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

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

In cooperation with the
United States Fish and Wildlife Service

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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 Iowa (USDA 2016). 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 1.1 of the EA. This Supplement examines potential environmental impacts of WS' program as it relates to an increase in the number of requests for assistance to manage bird damage and threats from barn swallows (*Hirundo rustica*), Canada geese (*Branta canadensis),* eastern meadowlarks (*Sturnella magna*), Eurasian collared doves (*Streptopelia decaocto*), great horned owls (*Bubo virginianus*), horned larks (*Eremophila alpestris*), western meadowlarks (*Sturnella neglecta*), and wood ducks (*Aix sponsa*) since the issuance of the Decision and FONSI in 2017. This Supplement also will examine potential environmental impacts of WS' program as it relates to managing a limited number of individuals of species not addressed in the EA, including American green-winged teal (*Anas crecca*), American wigeon (*Mareca americana*), bufflehead (*Bucephala albeaola*), greater scaup (*Aythya marila*), and lesser scaup (*Aythya affinis*). 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 Iowa is listed in Section 1.2 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 barn swallows, Canada geese, eastern meadowlarks, Eurasian collared doves, great horned owls, horned larks, western meadowlarks, and wood ducks causing damage and threats of damage since the completion of the EA. New requests for assistance and/or numbers of American wigeons, bufflehead, lesser scaup, greater scaup, and American green-winged teal causing damage and threats of damage has changed since the completion of the EA.

Some species of wildlife have adapted to and have thrived in human-altered habitats. Birds are often responsible for conflicts with people. 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 health and safety.

Canada Geese

The need to address Canada geese is based on increasing conflicts with this species and perhaps their expanding local urban populations. Most requests for assistance pertain to property damaged. There are varying types of damage, but most often pertain to excessive feces. Droppings cause damage to property, lower water quality, and decrease aesthetics of an area. Cooperators power wash areas of fecal buildup adding to local nutrient loads within storm water drainages and excess costs of labor and equipment upon maintenance departments. Canada geese also consume turf grasses and agricultural crops, causing a direct loss to individual farm incomes and increased soil erosion issues.

The increased local urban populations have also caused issues at a number of major airports. In FY 2017, WS' responded to requests from two airports to reduce the amount of Canada geese using the areas nearby their runways to roost, loaf, feed and nest. WS' used an array of techniques to capture individual birds which included: hand nets, chemical immobilization, shooting and drive traps. Afterwards, a notable decrease in Canada goose abundance, and use was observed and WS has since received additional requests for similar work at other Iowa airports.

WS has also started to receive requests for assistance from other city municipalities, golf courses and homeowner associations to resolve their conflicts with the geese. WS has provided technical assistance in the past, but cooperators are now seeking operational assistance as they are finding management actions to be too complex for average citizens.

Eurasian Collared Doves

The need to address Eurasian collared doves is directly related to the increased number of doves reported by cooperators and the executive order pertaining to invasive species management. Eurasian collared doves are nonnative to the United States and are not afforded protection under MBTA (70 FR 12710-12716). Their strong increasing trend suggests their adaptability as a species. Eurasian collard doves are typically encountered with feral pigeons and mourning doves at industrial sites foraging on grains and causing damaging situations. Eurasian collared doves have increased their presence at airfields and industrial plants in the past two years.

Wood Ducks

Requests for wood duck damage management has increased from various cooperators and airports. New cooperators, and growing requests from existing cooperators, reported ducks causing damage to new properties, where wood ducks have not previously inhabited or caused damage. Wood ducks are considered a large bird capable of dealing critical damage to aircraft. WS has observed a substantial increase in the number of wood ducks congregating in and around airfields. This proportionally increases the threat of striking an aircraft.

Horned Larks, Eastern Meadowlarks, Western Meadowlarks

WS has observed substantial increases in these species congregating in and around airfields. Additionally, WS' airport cooperators have requested further assistance in mitigating the associated risks. Although horned larks are relatively small birds, weighing 1 – 1.7 ounces (28-48 g), they form large winter flocks which can be hazardous to aircraft. While meadowlarks do not form large flocks, these birds readily adapt to airport environments, particularly close to runways. Because of the high speeds attained by military aircraft and the special materials used to build military aircraft, collision with even one small bird can cause substantial damage.

Great Horned Owls

In 2017, WS relocated 17 great horned owls away from the Des Moines and Sioux City airfields. The threat of collision increased from 2016 when 10 owls were relocated. Owls are large-bodied birds that can cause substantial damage to aircraft. Owls are readily found hunting on airfields as these properties provide optimal habitat for many small rodents. In addition, airfield structures provide hunting perches that bring owls in close proximity to runways. Anti-perching devices cannot be constructed on many of these structures as they may interfere with critical radar signals used by aircraft landing in inclement weather. For WS to maintain its effectiveness in mitigating wildlife damage caused by great horned owls, the number of owls potentially relocated each year must be elevated for damage management tactics to remain successful.

Barn Swallows

The need to address barn swallow damage has risen from requests for damage management coming from new cooperators. Barn swallows often prefer to establish their nests elevated on barn lofts or ledges off the ground (Buckelew Jr. and Hall 1994). Industrial plants provide suitable habitat for the nesting season and attract flocks of nesting barn swallows, which in turn cause damage via droppings and nest materials. Typical areas barn swallows prefer to nest are industrial plant's railcar houses or receiving docks and on exterior buildings or bridge ledges.

New Target Species

Requests for damage management concerning other avian species have been received by WS over the last year, particularly at airfields. American green-winged teal, American wigeon, bufflehead, lesser scaup, and greater scaup all have been observed at times foraging or roosting in or around airport facilities and runways. Sioux City airport has reported buffleheads adjacent to the main runway in the past year. Similar reports have been received regarding the aforementioned species, requiring WS to address this issue for human safety purposes.

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 Iowa; 2) Do the alternatives have significant cumulative impacts meriting an Environmental Impact Statement (EIS)?

SCOPE OF ANALYSIS

The EA and this Supplement evaluate additional bird damage management in order 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 damage management activities on federal, state, county, municipal, and private land when a request is received for such services by the appropriate property owner or manager.

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 Assessment - *Environmental Assessment- Reducing Bird Damage in the state of Iowa* (USDA 2016): WS had previously developed an EA that analyzed the need for action to manage damage associated with resident and migratory bird species within Iowa. 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 January 3, 2017, 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 several species into this Supplement addressing the need for bird damage management. 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 several species 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 Iowa 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 *Des Moines Register* 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 January 3, 2017.

This Supplement, along with the EA (USDA 2016), 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 *Des Moines Register*, 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 (USDA 2016). Alternatives developed and identified during the development of the EA to address those issues are discussed in Chapter 3 of the EA (USDA 2016). 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 2017, 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

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 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 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 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 Iowa 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, and harvest data. These methods remain applicable as described in the 2016 EA. Unless noted otherwise, the state population estimate listed for each species analyzed below was obtained from PFSC (2013). Breeding Bird Survey (BBS) population trends from 1966 to 2013 for Iowa and the regions that the state falls within (prairie potholes, eastern tallgrass prairie, and prairie hardwood transition) are listed for each species when available (Sauer et al. 2014). 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. 2014).

Population Impact Analysis from WS' activities in Iowa from 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 2017. 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 Canada geese, Eurasian collared doves, wood ducks, horned larks, eastern meadowlarks, western meadowlarks, great horned owls, and barn swallows addressed by WS in 2016 and 2017 is shown in Table 1. All lethal removal and nest destruction of target bird species in the EA (USDA 2016) was below the annual level of removal analyzed, except for Canada goose nests, Eurasian collared doves, eastern meadowlarks and western meadowlarks. In 2017, WS removed 11 Canada goose nests in comparison to the 10 nest proposed take in the EA. Similarly, lethal removal of Eurasian collared doves exceeded the proposed WS annual removal of 75 by one. The proposed removal of 50 eastern and western meadowlarks was reached in 2017. In 2017, WS relocated 17 great horned owls, which neared the WS authorized relocation of 20 great horned owls designated within the EA.

Table 1 – Target species non-lethally dispersed, lethally removed, live captured and relocated, and nests destroyed by WS during bird damage management activities in Iowa, 2016-2017.

Species	# Dispersed		# Killed		Relocated		Nests Destroyed	
	2016	2017	2016	2017	2016	2017	2016	2017
Canada goose	6,248	20,529	54	67	21	27	3	11
Eurasian collared dove	14	130	15	76	0	0	0	1
Wood duck	53	215	5	14	0	0	0	0
Horned lark	10	1,883	0	26	0	0	0	0
Eastern meadowlark	200	722	28	50	0	0	0	0
Western meadowlark	0	110	0	50	0	0	0	0
Great horned owl	0	1	0	0	10	17	0	0
Barn swallow	2,495	805	31	23	0	0	8	1
American wigeon	0	0	0	0	0	0	0	0
Greater scaup	0	0	0	0	0	0	0	0
Lesser scaup	0	164	0	0	0	0	0	0
American Green-winged teal	0	248	0	0	0	0	0	0
TOTAL	9,020	24,807	133	306	31	44	11	13

Canada Goose Biology and Population Impacts

IA population estimate: 84,694 (Jones et al. 2014)
BBS IA, 1966-2015: 21.59%
BBS Eastern Tallgrass Prairie, 1966-2015: 16.34%
BBS Prairie Potholes, 1966-2015: 9.90%
BBS Prairie Hardwood Transition, 1966-2015: 16.58%
BBS Prairie Hardwood Transition, 2005-2015: 18.92%
WS removal as % of state population: 1.77%
Cumulative removal as % of state population: 71.3%

WS proposed removal: 1,500 + 500 nests (and eggs)
BBS IA, 1966-2015: 20.70%
BBS Eastern Tallgrass Prairie, 2005-2015: 16.17%
BBS Prairie Potholes, 2005-2015: 9.92%

Canada geese are one of the most readily recognized and observable birds in Iowa. They can live approximately 20-25 years in the wild. There are two behaviorally-distinct types of Canada goose populations in Iowa: resident and migratory. Although they may appear similar, they exhibit many different behaviors that affect the management of these birds. Typically resident geese are those that nest south of the Canadian border. Migratory geese nest north of the Canadian border, migrating south beginning in October and returning back to Canada by March to begin nesting.

Iowa's Canada goose population originated from 16 pairs of clipped geese the IDNR held in a 14-acre pen in Ingham Lake Wildlife Management Area in 1964 (Jones et al. 2014). Goose hunting was closed to the surrounding area and in 1967 offspring from those 16 pairs produced the first free-flying geese in Iowa in the 20th century (Jones et al. 2014). The IDNR initiated similar procedures throughout other areas of Iowa to restore viable populations of geese to the state (Jones et al. 2014). The IDNR also translocated geese throughout the state between 1983 and 2001 to help accelerate the expansion of Canada geese (Jones et al. 2014). The highest concentration of geese occur in the Prairie Pothole region of the state in the northwest and north-central Iowa, especially in prairie marshes (Jones et al. 2014).

Iowa CBC data from 1966 through 2015 shows an increasing population trend for Canada geese (NAS 2010). The IDNR monitors the Canada goose population annually since it initiated the restoration program (Jones et al. 2014). The Iowa's population objective is around 100,000 birds to allow for a sustainable hunter harvest of 60,000 geese annually (Jones et al. 2014). From aerial surveys conducted in April, the current Canada goose population in Iowa was estimated at 84,694 individuals in 2014 (Jones 2014).

Canada geese can be harvested during a regular hunting season that traditionally occurs from late September/ early October through January. Since migrant geese do not arrive in Iowa until after September, this hunt targets the local goose population in Iowa. Figure 1 depicts the total number of hunter harvested geese between 2013 and 2016.

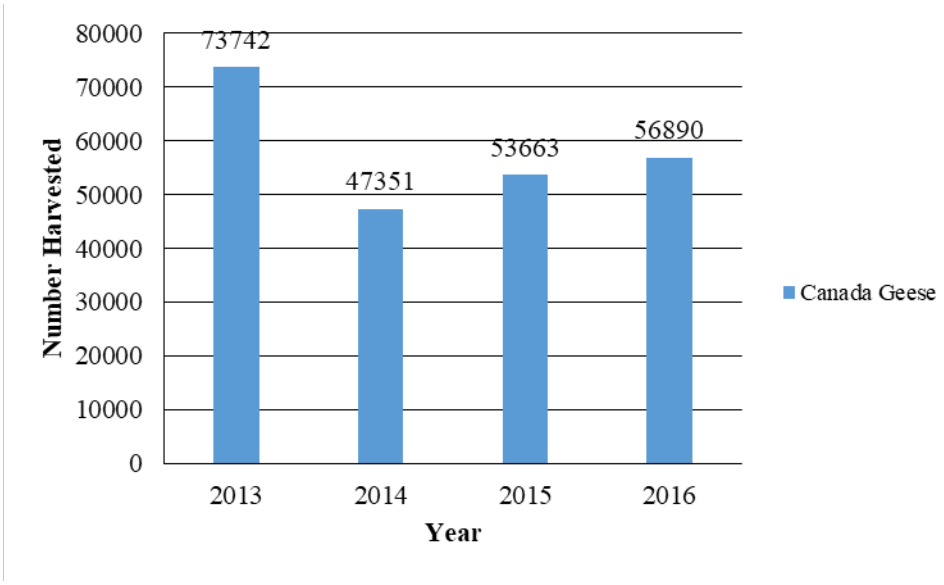

Figure 1 – Canada geese harvested annually in Iowa, 2013-2016

Canada geese are migratory game birds that are afforded federal and state protection. Goose populations are managed by the USFWS and the IDNR pursuant to the MBTA, Federal Regulations (50 CFR 10, 13, 20 & 21), and other federal and state laws, regulations, policies, and court rulings. The number of Canada geese addressed in Iowa by all entities to alleviate damage from 2013 to 2017 is shown in Table 2. WS is also authorized to trap and translocate up to 100 Canada geese annually. In 2016-2017, WS translocated at total of 48 geese. The highest authorized removal for non-WS entities (960 birds) in addition to the WS proposed removal and the average number of Canada geese harvested since 2013 (57,912 birds) was used to assess the cumulative removal.

Table 2 – Number of Canada geese addressed in Iowa from 2013 to 2017

Year	Dispersed by WS	Removal under Depredation Permits			
		WS authorized Removal[1]	WS' Removal	Authorized Removal for Other Entities	Removal by other Entities
2013	10315	20 + 10 nests	14	465	6
2014	20123	20 + 10 nests	50	300 + 10 nests	8
2015	12888	20 + 10 nests	72	450	64
2016	6,248	500 + 10 nests	54	490	68
2017	20,529	500 + 10 nests	67	960	114
Average	14020.6	280 + 10 nests	51.4	457.5	26

[1]: WS' authorized removal under a depredation permit issued to WS in Iowa and Missouri, additional removals by WS are allowed under permits held by cooperators and are not included in table

Direct, Indirect, and Cumulative Effects:

WS' proposed removal level will have no adverse direct or indirect effects on the Iowa Canada geese populations. WS proposed removal level would only be a small percentage of the estimated population. Additionally, WS' proposed removal would only represent between 2.03% and 3.17% of the annual harvest estimates in Iowa since 2013. WS does not typically remove geese during the migratory period; however, occasionally minimal numbers of geese are 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.

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

Despite the high cumulative removal as a percentage of the state population, the population trend for Canada geese has been stable. Therefore, the potential authorized removal from all non-WS entities combined with WS proposed removal and the annual harvest is not expected to create significant impacts to Canada goose populations. Additionally, the removal of Canada geese by WS would only occur at levels authorized by the USFWS and IDNR, which ensures WS' removal and removal by all entities, including hunter harvest, would be considered to achieve the desired population management levels of Canada geese in Iowa. Provided that the goose population allows for an annual harvest, WS' removal could be considered of low magnitude when compared to the number of geese observed in Iowa annually and therefore will not hinder the ability of those interested persons to harvest geese during the hunting season.

Additionally, WS could be requested to live-capture and translocate up to 100 Canada geese. WS' proposed translocation of up to 100 Canada geese is expected to have no adverse direct effects on the geese population in Iowa. Although the live-capture and translocation of this species would be a non-lethal method of reducing damage or threats of damage, geese could be translocated during their nesting season, which could lower nesting success. Reduced nesting success could occur by removing one of the adult pairs. Provided most of WS' translocations will occur outside of the nesting season, significant adverse indirect effects from translocation are not expected to occur to the population of Canada geese in Iowa. Canada geese captured and translocated could be banded for identification purposes using United

States Geological Survey approved metal leg-bands appropriate for the species. Banding would occur pursuant to a banding permit issued by the United States Geological Survey. Fair et al. (2010) stated "[w]*hen appropriate* [leg] *band sizes are used, the occurrence and rate of adverse effects on the subjects is ordinarily very low.*" The translocation of Canada geese can only occur when permitted by the USFWS and/or IDNR. Therefore, all removal, including live-capture and translocation by WS, is authorized and occurs at the discretion of the USFWS and IDNR, which ensures cumulative take is considered as part of population management objectives for Canada geese.

Eurasian Collared Dove Biology and Population Impacts

WS proposed removal: 500
BBS IA, 1966-2015: 33.78%
BBS Eastern Tallgrass Praire, 2005-2015: 35.33%
BBS Prairie Potholes, 1966-2015: 32.33%
BBS IA, 1966-2015: 39.35%
BBS Eastern Tallgrass Prairie, 2005-2015: 26.11%
BBS Prairie Potholes, 2005-2015: 45.27%

Eurasian collared-doves are nonnative to the United States and therefore are not afforded protection under the MBTA (70 FR 12710-12716). Eurasian collared-doves have successfully spread across much of Mexico and the United States, with the exception of the Northeastern U.S. (Romagosa 2012). Eurasian collared-doves are present year-round in Iowa (Romagosa 2012) and can typically be found among mourning doves and feral pigeons in damage situations. Eurasian collared-doves can be harvested during the mourning dove season from September to November and count towards the daily possession limit of doves. The number of Eurasian collared-doves observed during the CBC has shown an increasing trend in Iowa since 1966 (NAS 2010). The global population estimate of Eurasian collared-doves is estimated at 8,000,000 (PFSC 2013).

Eurasian collared-doves are considered a non-native species in Iowa and are afforded no protection under the MBTA. Therefore, no depredation permits, from either the USFWS or the IDNR, are needed for the removal of Eurasian collared-doves. The number of Eurasian collared-doves lethally removed by other entities to alleviate damage or threats is unknown since the reporting of Eurasian collared-dove removal is not required. The number of Eurasian collared-doves removed during the legal hunting season is also unknown. The number of Eurasian collared-doves dispersed and lethally removed by WS from 2013 through 2017 can be seen in Table 3. Executive Order 13112 states that each federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law; 1) reduce invasion of exotic species and associated damages, 2) monitor invasive species populations, provide for restoration of native species and habitats, 3) conduct research on invasive species and develop technologies to prevent introduction, and 4) provide for environmentally sound control and promote public education on invasive species.

Table 3 – Number of Eurasian collared-doves addressed by WS in Iowa from 2013-2017

Year	Dispersed by WS[1]	WS' Removal[1]
2013	18	0
2014	96	13
2015	29	16
2016	14	15
2017	130	76
Average	57.4	24

[1]: Data reported by calendar year

Direct, Indirect, and Cumulative Effects:
Although a state population estimate of Eurasian collared-doves was not available, WS' proposed removal would represent 0.00625% of the global population. Additionally, WS' removal of Eurasian

collared-doves to reduce damage and threats would be in compliance with Executive Order 13112. Therefore, WS' proposed removal level will have no adverse direct or indirect effects on Eurasian collared-dove populations in Iowa. While non-WS removal is unknown, Eurasian collared-dove populations have historically expanded their range throughout North America. Therefore, WS does not anticipate any significant cumulative impacts to Eurasian collared-dove populations in Iowa. Given the low magnitude of WS' proposed removal along with the rapidly growing regional population of this species, WS' proposed removal is also not expected to hinder the ability of those interested persons in harvesting Eurasian collared-doves during the hunting season.

Wood Duck Biology and Population Impacts

WS proposed removal: 100 + 20 nests

BBS IA, 1966-2015: 4.73%
BBS Eastern Tallgrass Praire, 2005-2015: 1.93%
BBS Prairie Potholes, 1966-2015: 4.51%

BBS IA, 1966-2015: 5.19%
BBS Eastern Tallgrass Prairie, 2005-2015: 3.34%
BBS Prairie Potholes, 2005-2015: 4.53%

Wood ducks are a common migratory species found across North America from central Canada down to the Gulf of Mexico, and throughout the eastern states (Bellrose and Holm 1994). Wood ducks occupying the northern states are early migrants, leaving in early September, with few birds remaining in the northern latitudes by mid-November (Bellrose and Holm 1994, Heusmann and McDonald 2002). Both the Mississippi and Atlantic Flyways contain large populations of resident wood ducks, primarily down in the southern states, east of Arkansas and Louisiana (Heusmann and McDonald 2002). Current population models only include the Atlantic flyway, which estimate the wood duck population in the Atlantic Flyway (during migration) at around 430,600 (USFWS 2016). In Iowa, wood ducks are found statewide and commonly encountered in wetlands, ponds or lakes adjacent to agricultural fields, in agricultural fields, and dry woodlands.

Wood ducks are considered a type of dabbling duck, referring to behavior associated with remaining on the water surface and "tips up" for food items in shallow water (Bellrose and Holm 1994). However, wood ducks are capable divers and may forage small nuts or grains that are submerged in several feet of water. Being cavity nesters, wood ducks are proficient at traversing diverse woody habitats and perching on trees, which enables them to take advantage of agricultural fields, riparian areas, and dry woodlands (Bellrose 1976, Palmer 1976, Yetter et al., 1999).

The presence of wood ducks in a wetland or waterway is indicative of an ecosystem's health and their abundance and high density congregations, especially in forested and shrub wetlands near mature forests, suggest a robust breeding population of both migratory and resident wood ducks (Robb and Bookhout 1995). Furthermore, wood ducks are protected by the MBTA and continually monitored by the USFWS and IDNR.

The number of wood ducks addressed in Iowa by all entities to alleviate damage is shown in Table 4. The highest combined authorized removal by non-WS entities (150 birds) in addition to the WS proposed removal was used to assess the cumulative removal.

Table 4 – Number of Wood Ducks addressed in Iowa 2013-2017

Year	Dispersed by WS	Removal under Depredation Permits			
		WS authorized Removal[1]	WS' Removal	Authorized Removal for Other Entities	Removal by other Entities
2013	414	20 + 20 nests	0	150	0
2014	119	20 + 20 nests	8	150	8
2015	77	20 + 20 nests	3	150	3
2016	53	20 + 20 nests	5	150	5
2017	215	20 + 20 nests	14	50	0
Average	175.6	20 + 20 nests	6	130	3.2

[1]: WS' authorized removal under a depredation permit issued to WS in Iowa and Missouri, additional removals by WS are allowed under permits held by cooperators and are not included in table

Direct, Indirect, and Cumulative Effects:

Wood duck population trends have steadily increased since 1966. Also, the removal of wood ducks can only occur when permitted by the USFWS through the issuance of depredation permits. WS proposed annual removal combined with other permitted removal only represents 0.06% of the Atlantic Flyway population. When these removal levels are combined with the average hunter harvest from the past five years (22,354), the level of removal represents 5.25% of the same population (Flyways.us 2017). This level of removal indicates that WS' proposed take will have no significant adverse effects on wood duck populations. The permitting of the removal by the USFWS and the IDNR pursuant to the MBTA ensures removal by WS and by other entities occurs within allowable removal levels to achieve the desired population objectives for wood ducks in Iowa.

Wood duck nests are authorized to be destroyed (which may involve treatment of eggs by oiling, puncturing, or addling to inhibit reproduction) by the USFWS through depredation permits issued to WS. The limited number of proposed nest removal would have no significant effects on wood duck reproduction.

Horned Lark Biology and Population Impacts

IA population estimate: 300,000
BBS IA, 1966-2015: -3.83%
BBS Eastern Tallgrass Praire, 1966-2015: -2.39%
BBS Prairie Potholes, 1966-2015: -3.84%
WS removal as % of state population: 0.03%
Cumulative removal as % of state population: 0.08%

WS proposed removal: 100
BBS IA, 1966-2015: -4.30%
BBS Eastern Tallgrass Prairie, 2005-2015: -3.14%
BBS Prairie Potholes, 2005-2015: -4.16%

Horned larks are present year-round throughout much of the United States, including Iowa (Beason 1995). Horned lark habitat consists of open country including short grass prairie, deserts, agricultural land, alpine habitat, and other areas with low vegetation (Beason 1995). Horned larks are a social species and therefore form flocks during the non-breeding season of up to several hundred birds (Beason 1995). These flocks may even join with other flocks of tree sparrows, dark-eyed juncos, Lapland longspurs, and snow buntings (Beason 1995). The number of horned larks observed in Iowa during the CBC has shown a variable, but stable trend since 1966 (NAS 2010).

The number of horned larks addressed in Iowa by all entities to alleviate damage is shown in Table 5. The highest combined authorized removal by non-WS entities (150 birds) in addition to the WS proposed removal was used to assess the cumulative removal.

Table 5 – Number of Horned Larks addressed in Iowa 2013-2017

Year	Dispersed by WS	Removal under Depredation Permits			
		WS authorized Removal[1]	WS' Removal	Authorized Removal for Other Entities	Removal by other Entities
2013	51	0	13	150	13
2014	1454	0	45	150	45
2015	214	350	0	0	0
2016	10	50	0	100	0
2017	1883	50	26	400	36
Average	722.4	90	16.8	160	18.8

[1]: WS' authorized removal under a depredation permit issued to WS in Iowa and Missouri, additional removals by WS are allowed under permits held by cooperators and are not included in table

Direct, Indirect, and Cumulative Effects:

WS' proposed removal is only a fraction of a percentage of the state population of horned larks. Therefore, WS proposed removal level is expected to have no adverse direct or indirect effects on horned lark populations. The cumulative removal by all entities in Iowa, including WS, was also only a fraction of a percentage of the state population. Additionally, all removal of horned larks would occur within the levels permitted by the USFWS and IDNR pursuant to the MBTA. Therefore, the potential authorized removal from all non-WS entities combined with WS proposed removal is not expected to create adverse cumulative impacts to horned lark populations. The permitting of the removal of horned larks by the USFWS and the IDNR pursuant to the MBTA ensures removal by WS and by other entities occurs within allowable removal levels to achieve the desired population objectives for horned larks in Iowa.

Eastern Meadowlark Biology and Population Impacts

IA population estimate: 500,000
BBS IA, 1966-2015: 0.52%
BBS Eastern Tallgrass Praire, 1966-2015: -2.28%
BBS Prairie Potholes, 1966-2015: -0.19%
BBS Prairie Hardwood Transition, 1966-2015: -3.58%
BBS Prairie Hardwood Transition, 2005-2015: -2.24%
WS removal as % of state population: 0.04%

WS proposed removal: 200
BBS IA, 1966-2015: 1.10%
BBS Eastern Tallgrass Prairie, 2005-2015: -2.58%
BBS Prairie Potholes, 2005-2015: -1.08%

Cumulative removal as % of state population: 0.4%

Eastern meadowlarks are a migratory bird that can be found throughout the eastern states, central and southeastern Arizona, central New Mexico and Southwest Texas (Jaster et al. 2012). In Iowa, eastern meadowlarks can be found year round throughout the state wherever there is adequate habitat (Jaster et al. 2012). Eastern meadowlarks require open habitat such as pastures, cultivated fields, barrens, orchards, golf courses, airports, reclaimed strip-mines or other types of open area for nesting and feeding (Jaster et al. 2012). During the non-breeding season eastern meadowlarks are highly social forming flocks of up to 200 birds (Jaster et al. 2012). The number of eastern meadowlarks observed in Iowa during the CBC has shown a decreasing trend since 1966 (NAS 2010).

The number of eastern meadowlarks addressed in Iowa by all entities to alleviate damage is shown in Table 6. The highest combined authorized removal by non-WS entities (470 birds) in addition to the WS proposed removal was used to assess the cumulative removal.

Table 6 – Number of Eastern meadowlarks addressed in Iowa from 2013 to 2017

Year	Dispersed by WS	Removal under Depredation Permits			
		WS authorized Removal[1]	WS' Removal	Authorized Removal for Other Entities	Removal by other Entities
2013	593	0	12	420	10
2014	232	0	20	420	22
2015	536	200	31	300	30
2016	200	200	28	400	33
2017	722	50	50	470	114
Average	456.6	66.67	28.2	380	20.67

[1]: WS' authorized removal under a depredation permit issued to WS in Iowa and Missouri, additional removals by WS are allowed under permits held by cooperators and are not included in table

Direct, Indirect, and Cumulative Effects:

Although the eastern meadowlark population trend has been slightly declining since 1966, WS proposed removal is only a fraction of a percent of the state population. Also, the removal of eastern meadowlarks can only occur when permitted by the USFWS through the issuance of depredation permits. Therefore, WS proposed removal level will have no adverse direct or indirect effects on eastern meadowlark populations. The potential authorized removal from all non-WS entities combined with WS proposed removal is also only a fraction of a percent of the state population and therefore it is not expected to create adverse cumulative impacts. The permitting of the removal by the USFWS and the IDNR pursuant to the MBTA ensures removal by WS and by other entities occurs within allowable removal levels to achieve the desired population objectives for eastern meadowlarks in Iowa.

Western Meadowlark Biology and Population Impacts

IA population estimate: 900,000
BBS IA, 1966-2015: -4.15%
BBS Eastern Tallgrass Praire, 1966-2015: -5.22%
BBS Prairie Potholes, 1966-2015: -1.82%
BBS Prairie Hardwood Transition, 1966-2015: -11.74%
BBS Prairie Hardwood Transition, 2005-2015: -9.30%
WS removal as % of state population: 0.02%

WS proposed removal: 200
BBS IA, 1966-2015: -6.01%
BBS Eastern Tallgrass Prairie, 2005-2015: -7.04%
BBS Prairie Potholes, 2005-2015: -1.23%

Cumulative removal as % of state population: 0.038%

Western meadowlarks are an abundant grassland bird found throughout the western portion of North America as far east as western Tennessee and Alabama during its wintering range (Davis and Lanyon 2008). In Iowa, western meadowlarks can be found year round throughout most of the state wherever there is adequate habitat (Davis and Lanyon 2008). Western meadowlarks prefer a wide range of open grassland habitats, but are also found in orchards, desert grassland, and along roadsides (Davis and Lanyon 2008). During fall and winter, western meadowlarks may form flocks of up to 200 individuals, sometimes with eastern meadowlarks (Davis and Lanyon 2008). The number of western meadowlarks observed in Iowa during the CBC has shown a slightly declining trend since 1966 (NAS 2010).

The number of western meadowlarks addressed in Iowa by all entities to alleviate damage is shown in Table 7. The highest combined authorized removal by non-WS entities (150 birds) in addition to the WS proposed removal was used to assess the cumulative removal.

Table 7 – Number of Western meadowlarks addressed in Iowa from 2013 to 2017

Year	Dispersed by WS	Removal under Depredation Permits			
		WS authorized Removal[1]	WS' Removal	Authorized Removal for Other Entities	Removal by other Entities
2013	0	0	0	0	0
2014	0	0	0	0	0
2015	0	50	0	0	0
2016	0	50	0	0	0
2017	110	50	50	150	50
Average	22	30	10	20	10

[1]: WS' authorized removal under a depredation permit issued to WS in Iowa and Missouri, additional removals by WS are allowed under permits held by cooperators and are not included in table

Direct, Indirect, and Cumulative Effects:

Although the western meadowlark population trend has been slightly declining since 1966, WS proposed removal is only a fraction of a percent of the state population. Also, the removal of western meadowlarks can only occur when permitted by the USFWS through the issuance of depredation permits. Therefore, WS proposed removal level will have no adverse direct or indirect effects on western meadowlark populations. The potential authorized removal from all non-WS entities combined with WS proposed removal is also not expected to create adverse cumulative impacts. The permitting of the removal by the USFWS and the IDNR pursuant to the MBTA ensures removal by WS and by other entities occurs within allowable removal levels to achieve the desired population objectives for western meadowlarks in Iowa.

Barn Swallow and Population Impacts

IA population estimate: 1,100,000
WS proposed number translocated: 50
BBS IA, 1966-2015: -0.22%
BBS Eastern Tallgrass Praire, 1966-2015: -0.37%
BBS Prairie Potholes, 1966-2015: -0.70%
BBS Prairie Hardwood Transition, 1966-2015: -0.17%
BBS Prairie Hardwood Transition, 2005-2015: -1.27%
WS removal as % of state population: 0.05%

WS proposed removal: 500 + 100 nests (and eggs)

BBS IA, 1966-2015: -0.43%
BBS Eastern Tallgrass Prairie, 2005-2015: -0.88%
BBS Prairie Potholes, 2005-2015: -0.11%

Cumulative removal as % of state population: 0.12%

Barn swallows, which are considered the most common swallow in the state, arrive in Iowa as early as mid-April to start nesting (Burnett et al. 1998*b*; Dinsmore 2003). They are common in open rural areas throughout the state and are known to nest in barns and other building, under bridges, in culverts, and along the entrance of caves (Buckelew Jr. and Hall 1994). Barn swallows usually produce two clutches per season, averaging 4-5 eggs per clutch (Brown and Brown 1999). After nesting, barn swallows migrate south to their wintering grounds in Central and South America (Brown and Brown 1999).

The number of barn swallows addressed in Iowa by all entities to alleviate damage is shown in Table 8. WS is also authorized to trap and translocate up to 50 barn swallows annually, but WS did not live-trap and

translocate any barn swallows during 2013 to 2017. The highest combined authorized removal by non-WS entities (865 birds) in addition to the WS proposed removal was used to assess the cumulative removal.

Table 8 – Number of barn swallows addressed in Iowa from 2013 to 2017

Year	Dispersed by WS	Removal under Depradation Permits			
		WS authorized Removal[1]	WS' Removal	Authorized Removal for Other Entities	Removal by other Entities
2013	77	500 + 10 nests	5	0	0
2014	896	500 + 10 nests	6	10	6
2015	747	500 + 10 nests	13	100	10
2016	2495	500 + 10 nests	31	280	58
2017	805	500 + 10 nests	23	865	23
Average	**1004**	**500 + 10 nests**	**15.6**	**251**	**19.4**

[1]: WS' authorized removal under a depredation permit issued to WS in Iowa and Missouri, additional removals by WS are allowed under permits held by cooperators and are not included in table

Direct, Indirect, and Cumulative Effects:

Although the barn swallow population trend has been slightly declining since 1966, WS proposed removal is only a fraction of a percent of the state population. Based on the best scientific data, WS proposed removal level will have no adverse direct or indirect effects on barn swallow populations. The potential authorized removal from all non-WS entities combined with WS proposed removal is also only a fraction of a percent of the state population and therefore it is not expected to create adverse cumulative impacts. The permitting of the removal by the USFWS and the IDNR pursuant to the MBTA ensures removal by WS and by other entities occurs within allowable removal levels to achieve the desired population objectives for barn swallows in Iowa.

Additionally, WS could live-capture and translocate up to 50 barn swallows. WS' proposed translocation of up to 50 barn swallows is expected to have no adverse direct effects on the barn swallow population in Iowa. Although the live-capture and translocation of this species would be a non-lethal method of reducing damage or threats of damage, barn swallows could be translocated during their nesting season which could lower nesting success. Reduced nesting success could occur by removing one of the adult pairs. Provided most of WS' translocations will occur outside of the nesting season, significant adverse indirect effects from translocation are not expected to occur to the population of barn swallows in Iowa. Barn swallows captured and translocated could be banded for identification purposes using United States Geological Survey approved metal leg-bands appropriate for the species. Banding would occur pursuant to a banding permit issued by the United States Geological Survey. Fair et al. (2010) stated "[w]*hen appropriate* [leg] *band sizes are used, the occurrence and rate of adverse effects on the subjects is ordinarily very low*". The translocation of barn swallows can only occur when permitted by the USFWS. Therefore, all removal, including live-capture and translocation by WS, is authorized and occurs at the discretion of the USFWS, which ensures cumulative take is considered as part of population management objectives for barn swallows.

Barn swallow nests are authorized to be destroyed (which may involve treatment of eggs by oiling, puncturing, or addling to inhibit reproduction) by the USFWS through depredation permits issued to WS. Swallows typically attempt to re-nest repetitively after a significant nest disturbance. Often, the birds will relocate to a suitable nesting environment after repeated nest failures. Therefore, it is unlikely that WS removal of swallow nest will have any significant effects on barn swallow reproduction.

Summary

Evaluation of WS' activities relative to wildlife populations indicated that program activities will likely have no cumulative adverse effects on populations in Iowa. 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.

Additional Target Species

In addition to the species analyzed above, other target species may be the subject of WS damage management activities, which involve harassment in small numbers, lethal removal, and nest destruction. The bird species lethally taken and the number of nests destroyed would not exceed twenty for each of the following species: American green-winged teal, bufflehead, lesser scaup, greater scaup, and American wigeon.

None of these bird species are expected to be taken by WS at any level that would adversely affect populations of those species. All of these birds are afforded protection under the MBTA and take is only allowed through the issuance of a depredation permit and only at those levels stipulated in the permit. Therefore, these birds would be taken in accordance with applicable state and federal laws and regulations authorizing take of migratory birds and their nests and eggs, including the USFWS. The USFWS, as the agency with management responsibility for migratory birds, could impose restrictions on depredation take as needed to assure cumulative take does not adversely affect the continued viability of populations. This would assure that cumulative impacts on these bird populations would have no significant adverse impact on the quality of the human environment.

Live-capture and Translocation

Several species within Iowa are translocated by WS to avoid conflicts, usually on airfields. WS has addressed great horned owl (*Bubo virginianus*) damage using primarily non-lethal dispersal methods and relocation to alleviate the threat of collision to aircraft. Based on requests received from new and existing cooperators, WS anticipates that up to 100 great horned owls could be live-captured and translocated annually under this Supplement.

WS' proposed translocation of great-horned owls is expected to have no adverse direct effects on the owl population. Although the live-capture and translocation of this species would be a non-lethal method of reducing damage or threats of damage, owls could be translocated during their nesting season, which could lower nesting success. Reduced nesting success could occur by removing one of the adult pairs. Provided most of WS' translocations will occur outside of the nesting season, significant adverse indirect

effects from translocation are not expected to occur. Owls captured and translocated could be banded for identification purposes using United States Geological Survey approved metal leg-bands appropriate for the species. Banding would occur pursuant to a banding permit issued by the United States Geological Survey. Fair et al. (2010) stated "[w]*hen appropriate* [leg] *band sizes are used, the occurrence and rate of adverse effects on the subjects is ordinarily very low*". The translocation of great-horned owls can only occur when permitted by the USFWS. Therefore, all removal, including live-capture and translocation by WS is authorized and occurs at the discretion of the USFWS, which ensures cumulative take is considered as part of population management objectives for great-horned owls.

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 only live captured and released one non-target wild turkey during bird damage management activities since the Decision and FONSI were 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 showed the listing of the rusty-patch bumble bee (*Bombus affinis*), Massasauga rattlesnake (*Sistrurus catenatus*), and the delisting of the prairie bush-clover (*Lespedeza leptostachya*) has occurred 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 these two newly listed species or their critical habitats. WS has not historically conducted operations in massasauga rattlesnake or rusty-patch bumble bee habitat. 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 Iowa to manage damage and threats caused by birds have not changed from those described in the EA. A review of those species listed in Iowa 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 2017, 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 Iowa 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 Iowa

Listed species -- 18 listings

Summary of Animals -- 14 listings

Status	Species/Listing Name
E	Bat, Indiana Wherever found (*Myotis sodalis*)
T	Bat, Northern long-eared Wherever found (*Myotis septentrionalis*)
E	Bumble bee, Rusty patched Wherever found (*Bombus affinis*)
E	Higgins eye (pearlymussel) Wherever found (*Lampsilis higginsii*)
T	Massasauga (=rattlesnake), eastern Wherever found (*Sistrurus catenatus*)
E	Mussel, sheepnose Wherever found (*Plethobasus cyphyus*)
T	Plover, piping [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. (*Charadrius melodus*)
E	Shiner, Topeka Wherever found, except where listed as an experimental population (*Notropis topeka (=tristis)*)
T	Skipper, Dakota Wherever found (*Hesperia dacotae*)
E	skipperling, Poweshiek Wherever found (*Oarisma poweshiek*)
E	Snail, Iowa Pleistocene Wherever found (*Discus macclintocki*)
E	Spectaclecase (mussel) Wherever found (*Cumberlandia monodonta*)
E	Sturgeon, pallid Wherever found (*Scaphirhynchus albus*)
E	Tern, least interior pop. (*Sterna antillarum*)

Summary of Plants -- 6 listings

Status	Species/Listing Name
T	Milkweed, Mead's (*Asclepias meadii*)
T	Monkshood, northern wild (*Aconitum noveboracense*)
T	Orchid, eastern prairie fringed (*Platanthera leucophaea*)
T	Orchid, western prairie fringed (*Platanthera praeclara*)

Notes:

- 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 Iowa
- 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 at https://ecos.fws.gov/ecp0/reports/species-listed-by-state-report?state=IA&status=listed on 4/23/18.