Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part I: General Conditions

General Information

Name of Municipality or Organization: Harwich State: MA

EPA NPDES Permit Number (if applicable): MAR041120

Primary MS4 Program Manager Contact Information

Name: Robert Cafarelli, PE Title: Town Engineer

Street Address Line 1: 732 Main Street

Street Address Line 2:

City: Harwich State: MA Zip Code: 02645

Email: rcafarelli@town.harwich.ma Phone Number: (508) 430-7508

Fax Number:

Other Information

Stormwater Management Program (SWMP) Location (web address or physical location, if already completed): SWMP is under preparation.

Eligibility Determination

Endangered Species Act (ESA) Determination Complete? Yes

Eligibility Criteria (check all that apply): ☐ A ☒ B ☐ C

National Historic Preservation Act (NHPA) Determination Complete? Yes

Eligibility Criteria (check all that apply): ☒ A ☐ B ☐ C

☑ Check the box if your municipality or organization was covered under the 2003 MS4 General Permit

MS4 Infrastructure (if covered under the 2003 permit)

Estimated Percent of Outfall Map Complete? *(Part II, III, IV or V, Subpart B.3.(a.) of 2003 permit)* 100%

If 100% of 2003 requirements not met, enter an estimated date of completion (MM/DD/YY):

Web address where MS4 map is published:

If outfall map is unavailable on the internet an electronic or paper copy of the outfall map must be included with NOI submission (see section V for submission options)

Outfall map included in Attachment B.

Regulatory Authorities (if covered under the 2003 permit)

Illicit Discharge Detection and Elimination (IDDE) Authority Adopted? *(Part II, III, IV or V, Subpart B.3.(b.) of 2003 permit)* Yes

Effective Date or Estimated Date of Adoption (MM/DD/YY): 10/01/18

Construction/Erosion and Sediment Control (ESC) Authority Adopted? *(Part II,III,IV or V, Subpart B.4.(a.) of 2003 permit)* Yes

Effective Date or Estimated Date of Adoption (MM/DD/YY): 05/11/10

Post- Construction Stormwater Management Adopted? *(Part II, III, IV or V, Subpart B.5.(a.) of 2003 permit)* Yes

Effective Date or Estimated Date of Adoption (MM/DD/YY): 10/01/18

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part II: Summary of Receiving Waters

Please list the waterbody segments to which your MS4 discharges. For each waterbody segment, please report the number of outfalls discharging into it and, if applicable, any impairments.

Massachusetts list of impaired waters: *Massachusetts 2014 List of Impaired Waters*- http://www.mass.gov/eea/docs/dep/water/resources/07v5/14list2.pdf

Check off relevant pollutants for discharges to impaired waterbodies (see above 303(d) lists) without an approved TMDL in accordance with part 2.2.2.a of the permit. List any other pollutants in the last column, if applicable.

Waterbody segment that receives flow from the MS4	Number of outfalls into receiving water segment	Chloride	Chlorophyll-a	Dissolved Oxygen/ DO Saturation	Nitrogen	Oil & Grease/ PAH	Phosphorus	Solids/ TSS/ Turbidity	E. coli	Enterococcus	Other pollutant(s) causing impairments
Atlantic Ocean	5	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Herring River (MA96-22)	4	☐	☐	☐	☒	☐	☐	☐	☐	☐	*TMDLs for Fecal Coliform
Wychmere Harbor (MA96-96)	3	☐	☐	☐	☒	☐	☐	☐	☐	☐	
Saquatucket Harbor (MA96-23)	3	☐	☐	☐	☒	☐	☐	☐	☐	☐	*TMDLs for Fecal Coliform
Carding Brook	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Outlet stream from Skinequit Pond	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Grass Pond Bog	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
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Click to lengthen table

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary

Identify the Best Management Practices (BMPs) that will be employed to address each of the six Minimum Control Measures (MCMs). For municipalities/organizations whose MS4 discharges into a receiving water with an approved Total Maximum Daily Load (TMDL) and an applicable waste load allocation (WLA), identify any additional BMPs employed to specifically support the achievement of the WLA in the TMDL section at the end of part III.

For each MCM, list each existing or proposed BMP by category and provide a brief description, responsible parties/departments, measurable goals, and the year the BMP will be employed (public education and outreach BMPs also requires a target audience). **Use the drop-down menus in each table or enter your own text to override the drop down menu.**

MCM 1: Public Education and Outreach

BMP Media/Category (enter your own text to override the drop down menu)	**BMP Description**	**Targeted Audience**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal**	**Beginning Year of BMP Imple-mentation**
Brochures/Pamphlets	Flyers and mailers sent for hazardous waste days	Residents	Highways and Maintenance	Continue to distribute flyers and mailers to residents	2018
Web Page	Use outreach materials and guidance from various sources (Think Blue Massachusetts, MassDEP, Cape Cod Stormwater) for posting online. This will implement outreach for relevant impairments town wide. See: https://www.thinkbluemassachusetts.org/for-businesses	Businesses, Institutions and Commercial Facilities	Conservation, Planning, Building, Highways and Maintenance	Provide links to websites within town website. The links will be catered towards commercial facilities.	2020

Web Page	A web page containing stormwater education materials posted within the Town web site marked as "Important Stormwater Management Information for Developers" – with a collection of links to relevant educational material	Developers (construction)	Planning, Highways and Maintenance, Building	Create website with at least 3 links targeted to developers or the construction industry	2019
Web Page	Post web links and guidance from various sources (Think Blue Massachusetts, MassDEP, Cape Cod Stormwater, etc.) specific to industrial facilities to the town website. This will implement outreach for relevant impairments town wide.	Industrial Facilities	Conservation, Planning, Building, Highways and Maintenance	Provide links to websites within town website that are catered towards industrial facilities	2019
Web Page	Post homeowners guide to Town website that includes pollution reduction techniques for the homeowner	Residents	Planning Department, Building Department	Continue to offer homeowners guide on town website	2018
Brochures/Pamphlets	Use Think Blue Massachusetts outreach materials and guidance This will implement outreach for relevant impairments town wide. Example: https://www.thinkbluemassachusetts.org/for-businesses	Businesses, Institutions and Commercial Facilities	Conservation, Planning, Building, Highways and Maintenance	Distribute brochures to businesses Institutions and commercial facilities	2019

Meeting, Design Recommendations, Hando	Provide education on recommended stormwater / erosion control practices by providing fact sheets and diagrams and through meeting with applicants.	Developers (construction)	Planning Department, Building Department	Provide each developer that applies for a permit with printed brochures and/or advice regarding stormwater management guidelines	2019
Brochures/Pamphlets	Use outreach materials and guidance from various web sources (Think Blue Massachusetts, MassDEP, Cape Cod Stormwater) for posting online. This will implement outreach for relevant impairments town wide. Example: https://www.thinkbluemassachusetts.org/for-industry	Industrial Facilities	Conservation, Planning, Building, Highways and Maintenance	Distribute brochures to industrial facilities	2020

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

MCM 2: Public Involvement and Participation

BMP Categorization	Brief BMP Description (enter your own text to override the drop down menu)	Responsible Department/Parties (enter your own text to override the drop down menu)	Additional Description/ Measurable Goal	Beginning Year of BMP Implementation
Public Review	SWMP available for review online and at Town Hall	Planning Department, Building Department, Highways and Maintenance	Allow annual review of stormwater management plan and posting of stormwater management plan on website	2019
Public Participation	Beach Clean-up Teams	Great Sand Lakes Association, Harwich Conservation Trust, Conservation Commis	Continue to clean two miles of beach annually	2018
Public Participation	Hazardous Waste Collection Days	Highways and Maintenance	Continue to sponsor at least 3 hazardous waste collection days annually	2018
Public Participation	Offer oil and antifreeze collection and recycling	Highways and Maintenance	Continue to offer collection and recycling	2018
Public Participation	Public hearings/meetings	Planning Department, Building Department	Continue to hold public hearings/meetings where rules and regulations are reviewed for compliance with stormwater regulations	2018

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

MCM 3: Illicit Discharge Detection and Elimination (IDDE)

BMP Categorization (enter your own text to override the drop down menu)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)	**Beginning Year of BMP Imple-mentation**
SSO inventory	Develop SSO inventory in accordance of permit conditions	Engineering, Consultant, Highways and Maintenance	There are no sanitary sewers in Harwich, this is not applicable	2018
Storm sewer system map	Create map and update during IDDE program completion	Engineering, Consultant, Highways and Maintenance	Update map within 2 years of effective date of permit and complete full system map 10 years after effective date of permit	2020
Written IDDE program	Create written IDDE program	Engineering, Consultant, Highways and Maintenance	Complete within 1 year of the effective date of permit and update as required	2019
Implement catchment investigations portion of IDDE program	Implement catchment investigations according to program and permit conditions	Engineering, Consultant, Highways and Maintenance	Complete catchment investigations in accordance with outfall screening procedure and permit conditions	2020
Employee training	Train employees on IDDE implementation	Engineering, Consultant, Highways and Maintenance	Train annually	2019
Conduct dry weather screening	Conduct in accordance with outfall screening procedure and permit conditions	Engineering, Consultant, Highways and Maintenance	Complete 3 years after effective date of permit	2020
Conduct wet weather screening	Conduct in accordance with outfall screening procedure	Engineering, Consultant, Highways and Maintenance	Complete in accordance with outfall screening procedure and permit conditions	2021
Ongoing screening	Conduct dry weather and wet weather screening (as necessary)	Engineering, Consultant, Highways and Maintenance	Complete ongoing outfall screening upon completion of IDDE program if needed	2022

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

MCM 4: Construction Site Stormwater Runoff Control

BMP Categorization (enter your own text to override the drop down menu or entered text)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)	**Beginning Year of BMP Imple-mentation**
Site inspection and enforcement of Erosion and Sediment Control (ESC) measures	Complete written procedures of site inspections and enforcement procedures	Building Department, Conservation, Planning	Complete within 1 year of the effective date of permit	2019
Site plan review	Complete written procedures of site plan review and begin implementation	Building Department, Conservation, Planning	Complete within 1 year of the effective date of permit	2019
Erosion and Sediment Control	Adoption of requirements for construction operators to implement a sediment and erosion control program	Building Department, Conservation, Planning	Complete within 1 year of the effective date of permit	2019
Waste Control	Adoption of requirements to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes	Building Department, Conservation, Planning	Complete within 1 year of the effective date of permit	2019

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

MCM 5: Post-Construction Stormwater Management in New Development and Redevelopment

BMP Categorization (enter your own text to override the drop down menu or entered text)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)	**Beginning Year of BMP Imple-mentation**
As-built plans for on-site stormwater control	The procedures to require submission of as-built drawings and ensure long term operation and maintenance will be a part of the SWMP	Planning Department, Building Department	The town will continue to require as-built plans for stormwater control	2018
Target properties to reduce impervious areas	Identify at least 5 permittee-owned properties that could be modified or retrofitted with BMPs to reduce impervious areas and update annually	Planning Department, Building Department	Complete 4 years after effective date of permit and report annually on retrofitted properties	2022
Allow green infrastructure	Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist	Planning Department, Building Department	Complete 4 years after effective date of permit and implement recommendations of report	2022
Street design and parking lot guidelines	Develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support low impact design options.	Planning Department, Building Department	Complete 4 years after effective date of permit and implement recommendations of report	2022

Incorporate stormwater controls or management practices for new development and redevelopment that meet the retention or treatment requirements of the permit and all applicable requirements of the Massachusetts Stormwater Handbook	Adoption, amendment, or modification of a regulatory mechanism to meet permit requirements	Planning Department, Building Department	Complete 2 years after effective date of permit	2020

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

MCM 6: Municipal Good Housekeeping and Pollution Prevention

BMP Categorization (enter your own text to override the drop down menu or entered text)	**BMP Description**	**Responsible Department/Parties** (enter your own text to override the drop down menu)	**Measurable Goal** (all text can be overwritten)	**Beginning Year of BMP Imple-mentation**
O&M procedures	Create written O&M procedures including all requirements contained in 2.3.7.a.ii for parks and open spaces, buildings and facilities, and vehicles and equipment	Conservation, Highways and Maintenance, Parks, Recreation, Schools	Complete and implement 2 years after effective date of permit	2020
Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Create inventory	Highways and Maintenance, Conservation, Parks and Recreation	Complete 2 years after effective date of permit and implement annually	2020
Infrastructure O&M	Establish and implement program for repair and rehabilitation of MS4 infrastructure	Highways and Maintenance	Complete 2 years after effective date of permit	2020
Stormwater Pollution Prevention Plan (SWPPP)	Create SWPPPs for maintenance garages, transfer stations, and other waste-handling facilities	Contractor, Planning, Highways and Maintenance, Building	Complete and implement 2 years after effective date of permit	2020
Catch basin cleaning	Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins on that schedule	Highways and Maintenance	Clean catch basins on established schedule and report number of catch basins cleaned and volume of material moved annually	2019
Street sweeping program	Sweep all streets and permitee-owned parking lots in accordance with permit conditions	Highways and Maintenance	Continue to sweep all streets and permitee-owned parking lots once per year in the spring	2018
Road salt use optimization program	Establish and implement a program to minimize the use of road salt	Highways and Maintenance	Continue to implement salt use optimization during deicing season	2018

Inspections and maintenance of stormwater treatment structures	Establish and implement inspection and maitenance procedures and frequencies	Highways and Maintenance	Continue to inspect and maintain treatment structures at least annually	2018

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

Actions for Meeting Total Maximum Daily Load (TMDL) Requirements

Use the drop-down menus to select the applicable TMDL, action description to meet the TMDL requirements, and the responsible department/parties. If no options are applicable, or more than one, **enter your own text to override drop-down menus.**

Applicable TMDL	Action Description	Responsible Department/Parties (enter your own text to override the drop down menu)
Cape Cod (Bacteria/Pathogen)	Adhere to requirements in part A.III of Appendix F	Town Clerk, Board of Health, Highways and Maintenance
Allen, Wychmere, and Saquatucket Harbors (Nitrogen)	Adhere to requirements in part A.IV of Appendix F	Conservation, Planning, Building, Town Clerk, Engineering
Herring River (Nitrogen)	Adhere to requirements in part A.IV of Appendix F	Conservation, Planning, Building, Town Clerk, Engineering

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part III: Stormwater Management Program Summary (continued)

Actions for Meeting Requirements Related to Water Quality Limited Waters

Use the drop-down menus to select the pollutant causing the water quality limitation and enter the waterbody ID(s) experiencing excursions above water quality standards for that pollutant. Choose the action description from the dropdown menu and indicate the responsible party. If no options are applicable, or more than one, **enter your own text to override drop-down menus.**

Pollutant	Waterbody ID(s)	Action Description	Responsible Department/Parties (enter your own text to override the drop down menu)

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part IV: Notes and additional information

Use the space below to indicate the part(s) of 2.2.1and 2.2.2 that you have identified as not applicable to your MS4 because you do not discharge to the impaired water body or a tributary to an impaired water body due to nitrogen or phosphorus. Provide all supporting documentation below or attach additional documents if necessary. Also, provide any additional information about your MS4 program below.

Notes on Part I:
Endangered Species Determination-
The U.S. Fish and Wildlife Service's (Service) Information for Planning and Consultation (IPaC) species list (Attachment A) indicated these species may be present in the project area: northern long-eared bat (Myotis septentrionalis), piping plover (Charadrius melodus), roseate tern (Sterna dougallii dougallii), red knot (Calidris canutus rufa), and rusty patched bumble bee (Bombus affinis). AECOM submitted the attached project review request as a non-Federal representative of the EPA pursuant to the requirements of the EPA's process for NPDES/MS4 permits. The intent of the letter was for concurrence with the determination that the project may affect, but is not likely to adversely affect, all of the species listed above except for northern long-eared bat. The project review request was sent to USFWS Region 1 office for review on 8/1/18 and was received by their office on 8/2/18. On 9/24/18 USFWS issued a form letter responding to this request. It was determined that the discharge activities covered under this permit 'may affect but are not likely to adversely affect' the species listed above if they satisfy five criteria listed in the letter. Harwich certifies that these criteria are met and that no further consultation under Section 7 of the ESA is necessary.
There are no known northern long-eared bat hibernaculums or roost trees within town boundaries as of the latest map published by NHESP (https://mass-eoeea.maps.arcgis.com/apps/Viewer/index.html?appid=de59364ebbb348a9b0de55f6febdfd52). The Town does not have any plans to remove any trees for stormwater related projects. The effect of the stormwater discharges and discharge related activities on the northern long-eared bat have been evaluated using the best scientific and commercial data available by EPA. Based on those evaluations, EPA has made a determination that the stormwater discharges and discharge related activities will have "no effect" on northern long-eared bat. Furthermore, the planned actions under the permit will have no effect on the northern long-eared bat. The town of Harwich will consult with US Fish and Wildlife as needed during the permit term on any future BMPs.

NHPA Determination-
Harwich's MS4 is covered under the 2003 Permit eligibility with the National Historic Preservation Act was previously determined. There is no expansion planned to the MS4 as part of this permit. Therefore Harwich is covered under Criterion A.

Notice of Intent (NOI) for coverage under Small MS4 General Permit

Part V: Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

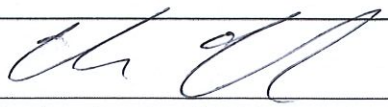
Name:	Christopher Clark	Title:	Town Administrator
Signature:		Date:	

[To be signed according to Appendix B, Subparagraph B.11, Standard Conditions]

Note: When prompted during signing, save the document under a new file name

Part V: Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	Christopher Clark	Title:	Town Administrator
Signature:		Date:	9/25/2018

[To be signed according to Appendix B, Subparagraph B.11, Standard Conditions]

Note: When prompted during signing, save the document under a new file name

Attachment A ENDANGERED

Official IPaC Species List,

Project Review Request,

and

USFWS Determination Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To:
Consultation Code: 05E1NE00-2018-SLI-2473
Event Code: 05E1NE00-2018-E-05740
Project Name: Harwich MS4 NOI

July 20, 2018

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2018-SLI-2473

Event Code: 05E1NE00-2018-E-05740

Project Name: Harwich MS4 NOI

Project Type: Regulation Promulgation

Project Description: This consultation is for the regulated discharges from the stormwater system in Harwich, MA in support of their 2018 MS4 NOI appplication. The location of this project is the rough extent of the town. The stormwater outfalls in this area are previously existing. The actual action areas are downstream from these discharge points but a larger area has been selected to be conservative. The map that is maintained by MassDEP/NHESP was also consulted (address: https://mass-eoeea.maps.arcgis.com/apps/Viewer/index.html?appid=de59364ebbb348a9b0de55f6febdfd52). There are no documented Northern Long-eared Bat Maternity roost sites or winter hibernacula in or near the project area. No illicit discharges have been found to these outfalls. Roost trees, hibernaculum, and other trees would not be significantly affected by the stormwater discharge. It is Harwich's opinion that there are no effects to Northern Long-eared Bats from these discharges.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.69206387828316N70.07881502437796W

Counties: Barnstable, MA

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot *Calidris canutus rufa* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Roseate Tern *Sterna dougallii dougallii* Population: northeast U.S. nesting pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Endangered

Insects

NAME	STATUS
Rusty Patched Bumble Bee *Bombus affinis*	Endangered

No critical habitat has been designated for this species.

Species profile: https://ecos.fws.gov/ecp/species/9383

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Project Review Request-

Submitted 8/01/18 to USFWS

AECOM
250 Apollo Drive
Chelmsford, MA 01824
aecom.com

Sean Maxwell
AECOM
250 Apollo Dr.
Chelmsford, Ma 01824

U.S. Fish and Wildlife Service
Attn: David Simmons
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301

July 20, 2018

Re: Project Review Request, Harwich MS4 NOI, Bourne, MA, 05E1NE00-2018-SLI-2473

We have reviewed the referenced project using the Environmental Protection Agency's (EPA) project review process for our Municipal Separate Storm Sewer System (MS4) and have followed provided guidance and instructions in completing the review. We completed our review on July 20, 2018 and are submitting our project package in accordance with the instructions for further review. The U.S. Fish and Wildlife Service's (Service) Information for Planning and Consultation (IPaC) species list indicated these species may be present in the project area: northern long-eared bat (*Myotis septentrionalis*), piping plover (*Charadrius melodus*), roseate tern (*Sterna dougallii dougallii*), red knot (*Calidris canutus rufa*), and rusty patched bumble bee (*Bombus affinis*). We are submitting this letter as a non-Federal representative of the EPA pursuant to the requirements of the EPA's process for NPDES/MS4 permits.

Our proposed action consists of: permitting of stormwater utilities and associated allowable discharges, improved stormwater management through: public outreach and participation, illicit discharge detection and elimination, construction site erosion and sedimentation control, post construction stormwater management, good housekeeping, and actions to reduce pollutants to impaired waters.

The location action area is identified on the enclosed locus map. The Action area is the area within the Town of Harwich that is regulated under the Massachusetts 2016 Small MS4 permit.

Permit implementation will begin in the fall of 2018 and the permit has an expiration date of June 30, 2022.

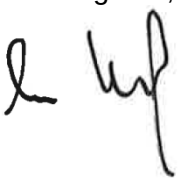
This is a request for review by the Service pursuant to section 7 of the Endangered Species Act. EPA has determined that our proposed action will have no effect on the northern long-eared bat because clearing trees is not part of Harwich's stormwater program. EPA has also determined that our proposed action will have no effect on the rusty patched bumble bee because Harwich's stormwater program will not have any measureable effect on the bee or its grassland habitat. We determined that the project may affect, but is not likely to adversely affect the other above listed species, because:

- Discharges from the project may reach the estuarine and shoreline environments used by the piping plover. However, the project will implement BMPs to reduce pollutants to the extent that the discharges are not known to have measureable impacts on piping plover, their habitat, or the food they eat.
- Although discharges from the project may reach the marine environment used by the roseate tern, the project will implement BMPs to reduce pollutants to the extent that the discharges are not known to have measureable impacts on roseate terns, their habitat, or the fish they eat.
- Discharges from the project may reach the estuarine and shoreline environments used by red knot. However, the project will implement BMPs to reduce pollutants to the extent that the discharges are not known to have measureable impacts on red knot, their habitat, or the food they eat.

The enclosed project package provides the information about the species considered in our review, and we identified our determinations for the resources that may be affected by the project. We request you concur with our determination that the project may affect, but is not likely to adversely affect the species described above.

For additional information, please contact Sean Maxwell at the address listed above, by phone at (603) 674-0625, or Sean.Maxwell@aecom.com.

Kind regards,



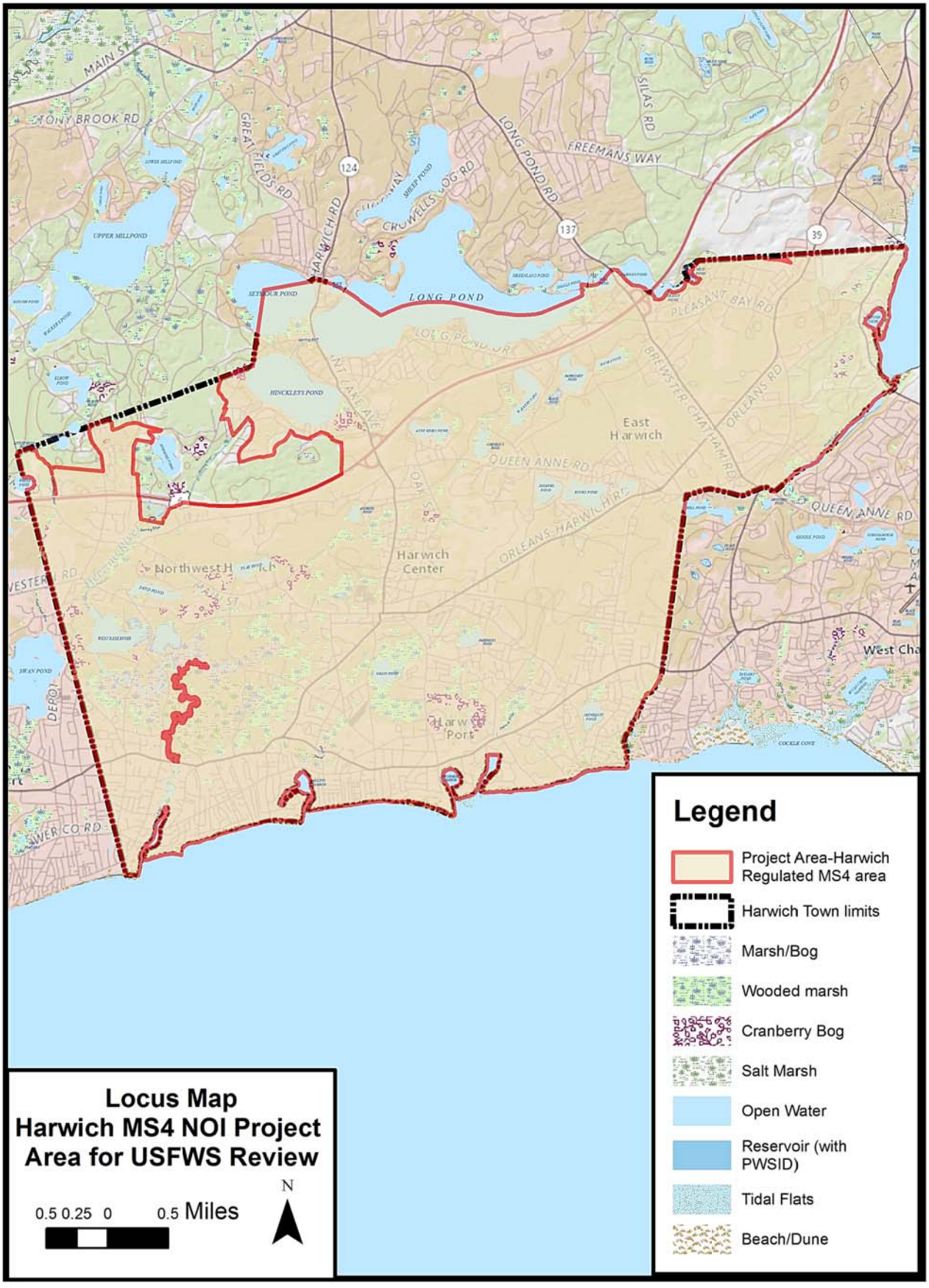
Sean Maxwell
Environmental Scientist IV
AECOM
T: 978-905-3141
M: 603-674-0625
E: Sean.Maxwell@aecom.com

Enclosures:

1) Locus Map of Action Area

2) IPaC Official Species List

3) Species information for listed species


Legend
Project Area-Harwich Regulated MS4 area
Harwich Town limits
Marsh/Bog
Wooded marsh
Cranberry Bog
Salt Marsh
Open Water
Reservoir (with PWSID)
Tidal Flats
Beach/Dune
Locus Map
Harwich MS4 NOI Project Area for USFWS Review
0.5 0.25 0 0.5 Miles
N
MAIN ST
TONY BROOK RD
GREAT FIELDS RD
HARWICH RD
124
CROWELLS BOG RD
LONG POND RD
FREEMANS WAY
SILAS RD
137
39
UPPER MILLPOND
SEYMOUR POND
LONG POND
HINCKLEYS POND
PLEASANT BAY RD
LONG POND DR
BREWSTER CHATHAM RD
ORLEANS RD
East Harwich
QUEEN ANNE RD
OAK ST
ORLEANS-HARWICH RD
Harwich Center
Northwest Harwich
DEPOT
COCKLE COVE

Official Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To:
Consultation Code: 05E1NE00-2018-SLI-2473
Event Code: 05E1NE00-2018-E-05740
Project Name: Harwich MS4 NOI

July 20, 2018

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2018-SLI-2473

Event Code: 05E1NE00-2018-E-05740

Project Name: Harwich MS4 NOI

Project Type: Regulation Promulgation

Project Description: This consultation is for the regulated discharges from the stormwater system in Harwich, MA in support of their 2018 MS4 NOI appplication. The location of this project is the rough extent of the town. The stormwater outfalls in this area are previously existing. The actual action areas are downstream from these discharge points but a larger area has been selected to be conservative. The map that is maintained by MassDEP/NHESP was also consulted (address: https://mass-eoeea.maps.arcgis.com/apps/Viewer/index.html?appid=de59364ebbb348a9b0de55f6febdfd52). There are no documented Northern Long-eared Bat Maternity roost sites or winter hibernacula in or near the project area. No illicit discharges have been found to these outfalls. Roost trees, hibernaculum, and other trees would not be significantly affected by the stormwater discharge. It is Harwich's opinion that there are no effects to Northern Long-eared Bats from these discharges.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.69206387828316N70.07881502437796W

Counties: Barnstable, MA

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot *Calidris canutus rufa* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Roseate Tern *Sterna dougallii dougallii* Population: northeast U.S. nesting pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Endangered

Insects

NAME	STATUS
Rusty Patched Bumble Bee *Bombus affinis*	Endangered

No critical habitat has been designated for this species.

Species profile: https://ecos.fws.gov/ecp/species/9383

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Piping Plover ECOS Profile & Fact Sheet

U.S. Fish & Wildlife Service

ECOS

ECOS / Species Profile for Piping Plover (Charadrius melodus)

Piping Plover (Charadrius melodus)

Range Information | Federal Register | Recovery | Critical Habitat | Conservation Plans | Petitions | Life History

Taxonomy: View taxonomy in ITIS

Listing Status: **Endangered** and **Threatened**

General Information

Size: 18 cm (7.25 in) in length. Color: Breeding season: Pale brown above, lighter below; black band across forehead; bill orange with black tip; legs orange; white rump. Male: Complete or incomplete black band encircles the body at the breast. Female: Paler head band; incomplete breast band. Winter coloration: Bill black; all birds lack breast band and head band.

The species historical range included Alabama, Colorado, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Puerto Rico, Rhode Island, South Carolina, South Dakota, Texas, Virginia, Virgin Islands, Wisconsin, Wyoming. See below for information about where the species is known or believed to occur.

Population detail

The FWS is currently monitoring the following populations of the Piping Plover

Current Listing Status Summary

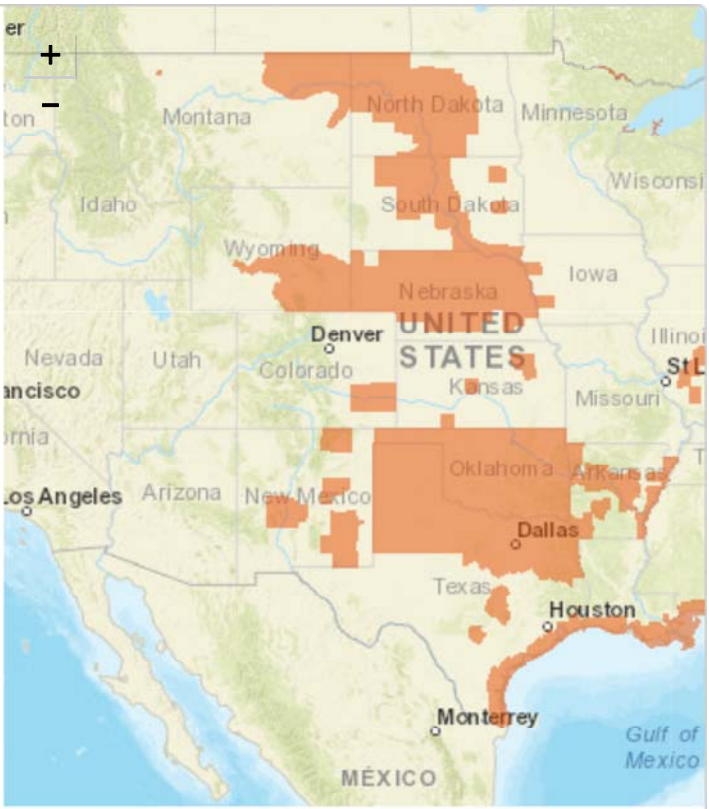
Status	Date Listed	Lead Region	Where Listed
Endangered	12/11/1985	Great Lakes-Big Rivers Region (Region 3)	[Great Lakes watershed DPS] - Great Lakes, watershed in States of IL, IN, MI, MN, NY, OH, PA, and WI and Canada (Ont.)
Threatened	12/11/1985	Northeast Region (Region 5)	[Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.

» Range Information

Current Range

☑ *[Great Lakes watershed DPS] - Great Lakes, watershed in States of IL, IN, MI, MN, NY, OH, PA, and WI and Canada (Ont.)*

☑ *[Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.*



Zoom in! Some species' locations may be small and hard to see from a wide perspective. To narrow-in on locations, check the state and county lists (below) and then use the zoom tool.

Want the FWS's current range for all species? Click here to download a zip file containing all individual shapefiles and metadata for all species.

- **[Great Lakes watershed DPS] - Great Lakes, watershed in States of IL, IN, MI, MN, NY, OH, PA, and WI and Canada (Ont.)**

  Listing status: Endangered

  - **States/US Territories** in which this population is known to or is believed to occur: Illinois , Indiana , Michigan , Minnesota , New York , Ohio , Pennsylvania , Wisconsin
  - **US Counties** in which this population is known to or is believed to occur: View All
  - **USFWS Refuges** in which this population is known to occur: Blackbeard Island National Wildlife Refuge, Cabo Rojo National Wildlife Refuge, Fergus Falls Wetland Management District, ... Show All Refuges
  - **Countries** in which this population is known to occur: Canada, United States

- **[Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.**

  Listing status: Threatened

  - **States/US Territories** in which this population is known to or is believed to occur: Alabama , Arkansas , Colorado , Delaware , Florida , Georgia , Iowa , Kansas , Louisiana , Maine , Maryland , Mississippi , Montana , Nebraska , New Jersey , New Mexico , New York , North Carolina , North Dakota , Oklahoma , Rhode Island , South Carolina , South Dakota , Texas , Virginia , Wyoming
  - **US Counties** in which this population is known to or is believed to occur: View All
  - **USFWS Refuges** in which this population is known to occur: Amagansett National Wildlife Refuge, Anahuac National Wildlife Refuge, Aransas National Wildlife Refuge, ... Show All Refuges
  - **Countries** in which this population is known to occur: Canada, Mexico, United States

» Federal Register Documents

Federal Register Documents

Show 10 entries

Date	Citation Page	Title
03/16/2016	81 FR 14121 14122	ETWP; Draft Revised Recovery Plan for the I
01/21/2016	81 FR 3450	Draft Environmental Assessment, Habitat Co Piping Plover, Massachusetts Division of Fish
07/08/2014	79 FR 38560 38562	Initiation of 5-Year Status Reviews of Nine Li
09/08/2011	76 FR 55638 55641	90-Day Finding on a Petition To List the Snov
05/19/2009	74 FR 23476 23600	Revised Designation of Critical Habitat for the Texas
10/21/2008	73 FR 62816 62841	Revised Designation of Critical Habitat for the North Carolina; Final Rule
09/30/2008	73 FR 56860 56862	Endangered and Threatened Wildlife and Pla information on the piping plover (Charadrius
06/09/2008	73 FR 32629	Correction to Revised Designation of Critical melodus) in Texas
05/20/2008	73 FR 29294 29321	Revised Designation of Critical Habitat for the Texas; Proposed rule

Showing 1 to 10 of 32 entries ‹ Previous 1 2 3 4 Next ›

» Recovery

- Recovery Plan Information Search
- Information Search FAQs

Current Recovery Plan(s)

Show 10 entries

Date	Title
03/16/2016	Volume II: Draft revised recovery plan for the wintering range of the piping plover (Charadrius melodus) and Comprehensive conservatio piping plover (Charadrius melodus) in its coastal migration and winte continental United States.
03/16/2016	Volume I: Draft Revised Recovery Plan for the Northern Great Plain (Charadrius melodus)
09/08/2003	Recovery Plan for the Great Lakes population of Piping Plovers
05/02/1996	Piping Plover Atlantic Coast Population Revised Recovery Plan

Showing 1 to 4 of 4 entries ‹ Previous 1 Next ›

Other Recovery Documents

Show 10 entries

Date	Citation Page	Title
03/16/2016	81 FR 14121 14122	ETWP; Draft Revised Recovery Plan for the I
07/08/2014	79 FR 38560 38562	Initiation of 5-Year Status Reviews of Nine Li Species
09/30/2008	73 FR 56860 56862	Endangered and Threatened Wildlife and Pla review; request for information on the piping
09/16/2003	68 FR 54241 54242	Approved Recovery Plan for the Great Lakes

Showing 1 to 8 of 8 entries ‹ Previous 1 Next ›

Five Year Review

Show 10 entries

Date	Title
09/29/2009	Piping Plover (Charadrius melodus) 5-Year Revie

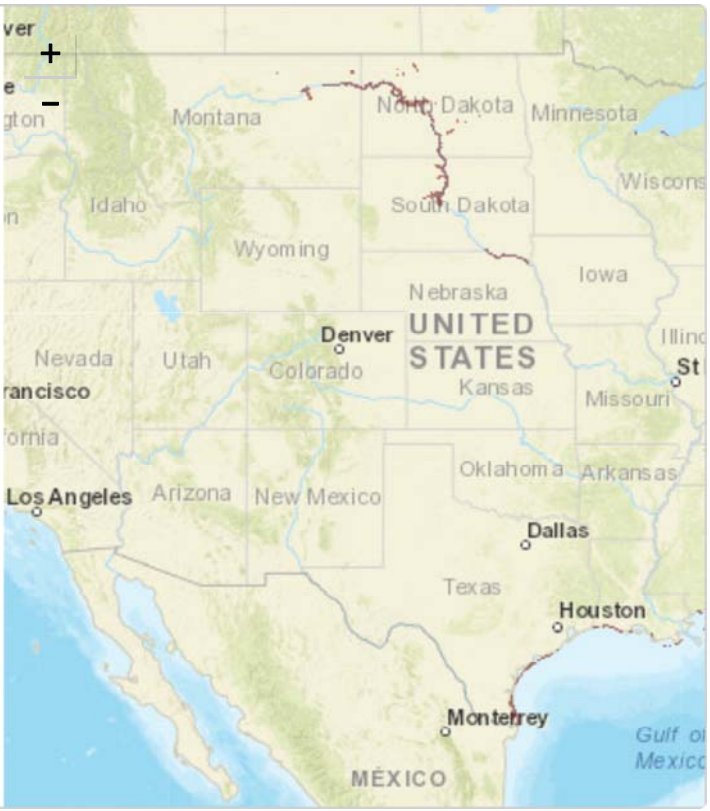
Showing 1 to 1 of 1 entries ‹ Previous 1 Next ›

» Critical Habitat

Critical Habitat Spatial Extents

Population(s)

- ☑ *[Great Lakes watershed DPS] - Great Lakes, watershed in States of IL, IN, MI, MN, NY, OH, PA, and WI and Canada (Ont.)*
- ☑ *[Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.*



Show 10 entries

Date	Citation Page	Title

05/19/2009	74 FR 23476 23600	Revised Designation of Critical Habitat for the Plover (Charadrius melodus) in Texas
10/21/2008	73 FR 62816 62841	Revised Designation of Critical Habitat for the Plover (Charadrius melodus) in North Carolin
05/20/2008	73 FR 29294 29321	Revised Designation of Critical Habitat for the Plover (Charadrius melodus) in Texas: Propo
09/11/2002	67 FR 57638 57717	Endangered and Threatened Wildlife and Pla for the Northern Great Plains Breeding Popul
12/28/2001	66 FR 67165 67166	ETWP; Proposed Designation of Critical Hab Breeding Population of the Piping Plover; Re and Notice of Availability of Draft Economic A
07/10/2001	66 FR 36137 36143	ETWP; Final Determination of Critical Habitat 36137-36143)

Showing 1 to 10 of 12 entries

< Previous 1 2 Next >

To learn more about critical habitat please see http://ecos.fws.gov/crithab

» Conservation Plans

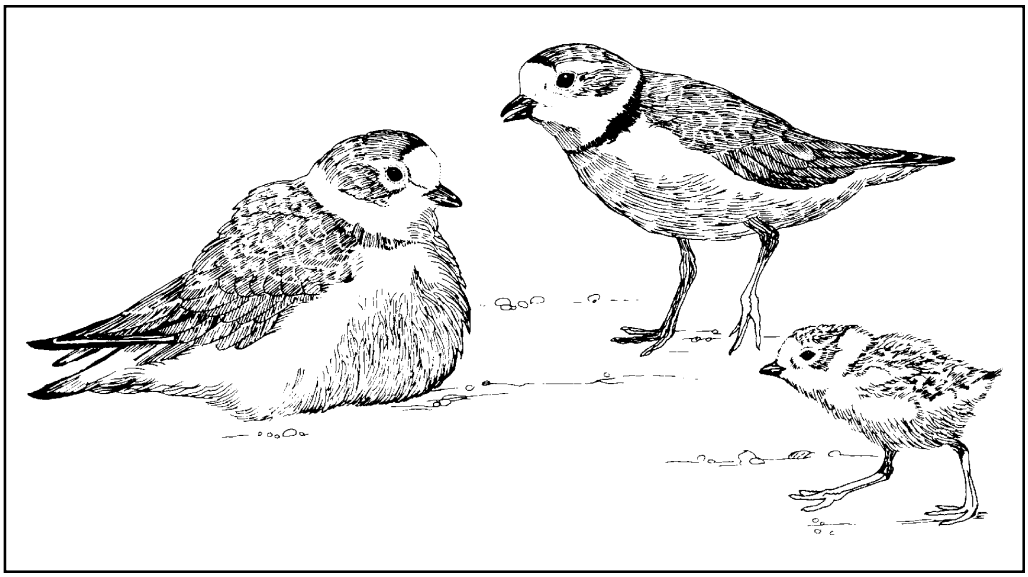
Habitat Conservation Plans (HCP) (learn more)

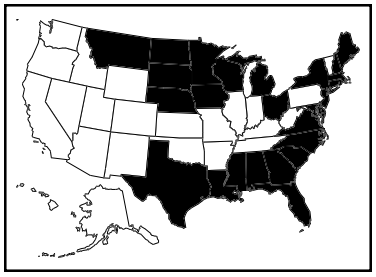
Show 10 entries

HCP Plan Summaries
Volusia Beaches
Town of Orlean's Plover Low Effect HCP
Piping Plover HCP (State of Massachusetts)
Magic Carpet Woods Association
Escambia County Beaches

U.S. Fish & Wildlife Service

Endangered Species Facts





States in which the piping plover is found. This map includes both summer and winter locations.

Piping Plover

The piping plover in the Great Lakes area is an *endangered species*. Endangered species are animals and plants that are in danger of becoming extinct. The Northern Great Plains and Atlantic Coast piping plovers are *threatened species.* Threatened species are animals and plants that are likely to become endangered in the foreseeable future. Identifying, protecting, and restoring endangered and threatened species is the primary objective of the U.S. Fish and Wildlife Service's endangered species program.

What is the Piping Plover?

Scientific Name - *Charadrius melodus*

Appearance - These small, stocky shorebirds have a sand-colored upper body, a white underside, and orange legs. During the breeding season, adults have a black forehead, a black breast band, and an orange bill.

Habitat - Piping plovers use wide, flat, open, sandy beaches with very little grass or other vegetation. Nesting territories often include small creeks or wetlands.

Reproduction - The female lays four eggs in its small, shallow nest lined with pebbles or broken shells. Both parents care for the eggs and chicks. When the chicks hatch, they are able to run about and feed themselves within hours.

Feeding Habits - The plovers eat insects, spiders, and crustaceans.

Range - Piping plovers are migratory birds. In the spring and summer they breed in the northern United States and Canada. There are three locations where piping plovers nest in North America: the shorelines of the Great Lakes, the shores of rivers and lakes in the Northern Great Plains, and along the Atlantic Coast. Their nesting range has become smaller over the years, especially in the Great Lakes area. In the fall, plovers migrate south and winter along the Gulf Coast or other southern locations.

The Great Lakes population of the piping plover is at a perilously low level. Since 1983, the number of nesting pairs has ranged from 12 to 32. In 2000, all of the Great Lakes pairs nested in Michigan.

Why is the piping plover endangered?

Habitat Loss or Degradation - Many of the coastal beaches traditionally used by piping plovers for nesting have been lost to commercial, residential, and recreational developments. Through the use of dams or other water control structures, humans are able to raise and lower the water levels of many lakes and rivers of plover inland nest sites. Too much water in the spring floods the plovers' nests. Too little water over a long period of time allows grasses and other vegetation to grow on the prime nesting beaches, making these sites unsuitable for successful nesting.

Nest Disturbance and Predation - Piping plovers are very sensitive to the presence of humans. Too much disturbance causes the parent birds to abandon their nest. People (either on foot or in a vehicle) using the beaches where the birds nest sometimes accidentally crush eggs or young birds. Dogs and cats often harass and kill the birds. Other animals, such as fox, gulls, and crows, prey on the young plovers or eggs.

What is being done to prevent extinction of the piping plover?

Listing - The Great Lakes population of the piping plover was listed as an endangered species in 1986, and the Northern Great Plains and Atlantic Coast populations were listed as threatened species that same year.

Recovery Plans - The U.S. Fish and Wildlife Service developed recovery plans that describe actions that need to be taken to help the bird survive and recover.

Research - Several cooperative research groups have been set up among federal and state agencies, university and private research centers, and the Canadian Wildlife Service. Studies are being conducted to determine where plovers breed and winter, estimate numbers, and monitor long-term changes in populations.

Habitat Protection - Measures to protect the bird's habitat are conducted each year (often by volunteers), including controlling human access to nesting areas, nest monitoring and protection, limiting residential and industrial development, and properly managing water flow. In Michigan, several landowners have formally agreed to protect plover nesting habitat.

Public Education - Many states and private agencies are running successful public information campaigns to raise awareness of the plover's plight. In Michigan, residents of coastal communities where the birds nest have been contacted by an “ambassador” and provided with information about the plight of the plover.

What can I do to prevent the extinction of species?

Learn - Learn more about the piping plover and other endangered and threatened species. Understand how the destruction of habitat leads to loss of endangered and threatened species and our nation's plant and animal diversity. Tell others about what you have learned.

Volunteer - If piping plovers live near you, join the “Plover Patrol” (information about the “Plover Patrol” is on the website to the right). Or volunteer your time at a nearby Nature Center, Wildlife Sanctuary or National Wildlife Refuge. Make sure you control pets, and always remove litter on beaches. Encourage others to do the same.

U.S. Fish & Wildlife Service
1 Federal Drive
Fort Snelling, Minnesota 55111
612/713-5337
http://midwest.fws.gov/eco_serv/endangrd

Roseate Tern ECOS Profile & Fact Sheet

Endangered Species

Endangered, Threatened and Special Concern Species in Connecticut

Species Fact Sheets

About NDDB Maps

Review/Data Requests

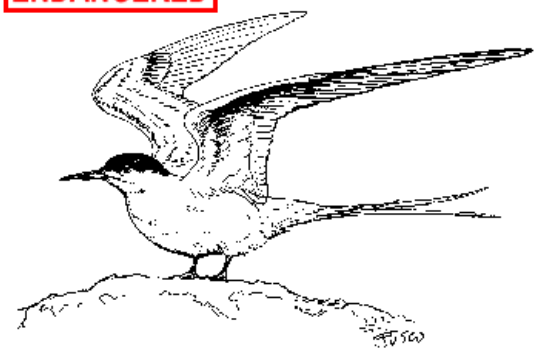
Contributing Data

Endangered Species Main Page

Main Menu

ROSEATE TERN
Sterna dougallii

ENDANGERED



Habitat: Strictly saltwater coastlines; almost never seen inland.
Weight: Approximately 4 ounces.
Length: 14-17 inches.
Wingspan: 30 inches.

Life Expectancy: Banding indicates 9 years of age.
Food: Small fish, occasionally mollusks.
Status: Federally and state endangered.

Identification: Adults have a white body and black head cap. The deeply forked tail measures 6 to 8 inches in length. The black bill is red at the base, varying with the season and the age of the bird; as the breeding season progresses from incubation to the care and feeding of chicks, more and more of the base turns pinkish-red. The rosy tint on the breast is rarely visible in summer, but the bird's bright orange-red legs and feet are easy to distinguish. Both sexes are similar. Chicks and fledglings have black bills, legs and feet. The voice is a high-pitched, rasping "aaak" and soft "chivy."

Range: Roseate terns nest in colonies on sand/gravel beaches or pebbly/rocky offshore islands along the Atlantic coast from Nova Scotia south to Long Island, New York, and on the southern tip of Florida. Roseates that nest in the northeastern United States appear to winter primarily in the waters off Trinidad and northern South America from the Pacific coast of Columbia to eastern Brazil.

Reproduction: Roseate terns arrive in Connecticut in late April and early May. The first eggs are laid by the third week of May in shallow scrapes, or depressions, sometimes lined with dried vegetation. Nests are often concealed by vegetation or rocks. The 1 to 2 eggs are pale buff with small dots of brown. The adults take turns incubating the eggs and bringing small fish to the chicks. The eggs hatch in 23 to 24 days, and the young fledge about 26 to 30 days after hatching. Birds that lose their nests or young will produce new nests into late July and occasionally into early August. Roseate terns usually breed and nest at 3 years of age.

Reason for Decline: Historically, the roseate tern population suffered losses due to the millinery trade. Roseate tern productivity has also been affected by increased human recreation and disturbance in coastal areas, as well as by predation by great black-backed and herring gulls, owls and nocturnal-feeding mammals. Increasing numbers of gulls and human activity on or near coastal barrier islands have greatly reduced available nesting habitat for the roseate tern population in northeastern North America. Many traditional nesting sites in southern New England were abandoned during the 1940s and 1950s when great black-backed and herring gulls rapidly expanded their nesting ranges. These large, aggressive gulls stake out nesting territories in early spring before the terns return from their wintering areas. Gulls have taken over most of the outer islands preferred by nesting terns.

History in Connecticut: In the late 1800s, unrestricted market hunting for the millinery trade devastated the roseate tern population on the Atlantic coast. After harvest for commercial purposes was prohibited by law, the population recovered and at times equaled the number of common terns. Roseate tern numbers declined again in the 1970s and 1980s when gull populations increased.

The third largest roseate tern colony in North America exists in Connecticut at Falkner Island, which is now part of the Stewart B. McKinney National Wildlife Refuge. Approximately 175 to 200 pairs of terns breed there every year. This population has been studied in detail since 1978. Other colony sites that have been used in

Connecticut during 1989 include Tuxis Island near Madison and Duck Island near Clinton. Several small islands in the New London area were occupied by roseate terns in the 1970s.

Approximately one-fourth of the roseate tern breeding population in a given year at Falkner Island does not return the following year. Presently, it is not known if this loss is due to mortality or emigration to other colony sites.

Interesting Facts: According to the U.S. Fish and Wildlife Service (USFWS), islands with manned lighthouses were favorite nesting areas for roseates because the human presence deterred large gulls from nesting. Since the automation of almost all lighthouses, gulls have moved in and displaced the terns. The USFWS officially listed the northeastern breeding population of the roseate tern as endangered in December, 1987.

Adult terns are mainly preyed on by avian species such as owls, gulls and raptors. Eggs and young are also vulnerable to predation, as well as to adverse weather conditions and disturbance. Predation may completely wipe out production in a given colony. The combination of adult mortality, delayed maturity and low productivity can, in a short time, result in serious population declines unless they are offset by subsequent years of high productivity.

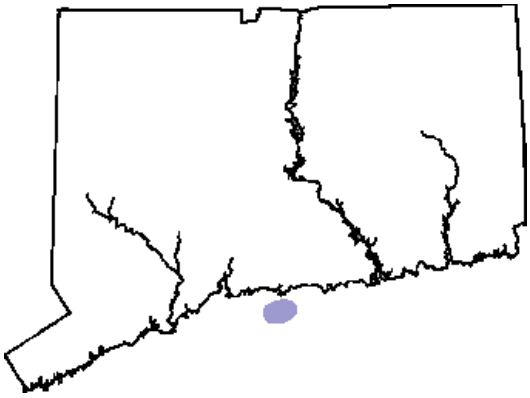
Roseate terns catch their prey by diving headfirst into the water. Their diet of small fish may have led to the alias mackerel gull, which also reflects their membership in the gull family. Graceful tern was another common name given to this adept flier.

In 1975, studies on Gull Island, New York, reported the hybridization of common terns and roseate terns. Similar crosses have not been documented since.

Protective Legislation: *Federal* - Endangered Species Act of 1973, Migratory Bird Treaty Act of 1918. *State* - Connecticut General Statutes Sec. 26-311.

What You Can Do: Respect all roseate tern nesting areas that are fenced or posted for the birds' protection. Do not approach or linger near roseate terns or their nests. Avoid landing vessels at offshore islands inhabited by terns.

Connecticut Range



The production of this Endangered and Threatened Species Fact Sheet Series is made possible by donations to the Endangered Species-Wildlife Income Tax Checkoff Fund.
(rev. 12/99)

Printable Version

79 Elm Street, Hartford, CT 06106-5127 / Phone: 860-424-3000

Red Knot ECOS Profile & Fact Sheet

U.S. Fish & Wildlife Service

Search ECOS

ECOS Environmental Conservation Online System

Conserving the Nature of America

Red knot (Calidris canutus rufa)

Range Information | Federal Register | Recovery | Critical Habitat | Conservation Plans | Petitions | Life History

Taxonomy: View taxonomy in ITIS

Listing Status: Threatened

Where Listed: WHEREVER FOUND

General Information

Length: 25-28 cm. Adults in spring: Above finely mottled with grays, black and light ochre, running into stripes on crown; throat, breast and sides of head cinnamon-brown; dark gray line through eye; abdomen and undertail coverts white; uppertail coverts white, barred with black. Adults in winter: Pale ashy gray above, from crown to rump, with feathers on back narrowly edged with white; underparts white, the breast lightly streaked and speckled, and the flanks narrowly barred with gray. Adults in autumn: Underparts of some individuals show traces of the "red" of spring.

The species historical range included Alabama, Arkansas, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Puerto Rico, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, Virgin Islands, West Virginia, Wisconsin, Wyoming. See below for information about where the species is known or believed to occur.

Current Listing Status Summary

Status	Date Listed	Lead Region	Where Listed
Threatened	01/12/2015	Northeast Region (Region 5)	Wherever found Additional species information

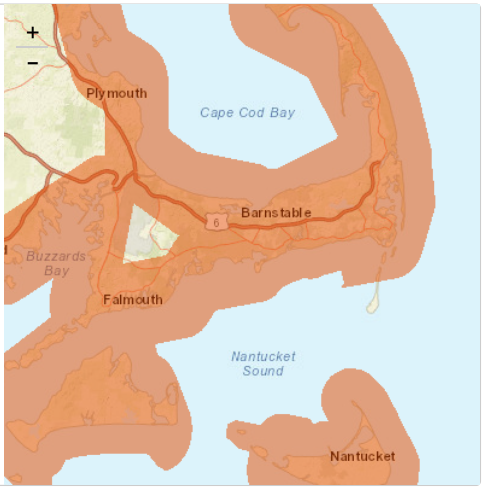
» Range Information

Current Range

Wherever found

Zoom in! Some species' locations may be small and hard to see from a wide perspective. To narrow-in on locations, check the state and county lists (below) and then use the zoom tool.

Want the FWS's current range for all species? Click here to download a zip file containing all individual shapefiles and metadata for all species.



- **Wherever found**

  Listing status: Threatened

- **States/US Territories** in which this population is known to or is believed to occur: Alabama , Arkansas , Connecticut , Delaware , Florida , Georgia , Illinois , Indiana , Kansas , Louisiana , Maine , Maryland , Massachusetts , Michigan , Minnesota , Mississippi , Missouri , Montana , Nebraska , New Hampshire , New Jersey , New York , North Carolina , North Dakota , Ohio , Oklahoma , Pennsylvania , Rhode Island , South Carolina , South Dakota , Texas , Virginia , West Virginia , Wisconsin
- **US Counties** in which this population is known to or is believed to occur: View All
- **USFWS Refuges** in which this population is known to occur: Amagansett National Wildlife Refuge, Back Bay National Wildlife Refuge, Big Boggy National Wildlife Refuge, ... Show All Refuges
- **Countries** in which this population is known to occur: Argentina, Aruba, Bahamas, Barbados, Belize, Brazil, British Virgin Islands, Canada, Cayman Islands, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, El Salvador, French Guiana, Guadeloupe, Guatemala, Guyana, Haiti, Jamaica, Mexico, Panama, Paraguay, Suriname, Trinidad and Tobago, United States, Uruguay, U.S. Virgin Islands, Venezuela

» Federal Register Documents

Federal Register Documents

Show 10 entries

Date	Citation Page	Title
12/11/2014	79 FR 73705 73748	Threatened Species Status for the Rufa Red Knot
05/14/2014	79 FR 27548 27550	Proposed Threatened Status for the Rufa Red Knot (Ca
04/04/2014	79 FR 18869 18870	Proposed Threatened Status for the Rufa Red Knot (Ca
09/30/2013	78 FR 60023 60098	Proposed Threatened Status for the Rufa Red Knot (Ca
11/21/2012	77 FR 69993 70060	Review of Native Species That Are Candidates for Listir on Resubmitted Petitions; Annual Description of Progre
10/26/2011	76 FR 66370 66439	Review of Native Species That Are Candidates for Listir on Resubmitted Petitions; Annual Description of Progre
11/10/2010	75 FR 69222 69294	Review of Native Species That Are Candidates for Listir on Resubmitted Petitions; Annual Description of Progre
11/09/2009	74 FR 57804 57878	Review of Native Species That Are Candidates for Listir on Resubmitted Petitions; Annual Description of Progre
12/10/2008	73 FR 75176 75244	Review of Native Species That Are Candidates for Listir on Resubmitted Petitions; Annual Description of Progre

Showing 1 to 10 of 11 entries ‹ Previous 1 2 Next ›

» Recovery

- Recovery Plan Information Search
- Information Search FAQs

No recovery information is available for the Red Knot.

» Critical Habitat

No critical habitat rules have been published for the Red Knot.

» Conservation Plans

Candidate Conservation Agreements (CCA): (learn more)

Show 10 entries

CCA Plan Summaries
Red Knot Cooperative Agreement

Showing 1 to 1 of 1 entries ‹ Previous 1 Next ›

» Petitions

Show 10 entries

Showing 1 to 4 of 4 entries

‹ Previous 1 Next ›

» Life History

No Life History information has been entered into this system for this species.

» Other Resources

NatureServe Explorer Species Reports -- NatureServe Explorer is a source for authoritative conservation information on more than 50,000 plants, animals and ecological communtities of the U.S and Canada. NatureServe Explorer provides in-depth information on rare and endangered species, but includes common plants and animals too. NatureServe Explorer is a product of NatureServe in collaboration with the Natural Heritage Network.

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FWS Digital Media Library -- The U.S. Fish and Wildlife Service's National Digital Library is a searchable collection of selected images, historical artifacts, audio clips, publications, and video.

U.S. Fish & Wildlife Service

Red knot

Calidris canutus rufa

Skilled aviator Rear Admiral Richard E. Byrd flew over both the North and South poles. But what this renowned man accomplished with the help of sled dogs, ships and airplanes, a little shorebird weighing less than a cup of coffee completes every year of its life. The red knot is truly a master of long-distance aviation.

On wingspans of 20 inches, red knots fly more than 9,300 miles from south to north every spring and repeat the trip in reverse every autumn, making this bird one of the longest-distance migrants in the animal kingdom. About 9 inches long, red knots are among the largest of the small sandpipers. Biologists have identified five races of red knot, three of them living in the Western Hemisphere: *C.c. islandica*, *C.c. rogersi*, and *C.c. rufa*. This last, the red knot known as rufa, winters at the tip of South America in Tierra del Fuego and breeds on the mainland and islands above the Arctic Circle.

Surveys of wintering knots along the coasts of southern Chile and Argentina and during spring migration in Delaware Bay on the U.S. coast indicate a serious population decline. Biologists from the U.S. Fish and Wildlife Service, state natural resource agencies, and non-profit organizations all share a concern for this race of red knot and are pooling efforts to identify what needs to be done to prevent further losses.

A red knot banded in May 1987 was seen on Delaware Bay in May 2000. During those 13 years, the bird had flown about 242,350 miles, a distance farther than from the earth to the moon.

Strength in numbers

Red knots migrate in larger flocks than do most other shorebirds. They break their spring and fall migrations into non-stop segments of 1,500 miles and more, ending at stopover sites called staging areas. Flocks of red knots converge on staging areas along the entire Atlantic coast. Red knots are faithful to these specific sites, stopping at the same location year after year.

While we can guess at some of the benefits of traveling in large flocks, we can also see the downside - susceptibility to habitat change and loss, susceptibility to toxins and diseases, and susceptibility to hunting. Red knots were heavily hunted in the early 20th century, and have never recovered in eastern Canada. They are still hunted in Barbados, the Guianas and other regions in South America. When wintering, the flocking of red knots may protect them from attack by birds of prey. Red knots under attack from falcons perform evasive maneuvers in dense flocks. These flock movements provide very successful protection for individual birds.

Eating like a bird

In order to endure their long journeys, red knots undergo extensive physiological changes. Flight muscle mass increases, while leg muscle mass decreases. Stomach and gizzard masses decrease, while fat mass increases by more than 50 percent. For much of the year red knots eat small mussels and other mollusks, shell and all. When red knots stop to eat during their migration, they eat fewer hard foods because of their shrunken gizzards, and in spring they seek the soft eggs of the horseshoe crab. In fact, the birds' spring migration is timed with the release of horseshoe crab eggs, the perfect food for a traveling red knot. The abundance of these nutritious eggs also makes them a quick and easily found food, saving the birds' energy. Red knots arrive at staging areas very thin, sometimes emaciated. They eat constantly to increase their fat mass to continue the trip, gaining up to 10 percent of their body weight each day and essentially doubling their body weight during their stopover stay.

Red knots often arrive in their arctic breeding areas before the snow cover has melted, and before insects are active and available to eat. The birds then eat plant seeds, grass shoots and other vegetable foods. Once insects hatch, chicks eat them almost exclusively, and adult red knots increase their consumption of insects along with plant materials.

Requirements for survival

Red knots' unique and impressive life history depends for its success, and the species' survival, on certain conditions. One of the most important is the continued availability of billions of horseshoe crab eggs at major North Atlantic staging areas, notably the Delaware Bay and Cape May peninsula. The increase in taking of horseshoe crabs for bait in commercial fisheries that occurred in the 1990s may be a major factor in the decline in red knots. Another necessary condition for red knots' survival is the continued existence of middle- and high-arctic habitat for breeding. Red knots could be particularly affected by global climate change, which may be greatest at the latitudes where this species breeds and winters.

Red knots fascinate biologists, bird watchers and people who appreciate the complex beauty of the natural world. Together with these partners, the U.S. Fish and Wildlife Service is dedicated to working to conserve this extraordinary bird.

Northeast Region
U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035
413/253 8200
http://northeast.fws.gov

Federal Relay Service
for the deaf and hard-of-hearing
1 800/877 8339

U.S. Fish and Wildlife Service
http://www.fws.gov
1 800/344 WILD

August 2005

Rusty Patched Bumble Bee ECOS Profile & Fact Sheet

Rusty patched bumble bee (Bombus affinis)

Range Information | Federal Register | Recovery | Critical Habitat | Conservation Plans | Petitions | Life History

Taxonomy: View taxonomy in ITIS

Listing Status: Endangered

Where Listed: WHEREVER FOUND

General Information

Historically, the rusty patched bumble bee was broadly distributed across the eastern United States, Upper Midwest, and southern Quebec and Ontario in Canada. Since 2000, this bumble bee has been reported from only 13 states and 1 Canadian province: Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Minnesota, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, Wisconsin and Ontario, Canada.

Rusty patched bumble bees live in colonies that include a single queen and female workers. The colony produces males and new queens in late summer. Queens are the largest bees in the colony, and workers are the smallest. All rusty patched bumble bees have entirely black heads, but only workers and males have a rusty reddish patch centrally located on the back.

See www.fws.gov/midwest/endangered/insects/rpbb for more.

The species historical range included Connecticut, Delaware, District of Columbia, Georgia, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Virginia, West Virginia, Wisconsin. See below for information about where the species is known or believed to occur.

Current Listing Status Summary

Status	Date Listed	Lead Region	Where Listed
Endangered	03/21/2017	Great Lakes-Big Rivers Region (Region 3)	Wherever found Additional species information

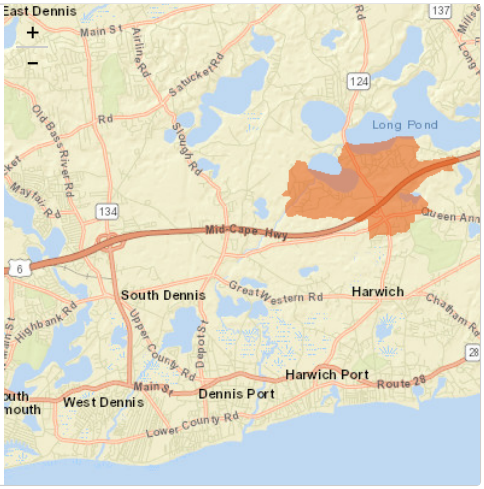
» Range Information

Current Range

☑ *Wherever found*

Zoom in! Some species' locations may be small and hard to see from a wide perspective. To narrow-in on locations, check the state and county lists (below) and then use the zoom tool.

Want the FWS's current range for all species? Click here to download a zip file containing all individual shapefiles and metadata for all species.



- **Wherever found**

Listing status: Endangered

- **States/US Territories** in which this population is known to or is believed to occur: Illinois , Indiana , Iowa , Maine , Massachusetts , Minnesota , Ohio , Virginia , West Virginia , Wisconsin
- **US Counties** in which this population is known to or is believed to occur: View All

» Federal Register Documents

Federal Register Documents

Show 10 entries

Date	Citation Page	Title
02/10/2017	82 FR 10285 10286	Endangered Species Status for Rusty Patched Bu
01/11/2017	82 FR 3186 3209	Endangered Species Status for Rusty Patched Bu
09/22/2016	81 FR 65324 65334	Endangered Species Status for Rusty Patched Bu
09/18/2015	80 FR 56423 56432	Endangered and Threatened Wildlife and Plants;

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» Recovery

- Recovery Plan Information Search
- Information Search FAQs

No recovery information is available for the Rusty patched bumble bee.

» Critical Habitat

No critical habitat rules have been published for the Rusty patched bumble bee.

» Conservation Plans

No conservation plans have been created for Rusty patched bumble bee.

» Petitions

Show 10 entries

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» Life History

Habitat Requirements

Rusty patched bumble bees once occupied grasslands and tallgrass prairies of the Upper Midwest and Northeast, but most grasslands and prairies have been lost, degraded, or fragmented by conversion to other uses. Bumble bees need areas that provide nectar and pollen from flowers, nesting sites (underground and abandoned rodent cavities or clumps of grasses), and overwintering sites for hibernating queens (undisturbed soil).

Food Habits

Bumble bees gather pollen and nectar from a variety of flowering plants. The rusty patched emerges early in spring and is one of the last species to go into hibernation. It needs a constant supply and diversity of flowers blooming throughout the colony's long life, April through September.

Reproductive Strategy

Rusty patched bumble bee colonies have an annual cycle. In spring, solitary queens emerge and find nest sites, collect nectar and pollen from flowers and begin laying eggs, which are fertilized by sperm stored since mating the previous fall. Workers hatch from these first eggs and colonies grow as workers collect food, defend the colony, and care for young. Queens remain within the nests and continue laying eggs. In late summer, new queens and males also hatch from eggs. Males disperse to mate with new queens from other colonies. In fall, founding queens, workers and males die. Only new queens go into diapause (a form of hibernation) over winter - and the cycle begins again in spring.

» Other Resources

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FWS Digital Media Library -- The U.S. Fish and Wildlife Service's National Digital Library is a searchable collection of selected images, historical artifacts, audio clips, publications, and video.

U.S. Fish & Wildlife Service

Rusty Patched Bumble Bee
Bombus affinis

The U.S. Fish and Wildlife Service listed the rusty patched bumble bee as endangered under the Endangered Species Act. Endangered species are animals and plants that are in danger of becoming extinct. Identifying, protecting and recovering endangered species is a primary objective of the U.S. Fish and Wildlife Service's endangered species program.

What is a rusty patched bumble bee?

Appearance: Rusty patched bumble bees live in colonies that include a single queen and female workers. The colony produces males and new queens in late summer. Queens are the largest bees in the colony, and workers are the smallest. All rusty patched bumble bees have entirely black heads, but only workers and males have a rusty reddish patch centrally located on the back.

Habitat: Rusty patched bumble bees once occupied grasslands and tallgrass prairies of the Upper Midwest and Northeast, but most grasslands and prairies have been lost, degraded, or fragmented by conversion to other uses. Bumble bees need areas that provide nectar and pollen from flowers, nesting sites (underground and abandoned rodent cavities or clumps of grasses), and overwintering sites for hibernating queens (undisturbed soil).

Illustrations of a rusty patched bumble bee queen (left), worker (center), and male (right) by Elaine Evans, The Xerces Society.

Photo courtesy of Christy Stewart

Reproduction: Rusty patched bumble bee colonies have an annual cycle. In spring, solitary queens emerge and find nest sites, collect nectar and pollen from flowers and begin laying eggs, which are fertilized by sperm stored since mating the previous fall. Workers hatch from these first eggs and colonies grow as workers collect food, defend the colony, and care for young. Queens remain within the nests and continue laying eggs. In late summer, new queens and males also hatch from eggs. Males disperse to mate with new queens from other colonies. In fall, founding queens, workers and males die. Only new queens go into diapause (a form of hibernation) over winter - and the cycle begins again in spring.

Feeding Habits: Bumble bees gather pollen and nectar from a variety of flowering plants. The rusty patched emerges early in spring and is one of the last species to go into hibernation.

Why conserve rusty patched bumble bees?

As pollinators, rusty patched bumble bees contribute to our food security and the healthy functioning of our ecosystems. Bumble bees are keystone species in most ecosystems, necessary not only for native wildflower reproduction, but also for creating seeds and fruits that feed wildlife as diverse as songbirds and grizzly bears.

Bumble bees are among the most important pollinators of crops such as blueberries, cranberries, and clover and almost the only insect pollinators of tomatoes. Bumble bees are more effective pollinators than honey bees for some crops because of their ability to "buzz pollinate." The economic value of pollination services provided by native insects (mostly bees) is estimated at $3 billion per year in the United States.

It needs a constant supply and diversity of flowers blooming throughout the colony's long life, April through September.

Range: Historically, the rusty patched bumble bee was broadly distributed across the eastern United States and Upper Midwest, from Maine in the U.S. and southern Quebec and Ontario in Canada, south to the northeast corner of Georgia, reaching west to the eastern edges of North and South Dakota. Its range included 28 states, the District of Columbia and 2 provinces in Canada. Since 2000, this bumble bee has been reported from only 13 states and 1 province: Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Minnesota, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, Wisconsin – and Ontario, Canada.

Why is the rusty patched bumble bee declining?

Habitat loss and degradation: Most prairies and grasslands of the Upper Midwest and Northeast have been converted to monoculture farms or developed areas, such as cities and roads. Grasslands that remain tend to be small and isolated.

Intensive farming: Increases in farm size and technology advances improved the operating efficiency of farms but have led to practices that harm bumble bees: increased use of pesticides, loss of crop diversity resulting in flowering crops being available for only a short time, loss of hedgerows with flowering plants, and loss of legume pastures.

Disease: Pathogens and parasites may pose a threat, although their prevalence and effects in North American bumble bees are not well understood.

Pesticides: The rusty patched bumble bee may be vulnerable to pesticides. Pesticides are used widely on farms and in cities and have both lethal and sublethal toxic effects. Bumble bees can absorb toxins directly through their exoskeleton and through contaminated nectar and pollen. Rusty patched bumble bees nest in the ground and may be susceptible to pesticides that persist in agricultural soils, lawns and turf.

Global climate change: Climate changes that may harm bumble bees include increased temperature and precipitation extremes, increased drought, early snow melt and late frost events. These changes may lead to more exposure to or susceptibility to disease, fewer flowering plants, fewer places for queens to hibernate and nest, less time for foraging due to high temperatures, and asynchronous flowering plant and bumble bee spring emergence.

What is being done to conserve rusty patched bumble bees?

U.S. Fish and Wildlife Service: Several Service programs work to assess, protect, and restore pollinators and their habitats. Also, the Service works with partners to recover endangered and threatened pollinators and pollinator-dependent plants. Concern about pollinator declines prompted formation of the North American Pollinator Protection Campaign, a collaboration of people dedicated to pollinator conservation and education. The Service has a Memorandum of Understanding with the Pollinator Partnership to work together on those goals. The Service is a natural collaborator because our mission is to work with others to conserve, fish, wildlife, and plants and their habitats.

Other Efforts: Trusts, conservancies, restoration groups and partnerships are supporting pollinator initiatives and incorporating native plants that support bees and other pollinators into their current activities. For example, the USDA Natural Resource Conservation Service is working with landowners in Michigan, Minnesota, Montana, North Dakota, South Dakota, and Wisconsin to make bee-friendly conservation improvements to their land. Improvements include the practices of planting cover crops, wildflowers, or native grasses and improved management on grazing lands.

Research: Researchers are studying and monitoring the impacts of GMO crops and certain pesticides on pollinators. Efforts by citizen scientists and researchers to determine the status of declining bee species are underway throughout the United States.

What can I do to help conserve the rusty patched bumble bee?

Garden: Grow a garden or add a flowering tree or shrub to your yard. Even small areas or containers on patios can provide nectar and pollen for native bees.

Native plants: Use native plants in your yard such as lupines, asters, bee balm, native prairie plants and spring ephemerals. Don't forget spring blooming shrubs like ninebark and pussy willow! Avoid invasive non-native plants and remove them if they invade your yard. For more information on attracting native pollinators, visit www.fws.gov/pollinators/pdfs/PollinatorBookletFinalrevWeb.pdf.

Natural landscapes: Provide natural areas - many bumble bees build nests in undisturbed soil, abandoned rodent burrows or grasss clumps. Keep some unmowed, brushy areas and tolerate bumble bee nests if you find them. Reduce tilling soil and mowing where bumble bees might nest. Support natural areas in your community, county and state.

Minimize: Limit the use of pesticides and chemical fertilizer whenever possible or avoid them entirely. Pesticides cause lethal and sublethal effects to bees and other pollinators.

Northern Long-eared Bat Fact Sheet

Northern Long-Eared Bat

Myotis septentrionalis

The northern long-eared bat is federally listed as a threatened species under the Endangered Species Act. ***Endangered*** species are animals and plants that are in danger of becoming extinct. ***Threatened*** species are animals and plants that are likely to become endangered in the foreseeable future. Identifying, protecting and restoring endangered and threatened species is the primary objective of the U.S. Fish and Wildlife Service's Endangered Species Program.

Photo by Steve Taylor, University of Illinois

This northern long-eared bat, observed during an Illinois mine survey, shows visible symptoms of white-nose syndrome.

What is the northern long-eared bat?

Appearance: The northern long-eared bat is a medium-sized bat with a body length of 3 to 3.7 inches and a wingspan of 9 to 10 inches. Their fur color can be medium to dark brown on the back and tawny to pale-brown on the underside. As its name suggests, this bat is distinguished by its long ears, particularly as compared to other bats in its genus, *Myotis*.

Winter Habitat: Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. They use areas in various sized caves or mines with constant temperatures, high humidity, and no air currents. Within hibernacula, surveyors find them hibernating most often in small crevices or cracks, often with only the nose and ears visible.

Summer Habitat: During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees). Males and non-reproductive females may also roost in cooler places, like caves and mines. Northern long-eared bats seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices. They rarely roost in human structures like barns and sheds.

Reproduction: Breeding begins in late summer or early fall when males begin to swarm near hibernacula. After copulation, females store sperm during hibernation until spring. In spring, females emerge from their hibernacula, ovulate and the stored sperm fertilizes an egg. This strategy is called delayed fertilization.

After fertilization, pregnant bats migrate to summer areas where they roost in small colonies and give birth to a single pup. Maternity colonies of females and young generally have 30 to 60 bats at the beginning of the summer, although larger maternity colonies have also been observed. Numbers of bats in roosts typically decrease from the time of pregnancy to post-lactation. Most bats within a maternity colony give birth around the same time, which may occur from late May or early June to late July, depending where the colony is located within the species' range. Young bats start flying by 18 to 21 days after birth. Maximum lifespan for the northern long-eared bat is estimated to be up to 18.5 years.

Feeding Habits: Like most bats, northern long-eared bats emerge at dusk to feed. They primarily fly through the understory of forested areas feeding on moths, flies, leafhoppers, caddisflies, and beetles, which they catch while in flight using echolocation or by gleaning motionless insects from vegetation.

Range: The northern long-eared bat's range includes much of the eastern and north central United States, and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and eastern British Columbia. The species' range includes 37 States and the District of Columbia: Alabama, Arkansas, Connecticut, Delaware, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming.

Why is the northern long-eared bat in trouble?

White-nose Syndrome: No other threat is as severe and immediate as

this. If this disease had not emerged, it is unlikely that northern long-eared bat populations would be experiencing such dramatic declines. Since symptoms were first observed in New York in 2006, white-nose syndrome has spread rapidly from the Northeast to the Midwest and Southeast; an area that includes the core of the northern long-eared bat's range, where it was most common before this disease. Numbers of northern long-eared bats (from hibernacula counts) have declined by up to 99 percent in the Northeast. Although there is uncertainty about the rate that white-nose syndrome will spread throughout the species' range, it is expected to continue to spread throughout the United States in the foreseeable future.

Other Sources of Mortality:
Although no significant population declines have been observed due to the sources of mortality listed below, they may now be important factors affecting this bat's viability until we find ways to address WNS.

Impacts to Hibernacula: Gates or other structures intended to exclude people from caves and mines not only restrict bat flight and movement, but also change airflow and microclimates. A change of even a few degrees can make a cave unsuitable for hibernating bats. Also, cave-dwelling bats are vulnerable to human disturbance while hibernating. Arousal during hibernation causes bats to use up their energy stores, which may lead to bats not surviving through winter.

Loss or Degradation of Summer Habitat: Highway construction, commercial development, surface mining, and wind facility construction permanently remove habitat and are activities prevalent in many areas of this bat's range. Many forest management activities benefit bats by keeping areas forested rather than converted to other uses. But, depending on type and timing, some forest management activities can cause mortality and temporarily remove or degrade roosting and foraging habitat.

Wind Farm Operation: Wind turbines kill bats, and, depending on the species, in very large numbers. Mortality from windmills has been documented for northern long-eared bats, although a small number have been found to date. However, there are many wind projects within a large portion of the bat's range and many more are planned.

What Is Being Done to Help the Northern Long-Eared Bat?

Disease Management: Actions have been taken to try to reduce or slow the spread of white-nose syndrome through human transmission of the fungus into caves (e.g. cave and mine closures and advisories; national decontamination protocols). A national plan was prepared by the Service and other state and federal agencies that details actions needed to investigate and manage white-nose syndrome. Many state and federal agencies, universities and non-governmental organizations are researching this disease to try to control its spread and address its affect. See www.whitenosesyndrome.org/ for more.

Addressing Wind Turbine Mortality: The Service and others are working to minimize bat mortality from wind turbines on several fronts. We fund and conduct research to determine why bats are susceptible to turbines, how to operate turbines to minimize mortality and where important bird and bat migration routes are located. The Service, state natural resource agencies, and the wind energy industry are developing a Midwest Wind Energy Habitat Conservation Plan, which will provide wind farms a mechanism to continue operating legally while minimizing and mitigating listed bat mortality.

Listing: The northern long-eared bat is listed as a threatened species under the federal Endangered Species Act. Listing a species affords it the protections of the Act and also increases the priority of the species for funds, grants, and recovery opportunities.

Hibernacula Protection: Many federal and state natural resource agencies and conservation organizations have protected caves and mines that are important hibernacula for cave-dwelling bats.

What Can I Do?

Do Not Disturb Hibernating Bats: To protect bats and their habitats, comply with all cave and mine closures, advisories, and regulations. In areas without a cave and mine closure policy, follow approved decontamination protocols (see http://whitenosesyndrome.org/topics/decontamination). Under no circumstances should clothing, footwear, or equipment that was used in a white-nose syndrome affected state or region be used in unaffected states or regions.

Leave Dead and Dying Trees Standing: Like most eastern bats, the northern long-eared bat roosts in trees during summer. Where possible and not a safety hazard, leave dead or dying trees on your property. Northern long-eared bats and many other animals use these trees.

Install a Bat Box: Dead and dying trees are usually not left standing, so trees suitable for roosting may be in short supply and bat boxes may provide additional roost sites. Bat boxes are especially needed from April to August when females look for safe and quiet places to give birth and raise their pups.

Support Sustainability: Support efforts in your community, county and state to ensure that sustainability is a development goal. Only through sustainable living will we provide rare and declining species, like the northern long-eared bat, the habitat and resources they need to survive alongside us.

Spread the Word: Understanding the important ecological role that bats play is a key to conserving the northern long-eared and other bats. Helping people learn more about the northern long-eared bat and other endangered species can lead to more effective recovery efforts. For more information, visit www.fws.gov/midwest/nleb and www.whitenosesyndrome.org

Join and Volunteer: Join a conservation group; many have local chapters. Volunteer at a local nature center, zoo, or national wildlife refuge. Many state natural resource agencies benefit greatly from citizen involvement in monitoring wildlife. Check your state agency websites and get involved in citizen science efforts in your area.

USFWS Determination Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE

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

September 24, 2018

To whom it may concern:

The U.S. Fish and Wildlife Service (USFWS) reviewed the stormwater discharge activities associated with the 2016 National Pollutant Discharge and Elimination System (NPDES) Massachusetts (MA) Small Municipal Separate Storm Sewer System (MS4) general permit (MA MS4 General Permit) issued by the Environmental Protection Agency (EPA). We determined those activities may affect, but are not likely to adversely affect, certain species listed under the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) when specific conditions are met. When these conditions are met, we do not need to review individual projects. These comments are provided in accordance with section 7 of the ESA and complement existing 2016 MA MS4 General Permit Appendix C Guidance. We understand the applicant is acting as a non-Federal representative of the EPA for the purpose of consultation under section 7. **This letter provides additional guidance for meeting Criterion B and should be submitted as part of your application package to the EPA.**

If the USFWS Information for Planning and Consultation website (https://ecos.fws.gov/ipac/) indicates your MA MS4 General Permit project action area may contain one or more of the following federally listed endangered species: roseate tern (*Sterna dougallii*), northern red-bellied cooter (*Pseudemys rubriventris*), dwarf wedgemussel (*Alasmidonta heterodon*), rusty patched bumble bee (*Bombus affinis*), northeastern bulrush (*Scirpus ancistrochaetus*), or American chaffseed (*Schwalbea americana*); threatened species: piping plover (*Charadrius melodus*), bog turtle (*Glyptemys muhlenbergii*), Puritan tiger beetle (*Cicindela puritana*), northeastern beach tiger beetle (*Cicindela dorsalis*), or red knot (*Calidris canutus rufa*); or their federally designated critical habitat; and the specific conditions listed below are met, you may submit this letter to complete the **MA MS4 General Permit Appendix C: Step 4** in place of a concurrence letter for informal consultation as documentation of ESA eligibility for **USFWS Criterion B.**

In addition, this letter also satisfies the requirement in the **MA MS4 General Permit Appendix C: Step 2 (3)** to contact the USFWS and obtain a concurrence letter, if you have not yet done so. If your project action area includes one or more of the above-listed species *and* one or more of the

species listed under **Criterion C,**[1] you may still use this letter to certify under **Criterion B**. All existing guidance regarding requirements for certifying eligibility according to the USFWS Criterion A, B, or C for coverage by the 2016 MS4 Permit (see MA MS4 General Permit Appendix C – Endangered Species Guidance) remains unchanged.

We have determined that proposed stormwater discharge activities covered under the 2016 MS4 Permit *may affect, but are not likely to adversely affect*, the above-listed species and the species' critical habitat when the following are true:

1. all stormwater discharges are pre-existing or previously permitted by EPA;
2. any planned operations and maintenance work covered by this permit will only affect previously disturbed areas where stormwater controls are already installed. In these situations the chance of encountering any of the subject species is discountable;
3. the project implements EPA MS4 Best Management Practices (BMPs) and meets Clean Water Act and Massachusetts Water Quality Standards. Although permitted discharges may reach the environment used by these species, BMPs reduce pollutants to the extent that discharges are not known to have measurable impacts on these species or their habitat;
4. no new construction or structural BMPs are proposed under this permit at this time; and
5. you agree that if, during the course of the permit term, you plan to install a structural BMP not identified in the Notice of Intent (NOI), you will re-initiate consultation with the USFWS as necessary (see **MA MS4 General Permit Appendix C: Step 2 (5)**).

If the above criteria are met, further consultation with the USFWS under section 7 of the ESA is not required at this time; however, if the proposed action changes in any way such that it may affect a listed species in a manner not previously analyzed or if new information reveals the presence of additional listed species that may be affected by the project, the applicant or the EPA should contact us immediately and suspend activities that may affect those species until the appropriate level of consultation is completed with our office. Thank you for your cooperation, and please contact David Simmons of this office at (603) 227-6425 if you have questions or need further assistance.

Sincerely yours,

Thomas R Chapman
Supervisor
New England Field Office

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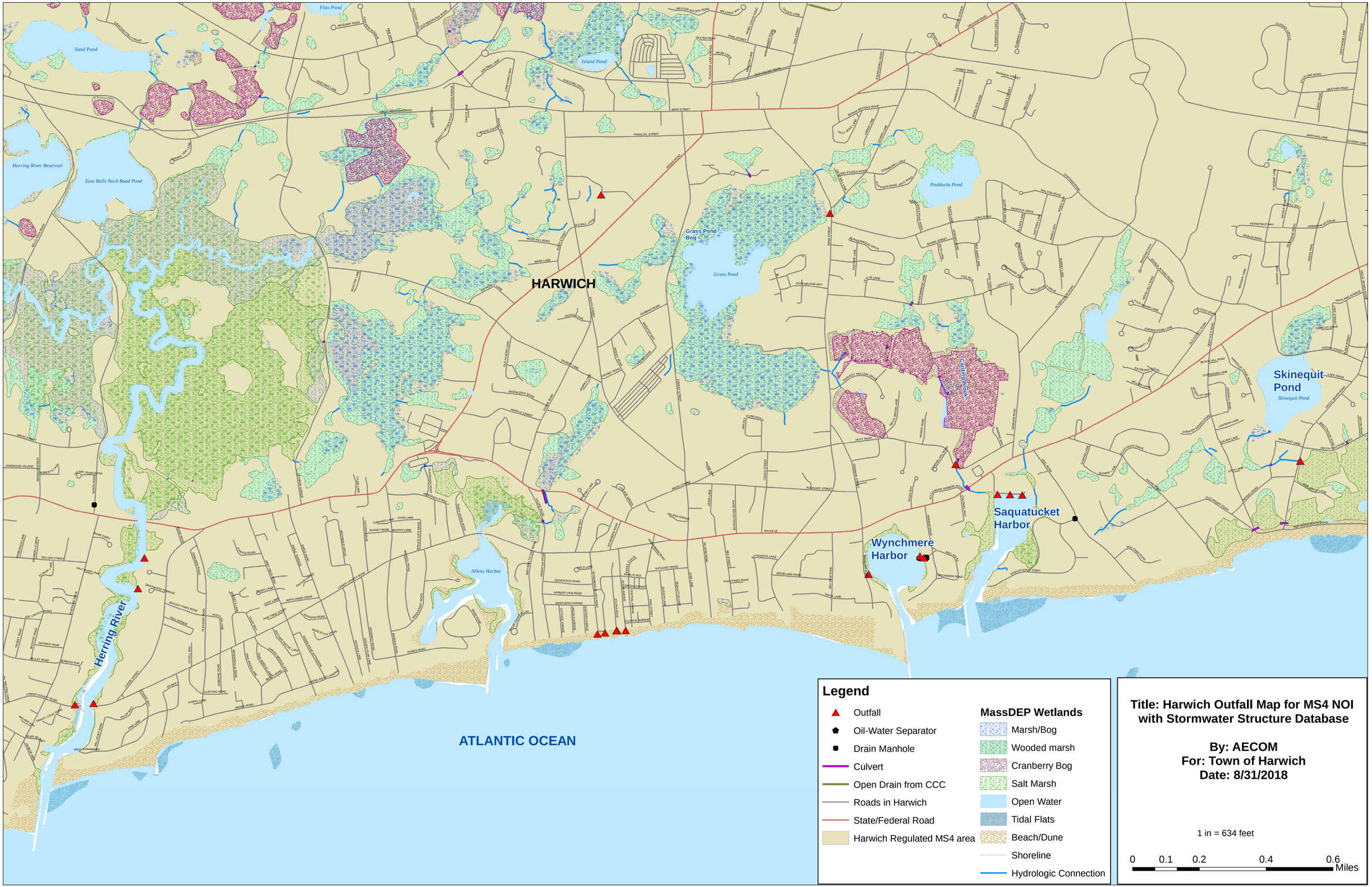
[1] Criterion C includes guidance for project action areas that may contain species for which EPA has already made a determination. These species include the northern long-eared bat (*Myotis septentrionalis*), sandplain gerardia (*Agalinis acuta*), small whorled pogonia (*Isotria medeoloides*), and/or American burying beetle (*Nicrophorus americanus*) (MA MS4 General Permit Appendix C: Step 3 – Determine if You Can Meet Eligibility USFWS Criterion C).

Attachment B

Outfall Map


HARWICH
ATLANTIC OCEAN
Flax Pond
Sand Pond
Island Pond
Herring River Reservoir
East Bells Neck Road Pond
Grass Pond Bog
Grass Pond
Paddocks Pond
Carding Brook
Skinequit Pond
Skinequit Pond
Saquatucket Harbor
Wynchmere Harbor
Allens Harbor
Herring River
MAIN STREET
PARALLEL STREET
ROUTE 28
SOUTH STREET
Legend
Outfall
Oil-Water Separator
Drain Manhole
Culvert
Open Drain from CCC
Roads in Harwich
State/Federal Road
Harwich Regulated MS4 area
MassDEP Wetlands
Marsh/Bog
Wooded marsh
Cranberry Bog
Salt Marsh
Open Water
Tidal Flats
Beach/Dune
Shoreline
Hydrologic Connection
Title: Harwich Outfall Map for MS4 NOI with Stormwater Structure Database
By: AECOM
For: Town of Harwich
Date: 8/31/2018
1 in = 634 feet
0 0.1 0.2 0.4 0.6 Miles