

**SUPPLEMENT TO THE ENVIRONMENTAL ASSESSMENT:
REDUCING ROCK DOVE, EUROPEAN STARLING, AND HOUSE SPARROW
DAMAGE MANAGEMENT IN IOWA**

June 2013

Across the United States, wildlife habitat has been substantially changed as the human population expands and more land is used to meet human needs. These human uses often come into conflict with the needs of wildlife and increase the potential for negative human/wildlife interactions. Conflicts with wild and feral birds include, but are not limited to, negative impacts of increasing bird populations on vegetation and habitat used by other wildlife species, damage to private property from bird feces, crop damage, risks of aircraft collisions with birds at or near airports, and risks of disease transmission to humans and livestock. Wildlife damage management is the science of reducing damage or other problems associated with wildlife and is recognized as an integral part of wildlife management (The Wildlife Society 1992). In response to persistent conflicts and complaints relating to wild and feral birds in Iowa, the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) completed an Environmental Assessment (EA) on reducing rock dove, European starling, and house sparrow damage in Iowa 2005 (USDA 2005). The EA analyzed the potential environmental effects of alternatives for managing damage by and conflicts with wild and feral birds at private and public property sites or facilities within Iowa wherever such management is needed and assistance is requested from the WS program. The management alternative selected in the August 12, 2005 Decisions and Finding of No Significant Impact (FONSI) involves the use of an integrated wildlife damage management (IWDM) approach, including non-lethal and lethal methods to manage rock dove, European starling, and house sparrow damage.

There have been changes to the regulations pertaining to bird damage management (BDM), the magnitude of WS' bird damage management activities in Iowa, and the methods to be considered for BDM. This supplement has been prepared to evaluate the environmental impacts of these changes and to reconsider WS' decision regarding the selection of a management alternative.

Individual actions on the types of sites encompassed by this analysis may be categorically excluded under the APHIS Implementing Regulations for compliance with the National Environmental Policy Act (NEPA) (7 CFR 372.5(c)). APHIS Implementing Regulations also provide that all technical assistance furnished by WS is categorically excluded (7 CFR 372.5(c)) (60 Federal Register 6,000, 6,003 (1995)). WS prepared the original EA and this supplement to assist in planning BDM activities and to clearly communicate with the public the analysis of cumulative impacts for a number of issues of concern in relation to alternative means of reducing rock dove, European starling, and house sparrow damage in Iowa. The analysis in the EA relied on existing data contained in published documents and agency (WS, USFWS, Iowa Department of Natural Resources (IDNR)) data and reports. Comments from the public involvement process were reviewed for substantive issues and alternatives which were considered in developing the alternatives and selecting the final management decision. This supplement adds to the analysis in the 2005 EA and FONSI and all information and analyses in the 2005 EA remain valid unless otherwise noted below.

I. PURPOSE OF AND THE NEED FOR THE PROPOSED ACTION

The purpose of this supplement is to analyze the effects of WS activities in Iowa to manage damage caused by the following bird species: rock dove/feral pigeon (*Columba livia*), English house sparrow (*Passer domesticus*), and European starling (*Sturnus vulgaris*).

1.1 Proposed Action

The Iowa WS Program proposes to alleviate or reduce damage to agricultural resources, livestock, property, crops, and human health and safety caused by exotic birds, in addition to conducting surveillance for diseases in exotic birds. WS typically uses an IWDM approach, commonly known as Integrated Pest Management (WS Directive 2.105) in which a combination of methods may be used or recommended to reduce damage. WS' wildlife damage management program activities are not based on punishing offending animals but are a means of reducing damage and are used as part of the WS Decision Model (WS Directive 2.101). The imminent threat of damage or loss of resources is often deemed sufficient

for wildlife damage management actions to be initiated (U.S. District Court of Utah 1993). WS receives request to assist in managing bird damage to agricultural resources, livestock, property, turf, and crops in reducing risks to human health and safety, and in conducting surveillance for diseases in exotic birds. All Iowa WS wildlife damage management is in compliance with relevant state, federal and local laws including the Endangered Species Act of 1973, the Migratory Bird Treaty Act and the Wildlife Code of Iowa.

1.2 Need for Action

The need for action remains as described in the EA section 1.3, except as noted below. Records of WS technical assistance projects are good indicators of the range and nature of damage by and conflicts with rock doves, European starlings and house sparrows in Iowa. This information is provided in Table 1. The Iowa Department of Natural Resources, State and County extension agents, private companies and organizations, and others also provide technical assistance with wildlife damage problems. Table 1 only contains information on requests made to WS and is not an indicator of the total number of problems with birds in Iowa.

When WS conducts an initial site visit to assess damage, the specialist will determine the species responsible for the damage and make an estimate of losses/damage. This information is referred to as verified losses. Verified loss data are usually only the damage observed at the time of the initial site investigation and does not necessarily represent total losses that have occurred at the site or landowner costs for damage prevention or property cleaning. Verified losses also do not include an estimate of the damage that would have occurred had WS not provided assistance with the damage problem. Some types of conflicts or damage risks, like risks to human or livestock health, cannot be readily quantified and are not represented. Nonetheless, like the information on requests for technical assistance with damage problems, this information serves as an indicator of the types of bird damage that can occur in the state.

Table 1. Annual requests to WS for technical assistance (advice) on the management of damage by and conflicts with wild and feral birds in Iowa for Fiscal Year 2012.

SPECIES	DAMAGE/CONFLICT TYPE			
	Agriculture	Human Health and Safety*	Property*	Natural Resources
Rock doves	8	5	5	0
House sparrows	10	0	2	0
European starlings	0	25	10	0

*Includes management of bird hazards at airports

Damage to roofs, metal structures and painted finishes

Members of the public have requested additional information on bird damage to buildings, metal structures and painted finish. Bird feces are highly acidic and can be corrosive to paint and metal surfaces. Potential for damage is greatest in situations where large numbers of birds congregate in one area to roost or loaf. Bird feces can also have corrosive effects on monuments and decorative stonework on buildings. Gómez-Heras et al. (2004) evaluated the impact of extracts from pigeon feces on limestone. Results from the study indicated that accumulations of pigeon droppings generate solutions with low pH and high salinity when they are leached by water. The derived solutions contain high concentrations of salts which had been identified as possible decay agents on stone monuments and historical buildings in other studies. Gómez-Heras et al. (2004) concluded that pigeon excrement should be considered as a potentially important factor in the long-term decay of stone.

Microbes within bird excrement also can cause damage to materials for buildings and monuments. Channon (2004) studied the impact of pigeon excrement on marble, Portland stone, Bath stone and concrete which is used as building material for monuments and heritage stonework on buildings. They treated the stones with pigeon excrement and at the end of one year of exposure to environmental conditions, cleaned the stones by scraping with a flat scraper then brushing with a stiff-bristled nylon brush and finally rinsing with a low-pressure water spray until all visible evidence of fouling had been removed and all that remained were a few persistent stains on the surface of the stonework. Condition of the stones was recorded at the end of the cleaning process and then the stones were left exposed to the elements and monitored for an additional four years. Despite the cleaning process, nutrients from the excrement had penetrated the

surface of the material and provided sufficient resources for moss to grow at the damage sites. Extent of initial damage and moss development varied between materials. In areas with acidic rainfall, the moss may serve as a pad which retains water and exacerbate problems with corrosion due to acid rainfall. Bassi and Chiatante (1976) determined that pigeon excrement constituted a highly favorable substrate for fungal growth and that the fungal growth may contribute to the damage of marble surfaces mechanically and through the secretion of acidic products.

Although most examples are from pigeons, similar impacts are likely for other bird species. Washing/scraping feces from surfaces can reduce the problem but require time and effort which, for some businesses/managers may result in loss of staff time as personnel are assigned to cleaning chores or the cost of hiring an individual/company to do the cleaning.

Bird Damage to Power Lines and Electric Utility Facilities

As with bird damage to structures, this information is provided in response to requests for additional information on the difficulties that birds may cause for electric utility companies. Fecal accumulations on electrical equipment compromise insulators, resulting in fires, shorts in electrical systems, risks to employee safety, and loss of power to customers. A power plant in Southeast Iowa was concerned with disease issues and employee safety because large amounts of bird droppings from European starlings and feral pigeons. The pigeon population was estimated to be over 300 throughout the year, and the European starling population was estimated at 5,000 while roosting at the power plant in winter. An additional safety concern was cleaning up the bird droppings by power washing the areas during the winter months with ice building up in work areas. Plant officials estimated hundreds of lost production hours cleaning up bird droppings throughout the year. There are methods available to wash equipment, but they often require shutting down power at the affected site and rerouting power to customers which can also cost over a million dollars in costs to route/acquire power from other sources.

One rural electrical administration reports that approximately 10% of its outage hours are attributable to birds, primarily starlings. Problems are caused when large numbers of starlings perch on 2-3 spans of power lines. If the birds suddenly flush from the lines at one time it can cause the lines to swing close to one another and short the system. Some equipment can be reset but lines using fuses generally have loss of power until a team can replace the shorted fuse. Power utility problems with starlings generally occur in locations near food sources including fruit orchards, dairies, cattle feedlots, and landfills.

In these situations, WS endeavors to work with the utility company and the individuals owning/managing the food source to resolve the problem. Solutions to these problems may include a range of non-lethal and lethal methods to reduce bird access to crops, livestock facilities, and landfills as well as visual frightening devices (reflectors) installed at the utility structures, noisemakers and similar frightening devices to discourage birds from loafing and roosting on utility structures, systems to clean utility equipment, and reduction of local starling numbers with lethal methods.

1.3 Summary of Public Involvement

WS released a pre-decisional EA on August 1, 2005 and a notice of the proposed action and invitation for public involvement was placed in the *Des Moines Register*, August 8-10, 2005, with circulation throughout Iowa. A letter noticing the availability of the EA entitled "Reducing Rock Dove, European Starling and House Sparrow Damage in Iowa" was also sent to those persons that have a known interest in the Iowa Bird Damage Management program. After a 53-day comment period, WS received no comment letters on the EA.

This supplement has been made available to the public for a 30 day comment period. A notice of availability has been published in *The Des Moines Register* and has also been mailed directly to agencies, organizations, and individuals with probable interest in the supplement, including those agencies and individuals who commented on the original EA. A copy of the pre-decisional supplement and a notice regarding the opportunity for public comment on the supplement has also been made available at (http://www.aphis.usda.gov/wildlife_damage/nepa.shtml). Public notification procedures are in compliance with new WS NEPA implementation procedures published in the Federal Register March 21, 2007 (Vol. 72, No. 54: 13237-13238).

1.4 Affected Environment

The analyses in the EA and supplement are intended to apply to any action that may occur in *any locale* and at *any time* within the State of Iowa. In this way, WS and the USFWS believe they meet the intent of NEPA with regard to site-specific analysis and that this is the only practical way for WS and the USFWS to comply with NEPA and still be able to meet needs for assistance with WDM in a timely fashion. The proposed action could include areas in and around commercial, industrial, public, and private buildings, facilities and properties and at other sites where birds loaf, feed, or otherwise occur. Examples of areas where BDM activities could be conducted include, but are not necessarily limited to: agricultural fields, orchards, farmyards, dairies, ranches, livestock operations, waste handling facilities, industrial sites, natural areas, government properties and facilities, private homes and properties, corporate properties, schools, hospitals, parks and recreation areas, swimming lakes, communally-owned homeowner/property owner association properties, natural areas, wildlife refuges, wildlife management areas, ponds, rivers, and inlets, airports and surrounding areas.

1.5 Relationship of this Environmental Assessment to other Environmental Documents

USDA 1994/97 FEIS: Animal Damage Control Programmatic Environmental Impact Statement

WS has determined that this matter is best assessed at the State level in an EA. WS' decision and actions regarding BDM in Iowa rely solely and exclusively on the decision document and record on this EA. The 2005 EA incorporated by reference, sections, discussions, appendices, or other portions thereof, of USDA 1994/97. This Supplemental EA does not incorporate by reference to USDA 1994/97.

1.6 Authority and Compliance

Authority of federal and state agencies to manage wildlife damage in the State of Iowa remains applicable as listed in the 2005 EA.

United States Department of the Interior, Fish and Wildlife Service

The primary responsibility of the USFWS is conserving fish, wildlife, plants and their habitats. While some of the USFWS's responsibilities are shared with other Federal, State, tribal, and local entities, the USFWS has special authorities in managing the National Wildlife Refuge System; conserving migratory birds, endangered species, certain marine mammals, and nationally significant fisheries; and enforcing Federal wildlife laws. The Migratory Bird Treaty Act (MBTA) gives the USFWS primary statutory authority to manage migratory bird populations in the United States. The USFWS is also charged with implementation and enforcement of the Endangered Species Act of 1973, as amended and with developing recovery plans for listed species.

1.7 Compliance with Federal and State Laws

Several federal and state laws authorize, regulate, or otherwise affect WS wildlife damage management. Laws with particular relevance to the proposed action are described in EA Section 1.6.4. WS complies with these laws, and consults and cooperates with other agencies as appropriate. The section below provides additional information regulations relevant to the EA.

Archaeological Resources protection Act (ARPA) of 1979, as amended (16 USC 470)

The Archaeological Resources Protection Act expands the protections provided by the Antiquities Act of 1906 by protecting archaeological resources and sites located on public and Indian lands. The ARPA defines "archaeological resources" as items: 1) of archaeological interest over 100 years old; and 2) found in an archaeological context on federal or Indian lands and requires finders to obtain a federal permit before excavating these objects.

Federal Water Pollution Control Act (Commonly known as the Clean Water Act (CWA) (33 USC 1251-1376, October 18, 1972, as amended))

The CWA is a statute aimed at restoring and maintaining the chemical, physical, and biological integrity of U.S. waters. The CWA is implemented and enforced by the EPA and authorizes the Public Health Service to prepare comprehensive programs for eliminating or reducing the pollution of interstate waters and tributaries and improving the sanitary condition of surface and underground waters. Additionally, the CWA authorizes water quality programs, requires federal effluent

limitations and state water quality standards, requires permits for discharge of pollutants into navigable waters, and provides enforcement mechanisms. Military bases, national park, and federal facilities must comply with CWA provisions.

Bald and Golden Eagle Protection Act (16 USC 668)

Congress enacted the Eagle Protection Act in 1940, thereby making it a criminal offense for any person to “take” or possess any bald eagle or any part, egg, or nest. Now that Bald Eagles have been removed from the Federal list of threatened and endangered species, the Bald and Golden Eagle Protection Act is the primary regulation governing Bald Eagle management. For purposes of this Act, “take” is defined as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb.” If an APHIS action could potentially affect either bald or golden eagles in any of these ways, APHIS must consult with the USFWS. If these species are found in a location where a proposed action will be carried out, APHIS must ensure that its actions do not impact eagles in a way that fits the definition of “take”. When there is a potential to affect Eagles, it is advisable to coordinate with the USFWS to assure actions avoid “take.”

1.8 Monitoring

The Iowa WS program monitors the impact of its BDM activities to ensure that current and anticipated future impacts remain within the parameters analyzed in the EA and supplement. Wildlife Services also checks for new methods, needs for action, and issues which might require revised analysis. Unless it is determined that an Environmental Impact Statement (EIS) is needed, the supplemented EA will remain valid until WS determines that new needs for action or new alternatives having different environmental effects must be analyzed. At that time, this analysis will be revised as necessary. Review of the EA will be conducted each year to ensure that it is complete and still appropriate to the scope of BDM activities within Iowa.

1.9 Issues Analyzed in Detail in the EA

Issues are concerns raised regarding potential environmental problems that might occur from a proposed action. Such issues must be considered in the NEPA decision-making process. Issues relating to the reduction of wildlife damage were raised during the scoping process in the preparation of the EA. Issues related to managing damage and threats associated with birds in Iowa were developed by WS in consultation with the USFWS, Iowa Department of Agriculture and Land Stewardship (IDALS), and the Iowa DNR.

The major issues are discussed in detail 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 (USDA 2005). Potential impacts of Alternatives 1, 3, and 4 on the human environment related to the major issues have not changed from those described in the EA and thus do not require additional analyses in this report or the proposed supplement. Chapter 4 of the EA contains a detailed discussion and comparison of the identified alternatives and the major issues (USDA 2005). Alternative 2 (proposed action/no action), as described in the EA, describes an integrated bird management program in that responds to requests for BDM to protect property, agriculture crops, livestock health, and human health and safety. Chapter 3 of this supplement provides an analysis of potential impacts for each of the major issues analyzed in the EA since the completion of the EA and the proposed supplement to the EA as related to Alternative 2 (proposed action/no action alternative):

The following issues were identified as important to the scope of the analysis:

- Effects on target bird species
- Effects on other wildlife species, including Threatened and Endangered (T&E) species
- Effects on public health and safety
- Impacts to stakeholders, including aesthetics
- Humaneness and animal welfare concerns of methods used

II. ALTERNATIVES

Alternative 2 was selected by the decision maker in the Decision/FONSI (2005) to respond to the issues pertaining to BDM. Additionally, Section 3.3 of the EA discusses three additional alternatives that were considered but not analyzed in detail. A detailed discussion of the effects of the Alternatives is described in the EA and remains as analyzed. Below is a summary of Alternative 2.

2.1 Alternative 2 - Continue the Current Federal BDM Program /Integrated Wildlife Damage Management (No Action/Proposed Action).

The proposed action is to continue an integrated bird management program in Iowa. An IWDM approach would continue which would allow use of any legal lethal and non lethal technique or method, used singly or in combination, to meet requests or needs for resolving conflicts with birds on public and private property. Individuals requesting assistance would be provided with information regarding the use of effective non-lethal and lethal techniques. Lethal methods used and/or recommended by WS would include shooting, trapping, toxicants, DRC-1339, Starlicide, Avitrol, nest and/or egg destruction or euthanasia following live capture and/or use of AC. Non-lethal methods used and recommended by WS may include habitat alteration, chemical repellents (e.g., methyl anthranilate), wire barriers and deterrents, netting, capture and relocation, harassment and scaring devices. The implementation of non-lethal methods such as habitat alteration and exclusion-type barriers would be the responsibility of the landowner to implement. BDM by WS would be allowed in Iowa, when requested, where a need has been documented and only upon completion of an Agreement for Control with the landowner/manager. All management actions would comply with appropriate federal, state, and local laws. Appendix B of the EA provides a more detailed description of the methods that could be used or recommended under the proposed action.

2.2 New Methods

A list of methods used and/or recommended by WS for BDM is found in Appendix B of the EA. Changes and additions to this list are provided below.

Air cannon nets, cannon nets and rocket nets are normally used for birds such as pigeons, feral ducks, and waterfowl. The net systems use mortar projectiles or rockets to propel the net(s) up and over birds, which have been baited to and/or regularly use a particular site. This type of net is especially effective for waterfowl and other birds which are wary of other capture techniques.

Hand nets are used to catch birds in confined areas such as homes and businesses. These nets resemble fishing dip nets with long handles. They can also be used during daylight hours or in conjunction with lights at night to capture a variety of different birds in the field.

III. ENVIRONMENTAL IMPACTS

This analysis is intended to update sections of the environmental impact analysis in the EA and only includes information on impacts which have changed since the EA was completed. A summary of WS bird harassment and lethal bird take is provided in Table 2.

Table 2. Impacts of WS direct control activities on target bird species for FY 2006 - 2012.

Target Species	Method	Euthanized	Dispersed
Feral Pigeon	Firearms	3,602	754
Feral Pigeon	DRC-1339	10	0
Feral Pigeons	Traps	2,059	0
Feral Pigeons	Other Methods	5	0
House/English Sparrow	Mist Nets	1,447	0
House/English Sparrow	Live Trapping	119	0
House/English Sparrow	Pneumatics	2,747	2,325
House/English Sparrow	Other Methods	0	10
European Starlings	DRC-1339 (Feedlots)	160,509	0
European Starlings	DRC-1339 (Staging Areas)	31,000	0
European Starlings	Mist Nets	24	0
European Starlings	Pneumatics	4,387	3,000
European Starlings	Pyrotechnics	0	205,907
European Starlings	Live Trapping	11,134	0
European Starlings	Other Methods	0	15

3.1 Bird Population Estimates

Bird populations can be monitored by using trend data derived from data collected during the BBS. Under established guidelines, observers count birds at established survey points for a set duration along a pre-determined route, usually along a road. Surveys were started in 1966 and are conducted in June which is generally considered as the period of time when those birds present at a location are likely breeding in the immediate area. The BBS is conducted annually in the United States, across a large geographical area, under standardized survey guidelines. The BBS is a large-scale inventory of North American birds coordinated by the United States Geological Survey, Patuxent Wildlife Research Center (Sauer et al. 2012). The BBS is a combined set of roadside survey routes primarily covering the continental United States and southern Canada. The primary objective of the BBS has been to generate an estimate of population change for all breeding birds. Populations of birds tend to fluctuate, especially locally, as a result of variable local habitat and climatic conditions. Trends can be determined using different population equations and statistically tested to determine if a trend is statistically significant.

Current estimates of population trends from BBS data are derived from hierarchical model analysis (Link and Sauer 2002, Sauer and Link 2011) and are dependent upon a variety of assumptions (Link and Sauer 1998). The statistical significance of a trend for a given species is also determined using BBS data (Sauer et al. 2012).

3.2 Effects on Target Bird Species

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. Methods employed in an integrated approach to reduce damage and threats are categorized into non-lethal and lethal methods. Non-lethal methods are employed to exclude, harass, and/or disperse wildlife from areas where damage or threats are occurring. Lethal methods are often employed to reinforce non-lethal methods and to remove birds that have been identified as causing damage or posing a threat to human safety. Both non-lethal and lethal methods have the potential to impact bird populations. The EA evaluated those potential impacts and found that when WS' activities are conducted within the scope analyzed in the EA, those activities would not adversely impact bird populations in Iowa (USDA 2005). WS' Standard Operating Procedures (SOP) are designed to reduce the effects on bird populations and are discussed in section 3.4 of the EA (USDA 2005).

WS has provided direct damage management and technical assistance in response to requests for assistance in Iowa since the completion of the 2005 EA. Descriptions and application of direct damage management and technical assistance projects are discussed in detail in EA. All bird damage management activities conducted by WS were pursuant to federal, State, and local laws and regulations.

The EA concluded that the proposed WS BDM program would not have a significant impact on target bird populations. For all species, WS take was below the maximum anticipated annual take analyzed in the EA. WS implemented and

employed an integrated damage management approach to reducing threats and damage caused by birds through the recommendation and use of multiple methods. WS conducted an average of 30 technical assistance projects annually involving bird species through the recommendation of methods to resolve damage and threats. Requests for assistance involved damage and threats to a variety of resources and often involved multiple resources.

The need for bird damage management in Iowa and the scope of the proposed action has not changed from that established in the EA. Bird damage reported to WS during FY 2006-12 totaled \$918,000 (Table 3). Requests from the public to address bird problems included problems with consumption and contamination of livestock feed, structural damage to homes and property, threats to human health and safety, and various other bird nuisances. Starling damage at feedlots and dairies continue to be one of the more significant bird problems in Iowa. Feedlot and dairy operators' estimates of damage caused by birds during this period were 50% (\$458,000) of all bird damage reported to WS in FY 2006-12. One hundred twenty-nine of the 170 complaints were for bird damage problems at feedlots and dairies, with starlings involved in the majority of complaints.

Table 3. Bird damage reported to WS during FY 2006-2012

BIRD SPECIES	DAMAGE TYPE	REQUESTS FOR ASSISTANCE	REPORTED COST OF DAMAGE
European starlings, feral pigeons and house sparrow	Consumption and Contamination of Livestock Feed	129	\$458,000
European starlings, feral pigeons and house sparrow	Disease Transmission and Human Health/Safety Concerns	26	\$438,000
European starling, feral pigeons and house sparrows	General Property Damage	15	\$22,000
TOTAL		170	\$918,000

Requests for use of lethal methods to address starling, pigeon, and house sparrow damage and threats arose primarily from the damage that accumulations of fecal dropping pose to human health & safety, property, consumption and contamination of livestock feed, and the disease threats posed by large accumulations of droppings under areas where the birds roost and loaf. Accumulations of fecal droppings are aesthetically displeasing and pose risks of disease transmission in areas of public-use and areas where storage of food-grade components occurs. Large groups of starlings can also pose strike hazards to aircraft when nesting, roosting, and loafing occurs near airports.

The analysis of magnitude is 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 and usually only after they have caused damage. 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.

WS' cumulative take of birds by species from FY 2006 through FY 2012 is shown in Table 2. WS' annual take for the six year period did not exceed the level analyzed in the EA (100,000 starlings annually). In addition, target species populations have remained relatively stable despite WS' management operations. European starlings have been showing a -1.5% decline since 1966 in Iowa, which is statistically significant (Sauer et al. 2012). However, Christmas Bird Count data has shown a stable trend in starling observations since 2005 (National Audubon Society 2010). The most recent population estimate available for starlings shows a statewide population of 1.3 million birds (PFSC 2013). Pigeons and house sparrows have also shown a statistically significant decline since 1966 of -1.8% and -3.1%, respectively (Sauer et al. 2012). However, WS' proposed annual take of 5,000 pigeons and 1,000 house sparrows is still well below the magnitude that would cause adverse impacts to these species populations. WS' proposed take only represents 1.25% and

0.02% of the estimated statewide population of pigeons (400,000) and house sparrows (5 million), respectively (PFSC 2013).

Pigeons, starlings, and sparrows are non-native, invasive species in the United States that are afforded no protection under the Migratory Bird Treaty Act or under Iowa state laws. Those species often compete with native species for resources, such as food and nesting sites. Any reduction in pigeon, starling, or house sparrow populations could be considered a beneficial impact to native bird species. 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 the 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, 4) provide for environmentally sound control, and 5) promote public education on invasive species. WS' activities to manage damage caused by pigeons, starlings, and house sparrows were pursuant to Executive Order 13112.

Based on the information above and analysis in the EA, we conclude the proposed action has not had a significant impact on target species populations. Impacts on target species populations are expected to remain insignificant.

3.3 Effects on Non-target Species Populations Including Threatened or Endangered Species

The issue of non-target species effects, including effects on threatened and endangered 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' minimization measures and standard operating procedures are designed to reduce the effects of damage management activities on non-target species' populations which were discussed in the EA (USDA 2005). 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.

The lethal take of non-targets from using those methods described in the EA is unlikely with take never reaching a magnitude that a negative impact on populations would occur. Any potential non-targets live-captured using non-lethal methods would be handled in such a manner as to ensure the survivability of the animal when released. The use of firearms is selective for target species since animals are identified prior to application; therefore, no adverse impacts are anticipated from use of this method. The use of chemical methods, when used according to label directions, poses minimal hazards to non-target wildlife (USDA 2005).

Since the completion of the EA, WS has not taken any non-target species during management operations for starlings, pigeons, and house sparrows. Based on the information above and analysis in the EA, we conclude the proposed action has not had a significant impact on non-target species populations. Impacts on non-target species populations are expected to remain insignificant.

Threatened and Endangered Species

In the EA, WS determined that the proposed bird damage management activities would have no effect on state or federally listed birds, mammals, plants, reptiles, amphibians, insects, fish, or other aquatic organisms. WS has not taken, captured or hazed any species listed by the USFWS during bird damage management activities. Therefore, the

conclusions in the EA regarding impacts of the BDM program on T&E species are accurate.

A review of the USFWS T&E species and candidate species lists and the IDNR T&E species lists showed no new additions to the state or federal lists of T&E species since the 2005 EA. WS' BDM activities are not conducted in locations or in manners (e.g., WS does not do habitat management) that would have any effect on state or federally-listed plants, reptiles, amphibians, insects, fish, or other aquatic organisms.

Given the information above on risks to non-target species, WS history of extremely low impacts of BDM on non-target species, and the protective measures proposed above, the proposed changes to the WS BDM program will not adversely affect non-target species.

3.4 Impacts on Human Health and Safety

The proposed take of the target bird species would allow WS to continue to provide effective assistance in reducing risks to human health and safety from birds. If the current limits are restricted, WS may have to use methods that are less than optimal to reduce risks to human health and safety from birds. This may be particularly undesirable at airports where Iowa WS currently does much of its BDM. There are no risks to human health and safety from the use of the proposed live-capture devices. The addition of the live-capture devices will improve WS' ability to assist with surveillance for diseases communicable to humans and would be beneficial to human health and safety. Based on the analysis in the EA and the above information, the proposed action, including the use of the new live-capture devices, will not adversely impact human health and safety and will better enable WS to respond to the need to protect human health and safety from risks associated with birds.

3.5 Impacts to Stakeholders, Including Aesthetics

Information in the summary report and supplement to the EA indicates that WS' take of bird species have been minimal and of a low magnitude when compared to the populations of those species. WS' take has not reached a magnitude of take that would severely limit the ability to view and enjoy birds. Only those birds identified as causing damage were targeted by WS during damage management activities and only after a request for such action was received. WS addressed most birds using non-lethal harassment methods to alleviate damage and threats which disperses birds from those areas. Similarly, the use of lethal methods removes those birds associated with the damage. However, birds can be viewed outside the area where damage management activities were conducted if a reasonable effort is made to locate those birds outside of the damage management area. WS receives requests to conduct damage management activities on only a small portion of the land area in Iowa. Therefore, activities are not conducted over large areas that would greatly limit the aesthetic value of birds.

Some people who routinely view or feed individual birds such feral pigeons are disturbed by removal of such animals under the current program and would also be disturbed by the proposed increases in the lethal take of birds. However, lethal control actions would still generally be restricted to local sites and to small, insubstantial percentages of overall populations. Therefore, the species subjected to limited lethal control actions would remain common and abundant and would therefore continue to remain available for viewing by persons with that interest.

The fecal contamination associated with high numbers of birds at parks and other public and private property is considered by some to be an adverse impact on their aesthetic enjoyment of these sites. The proposed take of birds would enable WS to continue to provide effective BDM assistance. If the current limits are restricted, WS may have to use methods that are less than optimal to resolve damage management situations that may occur after the yearly limit on take has been reached.

3.6 Humaneness and Animal Welfare Concerns of Lethal Methods Used by WS

Methods used in bird damage management activities from FY 2006 through FY 2012 and their potential impacts on humaneness and animal welfare did not change from those analyzed in the EA. All methods employed by WS to alleviate bird damage were discussed in the 2005 EA. WS continued to employ methods as humanely as possible to minimize distress. Live-captured birds addressed in the EA were euthanized using methods considered appropriate for wild birds by

the AVMA (AVMA 2013). Therefore, the analyses of the humaneness of methods used by WS to manage damage and threats caused by birds from FY 2006 through FY 2012 did not change from those analyzed in the EA.

As discussed in the EA, some individuals believe that the use of lethal BDM methods is inhumane and inappropriate. These individuals will also object to the proposed increases in lethal take for the same reasons discussed in the EA.

3.7 Cumulative Impacts

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

WS' wildlife damage management activities would be the primary federal program with damage management responsibilities; however, other entities may conduct similar activities as permitted by the USFWS and the IDNR. Through ongoing coordination with the USFWS and the IDNR, WS is aware of such activities and may provide technical assistance in such efforts. WS does not normally conduct direct damage management activities concurrently with other entities in the same area, but may conduct activities at adjacent sites within the same timeframe. The potential cumulative impacts analyzed below could occur either as a result of WS' program activities over time or as a result of the aggregate effects of those activities combined with the activities of other agencies and individuals.

Cumulative Impacts on Wildlife Populations

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 taken 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.

No cumulative adverse impacts on wildlife populations are expected from WS' actions based on the following considerations:

Historical outcomes of WS' programs on wildlife

No cumulative adverse effects have been identified for wildlife as a result of program activities implemented over time based on analyses contained in the EA, from annual monitoring reports, or from analyses contained in the proposed supplement. WS continues to implement an integrated damage management program that adapts to the damage situation and the species involved with causing the damage. WS only targets wildlife causing damage and only after a request for assistance is received. All program activities are coordinated with appropriate federal, state, and local entities to ensure WS' activities do not adversely impact the populations of any native wildlife species.

Since the completion of the EA, the total number of birds addressed by WS in Iowa has remained stable which provides

some indication that WS' activities are not cumulatively impacting populations. WS continues to implement an integrated program that employs non-lethal dispersal and harassment methods. WS will continue to provide technical assistance to those persons requesting assistance to identify and alleviate damage.

SOPs built into WS' program

SOPs are designed to reduce the potential negative effects of WS' actions on wildlife, and are tailored to respond to changes in wildlife populations which could result from unforeseen environmental changes. This would include those changes occurring from sources other than WS. Alterations in program activities are defined through SOPs, and implementation is insured through monitoring, in accordance with WS' Decision Model (Slate et al. 1992).

Summary of Cumulative Impacts

No significant cumulative environmental impacts are expected from activities considered under the supplement to the EA. Likewise, no significant cumulative impacts have been identified from the implementation of the proposed action in the EA since FY 2006. 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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X. ACRONYMS

AC	Alpha-Chloralose
ADC	Animal Damage Control
APHIS	Animal Plant Health Inspection Service
AVMA	American Veterinary Medical Association
BDM	Bird Damage Management
BBS	Breeding Bird Survey
CFR	Code of Federal Regulations
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEIS	Final EIS
FY	Fiscal Year
IDALS	Iowa Department of Agriculture and Land Stewardship
IDNR	Iowa Department of Natural Resources
IWDM	Integrated Wildlife Damage Management
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
PDEA	Pre-decisional EA
SOP	Standard Operating Procedure
T&E	Threatened and Endangered
USDA	United States Department of Agriculture
USGS	U.S. Geological Survey
USFWS	U.S. Fish and Wildlife Services
WS	Wildlife Services

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