

# Natural Heritage – Locality Liaison/Habitat Restoration

## *Final Report for FY2013 VCZMP Grant No. NA13NOS4190135 Task #6*

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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 subagencies.

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## *Executive Summary*

During the FY2013 grant year, the Locality Liaison reviewed 844 projects for impacts to natural heritage resources in the coastal zone (44% of the projects reviewed statewide). James City County has been an active partner with DCR's Natural Heritage Program, requesting review of eight projects for potential to impact natural heritage resources within their locality. Several resulted in recommendations for surveys for resources. One project included a recommendation for denial of a re-zoning request due to the potential to negatively impact rare natural communities. Other projects in the coastal zone included Fort Belvoir base improvements, with the proposed construction of a new training facility.

Many presentations were given to localities and other conservation partners on the Natural Heritage Data Explorer website (<https://vanhde.org>) The Environmental Review section held seven training days with multiple training sessions around the state. Coastal participants in the training sessions included 40 from state agencies, 1 from a Federal agency, 3 from local governments, 1 from a land trust and 5 from consulting companies. At the end of FY213, there were twenty-five coastal counties and thirteen coastal cities, eight Planning District Commissions and fourteen land trusts within the Coastal Zone with access to NHDE, digital shapefile data, and/or a combination of these tools. This equates to approximately 86% of Coastal Zone counties or cities having Natural Heritage data.

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 Wetland Restoration Catalog and the Coastal Ecological Value Assessment (Coastal VEVA), part of the Virginia DEQ's Coastal GEMS. Natural Heritage information is updated quarterly on the NHDE website and shapefiles including the updated information are also distributed to licensed users.

The Locality Liaison provided natural heritage information, tables and a Conservation Sites map to Westmoreland County, the City of Petersburg and a consultant for the City of Suffolk, for use in their comprehensive plan. The Locality Liaison is currently working with Northampton and James City Counties and the City of Virginia Beach to add or update the natural heritage information in their comprehensive plans or implementation documentation.

The Locality Liaison participated in four outreach events. On April 17, 2014, the Locality Liaison provided natural heritage information for Fort A. P. Hill in Caroline County at the Army's on site Earth Day Event for over six hundred students, teachers and parents. On June 17, 2014, the Locality Liaison gave an introduction to the NHDE for a Virginia Department of Transportation (VDOT) educational webinar that was attended by approximately 18 participants including VDOT staff and Virginia Planning District Commissions. On July 25, 2014 the Locality Liaison gave a brief introduction to the NHDE as part of a DCR Virginia Outdoors Plan presentation to approximately 45 attendees of the Virginia Association of Planning District Commission's summer conference. On September 27, 2014, the Locality Liaison gave a presentation on the NHDE to twelve participants at the Virginia Master Naturalist's annual conference.

The revised Virginia Wetlands Catalog, formerly the Wetland Restoration Catalog, funded by a Natural Resources Conservation Services (NRCS) grant with matching funds from DCR-DNH, The Nature Conservancy (TNC), and the Virginia Department of Transportation (VDOT) was developed with final completion scheduled for November, 2014. The revised catalog will provide a wetland and stream conservation and restoration prioritization tool for use in ranking specific opportunities for wetland and stream mitigation. The catalog will be shared with the Virginia Coastal Zone Management Program (VCZMP) and other conservation partners throughout Virginia.

### ***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.

Virginia Coastal Zone Management Program (VCZMP) and the Chesapeake Bay Program initiatives have generated considerable interest in land use issues within the Coastal Zone. In addition, the Bay Total Maximum Daily Load (TMDL) program is encouraging 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. The Locality Liaison program is working to have natural heritage resources play a larger role in helping localities find beneficial answers to the problems and opportunities they face.

### ***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 general oversight for all projects reviewed within the Coastal Zone. Numerous other DCR-DNH staff members also support the Locality Liaison program, including Data Manager Megan Rollins, Information Manager Jason Bulluck, 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 including VDOT projects. She conducts the review for Coastal Zone projects and provides oversight for the Project Review staff assisting in the review process. During this grant year, DCR-DNH has reviewed 844 projects in the Coastal Zone. This represents 44% 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 screens for issuance or re-issuance of pump-out facilities as part of their permitting process. The 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 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**

### **Department of Defense**

#### *Fort Belvoir*

Fort Belvoir continues improvements to the base. During this grant year, one project, the Construct Skill Training Facility, Davidson Army Airfield (Appendix A) was within the Accotink Bay- Gunston Cove Stream Conservation Unit where Eastern lampmussel and Wood turtle are documented and the Accotink Wetlands Conservation Site, where River bulrush, Water-plantain crowfoot and Tidal Freshwater Marsh could be impacted by changes in water quality as a result of this project. In addition, Parker's pipewort has been historically documented downstream from the training facility. DCR-DNH recommended the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. Also, due to the legal status of Wood turtle, DCR recommended

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).

### *Marine Corps Base, Quantico*

The Marine Corps Base at Quantico Natural Resources Management Plan (Appendix B) project area is within the Aquia Creek – Cannon Creek Stream Conservation Unit and the Chopawamsick Creek Conservation Site. Due to the potential for the base to support populations of natural heritage resources, DCR recommended a re-survey for the Dwarf wedgemussel within Aquia Creek, and inventories for the Fine-lined emerald, Frosted elfin, One-sided shinleaf, Sensitive joint-vetch and Parker's pipewort in the study area. In addition DCR recommended inventories for additional insect / invertebrate groups, such as, amphipods, isopods, dragonflies, damselflies, beetles, butterflies and moths, especially in native grass and wetland habitats. With the survey results, DCR can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources. Furthermore, DCR supported the Marine Corps Base Quantico Natural Resources Management Plan including the management recommendations for Small whorled pogonia in Chapter 7 of the report. DCR also recommended including the management recommendations for communities provided in Technical Report 00-04, *An inventory of the flora of the fire-maintained grassland and woodland at Marine Corps Base, Quantico, Virginia* in the management plan. As specific projects for the base are determined, DCR recommended further coordination with Natural Heritage for determination of potential impacts to natural heritage resources.

### **National Park Service**

#### *Dyke Marsh Wetland Restoration and Long-Term Management Plan*

The National Park Service's Wetland Restoration and Management Plan (Appendix C) project area includes the Hog Island Gut Conservation Site where Rough avens, Crested sedge and River bulrush have been documented. In addition, due to the potential for the site to support Sensitive joint-vetch, a state and federally listed rare plant, DCR recommended a survey for the resource in the project area and coordination with the U.S. Fish and Wildlife Service. With the survey results, DCR can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources. Additionally, since the project is located within 2 miles of a documented occurrence of a state listed animal, DCR recommended 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).

### **James City County**

#### *Xanterra Development, Grove Creek*

James City County has requested DCR – Natural Heritage to review several development projects this year that could have impacts to documented natural heritage resources. The

Xanterra Development, Grove Creek project proposed re-zoning an area along Country Road that was originally designated as open space to a designation that would allow residential development. The Grove Creek ravine is a rare example of a Coastal Plain drainage that has downcut into deep deposits of Tertiary shell deposits and supports two globally rare natural communities, the Coastal Plain Calcareous Ravine Forest, and Coastal Plain Calcareous Seepage Swamp. Two state rare plants, Mountain camellia and Pink thoroughwort are also associated with the Grove Creek Conservation Site. In addition, the Coastal Plain Dry Calcareous Forest is adjacent to the project area. DCR recommended a survey for the Mountain camellia and the Pink thoroughwort, and strongly recommended that the land be maintained as a natural area. According to James City County planning staff, the applicant has subsequently removed those sensitive areas from the master plan for the project (Appendix D).

## **Renewable Energy Projects Energy Projects**

### *Virginia Offshore Wind Technology Advancement Project*

As part of the Virginia Offshore Wind Technology Project (Appendix E), the proposed onshore transmission lines, operations and maintenance facility with associated base port are within the Camp Pendleton – Dam Neck Dune and Swale Conservation Site where a tiger beetle (*Cicindela trifasciata*) has been documented. DCR recommended a survey for the beetle due to the potential for the site to support the resource. Also, due to the potential for several state and federal marine mammals, sea turtles, and marine/coastal birds to occur within the project area, DCR recommended coordination with the Virginia Department of Game and Inland Fisheries (VDGIF), the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) to ensure compliance with protected species legislation.

### *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. DCR-DNH databases contain information about approximately 9,192 specific occurrences of natural heritage resources, 2,376 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 2,006 conservation sites, of which 566 are in the coastal zone. 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. 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, and includes the Virginia Conservation Vision models, which help target conservation efforts by guiding comprehensive planning. Several different levels of 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. Two training days were held at various localities throughout the state and others were held in Richmond utilizing the DEQ computer lab. Training is provided by the project review staff, including the Locality Liaison. The general training sessions are open to all organizations, but are divided into three sections according to the user's tier access level. During this grant year, fifteen separate hands-on training sessions for NHDE were held for coastal zone participants.

Approximately 793 projects have been submitted through NHDE within the FY2013 with 348 from the coastal zone. In addition, 145 projects statewide including 87 in 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 and increasing the number of projects reviewed electronically. The Map of Localities with Natural Heritage Resources has also been updated to an online dynamic map readily updatable by the Locality Liaison. ([http://www.dcr.virginia.gov/natural\\_heritage/localitiesmap.shtml](http://www.dcr.virginia.gov/natural_heritage/localitiesmap.shtml))

### ***Participants in Locality Liaison Presentations***

Presentations included an overview of DCR's Natural Heritage Program, the Locality Assistance Program, and the Natural Heritage Data Explorer (NHDE) website. Additional information was provided about the DCR Wetland Restoration Catalog and the Coastal Virginia Ecological Value Assessment (VEVA), part of DEQ's Coastal GEMS website application.

Coastal participants in the training sessions included 40 from state agencies, 1 from a Federal agency, 3 from local governments, 1 from a land trust and 5 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 F.

### ***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.

During this grant year, the Locality Liaison has provided specific language about natural heritage resources to the City of Suffolk for use in their comprehensive plan update (Appendix G). In addition, tables of the resources that have been documented within their locality and a map showing the locations of conservation sites associated with these natural heritage resources were included. Some localities that have expressed interest in incorporating natural heritage information into their upcoming comprehensive plan updates are: City of Norfolk, James City County and the City of Virginia Beach.

A successful example of this partnership would be the inclusion of natural heritage information, map and table of natural heritage resources in the Mathews County 2030 Comprehensive Plan, pages 106-109 (Appendix H). The process generally takes several years from initial contact to final plan, so DCR-DNH recommends that localities request updated information as the plan reaches completion.

At the end of FY213, there were twenty-five coastal counties and thirteen coastal cities, eight Planning District Commissions and fourteen land trusts within the Coastal Zone with access to NHDE, digital shapefile data, and/or a combination of these tools. This equates to approximately 86% of Coastal Zone counties or cities having Natural Heritage data. Please see Appendix I for a map of the Virginia localities with Natural Heritage information.

The Locality Liaison participated in four outreach events. On April 17, 2014, the Locality Liaison provided natural heritage information for Fort A. P. Hill in Caroline County at the Army's on site Earth Day Event for over six hundred students, teachers and parents. On June 17, 2014, the Locality Liaison gave an introduction to the NHDE for a Virginia Department of Transportation (VDOT) educational webinar that was attended by approximately 18 either VDOT staff or Virginia Planning District Commission participants. On July 25, 2014 the Locality Liaison gave a brief introduction to the NHDE as part of a DCR Virginia Outdoors Plan presentation to approximately 45 attendees of the Virginia Association of Planning District Commission's summer conference. On September 27, 2014, the Locality Liaison gave a presentation on the NHDE to twelve participants at the Virginia Master Naturalist's annual conference.

### ***Habitat Restoration and Protection Initiatives***

#### ***Virginia Wetlands Catalog***

The current Wetland Restoration Catalog (ca. 2008) contains potential wetland restoration sites that are within or adjacent to Natural Heritage Conservation Sites. This catalog is intended to

guide localities and regulatory agencies to appropriate sites for various conservation purposes including wetland mitigation. These sites represent high-probability opportunities to design and implement high-value wetland restoration projects.

The Virginia Natural Heritage Program has developed a revised methodology for updating and modifying the Virginia Wetlands Catalog, formerly the Wetland Restoration Catalog. This methodology started with the development of a wetlands basemap that includes all National Wetland Inventory wetlands, as well as other predicted wetlands based on analyses of soils data, floodplains, and agricultural wetlands data. All wetlands in this statewide basemap are then prioritized for their conservation and restoration values, using various datasets that identify each wetland's contributions to biodiversity conservation, wildlife habitat and/or water quality. This methodology was tested in an 11-subwatershed pilot area of the Pamunkey River of Virginia.

With findings from the Pamunkey Pilot and with funding from the Natural Resources Conservation Service (NRCS), DCR-DNH, The Nature Conservancy (TNC), and the Virginia Department of Transportation (VDOT), DCR-DNH is currently completing a statewide Virginia Wetlands Catalog. In November, 2014, the Catalog will be provided to the CZMP and other conservation partners as distinct and separate map-based summaries of wetland conservation and restoration opportunities ranked from 1-Outstanding to 5-General value. Both conservation and restoration opportunities will be mapped by sub-watershed boundaries, wetland boundaries and tax parcel IDs in six separate map outputs. The revised catalog will provide a wetland and stream conservation and restoration prioritization tool for use in ranking specific opportunities for wetland and stream mitigation and shared with other conservation partners as part of the locality liaison presentations.

### ***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. 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 ability for participants to attend by webinar may also be included to increase participation by localities in NHDE training sessions.

38 Coastal Zone localities currently have access to NHDE or digital shapefile 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 upgraded NHDE will be targeted in FY14. It is also important to keep in contact with the localities due to possible staffing changes.

The Locality Liaison will continue to focus on contacting localities that are not currently using Natural Heritage data, with Middlesex County and the City of Petersburg being targeted for FY14. 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. The Liaison will work to further the promotion and use of the Virginia Wetland Catalog as an effective tool for planning and environmental review processes. The Locality Liaison along with the project review staff will continue to work to improve the environmental review process.

# **Appendix A**

Letter for  
Fort Belvoir  
Construct Skill Training Facility  
Davison Army Airfield



# DCR Interoffice MEMORANDUM

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**To:** Robbie Rhur, DCR-DPRR  
**From:** Alli Baird, DCR-DNH  
**Date:** May 19, 2014  
**Subject:** DEQ 14-067F, Construct Skill Training Facility, Davison Army Airfield, Fort Belvoir  
Due May 22, 2014

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 the information currently in our files, the Accotink Bay – Gunston Cove Stream Conservation Unit is located within the project site. 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 all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. The Accotink Bay – Gunston Cove SCU has been given a biodiversity ranking of B5, which represents a site of general significance. The natural heritage resources associated with this site are:

<i>Lampsilis radiata</i>	Eastern lampmussel	G5/S2S3/NL/NL
<i>Glyptemys insculpta</i>	Wood turtle	G3/S2/NL/LT

The Eastern lampmussel is a freshwater mussel which inhabits river systems in areas with substrates composed of silt, sand, cobble, gravel and exposed bedrock (NatureServe, 2009). This species has a wide range, from eastern Canada west to Ontario and Quebec and south to South Carolina (NatureServe, 2009). In Virginia, there are records from the Chowan and York River drainages.

Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species.

The Wood turtle ranges from southeastern Canada, south to the Great Lake states and New England. In Virginia, it is known from northern counties within the Potomac River drainage (NatureServe, 2009). The Wood turtle inhabits areas with clear streams with adjacent forested floodplains and nearby fields, wet meadows, and farmlands (Buhlmann et al., 2008; Mitchell, 1994). Since this species overwinters on the bottoms of creeks and streams, a primary habitat requirement is the presence of water (Mitchell, 1994).

Threats to the wood turtle include habitat fragmentation, urbanization, and automobile or farm machinery mortality (Buhlmann et al., 2008). Please note that the Wood turtle is currently classified as threatened by the Virginia Department of Game and Inland Fisheries (VDGIF).

In addition, the Accotink Wetlands Conservation Site is also located downstream from the project site. 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. Accotink Wetlands Conservation Site has been given a biodiversity significance ranking of B3, which represents a site of high significance. The natural heritage resources of concern at this site are:

<i>Bolboschoenus fluviatilis</i>	River bulrush	G5/S2/NL/NL
<i>Ranunculus ambigens</i>	Water-plantain crowfoot	G4/S1/NL/NL
	Tidal Freshwater Marsh (Mixed High Marsh Type)	G3/S4?/NL/NL

River bulrush, a state-rare plant species, inhabits fresh tidal marshes of the coastal plain of Virginia. This species forms predominantly sterile colonies that spread by rhizomes. Water pollution and sedimentation, sea level rise, and invasive species such as *Phragmites australis* pose the greatest threats to populations of this sedge. Nine populations of river bulrush are believed to be extant in Virginia.

Water-plantain crowfoot is a perennial wetland herb in the buttercup family (Ranunculaceae). The global distribution of water-plantain spearwort includes the eastern, midwestern, and southern U.S. and Ontario, Canada. Although apparently globally secure, water-plantain spearwort, also known as water-plantain crowfoot, is regionally rare to historical or extirpated, particularly in some eastern states (Kartesz 1999). In Virginia, it has been documented in scattered locations in the Coastal Plain, Piedmont, and Ridge and Valley. Many Virginia occurrences are historical, but more recent occurrences include those in Fairfax, Charlotte, and Lee counties. The lower stem of this relatively stout herb may recline, producing roots from the nodes, then become ascending to erect and extending sometimes to over 3 feet long. Leaves are lance-shaped, with margins smooth to finely-toothed. Yellow-petaled flowers bloom from April-July and can be solitary or in a branching inflorescence; the round to oval fruiting head is composed of numerous, small, 1-seeded, fruits (Godfrey and Wooten 1981). Habitat in Virginia occurrences includes a variety of wetlands: freshwater marshes, both tidal and non-tidal; a spring seep within a clearcut; wet soil within a floodplain; a muddy stream bottom; ditches; and very wet, mucky ground in a small pastured wetland. Threats include habitat degradation or destruction, and competition from invasive alien plant species.

Tidal Freshwater Marsh (Mixed High Marsh Type) (*Impatiens capensis-Peltandra virginica-Polygonum arifolium-Schoenoplectus fluviatilis-Typha angustifolia* Tidal Herbaceous Vegetation) occupies the higher elevation zone of freshwater to slightly oligohaline marshes on the Atlantic Coast from Maine to Virginia. From Delaware to northern Virginia, this is the principal mixed freshwater tidal marsh community and forms extensive patches along many tidal rivers. This community is composed of mixed, dense, and often diverse marsh vegetation with highly variable species composition and patch dominance. The soils are highly variable, varying from silts and silty mucks to peats and sands across the range (NatureServe, 2010). In Virginia, this community occurs most extensively in estuarine reaches of the Potomac River

drainage, but has also been documented along the Rappahanock, Pamunkey, Mattoponi, and James Rivers.

Freshwater tidal marshes are naturally dynamic systems that are best developed where there is a major input of freshwater, daily tidal range of at least 0.5 m, and a geomorphology that tends to constrict and magnify tidal influence in the upper reaches of the estuary. These marshes are subject to diurnal flooding by tides and river discharge (NatureServe, 2010). Principal threats include chronic sea-level rise leading to increasing upstream salinity, pollutants, and invasive exotic plants such as marsh dewflower (*Murdannia keissak*) (Fleming et al. 2011).

Furthermore, Parker's pipewort (*Eriocaulon parkeri*, G3/S2/NL/NL) has been historically documented downstream from the project site. Parker's pipewort is classified as very rare to uncommon in Virginia. This diminutive pipewort species displays a greyish-white button flower and often occurs with other rare mudwort species in the intertidal zone of tidal regions from Maine to North Carolina. Potential threats include activities that alter natural river currents causing sedimentation, which could inhibit germination of seeds or smother seedlings, and/or erosion of the habitat. Other potential threats include activities that result in increased salinity levels, water pollution, and displacement by aggressive species (J. C. Ludwig, 1996). Parker's pipewort has been documented at 29 occurrences in Virginia with 11 of those historical or extirpated. Surveys for this species should be conducted during the flowering / fruiting period from July to October.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations. Due to the legal status of Wood turtle, DCR also 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).

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 Gladys Cason (804-367-0909 or [Gladys.Cason@dgif.virginia.gov](mailto:Gladys.Cason@dgif.virginia.gov)). According to the information currently in our files, the Unnamed Tributary of Dogue Creek, 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 these 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.

Cc: Amy Ewing, VDGIF

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# **Appendix B**

Letter for  
Marine Corps Base, Quantico  
Natural Resources Management Plan



**DCR**  
Interoffice  
**MEMORANDUM**

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**To:** Robbie Rhur, DCR-DPRR  
**From:** Alli Baird, DCR-DNH  
**Date:** December 18, 2013  
**Subject:** DCR 13-066, Marine Corps Base Quantico Natural Resources Management Plan  
Due December 18, 2013

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 there are numerous natural heritage resources documented within the Quantico Marine Corps Base (see Table attached). The following conservation sites are identified below due to associated natural heritage resources that have the potential to occur elsewhere within the project area.

The project area is located within the Aquia Creek – Cannon Creek Stream Conservation Unit (SCU). SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. The Aquia Creek – Cannon Creek SCU has been given a biodiversity ranking of B2, which represents a site of very high significance. The natural heritage resource of concern within this site is:

<i>Alasmidonta heterodon</i>	Dwarf wedgemussel	G1G2/S1/LE/LE
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The Dwarf wedgemussel grows to a length of approximately 30 mm. This species inhabits creeks of varying sizes, residing in muddy sand, sand, and gravel bottoms, in areas of slow to moderate current and little silt deposition (USFWS, 1993). Currently, this species exists in widely scattered, small populations in the Chowan, James, York, Rappahannock, and Potomac River drainages. Its native host fishes include Mottled sculpin (*Cottus bairdi*), Johnny darters (*Etheostoma nigrum*), Tessellated darters (*Etheostoma olmstedi*) and Sculpins (*Cottus* sp.) (Michaelson and Neves, 1995). Please note that this species is currently classified as endangered by the United States Fish and Wildlife Service (USFWS) and the Virginia Department of Game and Inland Fisheries (VDGIF).

Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species.

In addition, Aquia Creek has been designated by the Virginia Department of Game and Inland Fisheries (VDGIF) as a “Threatened and Endangered Species Water” The species associated with this T & E Water is the Dwarf wedgemussel (*Alasmidonta heterodon*, G1G2/S1/LE/LE).

Furthermore, the project area is also located within the Chopawamsick Creek Conservation Site. 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. Chopawamsick Creek Conservation Site has been given a biodiversity significance ranking of B3 which represents a site of high significance. The natural heritage resource of concern at this site is:

<i>Somatochlora filosa</i>	Fine-lined emerald	G5/S2/NL/NL
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The Fine-lined emerald is a state rare dragonfly species measuring 54-66 mm in length (Needham and Westfall, 1975). This colorful, slender species inhabits slow-flowing blackwater with sand, mud or silt substrate and emergent vegetation along the banks (NatureServe, 2010). The Fine-lined emerald ranges throughout the southeastern United States (Dunkle, 2000) and from several sites throughout the piedmont and coastal plain of Virginia.

Adult Odonata (dragonflies and damselflies), commonly seen flitting and hovering along the shores of most freshwater habitats, are accomplished predators. They lay their eggs on emergent vegetation or debris at the water’s edge. Unlike the adults, the larvae are aquatic where they typically inhabit the sand and gravel of the substrates. Wingless and possessing gills, they crawl about the submerged leaf litter and debris stalking their insect prey. The larvae seize unsuspecting prey with a long, hinged “grasper” that folds neatly under their chin. When larval development is complete, the aquatic larvae crawl from the water to the bank, climb up the stalk of the shoreline vegetation, and the winged adult emerges (Hoffman 1991; Thorpe and Covich 1991).

Because of their aquatic lifestyle and limited mobility, the larvae are particularly vulnerable to shoreline disturbances that cause the loss of shoreline vegetation and siltation. They are also sensitive to alterations that result in poor water quality, aquatic substrate changes, and thermal fluctuations.

In addition, the Frosted elfin (*Callophrys irus*, G3/S2/NL/NL) and One-sided shinleaf (*Orthilla secunda*, G5/SH/NL/NL) have been historically documented within the project area. There is also potential for Sensitive joint-vetch (*Aeschynomene virginica*, G2/S2/LT/LT) and Parker’s pipewort (*Eriocaulon parkeri*, G3/S2/NL/NL) to occur within the project area if suitable habitat exists on site.

Frosted elfin is gray-brown on the dorsal side. The ventral side is res-brown or gray-brown with a large gray patch at the outside and trailing edge of the hind wing. A black spot is usually evident in the center of this patch. They are found most often in dry areas, especially oak woods, shale barrens, pine forests, sandhills and coastal scrub. They feed upon Wild Lupine (*Lupinus perennis*) and Wild Indigo (*Baptisia tinctoria*). Others have been cited as well, like other Lupines and Rattlebox (*Crotalaria sagittalis*). There may be different management approaches for Frosted elfin populations which feed on Lupine versus Wild Indigo. In both cases, open habitat should be preserved; however, the use of fire, herbicides, and summer mowing, might be detrimental. Winter-time mowing and deer control may be beneficial. Habitat destruction is a likely cause of the demise of this species. (DCR-DNH et al. 2013)

One-sided shinleaf has shiny, bright green leaves below racemes of 6-20 whitish-green or white flowers all turned to one side. It is the only species in the genus *Orthilia*; it was once included in *Pyrola*, a larger genus of species that inhabit damp woods. Both common names refer to the straight, one-sided flower cluster. Leaves remain green throughout the winter, hence the common name wintergreen. (U of Texas, Austin, 3/22/2013)

Sensitive joint-vetch is a bristly stemmed annual legume growing to 2 meters in height. The characteristic pinnately divided leaves are gland-dotted and may fold slightly if touched. The pea-shaped flowers are yellow streaked with orange-red. This legume occurs in freshwater to brackish wetland habitats, primarily marshes, in the intertidal zone of our larger coastal rivers. This habitat type often supports a high diversity of both rare and common plant species. This annual herbaceous plant is classified as federally listed by the United States Fish and Wildlife Service (USFWS) and stated listed by the Virginia Department of Agriculture and Consumer Services (VDACS).

To thrive, Sensitive joint-vetch may require minimal competition from other plants. For this reason, plants are frequently found on accreting point bars and levees that have not yet been colonized by perennial species. Sensitive joint-vetch populations however, may also be found within marsh interiors. Researchers believe that these plants may be able to thrive there because of harsh soil and nutrient conditions that inhibit growth of potential competitors. An additional theory for the Sensitive joint-vetch occurring at those locations is that grazing herbivores, such as muskrat (*Ondatra zebethicus*), eat large areas of vegetation ("muskrat eat-outs") leaving behind exposed soils that are more easily colonized by annuals.

Populations face many potential on-site and off-site threats, including activities that alter natural river currents and sediment cycling and, thereby, prevent the development of accreting point-bar habitats for the species and/or cause erosion of that habitat. Other potential threats include activities which result in increased salinity levels, water pollution, displacement by aggressive species, and activities which result in excessive sediment loading which could inhibit germination of seeds or smother seedlings (USFWS, 1995). Sensitive joint-vetch is currently known from about 30 locations in Virginia's coastal plain, 10 of which are historical occurrences.

Surveys for Sensitive joint-vetch should be conducted from August 15 to October 15. At this time the plant is in flower or fruit and has attained some stature making it more visible during the surveys typically conducted from a boat.

Parker's pipewort (*Eriocaulon parkeri*, G3/S2/NL/NL) is classified as very rare to uncommon in Virginia. This diminutive pipewort species displays a greyish-white button flower and often occurs with other rare mudwort species in the intertidal zone of tidal regions from Maine to North Carolina. Potential threats include activities that alter natural river currents causing sedimentation, which could inhibit germination of seeds or smother seedlings, and/or erosion of the habitat. Other potential threats include activities that result in increased salinity levels, water pollution, and displacement by aggressive species (J. C. Ludwig, 1996). Parker's pipewort has been documented at 29 occurrences in Virginia with 11 of those historical or extirpated. Surveys for this species should be conducted during the flowering / fruiting period from July to October.

Due to the potential for this site to support populations of natural heritage resources, DCR recommends a re-survey for the Dwarf wedgemussel within Aquia Creek, and inventories for the Fine-lined emerald, Frosted elfin, One-sided shinleaf, Sensitive joint-vetch and Parker's pipewort in the study area. In addition DCR recommends inventories for additional insect / invertebrate groups, such as, amphipods, isopods, dragonflies, damselflies, beetles, butterflies and moths, especially in native grass and wetland

habitats. 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](mailto:chris.ludwig@dcr.virginia.gov) or 804-371-6206 to discuss arrangements for field work. A list of other individuals who are qualified to conduct inventories may be obtained from the USFWS.

Furthermore, due to the legal status of many of the natural heritage resources, DCR also recommends coordination with the United States Fish and Wildlife Service (USFWS), and the Virginia Department of Game and Inland Fisheries (VDGIF), to ensure compliance with protected species legislation.

DCR supports the Marine Corps Base Quantico Natural Resources Management Plan including the management recommendations for Small whorled pogonia in Chapter 7 of the report. In addition, DCR recommends including the management recommendations for communities provided in Technical Report 00-04, *An inventory of the flora of the fire-maintained grassland and woodland at Marine Corps Base, Quantico, Virginia* in the management plan. As specific projects are determined, DCR recommends further coordination with this office for determination of potential impacts to natural heritage resources.

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. Survey results should be coordinated with DCR-DNH and USFWS. Upon review of the results, if it is determined the species is present, and there is a likelihood of a negative impact on the species, DCR-DNH will recommend coordination with VDACS to ensure compliance with Virginia's Endangered Plant and Insect Species Act.

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.

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 Gladys Cason (804-367-0909 or [Gladys.Cason@dgif.virginia.gov](mailto:Gladys.Cason@dgif.virginia.gov)).

Thank you for the opportunity to comment on this project.

Cc: Troy Andersen  
Amy Ewing, VDGIF  
Keith Tignor, VDACS

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# **Appendix C**

Letter for  
National Park Service  
Dyke Marsh Wetland Restoration  
and Long-term Management Plan



# DCR Interoffice MEMORANDUM

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**To:** Robbie Rhur, DCR-DPRR

**From:** Alli Baird, DCR-DNH

**Date:** February 14, 2014

**Subject:** DEQ 14-016F, NPS – Dyke Marsh Wetland Restoration and Long-term Management Plan  
Due February 19, 2014

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 the information currently in our files, the Hog Island Gut Conservation Site is located within the project site. 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. Hog Island Gut Conservation Site has been given a biodiversity significance ranking of B5, which represents a site of general significance. The natural heritage resources of concern at this site are:

<i>Geum lacinatum</i>	Rough avens	G5/S2/NL/NL
<i>Carex cristatella</i>	Crested sedge	G5/S2?/NL/NL
<i>Bolboschoenus fluviatillis</i>	River bulrush	G5/S2/NL/NL

Rough avens occurs in open wetlands such as wet meadows (The Nature Conservancy, 1996). In Virginia, rough avens is currently known from ten locations, two of which are historic.

Crested sedge is a stout plant that grows in tufts and flowers from May to June. The beaks of the perigynia are spreading or recurved, giving the inflorescence a distinctly bristly appearance. It can be found in wet meadows, fens, seeps ditches and river shores, usually in calcareous soils of nutrient-rich alluvium. It is rare in the mountains and northern Piedmont(Weakley, et al., 2012).

River bulrush, a state-rare plant species, inhabits fresh tidal marshes of the coastal plain of Virginia. This species forms predominantly sterile colonies that spread by rhizomes. Water pollution and sedimentation, sea level rise, and invasive species such as *Phragmites australis* pose the greatest threats to populations of this sedge. Nine populations of river bulrush are believed to be extant in Virginia.

In addition, there is a potential for Sensitive joint-vetch (*Aeschynomene virginica*, G2/S2/LT/LT) to occur within the project area if suitable habitat exists on site. Sensitive joint-vetch is a bristly stemmed annual legume growing to 2 meters in height. The characteristic pinnately divided leaves are gland-dotted and may fold slightly if touched. The pea-shaped flowers are yellow streaked with orange-red. This legume occurs in freshwater to brackish wetland habitats, primarily marshes, in the intertidal zone of our larger coastal rivers. This habitat type often supports a high diversity of both rare and common plant species. This annual herbaceous plant is classified as federally listed by the United States Fish and Wildlife Service (USFWS) and stated listed by the Virginia Department of Agriculture and Consumer Services (VDACS).

To thrive, Sensitive joint-vetch may require minimal competition from other plants. For this reason, plants are frequently found on accreting point bars and levees that have not yet been colonized by perennial species. Sensitive joint-vetch populations however, may also be found within marsh interiors. Researchers believe that these plants may be able to thrive there because of harsh soil and nutrient conditions that inhibit growth of potential competitors. An additional theory for the Sensitive joint-vetch occurring at those locations is that grazing herbivores, such as muskrat (*Ondatra zebethicus*), eat large areas of vegetation ("muskrat eat-outs") leaving behind exposed soils that are more easily colonized by annuals.

Populations face many potential on-site and off-site threats, including activities that alter natural river currents and sediment cycling and, thereby, prevent the development of accreting point-bar habitats for the species and/or cause erosion of that habitat. Other potential threats include activities which result in increased salinity levels, water pollution, displacement by aggressive species, and activities which result in excessive sediment loading which could inhibit germination of seeds or smother seedlings (USFWS, 1995). Sensitive joint-vetch is currently known from about 30 locations in Virginia's coastal plain, 10 of which are historical occurrences.

Surveys for Sensitive joint-vetch should be conducted from August 15 to October 15. At this time the plant is in flower or fruit and has attained some stature making it more visible during the surveys typically conducted from a boat.

Due to the potential for this site to support populations of Sensitive joint-vetch, DCR recommends an inventory for the resource in the study 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](mailto:chris.ludwig@dcr.virginia.gov) or 804-371-6206 to discuss arrangements for field work. A list of other individuals who are qualified to conduct inventories may be obtained from the USFWS.

Due to the legal status of Sensitive joint-vetch, DCR also recommends coordination with USFWS to ensure compliance with protected species legislation.

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. Survey results should be coordinated with DCR-DNH and USFWS. Upon review of the results, if it is determined the species is present, and there is a likelihood of a negative impact on the species, DCR-DNH will recommend coordination with VDACS to ensure compliance with Virginia's Endangered Plant and Insect Species Act.

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 contact DCR for an update on this natural heritage information if a significant amount of time passes 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 Gladys Cason (804-367-0909 or [Gladys.Cason@dgif.virginia.gov](mailto:Gladys.Cason@dgif.virginia.gov)). This project is located within 2 miles of a documented occurrence of a state listed animal. 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).

Thank you for the opportunity to comment on this project.

Cc: Amy Ewing, VDGIF  
Troy Andersen, USFWS

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# **Appendix D**

Letter for  
James City County  
Xanterra Development  
And  
Map of revised Master Plan

Douglas W. Domenech  
Secretary of Natural Resources



David A. Johnson  
Director

**COMMONWEALTH of VIRGINIA**  
**DEPARTMENT OF CONSERVATION AND RECREATION**

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

October 7, 2013

Jose Ribiero  
James City County Planning Division  
101-A Mounts Bay Road  
Williamsburg, VA 23187

Re: Xanterra Development, Grove Creek

Dear Mr. Ribiero:

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 the information currently in our files, this site is located within the Grove Creek Conservation Site. 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. Grove Creek Conservation Site has been given a biodiversity significance ranking of B1, which represents a site of outstanding significance. The natural heritage resources of concern at this site are:

	Coastal Plain Calcareous Ravine Forest	G2/S2/NL/NL
	Coastal Plain Calcareous Seepage Swamp	G2/S2/NL/NL
	Coastal Plain Dry Calcareous Forest	G1/S1/NL/NL
<i>Stewartia ovata</i>	Mountain camellia	G4/S2/NL/NL
<i>Fleischmannia incarnate</i>	Pink thoroughwort	G5/S2/NL/NL

The Grove Creek ravine is a rare example of a Coastal Plain drainage that has downcut into deep deposits of Tertiary shell deposits. As a result, soils of the sideslopes and bottomland, as well as the groundwater saturating the drainage, are highly calcareous. Since most soils of the Coastal Plain are highly acidic, the vegetation of Grove Creek is rare and unusual, containing numerous species that are disjunct from further west, disjunct from further south, or simply rare on the Coastal Plain. Two globally rare natural communities occur within the project area. Please see the attached map of the area containing the above referenced natural heritage resources.

The Coastal Plain Calcareous Ravine Forest is the rich mixed hardwood forest of slopes bordering Grove Creek. This is a rich mesophytic to submesophytic forest in calcareous ravines that are found in the southeastern Virginia Coastal Plain and possibly the adjacent Piedmont. Habitats are north- to east-facing slopes and adjacent low interfluves downcut into Tertiary shell deposits or lime sands, including the Pliocene marine shell deposits of the calcium-rich Yorktown Formation (NatureServe, 2013).

The Coastal Plain Calcareous Seepage Swamp is the swamp forest occupying the bottom of the Grove Creek drainage, above tidal influence. It occurs on the Virginia Coastal Plain on groundwater-saturated stream bottoms in ravines that have cut into Tertiary shell deposits or limesands. Braided streams and hummock-and-hollow microtopography are characteristic of the environmental setting. Soils are highly calcareous with pH values up to 7.4 and calcium levels that range up to 6000 ppm. It is known only from calcareous ravines in the James and York River drainages, in James City, Surry, and York counties (Fleming, et al., 2012).

The Coastal Plain Dry Calcerous Forest is adjacent to the project area. This forest is a dry, open, forest or woodland of the Coastal Plain of Virginia and Maryland, is restricted to subxeric to xeric, fertile habitats over unconsolidated, calcareous deposits. These localized habitats are found on southeast- to southwest-facing, usually convex slopes of deep ravines or stream-fronting bluffs that have downcut into Tertiary shell deposits or limesands(NatureServe, 2013). Compared to Basic Mesic Forests of the Coastal Plain, these dry calcareous forests have a larger component of oaks (particularly chinkapin oak) in the overstory and have a much less lush herb layer (Fleming, et al., 2012.)

Rezoning and development of the land along the Country Road that was originally designated as open space could negatively impact the long-term viability of these resources by greatly reducing their forested buffer, altering microclimatic conditions (decreasing humidity), increasing run-off, and encouraging invasive exotic plants. The Virginia Natural Heritage Program strongly recommends that the land along the Country Road not be rezoned but continue to be maintained as a natural area.

In addition, two state-rare plants, pink thoroughwort and mountain camellia, have been documented in the project area. Pink thoroughwort is a loosely clumping perennial herb with opposite, ovate leaves and pink florets. It occupies mesic to dry, open forests, woodlands and clearings over calcareous and mafic rocks and coastal shell deposits and is rare throughout the state (Weakley, et al).

Mountain camellia is a mountain-coastal plain disjunct. Mountain camellia is uncommon throughout its range and is considered very rare in Virginia. A shrub of the tea family, mountain camellias have simple oval leaves and bear white flowers in mid-summer. They tend to grow on wooded bluffs and slopes with alkaline soils. Threats to populations include direct habitat destruction from clearing or erosion and alteration of the species microclimate through clearing of adjacent lands (Clark, 1993). This species is currently known from only 4 locations and historically known from multiple locations in Virginia.

Due to the potential for this site to support populations of mountain camellia and pink thoroughwort, DCR recommends an inventory for the resources in the study 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](mailto:chris.ludwig@dcr.virginia.gov) or 804-371-6206 to discuss arrangements for field work.

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 contact DCR for an update on this natural heritage information if a significant amount of time passes 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 Gladys Cason (804-367-0909 or [Gladys.Cason@dgif.virginia.gov](mailto:Gladys.Cason@dgif.virginia.gov)). This project is located within 2 miles of a documented occurrence of a state listed animal. 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

## Literature Cited

Clark, K.H. 1993. Conservation Planning for the Natural Areas of the Lower Peninsula of Virginia. Natural Heritage Technical Report #93-4. Virginia Department of Conservation and Recreation, Division of Natural Heritage. 8 March 1993. 193pp.

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# **Appendix E**

Letter for  
Virginia Offshore Wind Technology  
Advancement Project



# DCR Interoffice MEMORANDUM

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**To:** Robbie Rhur, DCR-DPRR  
**From:** Alli Baird, DCR-DNH  
**Date:** September 19, 2014  
**Subject:** DEQ 14-0968, VEPCO, Virginia Offshore Wind Technology Advancement Project  
Due September 24, 2014

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 the information currently in our files, the Camp Pendleton – Dam Neck Dune and Swale Conservation Site is located within the project site. 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. Camp Pendleton – Dam Neck Dune and Swale Conservation Site has been given a biodiversity significance ranking of B3, which represents a site of high significance. The natural heritage resource of concern at this site is:

*Cicindela trifasciata*

A Tiger beetle

G5/S1/NL/NL

The Tiger beetle, has a broad range, from southern California to central Chile and from Virginia south to Venezuela (NatureServe, 2009). In Virginia, it is known from the southern coastal plain and piedmont. It has a dark brown – blackish dorsal surface with a greenish hue (Knisely and Schulz, 1997). The dorsal surface is covered with shallow green punctures. The ventral surface of the thorax is coppery and the abdomen is metallic blue or greenish-blue (Knisely and Schulz, 1997). This tiger beetle occurs in a wide variety of water-edge habitats, including mudflats or swales in coastal areas, tidal estuaries, marshes and bays, and pond, river and stream edges (Knisely and Schultz, 1997).

Threats to this and other tiger beetles include habitat destruction from development or conversion to agricultural or timber operations.

Due to the high potential for this site to support populations of a Tiger beetle as stated on page 4-91 of *Virginia Offshore Wind Technology Advancement Project (VOWTAP)* prepared by Tetra Tech, Inc., , dated December 2013, revised February 2014, DCR recommends an inventory for the resource in the study 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](mailto:chris.ludwig@dcr.virginia.gov) or 804-371-6206 to discuss arrangements for field work.

There is potential for several state and federally-listed species including marine mammals, sea turtles, and marine/coastal birds to occur in the project area. According to the *Interim Avian Survey Report, April 2013 – October 2013*, VOWTAP dated December 2013 (Appendix L) the Gull-billed tern (*Gelochelidon nilotica*, G5/S2B/NL/LT), Peregrine falcon (*Falco peregrinus*, G4/S1B,S2N/NL/LT), and Piping plover (*Charadrius melodus*, G3/S2B,S1N/LT/LT) were documented in the project area. Due to the legal status of these species and potential for marine resources, DCR-DNH recommends coordination with the Virginia Department of Game and Inland Fisheries (VDGIF), the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) to ensure compliance with protected species legislation.

DCR supports the design and best management practice measures as stated in Table ES-1. Potential Impacts and Avoidance, Minimization, and Mitigation Measures of the VOWTAP, Research Activities Plan with regard to the following Table listed resources: Physical and Oceanographic Conditions; Water Quality; Marine Biological resources: Benthos and Fish, Underwater Noise; Terrestrial Biological resources; Avian and Bat Species; Threatened and Endangered Species and Species of Special Concern; Essential Fish Habitat; and, Wetlands and Other Jurisdictional Waterbodies.

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.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information once the construction laydown area(s), construction port, the operations and maintenance facility with an associated Base Port, and are determined 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 Gladys Cason (804-367-0909 or [Gladys.Cason@dgif.virginia.gov](mailto:Gladys.Cason@dgif.virginia.gov)).

Thank you for the opportunity to comment on this project.

Cc: Amy Ewing, VDGIF  
Troy Andersen, USFWS  
David O'Brien, NOAA

### *Literature Cited*

Knisley, C.B. and T.D. Schulz. 1997. The Biology of Tiger Beetles and a Guide to the species of the South Atlantic States. Virginia Museum of Natural History, Special Publication Number 5, Martinsville, VA. p. 134.

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# **Appendix F**

List of Organizations that  
Participated in Training

Capital Region Land Conservancy

City of Hampton

City of Norfolk

Community Planning Partners

Environmental Specialties Group

Froehling and Robertson, Inc.

Hanover-Caroline SWCD

HDR Engineering, Inc.

Mathews County

Natural Resources Group, LLC

Rural Development, US Dept. of Agriculture

VA Dept of Conservation and Recreation – Natural Heritage & Recreation

Resources

VA Dept. of Forestry

VA Dept. of Transportation

VA Economic Partnership

# **Appendix G**

City of Suffolk  
Comprehensive Plan  
Information Provided

## City of Suffolk 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 Suffolk is currently home to one hundred distinct types of natural heritage resources with two hundred and sixteen total occurrences throughout the city (Table I: Natural Heritage Resources). In addition, DCR has identified seventeen terrestrial and three aquatic conservation sites as areas necessary for their survival. (Table II: Conservation Sites)

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 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 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 Suffolk is the Great Dismal Swamp Conservation Site. In addition to multiple rare species and habitat types found here, the site/ecosystem are critically important because of the geographic location. 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. Great Dismal Swamp Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. There are nineteen natural heritage resources associated with this conservation site (see Table I: Natural Heritage Resources). A few of the rarer natural heritage resources at this conservation site are:

<i>Corynorhinus rafinesquii macrotis</i>	Big-eared bat	G3G4T3/S2/NL/LE
<i>Trillium pusillum var. virginianum</i>	Virginia Least Trillium	G3T2/S2/SOC/NL
	Non-Riverine Wet	
	Hardwood Forest	G2/S1/NL/NL

The Eastern Big-eared bat (*Corynorhinus rafinesquii macrotis*, G3G4/S2/NL/LE), named for its enormous ears twice the length of its head, is extremely rare in Virginia and is currently known only the southeastern portion of the state. Although widespread throughout the southeast, they are never found in large numbers. These bats roost singly or in small groups in hollow trees or abandoned buildings. They forage only after dark primarily in mature forests of both upland and lowland areas along permanent bodies of water (NatureServe, 2009). The details of this bat’s feeding behavior and much of its natural

history remain a mystery. Lack of information regarding the ecology of the eastern big-eared bat, and their sensitivity to disturbance, make them particularly vulnerable to destruction of roost sites and feeding areas where their presence goes undetected (Handley and Schwab 1991, Harvey 1992).

Threats to this species include forest destruction, particularly hollow tree removal, decreasing availability of abandoned buildings, and possibly, insecticides. Please note that this species is currently classified as endangered by the Virginia Department of Game and Inland Fisheries (VDGIF).

Due to the legal status of the Eastern Big-eared bat, 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).



*Corynorhinus rafinesquii macrotis* Big-eared bat

Virginia least trillium (*Trillium pusillum* var. *virginianum*, G3T2/S2/SOC/NL), a state rare perennial herb, primarily inhabits somewhat acidic, moist to saturated soils, although it does not grow in standing water. The plant is most often found on the margins of swamps, on high spots within swamps or in ground-water seepage areas. Direct destruction of individuals, loss of habitat, and alterations of water quality are the primary threats to this species (Clark and Potter, 1995). This herb species blooms from late March to May (Radford et. al., 1968). Surveys should be conducted during the earlier stages of the flowering period from late March to late April. Please note that this species is currently tracked as a species of concern by the United States Fish and Wildlife Service (USFWS), however this designation has no official legal status.



*Trillium pusillum* var. *virginianum* Virginia Least Trillium

The Non-riverine Wet Hardwood Forest (Embayed Region Type) occurs on extensive interstream flats with fine-textured mineral soils. Hydrology is seasonally to nearly permanently saturated, with occasional ponding, and is maintained by a high water table rather than riverine or estuarine flooding. This

community generally occurs around the edges of large peatlands such as the Great Dismal Swamp, as well as on low, poorly drained terraces of the outer Coastal Plain in southeastern Virginia. The canopy is dominated by swamp chestnut oak (*Quercus michauxii*), cherrybark oak (*Quercus pagoda*), laurel oak (*Quercus laurifolia*), sweetgum (*Liquidambar styraciflua*) (especially in logged examples), water oak (*Quercus nigra*), and American beech (*Fagus grandifolia*) (on mesic microsites). Typical understory species are swamp bay (*Persea palustris*), American hornbeam (*Carpinus caroliniana*), pawpaw (*Asimina triloba*), American holly (*Ilex opaca* var. *opaca*), and red maple (*Acer rubrum*). The shrub layer is often dense and typically has species such as giant cane (*Arundinaria gigantea* ssp. *tecta*), sweet-pepperbush (*Clethra alnifolia*) and coastal doghobble (*Leucothoe axillaris*) as dominants. Southern blueberry (*Vaccinium formosum*), Virginia sweetspire (*Itea virginica*), and swamp doghobble (*Leucothoe racemosa*), are minor shrub associates. Virginia least trillium (*Trillium pusillum* var. *virginianum*) sometimes occurs in this community.

This community and its composition and structure are dependent on local groundwater or sheet flow due to the saturated hydrology. This community was once extensive in southeastern Virginia but most stands were destroyed by extensive clearing, draining, and ditching for agricultural conversion. Few good examples remain, and only a small percentage of these are protected in managed areas. Unprotected examples are subject to ongoing threats by logging and changes to the hydrology which could disrupt groundwater volume and seasonality. The high value of the dominant trees, the typical failure of regeneration of the dominant trees after logging, the ease of drainage of the sites, and the relative fertility of the soil makes these communities among the most subject to loss of any wetland community type in the region. (NatureServe 2012)



Non-riverine Wet Hardwood Forest

## Natural Area Preserves

The City of Suffolk has one Natural Area Preserve protecting significant habitats. 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.

## **South Quay Sandhills**

Most of South Quay (pronounced "key") Sandhills Natural Area Preserve is located in the southwest corner of Suffolk bordering the Blackwater River and the North Carolina state line. A small portion of the preserve is situated across the Blackwater River in Southampton County. The preserve consists of 3,143 acres of bottomland forests and sandy uplands along the Blackwater River plus includes Virginia's last remaining natural stand of longleaf pine. Seeds collected from this remnant forest at the northern range limit of longleaf pine present a unique opportunity for longleaf pine restoration efforts in the Commonwealth. Restoring longleaf pine to over 1,500 acres of sandy uplands at the preserve will be a primary management focus for DCR.

Habitat for rare species of plants and animals associated with frequently-burned longleaf forests will be enhanced, and rare wetland community types will be protected and restored. Prescribed burning will promote and maintain the development of diverse groundcover vegetation on the sandy pine uplands and wetland transition zones. In addition to prescribed burning, management activities will include conversion of upland loblolly pine/hardwood stands to longleaf pine, ongoing biological inventory and monitoring, invasive species control, whitetail deer population management, boundary marking and maintenance, and developing public access opportunities. Successful long-term management will involve cooperation among the DCR's partners, including International Paper, Virginia Department of Forestry, U.S. Fish and Wildlife Service, and The Nature Conservancy.

### **Potential Threats to Natural Heritage Resources:**

A threat to this area and its bird species is the conversion of habitat to residential and commercial development or incompatible agricultural and forestry practices. Alteration of the local hydrology by land disturbance can change or eliminate habitat. Fragmentation of forests and the introduction of invasives, both flora and fauna, can have a direct effect on the survival of many native plants.

### **Literature Cited**

Clark, K.H. and J.L. Potter. 1995. North Landing River Natural Area Preserve Resource Management Plan, First Edition. Natural Heritage Technical Document 95-9. Virginia Department of Conservation and Recreation, Richmond, Virginia. February 1995.

Handley, C.O., and D. Schwab. 1991. Eastern big-eared bat. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia. p. 571-573.

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## **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

**TABLE II: City of Suffolk – Conservation Sites**

<b>Site Name</b>	<b>Biodiversity Rank</b>	<b>Legal Status</b>	<b>Type of Site</b>
DUMPLING ISLAND	B2	NL	Conservation Site
GREAT DISMAL SWAMP: NORTHWEST SECTION	B5	SL	Conservation Site
ROUTE 618 PINE BARRENS	B2	NL	Conservation Site
MANNING POWERLINE	B5	NL	Conservation Site
KILBY NORTHWEST POWERLINE	B2	NL	Conservation Site
MOSS SWAMP POWERLINE NORTH HABITAT ZONE	B5	NL	Conservation Site
ST. MARYS CHURCH POWERLINE	B5	NL	Conservation Site
MT. SINAI HOUSE HABITAT ZONE	B5	SL	Conservation Site
HOLY NECK HOUSE HABITAT ZONE	B5	SL	Conservation Site
JONES SWAMP HOUSE HABITAT ZONE	B5	SL	Conservation Site
PINEY GROVE SCHOOL HABITAT ZONE	B5	SL	Conservation Site
ADAMS SWAMP HOUSE HABITAT ZONE	B5	SL	Conservation Site
SUFFOLK AIRPORT POWERLINE HABITAT ZONE	B4	NL	Conservation Site
SOUTH QUAY	B2	NL	Conservation Site
SOMERTON CREEK SCU	B5	NL	Stream Conservation Unit
GREAT DISMAL SWAMP	B2	SL	Conservation Site
BALM OF GILEAD FLATWOODS	B4	SL	Conservation Site
LUMMIS FLATWOODS	B2	NL	Conservation Site
JONES SWAMP TRIBUTARY SCU	B2	NL	Stream Conservation Unit
MILL SWAMP SCU	B2	NL	Stream Conservation Unit

# **Appendix H**

Mathews County  
Comprehensive Plan  
PP 106-109



### Natural Heritage Resources

The Virginia Department of Conservation and Recreation (DCR) identifies and protects natural heritage resources, maintaining a comprehensive database of documented occurrences. The database includes conservation sites that contain known populations of natural heritage resources and adjacent habitat vital for their protection and stewardship.

The DCR database is useful for aiding local and regional planning; screening development projects for potential impacts on natural heritage resources; identifying targets for acquisition and easements and guiding property restoration activities.

There are several areas in Mathews County designated for conservation areas including Bethel Beach Natural Area Preserve, New Point Comfort Preserve, and most of the eastern shoreline of the County toward Milford Haven and Piankatank River.

Bethel Beach Conservation Site has a significant biodiversity ranking and features a long sandy beach, low dunes and extensive salt marsh. The Beach is essential habitat for several rare species, including the federally threatened northeastern beach tiger beetle (*Cicindela dorsalis*), which spends its entire two-year life cycle on the beach. Other species of special concern are the least tern (*Sterna antillarum*) and the sea-beach knotweed (*Polygonum glaucum*). Behind Bethel Beach is an extensive saltmarsh. This marsh is one of the few places in Virginia documented as a nesting site for the Northern Harrier (*Circus cyaneus*), a hawk that usually nests in more northern regions.

As development of natural areas and forest lands increases in Mathews County, natural heritage resources may be threatened. Forest fragmentation, introduction of invasive flora and fauna, and alteration of the local hydrology through land disturbance and/or sea level rise may change or eliminate habitat.

#### *Useful DCR References and Resources:*

Bethel Beach Natural Area Preserve Fact Sheet . Virginia Department of Conservation and Recreation, Natural Heritage Program.

[http://www.dcr.virginia.gov/natural\\_heritage/documents/pgbethel.pdf](http://www.dcr.virginia.gov/natural_heritage/documents/pgbethel.pdf)

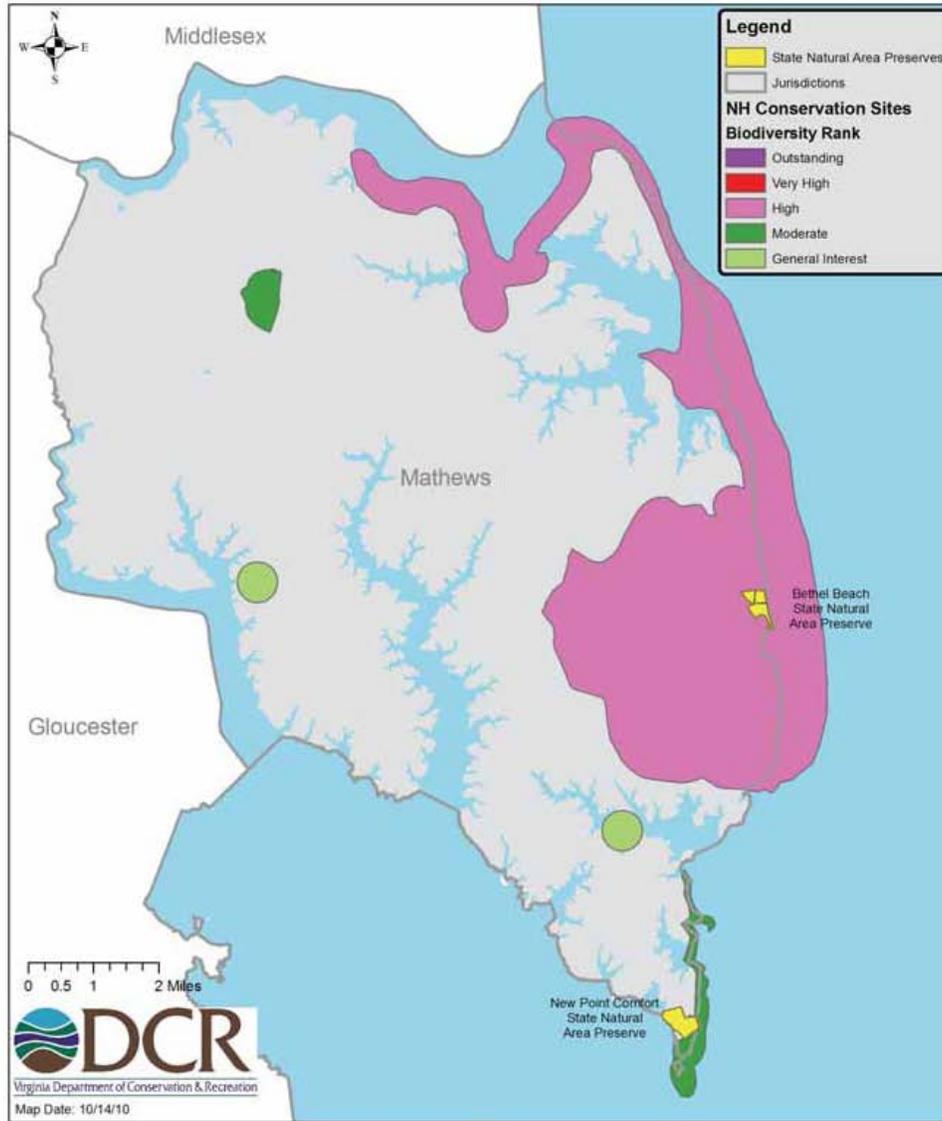
Definitions of Abbreviations used on Natural Heritage Resource Lists

[http://www.dcr.virginia.gov/natural\\_heritage/help.shtml](http://www.dcr.virginia.gov/natural_heritage/help.shtml)



IV. Mathews County Today and Tomorrow:  
Conditions, Opportunities, Policies and Strategies

NATURAL HERITAGE CONSERVATION SITES





*IV. Mathews County Today and Tomorrow:  
Conditions, Opportunities, Policies and Strategies*

### **Scenic Rivers**

As of 2009, there are no designated scenic rivers in the Middle Peninsula Planning District. However, the Piankatank River is considered “qualifying” as a scenic river from Route 17 in Middlesex, Gloucester and Mathews Counties to the Chesapeake Bay.

### **Important Bird Areas**

The Virginia Audubon Society has identified Important Bird Areas in Mathews County. Conservation lands in the county include Bethel Beach and New Point Comfort Natural Area Preserves. Extensive low marsh areas within these lands support significant populations of Clapper Rail, Seaside Sparrows, and Marsh Wrens, while tide pools support a large diversity of breeding species as well as migrant shorebirds. Large high marsh areas provide habitat for breeding populations of Sedge Wrens, Northern Harriers, Prairie Warblers, and Eastern Meadowlarks. Least Terns and American Oystercatchers are found on sandy berms and barriers while scattered pine hummocks and adjacent maritime forests support significant populations of Brown-headed Nuthatches and Chuck-will’s-widows. Isolated marsh islands support breeding American Black Ducks and American Oystercatchers. A map showing the Mathews Loop of the Virginia Birding and Wildlife Trail is on the Recreation Facilities Map.

### **Threatened and Endangered Species**

Information from the Virginia Department of Conservation and Recreation indicates that there is one Federal Threatened Species, the Northeastern Beach Tiger Beetle, in Mathews County.

A status review by the U.S. Fish & Wildlife Service (USFWS) in February 2009 recommended that the Tiger Beetle be reclassified from threatened to endangered. Since the last comprehensive survey conducted by the USFWS in 2008, total beetle numbers have declined 70% throughout their range along the western shoreline of the Chesapeake Bay in Virginia.

In addition to the Tiger Beetle there are various State species that are considered threatened, endangered or of special concern. These species are listed in the table on the following page and include amphibians, birds, beetles and plants.



Mathews County Comprehensive Plan 2030

IV. Mathews County Today and Tomorrow:  
Conditions, Opportunities, Policies and Strategies

Threatened and Endangered Species of Mathews County							
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	Last Year Observed	Site Name
<b>Amphibians</b>							
<i>Ambystoma mabeei</i>	Mabee's Salamander	G4	S1S2		LT	2000	Blakes Ponds
<i>Ambystoma tigrinum</i>	Tiger Salamander	G5	S1		LE	1988	
<i>Hyla gratiosa</i>	Barking Treefrog	G5	S1		LT	1984	
<b>Birds</b>							
<i>Ammodramus caudacutus</i>	Saltmarsh Sharp-tailed Sparrow	G4	S2B,S3N		SC	1985	
<i>Asio flammeus</i>	Short-eared Owl	G5	S1B,S3N			1988	
<i>Cistithorus platensis</i>	Sedge Wren	G5	S1B,S1S2N		SC	1992	New Pt Comfort
<i>Circus cyaneus</i>	Northern Harrier	G5	S1S2B,S3N		SC	1994	Bethel Beach
<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT	2002	Bethel Beach, Horn Harbor, Cardinal,
<i>Sterna antillarum</i>	Least Tern	G4	S2B		SC	2007	Bethel Beach
<b>Communities</b>							
	Coastal Plain Depression Wetland	G3	SNR			1988	Blakes Ponds
<b>Invertebrates</b>							
<i>Cicindela dorsalis</i>	Northeastern Beach Tiger Beetle	G4T2	S2	LT	LT		New Point Comfort, Bethel Beach
<b>Vascular Plants</b>							
<i>Chelone obliqua</i>	Red Turtlehead	G4	S1			1979	
<i>Mitreola petiolata</i>	Lax Hornpod	G5	S1			1979	
<i>Polygonum glaucum</i>	Sea-beach Knotweed	G3	S1S2			2007	Bethel Beach
<b>Natural Area Preserves</b>							
Bethel Beach							
New Point Comfort							
State Ranking: S1-Extremely rare; S2-Very rare; S3-Rare to uncommon; S#B-Breeding; S#N-Non-breeding Global Ranking: G1-Extremely rare; G2-Very rare; G3-Rare to uncommon; G4-Common; G5-Very common Federal Status: LE= Listed Endangered; LT= Listed Threatened State Status: LE= Listed Endangered; LT=Listed Threatened; SC= Special Concern							

Source: Virginia Department of Conservation and Recreation, 2010.

# **Appendix I**

Map of Localities with  
Natural Heritage Information

Map Showing Localities with Natural Heritage Information

[http://www.dcr.virginia.gov/natural\\_heritage/localitiesmap.shtml](http://www.dcr.virginia.gov/natural_heritage/localitiesmap.shtml)

**State Parks** ▾  
**Soil and Water**  
Natural Heritage ▾  
Native Plants  
Invasive Species  
Natural Area Preserves  
Natural Community Overview  
Information Services  
NH Database Search  
Conservation Lands Database  
All NH Programs  
**Recreation Planning, Trails and Grants** ▾  
**Dam Safety, Floodplain Management**  
**Land Conservation** ▾  
**Boards and Foundations**  
**Environmental Education**  
**Jobs**  
**Site Map**  
**About Us**

**NATURAL HERITAGE**

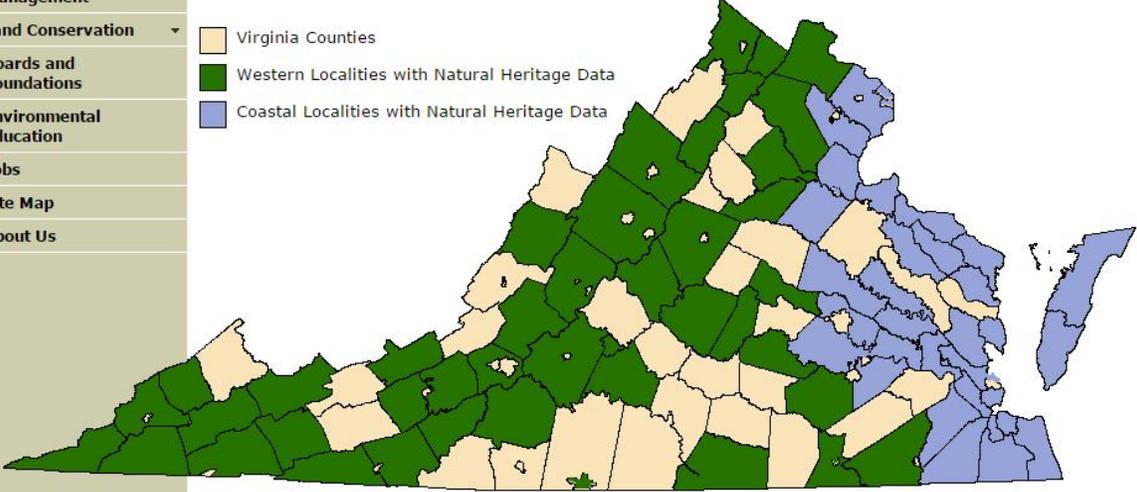
**Virginia Localities with Natural Heritage Information**



Virginia Coastal Zone  
MANAGEMENT PROGRAM

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

Legend:  
■ Virginia Counties  
■ Western Localities with Natural Heritage Data  
■ Coastal Localities with Natural Heritage Data



Last updated on Thursday, September 18, 2014.

Accomack - Coastal Locality with Data ▾