

**SUPPLEMENT TO THE ENVIRONMENTAL ASSESSMENT:
REDUCING BIRD DAMAGE IN THE STATE OF VERMONT**

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

**In cooperation with the
United States Fish and Wildlife Service
and the
Vermont Fish and Wildlife Department**

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INTRODUCTION

An environmental assessment (EA) was prepared by the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) program to analyze the potential impacts to the quality of the human environment from resolving or alleviating damage to agriculture, property, natural resources and threats to human health and safety caused by birds in the state of Vermont (USDA 2015). The EA evaluated the need for bird damage management and assessed potential impacts on the human environment of three alternatives to address that need. WS' proposed action in the EA implements an integrated damage management program to fully address the need to manage bird damage and threats while minimizing impacts to the human environment. The EA analyzed the effects of WS' activities to reduce damage and threats associated with resident and migratory bird species.

PURPOSE

The purpose of the EA will remain as addressed in section 1.2 of the EA. This supplement examines potential environmental impacts of WS' program as it relates to an increase in the number of requests, both actual and potential, for assistance to manage bird damage and threats from double-crested cormorants (*Phalacrocorax auritus*), red-winged blackbirds (*Agelaius phoeniceus*), common grackles (*Quiscalus quiscula*), brown-headed cowbirds (*Molothrus ater*) and bald eagles (*Haliaeetus leucocephalus*) since the issuance of the Decision and FONSI in 2016. This supplement will evaluate the potential environmental effects from an increase in management techniques to the above mentioned target species.

NEED FOR ACTION

A description of the need for action to reduce damage to resources and threats to human health and safety caused by birds in the state of Vermont is listed in Section 1.3 of the EA. The need for action addressed in the EA remains applicable to this supplement; however, WS has received increased requests for assistance and/or has experienced increased numbers of red-winged blackbirds, common grackles, and brown-headed cowbirds and reasonably expects an increase in requests for assistance for causing damage and threats of damage since the completion of the EA. In addition, the number of bald eagles in the state continues to increase. An injured eagle was spotted along the Connecticut River which increased the need to potentially trap injured bald eagles for transportation to a licensed wildlife rehabilitator. WS can reasonably expect to be requested to assist with injured eagles in the future. Also, double-crested cormorant biology and population impacts will be re-evaluated with updated scientific data.

The need for action is based on a need to manage bird damage to agricultural resources, natural resources, and property, including threats to human safety associated with birds. Some species of wildlife have adapted to and have thrived in human altered habitats. Birds, including double-crest cormorants, bald eagles, red-winged blackbirds, common grackles, and brown-headed cowbirds are often responsible for conflicts with people, natural resources and agriculture.

This proposed supplement to the EA addresses the need for an increase in bird damage management activities throughout Vermont. Those conflicts often lead people to request assistance with reducing damage to resources and to reduce threats to human safety. The need for action to manage damage and threats associated with birds arises from requests for assistance received by WS to reduce and prevent damage from occurring to four major categories: agricultural resources, property, natural resources, and threats to human safety. The number of technical assistance projects involving bird damage or threats of bird damage to those four major resource types for double-crested cormorant, bald eagle, common grackles, brown-headed cowbirds and blackbirds mixed flocks from fiscal year (FY) 2013 through FY 2017 is shown in Table 1.

Table 1 – Technical assistance projects conducted by WS in Vermont, FY 2013 – FY 2017

Species	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	AVERAGE
Double-crested cormorant	4	7	2	1	5	3.8
Bald Eagle	0	1	0	1	0	0.4
Brown-headed cowbirds	0	0	0	0	0	0
Common grackles	0	2	1	0	0	0.6
Red-winged blackbird	0	1	0	0	1	0.4
Blackbirds (Mixed species)	2	1	2	6	2	2.6

Red-winged blackbirds and common grackles

Although WS has only received a few requests for assistance to alleviate damage caused by red-winged blackbirds and common grackles in the past five years, WS has decided to include an analysis of red-winged blackbirds and common grackles since this species frequently coexists in mixed species flocks of blackbirds (Lowther 1993), and WS anticipates receiving more requests for assistance to alleviate damage caused by mixed species flocks of blackbirds, mostly to agricultural resources. WS has increased the proposed removal of red-winged blackbirds and common grackles as a result of the requests WS received for direct control to alleviate damage caused by these species in the NH/VT program. Large flocks of red-winged blackbirds are responsible for most of the damage reported to sweet corn with damage also occurring from grackles and starlings within the United States (Besser 1985). Damage occurs when birds rip or pull back the husk exposing the ear for consumption. Damage can also occur to sprouting corn as birds pull out the sprout or dig the sprout up to feed on the seed kernel (Besser 1985). Damage to sprouting corn occurs primarily from crows but red-winged blackbirds, grackles, and common ravens are also known to cause damage to sprouting corn (Mott and Stone 1973). Rogers and Linehan (1977) found that grackles damaged two corn sprouts per minute on average when present at a field planted near a breeding colony. Damage to sprouting corn is likely localized and highest in areas where breeding colonies exist in close proximity to agricultural fields planted with corn (Mott and Stone 1973, Rogers and Linehan 1977). WS has increased the proposed removal of red-winged blackbirds and common grackles in anticipation that WS will receive more requests to alleviate damage to agricultural resources caused by blackbirds and grackles.

Red-winged blackbirds and common grackles can also pose a threat to human health and safety when they are present at airfields. When birds are struck by aircraft, and especially when birds are ingested by aircraft engine, structural damage to the aircraft and engine failure can occur. WS has not removed any

red-winged blackbirds or common grackles from Vermont airports in the last five years. However, WS expects an increase of red-winged blackbirds and common grackles at airports in the future. Since 1990, there have been 2,308 recorded aircraft strikes (111 strikes with damage costing \$1.8 million) with blackbirds in the U.S. (326 red-winged blackbirds, 161 common grackles). Five red-winged blackbird strikes have resulted in damage costing over \$21,000 total while seven common grackle strikes have resulted in damage costing over \$74,000 (Wildlife Strikes to Civil Aircraft in the US 2015).

Brown-headed cowbirds

Although WS has not received any requests for assistance to alleviate damage caused by brown-headed cowbirds in the past five years, WS has decided to include an analysis of brown-headed cowbirds since this species frequently coexists in mixed species flocks of blackbirds (Lowther 1993), and WS anticipates receiving more requests for assistance to alleviate damage caused by mixed species flocks of blackbirds, mostly to agricultural resources. Brown-headed cowbirds are known to cause damage to agricultural resources, primarily from the consumption of livestock feed and from the increased risks associated with the transmission of diseases from fecal matter being deposited in feeding areas and in water used by livestock. Williams (1983) estimated seasonal feed losses from five species of blackbirds (primarily brown-headed cowbirds) at one feedlot in south Texas at nearly 140 tons valued at \$18,000. It has been reported that brown-headed cowbirds can cause damage to fruit and nut crops as well. Besser (1985) documented that cowbirds, along with red-winged blackbirds, woodpeckers, and crows, are known to cause damage to blueberries typically by plucking and consuming the berry.

Double-crested cormorants

On May 25, 2016, the United States District Court for the District of Columbia vacated the Public Resource Depredation Order for double-crested cormorants. The Court's vacatur of the Public Resource Depredation Order (PRDO) followed the Court's decision on the merits on March 29, 2016, concluding that the 2014 EA prepared by USFWS in renewing the PRDO was insufficient. Specifically, the Court found that USFWS failed to take a "hard look" at the effect of the PRDO on double-crested cormorant populations when it did not update previous population model estimates in its 2014 EA (see *Public Employees for Environmental Responsibility v. USFWS*, 177 F. Supp. 3d 146, 153 (D.D.C. 2016)).

Following the Court's decisions, all activities that result in take of double-crested cormorants for the protection of aquaculture or public resources now require a depredation permit issued by USFWS pursuant to the Migratory Bird Treaty Act (MBTA) (16 USC 703-712). WS-Vermont previously received a state-wide depredation permit from USFWS for the take of various species of birds. WS-Vermont currently operates under a state-wide depredation permit from USFWS for the take of various migratory bird species.

WS-Vermont has determined that to the extent that its EA references the USFWS' vacated the 2009 EA and/or the 2003 Environmental Impact Statement, WS-Vermont will no longer rely on the analyses from those documents regarding the impacts on double-crested cormorant populations.

The USFWS recently completed an EA on the take of cormorants nationwide across 37 central and eastern States and the District of Columbia pursuant to 50 C.F.R. § 21.41. This EA (USFWS 2017a) evaluated the reasonably foreseeable environmental impacts of making decisions on cormorant depredation permit applications for certain activities; managing cormorants at or near aquaculture facilities; alleviating human health and safety concerns; protecting threatened and endangered species (as listed under the Endangered Species Act of 1973, as amended; ESA); reducing damage to property; and protecting species of high conservation concern, and rare and declining plant communities at a local scale. The EA considered the impact to non-target species and the effect to the environment from using

lead shot for the take of cormorants. Based on the analysis in this EA (USFWS 2017b), a Decision and a Finding of No Significant Impact (FONSI) was signed by USFWS selecting the reduced take alternative.

The need for action with double-crested cormorants pertains to damage to public resources, threatened and endangered (T&E) species, natural resources and property. WS has been requested to assist in the implementation of the Lake Champlain Islands Wildlife Management Area Long-Range Management Plan developed by the Vermont Fish and Wildlife Department (VFWD). To meet objectives of the Lake Champlain Islands Management Plan, the VFWD has requested WS' assistance in managing and dispersing cormorants to restore vegetation and wildlife diversity on islands identified in the Plan and other locations when requested and applicable. Increasing concerns from private landowners have also required management and dispersal effort from WS. This supplement will analyze the potential environmental impacts from an increasing need for cormorant damage management activities to achieve management objects, reduce habitat damage, prevent the establishment of new cormorant colonies, protect threatened and endangered species, species of concern and human health and safety.

Cormorants can displace colonial waterbird species such as black-crowned night-herons (*Nycticorax nycticorax*), great egrets (*Ardea alba*), great blue herons (*Ardea herodias*), gulls, common terns (*Sterna hirundo*), and Caspian terns (*Hydroprogne caspia*) through habitat degradation and nest site competition (Farquhar et al. 2003). Cormorants defoliate shrubs and trees used for nesting and roosting which displaces waterbird species such as herons and egrets (Lemmon et al. 1994, Shieldcastle and Martin 1999, Farquhar et al. 2003). Once they have destroyed all available trees for nesting, cormorants will often shift to ground nesting (Hebert et al. 2005). While cormorants easily adapt to ground nesting, other colonial waterbirds (i.e., herons and egrets) prefer to nest higher in the trees to avoid predation (Cuthbert et al. 2002, Post 1990). However, it has also been shown that cormorant management activities themselves can have negative and/or positive impacts on species that co-habituate with cormorants (Wyman et al. 2018).

The presence of suitable trees and shrubs is vital for many nesting colonial waterbirds. Wires and Cuthbert (2001) identified vegetation die off as an important threat to 66% of the colonial waterbird sites designated as 'conservation sites of priority' in the Great Lakes of the United States. Cormorants were present at 23 of the 29 priority conservation sites reporting vegetation die offs (Wires and Cuthbert 2001). Cormorants were reported to impact the herbaceous layers and trees used for nesting due to fecal deposition, and often the herbaceous layer was reduced or eliminated from the colony site (Wires et al. 2001). In addition, natural resource managers reported that the impacts to avian species from cormorants were primarily from habitat degradation and from competition for nest sites (Wires et al. 2001). Although loss of vegetation can have an adverse impact on many species, some colonial waterbirds such as pelicans, gulls and terns do prefer sparsely vegetated substrates.

Forest communities provide nesting and loafing habitat for many bird species. However, cormorants may damage shrubs and trees through the removal of foliage and branches by loafing or for nest making activities (Koh et al. 2012). Cormorants may also harm forest communities comprising several acres by altering the soil characteristics through the deposition of acidic droppings (Koh et al. 2012). Accumulations of ammonium nitrogen rich guano alter the soil beneath cormorant colonies, decreasing the pH levels and increasing nitrogen and phosphorus concentrations (Cuthbert et al. 2002, Duffe 2006, Koh et al. 2012). Many native trees and vegetation respond poorly to these soil alterations, and begin to die or weaken in as little as three years after use for nesting (Koh et al. 2012). As trees become unstable, cormorants and other breeding birds in the colony will abandon them for more favorable trees (Koh et al. 2012). As the lack of suitable nesting habitat begins to occur, cormorants may adapt by nesting on the ground, but other bird species may abandon the site (Koh et al. 2012).

There are a total of 71 islands in Lake Champlain, including New York, Vermont, and Quebec. Most of these islands are in private ownership. Some of the private islands which cormorants have caused

damage to or displaced other nesting birds in Vermont include: Savage Island, Upper and Lower Fish Bladder Island, Dameas Island, Lazy Lady Island, Gardener Island, Diamond Island, Hen Island, and other shoreline locations. The VFWD has ownership or management responsibility to many islands and shoreline as well. These parcels include Mud Island, Rock Island, Sloop Island, South Sister Island (also known as Young Island), Woods Island, Knight Island, Button Island, Burton Island and many other shoreline properties. WS works in cooperation with the VFWD to prevent cormorant damage to these state lands to maintain native habitat and species biodiversity.

Cormorants began nesting on Young island in the early-1980's, (Figure 1.1) and the population grew so rapidly that much of the vegetation was completely eliminated (Figure 1.2). Young Island is approximately 5.5 acres in size and lies 0.6 miles off the western shore of Grand Isle, Vermont (Figure 1.1). The State of Vermont purchased the island in 1959. At the time of acquisition, the vegetation included hardwood forest dominated by Eastern cottonwood (*Populus deltoides*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), basswood (*Tilia americana*), and silver maple (*Acer saccharinum*) (Torti and Laroche 2006). Photographs from 1963 show a dense understory of raspberry (*Rubus* sp.) and mixed shrubs with staghorn sumac (*Rhus typhina*), cherry (*Prunus cerasus*), white cedar (*Thuja occidentalis*) and juniper (*Juniperus* sp.) (Figure 1.1).

Cormorant nesting on Lake Champlain Islands has resulted in the destruction of vegetation and the displacement of other species of birds (Duerr 2007). Loss of vegetation has caused colony abandonment of colonial waterbirds in other locations where research on co-nesting species has been conducted (Sheildcastle and Martin 1999, Cuthbert et al. 2002). Abandonment of a nesting colony has been documented on Lake Champlain at Four Brothers Islands; cormorant damage to the trees reduced the ideal nesting habitat and likely caused herons and egrets to relocate (Capen and Bryant 2012). A cormorant mitigation program was initiated in 1993 to help protect island habitat, prevent pioneering attempts, increase species diversity and work to re-establish native vegetation on the island (Figure 1.3). The objective of this program was to reduce the cormorant population causing negative impacts to these habitats, reduce impacts on other wildlife utilizing these locations, and to maintain species biodiversity.



Figure 1.1 - Photograph of Young Island, Vermont taken in 1963 (left) prior to colonization by cormorants and gulls, and in 1996 (right) after 15 years of nesting by cormorants and gulls.



Figure 1.2 - Photograph of Young Island, Vermont taken in 2006.



Figure 1.3 - Photograph of Young Island, Vermont taken in 2010 (left) and in 2012 (right) showing established native grasses and tree seedlings planted after the successful management of gulls and cormorants.

The Four Brothers Islands (named A, B, C, and D) is locally managed by the Adirondack Chapter of the Nature Conservancy. Several species of colonially nesting waterbirds use the island, including herons, egrets, gulls, terns and cormorants. Management of cormorants at other locations on Lake Champlain has resulted in more than 95% of Lake Champlain's nesting cormorants concentrated on Four Brothers Islands (Capen and Bryant 2012). As cormorant populations increased or new colonies emerge, they have displaced some other bird species. On Island A, black-crowned night herons have been displaced by cormorants and have moved to other islands to find suitable habitat. On Island D, cormorants killed a stand of white pines (*Pinus strobus*) which provided nesting substrate for great-blue herons, and a dense patch of yews (*Taxus* sp.) where black-crowned night herons nested. Both the black-crowned night herons and great blue herons have abandoned this island (Duerr et al. 2007, Capen and Bryant 2012).

On Young Island, black-crowned night herons, cattle egrets (*Bubulcus ibis*), and snowy egrets (*Egretta thula*) once nested in dense shrubs that existed on the island, but the shrubs have been killed off by the large population of cormorants and the herons and egrets no longer nested on the island (Duerr 2007). On Popasquash Island, common terns experienced low nesting success when competing for nest sites with

cormorants, and nesting success increased when cormorant densities were lowered (LaBarr and Rimmer 1999).

Property damage by cormorants on Lake Champlain includes droppings on boats, buoys, and bridges, and damage or death of trees. Cormorant droppings have high levels of ammonia (Koh et al. 2012) and can cause chemical burns on surfaces. Long term roosting and loafing of cormorants can interfere with these types of equipment. Droppings can affect performance of navigational aids or buoys if the guano causes corrosion or coats solar panels and repairs can be costly (International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) 2012).

Bald Eagle

WS has proposed adding capture of bald eagles as a result of a request received to assist with safeguarding natural resources. In FY 2017, with approval from the US Fish and Wildlife Service, WS initiated activities to recover an injured bald eagle for transportation to and evaluation from a licensed wildlife rehabilitator.

The bald eagle is a large raptor often associated with aquatic habitats across North America (Buehler 2000). Twenty-one pairs of bald eagles nested in Vermont in 2017, which is the highest recorded year in recent history (D. Sausville per. Comm. 2018). Nesting normally occurs from late-March through September with eggs present in nests from late-March through the end of May. Eaglets can be found in nests generally from late-May through mid-September (Buehler 2000). Officially removed from the federal list of threatened and endangered species in 2007, the bald eagle population in the lower 48 states has rebounded from an all-time low of 487 breeding pairs in 1963 to a high of 16,048 pairs in 2009 (USFWS 2016b). In addition, the VFWD lists the bald eagle as “*endangered*” in the state. As bald eagle numbers continue to rebound, WS anticipates an increase in the number of requests for trapping injured bald eagles for evaluation and rehabilitation.

Bald eagles can also pose threats to human health and safety when they occur in close proximity to airports. Since 1990, 226 bald eagle strikes have been reported to the FAA with 26 bald eagle strikes occurring in 2015 (Dolbeer et al. 2016). WS has received requests for assistance associated with bald eagles at airports and anticipates an increase in requests for eagle management.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) AND WS DECISION-MAKING:

All federal actions are subject to the NEPA (Public Law 9-190, 42 USC 4321 et seq.). WS follows CEQ regulations implementing the NEPA (40 CFR 1500 et seq.). In addition, WS follows the USDA (7 CFR 1b), and APHIS Implementing Guidelines (7 CFR 372) as part of the decision-making process. Those laws, regulations, and guidelines generally outline five broad types of activities to be accomplished as part of any project: public involvement, analysis, documentation, implementation, and monitoring. The NEPA also sets forth the requirement that all major 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. Federal activities affecting the physical and biological environment are regulated in part by the CEQ through regulations in 40 CFR 1500-1508. In accordance with the CEQ and USDA regulations, APHIS guidelines concerning the implementation of the NEPA, as published in the Federal Register (44 CFR 50381-50384) provide guidance to WS regarding the NEPA process.

Pursuant to the NEPA and the CEQ regulations, this EA supplement documents the analyses of potential federal actions, informs decision-makers and the public of reasonable alternatives capable of avoiding or minimizing significant effects, and serves as a decision-aiding mechanism to ensure that the policies and

goals of the NEPA are infused into federal agency actions. This EA supplement 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.

DECISIONS TO BE MADE

Based on the scope of the EA and this supplement, the decisions to be made are: 1) How can WS best respond to the need to reduce bird damage in Vermont; 2) Do the alternatives have significant cumulative impacts meriting an Environmental Impact Statement (EIS)?

SCOPE OF ANALYSIS

This supplement evaluates double-crested cormorant, red-winged blackbird, common grackle, brown-headed cowbird, and eagle damage management to eliminate or alleviate damage and threats to agriculture, property, natural resources, and human health and safety. Unless otherwise discussed in this supplement, the scope of analysis remains valid as addressed in section 1.5 of the EA.

Federal, State, County, City, and Private Lands

Under two of the alternatives analyzed in detail, WS could continue to provide assistance on federal, state, county, municipal, and private land when a request was received for such services from the appropriate resource owner or manager. Actions taken on federal lands have been analyzed in the scope of this EA and supplement.

AUTHORITY AND COMPLIANCE

WS' activities to reduce damage and threats associated with wildlife are regulated by federal, state, and local laws and regulations. The primary statutory authorities for the WS program are the Act of March 2, 1931 (46 Stat. 1468; 7 USCA 8351; 7 USCA 8352) as amended, and the Act of December 22, 1987 (101 Stat. 1329-331, 7 USCA 8353). The WS program is the lead federal authority in managing damage to agricultural resources, natural resources, property, and threats to human safety associated with wildlife. WS' directives define program objectives and guide WS' activities managing animal damage and threats.

RELATIONSHIP OF THIS DOCUMENT TO OTHER ENVIRONMENTAL DOCUMENTS

WS' Environmental Assessments - *Environmental Assessment- Reducing Bird Damage in the state of Vermont* (USDA 2015): WS had previously developed an EA that analyzed the need for action to manage damage associated with resident and migratory bird species within Vermont. The EA identified issues associated with bird damage management and analyzed alternatives to address those issues. After review of the analyses in the EA, a FONSI was signed on February 12, 2016, selecting the proposed action to implement an integrated approach to managing bird damage.

Changes in the need for action and the affected environment have prompted WS to initiate this new analysis for double-crested cormorant, red-winged blackbirds, common grackles, brown-headed cowbirds, and bald eagles into this supplement. This supplement will address more recently identified changes and will assess the potential environmental impacts of program alternatives based on a new need for action. Since activities conducted under the previous EA related to double-crested cormorant, red-winged blackbirds, common grackles, brown-headed cowbirds, and bald eagles will be re-evaluated under this supplement to address the new need for action and the associated affected environment, the previous analysis within the EA that addressed these species will be superseded by this analysis and the outcome of the Decision issued based on the analyses in this supplement.

RELATIONSHIPS OF AGENCIES DURING PREPARATION OF THIS EA SUPPLEMENT

Based on agency relationships, Memorandums of Understanding (MOUs), and legislative authorities, WS was the lead agency during the development of the EA and the supplement to the EA, and therefore, was responsible for the scope, content, and decisions made.

Public Involvement

Issues and alternatives related to bird damage management conducted by WS in Vermont were initially developed by WS. Issues were defined and preliminary alternatives were identified through the scoping process. Notice of the proposed action and invitation for public involvement on the pre-decisional EA was placed in the *Times Argus* newspaper with statewide circulation. There was a 30-day comment period for the public to provide input on the pre-decisional EA. No comments were received from the public after review of the pre-decisional EA. A Decision and FONSI was signed for the EA on February 12, 2016.

This supplement, along with the EA, and the associated Decisions and FONSI will be made available for public review and comment through the publication of a legal notice announcing a minimum of a 30-day comment period. The legal notice will be published at a minimum in the *Times Argus*, sent to interested parties via the APHIS stakeholder registry, and posted on the APHIS website. Comments received during the public involvement process will be fully considered for new substantive issues and alternatives.

ISSUES ADDRESSED IN DETAIL

The issues analyzed in detail are discussed in Chapter 2 of the EA. Alternatives developed and identified during the development of the EA to address those issues are discussed in Chapter 3 of the EA. The following issues were identified during the scoping process for the EA:

- Effects of Damage Management Activities on Target Bird Populations
- Effects on Non-target Wildlife Species Populations, Including T&E Species
- Effects of Damage Management Methods on Human Health and Safety
- Effects on the Aesthetic Values of Birds

Based on those damage management activities conducted previously by WS since the Decision and FONSI were signed in 2016, no additional issues have been identified that require detailed analyses. Those issues identified during the development of the EA remain applicable and appropriate to resolving damage and threats of damage associated with birds, including double-crested cormorant, red-winged blackbirds, common grackles, brown-headed cowbirds, and bald eagles.

ALTERNATIVES INCLUDING THE PROPOSED ACTION

The alternatives considered and evaluated using the identified issues are described and discussed in detail in Chapter 3 of the EA. In addition, Chapter 4 of the EA analyzes the environmental consequences of each alternative as those alternatives relate to the issues identified. Appendix B of the EA provides a description of the methods that could be used or recommended by WS under each of the alternatives. The EA describes three potential alternatives that were developed to address the issues identified above. Alternatives analyzed in detail include:

- Alternative 1 - Continuing the Current Integrated Approach to Managing Bird Damage (Proposed

Action/No Action)

- Alternative 2 - Bird Damage Management by WS using only Non-lethal Methods
- Alternative 3 - No Bird Damage Management Conducted by WS

STANDARD OPERATING PROCEDURES FOR BIRD DAMAGE MANAGEMENT TECHNIQUES

SOPs improve the safety, selectivity, and efficacy of wildlife damage management activities. The WS program uses many such SOPs which are discussed in detail in Chapter 3 of the EA. Those SOPs would be incorporated into activities conducted by WS when addressing bird damage management.

ENVIRONMENTAL CONSEQUENCES FOR ISSUES ANALYZED IN DETAIL

Potential impacts of Alternative 2 and Alternative 3 on the human environment related to the major issues have not changed from those described and analyzed in the EA and thus do not require additional analyses in this supplement. Chapter 4 of the EA contains a detailed discussion and comparison of the identified alternatives and the major issues. The issues were identified as important to the scope of the analysis in the EA (40 CFR 1508.25). Alternative 1 (proposed action/no action), as described in the EA, addresses requests for bird damage management using an integrated damage management approach by WS. The following is an analysis of potential impacts for each of the major issues analyzed in the EA since the completion of the EA as related to Alternative 1 (proposed action/no action alternative):

Issue 1 – Effects of Damage Management Activities on Target Bird Populations

A common concern when addressing damage associated with bird species are the effects on the populations of those species from methods used to manage damage. The integrated approach of managing damage associated with wildlife described in the EA under the proposed action alternative uses both non-lethal and lethal methods to resolve requests for assistance. Although non-lethal methods can disperse wildlife from areas where application occurs, wildlife is generally unharmed. Therefore, adverse effects are not often associated with the use of non-lethal methods. However, methods used to lethally remove birds and active nests can result in local reductions in those species' populations in the area where damage or threats of damage were occurring.

Magnitude can be described as a measure of the number of animals killed or nests destroyed 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. WS' take is monitored by comparing numbers of animals killed with overall populations or trends in populations to assure the magnitude of take is maintained below the level that would cause significant adverse impacts to the viability of native species populations. All lethal removal of birds and active nests by WS occurs at the requests of a cooperator seeking assistance and only after the appropriate permit has been issued by the USFWS, when appropriate.

The issue of the effects on target bird species arises from the use of non-lethal and lethal methods identified in the EA to address the need for reducing damage and threats associated with those bird species addressed in the EA. The EA found that when WS' activities are conducted within the scope analyzed in the EA, those activities would not adversely impact bird populations. WS' SOPs are designed to reduce the effects on bird populations and are discussed in section 3.3 and 3.4 of the EA.

WS has provided direct damage management and technical assistance in response to requests for

assistance in Vermont since the completion of the EA. Descriptions and application of direct damage management and technical assistance projects are discussed in detail in Chapter 3 of the EA. All bird damage management activities conducted by WS were pursuant to applicable federal, state, and local laws and regulations.

Information on bird populations and trends are often derived from several sources including the Breeding Bird Survey (BBS), the Christmas Bird Count (CBC), the Partners in Flight Landbird Population database, published literature, unpublished reports, and harvest data. These methods remain applicable as described in the 2015 EA. Unless noted otherwise, the state population estimate listed for each species analyzed below was obtained from Partners in Flight Science Committee (PFSC) (2013). Breeding Bird Survey (BBS) population trends from 1966 to 2015 for Vermont and the BCR regions that the state falls within two bird conservation regions: the Atlantic Northern Forest (Bird Conservation Region 14) and the Champlain Valley lies with the Lower Great Lakes/St. Lawrence Plain (LGLSP) (Bird Conservation Region 13). The statistical significance of a trend for a given species that is determined by the BBS data is color coded: a black percentage indicates a statistically non-significant positive or negative trend, a red percentage indicates a statistically significant negative trend, and a blue percentage indicates a statistically significant positive trend (Sauer et al. 2017).

Population Impact Analysis from WS' activities in Vermont from FY 2016 through FY 2017

WS has provided direct damage management and technical assistance in response to requests for assistance with bird damage and threats since the completion of the EA and the Decision/FONSI signed in 2016. All bird damage management activities conducted by WS were pursuant to relevant federal, state, and local laws and regulations, and were conducted within the parameters analyzed in the EA. Direct operational assistance provided by WS included both non-lethal harassment techniques and the lethal removal of target bird species.

The number of double-crested cormorant, common grackles, brown-headed cowbirds, and red-winged blackbirds addressed by WS in FY 2016 and FY 2017 is shown in Table 2. All lethal removal and nest destruction of target bird species in the EA was below the annual level of removal analyzed, except for brown-headed cowbirds. For brown-headed cowbirds, the proposed annual removal analyzed in the EA was 20 individuals, which was exceeded in FY 2016 when 32 individuals were lethally removed. Since the lethal removal of brown-headed cowbirds has exceeded the annual level of removal analyzed in the EA, they have been included in this supplement. Common grackles, and red-winged blackbirds are being included in the supplement because of increased damage and requests for assistance.

Since the completion of the EA and the Decision/FONSI, the PRDO has been vacated. The analyses in the EA relied upon a previous analysis conducted by the USFWS that evaluated the cumulative effects associated with the take of cormorants pursuant to the vacated depredation orders and under depredation permits. In the decision to vacate the depredation orders, the Court concluded the analysis of cumulative impacts on the cormorant population conducted in the NEPA analysis prepared by the USFWS was insufficient. Therefore, double-crested cormorant are being analyzed in the supplement.

Table 2 – Target species non-lethally dispersed and lethally removed by WS during bird damage management activities in Vermont, FY 2016 – FY 2017

Species	# Dispersed		# Killed	
	2016	2017	2016	2017
Double-crested cormorant	4,976	1,157	159	0
Bald eagle	2	0	0	0
Brown-headed cowbirds	0	0	32	0
Red-winged blackbird	0	0	0	0
Common grackle	0	0	0	0
Blackbirds (Mixed species)	0	49	0	0
TOTAL	4,978	1,206	191	0

Common Grackle Biology and Population Impacts

VT population estimate: 110,000

BBS Atlantic Northern Forest, 1966-2015: -1.73%

BBS Atlantic Northern Forest, 2005-2015: -1.65%

BBS LGLSP, 1966-2015: -1.21%

BBS LGLSP, 2005-2015: -1.51%

WS removal as % of state population: 1.8%

WS proposed removal: 2,000

BBS VT, 1966-2015: -2.18%

BBS VT, 2005-2015: -2.29%

Common grackles are found throughout Vermont and are considered abundant and widespread (Audubon 2017). Grackles can be found throughout the year in the United States except for the far northern and western portions of the species range in the United States (Peer and Bollinger 1997). Common grackles are a semi-colonial nesting species often associated with human activities. During the migration periods, common grackles can be found in mixed species flocks of blackbirds. The number of common grackles observed in areas surveyed during the CBC has shown a variable trend but an overall general declining trend since 1966 (NAS 2010). The variability may be correlated with the severity of winters in the state, which may limit the availability of food sources.

Since the removal of blackbird species, including common grackles, can occur without the need for a depredation permit when committing or about to commit damage, the number of common grackles lethally removed by non-WS entities in the state is currently unknown. WS has not dispersed or lethally removed any common grackles from FY 2013 through FY 2017, but they are included in this supplement since they often form mixed species flocks with other blackbird species. Since common grackles often form mixed species flocks with other blackbird species, determining the number of birds of each species present in the mixed species flocks can be difficult. Therefore, when dispersing mixed species flocks, the number of common grackles present in the flocks is unknown. However, from FY 2013 to FY 2017, WS has dispersed 330 birds in mixed species flocks of blackbirds.

Direct, Indirect, and Cumulative Effects:

WS’ proposed annual removal is only a small percentage of the state population estimate and BBS population trend data suggests the population is stable. Therefore based on the best scientific data, WS’ proposed removal level will have no adverse direct or indirect effects on common grackle populations.

While non-WS removal is unknown, common grackle populations have remained abundant enough that the USFWS has maintained the Federal Blackbird Depredation Order. Therefore, WS does not anticipate any significant cumulative impacts to common grackle populations.

Red-winged blackbird Biology and Population Impacts

VT population estimate: 300,000	WS proposed removal: 9,000
BBS Atlantic Northern Forest, 1966-2015: -1.87%	BBS VT, 1966-2015: -1.30%
BBS Atlantic Northern Forest, 2005-2015: -1.63%	BBS VT, 2005-2015: -1.22%
BBS LGLSP, 1966-2015: -1.21%	
BBS LGLSP, 2005-2015: -1.25%	
WS removal as % of state population: 3.0%	

The red-winged blackbird is one of the most abundant bird species in North America and is a commonly recognized bird that can be found in a variety of habitats (Yasukawa and Searcy 1995). The breeding habitat of red-winged blackbirds includes marshes and upland habitats from southern Alaska and Canada southward to Costa Rica extending from the Pacific to the Atlantic Coast along with the Caribbean Islands (Yasukawa and Searcy 1995). Northern breeding populations of red-winged blackbirds migrate southward during the migration periods but red-winged blackbirds are common throughout the year in states along the Gulf Coast and parts of the western United States (Yasukawa and Searcy 1995). During the migration periods, red-winged blackbirds often form mixed species flocks with other blackbird species. The number of red-winged blackbirds observed during the CBC in the state has shown a variable trend since 1966 (NAS 2010).

Since the removal of blackbird species, including red-winged blackbirds, can occur without the need for a depredation permit when committing or about to commit damage, the number of red-winged blackbirds lethally removed by non-WS entities in the state is currently unknown. WS has not dispersed or lethally removed any red-winged blackbirds from FY 2013 through FY 2017, but they are included in this supplement since they often form mixed species flocks with other blackbird species. Since red-winged blackbirds often form mixed species flocks with other blackbird species, determining the number of birds of each species present in the mixed species flocks can be difficult. Therefore, when dispersing mixed species flocks, the number of red-wing blackbirds present in the flocks is unknown. However, from FY 2013 to FY 2017, WS has only dispersed 55 birds in mixed species flocks of blackbirds.

Direct, Indirect, and Cumulative Effects:

WS' proposed annual removal of red-winged blackbirds is only a small percentage of the state population estimate and BBS population trend data suggests the population is stable. Therefore, WS' proposed annual removal level will have no adverse direct or indirect effects on red-winged blackbird populations. While non-WS removal is unknown, red-winged blackbird populations have remained abundant enough that the USFWS has maintained the Federal Blackbird Depredation Order. Therefore, WS does not anticipate any significant cumulative impacts to red-wing blackbird populations.

Brown-headed Cowbird Biology and Population Impacts

VT population estimate: 90,000	WS proposed removal: 1,800
BBS Atlantic Northern Forest, 1966-2015: -6.28%	BBS VT, 1966-2015: -3.40%
BBS Atlantic Northern Forest, 2005-2015: -5.68%	BBS VT, 2005-2015: -4.27%
BBS LGLSP, 1966-2015: -2.87%	
BBS LGLSP, 2005-2015: -2.58%	
WS removal as % of state population: 2.0%	

Brown-headed cowbirds are a species of the blackbird family commonly found in mixed species flocks during migration periods. Cowbirds are a common summer resident across the United States and southern Canada (Lowther 1993). Breeding populations in the northern range of the cowbird are migratory with cowbirds present year-round in much of the eastern United States and along the West Coast (Lowther 1993). Cowbirds are having a negative impact on other species and are considered far more abundant and widespread in New England (Audubon 2017). Likely restricted to the range of the bison (*Bison bison*) before the presence of European settlers, cowbirds were likely a common occurrence on the short-grass plains where they fed on insects disturbed by foraging bison (Lowther 1993). Cowbirds expanded their breeding range as people began clearing forests for agricultural practices (Lowther 1993). Cowbirds are still commonly found in open grassland habitats but also inhabit urban and residential areas. Unique in their breeding habits, cowbirds are known as brood parasites meaning they lay their eggs in the nests of other bird species (Lowther 1993). Female cowbirds can lay up to 40 eggs per season with eggs reportedly being laid in the nests of over 220 species of birds, of which, 144 species have actually raised cowbird young (Lowther 1993). No parental care is provided by cowbirds with the raising of cowbird young occurring by the host species. Similar to the other blackbird species, the number of cowbirds observed during the CBC conducted annually in the state has shown a downward trend pattern since 1966 (NAS 2010).

Since the removal of blackbird species, including brown-headed cowbirds, can occur without the need for a depredation permit when committing or about to commit damage, the number of cowbirds lethally removed by non-WS entities in the state is currently unknown. WS has only lethally removed 32 brown-headed cowbirds from FY 2013 through FY 2017 within Vermont, but brown-headed cowbirds are included in this supplement since they often form mixed species flocks with other blackbird species.

Direct, Indirect, and Cumulative Effects:

Based on the best scientific data, WS' proposed annual removal level will have no adverse direct or indirect effects on brown-headed cowbird populations. While non-WS removal is unknown, cowbird populations have remained abundant enough that the USFWS has maintained the Federal Blackbird Depredation Order. In addition, BBS population trend data suggests the population is stable. Therefore, WS does not anticipate any significant cumulative impacts to brown-headed cowbird populations.

Bald eagle Biology and Population Impacts

WS proposed removal: 2 nests
BBS Atlantic Northern Forest, 1966-2015: 6.59%
BBS Atlantic Northern Forest, 2005-2015: 8.99%
BBS LGLSP, 1966-2015: 7.78%
BBS LGLSP, 2005-2015: 10.37%

The bald eagle is a large bird of prey considered an opportunistic forager that eats a variety of mammalian, avian and reptilian prey, but generally prefers fish over other food types (Buehler 2000). Bald eagles are a North American species that historically occurred throughout the contiguous United States and Alaska. The largest North American breeding populations are in Alaska and Canada, but there are also significant bald eagle populations in the Great Lakes states, Florida, the Pacific Northwest, the Greater Yellowstone area, and the Chesapeake Bay region (USFWS 2017c).

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. In Vermont, bald eagles are listed as “*endangered*” in the state. Twenty-one pairs of bald eagles nested in Vermont in 2017, which is the highest recorded year in recent history (Buck and Fowle 2017). Nesting normally occurs from late-March

through September with eggs present in nests from late-March through the end of May. Eaglets can be found in nests generally from late-May through mid-September (Buehler 2000).

The USFWS developed an EIS that evaluated alternatives and issues associated with revising regulations permitting the incidental take of eagles and eagle nests, pursuant to the Act. The preferred alternative in the EIS evaluated the management on an eagle management unit level (similar to the migratory bird flyways) to establish limits on the amount of eagle take that the USFWS could authorize in order to maintain stable or increasing populations. This alternative further establishes a maximum duration for permits of 30 years with evaluations in five year increments (USFWS 2016a). A Record of Decision was made for the preferred alternative in the EIS. The selected alternative revised the permit regulations for the incidental take of eagles (see 50 CFR 22.26 as amended) and a provision to authorize the removal of eagle nests (see 50 CFR 22.27 as amended). The USFWS published a Final Rule on December 16, 2016 (81 FR 91551-91553).

Given the definition of “*disturb*” under the Bald and Golden Eagle Protection Act as described above, the use of trapping methods to capture injured eagles for rehabilitation or to utilize harassment methods to disperse eagles posing threats at or near airports could constitute “*take*” as defined under the Act, which would require permits from the USFWS and VFWD to conduct those types of activities.

In FY 2016, WS dispersed a total of two bald eagles. WS concurred with one airport requesting the ability to harass eagles from the airport’s air operations area to alleviate strike risks and one landfill requesting eagle harassment permits to ensure that any eagles inadvertently harassed during ongoing bird mitigation efforts for other bird species would be legally authorized. Harassment activities at landfills generally help reduce strike hazards at nearby airfields. This was attributed to bald eagles that were harassed during WS bird mitigation activities to protect aviation safety. All eagles harassed were authorized under both USFWS and VFWD issued bald eagle harassment permits. In FY 2017, an eagle along the Connecticut River was observed with a leg hold trap attached to the right tarsometatarsus. Concern was for the immediate health of the eagle as well as long term health effects from having the trap attached. The WS program was contacted by the USFWS to assist with trapping the eagle. Although the eagle eventually dispersed uncaptured, WS may be requested to provide similar services in the future.

Under 50 CFR 22.23, WS, airport authorities, state and local municipalities or private citizens could apply for a permit allowing for the “*take*” of eagles that are injured, or pose threats to aviation safety at civil and military airports. Under this proposed action alternative, WS could employ harassment or remove eagle nests from airports/air bases or surrounding areas as well as trap injured eagles for evaluation and/or rehabilitation when authorized and/or permitted by the USFWS and VFWD pursuant to the Act. Therefore, if no permit is issued by the USFWS and VFWD to trap or harass eagles no activities would be conducted by WS. Activities would only be conducted by WS when; 1) a permit allowing for the harassment or trapping of eagles has been issued directly to WS, 2) issued to an airport authority/military installation, state and local municipality or private citizen where WS is working as a sub-permittee, or 3) written authorization has been granted directly to WS to assist with trapping eagles for rehabilitation efforts. No lethal take of eagles would occur under this proposed action alternative.

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 81 FR 91551-91553, 50 CFR 22.23, 50 CFR 22.27). As necessary, WS would apply for the appropriate permits as required by the Bald and Golden Eagle Protection Act.

Direct, Indirect, and Cumulative Effects:

WS would employ harassment to disperse or translocate bald eagles and remove up to two active/inactive nests annually from airports and their surrounding areas to protect human health and safety, as well as, transmission lines, and electrical transfer stations when authorized and permitted by the USFWS and VFWD pursuant to the Act. Therefore, if no permit is issued by the USFWS and VFWD to harass, capture, or remove the nests of eagles posing a threat to aircraft, Vermont's power grid, or human health and safety, no harassment, capture, or nest removal would be conducted by WS. Harassment at airports, transfer stations, or surrounding areas may benefit individual eagles by preventing these birds from being fatally injured in collisions with aircraft. Additionally, capturing injured eagles for transportation to a licensed rehabilitator can potentially benefit local eagle populations. Impacts due to nest removal and destruction would have little adverse impact on the population. Although there may be reduced fecundity for the individuals affected by nest destruction, this activity has no long term effect on breeding adults. The destruction of up to two nests by WS would not reach a level where adverse effects on eagle populations would occur. No lethal take of bald eagles would occur under this proposed action alternative. WS would abide by all measures and stipulations provided by the USFWS and VFWD in permits issued for the harassment of bald eagles at airports to reduce aircraft strikes. The USFWS evaluates each nest removal and its potential impacts on a case-by-case basis.

Double-Crested Cormorant Biology and Population Impacts

BCR Atlantic/Interior regional breeding population: 85,510 – 256,212 ¹	WS proposed take: 2,000 + 1,000 nest (and eggs)
BBS Atlantic Northern Forest, 1966-2015: 3.18%	WS removal as % of regional population: 7.1%
BBS Atlantic Northern Forest, 2005-2015: 6.54%	Cumulative removal as % of population: 7.2%
BBS LGLSP, 1966-2015: 13.39%	
BBS LGLSP, 2005-2015: 14.65%	

¹Estimate nesting pair population range from Tyson et al 1999

Double-crested cormorants are large fish-eating colonial waterbirds widely distributed across North America (Hatch and Weseloh 1999). Wires et al. (2001) and Jackson and Jackson (1995) have suggested that the current cormorant resurgence may be, at least in part, a population recovery following years of DDT-induced reproductive suppression and unregulated take prior to protection under the MBTA. Cormorants are most commonly found in Vermont during the spring, summer, and fall months when the breeding and migrating populations are present, with peak migration numbers occurring in April and October (Wires et al. 2001). Breeding populations of cormorants in Vermont occur mostly on Lake Champlain. Other areas in Vermont with potential breeding habitat include lakes, rivers and swamps where nesting could occur on the ground or in trees.

Double-crested cormorants are one of six species of cormorants breeding in North America and have the widest range (Hatch 1995). The population (breeding and non-breeding birds) in the United States was estimated to be greater than one million birds in the 1990's (Tyson et al. 1999). More recently, the eastern North America pre-breeding population (breeders and non-breeders) was estimated to be 731,880 to 752,516 (USFWS 2017a). Tyson et al. (1999) found that the cormorant population increased about 2.6% annually during the early 1990s. The greatest increase was in the Interior region which was the result of a 22% annual increase in the number of cormorants in Ontario and those states in the United States bordering the Great Lakes (Tyson et al. 1999). From the early 1970s to the early 1990s, the Atlantic population of cormorants increased from about 25,000 pairs to 96,000 pairs (Hatch 1995). The number of breeding pairs of cormorants in the Atlantic and Interior population was estimated at over 85,510 and 256,212 nesting pairs, respectively (Tyson et al. 1999). The BBS shows a rapid trend increase in the cormorant population in the Atlantic Northern Forest (Bird Conservation Region 14) and the Lower Great Lakes/St. Lawrence Plain (LGLSP) (Bird Conservation Region 13) since 1966 (NAS 2010). The population on Lake Champlain grew approximately 21% per year from 1984 to 1996 (Fowle et al. 1999). Population management measures were initiated in 1999 (Fowle et al. 1999), yet the breeding population

continued to grow approximately 4.5% per year into 2011 (F. Pogmore. presentation to the Lake Champlain Cormorant Communication Committee (LCCCC), December 18, 2012). During the breeding season (May-August), cormorant densities on Lake Champlain range from 7.0 cormorants per km² (Duerr et al. 2012) to 8.9 cormorants per km² (Capen and Bryant 2012). Spring migration (March-April) and fall migration (September-November) may increase the lake-wide population to approximately 25 cormorants per km² seasonally (F. Pogmore, presentation to the Lake Champlain Cormorant Communications Committee (LCCC) December 18, 2012). In 1999, Young Island had the largest cormorant colony on Lake Champlain with 3,053 nests; that same year, management efforts to reduce the cormorant population were enacted to mitigate cormorant impacts to native vegetation and habitat on the island. By 2010, there was zero nesting attempts by cormorants on Young Island (Strickland et al. 2011) and the cormorant colony had moved to Four Brothers Islands (Duerr et al. 2007). In 2011, the number of cormorant nests climbed to 4,658 (F. Pogmore 2012 unpublished data) with the largest colony on Lake Champlain located on Four Brothers Islands with 3,936 cormorant nests (Capen and Bryant 2012).

Double-crested cormorants are protected under the MBTA. However, take can occur pursuant to the MBTA through depredation permits issued by the USFWS. Take of double-crested cormorants in Vermont will occur under the USFWS permits issued to WS by the USFWS. Double-crested cormorant nests can also be destroyed under a USFWS issued depredation permits to prevent and alleviate damage.

From FY 2016 through FY 2017, WS has lethally taken 159 cormorants and non-WS entities took no cormorants lethally (see Table 4). The two years of lethal removal represented 0.18% to 0.06% of the estimated number of breeding pairs of cormorants in the Atlantic and Interior at over 85,510 and 256,212 nesting pairs, respectively (Tyson et al. 1999). More than 97% of the cormorants addressed by WS from FY 2013 through FY 2017 were managed using non-lethal methods.

Table 4 – Double-crested cormorants addressed in Vermont from FY 2013 to FY 2017

Year	Dispersed by WS ¹	Total Lethal Take Authorized by USFWS ²	Take Under Depredation Permit		
			WS' Lethal Take ¹	Non-WS' Lethal Take ³	Total Lethal Take by All Entities
2013	10,550	2,050	515	49	564
2014	22,291	2,050	647	29	676
2015	25,437	2,150	377	95	472
2016	4,976	0	159	0	159
2017	1,157	0	0	0	0
AVERAGE	12,882	1,250	339.6	34.6	374.2

¹Data reported by federal fiscal year

²Does not include WS authorized take

³Data reported by calendar year

Direct, Indirect, and Cumulative Effects:

As the number of requests for assistance increases, the number of cormorants that will be addressed by WS to alleviate damage or threats is also likely to increase. The take of cormorants and their nests could occur where requested by private land owners, federal or state agencies or as outlined in the Lake Champlain Islands management plan. Based on the best scientific data, the number of requests received by WS for assistance with managing damage and threats associated with cormorants and in anticipation of additional requests for assistance, WS proposed removal level of 2,000 birds and 1,000 nests will have no adverse direct effects on cormorant populations. The potential authorized removal from all non-WS entities combined with WS proposed removal is also not expected to create adverse cumulative impacts. All removal of cormorants would occur within the levels permitted by the USFWS and VFWD pursuant

to the MBTA and WS will consult with the VFWD before initiating non-lethal harassment activities at cormorant nesting colonies to avoid unintentional nest site abandonment of non-target species.

The removal and destruction of nests should have little adverse impact on the population. Although this method may reduce the fecundity of individual birds, nest destruction has no long term effect. The destruction of double-crested cormorant nests annually by WS would occur in localized areas where nesting takes place and would not reach a level where adverse effects on cormorant populations would occur. As with the lethal take of adults, the take of nests must be authorized by the USFWS. Therefore, the number of nests taken by WS annually would occur at the discretion of the USFWS.

The USFWS EA (USFWS 2017a) included a potential biological removal (PBR) model used to estimate the impact of take on the double-crested cormorant population. Results from the PBR revealed that for the Atlantic Flyway, 26,226 double-crested cormorants could be taken while maintaining a stable population (i.e., allowable take). WS proposed take of double-crested cormorants in Vermont falls well below both allowable take and the Reduced Take Alternative of 11,634 double-crested cormorants selected by USFWS (USFWS 2017a, USFWS 2017b). As such, the proposed take outlined in Table 4 is below the amount of take that would likely reduce the population growth rate of double-crested cormorants based on the analysis in the PBR modeling analyzed in the EA (USFWS 2017a). This level of proposed take will have negligible adverse impacts on the Atlantic flyway population of double-crested cormorants or the quality of the human environment. USFWS will monitor double crested cormorant within and across regions in order to prevent cumulative significant impacts from take of double-crested cormorants in Atlantic flyway and the U.S.

Summary

Evaluation of WS' activities relative to wildlife populations indicated that program activities will likely have no cumulative adverse effects on populations in Vermont. WS' actions would be occurring simultaneously, over time, with other natural processes and human-generated changes that are currently taking place. Those activities include, but are not limited to:

- Natural mortality of wildlife
- Human-induced mortality through private damage management activities
- Human and naturally induced alterations of wildlife habitat
- Annual and perennial cycles in population densities

All those factors play a role in the dynamics of wildlife populations. In many circumstances, requests for assistance arise when some or all of those elements have contrived to elevate target species populations or place target species at a juncture to cause damage to resources. WS' actions to minimize or eliminate damage are constrained as to scope, duration and intensity, for the purpose of minimizing or avoiding impacts to the environment. WS evaluates damage occurring, including other affected elements and the dynamics of the damaging species; determines appropriate strategies to minimize effects on environmental elements; applies damage management actions; and subsequently monitors and adjusts/ceases damage management actions (Slate et al. 1992). This process allows WS to take into consideration other influences in the environment, such as those listed above, in order to avoid cumulative adverse impacts on target species.

Issue 2 – Effects on Non-target Wildlife Species Populations, Including T&E Species

The issue of non-target species effects, including effects on threatened and endangered (T&E) species, arises from the use of non-lethal and lethal methods identified in the alternatives. The use of non-lethal and lethal methods has the potential to inadvertently disperse, capture, or kill non-target wildlife. WS' SOPs are designed to reduce the effects of damage management activities on non-target species'

populations which were discussed in the EA. To reduce the risks of adverse effects to non-target wildlife, WS selects damage management methods that are as target-selective as possible or applies such methods in ways that reduces the likelihood of capturing non-target species. Before initiating management activities, WS also selects locations which are extensively used by the target species and employs baits or lures which are preferred by those species. Despite WS' best efforts to minimize non-target take during program activities, the potential for adverse effects to non-targets exists when applying both non-lethal and lethal methods to manage damage or reduce threats to safety.

Non-lethal methods have the potential to cause adverse effects on non-targets primarily through exclusion, harassment, and dispersal. Any exclusionary device erected to prevent access of target species also potentially excludes species that are not the primary reason the exclusion was erected. Therefore, non-target species excluded from areas may potentially be adversely impacted if the area excluded is large enough. The use of auditory and visual dispersal methods used to reduce damage or threats caused by target species are also likely to disperse non-targets in the immediate area where the methods are employed. However, the potential impacts on non-target species are expected to be temporary with target and non-target species often returning after the cessation of dispersal methods.

While every precaution is taken to safeguard against taking non-targets during operational use of methods and techniques for resolving damage and reducing threats caused by wildlife, the use of such methods can result in the incidental take of unintended species. Those occurrences are minimal and should not affect the overall populations of any species. WS has not captured, released or lethally removed any non-target birds during bird damage management activities since the Decision and FONSI was signed for the EA.

The EA concluded that effects of control methods on non-target species is biologically insignificant to nonexistent and that WS has not adversely affected the viability of any wildlife species populations through bird damage management activities. Bird damage management activities implemented by WS utilize the most selective and appropriate methods for taking targeted bird species and excluding non-target species. The lethal removal of non-targets from using those methods described in the EA is likely to remain low with removal never reaching a magnitude that a negative impact on populations would occur.

Threatened and Endangered Species

A review of T&E species listed by the USFWS (Appendix A) showed that no new threatened and endangered species have been added by the U.S. Fish and Wildlife Service since the completion of the EA in 2016. Based on a review of the best scientific data available, WS has determined that activities conducted pursuant to the proposed action would have "No Effect" on listed species or their critical habitats. WS does not anticipate performing operations in these habitats in the future. While WS may make recommendations for habitat modifications, the program does not typically perform these functions.

WS' program activities in Vermont to manage damage and threats caused by birds have not changed from those described in the EA. A review of those species listed in Vermont and discussed in the EA indicates that WS' bird damage management activities would continue to have no adverse effects on those species. Program activities and their potential impacts on other wildlife species, including T&E species have not changed from those analyzed in the EA. Impacts of the program on this issue are expected to remain insignificant.

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

Since the completion of the EA and the Decision and FONSI in 2016, no injuries to employees or the public occurred from the implementation of methods under the proposed action. Based on the analyses in the EA, when WS' activities are conducted according to WS' directives, SOPs, and in accordance with

federal, state, and local laws those activities pose minimal risks to human safety. Program activities and their potential impacts on human health and safety have not changed from those analyzed in the EA. No additional methods or techniques are being proposed for use under the proposed action. Impacts of the program on this issue are expected to remain insignificant.

Issue 4 – Effects on the Aesthetic Values of Birds

As described in the EA, WS employs methods when requested that would result in the dispersal, exclusion, or removal of individuals or small groups of birds to resolve damage to agriculture, property, natural resources, or threats to human health and safety. In some instances where birds are excluded, dispersed, or removed, the ability of interested persons to observe and enjoy those birds will likely temporarily decline. Even the use of non-lethal methods can lead to dispersal of birds if the resource being protected was acting as an attractant. Thus, once the attractant has been removed or made unattractive, birds will likely disperse to other areas where resources are more available.

The use of lethal methods would result in a temporary reduction in local populations resulting from the removal of target birds to resolve requests for assistance. WS' goal is to respond to requests for assistance and to manage those birds responsible for the resulting damage. Therefore, the ability to view and enjoy those birds will still remain if a reasonable effort is made to view those species outside the area in which damage management activities occurred.

The EA concluded the effects on aesthetics would be variable depending on the stakeholders' values towards wildlife. Program activities and potential impacts on human affectionate bonds with birds and aesthetics have not changed from those analyzed in the EA.

Summary

No significant cumulative environmental impacts are expected from activities considered under the supplement. Likewise, no significant cumulative impacts have been identified from the implementation of the proposed action in the EA since 2016. Under the proposed action, the reduction of wildlife damage or threats using an integrated approach employing both non-lethal and lethal methods would not have significant impacts on wildlife populations in Vermont or nationwide. WS continues to coordinate activities with federal, state, and local entities to ensure activities do not adversely impact wildlife populations. No risk to public safety is expected when WS' activities are conducted pursuant to the proposed action or the proposed supplement to the EA. The EA further describes and addresses cumulative impacts from the alternatives, including the proposed action.

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APPENDIX A

USFWS Listing of Threatened and Endangered Species in Vermont

Listed species -- 5 listings

Summary of Animals -- 3 listings

Summary of Plants -- 2 listings

Chapter 2 Animals -- 3 listings

Status **Species/Listing Name**

- E Bat, Indiana Wherever found ([Myotis sodalis](#))
- T Bat, Northern long-eared Wherever found ([Myotis septentrionalis](#))
- E Wedgemussel, dwarf Wherever found ([Alasmidonta heterodon](#))

Chapter 3 Plants -- 2 listings

Status **Species/Listing Name**

- E Bulrush, Northeastern ([Scirpus ancistrochaetus](#))
- E Milk-vetch, Jesup's ([Astragalus robbinsii var. jesupi](#))

Notes:

- **As of 02/13/2015 the data in this report has been updated to use a different set of information. Results are based on where the species is believed to or known to occur. The FWS feels utilizing this data set is a better representation of species occurrence. Note: there may be other federally listed species that are not currently known or expected to occur in this state but are covered by the ESA wherever they are found; Thus if new surveys detected them in this state they are still covered by the ESA. The FWS is using the best information available on this date to generate this list.**
- This report shows listed species or populations believed to or known to occur in Vermont
- This list does not include experimental populations and similarity of appearance listings.
- This list includes species or populations under the sole jurisdiction of the National Marine Fisheries Service.
- Click on the highlighted scientific names below to view a Species Profile for each listing.

Obtained from the USFWS website on 12/28/2017 at

<https://ecos.fws.gov/ecp0/reports/species-listed-by-state-report?state=VT&status=listed>