for use in New York would be recommended and used by WS under this alternative. Therefore, the use and recommendation of repellents would not have negative direct or indirect effects on non-target or threatened and endangered wildlife and plants when used according to label requirements. Most repellents for geese are derived from natural ingredients that pose a low risk to non-targets or plants when exposed to or when ingested. Two chemicals commonly registered with the EPA as goose repellents are methyl anthranilate and anthraquinone. Methyl anthranilate naturally occurs in grapes, and has been used to flavor food, candy, and soft drinks. Anthraquinone naturally occurs in plants like aloe and can be used to make dye. Both products claim to be deter geese from feeding on lawns. Several products are registered for use to reduce goose damage containing either methyl anthranilate or anthraquinone. Formulations containing those chemicals are liquids that are applied directly to susceptible resources.

The use of firearms is essentially selective for Canada geese since geese are easily identified prior to application; therefore, no adverse direct or indirect effects to non-target or threatened and endangered wildlife would be anticipated from use of this method. The euthanasia of geese by WS personnel would be conducted in accordance with WS Directive 2.505. Chemical methods used for euthanasia would be limited to carbon dioxide administered in an enclosed chamber after geese have been live-captured. Since live-capture of geese using other methods occurs prior to the administering of euthanasia chemicals, no adverse direct or indirect effects to non-target or threatened and endangered wildlife would occur under this alternative. WS' recommendation that geese be harvested during the regulated season by private entities to alleviate damage would not increase risks to non-target animals.

During the migration period, eagles occur throughout the United States and parts of Mexico (Buehler 2000). Under the Bald and Golden Eagle Act, activities that could result in the "take" of eagles cannot occur unless the United States Fish and Wildlife Service allow those activities to occur through the issuance of a permit. Take could occur through purposeful take (e.g., harassing an eagle from an airport using pyrotechnics to alleviate aircraft strike hazards) or non-purposeful take (e.g., unintentionally capturing an eagle in a trap). Both purposeful take and non-purposeful take require a permit from the United States Fish and Wildlife Service (see 50 CFR 22.26, 50 CFR 22.27). Additionally, bald eagles are protected in New York State under ECL 11-0537. In those cases where purposeful take could occur or where there is a high likelihood of non-purposeful take occurring, WS would apply for a permit for those activities.

It is possible that routine activities conducted by WS' personnel under the proposed action alternative could occur in areas where bald eagles are present, which could disrupt the current behavior of an eagle or eagles that were nearby during those activities. As discussed previously, "take" as defined by the Bald and Golden Eagle Protection Act, include those actions that "disturb" eagles. Disturb has been defined under 50 CFR 22.3 as those actions that cause or are likely to cause injury to an eagle, a decrease in productivity, or nest abandonment by substantially interfering with their normal breeding, feeding, or sheltering behavior.

WS has reviewed those methods available under the proposed action alternative and the use patterns of those methods. The routine measures that WS conducts would not meet the definition of disturb requiring a permit for the non-purposeful take of bald eagles. The USFWS states, "Eagles are unlikely to be disturbed by routine use of roads, homes, or other facilities where such use was present before an eagle pair begin nesting in a given area. For instance, if eagles build a nest near your existing home, cabin, or place of business you do not need a permit" (USFWS 2015b). Therefore, activities that are species-specific and are not of a duration and intensity that would result in disturbance as defined by the Act would not result in non-purposeful take. Activities, such as walking to a site, discharging a firearm, or riding an ATV along a trail, generally represent short-term disturbances to sites where those activities take place. WS would conduct activities that were located near eagle nests using the National Bald Eagle Management Guidelines (USFWS 2015b). The categories that would encompass most of these activities are Category D (Off-road vehicle use), Category F (Non-

motorized recreation and human entry), and Category H (Blasting and other loud, intermittent noises). These categories generally call for a buffer of 330 to 660 feet for category D and F, and a ½-mile buffer for category H. The NYSDEC also issued the NYS Bald Eagle Conservation Plan in 2016. WS would take active measures to avoid disturbance of bald eagle nests by following these guidelines and plans. However, other routine activities conducted by WS do not meet the definition of “disturb” as defined under 50 CFR 22.3. Those methods and activities would not cause injuries to eagles and would not substantially interfere with the normal breeding, feeding, or sheltering behavior of bald eagles.

WS does not anticipate any adverse cumulative impacts on non-target or threatened and endangered plants or wildlife from the implementation of the proposed Canada goose damage management methods. Based on the methods available to resolve goose damage and/or threats, WS does not anticipate the number of non-targets removed to reach a magnitude where declines in those species’ populations would occur. Additionally, WS does not anticipate any take of T&E species. Therefore, removal under the proposed action of non-targets will not create adverse cumulative effects on non-target species.

### **Alternative 2 – Non-lethal Canada Goose Damage Management Only**

Under this alternative, risks to non-target or threatened and endangered plants or wildlife from WS actions would likely be limited to the use of frightening devices and exclusionary devices as outlined under Alternative 1. Although the availability of WS assistance with non-lethal Canada goose methods could decrease incentives for non-WS entities to use lethal goose damage management methods, non-WS efforts to reduce or prevent damage could result in less experienced persons implementing goose damage management methods and potentially lead to a greater removal of non-target wildlife.

#### ***Direct, Indirect, and Cumulative Effects:***

Similar to Alternative 3, it is possible that frustration from the resource owner due to the inability to reduce losses could lead to illegal use of toxicants, or other non-specific damage management methods by others could lead to unknown direct or indirect effects to non-target or threatened and endangered plants or wildlife (Appendix C). Hazards to T&E species could be more variable under this alternative than Alternative 1. Potential direct or indirect effects to non-target species could therefore be greater under this alternative for methods that are less selective. Direct effects on non-targets from non-lethal methods of goose damage management conducted by WS would be similar to Alternative 1. Because WS would only employ non-lethal methods under this alternative, indirect effects on non-target species could occur when implementing exclusionary devices if the area is large enough. The larger the treatment area, the more species could likely be affected; therefore, if the area is large enough, adverse indirect effects on non-target species may occur, but these are expected to be minimal. Additionally, WS will not be conducting work in or adjacent to sensitive habitats. The ability to reduce negative effects caused by geese to wildlife species and their habitats, including T&E species, would be variable based upon the skills and abilities of the person implementing goose management programs. While cumulative impacts would be variable, WS does not anticipate any significant cumulative impacts from this alternative.

### **Alternative 3 – No Goose Damage Management Conducted by WS**

Under this alternative, WS would not be directly involved with damage management activities, but Canada geese could continue to be removed by individuals or agencies other than WS under depredation permits issued by the USFWS and the NYSDEC, removal would continue to occur during the regulated harvest season, and geese could still be removed under the depredation orders. Risks to non-targets and T&E species would continue to occur from those who implement goose damage management activities on their own or through recommendations by the other federal, state, and private



entities. Although some risks occur from those people that implement bird damage management in the absence of any involvement by WS, those risks are likely low and are similar to those under the other alternatives.

***Direct, Indirect, and Cumulative Effects:***

No direct or indirect impacts to non-target or threatened and endangered plants or wildlife would occur by WS under this alternative. The ability to reduce damage and threats of damage caused by geese to other wildlife species and their habitats, including T&E species, would be variable based upon the skills and abilities of the person implementing damage management actions under this alternative. The risks to non-target or threatened and endangered plants or wildlife species would be similar across the alternatives since most of those methods described in Appendix B would be available across the alternatives. If those methods available were applied by non-WS personnel as intended, then direct, indirect, and cumulative effects to non-target or threatened and endangered plants or wildlife would be the same as Alternative 1. If methods available were applied incorrectly or applied without knowledge of goose behavior, risks to non-target or threatened and endangered plants or wildlife would be greater under this alternative, but still insignificant. Therefore, direct, indirect, or cumulative impacts to non-target or threatened and endangered plants or wildlife could occur under this alternative; however, WS does not anticipate any significant cumulative impacts.

**3.1.3 ISSUE 3 - EFFECTS ON HUMAN HEALTH AND SAFETY**

Potential effects on human health and safety are described below and include safety of methods being utilized, as well as consumption of donated Canada goose meat.

**Alternative 1 - Continuing the Current Canada Goose Damage Management Program (No Action/Proposed Action)**

The cooperator requesting assistance is made aware through a MOU, cooperative service agreement, inter-agency agreement, or a similar document of the methods that could be potentially used at that location. Any of these documents makes the cooperator aware of the use of those methods on the property so they can identify any risks to human health and safety.

WS would use the Decision Model to determine the appropriate method or methods that would effectively resolve the request for assistance. Those methods would be continually evaluated for effectiveness and if necessary, additional methods could be employed. Risks to human safety from technical assistance conducted by WS would be similar to those risks addressed under Alternative 2. The use of non-lethal methods as part of an integrated approach to managing damage by WS would be similar to those risks addressed by the other alternatives.

WS' employees who conduct activities would be knowledgeable in the use of methods, Canada goose biology, and WS' Directives. That knowledge would be incorporated into the decision-making process inherent with the WS' Decision Model that would be applied when addressing threats and damage. Prior to and during the utilization of lethal methods, WS' employees would consider risks to human safety based on location and method. Potential risks to human safety from the use of methods could be greater in urban areas when compared to rural areas that are less densely populated. Consideration would also be given to the location where damage management activities would be conducted based on property ownership. If locations where methods would be employed occur on private property in rural areas where access to the property is controlled and monitored, the risks to human safety from the use of methods would likely be less. If damage management activities occur at parks or near other public use areas, then risks of the public encountering damage management methods and the corresponding risk to human safety increases. Activities would generally be conducted

when human activity is minimal (e.g., early mornings, at night) or in areas where human activities are minimal (e.g., in areas closed to the public).

Safety issues can arise related to misusing firearms and the potential human hazards associated with firearm use when employed to reduce damage and threats. To help ensure safe use and awareness, WS' employees who use firearms to conduct official duties are required to attend an approved firearm safety training course and to remain certified for firearm use; WS' employees must attend a re-certification safety training course in accordance with WS Directive 2.615. WS' employees who carry and use firearms as a condition of employment are required to attest that they have not been convicted of a misdemeanor crime of domestic violence. A thorough safety assessment would be conducted before firearms were deemed appropriate to alleviate or reduce damage and threats to human safety when conducting activities. WS would work closely with cooperators requesting assistance to ensure all safety issues were considered before the use of firearms was deemed appropriate. All methods, including firearms, must be agreed upon with the cooperator to ensure the safe use of methods.

All WS' personnel who handle and administer chemical methods would be properly trained in the use of those methods. Training and adherence to agency directives would ensure the safety of employees applying chemical methods. Geese euthanized by WS or captured using chemical methods would be disposed of in accordance with WS Directive 2.515 and applicable federal and state permits. All euthanasia would occur in the absence of the public to further minimize risks.

### ***Consumption of Donated Canada Goose Meat***

Commercially produced meats are often subjected to routine screenings for contaminants; however, the exposure to environmental contaminants has not been well studied (Horak et al. 2014). The locavore (eating food that is locally produced) movement has also generated some discussion regarding the health of wild caught, locally sourced meat (Tidball et al. 2014). In order to ensure the safety of consuming wild game meat donations, WS studied 17 contaminants of concern in the breast meat of wild Canada geese. The result showed that adult geese were below exposure limits set by the USDA Food Safety and Inspections Service and the U.S. Food and Drug Administration (Horak et al. 2014). Additionally, geese that are donated for human consumption are live captured and transported to a state or a USDA regulated poultry processing facility. This protocol follows recommendations by the NYS Department of Health, and consumption of donated Canada goose meat is not expected to cause any human health or safety problems.

### ***Effects from the Use of Lead Ammunition***

The lethal removal of Canada geese by WS in New York occurs primarily from the use of shotguns using non-toxic shot. However, the use of small-caliber rifles could be employed to lethally remove some geese in rare situations. To reduce risks to human safety and property damage from bullets passing through geese, the use of rifles is applied in such a way (e.g., caliber, bullet weight, distance) to decrease the likelihood of the bullet passing through birds. Geese that are removed using rifles would occur within areas where retrieval of all bird carcasses for proper disposal is highly likely such as nighttime roosting sites. Roosting sites are water bodies where geese congregate after feeding afield during the day (Schultz et al. 1988). With risks of lead exposure to human health and safety being primarily from bullet fragments entering the environment, retrieval and proper disposal of bird carcasses greatly reduces the risk that lead will enter the environment.

Deposition of lead into soil possibly could occur if, during the use of a rifle, the projectile passes through the goose, if misses occur, or if the goose carcass is not retrieved. Laidlaw et al. (2005) reported that, because of the low mobility of lead in soil, all of the lead that accumulates on the surface layer of the soil is generally retained within the top 20 cm

(about 8 inches). In addition, concerns occur that lead from bullets deposited in soil from shooting activities could lead to contamination of water, either ground water or surface water, from runoff. Stansley et al. (1992) studied lead levels in water that was subjected directly to high concentrations of lead shot accumulation because of intensive target shooting at several shooting ranges. Lead did not appear to “transport” readily in surface water when soils were neutral or slightly alkaline in pH (i.e., not acidic), but lead did transport more readily under slightly acidic conditions. Although Stansley et al. (1992) detected elevated lead levels in water in a stream and a marsh that were in the shot “fall zones” at a shooting range, the study did not find higher lead levels in a lake into which the stream drained, except for one sample collected near a parking lot where it was believed the lead contamination was due to runoff from the parking lot, and not from the shooting range areas.

Because the lethal removal of geese can occur during regulated hunting seasons and through the issuance of depredation permits, or under depredation orders without the need to obtain a depredation permit, WS’ assistance with removing geese would not be additive to the environmental status quo. The amount of lead deposited into the environment may be lowered by WS’ involvement in goose damage management activities due to efforts by WS to ensure projectiles do not pass through but are contained within the bird carcass which limits the amount of lead potentially deposited into soil from projectiles passing through the carcass. The proficiency training received by WS’ employees in firearm use and accuracy increases the likelihood that geese are lethally removed humanely in situations that ensure accuracy and that misses occur infrequently which further reduces the potential for lead to be deposited in the soil from misses or from projectiles passing through carcasses. In addition, WS’ involvement ensures goose carcasses lethally removed using firearms would be retrieved and disposed of properly to limit the availability of lead in the environment and prevent ingestion of lead by scavengers consuming carcasses. The potential for WS’ use of ammunition containing lead would be below any level that would pose any risk from exposure or significant contamination of soil or water.

#### ***Direct, Indirect, and Cumulative Effects:***

No adverse direct or indirect effects to human safety have occurred from WS’ use of methods to alleviate goose damage from FY 2011 through FY 2015. The risks to human safety from the use of non-lethal and lethal methods, when used appropriately and by trained personnel, is considered low. No adverse direct effects to human health and safety are expected through the use of live-capture traps and devices or other non-lethal methods. Since WS personnel are required to complete and maintain firearms safety training, no adverse direct effects to human health and safety are expected as a result of the misuse of firearms by WS personnel. Additionally, all WS personnel are properly trained on all chemicals handled and administered in the field, ensuring their safety as well as the safety of the public. Therefore, adverse direct effects to human health and safety from chemicals used by WS are anticipated to be low. The amount of chemicals used or stored by WS and cooperating agencies would be minimal to ensure human safety. No adverse indirect effects are anticipated from the application of any of the chemicals available for use by WS. Based on potential use patterns, the chemical and physical characteristics of the above mentioned toxicants and repellents, and factors related to the environmental fate, no cumulative impacts are expected from the chemical components used or recommended by the WS program in New York.

#### **Alternative 2 – Non-lethal Canada Goose Damage Management Only**

Under this alternative, WS would not use lethal Canada goose damage management methods. Concerns about human health risks from WS’ use of lethal goose damage management methods would be alleviated because no such use would occur. Effects on human health from WS Canada goose activities will depend on the ability of WS to resolve problems using non-lethal methods and the effectiveness of non-WS goose management efforts. In situations where risks to human health and safety from geese cannot be resolved using nonlethal methods, effects on the public will depend on the efficacy

of non-WS use of lethal goose management methods. If lethal goose management programs are implemented by individuals with less experience than WS, they may not be able to effectively resolve the problem or it may take longer to resolve the problem than with a WS program.

***Direct, Indirect, and Cumulative Effects:***

Because most methods available to resolve or prevent goose damage or threats are available to anyone, the direct, indirect, and cumulative effects to human health and safety from the use of those methods are similar between the alternatives. Private efforts to reduce or prevent damage would be expected to increase, and would possibly result in less experienced persons implementing chemical or other damage management methods which may have variable adverse direct, indirect, and/or cumulative effects to human and pet health and safety than under Alternative 1. Ignorance and/or frustration caused by the inability to reduce losses could lead to illegal use of toxicants by others which could lead to unknown direct, indirect, and/or cumulative impacts to humans and pets.

**Alternative 3 – No Goose Damage Management Conducted by WS**

Under the no goose damage management alternative, WS would not be involved with any aspect of managing damage associated with geese, including technical assistance. Due to the lack of involvement in managing damage caused by geese, no impacts to human safety would occur directly from WS. This alternative would not prevent those entities experiencing threats or damage from geese from conducting damage management activities in the absence of WS' assistance. Many of the methods discussed in Appendix B would be available to those persons experiencing damage or threats and could be used to remove geese if permitted by the USFWS and/or the NYSDEC. The direct burden of implementing permitted methods would be placed on those experiencing damage.

***Direct, Indirect, and Cumulative Effects:***

Since most methods available to resolve or prevent goose damage or threats are available to anyone, the adverse direct, indirect, and cumulative effects to human safety from the use of those methods are similar among the alternatives. Non-chemical methods available to alleviate or prevent damage associated with geese generally do not pose risks to human safety. Since most non-chemical methods available for goose damage management involve the live-capture or harassment of geese, those methods are generally regarded as posing minimal adverse direct and indirect effects to human safety. Habitat modification and harassment methods are also generally regarded as posing minimal adverse direct and indirect effects to human safety. Although some risks to safety are likely to occur with the use of pyrotechnics, propane cannons, and exclusion devices, those risks are minimal when those methods are used appropriately and in consideration of human safety. The only methods that would be available under this alternative that would involve the direct lethal taking of birds are shooting and nest destruction. Under this alternative, shooting and nest destruction would be available to those persons experiencing damage or threats of damage when permitted by the USFWS and the NYSDEC. Firearms, when handled appropriately and with consideration for safety, pose minimal risks to human safety. However, methods employed by those persons not experienced in the use of methods or are not trained in their proper use, could increase the adverse direct, indirect, and/or cumulative impacts to human safety. Overall, the methods available to the public, when applied correctly and appropriately, pose minimal risks to human safety.

**3.1.4 ISSUE 4 - EFFECTS ON SOCIO-CULTURAL RESOURCES**

People often enjoy viewing, watching, and knowing geese exist as part of the natural environment and gain aesthetic enjoyment in such activities. Those methods available to alleviate damage are intended to disperse and/or remove geese.

Non-lethal methods are intended to exclude or make an area less attractive, which disperses geese to other areas. Similarly, lethal methods are intended to remove those geese identified as causing damage or posing a threat of damage. The effects on the aesthetic value of geese as it relates to the alternatives are discussed below.

### **Alternative 1 – Continuing the Current Canada Goose Damage Management Program (No Action/Proposed Action)**

Under the proposed action, methods would be employed that would result in the dispersal, exclusion, or removal of individuals or small groups of geese to resolve damage and threats. When damage caused by geese has occurred, any removal of geese by the property or resource owner would likely occur whether WS was involved with taking the geese or not. Therefore WS' involvement would not likely be additive. The impact on the aesthetic value of geese and the ability of the public to view geese under the proposed action could be similar to the other alternatives. All goose damage management activities are conducted where a request for assistance has been received and only after agreement for such services have been agreed upon by the cooperator. The effects on the quality of the human environment are not highly contentious. Although there is some opposition to goose damage management, this action is not highly controversial in terms of size, nature, or effect.

WS' proposal to reduce Canada goose damage through harassment or lethal removal is not expected to interfere with the heritage of waterfowl hunting in New York State. Geese that are of management concern are typically found in urban or suburban locations that are not accessible to hunters.

#### ***Direct, Indirect, and Cumulative Effects:***

Direct impacts would be variable based on public perception, and may either include an increase or decrease in aesthetic benefits based on the individual's view. In some instances where geese were dispersed or removed, the ability of interested persons to observe and enjoy those geese could temporarily decline. Even the use of exclusionary devices can lead to the dispersal of wildlife if the resource being damaged was acting as an attractant. Thus, once the attractant has been removed or made unavailable, the geese would likely disperse to other areas. However, the ability to view and enjoy geese would remain if a reasonable effort was made to locate geese outside the area in which damage management activities were occurring. Further, given the mobile nature of Canada geese, individuals could immigrate into new areas over time.

Some people who are exposed to geese experience a reduction of aesthetic enjoyment of wildlife because they feel that geese are overabundant or objectionable. Continued increases in numbers of individuals or the continued presence of geese may lead to further degradation of some people's enjoyment of any wildlife or the natural environment. The actions of WS would positively affect the aesthetic enjoyment of wildlife or the environment for those people who were being adversely affected by the Canada geese.

These same management actions are not likely to effect the ability of people to hunt geese because many of those actions take place in urban or suburban locations that are not accessible to hunters. Therefore, people who enjoy hunting will still be able to benefit from the socio-cultural experience of spending time in the outdoors with both friends and family. The number of geese removed is not expected to have a detrimental impact on state goose populations, and both resident and migratory geese will still occur in locations available to hunters.

No significant cumulative impact is expected because the goose populations are a renewable resource, and therefore will be replaced with new geese in the following years. The purpose of WS' involvement is to alleviate the damage caused by the geese and not to manage populations.

### **Alternative 2 – Non-lethal-Canada Goose Damage Management Only**

Under this alternative, WS would not conduct any lethal goose damage management, but may conduct harassment of birds that are causing damage. Other non-lethal methods may be conducted as well under this alternative to help alleviate damage caused by geese.

#### ***Direct, Indirect, and Cumulative Effects:***

Although WS would not perform any lethal activities under this alternative, other private entities would likely conduct goose damage management activities similar to those that would no longer be conducted by WS, which means the direct and indirect effects on aesthetics may be similar to the Proposed Action Alternative. However, the efficacy of methods employed by others would be based on the skill and knowledge of the entity in regards to resolving the threat.

If property owners choose to allow and pay for the implementation of non-lethal methods by WS, this alternative could result in geese relocating to other sites where they may cause or aggravate similar problems for other property owners. Thus, this alternative would likely result in more property owners experiencing adverse direct and/or indirect effects on the aesthetic values of their properties than the Proposed Action Alternative.

### **Alternative 3 – No Goose Damage Management Conducted by WS**

Under this alternative, WS would not be involved with any aspect of Canada goose damage management in New York. Those people experiencing damage or threats associated with Canada geese would continue to use those methods legally available. Canada geese could continue to be dispersed under this alternative by non-WS entities, and harvest would continue during regulated hunting seasons and through depredation permits issued by the USFWS.

#### ***Direct, Indirect, and Cumulative Effects:***

Because Canada geese would continue to be harvested under this alternative, despite WS' lack of involvement, the ability to view and enjoy Canada geese would likely be similar to the other alternatives. The lack of WS' involvement would not necessarily lead to a reduction in the number of Canada geese dispersed or harvested since WS' has no authority to regulate harvest or the harassment of Canada geese.

Those people experiencing damage or threats would continue to use those methods they feel appropriate to resolve damage or threats, including harvest or would seek the direct assistance of other entities. Therefore, WS would have no impact under this alternative. The impacts to the aesthetic value of Canada geese would be similar to the other alternatives but it is hypothetically possible that frustration caused by the inability to reduce damage and associated losses would lead to illegal harvest of Canada geese. This would potentially lead to higher harvest levels than legally allowed which would result in direct impact of a decrease in aesthetics due to the reduction in number of geese. Indirect and cumulative impacts would be variable and would be dependent on harvest levels and public response.

### **3.2 ISSUES NOT CONSIDERED FOR COMPARATIVE ANALYSIS**

Additional issues were identified by WS and the USFWS during the scoping process of this EA. Those issues were considered by WS and the USFWS; however, those issues will not be analyzed in detail for the reasons provided. The following resource values are not expected to be significantly impacted by any of the alternatives analyzed as none of the alternatives cause any significant ground disturbance: soils, geology, minerals, water quality/quantity, flood plains, wetlands, visual resources, air quality, prime and unique farmlands, aquatic resources, timber, and range. Those resources will not be analyzed further.

#### **WS' Impact on Biodiversity**

The WS program does not attempt to eradicate any species of native wildlife. WS operates in accordance with applicable federal and state laws and regulations enacted to ensure species viability. Methods available are employed to target individual birds or groups of birds identified as causing damage or posing a threat of damage. Any reduction of a local population or group would frequently be temporary because immigration from adjacent areas or reproduction would replace the animals removed. WS operates on a small percentage of the land area of New York and would only target those birds identified as causing damage or posing a threat. Therefore, damage management activities conducted pursuant to any of the alternatives would not adversely affect biodiversity.

#### **Humaneness of Methods to be Employed**

Humaneness, in part, is a person's perception of harm or pain inflicted on an animal, and people may perceive the humaneness of an action differently. The issue of humaneness and animal welfare, as it relates to the killing or capturing of wildlife, is an important and very complex concept that can be interpreted in a variety of ways. Schmidt (1989) indicated that vertebrate pest damage management for societal benefits could be compatible with animal welfare concerns, if " ... the reduction of pain, suffering, and unnecessary death is incorporated in the decision making process." Suffering is described as a " . . . highly unpleasant emotional response usually associated with pain and distress." However, suffering " . . . can occur without pain . . .," and "... pain can occur without suffering . . ." (AVMA 2013). Because suffering carries with it the implication of a time frame, a case could be made for " . . . little or no suffering where death comes immediately . . ." (CDFG 1991), such as shooting.

Pain obviously occurs in animals, but assessing pain experienced by animals can be challenging (AVMA 2013, CDFG 1991). The AVMA defines pain as being, "that sensation (perception) that results from nerve impulses reaching the cerebral cortex via ascending neural pathways" (AVMA 2013). The key component of this definition is the perception of pain. The AVMA (2013) notes that "pain" should not be used for stimuli, receptors, reflexes, or pathways because these factors may be active without pain perception. For pain to be experienced, the cerebral cortex and subcortical structures must be functional. If the cerebral cortex is nonfunctional because of hypoxia, depression by drugs, electric shock, or concussion, pain is not experienced.

The AVMA states "... euthanasia is the act of inducing humane death in an animal" and that "...that if an animal's life is to be taken, it is done with the highest degree of respect, and with an emphasis on making the death as painless and distress free as possible" (AVMA 2013). Additionally, euthanasia methods should minimize any stress and anxiety experienced by the animal prior to unconsciousness." Although use of euthanasia methods to end an animal's life is desirable, as noted by the AVMA, "For wild and feral animals, many of the recommended means of euthanasia for captive animals are not feasible. In field circumstances, wildlife biologists generally do not use the term euthanasia, but terms such as killing, collecting, or harvesting, recognizing that a distress-free death may not be possible" (Beaver et al. 2001).

AVMA (2013) notes, “While recommendations are made, it is important for those utilizing these recommendations to understand that, in some instances, agents and methods of euthanasia identified as appropriate for a particular species may not be available or may become less than an ideal choice due to differences in circumstances. Conversely, when settings are atypical, methods normally not considered appropriate may become the method of choice. Under such conditions, the humaneness (or perceived lack thereof) of the method used to bring about the death of an animal may be distinguished from the intent or outcome associated with an act of killing.

Following this reasoning, it may still be an act of euthanasia to kill an animal in a manner that is not perfectly humane or that would not be considered appropriate in other contexts. For example, due to lack of control over free-ranging wildlife and the stress associated with close human contact, use of a firearm may be the most appropriate means of euthanasia. Also, shooting a suffering animal that is in extremis, instead of catching and transporting it to a clinic to euthanize it using a method normally considered to be appropriate (e.g., barbiturates), is consistent with one interpretation of a good death. The former method promotes the animal’s overall interests by ending its misery quickly, even though the latter technique may be considered to be more acceptable under normal conditions (Yeates 2010). Neither of these examples, however, absolves the individual from her or his responsibility to ensure that recommended methods and agents of euthanasia are preferentially used.”

WS personnel are experienced and professional in their use of management methods so that they are as humane as possible under the constraints of current technology and funding. SOPs (Section 2.6) used to maximize humaneness are listed in this EA. As appropriate, WS euthanizes live animals by methods recommended by the AVMA (2013) or the recommendations of a veterinarian, even though the AVMA euthanasia methods were developed principally for companion animals and slaughter of food animals, and not for free-ranging wildlife. These guidelines are in line with NYSDEC’s guidelines. Due to the status quo definition, animals will be removed from the environment even with the absence of WS operations. Therefore, WS’ professional involvement would ensure that most humane methods are utilized.

WS and the NWRC are striving to bring additional non-lethal damage management alternatives into practical use and to improve the selectivity and humaneness of management devices. Until new findings and products are found practical, a certain amount of animal suffering could occur when some methods are used in situations when non-lethal damage management methods are not practical or effective. WS supports the most safe, humane, selective, and effective damage management techniques, and would continue to incorporate advances into program activities.

### **A Loss Threshold Should be Established Before Allowing Lethal Methods**

One issue identified through WS’ implementation of the NEPA processes is a concern that a threshold of loss should be established before employing lethal methods to resolve damage and that wildlife damage should be a cost of doing business. Some damage and economic loss can be tolerated by cooperators until the damage reaches a threshold where damage becomes an economic burden. The appropriate level of allowed tolerance or threshold before employing lethal methods would differ among cooperators and damage situations. In addition, establishing a threshold would be difficult or inappropriate to apply to human health and safety situations.

### **Goose Damage Management Should not Occur at Taxpayer Expense**

Another issue previously identified is the concern that wildlife damage management should not be provided at the expense of the taxpayer or that activities should be fee-based. WS program’s funding for damage management activities is derived



from federal appropriations and through cooperative funding. Activities conducted for the management of damage and threats to human safety from geese would be funded through cooperative service agreements with individual property owners or managers. A minimal federal appropriation is allotted for the maintenance of a WS program in New York. The remainder of the WS program is entirely fee-based. Technical assistance is provided to requesters as part of the federally funded activities, but all direct assistance in which WS' employees perform damage management activities is funded through cooperative service agreements between the requester and WS.

### **Cost Effectiveness of Management Methods**

The CEQ does not require a formal, monetized cost benefit analysis to comply with the NEPA. Consideration of this issue is not essential to making a reasoned choice among the alternatives being considered. However, the methods determined to be most effective to reduce damage and threats to human safety caused by birds and that prove to be the most cost effective would receive the greatest application. As part of an integrated approach, evaluation of methods would continually occur to allow for those methods that are most effective at resolving damage or threats to be employed under similar circumstances where birds are causing damage or pose a threat. Additionally, management operations may be constrained by cooperator funding and/or objectives and needs.

### **Goose Damage Should be Managed by Private Licensed Nuisance Wildlife Control Agents**

Private licensed nuisance wildlife control agents could be contacted to reduce bird damage for property owners when deemed appropriate by the resource owner. Some property owners would prefer to use a private nuisance wildlife control agent because the nuisance wildlife agent is located in closer proximity and thus could provide the service at less expense, or because they prefer to use a private business rather than a government agency. However, some property owners would prefer to enter into an agreement with a government agency. In particular, large industrial businesses, and cities and towns may prefer to use WS because of security and safety issues.

### **Effectiveness of Management Methods**

The effectiveness of any damage management program could be defined in terms of losses or risks potentially reduced or prevented, how accurately practitioners diagnose the problem, the species responsible for the damage, and how actions are implemented to correct or mitigate risks or damages. To determine that effectiveness, WS must be able to complete management actions expeditiously to minimize harm to non-target animals and the environment, while at the same time, using methods as humanely as possible within the limitations of current technology, funding, and workforce resources. The most effective approach to resolving any damage problem is to use an adaptive integrated approach which may call for the use of several management methods simultaneously or sequentially (Courchamp et al. 2003).

Concern is often raised that new Canada geese immigrate to an area where damage was occurring after lethal methods are used, which creates a financial incentive to continue the use of only lethal methods. However, as stated throughout the EA, the use of non-lethal methods are also often temporary which could result in Canada geese returning to an area where damage was occurring once those methods are no longer used. Canada geese would return if suitable habitat continues to exist at the location where damage was occurring and Canada goose densities are sufficient to occupy all available habitats. Therefore, any reduction or prevention of damage from the use of methods addressed in the EA would be temporary if habitat conditions continue to exist. Dispersing Canada geese using pyrotechnics, repellents, dogs (such as border collies), or any other non-lethal method addressed in the EA often requires repeated application to discourage geese which increases costs, moves geese to other areas where they could cause damage, and are temporary if habitat conditions remain unchanged. Dispersing geese could be viewed as moving problem geese from one area to another

which would require addressing damage caused by those geese at another location. WS' recommendation of or use of techniques to modifying existing habitat or making areas unattractive to geese was addressed in this EA and in Appendix B. Therefore, WS' objective is to respond to requests for assistance with the most effective methods and to provide for the long-term solution to the problem using WS' Decision Model to adapt methods in an integrated approach to managing waterfowl damage that is agreed upon by the cooperator.

The goal of the WS program is to reduce damage, risks, and conflicts with wildlife as requested. WS recognizes that localized population reduction could be short-term and that new individuals may immigrate, be released at the site, or be born to animals remaining at the site (Courchamp et al. 2003). The ability of an animal population to sustain a certain level of removal and to eventually return to pre-management levels, however, does not mean individual management actions are unsuccessful but that periodic management may be necessary.

### **3.3 SUMMARY OF IMPACTS**

No significant cumulative impacts to the human environment are expected from any of the proposed actions analyzed in this EA. Under the Current/Proposed Action, the lethal removal of Canada geese by WS has not and would not have a significant impact on overall goose populations in New York or nationwide, but some local reductions may occur. No risk to public safety is expected due to the continuation of the goose damage management program by WS since only trained and experienced wildlife biologists/specialists would conduct and recommend goose damage management activities. Although some persons will likely be opposed to WS' participation in goose damage management activities on public and private lands, the analysis in this EA indicates that WS adaptive integrated goose damage management program would not result in significant adverse cumulative impacts on the quality of the human environment.

## **CHAPTER 4: LIST OF PREPARERS AND PERSONS/AGENCIES CONSULTED FOR THIS EA**

### **4.1 LIST OF PREPARERS**

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### **4.2 LIST OF COOPERATING AGENCIES**

New York State Department of Environmental Conservation, Bureau of Wildlife  
United States Department of the Interior, Fish and Wildlife Service  
New York State Office of Parks, Recreation, and Historic Preservation  
City of New York, Department of Environmental Protection  
City of New York, Department of Parks and Recreation  
Port Authority of New York and New Jersey

### **4.3 LIST OF PERSONS/AGENCIES CONSULTED**

United States Department of the Interior, National Park Service

## APPENDIX A – LITERATURE CITED

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## APPENDIX B – METHODS

### NON-LETHAL METHODS - NONCHEMICAL

**Agricultural producer and property owner practices.** These consist primarily of non-lethal preventive methods such as cultural methods and habitat modification. Cultural methods and other management techniques are implemented by the agricultural producer or property owners/managers. Resource owners/managers may be encouraged to use these methods, based on the level of risk, need, and professional judgment on their effectiveness and practicality.

**Cultural methods.** These may include altering planting dates so that crops are not young and more vulnerable to damage when geese are present, or the planting of crops that are less attractive or less vulnerable to geese.

**Environmental/Habitat modification.** Modification can be an integral part of goose damage management. Wildlife production and/or presence are directly related to the type, quality, and quantity of suitable habitat. Therefore, habitat can be managed to reduce or eliminate the production or attraction of certain geese or to repel certain birds. In most cases, the resource or property owner is responsible for implementing habitat modifications, and WS only provides advice on the type of modifications that have the best chance of achieving the desired effect. Habitat management is most often a primary component of goose damage management strategies at or near airports to reduce goose aircraft strike problems by eliminating geese nesting, roosting, loafing, or feeding sites.

**Animal behavior modification.** This refers to tactics that alter the behavior of wildlife to reduce damage. Animal behavior modification may involve use of scare tactics or fencing to deter or repel animals that cause loss or damage (Twedt and Glahn 1982). Some but not all methods that are included by this category are bird-proof barriers, electronic guards, propane exploders, pyrotechnics, dogs (such as border collies), remote control devices, distress calls and sound producing devices, chemical frightening agents, repellents, scarecrows, mylar tape, lasers, and eye-spot balloons.

These techniques are generally only practical for small areas. Scaring devices such as distress calls, eyespot balloons, raptor effigies and silhouettes, mirrors, and moving disks can be effective, but usually for only a short time before birds become accustomed and learn to ignore them (Arhart 1972, Rossbach 1975, Conover 1982, Shirota and Masake 1983, Schmidt and Johnson 1983, Mott 1985, Graves and Andelt 1987, Bomford 1990). Mylar tape has produced mixed results in its effectiveness to frighten birds (Dolbeer et al. 1986, Tobin et al. 1988).

**Paintball guns.** Paintball guns are used as a non-lethal harassment method to disperse birds from areas using physical harassment. Paintballs are most often used to harass waterfowl. Paintballs can be used to produce physically and visually negative-reinforcing stimuli that can aid in dispersing of geese from areas where damages or threats of damages are occurring.

**Goose barriers.** These can include netting, overhead grid wires, or bird balls. In the case of geese, these items can be used over ponds to reduce the ability of geese to land. Grid wires and netting can be strung 10 to 15 inches high over the water to deter geese. Bird Balls are floating plastic balls that are used to cover the surface of the pond to prevent access to open water. Exclusion adequate to stop bird movements can also restrict movements of livestock, people and other wildlife (Fuller-Perrine and Tobin 1993).

**Auditory scaring devices.** Auditory scaring devices such as propane exploders, pyrotechnics, electronic guards, scare crows, and audio distress/predator vocalizations are effective in many situations for dispersing damage-causing bird species. These devices are sometimes effective, but usually only for a short period of time before birds become accustomed and learn to ignore them (Arhart 1972, Rossbach 1975, Shirota and Masake 1983, Schmidt and Johnson 1983, Mott 1985, Bomford 1990). Birds quickly learn to ignore scaring devices if the birds' fear of the methods is not reinforced with shooting or other tactics.

**Visual scaring techniques.** Visual scaring techniques such as use of Mylar tape (highly reflective surface produces flashes of light that startles birds), eye-spot balloons (the large eyes supposedly give birds a visual cue that a large predator is present), flags, effigies (scarecrows), sometimes are effective in reducing bird damage. Mylar tape has produced mixed results in its effectiveness to frighten birds (Dolbeer et al. 1986, Tobin et al. 1988). Birds quickly learn to ignore visual and other scaring devices if the birds' fear of the methods is not reinforced with shooting or other tactics.

**Lasers.** Lasers are a non-lethal technique recently evaluated by the NWRC (Glahn et al. 2000, Blackwell et al. 2002). For best results and to disperse numerous birds from a roost, the laser is most effectively used in periods of low light, such as after sunset and before sunrise. In the daytime, the laser can also be used during overcast conditions or in shaded areas to move individual and small numbers of birds, although the effective range of the laser is much diminished. Blackwell et al. (2002) tested lasers on several bird species and observed varied results among species. Lasers were ineffective at dispersing mallards with birds habituating in approximately 5 minutes and 20 minutes, respectively (Blackwell et al. 2002). As with other bird damage management tools lasers are most effective when used as part of an integrated management program.

**Live traps.** (Although live traps are non-lethal, birds may be euthanized upon capture). In most situations, live trapped birds are subsequently euthanized. Relocation to other areas following live capture would not generally be effective because problem geese are highly mobile and can easily return to damage sites from long distances. In addition, relocation of geese in New York requires special permitting and not typically allowed or recommended by NYSDEC. Translocation of wildlife is also discouraged by WS' policy (WS Directive 2.501) because of stress to the relocated animal, poor survival rates, and difficulties in adapting to new locations or habitats.

Live traps include:

**Cannon nets.** Cannon nets are normally used for larger birds and use aerodynamic projectiles to propel a net up and over birds which have been baited to a particular site. Cannon nets can be fired with compressed air (Air Cannon) or may use black powder as a propellant.

**Drive traps (Corral traps).** These traps could be used to live-capture geese. Corral traps can be effectively used to live capture geese during the annual molt when birds are unable to fly. Each year for a few weeks in the summer, geese are flightless as they are growing new flight feathers. During this period, geese can be slowly guided into corral-traps.

**Funnel traps or Walk-in Trap.** These traps could be used to live-capture waterfowl. Traps are set up on land or in shallow water and baited. Funnel traps allow waterfowl to enter the trap but prevents them from exiting. Traps would be checked regularly to address live-captured waterfowl. Captured waterfowl can be relocated or euthanized.



**Resource Management.** Resource management includes a variety of practices that may be used by resource owners to reduce the potential for wildlife damage. Implementation of these practices is appropriate when the potential for damage can be reduced without significantly increasing a resource owner's costs or diminishing his/her ability to manage resources pursuant to goals. Resource management recommendations are made through WS technical assistance efforts.

## NON-LETHAL METHODS - CHEMICAL

**Methyl anthranilate.** Methyl anthranilate (artificial grape flavoring used in foods and soft drinks for human consumption) would be used or recommended by WS as a bird repellent. Methyl anthranilate (artificial grape flavoring food additive) has been shown to be a promising repellent for many bird species, including waterfowl (Dolbeer et al. 1993). Cummings et al. (1995) found effectiveness of MA declined significantly after 7 days. Belant et al. (1996) found MA ineffective as a bird grazing repellent, even when applied at triple the recommended label rate. MA is also under investigation as a potential bird taste repellent. It is registered for applications to turf or to surface water areas used by unwanted birds. The material has been shown to be nontoxic to bees ( $LD_{50} > 25$  micrograms/bee<sup>12</sup>), nontoxic to rats in an inhalation study ( $LC_{50} > 2.8$  mg/L<sup>13</sup>), and of relatively low toxicity to fish and other invertebrates.

Methyl anthranilate is naturally occurring in concord grapes and in the blossoms of several species of flowers and is used as a food additive and perfume ingredient (Dolbeer et al. 1992). It has been listed as "*Generally Recognized as Safe*" by the U.S. Food and Drug Administration (Dolbeer et al. 1992). Water surface and turf applications of MA are generally considered expensive. For example, the least intensive application rate required by label directions is 20 lbs. of product (8 lbs. active ingredient) per acre of surface water at a cost of about \$64/lb. with retreating required every 3-4 weeks. Cost of treating turf areas would be similar on a per acre basis. In addition, MA completely degrades in about 3 days when applied to water, which indicates the repellent effect is short-lived.

Another potentially more cost effective method of MA application is by use of a fog-producing machine (Vogt 1997). The fog drifts over the area to be treated and is irritating to the birds, while being nonirritating to any humans that might be exposed. Fogging applications must generally be repeated 3-5 times after the initial treatment before the birds abandon a treatment site. Applied at a rate of about 0.25 lb./acre of water surface, the cost is considerably less than when using the turf or water treatment methods. MA is also being investigated as a livestock feed additive to reduce or prevent feed consumption by birds. Such chemicals undergo rigorous testing and research to prove safety, effectiveness, and low environmental risks before they would be registered by EPA or the FDA.

**Alpha-chloralose.** Alpha-chloralose is a central nervous system depressant used as an immobilizing agent to capture and remove Canada geese and other birds. Alpha-chloralose is typically delivered in a well contained bait in small quantities with minimal hazards to pets and humans; single bread or corn baits are fed directly to the target birds. WS' personnel are present at the site of application during baiting to retrieve the immobilized birds. Unconsumed baits are removed from the site following each treatment. However, the solubility and mobility are believed to be moderate and environmental persistence is believed to be low. Bioaccumulation in plants and animal tissue is believed to be low. Alpha-chloralose is used in other countries as an avian and mammalian toxicant. The compound is slowly metabolized, with recovery occurring a few hours after administration (Schafer 1991). The dose used for immobilization is designed to be about two to 30 times lower than the  $LD_{50}$ . Mammalian data indicate higher  $LD_{50}$  values than birds. Toxicity to aquatic organisms is unknown (Woronecki et al. 1990), but the compound is not generally soluble in water and therefore should remain unavailable to aquatic organisms. Factors supporting the determination of this low potential included the lack of exposure to pets, non-target species and the public, and the low toxicity of the active ingredient. Other supporting rationale for this determination included relatively low total annual use and a limited number of potential exposure pathways. The agent is

currently approved for use by WS as an Investigative New Animal Drug by the FDA rather than a pesticide (O'Hare et al. 2007).

**Other chemical repellents.** A number of other chemicals have shown bird repellent capabilities. Anthraquinone, a naturally occurring chemical found in many plant species and in some invertebrates as a natural predator defense mechanism, has shown effectiveness in protecting rice seed from red-winged blackbirds and boat-tailed grackles (Avery et al. 1997). It has also shown effectiveness as a foraging repellent against Canada goose grazing on turf and as a seed repellent against brown-headed cowbirds (Dolbeer et al. 1998).

## **LETHAL METHODS- NONCHEMICAL**

**Shooting.** Normally shooting is conducted with shotguns, rifles or air rifles. Shooting is a very individual specific method and is normally used to remove a single offending goose. However, at times, a few geese could be shot from a flock to make the remainder of the geese more wary and to help reinforce non-lethal methods. It is selective for target geese and, in rare instances, may be used in conjunction with the use of spotlights. Geese are killed as quickly and humanely as possible. All firearm safety precautions are followed by WS when conducting goose damage management activities and all laws and regulations governing the lawful use of firearms are strictly complied with.

Firearm use is very a sensitive public concern because of safety relating to the public and the threat of misuse. To ensure safe use and awareness, WS employees who use firearms to conduct official duties are required to attend an approved National Rifle Association firearms safety and handling training program before using a firearm in an official capacity and to attend a refresher course annually (WS Directive 2.615). WS employees who carry firearms as a condition of employment are required to sign a form certifying that they meet the criteria stated in *Lautenberg Amendment* which prohibits firearm possession by anyone who has been convicted of a misdemeanor crime of domestic violence.

**Hunting.** Hunting is sometimes recommended by WS as a viable damage management method when the target species can be legally hunted. A valid hunting license and other licenses or permits may be required by the NYSDEC and the USFWS for certain species. This method provides conservation funds for waterfowl, food for hunters, and requires no cost to the landowner.

**Cervical dislocation.** Cervical dislocation is sometimes used to euthanize birds which are captured in live traps. The bird is stretched and the neck is hyper-extended and dorsally twisted to separate the first cervical vertebrae from the skull. The AVMA approves this technique as a humane method of euthanasia and states that cervical dislocation when properly executed is a humane technique for euthanasia of poultry and other small birds (Beaver et al. 2001). Cervical dislocation is a technique that may induce rapid unconsciousness, does not chemically contaminate tissue, and is rapidly accomplished (Beaver et al. 2001).

## **LETHAL METHODS- CHEMICAL**

All chemicals used by WS are registered as required by the FIFRA. WS' personnel that use restricted-use chemical methods are certified as pesticide applicators by the State of New York and are required to adhere to all certification requirements set forth in FIFRA and New York pesticide control laws and regulations. Chemicals are only used on private, public, or tribal property sites with authorization from the property owner/manager.

**CO<sub>2</sub>.** CO<sub>2</sub> could be used to euthanize geese captured in corral traps. Live geese are placed in a specially designed, large, welded aluminum box into which CO<sub>2</sub> gas is released. This method is approved as a euthanizing agent by the AVMA

(Beaver et al. 2001). The amount of CO<sub>2</sub> used by WS for euthanasia purposes is insignificant and inconsequential to the amounts used for other purposes by society.

**Nest/egg destruction.** Nest/egg destruction is the removal of nesting materials and eggs during the construction phase of the nesting cycle. Nest destruction is generally only applied when dealing with a single bird or very few birds. This method is used to discourage birds from constructing nests in areas, which may create nuisances or safety issues for home and business owners. Removal of nests is intended to deter birds from nesting in the same area again. Birds generally attempt to re-nest, so the method may need to be conducted repeatedly throughout the nesting season, and over several years. Heusmann and Bellville (1978) reported that nest removal was an effective, but time-consuming, method because problem bird species are highly mobile and can easily return to damage sites from long distances, or because of high populations. This method poses no imminent danger to pets or the public.

Egg Treatment (addling/shaking, puncturing, or oiling) is a method of suppressing reproduction in local nuisance geese populations by destroying egg embryos to arrest their development and eliminate hatching. Treated eggs are returned to the nest and the adult geese remain attached to the nest site. Treatment of eggs will not reduce the overall problem bird population, but may slow its growth and make adult birds more responsive to harassment (also see *Egg oiling* below). Egg oiling is a form of egg treatment by coating the eggs in corn oil. The oil prevents exchange of gases and causes asphyxiation of developing embryos and has been found to be 96-100% effective in reducing hatchability (Pochop 1998, Pochop et al. 1998). The method has an advantage over nest or egg destruction in that the incubating geese generally continue incubation and do not re-nest. To be most effective, the oil should be applied anytime between the fifth day after the laying of the last egg in a nest and at least five days before anticipated hatching. This method is extremely target specific. The EPA has ruled that use of corn oil for this purpose is exempt from registration requirements under FIFRA. In New York State, corn oil is required to be listed as a 25(b) and is required to be appropriately labeled. Pesticide certification is not required for the use of corn oil on Canada goose eggs.

**APPENDIX C – FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES**

Species	Counties	Habitat Characteristics	Relevant Information	Methods for Resolving Goose Damage	Determination
Bog Turtle (T)  <i>Clemmys</i> [= <i>Glyptemys</i> ] <i>muhlenbergii</i>	Cayuga, Columbia, Dutchess, Genesee Onondaga, Orange, Oswego, Putnam, Rensselaer, Rockland, Seneca, Sullivan, Ulster, Wayne, Westchester	<ul style="list-style-type: none"> <li>• Winters in muskrat lodges or in burrows communally with other bog turtles or spotted turtles.</li> <li>• Prefers cool, shallow slow moving water with deep soft muck soils and tussock type vegetation</li> <li>• Found in emergent and scrub/shrub wetlands such as shallow spring-fed fens, sphagnum bogs, swamps, marshy meadows, and wet pastures.</li> </ul>	<ul style="list-style-type: none"> <li>• Occurrences of working in these habitats would be unlikely and therefore impacts would be insignificant, discountable and/or beneficial.</li> <li>• If goose management activities take place in wetlands, Wildlife Services will consult USFWS iPaC and/or the NYSDEC mapper to check for indication of presence of turtles.</li> <li>• Management actions in wetlands are typically concluded in a few hours, with no soil disturbance and no change in water level.</li> </ul>	<ul style="list-style-type: none"> <li>• Audio scaring devices</li> <li>• Nest or egg destruction</li> <li>• Shooting</li> <li>• Physical exclusion</li> <li>• Habitat modification</li> <li>• Paintball guns</li> <li>• Goose barriers</li> <li>• Recommendation of the use of legal hunting</li> <li>• Live capture and euthanasia</li> <li>• Visual scaring techniques</li> <li>• Chemical repellents</li> <li>• Lasers</li> <li>• Overhead wires</li> <li>• Live traps</li> </ul>	<ul style="list-style-type: none"> <li>• May affect, but not likely to adversely affect</li> </ul>
Indiana Bat (E)  <i>Myotis sodalis</i>	Albany, Cayuga, Columbia, Dutchess Essex, Jefferson, Onondaga, Orange, Oswego, Rockland, Seneca, Ulster, Warren, Westchester	<ul style="list-style-type: none"> <li>• During winter, caves located in karst areas of the east-central United States or man-made excavated mines.</li> <li>• In summer, roost sites under the bark of dead or dying trees that retain large, thick slabs of peeling bark.</li> </ul>	<ul style="list-style-type: none"> <li>• Occurrences of working in these habitats would be unlikely; however, work may occur in areas that are adjacent to or in close proximity to habitats used by bats.</li> <li>• Management activities for Canada geese are not expected to result in the removal of any trees or occur in any mines or caves.</li> <li>• Shooting and audio scaring devices are used almost exclusively at airports and in agricultural settings where habitat is primarily open fields and noise levels are already elevated.</li> <li>• Corral traps are almost exclusively employed in lawn settings in urban and suburban environments.</li> </ul>	<ul style="list-style-type: none"> <li>• Audio scaring devices</li> <li>• Nest or egg destruction</li> <li>• Shooting</li> <li>• Physical exclusion</li> <li>• Habitat modification</li> <li>• Paintball guns</li> <li>• Goose barriers</li> <li>• Recommendation of the use of legal hunting</li> <li>• Live capture and euthanasia</li> <li>• Visual scaring techniques</li> <li>• Chemical repellents</li> <li>• Lasers</li> <li>• Overhead wires</li> <li>• Live traps</li> </ul>	<ul style="list-style-type: none"> <li>• May affect, but not likely to adversely affect</li> </ul>
Karner Blue Butterfly (E)  <i>Lycaeides melissa samuelis</i>	Albany, Saratoga, Schenectady, Warren	<ul style="list-style-type: none"> <li>• Dependent on wild blue lupine, in upland savanna and barrens habitats typified by dry sandy soils, pitch pine or dune/sand plain plant communities; and now occur in roadsides, military bases, and some forest lands.</li> </ul>	<ul style="list-style-type: none"> <li>• Management actions for Canada geese are not expected to occur in upland savannahs or barrens.</li> <li>• Goose damage management activities almost exclusively occur in urban and suburban areas routinely mowed or in planted fields.</li> </ul>	<ul style="list-style-type: none"> <li>• Audio scaring devices</li> <li>• Nest or egg destruction</li> <li>• Shooting</li> <li>• Physical exclusion</li> <li>• Habitat modification</li> <li>• Paintball guns</li> <li>• Goose barriers</li> <li>• Recommendation of the use of legal hunting</li> <li>• Live capture and euthanasia</li> <li>• Visual scaring techniques</li> <li>• Chemical repellents</li> <li>• Lasers</li> <li>• Overhead wires</li> <li>• Live traps</li> </ul>	<ul style="list-style-type: none"> <li>• No effect</li> </ul>

Species	Counties	Habitat Characteristics	Relevant Information	Methods for Resolving Goose Damage	Determination
Clubshell (E) (mussel)  <i>Pleurobema clava</i>	Cattaraugus, Chautauqua	<ul style="list-style-type: none"> <li>• Prefers clean, loose sand and gravel in medium to small rivers and streams.</li> <li>• Will bury itself in substrate up to 4 inches.</li> <li>• Requires a stable, undisturbed habitat with fish hosts to complete its life stages.</li> <li>• May live up to 50 years.</li> </ul>	<ul style="list-style-type: none"> <li>• Goose management activities rarely occur in rivers, streams, or creeks.</li> <li>• Typically, Wildlife Services is on location for a short duration of time (less than an hour) and accesses water via paddle craft.</li> <li>• Wildlife Services personnel are not walking across the bottom of rivers, streams, or creeks in a substantial way.</li> <li>• Occurrences of working in these habitats would be unlikely and therefore impacts would be insignificant, discountable and/or beneficial.</li> </ul>	<ul style="list-style-type: none"> <li>• Audio scaring devices</li> <li>• Nest or egg destruction</li> <li>• Shooting</li> <li>• Physical exclusion</li> <li>• Habitat modification</li> <li>• Paintball guns</li> <li>• Goose barriers</li> <li>• Recommendation of the use of legal hunting</li> <li>• Live capture and euthanasia</li> <li>• Visual scaring techniques</li> <li>• Chemical repellents</li> <li>• Lasers</li> <li>• Overhead wires</li> <li>• Live traps</li> </ul>	<ul style="list-style-type: none"> <li>• May affect, but not likely to adversely affect</li> </ul>
Rayed Bean (E) (mussel)  <i>Villosa fabalis</i>	Cattaraugus, Chautauqua	<ul style="list-style-type: none"> <li>• The rayed bean generally lives in smaller, headwater creeks, but it is sometimes found in large rivers and wave-washed area of glacial lakes. It prefers gravel or sand substrates, and is often found in and around roots of aquatic vegetation. Adults spend their entire lives partially or completely buried in substrate</li> </ul>	<ul style="list-style-type: none"> <li>• Goose Management activities rarely occur in rivers, streams, or creeks.</li> <li>• Typically, Wildlife Services is on location for a short duration of time (less than an hour) and accesses water via paddle craft.</li> <li>• Wildlife Services personnel are not walking across the bottom of rivers, streams, or creeks in a substantial way.</li> <li>• Occurrences of working in these habitats would be unlikely and therefore impacts would be insignificant, discountable and/or beneficial.</li> </ul>	<ul style="list-style-type: none"> <li>• Audio scaring devices</li> <li>• Nest or egg destruction</li> <li>• Shooting</li> <li>• Physical exclusion</li> <li>• Habitat modification</li> <li>• Paintball guns</li> <li>• Goose barriers</li> <li>• Recommendation of the use of legal hunting</li> <li>• Live capture and euthanasia</li> <li>• Visual scaring techniques</li> <li>• Chemical repellents</li> <li>• Lasers</li> <li>• Overhead wires</li> <li>• Live traps</li> </ul>	<ul style="list-style-type: none"> <li>• May affect, but not likely to adversely affect</li> </ul>
Houghton's Goldenrod (T) (plant)  <i>Solidago houghtonii</i>	Genesee	<ul style="list-style-type: none"> <li>• Grows only along the Great Lakes shoreline. It grows primarily along the northern shores of Lakes Michigan and Huron.</li> <li>• Typically grows on moist sandy beaches and shallow depressions between low sand ridges along the shoreline. Fluctuating water levels of the Great Lakes play a role in maintaining this unique goldenrod</li> </ul>	<ul style="list-style-type: none"> <li>• Occurrences of working in these habitats would be unlikely and therefore impacts would be insignificant, discountable and/or beneficial.</li> <li>• Management activities for Canada geese may occur along shorelines or beaches.</li> <li>• Wildlife Services will consult USFWS iPaC and/or the NYSDEC mapper at to identify locations of Houghton's goldenrod.</li> <li>• In areas of the state where this plant occurs Canada goose management is implemented at parks, golf courses, and on other manicured lawns. Therefore no vegetation management would be necessary.</li> </ul>	<ul style="list-style-type: none"> <li>• Audio scaring devices</li> <li>• Nest or egg destruction</li> <li>• Shooting</li> <li>• Physical exclusion</li> <li>• Habitat modification</li> <li>• Paintball guns</li> <li>• Goose barriers</li> <li>• Recommendation of the use of legal hunting</li> <li>• Live capture and euthanasia</li> <li>• Visual scaring techniques</li> <li>• Chemical repellents</li> <li>• Lasers</li> <li>• Overhead wires</li> <li>• Live traps</li> </ul>	<ul style="list-style-type: none"> <li>• May affect, but not likely to adversely affect</li> </ul>

Species	Counties	Habitat Characteristics	Relevant Information	Methods for Resolving Goose Damage	Determination
Northern Wild Monkshood (T) (plant) <i>Aconitum noveboracense</i>	Delaware, Sullivan, Ulster	<ul style="list-style-type: none"> <li>This plant is typically found on shaded or partly shaded cliffs, algific talus slopes, or on cool, streamside sites. These areas have cool soil conditions, cold air drainage, or cold groundwater flowage. This plant has distinct blue hood-shaped flowers. Stems range about 1-4 ft. tall. Habitat consists of sand, firm muddy sand, firm clay, and/or gravel bottom in creeks and rivers of various sizes.</li> </ul>	<ul style="list-style-type: none"> <li>Occurrence of working in these habitats would be unlikely and therefore impacts would be insignificant, discountable, and/or beneficial.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	No effect
Dwarf Wedgemussel (E) <i>Alasmidonta heterodon</i>	Delaware, Dutchess, Orange, Sullivan	<ul style="list-style-type: none"> <li>Habitat consists of sand, firm muddy sand, and/or gravel bottom in creeks and rivers of various sizes.</li> <li>Requires areas of slow to moderate current, good water quality and little silt deposition.</li> <li>Threats to the dwarf wedgemussel include direct habitat destruction from damming and channelizing of rivers, and indirect degradation of habitat due to pollution, sedimentation, invasion by exotic species, and fluctuations in water level or temperature.</li> </ul>	<ul style="list-style-type: none"> <li>Goose management activities rarely occur in rivers or creeks.</li> <li>Typically, Wildlife Services is on location for a short duration of time (less than an hour) and accesses water via paddle craft.</li> <li>Wildlife Services personnel are not walking across the bottom of rivers or creeks in a substantial way.</li> <li>Occurrences of working in these habitats would be unlikely and therefore impacts would be insignificant, discountable and/or beneficial.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>May affect, but not likely to adversely affect</li> </ul>
Eastern prairie fringed orchid (T) (Historic) <i>Plantanthera leucophaea</i>	This plant is considered extirpated in New York.	<ul style="list-style-type: none"> <li>This plant is found in habitats ranging from mesic prairie to wetlands such as sedge meadows, marsh edges and bogs.</li> <li>Requires full sun and grassy habitat with little or no woody encroachments.</li> </ul>	<ul style="list-style-type: none"> <li>This plant is considered extirpated in New York.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>No effect</li> </ul>

Species	Counties	Habitat Characteristics	Relevant Information	Methods for Resolving Goose Damage	Determination
Roseate Tern (E) (bird) <i>Sterna dougallii</i>	Suffolk	<ul style="list-style-type: none"> <li>Nests can be small depressions in the sand, shell, or gravel, and may be lined with bits of grass and other debris. Nests are usually placed in dense grass clumps, or even under boulders or riprap.</li> <li>Forages in near-shore waters.</li> <li>Uses a variety of substrates, including pea gravel, open sand, overhanging rocks, and salt marshes.</li> </ul>	<ul style="list-style-type: none"> <li>Occurrences of working in these habitats would be unlikely and therefore impacts would be insignificant, discountable, and/or beneficial.</li> <li>Wildlife Services does not have a history of conducting work in coastal beach environments, but it is not outside the realm of possibility.</li> <li>Wildlife Services will consult USFWS iPaC and/or the NYSDEC mapper to identify locations of roseate terns.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>No effect</li> </ul>
Piping Plover (T) (bird) <i>Charadrius melodus</i>	Bronx, Nassau, Queens, Suffolk  (Recognized as endangered in the Great Lakes watershed)	<ul style="list-style-type: none"> <li>Occupy beaches from March through September for nesting and rearing young.</li> <li>Nests can be found on sandy beaches or in areas that have been filled with dredged sand, often near dunes in areas with little or no beach grass and inlet/overwash areas.</li> </ul>	<ul style="list-style-type: none"> <li>Occurrences of working in these habitats would be unlikely and therefore impacts would be insignificant, discountable, and/or beneficial.</li> <li>Wildlife Services does not have a history of conducting work in coastal beach environments, but it is not outside the realm of possibility.</li> <li>Along the eastern shore of Lake Ontario and in other areas where piping plover occur, Canada goose management is implemented at parks, golf courses, and on other manicured lawns which does not overlap with piping plover nesting habitat. WS would not enter restricted nesting areas for this or any species. Wildlife Services will coordinate with U.S. Fish and Wildlife Service New York Field Office for any projects anticipated to impact this species or their habitat.</li> <li>Wildlife Services will consult USFWS iPaC and/or the NYSDEC mapper at to identify locations of piping plover.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>No effect</li> </ul>

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Chittenango ovate amber snail (T)  <i>Novisuccinea chittenangoensis</i>	Madison	<ul style="list-style-type: none"> <li>Occurs only along a 100 foot high waterfall within Chittenango State Park.</li> </ul>	<ul style="list-style-type: none"> <li>Management activities will not occur on the vegetated slopes adjacent to the waterfall.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>No effect</li> </ul>
Sandplain gerardia (E) (plant)  <i>Agalinis acuta</i>	Nassau, Suffolk	<ul style="list-style-type: none"> <li>This plant prefers native grasslands on sandy loam soils. It occurs mostly within 10 miles of the coast.</li> <li>In New York, plants are found along the coastline where it grows on the shifting sands between the dunes and the high tide mark.</li> </ul>	<ul style="list-style-type: none"> <li>Occurrences of working in these habitats would be unlikely and therefore impacts would be insignificant, discountable, and/or beneficial.</li> <li>Wildlife Services does not have a history of conducting work in coastal beach environments, but it is not outside the realm of possibility.</li> <li>Wildlife Services will consult USFWS iPaC and/or the NYSDEC mapper at to identify locations of sandplain gerardia.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>May affect, but not likely to adversely affect</li> </ul>
Small whorled pogonia (T) (plant)  <i>Isotria medeoloides</i>	Orange	<ul style="list-style-type: none"> <li>Occurs in one known location which is forested.</li> <li>Small whorled pogonia is found in older hardwood stands of beech, birch, maple, oak, and hickory that have an open understory, or at times in hemlock stands or stands of other softwoods.</li> <li>Populations are frequently associated with dead wood.</li> </ul>	<ul style="list-style-type: none"> <li>Management activities will not occur in forested habitats in Orange County, New York.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>No effect</li> </ul>



Species	Counties	Habitat Characteristics	Relevant Information	Methods for Resolving Goose Damage	Determination
Seabeach amaranth (T) (plant)  <i>Amaranthus pumilus</i>	Nassau, Suffolk	<ul style="list-style-type: none"> <li>Plants are found along the coastline where it grows on the shifting sands between the dunes and the high tide mark.</li> </ul>	<ul style="list-style-type: none"> <li>Occurrences of working in these habitats would be unlikely and therefore impacts would be insignificant, discountable, and/or beneficial.</li> <li>Wildlife Services does not have a history of conducting work in coastal beach environments, but it is not outside the realm of possibility.</li> <li>Wildlife Services will consult USFWS iPaC and/or the NYSDEC mapper at to identify locations of seabeach amaranth.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>May affect, but not likely to adversely affect</li> </ul>
Leedy's roseroot (T) (plant)  <i>Rhodiola integrifolia</i> spp. <i>leedyi</i>	Schuyler, Seneca, Yates	<ul style="list-style-type: none"> <li>Grows on cool cliffs along the west shore of Seneca Lake.</li> <li>Prefers areas where cool air from caves comes to cliff surfaces through cracks.</li> </ul>	<ul style="list-style-type: none"> <li>Management activities are not expected to occur on cliff surfaces</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>No effect</li> </ul>
Northeastern bulrush (E) (plant)  <i>Scirpus ancistrochaetus</i>	Steuben	<ul style="list-style-type: none"> <li>Occurs in one known location which is forested.</li> <li>Typically grows in seasonal pools, small ponds, beaver dams and other depression-related wet area. Prefers areas that are inundated with shallow water, or at least saturated, throughout much of the growing season.</li> </ul>	<ul style="list-style-type: none"> <li>Occurrences of working in these habitats would be unlikely and therefore impacts would be insignificant, discountable and/or beneficial.</li> <li>Wildlife Services does not anticipate conducting Canada goose management in forested areas where northeastern bulrush exists.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>No effect</li> </ul>

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Kemp's [=Atlantic] Ridley Sea Turtle (E)  <i>Lepidochelys kempi</i>	Currently not believed to occur in New York	<ul style="list-style-type: none"> <li>Primarily occupy "neritic" habitats. Neritic zones typically contain muddy or sandy bottoms where prey can be found.</li> </ul>	<ul style="list-style-type: none"> <li>Management activities for Canada geese are not expected to occur in habitats used by Kemp's ridley sea turtles.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>No effect</li> </ul>
Green Sea Turtle (T)  <i>Chelonia mydas</i>	Currently not believed to occur in New York	<ul style="list-style-type: none"> <li>Uses beaches for nesting.</li> <li>Open ocean convergence zones.</li> <li>Coastal areas for feeding.</li> </ul>	<ul style="list-style-type: none"> <li>Management activities for Canada geese are not expected to occur in habitats used by green sea turtles.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>No effect</li> </ul>
Hawksbill Sea Turtle (E)  <i>Eretmochelys imbricate</i>	Kings, Nassau, Queens, Richmond, Suffolk	<ul style="list-style-type: none"> <li>Ledges and caves of coral reefs.</li> </ul>	<ul style="list-style-type: none"> <li>Management activities for Canada geese are not expected to occur in habitats used by hawksbill sea turtle.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live trap</li> </ul>	<ul style="list-style-type: none"> <li>No effect</li> </ul>

Species	Counties	Habitat Characteristics	Relevant Information	Methods for Resolving Goose Damage	Determination
Leatherback Sea Turtle (E)  <i>Dermochelys coriacea</i>	Kings, Nassau, Queens, Richmond, Suffolk	<ul style="list-style-type: none"> <li>Primarily open ocean, but does forage in coastal waters.</li> </ul>	<ul style="list-style-type: none"> <li>Management activities for Canada geese are not expected to occur in habitat used by leatherback sea turtles.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>No effect</li> </ul>
Loggerhead Sea Turtle (T)  <i>Caretta caretta</i>	Currently not believed to occur in New York	<ul style="list-style-type: none"> <li>Nests on beaches.</li> <li>Forages in coastal waters.</li> </ul>	<ul style="list-style-type: none"> <li>Management activities for Canada geese are not expected to occur in habitat used by loggerhead sea turtles.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>No effect</li> </ul>

Species	Counties	Habitat Characteristics	Relevant Information	Methods for Resolving Goose Damage	Determination
Eastern massasauga rattlesnake (T)  <i>Sistrurus catenatus catenatus</i>	Genesee, Onondaga	<ul style="list-style-type: none"> <li>Wet prairie, bogs and swamps</li> <li>Marshes and floodplain open areas in wetlands with elevated hummocks for basking.</li> </ul>	<ul style="list-style-type: none"> <li>Occurrences of working in these habitats would be unlikely and therefore impacts would be insignificant, discountable and/or beneficial.</li> <li>Wildlife Services will consult USFWS iPaC and/or the NYSDEC mapper to identify locations of eastern massasauga rattlesnakes.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>May affect, but not likely to adversely affect</li> </ul>
Northern Long-Eared Bat (T)  <i>Myotis septentrionalis</i>	Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, Steuben, St. Lawrence, Suffolk, Sullivan, Tioga Tompkins, Ulster, Warren Washington, Wayne, Westchester, Wyoming Yates	<ul style="list-style-type: none"> <li>Roost individually or in colonies in crevices or holes within live or dead trees</li> <li>Hibernate throughout winter in mines and caves with relatively high humidity, consistent temperatures, and no air currents</li> </ul>	<ul style="list-style-type: none"> <li>Occurrences of working in these habitats would be unlikely; however, work may occur in areas that are adjacent to or in close proximity to habitats used by bats.</li> <li>Management activities for Canada geese are not expected to result in the removal of any trees or occur in any mines or caves.</li> <li>Shooting and audio scaring devices are used almost exclusively at airports and in agricultural settings where habitat is primarily open fields and noise levels are already elevated.</li> <li>Corral traps are almost exclusively employed in lawn settings in urban or suburban environments.</li> </ul>	<ul style="list-style-type: none"> <li>Audio scaring devices</li> <li>Nest or egg destruction</li> <li>Shooting</li> <li>Physical exclusion</li> <li>Habitat modification</li> <li>Paintball guns</li> <li>Goose barriers</li> <li>Recommendation of the use of legal hunting</li> <li>Live capture and euthanasia</li> <li>Visual scaring techniques</li> <li>Chemical repellents</li> <li>Lasers</li> <li>Overhead wires</li> <li>Live traps</li> </ul>	<ul style="list-style-type: none"> <li>May affect, but not likely to adversely affect</li> </ul>

Species	Counties	Habitat Characteristics	Relevant Information	Methods for Resolving Goose Damage	Determination
Red Knot (T) (bird)  <i>Calidris canutus</i>	Kings, Nassau, Queens, Suffolk	<ul style="list-style-type: none"> <li>• These long distance migratory birds require stopover habitats that are plentiful in foods that are easy to digest such as horseshoe crabs, juvenile clams, and mussels such that they can gain up to 10% of their body weight each day</li> </ul>	<ul style="list-style-type: none"> <li>• Occurrences of working in these habitats would be unlikely and therefore impacts would be insignificant, discountable, and/or beneficial.</li> <li>• Wildlife Services does not have a history of conducting work in coastal beach environments but it is not outside the realm of possibility.</li> <li>• Canada goose management is implemented at parks, golf courses, and on other manicured lawns which does not overlap with red knot habitat.</li> </ul>	<ul style="list-style-type: none"> <li>• Audio scaring devices</li> <li>• Nest or egg destruction</li> <li>• Shooting</li> <li>• Physical exclusion</li> <li>• Habitat modification</li> <li>• Paintball guns</li> <li>• Goose barriers</li> <li>• Recommendation of the use of legal hunting</li> <li>• Live capture and euthanasia</li> <li>• Visual scaring techniques</li> <li>• Chemical repellents</li> <li>• Lasers</li> <li>• Overhead wires</li> <li>• Live traps</li> </ul>	<ul style="list-style-type: none"> <li>• No effect</li> </ul>
Swamp Pink (T) (plant)  <i>Helonias bullata</i>	Currently not believed to occur in New York	<ul style="list-style-type: none"> <li>• Obligate wetland species</li> <li>• Occur along seepage areas and streams</li> <li>• Limited to areas that are perennially saturated but not inundated by floodwater</li> </ul>	<ul style="list-style-type: none"> <li>• This species is not currently believed to occur in New York so no impacts are expected.</li> </ul>	<ul style="list-style-type: none"> <li>• Audio scaring devices</li> <li>• Nest or egg destruction</li> <li>• Shooting</li> <li>• Physical exclusion</li> <li>• Habitat modification</li> <li>• Paintball guns</li> <li>• Goose barriers</li> <li>• Recommendation of the use of legal hunting</li> <li>• Live capture and euthanasia</li> <li>• Visual scaring techniques</li> <li>• Chemical repellents</li> <li>• Lasers</li> <li>• Overhead wires</li> <li>• Live traps</li> </ul>	<ul style="list-style-type: none"> <li>• No effect</li> </ul>
Rusty Patched Bumble Bee (E) (historic)  <i>Bombus Affinis</i>	Currently not believed to occur in New York	<ul style="list-style-type: none"> <li>• Grasslands and prairies with undisturbed soils.</li> </ul>	<ul style="list-style-type: none"> <li>• This species is not currently believed to occur in New York so no impacts are expected.</li> </ul>	<ul style="list-style-type: none"> <li>• Audio scaring devices</li> <li>• Nest or egg destruction</li> <li>• Shooting</li> <li>• Physical exclusion</li> <li>• Habitat modification</li> <li>• Paintball guns</li> <li>• Goose barriers</li> <li>• Recommendation of the use of legal hunting</li> <li>• Live capture and euthanasia</li> <li>• Visual scaring techniques</li> <li>• Chemical repellents</li> <li>• Lasers</li> <li>• Overhead wires</li> <li>• Live traps</li> </ul>	<ul style="list-style-type: none"> <li>• No effect</li> </ul>

Species	Counties	• Habitat Characteristics	• Relevant Information	• Methods for Resolving Goose Damage	Determination
American hart's-tongue fern (T)  <i>Asplenium scolopendrium</i> <i>var. americana</i>	Madison, Onondaga	<ul style="list-style-type: none"> <li>• This plant is found in a few discrete habitats in shaded, moist, northern deciduous forests growing in fissures in large rocks usually no more than a foot above the moist soil.</li> <li>• May be found in limestone sinkholes, gorges or coulees.</li> <li>• Prefers shaded, moist boulders and ledges.</li> </ul>	<ul style="list-style-type: none"> <li>• Management activities are not expected to occur in habitats occupied by these plants.</li> </ul>	<ul style="list-style-type: none"> <li>• Audio scaring devices</li> <li>• Nest or egg destruction</li> <li>• Shooting</li> <li>• Physical exclusion</li> <li>• Habitat modification</li> <li>• Paintball guns</li> <li>• Goose barriers</li> <li>• Recommendation of the use of legal hunting</li> <li>• Live capture and euthanasia</li> <li>• Visual scaring techniques</li> <li>• Chemical repellents</li> <li>• Lasers</li> <li>• Overhead wires</li> <li>• Live traps</li> </ul>	<ul style="list-style-type: none"> <li>• No effect</li> </ul>

APPENDIX D – USFWS CONCURRENCE LETTER REGARDING FEDERALLY-LISTED THREATENED  
AND ENDANGERED SPECIES

Emailed 7/3/17



United States Department of the Interior

FISH AND WILDLIFE SERVICE

3817 Luker Road  
Cortland, NY 13045



June 30, 2017

Ms. Kim Porter  
U.S. Department of Agriculture  
Wildlife Services  
572 Third Avenue Extension, Suite 2  
Rensselaer, NY 12144

Dear Ms. Porter:

This responds to your letter dated May 2, 2017, regarding the Environmental Assessment (EA) report prepared for the proposed nuisance Canada goose management program. The program will be implemented by the U.S. Department of Agriculture, Wildlife Services (WS) across New York State wherever warranted to limit goose damage to property and the environment, as well as to protect human safety. The U.S. Fish and Wildlife Service (Service) has reviewed the EA dated May 2017, as well as recent revisions to the document provided by you in an electronic mail dated June 2, 2017, and June 28, 2017.

As you are aware, Federal agencies have responsibilities under Section 7 of the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to consult with the Service regarding projects that may affect federally listed species or designated critical habitat, and confer with the Service regarding projects that are likely to jeopardize federally proposed species and/or adversely modify proposed critical habitat.

A review of potential environmental impacts associated with resident goose management was completed by the Service in 2005. It contained a detailed analysis of issues and methods used to manage Canada goose damage. Subsequent to that, WS adopted the Final Environmental Impact Statement written by the Service and incorporated it, by reference, into the current EA.

To control nuisance Canada geese, WS intends to use a variety of methods, including lethal (hunting, shooting, euthanization, and egg oiling) and non-lethal (trap and transfer, behavior modification, deterrents, and habitat modification) techniques. The methods employed are site-specific and determined by WS biologists in consultation with property owners.

On Page 47 of the EA, WS indicates that from 2012 to 2016 no non-target wildlife or plants were inadvertently captured or harmed during WS Canada goose management activities. Their approach is targeted to one species and the methods employed are selected for only geese.

Therefore, WS has determined that their activities associated with Canada goose management would have either no effect or may affect but would not likely adversely affect federally listed species. Appendix C of the EA lists the WS determinations for each federally listed species in New York State (enclosed). Based upon expected goose management techniques to be employed and past experience, WS expects that these activities will result in no effect to 18 species and may affect, but will not adversely affect, another 10 species. For species which occur in suitable goose habitat, WS has indicated that as a standard operating procedure the Service's Information and Planning for Conservation online tool will be referenced as necessary for indication of the presence of federally listed species in areas where they are conducting goose management activities. Given the information provided by WS on the proposed management techniques, species involved, their habitats and locations, the Service concurs with the determinations in Appendix C.

No further coordination or consultation under the ESA is required with the Service at this time. Should project plans change, or if additional information on listed or proposed species or critical habitat becomes available, this determination may be reconsidered. The most recent compilation of federally listed and proposed endangered and threatened species in New York is available for your information. Until the proposed project is complete, we recommend that you check our website every 90 days from the date of this letter to ensure that listed species presence/absence information for the proposed project is current.\*

Any additional information regarding the proposed projects and their potential to impact listed species should be coordinated with both this office and with the New York State Department of Environmental Conservation.

We appreciate the opportunity to review the EA and provide these comments. If you require additional information or assistance please contact Tim Sullivan at 607-753-9334.

Sincerely,



*for* David A. Stilwell  
Field Supervisor

Enclosure

\*Additional information referred to above may be found on our website at:  
<http://www.fws.gov/northeast/nyfo/es/section7.htm>.

cc: NYSDEC, Albany, NY



**APPENDIX E – NYSDEC CONCURRENCE LETTER REGARDING STATE-LISTED THREATENED AND  
ENDANGERED SPECIES**

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**

Division of Fish and Wildlife, Bureau of Wildlife  
625 Broadway, 5th Floor, Albany, NY 12233-4754  
P: (518) 402-8883 F: (518) 402-8925  
www.dec.ny.gov

MAY 03 2017

Mr. Allen Gosser, State Director  
USDA, APHIS, Wildlife Services  
572 Third Ave. Extension, Suite 2  
Rensselaer, NY 12144


Dear Allen,

This letter is in response to your March 7, 2017 request for concurrence on potential risks to state-listed threatened and endangered species from the implementation of alternatives as outlined in the Environmental Assessment (EA) prepared by the USDA-APHIS-WS for Canada Goose Damage Management in New York.

As outlined in the document dated February 8, 2017 and submitted to this office, a series of goose management actions are outlined and examined for potential impacts to those state-listed species that can be reasonably anticipated to occur within the project area. The analysis conducted was inclusive of all species, both plant and animal, that may be potentially impacted.

This office can concur that the description of goose management activities and the concomitant analysis and conclusions for impacts on listed species are justified and appropriate. For all activities delineated in the EA, we are in concurrence that the actions of USDA APHIS WS are not likely to adversely affect State or Federally-listed species.

Sincerely,



Dan Rosenblatt  
Wildlife Diversity Section Head

cc: J. Farquhar, III, NYSDEC  
M. Schiavone, NYSDEC



**APPENDIX F – STATE OF NEW YORK DEPARTMENT OF STATE CONCURRENCE LETTER  
REGARDING COASTAL ZONE RESOURCES**

STATE OF NEW YORK  
**DEPARTMENT OF STATE**  
ONE COMMERCE PLAZA  
99 WASHINGTON AVENUE  
ALBANY, NY 12231-0001  
WWW.DOS.NY.GOV

ANDREW M. CUOMO  
GOVERNOR

ROSSANA ROSADO  
SECRETARY OF STATE

May 4, 2017

Mr. Allen Gosser  
State Director, NY  
USDA, APHIS, Wildlife Services  
572 Third Avenue Extension, Suite 2  
Rensselaer, New York 12144

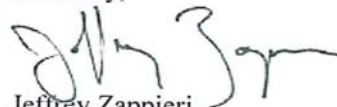
Re: F-2017-0204 (DA)  
USDA, APHIS, Wildlife Services  
Managing Canada Goose Damage in NYS  
**Negative Determination**

Dear Mr. Gosser:

The Department of State received the material from you regarding the proposed activity on March 9, 2017. Based on the information provided, the Department concurs with the USDA, APHIS, Wildlife Services' determination that the activities will not result in any reasonably foreseeable effects to land and water uses or natural resources of the coastal area. Further review of this activity by the Department of State is not necessary.

Thank you for providing this information to the Department of State. If you have any questions regarding this matter, please contact us at (518) 474-6000 and refer to our file # F- 2017-0204 (DA).

Sincerely,



Jeffrey Zappieri  
Supervisor, Consistency Review Unit  
Office of Planning and Development

JZ/ wf

