

Natural Heritage – Locality Liaison/Habitat Restoration

Final Report for FY2015 VCZMP Grant No. NA15NOS4190164 Task #5

November 15, 2016

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*Virginia Department of Conservation and Recreation –
Division of Natural Heritage*



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The views expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Department of Commerce, NOAA, or any of its sub agencies.

TABLE OF CONTENTS

Executive Summary_____	page 1
Introduction_____	page 3
Staffing_____	page 3
Environmental Review_____	page 3
Natural Heritage Data and Natural Heritage Data Explorer_____	page 6
List of Participants in Presentations_____	page 8
Locality Partnerships with DCR-Natural Heritage_____	page 8
Habitat Restoration and Protection Initiatives_____	page 9
Recommendations for Future Actions_____	page 9

Appendix

Letters for WB – Xpress_____	A
Letter for Essex Solar Center_____	B
Letters for Timberland Property_____	C
Letters and Tables for Army Corps of Engineer projects_____	D
Letter for National Capital Region Invasive Plant Management Plan_____	E
Virginia Land Conservation Workshop Presentation _____	F
List of Training Participants _____	G
Map of Localities with Natural Heritage Information _____	H
Quarterly Coastal Species Highlight_____	I
Newport News Comprehensive Plan Natural Heritage Information_____	J

Executive Summary

During the FY2015 grant year, the Locality Liaison reviewed 1052 projects for impacts to natural heritage resources in the coastal zone (41% of the projects reviewed statewide). Several projects for renewable energy were submitted this year, including thirteen different solar projects. Environmental Resources Management has continued to work with DCR and Fairfax County Park Authority and Dominion Virginia Power to find the least impactful solution for the WB Xpress pipeline and Chantilly Compressor Station. The Elizabeth River Restoration Trust has established a draft plan for restoration and enhancement projects to be used for mitigation in two hydrologic units within the watershed.

Coastal localities and other conservation partners participated in seven training sessions for the Natural Heritage Data Explorer (NHDE) website (<https://vanhde.org>) including 5 from state agencies, 7 from local governments, 1 from a Planning District Commission, 5 from land trusts, and 10 from consulting companies. At the end of FY215, there were twenty-five coastal counties and fifteen coastal cities, eight Planning District Commissions (100%) and nineteen land trusts (76%) within the Coastal Zone with access to NHDE, digital shapefile data, and/or a combination of these tools. This equates to 91% of Coastal Zone counties or cities having Natural Heritage data, 100% of the Planning District Commissions and 76% of the Land Trusts.

Presentations included an overview of DCR's Natural Heritage Program, the Locality Assistance Program, and the Natural Heritage Data Explorer (NHDE) website highlighting the Virginia ConservationVision models, and the Virginia Species and Communities Database Search. In addition, other online conservation tools were presented including the Virginia Wetlands Catalog and the Coastal Ecological Value Assessment (Coastal VEVA), part of the Virginia DEQ's Coastal GEMS and the Virginia Potential Land Conservation Treasures layers. Natural Heritage information is updated quarterly on the NHDE website and shapefiles including the updated information are also distributed to licensed users. During FY15, 523 (48 were No Comment through NHDE) coastal projects were submitted through the NHDE, 50% of all the projects submitted in the coastal zone.

In addition, the Locality Liaison participated in the Virginia Land Conservation Conference 2016 as one of four presenters in the *Online Tools for Land Trusts* break-out session. An overview of the NHDE was given along with a demonstration of the public access website and a description of the tier levels for accessing Natural Heritage resource information for licensed land trusts. The Locality Liaison also participated in the City of Norfolk Flood Risk Management Study – Planning Workshop co-hosted with the U. S. Army Corps of Engineers Norfolk District, focused on flood risk management strategies to address the city's resilience challenges, opportunities and restraints.

The Locality Liaison worked with the data management specialist to improve tracking of Natural Heritage Data Explorer licenses and renewed or initiated 43 licenses throughout this year.

The Locality Liaison also added a quarterly coastal species highlight section to the Local Assistance webpage (<http://www.dcr.virginia.gov/natural-heritage/localityliaison>) and the

locality map (<http://www.dcr.virginia.gov/natural-heritage/localitiesmap>) was updated quarterly identifying localities with natural heritage data.

Newport News coordinated with DCR for information on Natural Heritage resources for inclusion in their updated comprehensive plan. A table of resources, map and text was provided.

Introduction

Through the Locality Liaison program, the Virginia Department of Conservation and Recreation's Division of Natural Heritage (DCR-DNH) works with local and regional planners to assist them in fully utilizing natural heritage resource information as well as the consultative services we provide to ensure protection of natural heritage resources. The Locality Liaison program seeks to establish natural heritage resource information as part of fundamental locality decision-making criteria through tools such as project review, comprehensive planning, project sitings, zoning amendments, and open space planning.

The Virginia Coastal Zone Management Program (VCZMP) the Chesapeake Bay Program and the need to develop flood risk management initiatives have generated interest in land use issues within the Coastal Zone. In addition, the Bay Total Maximum Daily Load (TMDL) program has encouraged localities to incorporate green infrastructure into their land planning. Coastal localities are developing conservation objectives, identifying potential areas for protection and looking at innovative approaches in making land use decisions that will improve water quality and develop long-range planning for local resiliency. The Locality Liaison program continues to work to have natural heritage resources play a larger role in helping localities find beneficial answers to the problems and opportunities they face in development and protecting their natural heritage resources.

Staffing

Alli Baird currently serves as the Coastal Zone Locality Liaison (Locality Liaison) and reviews projects within the coastal zone with assistance from other environmental review staff. Rene' Hypes (Environmental Review Coordinator) provides input for higher profile projects reviewed within the Coastal Zone. Numerous other DCR-DNH staff members also support the Locality Liaison program, including Data Manager Megan Rollins, Project Review Assistants, and various Natural Heritage biological inventory personnel.

Environmental Review

The DCR-DNH Environmental Review Section, to which the Locality Liaison is assigned, works with local, state, and federal government agencies as well as private individuals and consultants to assess the potential for proposed activities to impact natural heritage resources and to recommend ways to avoid or minimize these impacts. The Locality Liaison has primary responsibility for reviewing projects in the Coastal Zone and provides oversight for the Project Review staff assisting in the review process. Barbara Gregory (Project Review Assistant, Senior) conducts reviews for the Virginia Department of Transportation (VDOT) projects statewide including the Coastal Zone. During this grant year, DCR-DNH has reviewed 1052 projects in the Coastal Zone. This represents 41% of the projects reviewed statewide by DCR-DNH.

Through environmental review, the Locality Liaison provides service in connecting clients directly to needed information about natural heritage resources. With the state's most comprehensive database for rare, threatened and endangered species and significant natural communities, environmental review provides an opportunity for cooperating with other organizations. Many private consultants routinely and voluntarily coordinate with DCR-DNH before taking development project applications to regulatory agencies. Though DCR-DNH does not have regulatory authority, it has agreements with regulatory agencies that rely on our natural heritage resource data. The United States Army Corps of Engineers (ACOE) and the Department of Environmental Quality (DEQ) Virginia Water Protection Permit Program (VWPP) screen wetland development projects against the DCR-DNH database and forward potential conflicts for our comment. The DEQ Virginia Pollutant Discharge Elimination System (VPDES) program also screens issuance and re-issuances of permits for point source discharges to surface waters against the DCR-DNH database and the Virginia Department of Health (VDH) screens for issuance or re-issuance of pump-out facilities as part of their permitting process. The Virginia Marine Resource Commission (VMRC) relies on the DCR-DNH to review Joint Permit Applications (JPAs) and the DEQ Office of Regulatory Affairs, Renewable Energy Permitting relies on DCR-DNH to review solar and wind energy projects for potential impacts to natural heritage resources. Virginia Soil and Water Conservation Districts, which coordinate local natural resource protection programs, rely on DCR-DNH for information to include in local agricultural conservation planning. The United States Fish and Wildlife Service (USFWS) also relies heavily on DCR-DNH data for their own regulatory responses. The USFWS Information, Planning, and Conservation (IPaC) System web site on-line screening process includes DCR-DNH species distribution models and references the Natural Heritage website for species coordination purposes. Additionally DCR-DNH provides information on natural heritage resources to the Virginia Outdoors Foundation as they work on developing conservation easements.

The DCR-DNH has a Memorandum of Agreement with the Virginia Department of Game and Inland Fisheries (VDGIF) for sharing of data and species coordination between the two agencies. In addition to regulatory agencies, the Virginia Department of Transportation (VDOT) integrates Natural Heritage data into CEDARs, their internal database for environmental screening purposes, and uses the Natural Heritage Data Explorer for submitting transportation projects. Also, under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR-DNH represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species.

Specific Projects

Energy - Pipeline Project

Columbia Gas Transmission Line - WB Xpress Project

One of the several sites originally proposed for this project were within the Bull Run Diabase Flatwoods and the Elklick Diabase Flatwoods Conservation Sites (Appendix A). The original proposed infrastructure alignment intersected a significant natural community, the Northern Hardpan Basic Oak Hickory Forest, in both conservation sites. In addition, Purple milkweed and Torrey's mountain-mint have been documented in the Bull Run Diabase Flatwoods. Stiff goldenrod, historically documented in the existing Right-of-Way (ROW), is intersected by the project along the existing transmission line and diabase glades within the project site have the potential to support several globally and state rare plant species. Furthermore, the Elklick Woodlands Natural Area Preserve is located within the project area and is owned by the Fairfax County Parks Authority and DCR. Through written comments, DCR-DNH continued to strongly recommend avoidance of the significant rare communities within the conservation sites, and a survey for the rare plants associated with diabase glades. DCR-DNH also recommended continued coordination with the Fairfax Parks Authority and the DCR Northern Region Natural Area Steward in regards to the impacts to the natural area preserve. The consultant subsequently submitted an alternate location for access within the Dominion Virginia Power ROW that follows an existing vehicle route avoiding impact to Elklick Woodlands Natural Area Preserve and the Torrey's mountain-mint, and proposed an alternate location avoiding the Bull Run Diabase Flatwoods Conservation Site / Fairfax Park Authority Hickory Forest Park along Bull Run Post Office Road. In addition, the access to the staging area was altered thereby avoiding the documented occurrence of purple milkweed.

Renewable Energy

Essex Solar Center

DCR-DNH provided written comments for the Essex Solar Center noting that while there were no natural heritage resources within two miles of the project area, the project was within the Coastal Avian Protection Zone 12. In addition, and of some concern, the project is within a C5 ecological core as identified by Virginia Conservation Vision. Cores are areas of unfragmented natural cover. Fragmentation of such cores can disrupt species interactions and ecosystem processes, reducing biodiversity and habitat quality. As a greater number of projects have come in for review, DCR has become aware of the potential for greater forest fragmentation that was not initially anticipated from these projects. (Appendix B)

Private Landowner Potential Purchase

Timberland Property

This project review involved the acquisition of multiple timberland properties including bottomland hardwoods and upland pine plantations. The prospective purchaser intended to continue managing the lands for timber production, but also possible recreational hunting purposes. The request was to identify sensitive areas for which special management guidelines and practices may be warranted. (Appendix C)

Army Corps of Engineers, Norfolk District

City of Norfolk Flood Risk Scoping

The City of Norfolk was identified as one of nine areas of high risk for flooding in a study by the U. S. Army Corps of Engineers that warrants an in-depth investigation into potential coastal storm risk management measures. ACOE and the City of Norfolk will develop the feasibility study to address potential structural and non-structural alternatives to mitigate impacts from flooding and determining the Federal interest in cost-sharing for those alternatives. The request was to identify issues and potentially significant effects to be considered in the analysis. (Appendix D)

Living River Restoration Trust – 2016 Draft Instrument

The Living River Restoration Trust drafted a proposal for a watershed approach to restore and enhance existing shallow river bottom within the Elizabeth River watershed as a means to offset impacts of permitted activity resulting in dredging or filling of previously undisturbed shallow habitat. Two hydrologic units (HUC) were identified within which impacts would be offset by compensatory mitigation. In addition, during an interagency review team meeting DCR noted invasive species could be a potential threat to mitigation projects requiring monitoring and remediation. (Appendix D)

National Park Service

National Capital Region Invasive Plant Management Plan and Environmental Assessment

The National Park Service requested a review of their Invasive Plant Management Plan that covers 15 parks that constitute the National Capital Region to ensure that all of the parks have a range of methods available for use in treating non-native invasive plant species. The purpose of the Environmental Assessment is to protect and restore natural and cultural resources in the 15 parks by controlling, containing or substantially minimizing populations of non-native invasive plant species through targeted treatment. By providing managers with alternative vegetative management techniques, rare threatened and endangered species may be protected or enhanced through appropriate treatment. Establishing Best Management Practices (BMPs) within the region would identify and implement environmentally sound, cost-effective invasive plant management strategies. (Appendix E)

Natural Heritage Data and Natural Heritage Data Explorer

The heart of DCR-DNH's service to localities is the set of databases and information tools that indicate what is rare, where the rarities are, and how they can be protected. As of September 30, 2016, DCR-DNH databases contain information about approximately 9,257 specific occurrences of natural heritage resources, 2,394 of which reside in the coastal zone. Over the years, DCR-DNH has continually worked to improve the quality of the data and the utility of the tools used to present the data to researchers, planners, and decision-makers. All DCR-DNH data has been

converted to modified polygons within the GIS system. Conservation sites are now the primary mechanism for distributing natural heritage location information for public use. Conservation sites identify areas that potentially warrant conservation action because of the associated natural heritage resources and the habitat required for their survival. They incorporate contextual information about the key areas of the landscape surrounding the actual locations of natural heritage resources that are necessary to ensure protection of those resources. DCR-DNH currently tracks over 2,080 conservation sites, of which 559 are in the coastal zone as of September 30, 2016. These sites are continuously being updated by DCR-DNH staff.

The Virginia Natural Heritage Data Explorer (NHDE) allows Internet users to access Natural Heritage data on a remote website. This ArcServer GIS informational tool can alert planners to potential areas of opportunity or concern, facilitate proactive planning for county resources, and allow preliminary screening of projects and activities for potential impacts to natural heritage resources. In addition, licensed user may submit projects for review through the website. The natural heritage data on the website is updated quarterly, as updates are released for digital screening coverage shapefiles.

The website includes the Species and Communities Search function which allows users to search for a list of natural heritage resources by various filters including localities, coastal zone and planning district commissions. The Virginia ConservationVision models are also accessible through the website, which help target conservation efforts by guiding comprehensive planning. In addition, two new layers have been included on the public access tier to address potential Land Conservation Treasures. “Treasures” are a tangible project that provides a new opportunity for the public to access or experience a natural, cultural or scenic outdoor recreation resource. They are a permanent land protection project, including easement amendments that meets one or more of fourteen mapped conservation metrics.

Several different levels of NHDE access are available, from a public access level to a paid subscription with increasing information made available to different Tier level users. The Natural Heritage Data Explorer website tool can be accessed at <https://vanhde.org/>.

Training sessions for the Natural Heritage Data Explorer have generally been held on an every-other-month basis. The training days were held in Richmond utilizing the DEQ computer lab and one training day was held at the Virginia Institute of Marine Science. Training is provided by the project review staff, primarily the Locality Liaison. The general training sessions are open to all organizations, but may be divided into three sections according to the user’s tier access level. During this grant year, 7 separate hands-on training sessions for NHDE were held for coastal zone participants.

Approximately 1155 projects have been submitted through NHDE during FY2015 with 523 occurring in the coastal zone. Of those, 122 projects statewide including 48 from the coastal zone did not have natural heritage resources within two miles of the project location with a report automatically sent to the requestor from the NHDE website application stating this information and that no further review was required by DCR-DNH staff. Improvements to internal project review efficiency have been achieved through enhanced database query functions, updates to the

fillable on-line information services order forms including new review services and increasing the number of projects reviewed electronically.

In addition, the Locality Liaison participated in the Virginia Land Conservation Conference 2016 as one of four presenters in the *Online Tools for Land Trusts* break-out session. An overview of the NHDE was given along with a demonstration of the public access website and a description of the tier levels for accessing Natural Heritage resource information for licensed land trusts. (Appendix F) The Locality Liaison also participated in the City of Norfolk Flood Risk Management Study – Planning Workshop co-hosted with the U. S. Army Corps of Engineers, Norfolk District focused on flood risk management strategies to address the city’s resilience challenges, opportunities and restraints.

Participants in Locality Liaison Presentations

Presentations included an overview of DCR’s Natural Heritage Program, the Locality Assistance Program, the Natural Heritage Data Explorer (NHDE) website and ConservationVision models. Additional information was provided about Virginia Land Conservation Treasures, the Virginia Wetlands Catalog and the Coastal Virginia Ecological Value Assessment (VEVA), part of DEQ’s Coastal GEMS website application.

Coastal participants in the training sessions included 5 from state agencies, 7 from local governments, 1 from a Planning District Commission, 4 from a land trusts and 10 from consulting companies. A list of the local governments, conservation partners and state, federal agencies and consultants that participated in these training sessions can be found in Appendix G.

Locality Partnerships with DCR-Natural Heritage

The Locality Liaison has worked with localities within the Coastal Zone to encourage comprehensive use of natural heritage data and DCR-DNH services for conservation planning.

At the end of FY15, there were 25 coastal counties and 15 coastal cities, 8 Planning District Commissions and 19 land trusts within the Coastal Zone with access to NHDE, digital shapefile data, and/or a combination of these tools. This equates to 91% of Coastal Zone counties or cities having Natural Heritage data, 100% of the Planning District Commissions and 66% of the Land Trusts as of September 30, 2016. The Locality Liaison updated the website map (<http://www.dcr.virginia.gov/natural-heritage/localitiesmap>) quarterly to display localities with natural heritage data, reflecting the current status. Please see Appendix H for a map of the Virginia localities with Natural Heritage information. The Locality Liaison worked with the data management specialist to improve tracking of Natural Heritage Data Explorer licenses and renewed or initiated 43 licenses throughout this year.

A Species Highlight section has been added to the Locality Liaison webpage. On a quarterly basis a particular coastal species was highlighted by adding a photograph to the webpage that,

when clicked, would take the viewer to a pop-up with additional species and habitat description. (Appendix I)

Additionally, the Locality Liaison provided natural heritage resource information in the form of tables, text and a map of resources for inclusion in the comprehensive plan update (Appendix J) for the City of Newport News.

Habitat Restoration and Protection Initiatives

State Parks Planning Review

Natural Heritage staff participated on an advisory committee for state parks to discuss their master planning efforts. DCR staff review the park's resource information to consider appropriate park development. This process has provided state park planners with natural heritage resource information early in the planning stages to prevent impacts to resources. The review of Westmoreland State Park master plan identified potential for a natural heritage resource to occur within the park. DCR-DNH recommended an inventory for the resource and coordination with the USFWS.

Virginia Aquatic Resources Trust Fund Interagency Review Team

The Corps-Norfolk District and DEQ chair the Virginia Aquatic Resources Trust Fund (VARTF) Interagency Review Team that reviews and approves wetland and stream mitigation projects. Once approved these projects serve as an acceptable form of compensatory mitigation for impacts to state waters, including wetlands, permitted under Virginia Water Protection individual and general permits. DCR-DNH environmental review coordinator is a member of the interagency review team reviewing proposed wetland mitigation projects in the coastal zone as well as the other parts of the state. Several wetland mitigation bank projects were reviewed this year including three coastal zone wetland mitigation bank projects.

Recommendations for Further Actions

The Locality Liaison program has proven most effective when the Locality Liaison can become actively involved in a specific project of concern to the locality such as the partnerships with James City County and Fairfax County. Furthermore, interest in natural heritage information often depends on timing such as whether a comprehensive plan is under review or a major development project is being considered. Thus, the Locality Liaison will strive to stay aware of upcoming locality events through coordination with other Heritage regional and agency staff. The Liaison continues to identify when Coastal Zone localities comprehensive plans are due for review and will contact these localities at the appropriate time to offer assistance.

The Natural Heritage Data Explorer training will continue to be available every other month to provide interested users with the ability to access natural heritage information. In addition to on-site training, the locality liaison will offer to bring the training to the locality and the ability for participants to attend by webinar may also be included to increase participation by localities in NHDE training sessions.

40 Coastal Zone localities currently have access to the NHDE or digital shapefile Natural Heritage data. It is very important to provide follow-up assistance to these localities beyond the initial presentation and delivery of data. The Locality Liaison plans to work with these localities to determine how these data are being used and discuss local needs for further assistance. Additionally, localities that had used the NHDE in the past, but have not attended training for the NHDE will be targeted in FY16. It is also important to keep in contact with the localities due to possible staffing changes.

In the coming FY16 cycle, the NHDE will be upgraded to include technical enhancements to the website, improving functionality and efficiency. In addition, the creation and updating of conservation sites will be automated to increase updating frequency and consistency in how these sites are displayed to public.

The Locality Liaison will continue to focus on contacting localities that currently do not have Natural Heritage data, with Middlesex and King and Queen Counties being targeted for FY16 as well as counties that have not renewed their license. In some cases this may involve contacting departments other than planning, such as GIS, Environmental, Recreation, Parks or Utilities departments if they are separate entities. This may also involve an effort to assist localities in developing ordinances or regulations necessitating the review of Natural Heritage information for certain projects, including renewable energy projects. Contacting PDCs may help in identifying the best way to involve some of the localities.

The Locality Liaison web page will be updated and revised to continue to provide relevant natural heritage information for localities as well as updating the quarterly coastal species section and the map of localities with Natural Heritage data. The Liaison will work to further The Locality Liaison along with the project review staff will continue to work to improve the environmental review process.

Appendix A

Letters for
Columbia Gas Transmission Line
WB Xpress Project

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director



Rochelle Altholz
Deputy Director of
Administration and Finance

David C. Dowling
Deputy Director of
Soil and Water Conservation
and Dam Safety

Thomas L. Smith
Deputy Director of Operations

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

June 24, 2016

Karen Beatty
Environmental Resources Management, Inc.
121 Trade St. Suite 2350
Charlotte, NC 28202

Re: WB Xpress Project – Site 3B of 5

Dear Ms. Beatty:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Site 3B of 5 (equivalent to Chantilly Compressor Station, Permanent Access Road (PAR) -77Chantilly Lateral, Line VA – 1 and PAR – 79, as shown on the *Preliminary Applicant Prepared Draft Environmental Assessment, Columbia Gas Transmission, LLC, WB Xpress Project*, Docket No. PF15-21-000 submitted November 20, 2015, Appendix B, Aboveground Facility Aerial Maps, pp. 34-35)

According to the information currently in our files, the Elklick Diabase Flatwoods Conservation Site is located within the project boundary. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element’s conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. The Elklick Diabase Flatwoods Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources associated with this site are:

<i>Asclepias purpurascens</i>	Purple milkweed	G5?/S2/NL/NL
	Northern Hardpan Basic Oak Hickory Forest	G3S3/NL/NL
<i>Pycnanthemum torreyi</i>	Torrey’s mountain-mint	G2/S2/SOC/NL

The Northern Hardpan Basic Oak – Hickory Forest is endemic to the Culpeper Basin and western Piedmont foothills of Virginia and Maryland. This community is a subxeric to submesic oak-hickory forest occurring in association with soils weathered from Triassic diabase but occasionally on soils weathered from other mafic rocks and siltstone. Most soils occupied by this community have plastic, hardpan subsoil or are shallow over bedrock, and some have pronounced shrink-swell properties. Forest

canopies can be open to closed, sometimes stunted, with variable combinations of oaks (*Quercus alba*, *Quercus rubra*, *Quercus stellata*), hickories (*Carya glabra*, *Carya ovalis*, *Carya alba*), and *Fraxinus americana*. The lower strata contain eastern redbud (*Cercis canadensis*) and other plants indicative of base-rich soils, and the herb layer usually has a prominent component of forest grasses. Many stands of this community have been destroyed by suburban development and virtually all stands have been impacted to some extent by timber removal, conversion to pine silviculture, and grazing.

Torrey's mountain mint is a globally rare perennial herb with a mint-like odor. It measures 3 feet in height and has small white to purple flowers arranged in dense, terminal clusters that bloom in July - September (Strausbaugh & Core, 1978). It occurs in dry, rocky deciduous woods, along roadsides, powerline rights-of-way, calcareous seepage, and in thickets near streams. Populations of Torrey's mountain mint are found as small, dense colonies and are sensitive to minor habitat disturbances as well as stochastic events. Additional threats include woody plant succession, invasive species, herbicide use in rights-of-way and roadside locations, road maintenance work, and general habitat destruction (NatureServe, 2011). Surveys for this species should be conducted during the July-September flowering/fruitlet period.

Please note that this species is currently classified as a species of concern by the United States Fish and Wildlife Service (USFWS); however this designation has no official legal status.

There is a small subpopulation of Torrey's Mountain-mint at the edge of the woods within the Atlantic Seaboard / Columbia Gas Easement headed east north-east within the Ellick Woodlands Natural Area Preserve (see attached map).

In addition, Purple milkweed (*Asclepias purpurascens*, G5/S2/NL/NL) has been documented within the project area along the existing transmission (see attached map) and within the proposed Staging area. Purple milkweed occurs in prairies, woodland openings/edges, and thickets, and in wet situations as well as on dry, rocky ridgetops, along roadsides and rights-of-way (NatureServe, 2004). The plant flowers in June and July. It occurs in eastern North America from Ontario and New Hampshire south to Georgia and west as far as South Dakota and Texas. However, distribution is spotty in parts of the range, especially along the northeastern seaboard, in the southeast (Virginia to Mississippi), and in the northern midwest. Purple milkweed is currently known from 9 locations in Virginia. NatureServe, 2004)

DCR has reviewed *Virginia Rare Plant Survey Report*, Fairfax, Virginia prepared by Natural Resource Group, dated November 2015. While DCR concurs with the negative results for diabase plants within the "B" and "C" Areas identified in the report. However, despite the lack of identification of Purple milkweed or Torrey's mountain-mint during the survey, DCR botanist believes the resources still may exist due to the Torrey's mountain-mint being recently identified by DCR staff, and the rare plant survey was not conducted at a time of year appropriate to identify Purple milkweed. Please note suitable habitat for these rare plants can be found in areas mowed every year.

DCR recommends avoidance of natural heritage resources where feasible. As an alternative for the area of documented Torrey's mountain-mint, DCR recommends directional drilling beneath the resource. Should that not be feasible, DCR recommends stockpiling the top six inches (6") of soil from that area, to be returned to the same location after the work is completed. If seeding for erosion control is necessary, use only annual rye.

For the area where the purple milkweed is documented, DCR recommends avoidance by altering the location of the road accessing the staging area on the NW side, to the south of the documented location of the purple milkweed. If the road relocation is not feasible, stock-piling soils as for the mountain-mint.

DCR also recommend the preparation and implementation of an invasive species management plan.

The Ellick Woodlands Natural Area Preserve is located within the project area and is owned by the Fairfax County Parks Authority and jointly managed by the Fairfax County Parks Authority and DCR. DCR recommends continued coordination with the DCR Northern Region Natural Area Steward, Mike Lott (540-658-8690) and the Fairfax County Parks Authority.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

A fee of \$95.00 has been assessed for the service of providing this information, however the fee has been waved due to the tardiness of our comments.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov.

Should you have any questions or concerns, feel free to contact me at (804) 692-0984. Thank you for the opportunity to comment on this project.

Sincerely,



Alli Baird, LA, ASLA
Coastal Zone Locality Liaison

Literature Cited

NatureServe. 2004. NatureServe Explorer: An online encyclopedia of life [web application]. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>.



DCR Interoffice MEMORANDUM

To: Robbie Rhur, DCR-DPRR
From: Alli Baird, DCR-DNH
Date: August 19, 2016
Subject: DEQ 16-170F, WB Xpress Project, Federal Consistency Certification
Due August 24, 2016

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to information currently in our files, Purple milkweed (*Asclepias purpurascens*, G5/S2/NL/NL) has been documented within the project area. Purple milkweed occurs in prairies, woodland openings/edges, and thickets, and in wet situations as well as on dry, rocky ridgetops, along roadsides and rights-of-way (NatureServe, 2004). The plant flowers in June and July. It occurs in eastern North America from Ontario and New Hampshire south to Georgia and west as far as South Dakota and Texas. However, distribution is spotty in parts of the range, especially along the northeastern seaboard, in the southeast (Virginia to Mississippi), and in the northern midwest. Purple milkweed is currently known from 9 locations in Virginia.

Due to the potential for this site to support populations of Purple milkweed, DCR recommends an inventory for the resource in the study area at the intersection of the two ROWs northwest of the proposed staging area. With the survey results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources.

DCR-Division of Natural Heritage biologists are qualified and available to conduct inventories for rare, threatened, and endangered species. Please contact J. Christopher Ludwig, Natural Heritage Inventory Manager, at chris.ludwig@dcr.virginia.gov or 804-371-6206 to discuss arrangements for field work

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov. This project is located within 2 miles of documented occurrences of state listed animals. In addition, according to the information currently in our files, Cub Run, which has been designated by the Virginia Department of Game and Inland Fisheries (VDGIF) as a “Threatened and Endangered Species Water” for the Wood turtle is within 2 miles of the project area. Therefore, DCR recommends coordination with Virginia's regulatory authority for the management and protection of this species, the VDGIF, to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

Thank you for the opportunity to comment on this project.

Literature Cited

NatureServe. 2004. NatureServe Explorer: An online encyclopedia of life [web application]. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>.

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director



Rochelle Altholz
*Deputy Director of
Administration and Finance*

David C. Dowling
*Deputy Director of
Soil and Water Conservation
and Dam Safety*

Thomas L. Smith
Deputy Director of Operations

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

September 23, 2016

Karen Beatty
Environmental Resources Management, Inc.
121 W. Trade St., Suite 2350
Charlotte, NC 28202

Re: WB Express, Chantilly Line VA-1

Dear Ms. Beatty:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Biotics documents the presence of natural heritage resources within two miles of the project area. However, due to the scope of the activity and the distance to the resources, we do not anticipate that this project will adversely impact these natural heritage resources.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

A fee of \$60.00 has been assessed for the service of providing this information. Please find enclosed an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, **DCR - Division of Natural Heritage, 600 East Main Street, 24th Floor, Richmond, VA 23219**. Payment is due within thirty days of the invoice date. Please note the change of address for remittance of payment as of July 1, 2013. Late payment may result in the suspension of project review service for future projects.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov. This project is located within 2 miles of a documented occurrence

of a state listed animal. In addition, according to the information currently in our files, Cub Run, which has been designated by the Virginia Department of Game and Inland Fisheries (VDGIF) as a “Threatened and Endangered Species Water” for the Wood turtle is within 2 miles of the project area. Therefore, DCR recommends coordination with Virginia's regulatory authority for the management and protection of this species, the VDGIF, to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

Should you have any questions or concerns, feel free to contact me at (804) 692-0984. Thank you for the opportunity to comment on this project.

Sincerely,

A handwritten signature in cursive script that reads "Alli Baird".

Alli Baird, LA, ASLA
Coastal Zone Locality Liaison

Cc: Amy Ewing, VDGIF

Literature Cited

- NatureServe. 2004. NatureServe Explorer: An online encyclopedia of life [web application]. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: April 27, 2010).
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- NatureServe, 2014. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe. Arlington, Virginia. Available <http://explorer.natureserve.org> (Accessed: December 22, 2014).
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- Williams, J.D., M.L. Warren, Jr., K.S. Cummings, J.L. Harris, and R.J. Neves. 1993. Conservation status of freshwater mussels of the United States and Canada. Fisheries 18: 6-9.

Appendix B

Letter for
Essex Solar Center

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director



Rochelle Altholz
*Deputy Director of
Administration and Finance*

David C. Dowling
*Deputy Director of
Soil and Water Conservation
and Dam Safety*

Thomas L. Smith
Deputy Director of Operations

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

September 12, 2016

Juliette Giordano
Angler Environmental
2750 Prosperity Avenue, Suite 220
Fairfax, VA 22031

Re: 70584, Essex Solar Center

Dear Ms. Giordano:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Biotics documents the presence of natural heritage resources within two miles of the project area. However, due to the scope of the activity and the distance to the resources, we do not anticipate that this project will adversely impact these natural heritage resources.

Please note that the project is within the Coastal Avian Protection Zone (CAPZ) 12

Zone 12: Outer fringes of the lower, middle and northern peninsulas. In this zone, the relevant avian species and other avian mitigation factors are: T&E species. The applicant shall either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the CAPZ map.

In addition, the proposed project will fragment a C5 ecological core as identified in the Virginia ConservationVision. The Virginia ConservationVision is a GIS analysis for identifying and prioritizing conservation lands in Virginia. (http://www.dcr.virginia.gov/natural_heritage/vaconvision.shtml)

Cores are areas of unfragmented natural cover with at least 100 acres of interior condition and provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Cores also provide benefits in terms of open space, recreation, water quality (including drinking water protection), and carbon sequestration, along with the associated economic benefits of these functions. The cores are ranked from 1 to 5 (5 being the least ecological relevant) using many prioritization criteria, such as the number of natural heritage resources (i.e. rare species) occurring in a core.

Fragmentation occurs when a large, contiguous ecosystem is transformed into one or more smaller patches surrounded by disturbed areas resulting from the conversion and development. Habitat fragmentation results in biogeographic changes that disrupt species interactions and ecosystem processes, reducing biodiversity and habitat quality due to limited recolonization, increased predation and egg parasitism, and increased invasion by weedy species.

Therefore minimizing fragmentation is a key mitigation measure that will preserve the natural patterns and connectivity of habitats that are key components of biodiversity. The deleterious effects of fragmentation can be reduced by minimizing edge in remaining fragments (leaving round versus long, skinny fragments); by retaining connective corridors that allow significant migration between fragments; and by designing the intervening landscape to minimize its hostility to native wildlife (natural cover versus lawns).

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

A fee of \$60.00 has been assessed for the service of providing this information. Please find enclosed an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, **DCR - Division of Natural Heritage, 600 East Main Street, 24th Floor, Richmond, VA 23219**. Payment is due within thirty days of the invoice date. Please note the change of address for remittance of payment as of July 1, 2013. Late payment may result in the suspension of project review service for future projects.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov.

Should you have any questions or concerns, feel free to contact me at (804) 692-0984. Thank you for the opportunity to comment on this project.

Sincerely,



Alli Baird, LA, ASLA
Coastal Zone Locality Liaison

Cc: Mary Major, DEQ

Appendix C

Letter, Tables and Maps for
Timberland Property

Molly Joseph Ward
Secretary of Natural Resources



Joe Elton
Deputy Director of Operations

Clyde E. Cristman
Director

Rochelle Altholz
Deputy Director of Administration
and Finance

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

600 East Main Street, 24th Floor
Richmond, Virginia 23219
(804)786-6124

February 3, 2016

Brad Dethero
Geo-Source, Inc.
462 North Court Street
Florence, AL 35630

Re: 16-03, Timberland Property

Dear Mr. Dethero:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has used Biotics to generate a custom report you requested for natural heritage resources intersecting the shapefile provided. Virginia natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

The Excel spreadsheet contains information about conservation sites, stream conservation units and general locations of heritage resources within the submitted parcels. The attached maps show conservation sites and stream conservation units in the vicinity and within the submitted parcels as well as state Natural Area Preserves within the submitted parcels. Conservation sites represent key areas of the landscape worthy of protection and stewardship action because of the natural heritage resources they support. Conservation sites are polygons designed around one or more occurrences of rare plant, animal, or natural communities; they include the natural heritage resources and, where possible, associated habitat buffer or other adjacent land necessary for the resource's conservation. Stream Conservation Units (SCUs) identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and the portions of all tributaries within this distance.

Conservation sites and Stream Conservation Units are given a biodiversity significance ranking based on the rarity, quality, and number of natural heritage resources they contain. The following attribute fields provided for conservation sites include site name, biodiversity significance rank, type, acreage and legal status. (see link to Ranking document below) In addition, the spreadsheet lists natural heritage resources with attributes associated with the conservation sites.

The general location records are for natural heritage resource occurrences that have not been included in conservation sites or SCUs. These areas may represent poor quality occurrences, or occurrences that have

not been reverified in at least 20 years, or occurrences with locations that are not precisely known. General Location NHRs indicate the need for further biological survey work.

Natural Area Preserves are legally designated and protected lands that contain some of the rarest natural communities and rare species habitats in Virginia. Natural area dedication places legally binding restrictions on future activities on a property. These restrictions will transfer with the sale of the property. Tracts BLA52-313, 314, 315 and BLA52-343 shown on Map 1 of 6, are within the Blackwater Sandhills Natural Area Preserve, owned by the Isle of Wight County. Tract BLA53-539, shown on Map 3 of 6, is within the South Quay Sandhills Natural Area Preserve. Please contact Rob Evans, Natural Areas Protection Manager (Rob.Evans@dcr.virginia.gov; 804-371-6205) to determine the particular legal restrictions on these parcels.

The use of the conservation sites and other natural heritage resource information can facilitate project permitting by identifying biologically sensitive areas before projects are submitted to permitting authorities. For example, potential impacts to endangered species can be identified early in the planning process, while there is still an opportunity to modify a project to avoid the impacts. Early coordination is key to ensuring protection of an area's natural heritage resources and accelerating the permit review process. If ground-disturbing activities are proposed within a conservation site, or directly impacts a non-conservation natural heritage resource you should contact DCR for a site-specific review of the project area. A determination can then be made regarding potential impacts of the proposed work, if any, on occurrences of natural heritage resources including threatened and endangered species. In most cases, our response letter can be provided to you within 30 days.

Any activities proposed in the vicinity of threatened and endangered species should be coordinated with the appropriate regulatory authorities. All federally protected species are regulated by the United States Fish and Wildlife Service (USFWS). State protected animals, except insects, are regulated by the Virginia Department of Game and Inland Fisheries (VDGIF). The Virginia Department of Agriculture and Consumer Services (VDACS), has regulatory authority to conserve threatened and endangered plant and insect species. VDACS has established a Memorandum of Agreement with DCR, through which DCR's Division of Natural Heritage, in consultation with VDACS, represents VDACS in its comments and recommendations regarding the potential impact of reviewed projects or activities on state-listed plant and insect species.

Please credit DCR as the source of this information if it is used in any presentations or documents. Please send a copy of any documents, which utilize this information to DCR. Do not hesitate to contact us if you have any questions regarding the use or interpretation of the data.

Any absence of data may indicate that a project area has not been surveyed, rather than confirm that the area lacks natural heritage resources. New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

A fee of \$520.00 has been assessed for the custom report. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, Department of Conservation and Recreation, Division of Natural Heritage, 600 East Main Street, 24th Floor Richmond, Virginia 23219 ATTN: Cashier. Payment is due within thirty days of the invoice date.

Species rank information is available at http://www.dcr.virginia.gov/natural_heritage/help.shtml for your reference. I hope this information proves useful. Please give me a call if you have any questions or concerns, or if we can provide further information.

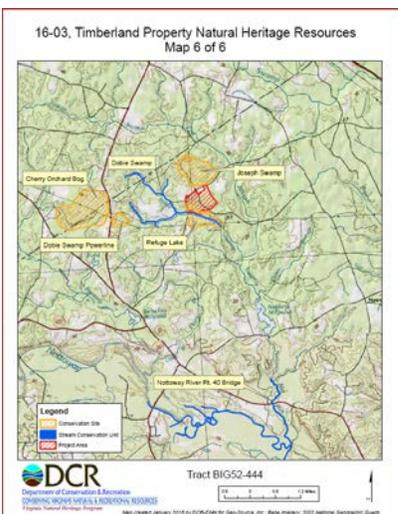
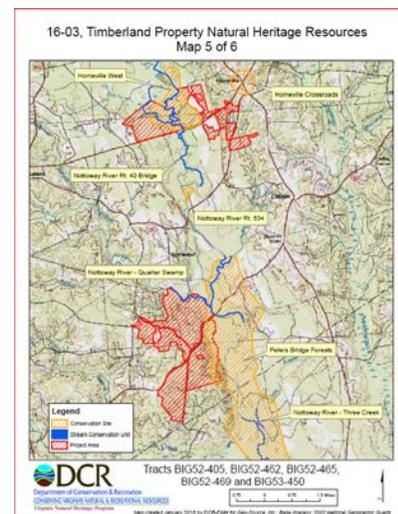
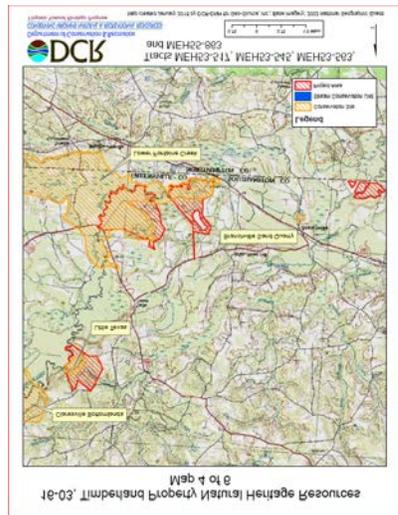
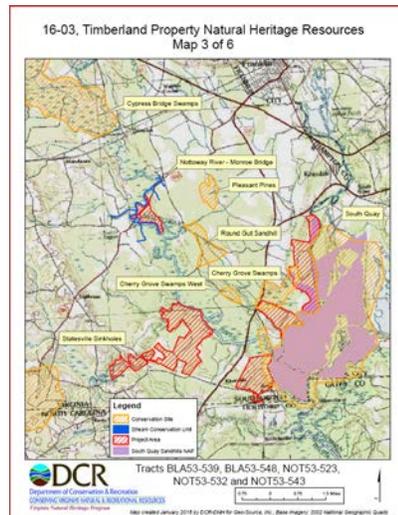
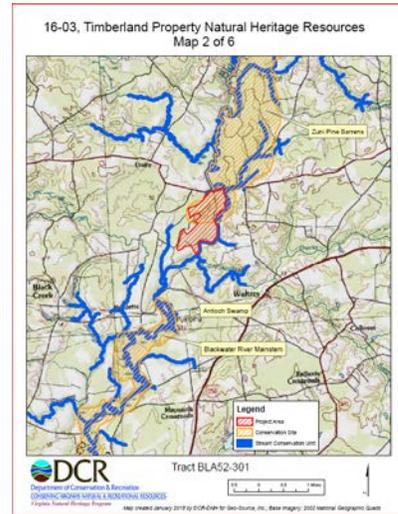
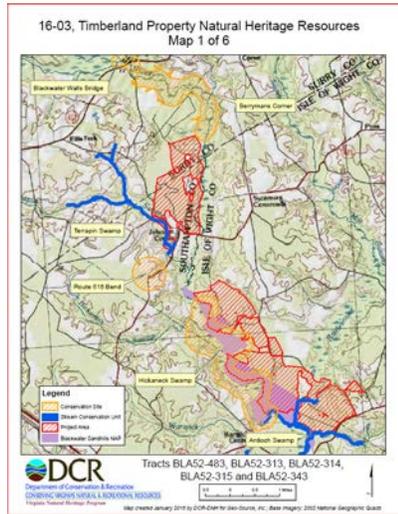
Thank you for the opportunity to offer this information.

Sincerely,

A handwritten signature in dark red ink that reads "Alice R. T. Baird". The signature is written in a cursive style with a prominent initial 'A'.

Alice R. T. Baird, LA, ASLA
Locality Liaison

16-03, Timberland Property Natural Heritages Resources Screening Maps



Appendix D

Letters and Tables for
Army Corps of Engineer Projects

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director



COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
*Deputy Director of
Administration and Finance*

David C. Dowling
*Deputy Director of
Soil and Water Conservation
and Dam Safety*

Thomas L. Smith
Deputy Director of Operations

June 21, 2016

David M. Schulte
Norfolk District, Corps of Engineers
ATTN: CENAO-WR-R
803 Front Street
Norfolk, VA 23510-1096

Re: City of Norfolk Flood Risk Scoping revised 6-23-16

Dear Mr. Schulte:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Biotics documents the presence of natural heritage resources within two miles of the project area. Attached please see table *City of Norfolk Natural Heritage Resources* for a list of documented resources within the City of Norfolk. In addition the following individuals have access to shapefiles of resources within the city: Sara Kidd and Randy Keaton, Hampton Roads PDC; Kimberly Baggett, Army Corps of Engineers, Norfolk District Regulatory Branch; and Anne Doyle has access to the information through the Natural Heritage Data Explorer.

As the suite of potential structural and non-structural alternatives are developed for storm risk management solutions, DCR recommends a re-review to determine impacts to natural heritage resources, based on specific solutions and locations.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov. This project is located within 2 miles of documented occurrences of a state listed animal and a state and federally listed animal. Therefore, DCR recommends coordination with the USFWS and VDGIF, Virginia's regulatory authority for the management and protection of this species to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

Should you have any questions or concerns, feel free to contact me at 804-692-0984. Thank you for the opportunity to comment on this project.

Sincerely,



Alli Baird, LA, ASLA
Coastal Zone Locality Liaison

Cc: Amy Ewing, VDGIF
Christine Vaccaro, NOAA

City of Norfolk Natural Heritage Resources

Group Name	Scientific Name	Common Name	Last Observed	Global Rank	USFWS Species of Concern	State Rank	Federal Status	State Status	Rank	Site Name
Vascular Plant	Tillandsia usneoides	Spanish-moss	1969-05-22	G5		S1S2			H	
Vertebrate Animal	Sternula antillarum	Least Tern	1989-07	G4		S2B			D	
Vertebrate Animal	Falco peregrinus	Peregrine Falcon	1994-	G4		S1B,S2N		LT	C	Norfolk Trestle
Vertebrate Animal	Falco peregrinus	Peregrine Falcon	1998-	G4		S1B,S2N		LT	D	
Vascular Plant	Iva imbricata	Dune marsh-elder	1898-07-20	G5?		S1			H	
Vertebrate Animal	Nyctanassa violacea	Yellow-crowned Night-heron	1995-10-16	G5		S2S3B,S3N			E	East Ocean View
Vascular Plant	Cuscuta indecora	Big-seed Alfafa dodder	1984-07-31	G5		S1			H	
Vascular Plant	Quercus hemisphaerica	Sand laurel oak	2003-07-08	G5		S1			D	
Vascular Plant	Sclerolepis uniflora	One-flowered sclerolepis	1840	G4		S1			H	
Vascular Plant	Solidago tortifolia	Twisted leaf goldenrod	1968-09-21	G4G5		S1			H	
Vertebrate Animal	Acipenser oxyrinchus	Atlantic Sturgeon	2007-05	G3		S2	LE	LE	E	
Site Name	Biodiversity Rank	Legal Status								
Norfolk Trestle	B5	SL								
East Ocean View	B5	NL								

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director



Rochelle Altholz
*Deputy Director of
Administration and Finance*

David C. Dowling
*Deputy Director of
Soil and Water Conservation
and Dam Safety*

Thomas L. Smith
Deputy Director of Operations

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

September 6, 2016

Brian Denson
USACE-Norfolk District
Norfolk, VA 23510

Re: NAO-2009-0044, Living River Restoration Trust- 2016 Draft Instrument

Dear Mr. Denson:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the Elizabeth River Watershed. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the attached September 6, 2016 PDF natural heritage report, natural heritage resources have been documented within the Elizabeth River watershed. To avoid and minimize impacts to these resources, DCR recommends the continued coordination of individual projects with the Interagency Review Team as stated in the General Mitigation Site Review Procedures of the draft instrument. For any proposed mitigation site, DCR recommends an inventory of the invasive species on the site during the site selection process and if invasives are identified or invade post-construction DCR recommends the development and implementation of an invasive species plan. Phragmites (Common Reed) is especially prolific in the Elizabeth River and ground disturbance can promote colonization in suitable habitat areas.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

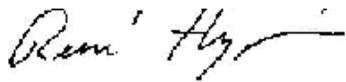
The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov. This project is located within 2 miles of a documented occurrences of state listed animals. Therefore, DCR recommends coordination with VDGIF, Virginia's regulatory

authority for the management and protection of this species to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

Sincerely,

A handwritten signature in black ink, appearing to read "S. Rene' Hypes", with a long horizontal flourish extending to the right.

S. Rene' Hypes
Project Review Coordinator

CC: Amy Ewing, VDGIF

Natural Heritage Resources

Your Criteria

Watershed (8 digit HUC): 02080208 - Hampton Roads

Subwatershed (12 digit HUC): JL54 - Eastern Branch Elizabeth River, JL55 - Western Branch Elizabeth River, JL56 - Elizabeth River-Lafayette River Search Run: 9/6/2016 12:28:50 PM

Result Summary

Total Species returned: 16

Total Communities returned: 0

Click scientific names below to go to NatureServe report. Click column headings for an explanation of species and community ranks.

Common Name/Natural Community	Scientific Name	Global Conservation Status Rank	State Conservation Status Rank	Federal Legal Status	State Legal Status	Statewide Occurrences	V	C
Hampton Roads								
Eastern Branch Elizabeth River								
BIRDS								
Great Egret	Ardea alba	G5	S2S3B,S3N	None	None	11	Y	
Peregrine Falcon	Falco peregrinus	G4	S1B,S2N	None	LT	35	Y	

Common Scientific Name/Natural Name Community Status Rank	Global Conservation Status Rank	State Conservation Status Rank	Federal Legal Status	State Legal Status	Statewide Occurrences	
Yellow-crowned Night-heron <i>Nyctanassa violacea</i>	G5	S2S3B,S3N	None	None	10	Y
VASCULAR PLANTS						
Big-seed Alfalfa dodder <i>Cuscuta indecora</i>	G5	S1	None	None	12	Y
Elizabeth River-Lafayette River BIRDS						
Wilson's Plover <i>Charadrius wilsonia</i>	G5	S1B	None	LE	11	Y
Northern Harrier <i>Circus cyaneus</i>	G5	S1S2B,S3N	None	None	15	Y
Least Tern <i>Sternula antillarum</i>	G4	S2B	None	None	18	Y
VASCULAR PLANTS						
Big-seed Alfalfa dodder <i>Cuscuta indecora</i>	G5	S1	None	None	12	Y
One-flowered sclerolepis <i>Sclerolepis uniflora</i>	G4	S1	None	None	2	Y
Western Branch Elizabeth River AMPHIBIANS						
Oak Toad <i>Anaxyrus quercicus</i>	G5	S2	None	None	9	Y
BIRDS						
Great Egret <i>Ardea alba</i>	G5	S2S3B,S3N	None	None	11	Y
Peregrine Falcon <i>Falco peregrinus</i>	G4	S1B,S2N	None	LT	35	Y
REPTILES						
Canebrake Rattlesnake <i>Crotalus horridus</i> [Coastal Plain population]	G4T4	S1	None	LE	19	Y

Common Name/Natural Community	Scientific Name	Global Conservation Status Rank	State Conservation Status Rank	Federal Legal Status	State Legal Status	Statewide Occurrences	Co:
VASCULAR PLANTS							
Lax Hornpod	Mitreola petiolata	G5	S1	None	None	9	
One-flowered sclerolepis	Sclerolepis uniflora	G4	S1	None	None	2	
Elliott's Aster	Symphyotrichum elliottii	G4	S1	None	None		4

Note: On-line queries provide basic information from DCR's databases at the time of the request. They are NOT to be substituted for a project review or for on-site surveys required for environmental assessments of specific project areas. For Additional Information on locations of Natural Heritage Resources please submit an [information request](#). To Contribute information on locations of natural heritage resources, please fill out and submit a [rare species sighting form](#).

Appendix E

Letter for National Park Service
Invasive Plant Management Plan

Molly Joseph Ward
Secretary of Natural Resources



Joe Elton
Deputy Director of Operations

Clyde E. Cristman
Director

Rochelle Altholz
Deputy Director of Administration
and Finance

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

600 East Main Street, 24th Floor
Richmond, Virginia 23219
(804)786-6124

June 7, 2016

Mark Frey
National Park Service
4598 MacArthur Blvd. NW
Washington, DC 20007

Re: National Capital Region Invasive Plant Management Plan EA

Dear Mr. Frey:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Please find tables of Natural Heritage resources documented within each park attached. The tables include rare, threatened and endangered species that have been documented within the parks in Virginia; Prince William Park, George Washington Memorial Park (the portion in Virginia), Manassas National Battlefield Park, Wolf Trap Farm Park, and the portion of Harper's Ferry Historical Park that is within Virginia. Please note that many of the species listed in these tables, including state endangered and threatened, and federally threatened and species of concern, documented within the parks, were not found in Appendix B Species List.

DCR supports the 2.4.5 Wildlife BMPs and Mitigation Measures and 2.4.6 Threatened, Endangered and Sensitive Species BMPs and Mitigation Measures found on pages 52-54. In addition, DCR recommends the use of Natural Heritage digital shapefiles of documented occurrences of natural heritage resources that may be available upon request for your use for planning purposes only. For more information, please contact Rene' Hypes at Rene.Hypes@DCR.Virginia.gov or (804)371-2708.

As specific plans for the individual parks are finalized, DCR recommends submittal of the plans for review for potential impacts to natural heritage resources

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Angela Weller at 804-364-8747 or Angela.Weller@dgif.virginia.gov. This project is located within 2 miles of documented occurrences of state listed animals. Therefore, DCR recommends coordination with VDGIF, Virginia's regulatory authority for the management and protection of this species to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

Should you have any questions or concerns, feel free to contact me at 804-692-0984. Thank you for the opportunity to comment on this project.

Sincerely,



Alli Baird, LA, ASLA
Coastal Zone Locality Liaison

Cc: Amy Ewing, VDGIF
Troy Andersen, USFWS

Appendix F

Virginia Land Conservation Conference
April 27, 2016

Virginia Natural Heritage Data Explorer

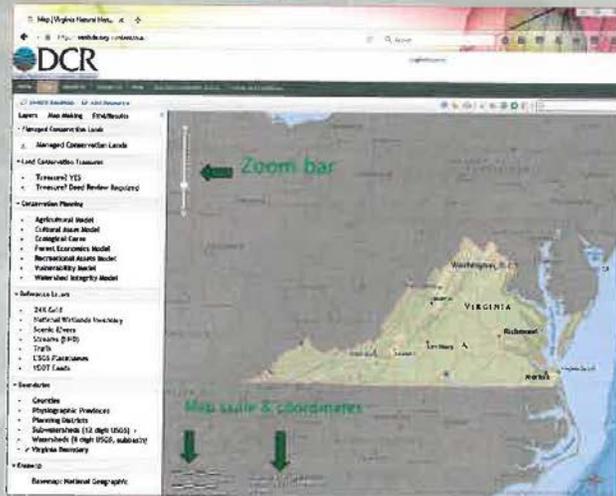
Presented by DCR - Division of Natural Heritage - Locality Liaison, Alli Baird



10th Annual
Virginia Land Conservation Conference
Local Action, Regional Results
April 27, 2016, Fredericksburg, Virginia



Virginia Natural Heritage Data Explorer (NHDE) Public Access



NHDE – Managed Conservation Lands Layer & Identify

DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL AND RECREATIONAL RESOURCES

Identify
Search a resource and click on map to identify Managed Conservation Lands

Details: Managed Conservation Lands 211 (1 of 1)
 Layer: Managed Conservation Lands
 Management Name: HARBOR LOCK
 Management Type: National Fish Hatchery
 Management Agency: US Fish and Wildlife Service
 Owner: US Fish and Wildlife Service
 Management Level: Federal
 Public Access: Open
 Total Acres: 121.48
 GIS Acres: 131.16
 National Fish Hatchery

NHDE – Land Conservation Treasures Layers

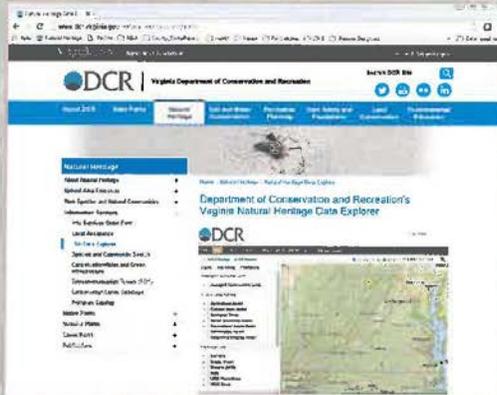
“Treasure” = one permanent land protection project, including easement amendments, that satisfy one of 14 mapped conservation metrics. 5 metrics qualify for automatic acceptance, 14 require DCR to verify that specific resource protection language is contained in the recorded deed.

DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL AND RECREATIONAL RESOURCES

Identify
Search a resource and click on map to identify Land Conservation Treasures

Legend
 Land Conservation Treasures
 - Treasured YES
 - Treasured Deed Review Required
 Conservation Planning
 Reference Layers
 - 24K Grid
 - National Wetlands Inventory
 - State Parks
 - Stream Buffers
 - Trails
 - USGS Place Names
 - VDOT Roads
 Boundaries
 - Counties
 - Physiographic Provinces
 - Planning Districts
 - Subwatersheds (1:250,000 USGS)
 - Watersheds (8-digit USGS, subbasin)
 - Virginia Boundary
 Elevation
 Screenshot: National Geographic

Additional information is available under Information Services at:
<http://www.dcr.virginia.gov/natural-heritage/>



Next training will be on June 16, 2016 at the Richmond DEQ office, 629 East Main Street

Register by sending your contact information to:
nhdetraining@dcr.virginia.gov

Or use the link on our website to register.



Appendix G

List of Coastal Training Participants

List of Coastal Training Participants

Morton Thomas & Associates
Angler Environmental
Bowman Consulting
Charles City County
City of Hampton
City of Norfolk
City of Suffolk
DCR - DNH
Elizabeth River Project
Essex County
George Washington Regional Commission
Isle of Wight County
MSA, P.C.
Natural Resources Group
Northern Neck Land Conservancy
Northern Virginia Conservation Trust
Old Dominion Land Conservancy
Peed & Borz, LLC
Stafford County
Stantec
Team Fishel
The Trust for Public Land
Virginia DEQ Piedmont Regional Office
VDOT – Fredericksburg District
Whitman, Requardt & Associates

Appendix H

Map of Localities with
Natural Heritage Information

Natural Heritage	
About Natural Heritage	+
Natural Area Preserves	+
Rare Species and Natural Communities	+
Information Services	+
Native Plants	+
Invasive Plants	+
Caves/Karst	+
Publications	+

Home » [Natural Heritage](#) » [Virginia Localities with Natural Heritage Information](#)

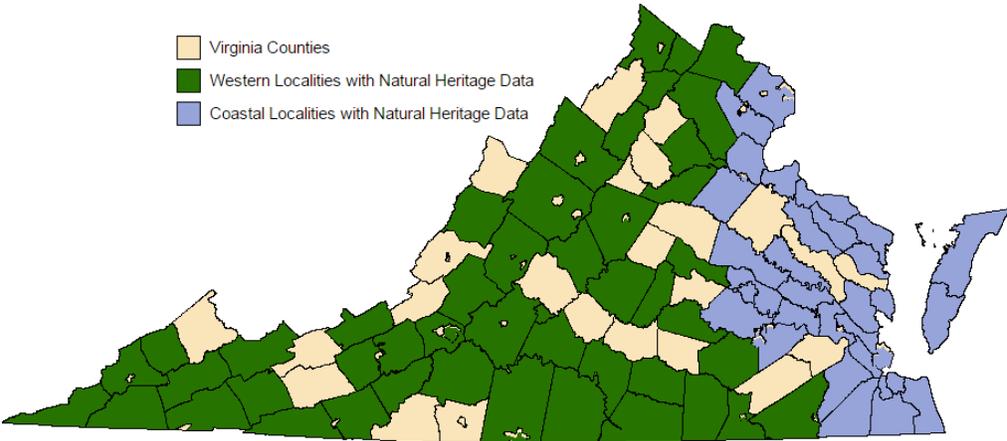
Virginia Localities with Natural Heritage Information




Virginia Coastal Zone
MANAGEMENT PROGRAM

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE

- Virginia Counties
- Western Localities with Natural Heritage Data
- Coastal Localities with Natural Heritage Data



Last updated on Friday, October 21, 2016.

Map of Virginia Localities with Natural Heritage Information can be found at:

<http://www.dcr.virginia.gov/natural-heritage/localitiesmap>

Appendix I

Quarterly Coastal Species Highlight

Locality Liaison Program X sphighlight-cleistesio... X

www.dcr.virginia.gov/natural-heritage/localityliaison

Apps Natural Heritage Payline ASLA County_CompPlans Health House Plant photos VIMS Website Design,etc A Biomimicry Primer Other b

Natural Heritage

- About Natural Heritage +
- Natural Area Preserves +
- Rare Species and Natural Communities +
- Information Services** -
 - Info Services Order Form
 - Local Assistance
 - NH Data Explorer
 - Species and Community Search
 - Conservation/Vision and Green Infrastructure
 - Telecommunication Towers (PDF)
 - Conservation Lands Database
 - Wetlands Catalog
 - Species Distribution Modeling
- Native Plants +
- Invasive Plants +
- Caves/Karst +
- Publications +

Home » Natural Heritage » Locality Liaison Program

Locality Assistance Program for Natural Heritage Conservation

Program Mission and Goals | Locality Liaisons | Tools & Services | Data Subscriptions & Map of Locality Subscribers | Contact the Locality Liaison |

TO ORDER INFORMATION SERVICES:

Once you've determined which services you need:

- please fill out the [online Information Services Order Form](#) (updated 2014)
- if you experience difficulty with the online form version, please print, fill out and send this PDF version: [Printable PDF Information services order form](#). (PDF)

Species Highlight

click image to read more



[Large spreading pogonia \(PDF\)](#)

Species Highlight: Large Spreading pogonia (*Cleistesioipsis divaricata*) also known as Rosebud orchid



Global Rarity Rank: G4 – Apparently Globally Secure
State Rarity Rank: S1 – Critically imperiled in Virginia
Legal Status: no legal status

Spreading pogonia, a state rare, perennial plant species, can be found in sphagnum bogs and pocosin openings; but is now confined largely to artificially maintained powerline clearings. As part of the southwestern Long-leaf pine habitat it depended on fire to create the open-structured highly diverse habitat. This orchid is rare in the southern Coastal Plain, south of the James River. The plant is larger than *Cleistesioipsis bifaria* in nearly every respect and is restricted to acidic, Coastal Plain wetlands throughout its range. In 2014, 12 occurrences of this state rare plant were documented in Virginia, 9 extant and 3 historic.

Literature Cited

Weakley, A.S, J. C. Ludwig, and J.F. Townsend 2012. Flora of Virginia. Bland Crowder, ed. Foundation of the Flora of Virginia Project Inc., Richmond. Fort Worth: Botanical Research Institute of Texas Press. p. 1172.

Appendix J

Newport News Comprehensive Plan
Natural Heritage Information

City of Newport News, Virginia, Natural Heritage Resources

Natural heritage resources as defined by the Virginia Department of Conservation and Recreation – Division of Natural Heritage (DCR) are the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations such as caves and karst features. The City of Newport News is currently home to 10 distinct types of natural heritage resources with 13 total occurrences throughout the city (Table I: Natural Heritage Resources). In addition, DCR has identified six conservation sites as areas necessary for their survival (Table II).

DCR identifies and protects natural heritage resources statewide and maintains a comprehensive database of all documented occurrences of natural heritage resources in Virginia. DCR has developed conservation sites that contain known populations of natural heritage resources and include adjacent or surrounding habitat vital for their protection. Conservation sites do not represent protected lands. They are recommended for protection and stewardship because of the natural heritage resources and habitat they support, but are not currently under any official protection designation. Conservation sites can be used to screen development projects for potential impacts to natural heritage resources, aid local and regional planning, identify targets for acquisitions and easements and guide priorities for restoration activities.

An example of a conservation site in the City of Newport News is the Beaverdam Flatwoods Conservation Site. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. Beaverdam Flatwoods Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resource associated with this conservation site is:

Coastal Plain Seasonal Pond (Swamp Tupelo – Overcup Oak type) G3/SNR/NL/NL

The Coastal Plain Seasonal Pond is a depression wetland that is endemic to relatively deep, seasonal ponds in the Coastal Plain of Virginia and Maryland. The habitat is typically flooded up to 100 cm deep for a substantial part of the year. The community naturally occurs in small, isolated patches, but may occasionally occur in complexes with many ponds totaling up to 25 acres in aggregate. The vegetation is an open forest or woodland dominated by swamp tupelo (*Nyssa biflora*), often in association with sweetgum (*Liquidambar styraciflua*) and red maple (*Acer rubrum*). Overcup oak (*Quercus lyrata*) is a dominant or co-dominant tree in about half of the known occurrences.

Another important conservation site both within the City of Newport News and York County is the Grafton Ponds Conservation Site. Grafton Ponds Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources at this site are:

Mabee's salamander	<i>Ambystoma mabeei</i>	G4/S1S2/NL/LT
Barking treefrog	<i>Hyla gratiosa</i>	G5/S1/NL/LT

Great egret	<i>Ardea alba</i>	G5/S2S3B,S3N/NL/NL
Harper's fimbry	<i>Fimbristylis perpusilla</i>	G2/S1/SOC/LE
Pondspice	<i>Litsea aestivalis</i>	G3?/S1/NL/NL
Cuthbert Turtlehead	<i>Chelone cuthbertii</i>	G3/S2/NL/NL
Pine barren sandreed	<i>Calamovilfa brevipilis</i>	G4/S1/NL/NL
Large-leaf Peatmoss	<i>Sphagnum macrophyllum</i> var. <i>macrophyllum</i>	G3G5T3?/S2/NL/NL
Slender marsh pink	<i>Sabatia campanulata</i>	G5/S2/NL/NL
Hairy Saint-John's wort	<i>Hypericum setosum</i>	G4G5/S1S2/NL/NL
Coastal Plain Seasonal Pond (Swamp Tupelo – Overcup Oak Type)		G1G2/S1S2/NL/NL
Coastal Plain Seasonal Pond (Narrow Plumegrass Type)		G2G3/SU/NL/NL
Coastal Plain Seasonal Buttonbush Pond		G3?/S2/NL/NL
Coastal Plain Depression Swamp (Willow Oak – Red Maple - Sweetgum Type)		G3/S2?NL/NL

Grafton Ponds is a complex of coastal plain sinkhole ponds and wetlands. This complex is an area, which encompasses a conglomeration of significant geologic features (the depressions), as well as a number of rare natural community types that are associated with the depressions. These coastal plain sinkhole ponds are unique wetland types, formed over the course of thousands of years as lime beds within the Yorktown Formation were leached and dissolved by groundwater and overlying sediments slowly subsided. The hydrology is driven by ground and surface waters, with water typically present in the winter and spring, drawing down in the later spring and summer, and drying by the late summer and early fall. With the tremendous variety of hydrologic regimes, pond shapes and sizes, and plant life in and around the ponds, and considering the sheer numbers of ponds, this complex offers the parameters necessary to produce high biological diversity and ecological significance. Consequently, many rare and unique plant and animal species have been documented within this coastal plain sinkhole pond complex. This complex is the last remaining relatively undisturbed coastal plain sinkhole complex in Virginia.



Photo by Gary Fleming



Canebrake rattlesnake, DCR-DNH, Irv Wilson 2007

In addition, the Canebrake rattlesnake (*Crotalus horridus*, G4T4/S1/NL/LE) has been documented in the City of Newport News. Timber and Canebrake rattlesnakes are two forms of the same species (*Crotalus horridus*). The species is widespread throughout eastern United States ranging from New England to Minnesota and south to Florida and Texas. The forms differ in appearance and habitat distribution but share enough genetic similarities that they are the same species (NatureServe, 2009). The Timber rattlesnake is typically darker or yellow-ish (Gibbons and Dorcas, 2005). In Virginia, it is found in the piedmont and mountainous regions. The Canebrake rattlesnake is typically lighter in color, often pinkish, and is found in more coastal areas, including the northern limit of its range in the southeastern counties of the coastal plain of Virginia (Gibbons and Dorcas, 2005).

Canebrake rattlesnakes in Virginia inhabit hardwood and mixed hardwood-pine forests, cane thickets and the ridges and glades of swampy areas (Mitchell and Schwab, 1991). Canebrake rattlesnakes are generally terrestrial and feed on a variety of small animals including small mammals, birds, and amphibians (Mitchell & Schwab, 1991).

The primary threats to the Canebrake rattlesnake are the loss of habitat due to development activities and persecution by humans (Mitchell, 1994). Please note that the coastal plain populations of the Canebrake rattlesnake are currently classified as endangered by the Virginia Department of Game and Inland Fisheries (VDGIF).

Natural Area Preserve

A portion of the Grafton Ponds Conservation Site has been dedicated as a natural area preserve and is a part of the Virginia Natural Area Preserves System. The Virginia Natural Area Preserves System was established in the late 1980's to protect some of the most significant natural areas in the Commonwealth. A site becomes a component of the preserve system once it is dedicated as a natural area preserve by the Director of the Department of Conservation & Recreation. Natural area dedication works in much the same way as a conservation easement by placing legally binding restrictions on future activities on a property. The Natural Area Preserve System includes examples of some of the rarest natural communities and rare species habitats in Virginia. The Grafton Ponds Natural Area Preserve represents Virginia's best remaining example of a coastal plain pond complex and is owned by the City of Newport News. DCR provides assistance in the management of the preserve.

Potential Threats to Natural Heritage Resources

Natural Heritage resources within the City of Newport News are primarily threatened by the development of natural areas and forested lands. Fragmentation of forests and invasive species such as Japanese Stiltgrass and Common Reed can have a direct effect on the survival of many native species. Alteration of the local hydrology by land disturbance and ditching can also change or eliminate habitat for natural heritage resources.

Literature Cited:

Gibbons, W. and Dorcas, M. 2005. Snakes of the southeast. University of Georgia Press. Athens, GA. 253pp.

Mitchell, J.C. 1994. The reptiles of Virginia. Smithsonian Institution Press. Washington, DC. pp. 296 - 302.

Mitchell, J.C. & D. Schwab. 1991. Canebrake rattlesnake. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: April 6, 2010).

NatureServe. 2010. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: July 12, 2011)

Appendix:

Definitions of Abbreviations Used on Natural Heritage Resource Lists of the Virginia Department of Conservation and Recreation

Natural Heritage State Ranks

The following ranks are used by the Virginia Department of Conservation and Recreation to set protection priorities for natural heritage resources. Natural Heritage Resources, or "NHR's," are rare plant and animal species, rare and exemplary natural communities, and significant geologic features. The criterion for ranking NHR's is the number of populations or occurrences, i.e. the number of known distinct localities; the number of individuals in existence at each locality or, if a highly mobile organism (e.g., sea turtles, many birds, and butterflies), the total number of individuals; the quality of the occurrences, the number of protected occurrences; and threats.

S1 - Critically imperiled in the state because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state. Typically 5 or fewer populations or occurrences, or very few remaining individuals (<1000).

S2 - Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. Typically 6 to 20 populations or occurrences or few remaining individuals (1,000 to 3,000).

S3 - Vulnerable in the state either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically having 21 to 100 populations or occurrences (1,000 to 3,000 individuals).

S4 - Apparently secure; Uncommon but not rare, and usually widespread in the state. Possible cause of long-term concern. Usually having >100 populations or occurrences and more than 10,000 individuals.

S5 - Secure; Common, widespread and abundant in the state. Essentially ineradicable under present conditions, typically having considerably more than 100 populations or occurrences and more than 10,000 individuals.

S#B - Breeding status of an animal within the state

S#N - Non-breeding status of animal within the state. Usually applied to winter resident species.

S#? - Inexact or uncertain numeric rank.

SH - Possibly extirpated (Historical). Historically known from the state, but not verified for an extended period, usually > 15 years; this rank is used primarily when inventory has been attempted recently.

S#S# - Range rank; A numeric range rank, (e.g. S2S3) is used to indicate the range of uncertainty about the exact status of the element. Ranges cannot skip more than one rank.

SU - Unrankable; Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

SNR - Unranked; state rank not yet assessed.

SX - Presumed extirpated from the state. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.

SNA - A conservation status rank is not applicable because the element is not a suitable target for conservation activities.

Natural Heritage Global Ranks are similar, but refer to a species' rarity throughout its total range. Global ranks are denoted with a "G" followed by a character. Note GX means the element is presumed extinct throughout its range. A "Q" in a rank indicates that a taxonomic question concerning that species exists. Ranks for subspecies are denoted with a "T". The global and state ranks combined (e.g. G2/S1) give an instant grasp of a species' known rarity. These ranks should not be interpreted as legal designations.

FEDERAL LEGAL STATUS

The Division of Natural Heritage uses the standard abbreviations for Federal endangerment developed by the U.S. Fish and Wildlife Service, Division of Endangered Species and Habitat Conservation.

LE - Listed Endangered

LT - Listed Threatened

PE - Proposed Endangered

PT - Proposed Threatened

C - Candidate (formerly C1 - Candidate category 1)

E(S/A) - treat as endangered because of similarity of appearance

T(S/A) - treat as threatened because of similarity of appearance

SOC - Species of Concern species that merit special concern (not a regulatory category)

NL – no federal legal status

STATE LEGAL STATUS

The Division of Natural Heritage uses similar abbreviations for State endangerment.

LE - Listed Endangered

PE - Proposed Endangered

SC - Special Concern - animals that merit special concern according to VDGIF (not a regulatory category)

LT - Listed Threatened

PT - Proposed Threatened

C - Candidate

NL - no state legal status

For information on the laws pertaining to threatened or endangered species, please contact:

U.S. Fish and Wildlife Service for all FEDERALLY listed species;
Department of Agriculture and Consumer Services, Plant Protection Bureau for STATE listed plants and insects
Department of Game and Inland Fisheries for all other STATE listed animals

Conservation Sites Ranking

Brank is a rating of the significance of the conservation site based on presence and number of natural heritage resources; on a scale of 1-5, 1 being most significant. Sites are also coded to reflect the presence/absence of federally/state listed species:

Conservation Site Ranks:

B1 – Outstanding significance
B2 – Very high significance
B3 – High significance
B4 – Moderate significance
B5 - Of general biodiversity significance

Legal Status of Site:

FL – Federally listed species present
SL – State listed species present
NL – No listed species present

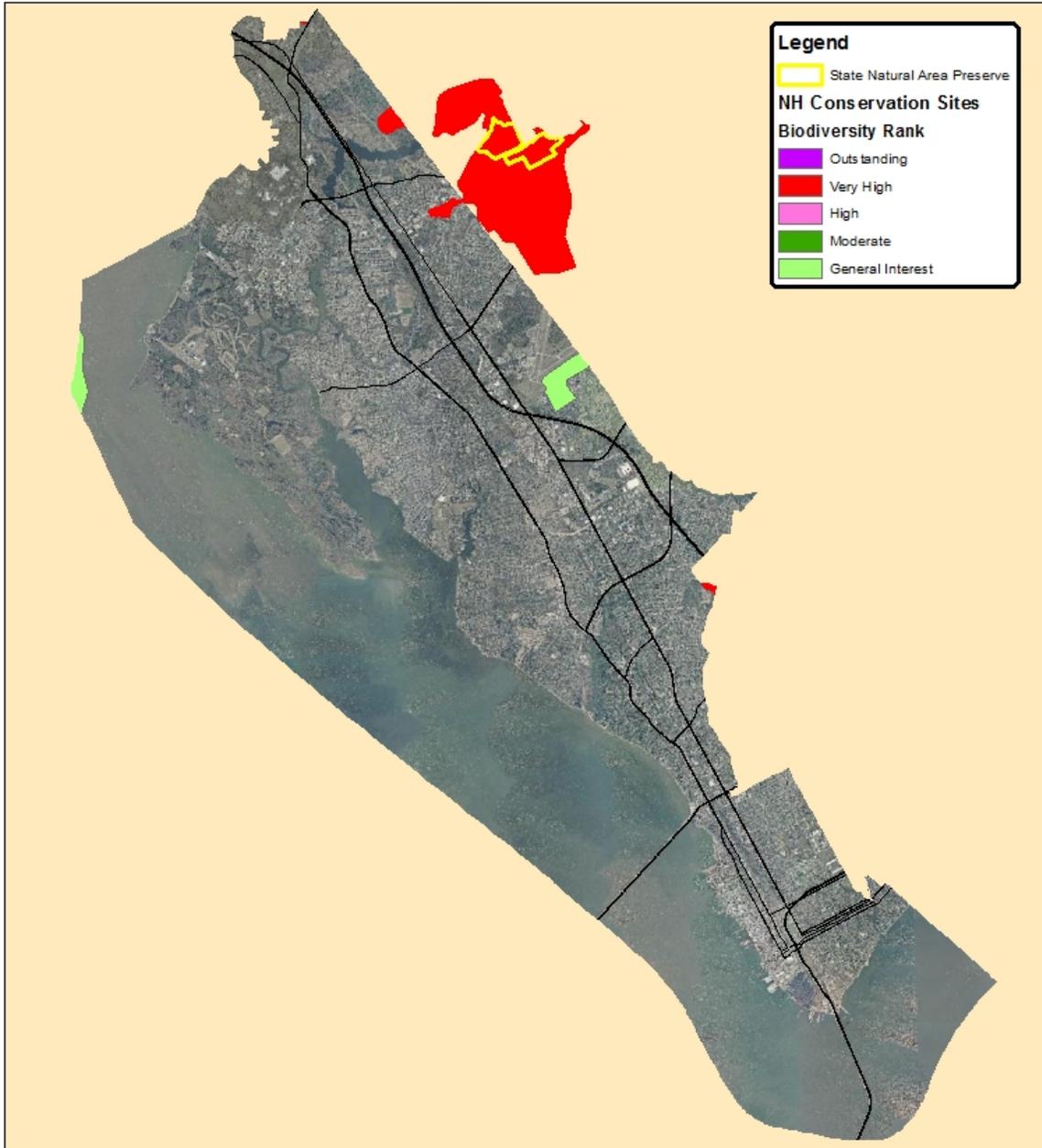
City of Newport News
Table I: Natural Heritage Resources

Group Name	Scientific Name	Common Name	Ecological Group	Last Observed	Global Rank	FWS- Species of concern	State Rank	Federal Status	State Status	Conservation Site Name
Vertebrate Animal	Crotalus horridus [Coastal Plain population]	Canebrake Rattlesnake		1993-09-07	G4T4		S1		LE	
Vascular Plant	Chelone cuthbertii	Cuthbert Turtlehead		1990-09-19	G3		S2			Grafton Ponds
Vascular Plant	Carex lupuliformis	False Hop Sedge		1950	G4		S1S2			
Vascular Plant	Cyperus diandrus	Umbrella Flatsedge		1937-09-18	G5		S1			
Vertebrate Animal	Falco peregrinus	Peregrine Falcon		1998-	G4		S1B, S2N		LT	
Vascular Plant	Ludwigia hirtella	Rafinesque's seedbox		1972-08-10	G5		S2			
Vertebrate Animal	Falco peregrinus	Peregrine Falcon		1996	G4		S1B, S2N		LT	James River Ghost Fleet
Terrestrial Natural Community	Nyssa biflora - (Quercus lyrata) / Eubotrys racemosa / Carex jooirii Forest	Coastal Plain Seasonal Pond (Swamp Tupelo - Overcup Oak Type)	Coastal Plain Depression Wetland	2012-07-17	G1G2		S1S2			Beaverdam Flatwoods
Vascular Plant	Hypericum setosum	Hairy St. John's-wort		2010-09-16	G4G5		S1S2			
Vascular Plant	Cuscuta coryli	Hazel Dodder		1973-08-09	G5?		S2			
Vertebrate Animal	Crotalus horridus [Coastal Plain population]	Canebrake Rattlesnake		2008-10-16	G4T4		S1		LE	Airport - Tabb
Vertebrate Animal	Acipenser oxyrinchus	Atlantic Sturgeon		2007-05	G3		S2	LE	LE	

City of Newport News
Table II: Conservation Sites

Site Name	Biodiversity Rank	Legal Status	Acres	Type
Grafton Ponds	B2	SL	2968	Conservation Site
Beaverdam Flatwoods	B2	NL	178	Conservation Site
Airport - Tabb	B5	SL	949	Conservation Site
Halstead Road Sinkhole Ponds	B2	NL	158	Conservation Site
James River Ghost Fleet	B5	SL	563	Conservation Site
Sandy Bottom	B2	NL	501	Conservation Site

City of Newport News Natural Heritage Conservation Sites



Map Date: 01/12/16