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

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

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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, in cooperation with the United States Fish and Wildlife Service (USFWS), and the Rhode Island Department of Environmental Management (RIDEM) Division of Fish and Wildlife, 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 Rhode Island (USDA 2013). The EA evaluated the need for bird damage management and assessed potential impacts on the human environment of five 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 (USDA 2013). Comments from the public involvement process were reviewed for substantive issues and alternatives which were considered in developing the Decision for the EA. After consideration of the analysis contained in the EA and review of public comments, a Decision and Finding of No Significant Impact (FONSI) was issued on July 1, 2013. The Decision and FONSI selected the proposed action to implement an integrated damage management program using multiple methods to adequately address the need to resolve bird damage.

PURPOSE

The purpose of the EA will remain as addressed in section 1.1 of the EA (USDA 2013). This Supplement to the EA examines potential environmental impacts of WS' program as it relates to: 1) new information that has become available from research findings and data gathering since the issuance of the Decision and FONSI in 2013, 2) the review of osprey (*Pandion haliaetus*), and 3) the inclusion of Canada geese (*Branta canadensis*), great black-backed gulls (*Larus marinus*), herring gulls (*Larus argentatus*), ring-billed gulls (*Larus delawarensis*), and laughing gulls (*Larus atricilla*) management activities to protect agriculture, property, natural resources and human health and safety.

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 Rhode Islands in Section 1.2 of the EA (USDA 2013). The need for action addressed in the EA remains applicable to this Supplement since Canada geese and gulls impact the resources listed in the EA similarly to the other species analyzed in the EA.

Some species of wildlife have adapted to and have thrived in human altered habitats. Birds, including Canada geese, great black-backed gulls, herring gulls, ring-billed gulls, and laughing gulls in particular, 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 in Rhode Island arises from requests for assistance received by WS to reduce and prevent damage from occurring to four major categories. Those four major categories include agricultural resources, property, natural resources, and threats to human safety. WS has identified those bird species most likely to be responsible for causing damage to those four categories based on previous requests for assistance and assessments of the threat of bird strike hazards at airports.

RELATIONSHIP OF THIS DOCUMENT TO OTHER ENVIRONMENTAL DOCUMENTS

WS' Environmental Assessments - *Reducing Gull Damage through an Integrated Wildlife Damage Management Program in the State of Rhode Island* (USDA 2008) and *Reducing Canada Goose Damage throughout the State of Rhode Island* (USDA 2010): WS has previously developed EAs that analyzed the need for action to manage damage associated with great black-backed, herring, ring-billed, and laughing gulls and Canada geese. The gull EA identified issues associated with gull damage to property, agriculture, and natural resources, threats to aviation safety and human health and safety related to gulls and analyzed alternatives to address those issues. After review of the analyses in the EA, a Decision and Finding of No Significant Impact (FONSI) were signed on July 9, 2008, selecting the proposed action to implement an integrated approach to managing damage and threats caused by gulls. Similarly, the Canada goose EA identified issues associated with goose damage management and analyzed alternatives to address those issues. After review of the analyses in the EA, a FONSI was signed on August 5, 2010, selecting the proposed action to implement an integrated approach to managing goose damage.

Changes in the need for action and the affected environment have prompted WS and cooperating agencies to initiate this new analysis for gulls and Canada geese into this Supplement addressing the need for bird damage management. This Supplement to the EA will address more recently identified changes and will assess the potential environmental impacts of program alternatives based on a new need for action, primarily a need to address damage and threats of damage associated with gulls and Canada geese. Since activities conducted under the previous EAs will be re-evaluated under this EA to address the new need for action and the associated affected environment, the previous EAs that addressed gulls and Canada geese will be superseded by this analysis and the outcome of the Decision issued based on the analyses in this Supplement to the EA.

AUTHORITY AND COMPLIANCE

WS' activities to reduce damage and threats associated with wildlife are regulated by federal, state, and local laws and regulations. The authority of WS and other agencies along with compliance with relevant laws and regulations are discussed in detail in section 1.6 of the EA (USDA 2013). Compliance with laws and regulations not directly addressed in the EA will be discussed 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. The USFWS and the RIDEM provided input throughout the EA preparation to ensure an interdisciplinary approach in compliance with NEPA and agency mandates, policies, and regulations.

SCOPE OF ANALYSIS

The EA and this Supplement evaluate gull and Canada goose 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 the EA.

Actions Analyzed

The EA evaluates the need for bird damage management to reduce threats and damage occurring to agriculture, property, natural resources, and human health and safety wherever such management is requested from the WS program. This Supplement discusses the issues associated with continuing bird damage management to meet the need for action while addressing those issues.

WS uses a decision model based on a publication by Slate et al. (1992) which involves evaluating each threat or damage situation, taking action, evaluating the action, and monitoring results of the actions taken. The published article provides more detail on the processes used in WS' Decision Model. WS' personnel use the Decision Model to develop the most appropriate strategy to reduce damage and to determine potential environmental effects from damage management actions (Slate et al. 1992).

The methods available for use under the alternatives evaluated are provided in Appendix B of the EA (USDA 2013). The alternatives and Appendix B in the EA also discuss how methods would be employed to manage damage and threats to agriculture, property, natural resources, and human health and safety.

The Migratory Bird Treaty Act (MBTA) makes it unlawful to pursue, hunt, take, capture, kill, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or their parts, nests, or eggs (16 U.S.C 703-711). A list of bird species protected under the MBTA can be found in 50 CFR 10.13.

The MBTA does allow for the lethal take of those bird species listed in 50 CFR 10.13 when depredation occurs through the issuance of depredation permits or the establishment of depredation orders. Under authorities in the MBTA, the USFWS is the federal agency responsible for the issuance of depredation permits or the establishment of depredation orders for the take of those protected bird species when damage or threats of damage are occurring. Information regarding migratory bird permits can be found in 50 CFR 13 and 50 CFR 21.

The USFWS is a cooperating agency on this Supplement to analyze cumulative take of migratory birds from the issuance of depredation permits. The USFWS has jurisdiction over the management of migratory birds and has specialized expertise in identifying and quantifying potential adverse effects to the human environment from bird damage management activities. The analyses in this Supplement and the analyses in the EA would ensure the compliance of the USFWS with the NEPA for the issuance of depredation permits for the take of osprey, great black-backed gulls, herring gulls, ring-billed gulls, laughing gulls, and Canada geese.

Native American Lands and Tribes

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

Federal, State, County, City, and Private Lands

Under four of the alternatives analyzed in detail, WS could continue to provide damage management activities on federal, state, county, municipal, and private land in Rhode Island when a request is received for such services by the appropriate property owner or manager. In those cases where a federal agency requests WS' assistance with managing bird damage management, the requesting agency would be responsible for analyzing those activities in accordance with the NEPA. However, the EA and this Supplement would cover such actions if the requesting federal agency determined the analyses and scope of the EA and this Supplement were appropriate for those actions and the requesting federal agency adopted the EA through their

own Decision based on the analyses in the EA and Supplement. Therefore, actions taken on federal lands have been analyzed in the scope of the EA and this Supplement to the EA.

Period for which this EA is valid

If the analyses in this Supplement indicates an EIS is not warranted, the EA, as supplemented, would remain valid until WS, in consultation with the USFWS and the RIDEM, determines that new needs for action, changed conditions, new issues, or new alternatives having different environmental impacts must be analyzed. Monitoring of activities ensures the EA remains appropriate to the scope of damage management activities conducted by WS.

Site specificity

The site specificity of the EA will remain as addressed in section 13 of the EA (USDA 2013). The EA analyzes the potential impacts of bird damage management and addresses activities on all public and private lands within the State of Rhode Island under MOUs, Cooperative Agreements, and in cooperation with the appropriate public land management agencies. It also addresses the impacts of bird management in areas where additional agreements may be signed in the future.

The analyses in the EA and this Supplement are intended to apply to any action that may occur in any locale and at any time within the State of Rhode Island. In this way, WS believes it meets the intent of the NEPA with regard to site-specific analysis and that this is the only practical way for WS to comply with the NEPA and still be able to address bird damage and threats to agriculture, property, natural resources, and human health and safety.

Public Involvement

Issues related to the proposed action were initially developed by an interdisciplinary team involving the RIDEM and USFWS. This multi-agency team refined the issues and identified preliminary alternatives. An invitation for public comment letter on the pre-decisional EA was sent to 56 individuals or organizations identified as interested in Rhode Island WS or RIDEM projects. Notice of the proposed action and invitation for public involvement on the pre-decisional EA was placed in the *Providence Journal* newspaper with statewide circulation. There was a 31-day comment period for the public to provide input on the pre-decisional EA. One comment letter was received from the public after review of the pre-decisional EA. All comments were analyzed to identify substantial new issues, alternatives, or to redirect the program. A Decision and FONSI was signed for the EA on July 1, 2013. No comments were received.

This Supplement, along with the EA (USDA 2013), 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 *Providence Journal*, 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.

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 Rhode Island, and 2) Do the alternatives have significant cumulative impacts meriting an Environmental Impact Statement (EIS)?

ISSUES ADDRESSED IN DETAIL

The issues analyzed in detail are discussed in Chapter 2 of the EA (USDA 2013). Alternatives developed and identified during the development of the EA to address those issues are discussed in Chapter 3 of the EA (USDA 2013). The following issues were identified during the scoping process for the EA:

- Effects on Target Species Populations
- Effects of Control Methods on Non-target Wildlife Species Populations, Including T&E Species
- Effects of Control Methods on Human Health and Safety
- Effects on the Aesthetic Values of Birds
- Humaneness and Animal Welfare Concerns of Methods
- Effects of Bird Damage Management Activities on the Regulated Harvest of Birds
- Effectiveness of Bird Damage Management Methods

Based on those damage management activities conducted previously by WS since the Decision and FONSI were signed in 2013 and in consultation with the USFWS and the RIDEM, no additional issues have been identified that require detailed analyses. Those issues identified during the development of the EA remain applicable and appropriate to resolving damage and threats of damage associated with birds, including osprey, gulls, and Canada geese.

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 (USDA 2013). In addition, Chapter 4 of the EA analyzes the environmental consequences of each alternative as those alternatives relate to the issues identified (USDA 2013). 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 through Technical Assistance Only
- 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 in the State of Rhode Island uses many such SOPs which are discussed in detail in Chapter 3 of the EA (USDA 2013). Those SOPs would be incorporated into activities conducted by WS when addressing bird damage management.

ENVIRONMENTAL CONSEQUENCES FOR ISSUES ANALYZED IN DETAIL

The major issues are discussed in detail in Chapter 2 of the EA (USDA 2013). Alternatives developed and identified during the development of the EA to meet the need for action and to address those issues are discussed in Chapter 3 of the EA (USDA 2013). 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 (USDA 2013). 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 including Ospreys, Canada Geese, and Gulls

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 take 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 take 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 in Rhode Island (USDA 2013). WS' SOPs are designed to reduce the effects on bird populations and are discussed in section 3.4 of the EA (USDA 2013).

WS has provided direct damage management and technical assistance in response to requests for assistance in Rhode Island 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 (USDA 2013). 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. Further information on particular sources of information is provided below. These methods remain applicable as described in the 2013 EA unless noted below.

Partners in Flight Landbird Population Estimate

The BBS data are intended for use in monitoring bird population trends, but it is also possible to use BBS data to develop a general estimate of the size of bird populations. Using relative abundances derived from the BBS, Rich et al. (2004) extrapolated population estimates for many bird species in North America as part of the Partners in Flight Landbird Population Estimate database. The Partners in Flight system involves extrapolating the number of birds in the 50 quarter-mile circles (total area/route = 10 mi^2) survey conducted during the BBS to an area of interest. The model used by Rich et al. (2004) makes assumptions on the detectability of birds, which can vary for each species. Some species of birds that are more conspicuous (visual and auditory) are more likely to be detected during bird surveys when compared to bird species that are more secretive and do not vocalize often. Information on the detectability of a species is combined to create a detectability factor which may be combined with relative abundance data from the BBS to yield a population estimate (Partners in Flight Science Committee 2013).

Annual Harvest Estimate

Many bird species addressed in the EA are classified as game species by the USFWS and RIDEM as are Canada geese addressed in this Supplement to the EA and can be harvested during annual hunting seasons which are regulated by the USFWS and/or RIDEM. With management authority over migratory game birds, the USFWS and RIDEM can adjust take levels to ensure population objectives. WS reports all take to the

USFWS or RIDEM, depending on species, for consideration in the management of wildlife populations. Similarly, where available, harvest data is included in WS' analysis for magnitude of impact on populations.

Population Impact Analysis from WS' activities in Rhode Island from FY 2013 through FY 2014

WS has provided direct damage management and technical assistance in response to requests for assistance with bird damage and threats in Rhode Island since the completion of the EA and the Decision/FONSI signed in 2013. 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 bird species. Between FY 2013 and FY 2014, WS non-lethally dispersed a total of 827,254 birds of 30 species, killed a total of 1,979 birds of 18 species, relocated 14 birds of four species, and destroyed 8 nests of two species (Table 1).

Table 1 – Species non-lethally dispersed, lethally removed, live captured and relocated, and nests destroyed by WS during bird damage management activities in Rhode Island, FY 2013 – FY 2014

	# Dispersed		# Killed		Relocated		Nests Destroyed	
Species	2013	2014	2013	2014	2013	2014	2013	2014
Blackbirds, Red-winged	30	0	0	0	0	0	0	0
Buntings, Snow	175	267	0	24	0	0	0	0
Cormorant, Double-crested	7	16	14	15	0	0	0	0
Cowbirds, Brown-headed	1,250	6,250	43	6	0	0	0	0
Crows, American	3,998	18,418	66	105	0	0	0	0
Doves, Mourning	88	79	4	2	0	0	0	0
Ducks, American Black	1,417	1,551	2	6	0	0	0	0
Ducks, Common Eider	8	0	0	0	0	0	0	0
Ducks, Mallard	1,536	1,549	10	18	0	6	0	0
Ducks, Hooded Merganser	0	25	0	0	0	0	0	0
Egrets, Cattle	0	0	2	0	0	0	0	0
Egrets, Great	0	1	0	1	0	0	0	0
Falcons, American Kestrel	55	68	0	0	0	2	0	0
Grackles, Common	0	35	0	0	0	0	0	0
Hawks, Northern Harrier	8	13	0	0	0	0	0	0
Hawks, Red-tailed	89	80	0	0	0	1	0	0
Herons, Great Blue	6	42	2	0	0	0	0	0
Killdeers	199	93	0	0	0	0	0	0
Larks, Horned	342	199	0	0	0	0	0	0
Ospreys	4	14	11	8	0	0	0	1
Owls, Snowy	0	6	0	0	0	5	0	0
Pigeons, Rock (Feral)	9	0	21	2	0	0	7	0
Robins, American	2,384	50	0	0	0	0	0	0
Sparrows, House (English)	211	25	0	0	0	0	0	0
Starlings, European	161,629	621,448	637	807	0	0	0	0
Swallows, Bank	0	11	0	0	0	0	0	0
Swallows, Barn	111	100	19	0	0	0	0	0
Swallows, Tree	300	1,000	42	28	0	0	0	0
Swans, Mute	2	1	3	3	0	0	0	0
Turkeys, Eastern Wild	223	50	37	16	0	0	0	0
Vulture, Turkey	205	1,577	22	3	0	0	0	0
Total	**174,286**	**652,968**	**935**	**1,044**	**0**	**14**	**7**	**1**

With the exception of osprey, during FY 2013, all lethal take and nest destruction of target bird species in the EA (USDA 2013) was below the annual level of take analyzed. Osprey only exceeded the analyzed annual take by one individual during FY 2013.

Osprey Biology and Population Impacts Analysis

MA population estimate:	140*	New England/Mid-Atlantic BBS, 1966-2013:	7.38%
IUCN Status:	Least Concern	New England/Mid-Atlantic BBS, 2003-2013:	8.76%
RI CBC Trend 1975-2013:	Increasing	Eastern BBS, 1966-2013:	3.69%
WS proposed take:	15	Eastern BBS, 2003-2013:	6.29%
WS proposed nests with eggs:	5	Cumulative take as % of state population:	10.7%
WS take as % of state population:	10.7%		

*Estimates from Rich et al. 2004

WS has responded to requests for assistance involving osprey during FY 2013 and FY 2014 by providing technical assistance and by providing direct operational assistance using shooting, nest and egg removal and destruction and non-lethal harassment methods to disperse osprey. WS analyzed lethal take up to ten ospreys and destruction of up to five active osprey nests annually to alleviate damage and threats. However, during FY 2013, WS was requested to lethally remove eleven ospreys to reduce threats at three airports. Based on previous need to take more than ten ospreys in on year, anticipated additional requests for assistance to manage damage associated with osprey, and in anticipation of additional efforts, anticipated annual take of osprey will increase to 15.

Based on BBS data, Rich et al. (2004) estimated the statewide population of osprey was 140 birds when the EA was prepared in 2013. Currently the Partners in Flight Science Committee (PFSC 2013) does not have a current estimate of the osprey population in Rhode Island. Ospreys are listed as a species of concern by the RIDEM based on the status of breeding population in Rhode Island. As stated in the EA (2013), migratory bird species that are state, but not federally, listed may be lethally taken legally in Rhode Island under USFWS depredation permits approved and co-signed by RIDEM. Because many of the conflicts caused by osprey involve nesting activity, all of this take could occur during the nesting season.

Direct, Indirect, and Cumulative Effects:

Based on the best scientific data, WS proposed removal level will have no adverse direct effects on osprey populations. Additionally, the potential authorized removal from all non-WS entities combined with WS proposed removal is not expected to create adverse cumulative impacts. The permitting of the removal by the USFWS and the RIDEM pursuant to the MBTA ensures removal by WS and by other entities occurs within allowable removal levels to achieve the desired population objectives for osprey in Rhode Island.

Canada Geese

RI population estimate:	5,433*	Average annual harvest, 2010-2014:	3,228
IUCN Status:	Least Concern	WS proposed take:	700
RI CBC Trend 1966-2013:	Increasing	WS proposed nests with eggs:	350
RI BBS, 1966-2012:	10.94%	WS take as % of state breeding population:	12.88%
RI BBS, 2002-2012:	8.77%	Cumulative take as % of state population:	72.30%
Eastern BBS, 1966-2012:	12.85%	New England/Mid-Atlantic BBS, 1966-2012:	8.54%
Eastern BBS, 2002-2012:	11.95%	New England/Mid-Atlantic BBS, 2002-2012:	8.17%

*Estimate from 2014 Atlantic Flyway Breeding Waterfowl Plot Survey (Klimstra et al. 2014)

There are two types of Canada geese that inhabit Rhode Island during the year, resident and migratory. Canada geese are considered resident in the state when nesting and/or residing on a year around basis, when nesting in the state during the months of March, April, May, or June, or residing in the state during the months of April, May, June, July, August (Rusch et al. 1995, Ankney 1996, USFWS 2005). Most requests for assistance received by WS occur under the criteria where geese present are considered resident.

Resident Canada Geese

The annual Atlantic Flyway Breeding Waterfowl Plot Survey population estimates for resident Canada geese in the State from 2010 through 2014 (Klimstra et al. 2014) are shown in Table 2. In 1999, the population objective for resident Canada geese in the state was established at 3,000 individuals (Atlantic Flyway Council 2011, USFWS 2005).

Canada geese can be harvested during regulated hunting seasons. Under frameworks developed by the USFWS, the RIDEM allows Canada geese to be harvested during a September hunting season, the regular waterfowl season, and during a late Canada goose season. To manage increasing populations of resident geese across their range, the USFWS established a framework that allowed the states to implement a harvest season in September which is intended to target resident geese specifically.

The take of geese under the depredation orders that allow for the take of Canada geese once certain conditions have been met must be reported to the USFWS. Therefore, the cumulative impacts of the proposed action on resident Canada geese populations are based upon the anticipated WS' take, hunter harvest, and authorized take by other entities (e.g., agricultural producers, municipalities, homeowners associations, airports) through the issuance of depredation permits or under the depredation orders. The cumulative take of geese in Rhode Island from 2010 through 2014 is shown in Table 2.

Table 2. Resident Canada goose population estimates and number addressed and harvested in Rhode Island from FY 2010 to FY 2014

Year	Estimated Population[1]	Hunter Harvest[2]	Dispersed by WS[3]	Total Take Authorized by USFWS[4]	Take under Depredation Permits		
					WS' Take[3]	Non-WS' Take[5]	Total Take by All Entities
2010	6,471	2,800	835	375	101	103	204
2011	9,688	4,165	457	490	135	135	270
2012	5,023	2,931	4,837	715	676	329	1,005
2013	7,382	1,531	17,579	775	283	440	723
2014	4,038	4,715	21,933	955	242	410	652
AVERAGE	**6,520**	**3,228**	**9,128**	**662**	**287**	**283**	**571**

[1] Estimate based on Atlantic Flyway Breeding Waterfowl Plot Survey (Klimstra et al. 2014)
[2]Raftovich et al 2014, Raftovich et al 2012, Raftovich et al 2010
[3]WS' take is reported by federal fiscal year
[4]Data provided by the USFWS (J. Ratcliffe, USFWS pers. comm. 2014)
[5]Data reported by calendar year

As part of an integrated approach, WS has also employed pyrotechnics, human presence, the noise associated with the discharge of a firearm, and other non-lethal methods to disperse 45,641 geese between FY 2010 and FY 2014, averaging 9,128 annually. Of the total number of geese addressed by WS from FY 2010 through FY 2014, over 96.95% were addressed using non-lethal methods.

Direct, Indirect, and Cumulative Effects:
Based on previous requests for assistance, WS anticipates up to 700 geese total could be lethally taken by WS annually based on previous requests for assistance and in anticipation of the need to address additional requests for assistance, including take that could occur at airports. In addition, the nests and/or eggs of resident Canada geese could be destroyed by WS as part of an integrated approach to managing damage. Under the proposed action alternative, up to 350 nests could be destroyed annually by WS. WS' take of nests and/or eggs would only occur when permitted by the or through registration with USFWS. No nest treatment of resident Canada geese would occur by WS without a depredation permit issued by the USFWS and co-signed by the RIDEM or as an agent on an online registration issued by the USFWS. Therefore, WS take would only occur at the discretion of the USFWS after population objectives for geese are considered.

Based on the best scientific data, WS proposed removal level will have no adverse direct effects on the resident goose population. Additionally, the potential authorized removal from all non-WS entities combined with WS proposed removal is not expected to create adverse cumulative impacts.

Migratory Canada Geese

Migratory Canada geese breed in Canada and Alaska and winter in the continental United States. Breeding populations that winter in Rhode Island are typically from three breeding populations. These are the North Atlantic Population (NAP), Southern James Bay Population (SJBP), and the Atlantic Population (AP) of Canada geese. Under field conditions, distinguishing geese between population segments can be difficult. Determining whether a Canada goose present in the state is migratory or a resident (i.e., present in the state throughout the year) can also be difficult under field conditions. Therefore, for the purposes of this analyses, those Canada geese present in the state from September through March will be considered as migratory geese, although resident geese regularly begin nesting in March throughout the state and nesting geese can be clearly identified as being resident.

Frameworks have been established by the USFWS and implemented by the RIDEM to allow for the harvest of geese during those months when geese present in the state could be migratory. The September season is intended to manage populations of resident geese. Although migratory geese could be present during September, the majority of geese present are likely geese that nested within the state. This is based on band recovery data, collar observations, and radio satellite data which indicate that the September season is virtually entirely free of migratory birds in neighboring Massachusetts (H. Heusmann, MDFW pers. comm. 2011). Dunn and Jacobs (2000) found that from 1992 through 1999, 4.1% of the banded geese harvested in Pennsylvania during a special September season were identified as migrant geese from either the SJBP (n=24) or the AP (n=5) of Canada geese.

From FY 2010 through FY 2014, a total of 243 geese were lethally taken by WS during the period when geese present could be considered migratory (September through March) or approximately 48.6 geese per year. This represents 16.91% of the 1,437 geese taken by WS during the same time period. However, based on increasing requests for assistance to manage geese, WS may be required to lethally take geese during those months when geese could be considered migratory, if deemed appropriate through the use of the WS Decision Model. WS anticipates that requests for the lethal take of geese during those months when geese are considered migratory would occur primarily at airports where geese can pose a threat to human safety and to property. However, requests could be received to reduce damage or threats to other resources. Based on an increase in the number of requests received for the lethal take of geese during those periods of time when geese present would be considered migratory, WS may take up to 200 geese annually during those periods when geese could be considered migratory.

Direct, Indirect, and Cumulative Effects:
All take by WS occurs through the issuance of a depredation permit issued by the USFWS which is reported annually to the USFWS. All take of geese during the hunting seasons occur under frameworks established by the USFWS. Take by other entities occurs under depredation permits or depredation orders established by the USFWS with the requirement that take be reported to the USFWS. Therefore, the permitting of the take by the USFWS and the RIDEM ensures cumulative take is considered as part of management objectives for Canada geese. WS' cumulative take of up to 200 geese that could be considered migratory annually would have represented almost 4.24% of the number of geese harvested during the 2014 Canada goose seasons which ran from September 2013 to February 2014. According to Lindberg and Malecki (1994) resident geese were harvested proportionally more than their availability in the population while migrants were harvested proportionally less than their availability in Crawford County, Pennsylvania during 1988 and 1989.

No take of migratory geese would occur by WS without a depredation permit issued by the USFWS. Therefore, WS take would only occur at the discretion of the USFWS after population objectives for geese are considered. Based on the best scientific data, WS proposed removal level will have no adverse direct effects

on the migrant goose population. Additionally, the potential authorized removal from all non-WS entities combined with WS proposed removal is not expected to create adverse cumulative impacts.

Great Blacked-backed Gull, Herring Gull, Ring-billed Gull and Laughing Gull Population Impact Analysis

Biological assessments for identifying the potential impact of harvest and/or removal programs on bird populations have a long history of application in the United States. Population modeling and extensive monitoring programs form the basis of an adaptive decision-making process used each year for setting migratory game bird harvest regulations, while ensuring that levels of take are sustainable. Increasing human-wildlife conflicts caused by migratory bird species (both game and nongame), and their potential impacts on sensitive species and their habitats, has resulted in greater use of analytical tools to evaluate the effects of authorized take to achieve population objectives (Runge et al. 2009). One such tool is referred to as the Potential Biological Removal (PBR) model (Wade 1998, Runge et al. 2004).

The USFWS completed PBR models for great black-backed gulls, herring gulls, ring-billed gulls, and laughing gulls that nest in BCR 14 and BCR 30. All of Rhode Island lies within BCR 30. BCR 14 and BCR 30 cover most of the coastal and inland areas of the upper northeastern United States. Since population estimates and trends for gulls in Rhode Island are limited, the PBR models developed by the USFWS for BCR 14 and BCR 30 will be used to analyze potential population impacts under the proposed action alternative.

Allowable harvest models for bird species have had a long history of use in the United States, primarily with waterfowl species, to determine allowable harvest during annual hunting seasons. Although no hunting season exists for gulls, the take of gulls under depredation permits issued by the USFWS and the RIDEM can occur in Rhode Island. The USFWS prepared PBR models using population parameters for each gull species to estimate the allowable take level for gulls in BCR 14 and BCR 30. Population parameter estimates were taken from available literature for each gull species (see Table 2), or in cases where estimates were not available, surrogate estimates from closely-related species were used (Seamans et al. 2007). Because there was uncertainty associated with demographic parameter estimates, allowable take levels were calculated using a simulation approach to estimate a range of R_{max} values with parameter estimates randomly drawn from normal distributions based on reported standard errors (see Table 3; Seamans et al. 2007).

Table 2 - Demographic parameter estimates (θ) used for estimating R_{max} and Potential Biological Removal of gulls in BCR 14 and BCR 30 (Seamans et al. 2007).

		Great black-backed gull[1]		Herring gull[2]		Ring-billed gull [3]		Laughing gull [4]	
Parameter	**Age class**	**(θ)**	**SE (θ)**	**(θ)**	**SE (θ)**	**(θ)**	**SE (θ)**	**(θ)**	**SE (θ)**
p	Adult	0.87	0.03	0.87	0.03	0.87	0.03	0.87	0.03
$l\alpha$	Adult	0.42		0.42		0.56		0.56	
	Hatch Year	0.729	0.035	0.729	0.035	0.729	0.035	0.729	0.035
	Second Year	0.886	0.024	0.886	0.024	0.886	0.024	0.886	0.024
b		0.784	0.018	0.752	0.022	0.752	0.022	0.752	0.022
α		5		5		3		3	
ω		19		20		19		19	
N_{min}		250,000		390,000		54,000		270,000	
R_{max}		0.09	0.027	0.086	0.027	0.113	0.036	0.113	0.036

[1] Good 1998
[2] Pierotti and Good 1994
[3] Ryder 1993, Seamans et al. 2007
[4] Burger 1996, Dinsmore and Schreiber 1974

To use the PBR method to determine levels of allowable take, or cumulative impacts over a large geographic

area, the information required includes a minimum estimate of the population size using science-based monitoring programs (e.g., BBS, CBC, coordinated colony surveys) and the intrinsic rate of population growth. The formula for PBR is:

$$PBR = ½ R_{max} N_{min} F_R$$

where R_{max} is the maximum population growth rate at low densities and in the absence of removal, N_{min} is the minimum population size, and F_R is a recovery factor ranging from 0.1 to 2.0 (Runge et al. 2004). The recovery factor is a qualitative assessment that is typically set at low levels for endangered ($F_R = 0.1$) or threatened species ($F_R = 0.5$; Taylor et al. 2000), or if the status of the population is poorly known (Runge et al. 2004). However, using a recovery factor above 1.0 has been discussed for species in which the management objective is to hold the population at a smaller fraction of its carrying capacity (Runge et al. 2009).

To estimate R_{max} for gulls, the Slade formula (Slade et al. 1998) was used:

$$1 = p\lambda^{-1} + 1_{\alpha}\, b\lambda^{-\alpha} - l_{\alpha} bp^{(\omega-\alpha+1)}\, \lambda^{-(\omega+1)}$$

where p is adult annual survival rate, $l\alpha$ is the survival rate from birth to age at first reproduction, b is the number of female offspring per female of reproductive age per year, α is the age at first reproduction, ω is the age at last reproduction, and λ is the intrinsic rate of population change. After solving the above equation for λ, R_{max} was estimated as $\ln(\lambda)$.

Population estimates (N_{min}) for each species were based on the number of gulls at known breeding colonies in BCR 14 and BCR 30 during the mid-1990s (Waterbird Conservation for the Americas 2007), and adjusted using a conservative estimate of 0.75 non-breeding gull per breeder to estimate the total population (Seamans et al. 2007). Allowable take levels (± 95% CI) for each of the four gull species addressed in this Supplement under three recovery factors (0.5, 1.0, 1.5) in BCR 14 and BCR 30 are presented in Table 4.12.

The PBR models were developed by the USFWS for BCR 14 and BCR 30 to evaluate harvest levels for gulls in the northeastern United States to ensure take occurred within levels to achieve desired population objectives for those species. The four gull species addressed in this assessment are known to breed along coastal areas and inland sites that are contained within BCR 14 and BCR 30. Some concerns arise regarding the use of regional gull population estimates for assessing allowable take in BCR 14 and BCR 30 as opposed to the more specific breeding population estimates in Rhode Island. To address those concerns, the analyses for each species will include the evaluation of proposed take levels as they relate to the statewide breeding population, and how the proposed take relates to the PBR model for gulls in BCR 14 and BCR 30.

Table 3 - Potential Biological Removal (± 95% CI) of gulls in BCR 14 and BCR 30 under three recovery factors (Seamans et al. 2007).

Species	$F_R = 0.5$	$F_R = 1.0$	$F_R = 1.5$
Great Black-backed Gull	5,614 (2,764 – 8,358)	11,234 (5,561–16,670)	16,853 (8,364–25,086)
Herring Gull	8,360 (3,892– 12,656)	16,725 (7,788–25,397)	25,048 (11,716–37,875)
Ring-billed Gull	1,532 (713–2,318)	3,065 (1,455–4,634)	4,588 (2,161–6,951)
Laughing Gull	7,685 (3,927–12,685)	15,274 (7,188–23,042)	26,044 (10,798–34,818)

Most states in the northeastern United States conduct colonial waterbird surveys to determine breeding population trends for many colonial waterbirds, including gulls. Most state-level population estimates are provided as the number of breeding pairs of gulls surveyed. Therefore, one breeding pair equals two gulls. Gulls are migratory bird species and the breeding population of gulls estimated at the state-level is only representative of the number of gulls present in a state during a short period of time (i.e., during the breeding season). The breeding colony surveys do not account for migratory gulls present during the winter, nor do they account for the population of non-breeding gulls (i.e., sub-adults and non-breeding adults) present during the breeding season. Therefore, to better account for the mobility of gulls and the fact that gulls present in the northeastern United States are likely gulls that nest and migrate throughout BCR 14 and BCR 30, the USFWS

developed models based on the geographical scope of the nesting populations of gulls. In addition, PBR models developed by the USFWS are based on breeding and non-breeding gulls, as opposed to colonial waterbird surveys. PBR models estimate allowable take by calculating a total population for each gull species using 0.75 non-breeding gulls for every breeding adult. Since the take of gulls to alleviate damage can occur throughout the year and not just during the breeding season, a comprehensive model like the PBR that includes non-breeding populations of gulls allows for a more systemic analysis of allowable take on gull populations.

The level of annual take evaluated for each gull species under the proposed action was based on the number of gulls lethally taken during requests received by WS in Rhode Island from FY 2010 through FY 2014. As the number of requests for assistance received by WS increases, the number of gulls that are addressed to alleviate damage is also likely to increase. Based on prior requests for assistance, WS anticipates requests to alleviate damage associated with gulls to increase at airports, military installations, landfills, transfer stations, and building rooftops. WS also anticipates an increase in requests to alleviate predation and nest site competition with other colonial nesting waterbirds.

Great Black-backed Gull Biology and Population Impacts

S. New England (SNE) pop. est.:	25,528*	Highest annual non-WS take, 2010-2014:	163
IUCN Status:	Least Concern	WS proposed take:	200
RI CBC Trend 1966-2013:	Increasing	WS proposed nests with eggs:	100
WS take as % of SNE population:	0.78%	Cumulative take as % of SNE population:	1.42%
Eastern BBS, 1966-2013:	-4.78%	New England/Mid-Atlantic BBS, 1966-2013:	2.31%
Eastern BBS, 2003-2013:	-1.26%	New England/Mid-Atlantic BBS, 2003-2013:	7.51%

*Waterbird Conservation for the Americas 2007

In BCR 14, the breeding population of great black-backed gulls has been estimated at 115,546 birds and in BCR 30, the breeding population of great black-backed gulls has been estimated at 37,372 birds (Waterbird Conservation for the Americas 2007). Great black-backed gulls have increased about 39% across the entire 13 northeast states in the region from the 1970s through the 1990s (Waterbird Conservation for the Americas 2007). In the United States, great black-backed gull breeding populations have increased 109% from the 1970s to 1990s (Waterbird Conservation for the Americas 2007).

CBC data gathered in Rhode Island, from 1966 through 2013, shows the number of great black-backed gulls observed during surveys to be increasing (NAS 2010). In the Eastern BBS Region, populations are decreasing at an estimated rate of -2.31% annually since 1966. However, estimates for the New England/Mid-Atlantic Coast indicate populations are increasing at a rate of 7.51% in the past decade.

Table 4 shows the authorized take of great black-backed gulls in Rhode Island permitted by the USFWS and the RIDEM, and the reported take for all entities receiving depredation permits.

Table 4 – Number of great black-backed gulls addressed in Rhode Island from FY 2010 through FY 2014

		Take under Depredation Permits							
Year	**Dispersed by WS[1]**	**Non-WS Authorized Nests[2]**	**WS Nests[1]**	**Non-WS Nests[2]**	**Total Nests**	**Authorized Take[2]**	**WS' Take[1]**	**Non-WS Take[2]**	**Total Take by All Entities**
2010	58	0	0	0	0	1,220	1	12	13
2011	152	500	89	0	89	1,120	86	163	249
2012	31,675	830	101	0	101	2,875	86	0	86
2013	14,950	140	0	0	0	2,575	85	0	85
2014	30,828	35	0	0*	0*	2,585	106	0*	106*
AVERAGE	**15,533**	**301**	**38**	**0**	**38**	**2,075**	**72**	**35**	**108**

[1]Data reported by federal fiscal year
[2]Data reported by calendar year
*Take reports for 2014 not complete when this EA was prepared

From FY 2010 to FY 2014, 1,505 great black-backed gull nests were authorized for take by non-WS entities and none were destroyed. During this period, WS destroyed 190 active great black-backed gull nests with eggs.

To maintain the current population levels in BCR 14 and BCR 30, the PBR model developed by the USFWS predicts take of 11,234 great black-backed gulls would not cause a decline in gull populations in BCR 14 or BCR 30. With $F_R = 0.5$ (recovery factor), the PBR predicted 5,614 great black-backed gulls could be harvested annually in BCR 14 and BCR 30 and still allow those populations to increase.

Direct, Indirect, and Cumulative Effects:

From 2010 through 2013, the latest year with complete take report data, the number of great black-backed gulls taken annually by all entities in the northeastern United States (USFWS Region 5) has ranged from 307 to 691 gulls with an average of 483 gulls (J. Ratcliffe, USFWS, pers. comm. 2015). This average annual take of 483 gulls is below the level of annual take required to maintain current population levels predicted by the PBR model. To cause a population decline, the PBR model estimates that nearly 17,000 great black-backed gulls would have to be taken annually in the region. If WS annual take reaches 200 great black-backed gulls and the take of great black-backed gulls remains similar to the average annual take that occurred from 2010 through 2014 in the northeastern United States, the combined total would not reach a magnitude that the PBR model predicts would result in a decline in the population of black-backed gulls in BCR 14 and BCR 30.

Increases in the number of requests for assistance to manage damage are likely to involve gull damage at airports, military installations, landfills, on rooftops, and involve reducing threats to natural resources. Based on those anticipated increases in requests for assistance, WS could lethally take up to 200 great black-backed gulls and 100 nests (and eggs) annually under the proposed action alternative in Rhode Island. The permitting of take by the USFWS and the RIDEM provides outside evaluation to ensure WS' take occurs within the allowed limits to achieve desired population objectives.

The destruction of up to 100 great black-backed gull nests (and eggs) annually by WS would occur in localized areas where nesting takes place and would not reach a level where adverse effects on great black-backed gull populations would occur. As with the lethal take of gulls, the take of nests must be authorized by the USFWS and the RIDEM. Therefore, the number of nests taken by WS annually would occur at the discretion of the USFWS and the RIDEM. Based on the best scientific data, WS proposed removal level will have no adverse direct effects on the black-backed gull population. Additionally, the potential authorized removal from all non-WS entities combined with WS proposed removal is not expected to create adverse cumulative impacts.

Herring Gull Biology and Population Impacts

S. New England (SNE) pop. est.:	36,256*	Highest annual non-WS take, 2010-2014:	479
IUCN Status:	Least Concern	WS proposed take:	750
RI CBC Trend 1966-2013:	Decreasing	WS proposed nests with eggs:	1,000
RI BBS, 1966-2013:	-11.44	WS take as % of SNE population:	2.07%
RI BBS, 2003-2013:	-11.57	Cumulative take as % of SNE population:	3.39%
Eastern BBS, 1966-2013:	-4.78%	New England/Mid-Atlantic BBS, 1966-2013:	2.31%
Eastern BBS, 2003-2013:	-1.26%	New England/Mid-Atlantic BBS, 2003-2013:	7.51%

*Waterbird Conservation for the Americas 2007

Herring gulls nest along the Atlantic coast using natural or man-made sites, such as rooftops and breakwalls. Herring gulls are increasingly nesting on man-made structures, particularly on rooftops or in areas with complete perimeter fencing such as electrical substations.

Almost 91,000 herring gulls are believed to breed in BCR 30. In addition, over 196,000 herring gulls are believed to breed in the neighboring BCR 14 (Waterbird Conservation for the Americas 2007). Herring gulls have decreased approximately 38% in the same area between 1970 and into the 1990s (Waterbird

Conservation for the Americas 2007). According to the Waterbird Conservation for the Americas (2007), herring gulls are considered a species of low concern in North America. .

CBC data gathered in Rhode Island from 1966 through 2013 indicates the number of herring gulls observed during surveys has shown a decreasing trend (NAS 2010). The number of herring gulls observed during BBS surveys from 2003 to 2013 has shown an increasing trend of 7.51% annually in the New England/Mid-Atlantic Region (Sauer et al. 2014). However, Rhode Island and the Eastern BBS Region displayed declining trends of -11.44% and -1.26% annually, respectively (Sauer et al. 2014). Existing BBS survey routes and coastal counts of nesting herring gulls may not sufficiently take into account the change in nesting behavior from islands to rooftops exhibited by numerous nesting herring gull pairs.

Herring gulls are protected under the MBTA, but can be taken pursuant to the issuance of a depredation permit by the USFWS and the RIDEM when gulls are causing or about to cause damage (see Table 5). Based on the PBR model, an allowable harvest of up to 16,725 herring gulls in BCR 14 and BCR 30 would maintain current population levels in those two regions. The take of herring gulls also occurs by other entities (e.g., airports, landfills) through depredation permits issued by the USFWS and the RIDEM.

Table 5 – Number of herring gulls addressed in Rhode Island from FY 2010 through FY 2014

Year	Dispersed by WS[1]	Take under Depredation Permits							
		Non-WS Authorized Nests[2]	WS Nests[1]	Non-WS Nests[2]	Total Nests	Authorized Take[2]	WS' Take[1]	Non-WS Take[2]	Total Take by All Entities
2010	1,472	20	25	0	25	700	39	533	572
2011	2,589	520	348	82	430	1,150	69	393	462
2012	688,146	1,162	774	72	846	3,255	1,266	0	1,266
2013	652,975	225	34	145	179	2,575	1,613	0	1,613
2014	1,362,564	100	16	4*	20*	2,585	1,087	0*	1,087*
AVERAGE	**541,549**	**405**	**239**	**60**	**300**	**2,053**	**814**	**185**	**1,000**

[1]Data reported by federal fiscal year
[2]Data reported by calendar year
*Take reports for 2014 USFWS depredation permits were not complete at the time this EA was prepared

Direct, Indirect, and Cumulative Effects:
From 2010 through 2013, the number of herring gulls taken annually by all entities in the northeastern United States (USFWS Region 5) has ranged from 2,633 to 5,556 gulls with an average of 4,445 gulls (J. Ratcliffe, USFWS, pers. comm. 2015). This average annual take of 4,445 gulls is below the level of annual take required to maintain current population levels predicted by the PBR model. To cause a population decline, the PBR model estimates that nearly 16,725 herring gulls would have to be taken annually in the region. If WS annual take reaches 750 herring gulls and the take of herring gulls remains similar to the take that occurred from 2010 through 2013 in the northeastern United States, the combined total would not reach a magnitude that the PBR model predicts would result in a decline in the population of herring gulls in BCR 14 and BCR 30.

The increase in the annual take level by WS in Rhode Island from FY 2011 to FY 2012 arises primarily from the increased requests to address damage associated with herring gulls at waste management facilities, airports, military installations, and rooftops. The take of 750 herring gulls would represent 1.92% of the estimated 91,000 herring gulls believed to breed in BCR 30. In addition to the lethal take of herring gulls, up to 1,000 nests (and eggs) could be destroyed annually to reduce damage and threats to human health and safety, property, agricultural resources, and natural resources.

Hence, WS' proposed take of up to 750 herring gulls and 1,000 nests (and eggs) annually, along with take by other entities, is expected to continue to be insignificant to the overall viability and reproductive success of herring gull populations on a local, regional, and nationwide scale. Known take of herring gulls is below the level that the PBR model predicts will cause a decline in the population in the northeastern United States from

take permitted by the USFWS and the RIDEM. The permitting of take by the USFWS and the RIDEM provides outside evaluation to ensure WS' take occurs within the allowed limits to achieve desired population management objectives for herring gulls in Rhode Island and the northeastern United States.

Based on the level of take since FY 2010 and the anticipation of requests to manage damage and threats to human health and safety, WS reasonably expects the need to lethally take herring gulls to increase, but would not exceed 750 herring gulls annually.

WS' potential impacts to populations of herring gulls has been, and is expected to continue to be, insignificant to the overall viability and reproductive success of herring gull populations on a local, regional, and nationwide scale. The permitting of take by the USFWS and the RIDEM provides outside evaluation to ensure WS' take occurs within the allowed limits to achieve desired population management objectives for herring gulls in Rhode Island and the northeastern United States. Based on the best scientific data, WS proposed removal level will have no adverse direct effects on the herring gull population. Additionally, the potential authorized removal from all non-WS entities combined with WS proposed removal is not expected to create adverse cumulative impacts.

Ring-billed Gull Biology and Population Impacts

BCR 14 population estimate:	40,844*	Highest annual non-WS take, 2010-2014:	214
IUCN Status:	Least Concern	WS take as % of BCR 14 population:	0.37%
RI CBC Trend 1966-2013:	Increasing	Cumulative take as % of BCR 14 population:	0.89%
WS proposed take:	150	New England/Mid-Atlantic BBS, 1966-2013:	1.89%
Eastern BBS, 1966-2013:	3.60%	New England/Mid-Atlantic BBS, 2003-2013:	3.10%
Eastern BBS, 2003-2013:	8.46%		

*Waterbird Conservation for the Americas 2007

New England/Mid-Atlantic populations of ring-billed gulls have increased at a rate of 3.10% from 2003 to 2013, with a regional breeding population estimated at 40,844 gulls (Waterbird Conservation for the Americas 2007). No breeding populations are currently known to occur in Rhode Island or anywhere else in BCR 30. However, ring-billed gulls can be found throughout the year and can be observed throughout most, if not all, of the State.

Ring-billed gulls are considered a species of lowest concern in BCR 14 and BCR 30 (Waterbird Conservation for the Americas 2007). CBC data from 1966 to 2013 shows a general increasing trend for wintering populations of ring-billed gulls throughout Rhode Island. In the EBBS and New England/ Mid-Atlantic Coast BBS region, the ring-billed gull population is also showing an increase annually (Sauer et al. 2014). There are no BBS observations for ring-billed gulls in Rhode Island (Sauer et al. 2014).

Ring-billed gulls are protected under the MBTA. However, take can occur pursuant to the MBTA through depredation permits issued by the USFWS and the RIDEM. WS' take of gulls occurs under permits issued to WS or under permits issued to cooperators where WS is acting as an agent on the permit. The USFWS-authorized take of ring-billed gulls in Rhode Island issued to all entities is shown in Table 6. In 2014, the USFWS authorized take of up to 2,570 ring-billed gulls for damage management purposes to all entities, which would comprise 6.29% of the population estimated at 40,844 gulls in BCR 14 if take had occurred at the authorized levels.

Direct, Indirect, and Cumulative Effects:

Based on the number of ring-billed gulls lethally taken from FY 2010 through FY 2014 and a reasonable anticipation of an increase in the number of requests for assistance, WS could lethally take up to 150 ring-billed gulls in Rhode Island as part of an integrated damage management program. WS anticipates an increase in the need to address damage and threats associated with ring-billed gulls at airports and waste management facilities.

Table 6 – Number of ring-billed gulls addressed in Rhode Island from FY 2010 through FY 2014

Year	Dispersed by WS[1]	Take under Depredation Permits			
		Authorized Take[2]	WS' Take[1]	Non-WS Take[2]	Total Take by All Entities
2010	0	120	1	0	1
2011	0	1,020	0	22	22
2012	1,102	2,520	23	9	32
2013	2,929	2,500	30	0	30
2014	1,180	2,570	17	0*	17
AVERAGE	**1,042**	**1,746**	**14**	**6**	**20**

[1]Data reported by federal fiscal year

[2]Data reported by calendar year

*Take reports for 2014 USFWS depredation permits were not complete at the time this EA was prepared

From 2010 through 2013, the number of ring-billed gulls taken annually in the northeastern United States (USFWS Region 5) has ranged from 2,224 to 3,001 ring-billed gulls with an average annual take of 2,573 ring-billed gulls (J. Ratcliffe, USFWS, pers. comm. 2015). The PBR model developed by the USFWS currently predicts that 3,065 ring-billed gulls could be taken annually to maintain the current breeding population levels in BCR 14 and BCR 30 (Waterbird Conservation for the Americas 2007). Non-breeding ring-billed gulls are also known to occur throughout BCR 14 and BCR 30 during the breeding season. Based on the known take of ring-billed gulls occurring annually in BCR 14 and BCR 30, the take level from all known sources has been below the estimated level that would result in a breeding population decline.

Based on the best available information described above, WS' potential impacts to populations of ring-billed gulls has been, and is expected to continue to be, insignificant to the overall viability and reproductive success of ring-billed gull populations on a local, regional, and nationwide scale. With management authority over migratory birds in Rhode Island, the USFWS and the RIDEM could impose stricter take limits if warranted based on population data. This should assure that cumulative impacts on ring-billed gull populations would have no significant adverse impact on the quality of the human environment.

Laughing Gull Biology and Population Impacts

S. New England (SNE) pop. est.:	13,524*	Highest annual non-WS take, 2010-2014:	0
IUCN Status:	Least Concern	WS proposed take:	100
RI CBC Trend 1966-2013:	Decreasing	WS proposed nests with eggs:	500
WS take as % of SNE population:	0.74%	Cumulative take as % of SNE population:	0.74%
Eastern BBS, 1966-2013:	2.47%	New England/Mid-Atlantic BBS, 1966-2013:	5.46%
Eastern BBS, 2003-2013:	4.22%	New England/Mid-Atlantic BBS, 2002-2013:	4.91%

*Estimated Population of BCR 30

Laughing gulls can be found nesting along the coastal areas of BCR 14 and BCR 30 with most breeding colonies occurring in BCR 30 (Waterbird Conservation for the Americas 2007). Over 200,000 laughing gulls nest along the coastal areas in BCR 30 and have been given a conservation rank of lowest concern (Waterbird Conservation for the Americas 2007). In BCR 14, nesting laughing gulls are estimated at 2,704 birds and have also been given a conservation rank of lowest concern (Waterbird Conservation for the Americas 2007). The breeding population of laughing gulls in the 1970s was estimated at 129,768 birds in 63 colonies. In the 1990s, the breeding population had increased to 205,348 laughing gulls in 275 colonies which represented a 58% increase in regional abundance (Waterbird Conservation for the Americas 2007). BBS trend data for laughing gulls in the Eastern BBS Region shows a statistically significant increasing trend estimated at 2.47% annually since 1966 with an estimated 4.22% increase occurring in the past decade (Sauer et al. 2014). In the New England/Mid-Atlantic Coast region, BBS trend data shows an increasing trend estimated at 5.46% annually since 1966 with a 4.91% increase occurring from 2003 through 2013 (Sauer et al. 2014). In Rhode

Island, there are no BBS estimates currently available for laughing gulls (Sauer et al. 2014). CBC data for laughing gulls observed overwintering in Rhode Island has shown a decreasing trend since 1966 (NAS 2010).

Laughing gulls are protected under the MBTA. However, take can occur pursuant to the MBTA through depredation permits issued by the USFWS and the RIDEM. WS' take of gulls occurs under permits issued to WS or under permits issued to cooperators where WS is acting as an agent on the permit. The take of laughing gulls in Rhode Island authorized by the USFWS is shown in Table 7.

Table 7 – Number of laughing gulls addressed in Rhode Island from FY 2010 through FY 2014

Year	Dispersed by WS[1]	Take under Depredation Permits		
		Authorized Take[2]	WS Take[1]	Non-WS Take[1]
2010	11	100	1	0
2011	2	400	0	0
2012	2	400	4	0
2013	130	400	0	0
2014	575	400	0	0
AVERAGE	**144**	**340**	**1**	**0**

[1]Data reported by federal fiscal year

[2]Data reported by calendar year

Direct, Indirect, and Cumulative Effects:

Based on the low number of laughing gulls lethally taken from FY 2010 through FY 2014 and a reasonable anticipation of an increase in the number of requests for assistance, WS could lethally take up to 100 laughing gulls and destroy or treat all eggs in up to 500 laughing gull nests as part of an integrated damage management program. WS anticipates an increase in the need to address damage and threats associated with laughing gulls at airports and waste management facilities, and from gulls nesting on rooftops.

From 2010 through 2013, the lethal annual take of laughing gulls by all entities in the northeastern United States (USFWS Region 5) has ranged from 1,882 to 4,385 gulls with an average annual take of 3,028 laughing gulls (J. Ratcliffe, USFWS, pers. comm. 2015). The PBR model for laughing gulls in BCR 14 and BCR 30 estimates that nearly 15,000 laughing gulls can be taken annually with no adverse effect on the current population. Current take levels from all known entities in the breeding range of laughing gulls has not exceeded the level of annual take that would cause a decline in the breeding laughing gull population based on the PBR model. Based on the increasing populations observed during summer and winter surveys and the cumulative take of laughing gulls in the northeastern United States being below the level where a decline would occur in the population, WS' take of laughing gulls since 2010, with the oversight of cumulative take by the USFWS, has not adversely affected laughing gull populations.

If WS lethally takes 100 laughing gulls and 500 laughing gull nests annually, and if the take of laughing gulls under depredation permits from 2010 through 2014 is indicative of future lethal take in the northeastern United States, the total take of gulls in BCR 14 and BCR 30 would range from 3,640 to 7,532 gulls with an average annual take of 6,418 laughing gulls. As stated previously, based on the PBR model developed for laughing gulls by the USFWS, up to 15,000 laughing gulls could be taken in BCR 14 and BCR 30 annually to maintain current population levels. The proposed total take of laughing gulls by WS evaluated in this assessment when included with take by all other entities would not exceed the level necessary to cause a decline in laughing gull populations based on the PBR model.

Based on the best available information described above, WS' potential impacts to populations of laughing gulls has been, and is expected to continue to be, insignificant to the overall viability and reproductive success of laughing gull populations on a local, regional, and nationwide scale. With management authority over migratory birds in the Rhode Island, the USFWS and the RIDEM could impose stricter take limits if

warranted based on population data. This should assure that cumulative impacts on laughing gull populations would have no significant adverse impact on the quality of the human environment.

Summary

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

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

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

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

The issue of non-target species effects, including effects on threatened and endangered (T&E) species, arises from the use of non-lethal and lethal methods identified in the alternatives. The use of non-lethal and lethal methods has the potential to inadvertently disperse, capture, or kill non-target wildlife. WS' SOPs are designed to reduce the effects of damage management activities on non-target species' populations which were discussed in the EA (USDA 2013). 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. No non-target species were killed or live captured during bird damage management activities since the Decision and FONSI were signed for the EA (USDA 2013).

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 take of non-targets from using those methods described in the EA is likely to remain low with take 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, the National Marine Fisheries Service, and the RIDEM showed that the listing of the rufa red knot (*Calidris canutus rufa*) and the long-eared bat (*Myotis septentrionalis*) has occurred since the completion of the EA in 2013. WS would continue to monitor both the federal and state lists of T&E species and would consult with the USFWS and the RIDEM to ensure future activities to manage bird damage and threats to human health and safety have no effect on newly listed species.

WS' program activities in Rhode Island to manage damage and threats caused by birds have not changed from those described in the EA. A review of those species listed in Rhode Island 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 2013, 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 (USDA 2013). 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 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.

Issue 5 – Humaneness and Animal Welfare Concerns of Methods

As discussed in the EA, humaneness, in part, appears to be a person's perception of harm or pain inflicted on an animal. People may perceive the humaneness of an action differently. The challenge in coping with this issue is how to achieve the least amount of animal suffering within the constraints imposed by current technology and funding.

Some individuals believe any use of lethal methods to resolve damage associated with wildlife is inhumane because the resulting fate is the death of the animal. Others believe that certain lethal methods can lead to a humane death. Others believe most non-lethal methods of capturing wildlife to be humane because the animal is generally unharmed and alive. Still others believe that any disruption in the behavior of wildlife is inhumane. With the varied attitudes on the meaning of humaneness, the analyses must consider the most effective way to address damage and threats caused by wildlife in a humane manner. WS is challenged with conducting activities and employing methods that are perceived to be humane while assisting those persons requesting assistance to manage damage and threats associated with wildlife. The goal of WS is to use methods as humanely as possible to effectively resolve requests for assistance to reduce damage and threats to human safety. WS continues to evaluate methods and activities to minimize the potential pain and suffering of wildlife when attempting to resolve requests for assistance.

WS' mission is to effectively address requests for assistance using methods in the most humane way possible that minimizes the stress and pain of the animal. WS' personnel are experienced and professional in their use of management methods, and methods are applied as humanely as possible. Methods used in wildlife damage management activities since the completion of the EA and their potential impacts on humaneness and animal welfare have not changed from those analyzed in the EA. Therefore, the analyses of the humaneness of methods used by WS during activities to protect native birds have not changed from those analyzed in the EA.

Issue 6 - Effects of Bird Damage Management Activities on the Regulated Harvest of Birds

The magnitude of WS' bird take for damage management purposes from FY 2013 and FY 2014 was low when compared to the total take of birds and when compared to the estimated statewide populations of those species. Since all take of birds is regulated by the USFWS and the RIDEM, the take of birds by WS that would occur annually and cumulatively would occur pursuant to established bird population objectives. WS' take of birds (combined take) annually to alleviate damage would be a minor component of the known annual take that occurs during the harvest seasons.

With oversight of bird take, the USFWS and the RIDEM maintains the ability to regulate take by WS to meet management objectives for birds. Therefore, the cumulative take of birds is considered as part of the USFWS and the RIDEM objectives for bird populations.

Issue 7 - Effectiveness of Bird Damage Management Methods

A major concern of wildlife damage management is the effectiveness of any damage management program and whether the proposed action or any of the alternatives would reduce such damage to more acceptable levels. This effectiveness could be defined in terms of losses or risks potentially reduced or prevented which is based on how accurately the practitioner diagnoses the problem, the species responsible for the damage, and how actions are implemented to correct or mitigate risks or damages. The most effective approach to resolving any damage problem is to use an adaptive integrated approach, which may call for the use of several management methods simultaneously or sequentially (Courchamp et al. 2003).

Effectiveness is based on the types of methods employed, the application of the method, restrictions on the use of the method(s), the skill of the personnel using the method and, for WS' personnel, the guidance provided by WS' Directives and policies. The goal of the WS' program is to reduce damage, risks, and conflicts with wildlife as requested. WS recognizes that localized population reduction could be short-term and that new individuals may immigrate, be released at the site, or be born to animals remaining at the site (Courchamp et al. 2003). The ability of an animal population to sustain a certain level of removal and to

eventually return to pre-management levels; however, does not mean individual management actions were unsuccessful, but that periodic management may be necessary.

Correlated with the effectiveness of methods at reducing or alleviating damage or threats would be the costs associated with applying methods to reduce damage or threats. If methods are ineffective at reducing or alleviating damage or if methods require re-application after initially being successful, the costs associated with applying those methods increases. An analysis of cost-effectiveness in many damage management situations is difficult or impossible to determine because the value of benefits may not be readily calculable and personal perspectives differ about damage. For example, the potential benefit of eliminating Canada geese from defecating on public use areas could reduce incidences of illness among an unknown number of users. Since some bird-borne diseases are potentially fatal, or severely debilitating, the value of the benefit may be high. However, no studies of disease problems with and without bird damage management have been conducted, and, therefore, the number of cases prevented because of damage management are not possible to estimate. In addition, it is rarely possible to prove conclusively birds were responsible for individual disease cases or outbreaks.

As part of an integrated approach to managing bird damage, WS has the ability to adapt methods to damage situations to effectively reduce or prevent damage from occurring. Under integrated approach implemented under the EA, all methods, individually or in combination, were employed as deemed appropriate through WS' Decision Model to address requests for assistance. WS' objective when receiving a request for assistance under the proposed action was to reduce damage and threats to human safety or to prevent damage from occurring using an integrated approach to managing bird damage. Therefore, WS employs methods to achieve that objective.

CEQ does not require a formal, monetized cost-benefit analysis to comply with the NEPA (40 CFR 1508.14) and consideration of this issue is not essential to making a reasoned choice among the alternatives. However, the methods determined to be most effective to reduce damage and threats to human safety caused by birds and that prove to be the most cost effective will receive the greatest application. As part of an integrated approach, evaluation of methods will continually occur to allow for those methods that are most effective at resolving damage or threats to be employed under similar circumstance where birds are causing damage or pose a threat. Additionally, management operations may be constrained by cooperator funding and/or objectives and needs. The cost effectiveness of methods and the effectiveness of methods are linked.

As stated in the EA, WS only provides assistance after a request has been received and a cooperative service agreement or other comparable document has been signed by WS and the requesting entity in which all methods used to address birds causing damage are agreed upon. Methods employed to manage bird damage, whether non-lethal or lethal, are often temporary with the duration dependent on many factors discussed in the EA. WS employs only those methods as agreed upon by the requestor after available methods are discussed.

WS' objective is to respond to requests for assistance with the most effective methods and to provide for the long-term solution to the problem using WS' Decision Model to adapt methods in an integrated approach to managing bird damage that is agreed upon by the cooperator.

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 2013. 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 Rhode Island 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.

LIST OF PREPARERS AND REVIEWERS

Timothy S. Cozine,	USDA-WS, Staff Wildlife Biologist, Amherst, MA
Christopher Croson,	USDA-WS, Staff Wildlife Biologist, Elkins, WV

LIST OF PERSONS CONSULTED

Jason Osenkowski,	Wildlife Biologist RIDEM DFW
Brian Tefft,	Wildlife Biologist RIDEM DFW
Chris Dwyer,	Senior Gamebird Biologist USFWS, Migratory Birds
Anthony Tur,	USFWS Biologist USFWS, NEFO, Ecological Services
Susi von Oettingen,	USFWS Biologist USFWS, NEFO, Ecological Services

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APPENDIX A

FEDERALLY AND STATE LISTED THREATENED AND ENDANGERED SPECIES IN THE STATE OF RHODE ISLAND

RARE NATIVE ANIMALS OF RHODE ISLAND
Revised: March, 2006

ABOUT THIS LIST

The list is divided by vertebrates and invertebrates and is arranged taxonomically according to the recognized authority cited before each group. Appropriate synonymy is included where names have changed since publication of the cited authority.

The Natural Heritage Program's *Rare Native Plants of Rhode Island* includes an estimate of the number of "extant populations" for each listed plant species, a figure which has been helpful in assessing the health of each species. Because animals are mobile, some exhibiting annual long-distance migrations, it is not possible to derive a population index that can be applied to all animal groups. The status assigned to each species (see definitions below) provides some indication of its range, relative abundance, and vulnerability to decline. More specific and pertinent data is available from the Natural Heritage Program, the Rhode Island Endangered Species Program, and the Rhode Island Natural History Survey.

STATUS The status of each species is designated by letter codes as defined:

(FE) **Federally Endangered:** 10 species listed, 3 currently occur in State-roseate tern, American burying beetle, and sandplain gerardia (USFWS 2008)

(FT) **Federally Threatened:** 4 species listed, 3 currently occur in State- piping plover, long-eared bat and small whorled pogonia (USFWS 2008)

(SE) **State Endangered:** Native species in imminent danger of extirpation from Rhode Island. These taxa may meet one or more of the following criteria:

1. Formerly considered by the U.S. Fish and Wildlife Service for Federal listing as endangered or threatened.
2. Known from an estimated 1 to 2 total populations in the state.
3. Apparently globally rare or threatened; estimated at 100 or fewer populations range-wide.

Animals listed as State Endangered are protected under the provisions of the Rhode Island State Endangered Species Act, Title 20 of the General Laws of the State of Rhode Island. This law states, in part (20-37-3):

"No person shall buy, sell, offer for sale, store, transport, export, or otherwise traffic in any animal or plant or any part of any animal or plant whether living or dead, processed, manufactured, preserved or raw if such animal or plant has been declared to be an endangered species by either the United States secretaries of the Interior or Commerce or the Director of the R. I. Department of Environmental Management."

(ST) **State Threatened:** Native species that are likely to become State Endangered in the future if current trends in habitat loss or other detrimental factors remain unchanged. In general, these taxa have 3-5 known or estimated populations and are especially vulnerable to habitat loss.

(C) **Concern:** Native species not considered to be State Endangered or State Threatened at the present time, but are listed due to various factors of rarity and/or vulnerability. Species listed in this category may warrant endangered or threatened designation, but status information is presently not well known.

(SH) State Historical: Native species which have been documented for the state during the last 100 years, but which are currently unknown to occur. When known, the year of the last documented occurrence in Rhode Island is included.

FUTURE REVISIONS

The listing of rare species is an ongoing process requiring annual revisions to reflect the best scientific information available concerning the circumstances of rarity, as well as our increased knowledge of the native fauna. Submission of additional data on species currently listed, or on other species which may warrant listing, is encouraged.

Information may be sent to:

Rhode Island Natural Heritage Program
Rhode Island Dept. of Environmental Management
Division of Planning & Development
235 Promenade Street
Providence, Rhode Island 02908
Telephone: (401) 222-2776 ext.4308

Rhode Island Endangered Species Program
Rhode Island Dept. of Environmental Management
Division of Fish and Wildlife
Great Swamp Management Area
West Kingston, Rhode Island 02892
Telephone: (401) 789-0281

INVERTEBRATES

The task of evaluating the status of invertebrates in Rhode Island has been initiated for several selected groups. At this time the list primarily includes freshwater bivalves (clams and mussels) and the following insect groups: lepidopterans (moths and butterflies), odonates (dragonflies and damselflies), silphids (burying beetles), and cicindelids (tiger beetles). Additional taxa will be added in the future upon the completion of further research and inventory. The following publications are a partial listing of taxonomic references:

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BIVALVE MOLLUSKS		
Unionoida (freshwater mussels)		
Margaritiferidae (pearlshells)		
Margaritifera margaritifera	Eastern Pearlshell	SE
Unionidae (unionid mussels)		
Alismidonta varicosa	Brook Floater	SH (1897)
Lampsilis radiata	Lampmussel	C
Ligumia nasuta	Eastern Pond Mussel	C
Strophitus undulatus	Squawfoot	C
CRUSTACEANS		
Amphipoda (amphipods)		
Crangonyctidae (freshwater amphipods)		
Synurella chamberlaini	Coastal Swamp Amphipod	C

INSECTS

Coleoptera (beetles)		
Cicindelidae (tiger beetles)		
Cicindela dorsalis dorsalis	Northeastern Beach Tiger Beetle	FT/SH (1978)
Cicindela formosa generosa	Pine Barrens Tiger Beetle	ST
Cicindela hirticollis	Seabeach Tiger Beetle	ST
Cicindela limbalis	Claybanks Tiger Beetle	C
Cicindela marginata	Salt Marsh Tiger Beetle	ST
Cicindela patruela	Barrens Tiger Beetle	SH (1921)
Cicindela purpurea	Purple Tiger Beetle	C
Cicindela rufiventris	Red-bellied Tiger Beetle	C
Cicindela tranquebarica	Dark-bellied Tiger Beetle	ST
Silphidae (burying beetles)		
Nicrophorus americanus	American Burying Beetle	FE
Staphylinidae (rove beetles)		
Lordithon niger	Black Lordithon Rove Beetle	C
Lepidoptera (butterflies and moths)		
Lycaenidae (coppers, hairstreaks, elfins, & blues)		
Lycaena epixanthe	Bog Copper	C
Satyrium acadica	Acadian Hairstreak	C
Satyrium caryaevorum	Hickory Hairstreak	C
Mitoura hesseli	Hessel's Hairstreak	C
Incisalia henrici	Henry's Elfin	C
Incisalia irus	Frosted Elfin	ST
Incisalia polia	Hoary Elfin	C
Fixsenia favonius ontario	Northern Hairstreak	C
Parrhasius m-album	White M Hairstreak	C
Nymphalidae (brush-footed butterflies)		
Speyeria idalia	Regal Fritillary	SH (1990)
Boloria bellona	Meadow Fritillary	C
Enodia anthedon	Northern Pearly Eye	C
Hesperiidae (skippers)		
Erynnis brizo	Sleepy Duskywing	C
Erynnis persius	Persius Duskywing	SH (1950)
Poanes massasoit	Mulberry Wing	C
Poanes viator zizaniae	Broad Winged Skipper	C
Atrytonopsis hianna	Dusted Skipper	C
Noctuidae (noctuid moths)		
Abagrotis crumbi benjamini	Benjamin's Abagrotis	C
Acronicta lanceolaria	A Noctuid Moth	C
Apharetra purpurea	Blueberry Sallow	C
Aplectoides condita	A Noctuid Moth	C
Grammia speciosa	An Arctiid Moth	C
Lithophane viridipallens	Pale Green Pinion Moth	C
Metarranthis pilosaria	Coastal Swamp Metarranthis	C
Papaipema appassionata	Pitcher Plant Borer	C
Papaipema leucostigma	Columbine Borer	SH
Spartiniphaga inops	Spartina Borer	C
Zale sp. (*)	Pine Barrens Zale	C
Zale submediana	A Noctuid Moth	C

(*) a full scientific name for this species has not been published.

Saturniidae (saturnid moths)		
Citheronia regalis	Royal Walnut Moth	SH (1939)
Citheronia sepulcralis	Pine Devil	SH

Hemileuca maia maia	Barrens Buckmoth	C
Odonata (dragonflies and damselflies)		
Coenagrionidae (pond damselflies)		
Enallagma pictum	Scarlet Bluet	C
Enallagma recurvatum	Pine Barrens Bluet	C
Lestes unguiculatus	Lyre-tipped Spreadwing	C
Nehalennia integricollis	Southern Sprite	ST
Gomphidae (clubtails)		
Ophiogomphus aspersus	Brook Snaketail	ST
Progomphus obscurus	Common Sanddragon	C
Stylurus scudderi	Zebra Clubtail	ST
Stylurus spiniceris	Arrow Clubtail	C
Aeshnidae (darners)		
Aeshna mutata	Spatterdock Darner	C
Anax longipes	Comet Darner	C
Corduliidae (emeralds)		
Cordulegaster obliqua	Arrowhead Spiketail	C
Neurocordulia obsoleta	Umber Shadowdragon	C
Somatochlora georgiana	Coppery Emerald	C
Williamsonia lintneri	Ringed Boghaunter	SE
Libellulidae (common skimmers)		
Leucorrhinia glacialis	Crimson-ringed Whiteface	ST
Libellula auripennis	Golden-winged Skimmer	C
FISH		
Petromyzontidae (lampreys)		
Lampetra appendix	American Brook Lamprey	ST
Acipenseridae (sturgeons)		
Acipenser oxyrhynchus	Atlantic Sturgeon	SH
Acipenser brevirostrum	Shortnose Sturgeon	FE (SH)
AMPHIBIANS		
Plethodontidae (lungless salamanders)		
Gyrinophilus porphyriticus	Northern Spring Salamander	C
Pelobatidae (spadefoot toads)		
Scaphiopus holbrookii	Eastern Spadefoot	SE
Ranidae (true frogs)		
Rana pipiens	Northern Leopard Frog	C
REPTILES		
Cheloniidae (sea turtles) - offshore waters only.		
Caretta caretta	Loggerhead Sea Turtle	FT
Eretmochelys imbricata	Hawksbill Sea Turtle	FE
Lepidochelys kempii	Kemp's Ridley Sea Turtle	FE
Dermochelyidae (leatherback turtles) - offshore waters only.		
Dermochelys c. coriacea	Atlantic Leatherback	FE
Emydidae (turtles)		
Clemmys guttata	Spotted Turtle	P
Clemmys insculpta	Wood Turtle	C/P
Malaclemys t. terrapin	Northern Diamondback Terrapin	SE/P
Terrapene carolina	Eastern Box Turtle	P
Colubridae (colubrid snakes)		
Carphophis amoenus	Eastern Worm Snake	C
Elaphe obsoleta	Black Rat Snake	C

Heterodon platirhinos	Eastern Hognose Snake	C
Thamnophis sauritus	Eastern Ribbon Snake	C
Viperidae (vipers)		
Crotalus horridus	Timber Rattlesnake	SH(1972)/ P
BIRDS		
Podicipedidae (grebes)		
Podilymbus podiceps	Pied-billed Grebe	SE
Ardeidae (herons)		
Botaurus lentiginosus	American Bittern	SE
Ixobrychus exilis	Least Bittern	ST
Ardea herodias	Great Blue Heron	C
Ardea albus	Great Egret	C
Egretta caerulea	Little Blue Heron	C
Egretta thula	Snowy Egret	C
Bubulcus ibis	Cattle Egret	C
Nycticorax nycticorax	Black-crowned Night Heron	C
Nyctanassa violacea	Yellow-crowned Night Heron	C
Threskiornithidae (ibises)		
Plegadis falcinellus	Glossy Ibis	C
Anatidae (swans, geese, ducks)		
Anas crecca	Green-winged Teal	C
Anas discors	Blue-winged Teal	C
Anas strepera	Gadwall	C
Lophodytes cucullatus	Hooded Merganser	C
Accipitridae (eagles, hawks)		
Haliaeetus leucocephalus	Bald Eagle	FT*
Pandion haliaetus	Osprey	C
Circus cyaneus	Northern Harrier	SE
Accipiter striatus	Sharp-shinned Hawk	SH (1939)
Accipiter cooperii	Cooper's Hawk	C
Accipiter gentilis	Northern Goshawk	C
Falco peregrinus	Peregrine Falcon	SE
Rallidae (rails, gallinules)		
Rallus elegans	King Rail	C
Rallus longirostris	Clapper Rail	C
Porzana carolina	Sora	C
Gallinula chloropus	Common Moorhen	SH (1970)
Charadriidae (plovers)		
Charadrius melodus	Piping Plover	FT
Haematopodidae (oystercatchers)		
Haematopus palliatus	American Oystercatcher	C
Scolopacidae (sandpipers)		
Catoptrophorus semipalmatus	Willet	C
Bartramia longicauda	Upland Sandpiper	SE
Laridae (gulls, terns)		
Sterna dougallii	Roseate Tern	FE/SH (1979)
Sterna antillarum	Least Tern	ST
Tytonidae (barn owls)		
Tyto alba	Barn Owl	SE
Strigidae (owls)		
Asio otus	Long-eared Owl	C
Aegolius acadicus	Northern Saw-whet Owl	C

Caprimulgidae (goatsuckers)		
Chordeiles minor	Common Nighthawk	C
Picidae (woodpeckers)		
Dryocopus pileatus	Pileated Woodpecker	C
Tyrannidae (flycatchers)		
Empidonax virescens	Acadian Flycatcher	C
Alaudidae (larks)		
Eremophila alpestris	Horned Lark	C
Hirundinidae (swallows)		
Hirundo pyrrhonota	Cliff Swallow	SH (1991)
Troglodytidae (wrens)		
Troglodytes troglodytes	Winter Wren	C
Cistothorus palustris	Marsh Wren	C
Parulidae (warblers)		
Vermivora chrysoptera	Golden-winged Warbler	SH (1960)
Parula americana	Northern Parula	ST
Dendroica caerulescens	Black-throated Blue Warbler	ST
Dendroica cerulea	Cerulean Warbler	SE
Dendroica fusca	Blackburnian Warbler	ST
Protonotaria citrea	Prothonotary Warbler	C
Helmitheros vermivorus	Worm-eating Warbler	C
Icteria virens	Yellow-breasted Chat	SE
Emberizidae (sparrows)		
Pooecetes gramineus	Vesper Sparrow	SH (1984)
Ammodramus henslowii	Henslow's Sparrow	SH (1940)
Ammodramus savannarum	Grasshopper Sparrow	ST
Ammodramus maritimus	Seaside Sparrow	C
Zonotrichia albicollis	White-throated Sparrow	C
Junco hyemalis	Dark-eyed Junco	C

*Bald Eagles have been removed from the federal endangered species list

MAMMALS

Soricidae (shrews)		
Sorex fumeus	Smoky Shrew	C
Sorex palustris	Water Shrew	C
Leporidae (rabbits, hares)		
Sylvilagus transitionalis	New England Cottontail	C
Muridae (mice)		
Synaptomys cooperi	Southern Bog Lemming	C
Felidae (cats)		
Lynx rufus	Bobcat	ST
Balaenopteridae (rorquals)		
Balaenoptera physalus	Fin Whale	FE
Megaptera novaeangliae	Humpback Whale	FE
Balaenidae (right whales)		
Eubalaena glacialis	North Atlantic Right Whale	FE

APPENDIX B
USFWS NEFO "NO SPECIES PRESENT" LETTER

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
http://www.fws.gov/newengland

January 17, 2012

To Whom It May Concern:

This project was reviewed for the presence of federally listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

(http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm)

Based on information currently available to us, no federally listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required. No further Endangered Species Act coordination is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact Mr. Anthony Tur of this office at 603-223-2541 if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office