

October 30, 2017

**Virginia Coastal Zone Management Program
Semiannual Section B.2-4 Report
For the Period from April 1, 2017 – September 30, 2017**

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SECTION B.2 PERMIT ADMINISTRATION, MONITORING AND ENFORCEMENT

1) DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ)

a) DEQ – Virginia Coastal Zone Management Program

Virginia CZM Program staff continued to work with our partner agencies to implement the Program over the last 6 months. For a full description of staff activities, please refer to the Section A report for Task 1.01.

b) DEQ – Water Permitting Programs

DEQ- Virginia Water Protection Permit (VWPP) Program

The Virginia Water Protection (VWP) Permit Program authorizes surface water withdrawal activities¹ and activities in wetlands and surface waters that may or may not require Clean Water Act section 401 water quality certifications. In addition to the permit processing and wetlands impact data for the Tidewater region of the Commonwealth, this narrative highlights any challenges encountered during the reporting period.

During the reporting period of April 1, 2017 through September 30, 2017, the VWP Permit Program issued 10 individual permits and 50 general permit coverages; processed 10 Notices of Planned Change on general permit coverages; nine individual permit modifications; and no individual permit reissuances. For the purposes of this report, no permit application denials, withdrawals, or waivers were included.

The average time to process a general permit coverage was 28 days, and the average time to process an individual permit was 82 days. Processing delays occurred for two general permit coverages, exceeding the statutory limits for coverage issuance, due to federal Section 106 coordination associated with the 17-SPGP-01. One VWP individual permit exceeded the statutory processing limit due to a delayed payment of the permit application fee, which in turn delayed finalizing the draft permit. This project was also decided by the State Water Control Board rather than being finalized by DEQ, a process having separate timelines from the standard issuance timelines.

Approximately 47 acres of wetland impacts occurred during the reporting period, and approximately 91 wetland credits were purchased at compensatory mitigation banks during this reporting period.

During the reporting period, 10 compliance actions were taken on individual permits and 37 on general permit coverages. Six of the individual permit and 11 of the general permit coverage actions are still pending or active. Additionally, 14 compliance actions were taken on activities not having a VWP permit, and all but three of these are still pending or active.

A new pilot compliance initiative was launched in September to fast-track the resolution of minor compliance issues in certain situations. The pilot will be rolled out in DEQ's Piedmont Regional Office with future plans to expand the pilot based on the agency's assessment of success.

The VWP Permit Program did not receive comments or concerns about, or make changes to procedures associated with, expediting decision-making for the management of coastal resources.

¹ While VWP permits may authorize surface water withdrawal activities, data specific to streams, stream flow, or water quantity are not included in this program summary.

DEQ – Virginia Pollution Abatement (VPA) Water Permitting Program

The Virginia Pollution Abatement permit (VPA) is required for facilities that manage wastewater, animal waste, biosolids or industrial sludges in such a manner that they do not have a discharge from the site. For example, an agricultural facility that temporarily stores wastewater to be land applied as part of an irrigation/fertilization program.

During the period between April 1, 2017 and September 30, 2017, three VPA Individual Permit applications were received, one application was received for a new issuance and two applications were received for modifications; the modifications were each for a permit authorizing the land application of biosolids. Those applications remain pending. However, one modification was completed during the period for an application received prior to April 2017. One permit issuance was also completed during the reporting period.

During the period between April 1, 2017 and September 30, 2017, five applications were received for coverage under the VPA General Permit for Poultry Waste Management. Seven permits were issued, however three of the issuances were for applications received prior to April 2017. One of the applications received is pending coverage as of September 30, 2017. No applications were received for farms, located in the Coastal Zone Management area, seeking coverage under the VPA General Permit for Animal Feeding Operations, during this period.

DEQ – Virginia Pollution Discharge Elimination System (VPDES) Water Permitting Program

There are a total of 291 individual municipal and industrial CZM area VPDES permits. This number and the numbers in the table above represent typical activity in the program.

There are also numerous facilities registered under general permits in CZM areas including 65 car wash, 105 concrete products, 17 cooling water, 282 domestic sewage $\leq 1,000$ GPD, 61 nonmetallic mineral mining, 39 petroleum, 13 potable water treatment, 55 seafood processors, and 534 industrial storm water. These represent typical numbers for permit registrants in CZM areas in Virginia. There are a number of general permit coverages that are automatically covered under a permit (e.g., pesticide applications and hydrostatic testing) and are not entered into the CEDS database.

| VPDES/VPA - April 1, 2015 – September 30, 2015 | | | | | | | | | | |
|--|--|------|-----------------------------------|-----|-------------------------------------|-----|-------------------------|-----|--|----|
| | Permits Issued / Avg Proc. Days ⁽¹⁾ | | Permits Reissued / Avg Proc. Days | | Permits Modified** / Avg Proc. Days | | Denied / Avg Proc. Days | | Permits Reissue Pending / Avg Proc. Days | |
| VPDES | 1 | 129 | 21 | 189 | 1 | 154 | 0 | N/A | 21*** | NA |
| VPA | 1 | 2934 | 1 | 623 | 0 | NA | 0 | NA | 0 | NA |
| VPA GP | 7 | 50 | 0 | NA | 0 | NA | 0 | NA | 2 | 45 |

Processing day is the amount of time between receiving a complete application and making the final case decision (issuance, reissuance, modification, etc.).

* Information from CEDS (Comprehensive Environmental Data System) database

** Major modifications

***This represents existing VPDES individual permits expired but pending through September 30, 2017.

c) DEQ – Water Program Enforcement and Compliance

DEQ continues to apply both informal and formal enforcement measures in the enforcement program. Reference Table 1, below.

Informal measures, such as Warning Letters and Letters of Agreement, are used in those cases where non-compliance is not significant in nature and where compliance can be achieved in a short period of time. For the period April 1, 2017 through September 30, 2017, DEQ issued 151 Warning Letters and two Letter of Agreement for violations of VPDES, VPA, VWPP, and Ground Water program requirements.

Formal enforcement actions are used in those cases where non-compliance is more serious or may take a significant amount of time to correct. Formal measures generally involve the issuance of a Notice of Violation followed by a Consent Order, or an Executive Compliance Agreement in the case of a state agency. In some cases, Unilateral Administrative Orders or court orders may be sought. Between April 1, 2017 and September 30, 2017, DEQ issued 22 Notices of Violation for violations of VPDES, VPA, VWPP, and Ground Water program requirements. During the same period, the agency concluded enforcement cases with the issuance of 15 Consent Orders that assessed a total of \$252,939 in civil charges.

Table 1

| Measure | Action Type | Count | Total Civil Charges Assessed |
|--------------|----------------------|------------|------------------------------|
| Informal | Warning Letters | 151 | N/A |
| Informal | Letters of Agreement | 2 | N/A |
| Formal | Notices of Violation | 22 | N/A |
| Formal | Consent Order | 15 | \$252,983 |
| Total | | 190 | \$252,983 |

d) DEQ – Air Permitting Program

**OFFICE OF AIR PERMIT PROGRAMS
PERMITS ISSUED REPORT FOR
VIRGINIA’S COASTAL RESOURCES MANAGEMENT PROGRAM**

Period: April 1, 2017 – September 30, 2017

| PERMIT TYPE | NUMBER OF PERMITS ISSUED | AVERAGE PROCESSING TIME (Days) |
|--|--------------------------|--------------------------------|
| PSD & NA | 1 | 68 |
| Major | 0 | NA |
| Minor | 38 | 43 |
| Administrative Amendment | 1 | 2 |
| Exemptions | 12 | 80 |
| State Operating | 0 | NA |
| Federal Operating (Title V) Initial Issuance | 0 | NA |
| Federal Operating (Title V) Renewal | 5 | 522 |
| Acid Rain (Title IV) | 0 | NA |
| Total Number Permits Issued | <u>57</u> | |

* The average processing time is determined by computing the difference between when the application was deemed administratively complete and when the permit was issued.

Note: The information provided for this report includes data from the Northern Virginia Regional Office, Portions of the Piedmont Regional Office and the Tidewater Regional Office only.

Definitions:

Prevention of Significant Deterioration (PSD) = A source which emits **250 tons or more** per year of any regulated pollutant or is one of 28 specific industries listed in the state regulations and will emit 100 tons per year of a regulated pollutant.

Major = A source which emits, or has the potential to emit, **100 tons or more** per year of any air pollutant.

Minor = A source which emits, or has the potential to emit, **less than 100 tons** per year of any air pollutant.

State Operating= Permit written pursuant to 9 VAC 5-80-800 et al.

Administrative Consent Agreement = An agreement that the owner or any other person will perform specific actions to diminish or abate the causes of air pollution for the purpose of coming into compliance with regulations, by mutual agreement of the owner or any other person and the Board.

Administrative Amendment = Administrative changes made to the permit to clarify or correct an issued permit. For example, typographical errors, name changes, etc.

Exemption = Facilities are exempted from permitting requirements by exemption levels defined in 9 VAC 5-80-1105.

Federal Operating (Title V) = a source that emits **10 tons or more** per year of any hazardous air pollutant, **or 25 tons** per year of any combination of hazardous air pollutants or emits any criteria pollutant above 100 tons per year.

Acid Rain (Title IV) = Permits issued specifically to address SO₂ and NO_x from electric generating units covered under the Acid Rain regulations.

**OFFICE OF AIR PERMIT PROGRAMS
PERMITS PENDING REPORT FOR
VIRGINIA'S COASTAL RESOURCES MANAGEMENT PROGRAM**

Permits pending as of September 30, 2017

| PERMIT TYPE | NUMBER OF PERMITS PENDING |
|---|------------------------------------|
| PSD & NA | 3 |
| Major | 1 |
| Minor | 49 |
| Administrative Amendment | 2 |
| Exemptions | 8 |
| State Operating | 11 |
| Federal Operating (Title V) Initial Issuance | 6 |
| Federal Operating (Title V) Renewal | 40 |
| Acid Rain (Title IV) | 3 |
| Total Permits Pending | <u>123</u> |

Note: The information provided for this report includes data from the Northern Virginia Regional Office, Piedmont Regional Office and Tidewater Regional Office only.

**OFFICE OF AIR PERMIT PROGRAMS
PERMITS WITHDRAWN AND APPLICATIONS DENIED REPORT FOR
VIRGINIA'S COASTAL RESOURCES MANAGEMENT PROGRAM**

Period: April 1, 2017 – September 30, 2017

| PERMIT TYPE | NUMBER OF PERMITS WITHDRAWN | NUMBER OF APPLICATIONS DENIED |
|-----------------------------|-----------------------------|-------------------------------|
| PSD | 0 | 0 |
| Major | 0 | 0 |
| Minor | 2 | 0 |
| Administrative Amendment | 2 | 0 |
| Exemptions | 1 | 0 |
| State Operating | 1 | 0 |
| Federal Operating (Title V) | 1 | 0 |
| Acid Rain (Title IV) | 0 | 0 |
| Total Permits Rescinded | <u>7</u> | <u>0</u> |

Note: The information provided for this report includes data from the Northern Virginia Regional Office, Piedmont Regional Office and Tidewater Regional Office only.

e) DEQ – Air Program Enforcement and Compliance

DEQ continues to apply both informal and formal enforcement measures in its air enforcement program. Reference Table 2, on the following page.

Informal measures include Requests for Corrective Action, Informal Correction Letters, Warning Letters, and Letters of Agreement. These actions are used in those cases where non-compliance is not significant in nature and where compliance can be achieved in a short period of time. During the six-month period beginning April 1, 2017 through September 30, 2017, DEQ issued 21 Requests for Corrective Action, and 24 Warning Letters.

Formal enforcement actions are used in those cases where non-compliance is more serious or may take a significant amount of time to correct. Formal measures generally involve the issuance of a Notice of Violation and negotiation of a Consent Order, or an Executive Compliance Agreement in the case of a state agency. In some cases, Unilateral Orders or court orders may be pursued. Between April 1, 2017 and September 30, 2017, DEQ initiated 11 new formal enforcement actions via issuance of Notices of Violation. Additionally, the Agency issued 20 Consent Orders; assessing \$570,106.85 in civil charges.

Table 1

| Measure | Action Type | Count | Total Civil Charges Assessed |
|--------------|--------------------------------|-----------|------------------------------|
| Informal | Requests for Corrective Action | 21 | N/A |
| Informal | Informal Correction Letter | 0 | N/A |
| Informal | Warning Letters | 24 | N/A |
| Formal | Notices of Violation | 11 | N/A |
| Formal | Consent Orders | 20 | \$570,106.85 |
| Total | | 76 | \$570,106.85 |

f) DEQ – Erosion and Sediment Control

Summary of Specific Outputs:

| Specific Outputs | Progress / Status |
|--|--|
| 17 CZM Chesapeake Bay Land Disturbing Activities Permitted - Projects less than 1 acre found within Chesapeake Bay Designated Areas. | Permit coverage has been issued and projects are under construction. Compliance is achieved through ongoing permit review, technical assistance, and project inspection. |
| 274 CZM Small Construction Activities Permitted- Land Disturbing Activities greater than or equal to 1 acre and less than 5 acres. | Permit coverage has been issued and projects are under construction. Compliance is achieved through ongoing permit review, technical assistance, and project inspection. |
| 77 CZM Large Construction Activities Permitted- Land Disturbing Activities greater than or equal to 5 acres and less than 10 acres. | Permit coverage has been issued and projects are under construction. Compliance is achieved through ongoing permit review, technical assistance, and project inspection. |
| 92 CZM Large Construction Activities Permitted- Land Disturbing Activities greater than or equal to 10 acres and less than 50 acres. | Permit coverage has been issued and projects are under construction. Compliance is achieved thru ongoing permit review, technical assistance, and project inspection. |
| 5 CZM Large Construction Activities Permitted- Land Disturbing Activities greater than or equal to 50 acres and less than 100 acres. | Permit coverage has been issued and projects are under construction. Compliance is achieved thru ongoing permit review, technical assistance, and project inspection. |
| 8 CZM Large Construction Activities Permitted- Land Disturbing Activities greater than or equal to 100 acres. | Permit coverage has been issued and projects are under construction. Compliance is achieved thru ongoing permit review, technical assistance, and project inspection. |
| 473 Total CZM Land Disturbing Activities Permitted thru coverage under the Construction General Permit. | Coastal Zone Management resources are conserved and restored through permit compliance. |

Supplemental Narrative:

Considerable erosion and sediment control and stormwater management progress occurred during the performance period. New and improved requirements for project stabilization during construction and recently enhanced post construction requirements will result in further improvements to coastal zone resources. The new post construction requirements have been developed to more closely mimic predevelopment hydrology found in a naturally wooded site condition. The implementation of these new requirements will result in less downstream sediment export and fewer nutrient export impacts from land development.

Erosion & Sediment Control (ESC) and Stormwater Management (SWM) Laws and Regulations are designed to help reduce pollutants in the Chesapeake Bay, and require localities, developers, and consultants to be certified in various knowledge and practices. The law requires DEQ to offer two certification tracks, one for ESC and another for SWM.

Each track includes training courses to assist people to become certified as: Program Administrators, Inspectors, Plan Reviewers and Combined Administrators, and requires individuals to pass a professionally administered certification exam. Each certification type is valid for 3 years and individuals can recertify by completing continuing education throughout the certification period.

Between April 1, 2017 and September 30, 2017, Virginia certified or recertified:

- 187 people in both Stormwater and Erosion – called “Dual Certification”
- 169 people in Stormwater Management only
- 461 people in Erosion and Sediment Control only

As of September 30, 2017, total certified individuals in Virginia are as follows:

- 913 total people Dual Certified. (786 people as of March 31, 2017)
- 701 total people certified in Stormwater Management only. (681 people as of March 31, 2017)
- 2,315 total people certified in Erosion and Sediment Control only. (2,397 people as of March 31, 2017).

g) DEQ- Office of Stormwater Management – Local Government Assistance Programs- Chesapeake Bay Preservation Act

Summary

Program Description

The Bay Act program is designed to improve water quality in the Chesapeake Bay and other waters of the State by requiring the use of effective land management and land use planning. Specifically, these requirements fall into three implementation phases. Phase I consists of local governments designating and mapping Chesapeake Bay Preservation Areas (CBPAs) and adopting land use and development performance criteria to protect those features. CBPAs include Resource Protections Areas (RPAs) and Resource Management Areas (RMAs). RPAs consist of tidal wetlands, tidal shores, nontidal wetlands connected and contiguous to tidal wetlands or perennial streams and a 100-foot fully vegetated buffer. RMAs include lands adjacent to RPAs that are made up of land features such as highly erodible soils, steep slopes and floodplains. Sixty of the eighty-four Tidewater localities have designated their entire jurisdiction as an RMA. Phase II consists of the incorporation of water quality protection measures into local comprehensive plans. Phase III involves the review and revision of local land use codes to include specific standards that implement water quality performance criteria.

Technical Assistance & Training

During the reporting period, April 1, 2017 – September 30, 2017, staff continued to provide assistance and training to the Bay Act localities. For this period, 6 formal outreach events were conducted and staff responded to 52 technical assistance requests.

Environmental Impact Reviews

Through the Environmental Impact Review process, staff also continued to review plans for State and Federal projects to ensure those projects were consistent with the Bay Act. During the reporting period, 51 environmental impact reviews were completed.

Compliance Reviews

As indicated in the previous semi-annual report, the Chesapeake Bay Preservation Act Compliance Review process was re-initiated in September of 2015, after having been suspended for a period of three years to allow Local Government Assistance Programs (LGAP) staff to work on local stormwater program development. During this reporting period, 6 new compliance reviews were initiated and 7 have been completed. Since the compliance reviews were reinitiated in 2015, a total of 43 reviews were initiated and 23 have been completed.

During these reviews, staff assess whether or not the locality is implementing soil & water quality conservation assessments for agricultural lands, the status of the water quality provisions of the local comprehensive plans, how well local governments are ensuring that impervious cover is minimized, indigenous vegetation is maintained and land disturbance is minimized on approved development projects and if the performance criteria are being applied consistently to the use and development of land.

2) VIRGINIA MARINE RESOURCES COMMISSION (VMRC)

a) VMRC – Habitat Management Division

During the period April 1, 2017 through September 30, 2017, the Habitat Management Division received 1138 applications for projects involving State-owned submerged lands, wetlands or dunes. These applications were for projects such as piers, boathouses, boat ramps, marinas, dredging and shoreline stabilization. As the clearinghouse for the Joint Permit Application all applications were assigned a processing number by the Division and forwarded to the appropriate agencies, including, local wetlands boards, the Norfolk District of the U.S. Army Corps of Engineers, the Department of Environmental Quality, VIMS and others as necessary.

A public interest review was initiated and site inspections were conducted for those projects requiring a permit from the Marine Resources Commission. Likewise, Habitat Management staff also conducted site inspections for all projects requiring a local wetlands board permit and evaluated each local board decision for Commissioner review. Habitat Management staff also conducted compliance inspections on permits issued by VMRC and local wetlands boards. Ten notices to comply were issued during the period.

The Habitat Management Staff completed actions on 1070 applications received during the period. Action on most applications was completed within 90 days after they were received. As such, a number of the actions taken during the period were for applications received prior to April 2017. Similarly, those applications received near the end of the current reporting period are still under review. Habitat Management Staff also participated in the inter-agency review process involving general permits for Virginia Department of Transportation projects.

In addition to staff actions, the Full Commission considered 32 projects. During the reporting period, the Commission considered 16 protested projects or projects requiring a staff briefing, The Commission also approved 16 projects over \$500,000.00 in value.

During the reporting period local wetland boards throughout Tidewater Virginia acted on 252 projects involving tidal wetlands. Of this total, 178 were approved as proposed, 64 were approved as modified, 1 was denied, 6 are pending, 1 was inactivated, 2 no permit was required, and 40 required compensation either on or off site (20), or through payment of an in lieu fee (20) accounting for 83,077 square feet of tidal wetland impacts.

b) VMRC – Fisheries Management Division

At the April 2017 meeting, the agency established an emergency amendment to the regulation for scup (porgy). The scup amendment establishes the 2017 Virginia summer period commercial quota as 11,812 pounds. Also, at the April 2017 meeting, the commission established the 2017 Virginia commercial bluefish quota as 1,014,773 pounds.

At the May 2017 meeting, the agency established the final regulation to the emergency amendment for scup (porgy). Also, the commission established the commercial black sea bass quota as 824,080 pounds, whereby the 2017 directed commercial black sea bass fishery quota is 784,080 pounds and the 2017 commercial black sea bass bycatch fishery quota is 40,000 pounds.

At its June 2017 meeting, the agency adopted amendments to the spiny dogfish regulation that established the May 1, 2017 through April 30, 2018 commercial spiny dogfish harvest quota as 4,220,814 pounds and removed the weekly buyer reporting requirement.

At the July 2017 meeting, the agency established the final regulation to the emergency amendment for spiny dogfish. Also, at the July 2017 meeting, the commission increased Virginia's portion of the coast wide total allowable landings of menhaden. The total allowable commercial landings for menhaden in 2017 and 2018 in metric tons are equivalent to 372,443,990 pounds, and that total amount of allowable landings is allocated as quotas among three sectors of the menhaden fishery. The purse seine menhaden reduction sector is allocated a quota of 335,359,214 pounds of allowable menhaden landings; the purse seine menhaden bait sector a 31,204,766 pound quota of allowable menhaden landings; and, the non-purse seine menhaden bait sector a 5,880,010 pound quota of allowable menhaden landings. The non-purse seine commercial bait sector's allocation by gear type is as follows: cast net: 2,261 pounds, dredge: 3,595 pounds, gill net: 1,781,986 pounds, fyke net: 2,477 pounds, pound net: 3,997,201 pounds, seine: 23,550 pounds, and, trawl: 68,940 pounds.

At the September 2017 meeting, the agency established an emergency amendment that set an October 1, 2017 closure date for the commercial cobia fishery. Also, at the September 2017 meeting, the agency established an emergency amendment to summer flounder that allows each vessel to land the 7,000 pound trip limit one time from October 16 through December 31, 2017.

c) VMRC – Law Enforcement Division

Enforcement under "Other Agency" refers to summons issued for other agencies' laws, code or regulation sections. The majority of the summons in this category are for DGIF regulations on boating safety laws, expired boat registration, no life jackets, flares, etc.

Summons under "Police Powers" are all criminal vs fisheries. These are the reckless driving, drunk driving, driving without a license/suspended license, shoplifting, possession of controlled substances.

**VIRGINIA MARINE POLICE
ARRESTS/CONVICTIONS SUMMARY BY CATEGORY**

REPORT FORMAT: FEDERAL FISCAL YEAR AREA: ALL AREAS
START PERIOD: 10/01/2012
END PERIOD: 09/30/2017



| Category | 2012/2013 | | 2013/2014 | | 2014/2015 | | 2015/2016 | | 2016/2017 | |
|--------------------------------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|------------|
| | Convictions | Arrests | Convictions | Arrests | Convictions | Arrests | Convictions | Arrests | Convictions | Arrests |
| Buyers | 6 | 8 | 10 | 10 | 5 | 6 | 2 | 2 | 1 | 4 |
| Casting Garbage/Trash | 0 | 0 | 5 | 5 | 1 | 1 | 3 | 3 | 2 | 2 |
| Clams | 7 | 9 | 4 | 7 | 2 | 3 | 3 | 3 | 1 | 1 |
| Commercial Fishing License | 4 | 6 | 6 | 10 | 7 | 10 | 17 | 25 | 7 | 10 |
| Conchs | 6 | 8 | 7 | 9 | 1 | 1 | 3 | 3 | 0 | 0 |
| Crabs | 43 | 50 | 92 | 120 | 121 | 138 | 70 | 102 | 52 | 59 |
| Federal Violation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FIP Violations | 63 | 63 | 58 | 60 | 76 | 81 | 44 | 45 | 27 | 28 |
| Fish | 219 | 253 | 75 | 81 | 150 | 163 | 167 | 196 | 144 | 159 |
| Freshwater Fishing without a license | 14 | 18 | 12 | 16 | 20 | 22 | 23 | 32 | 16 | 17 |
| Gill Nets | 9 | 11 | 14 | 18 | 17 | 24 | 13 | 25 | 13 | 27 |
| Habitat/Wetlands | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| License Tags | 0 | 2 | 3 | 4 | 1 | 1 | 4 | 9 | 0 | 2 |
| Mandatory Reporting | 1 | 58 | 0 | 0 | 9 | 18 | 10 | 20 | 1 | 5 |
| Misc | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Non-residents | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NSSP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Agencies | 220 | 255 | 227 | 279 | 382 | 461 | 280 | 338 | 244 | 296 |
| Oysters | 139 | 226 | 109 | 161 | 174 | 297 | 107 | 215 | 71 | 94 |
| Piers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Police Powers | 95 | 109 | 76 | 88 | 95 | 114 | 118 | 129 | 66 | 78 |
| Removal of Obstructions | 3 | 5 | 1 | 1 | 1 | 1 | 3 | 3 | 1 | 11 |
| Resisting officer | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Shellfish | 11 | 14 | 5 | 6 | 14 | 25 | 7 | 8 | 10 | 16 |
| SW Recreational Licenses | 204 | 262 | 190 | 241 | 205 | 234 | 229 | 251 | 155 | 163 |
| TOTALS: | 1044 | 1357 | 894 | 1116 | 1281 | 1600 | 1103 | 1409 | 812 | 973 |
| PERCENT OF CONVICTIONS: | 76.93% | | 80.11% | | 80.06% | | 78.28% | | 83.45% | |

3) VIRGINIA DEPARTMENT OF HEALTH (VDH) – DIVISION OF SHORELINE SANITATION

From April 1, 2017 through September 30, 2017, the VDH Division of Shellfish Sanitation had:
1431 acres of shellfish grounds closed to harvesting,
1379 acres of shellfish grounds seasonally closed,
1136 acres of shellfish grounds opened, and
1919 acres of shellfish grounds seasonally opened.

Activities of the Virginia Department of Health for the Virginia Coastal Resources Management Report are summarized below. This includes statics on applications for sanitary facilities at marinas and other places where boats are moored.

The Department received and reviewed a total of Twenty-Nine (29) VMRC Permit Applications, and processed as follows:

Eight (8) Permit Applications needed action in the Marina Program.

Twenty-Six (26) applications were approved based on meeting the requirements of providing adequate facilities of the Marina Regulations if applicable.

Three (3) applications were denied because of inadequate facilities. (2) Two of those rejected were later approved after meeting our regulatory requirements.

4) Department of Conservation and Recreation (DCR)

a) DCR - Division of Soil and Water Conservation

Nutrient Management

DCR Nutrient Management Staff have been active in developing, reviewing nutrient management plans, enhancing private sector plan development, and other nutrient reduction activities to achieve the Commonwealth's nutrient reduction commitments of Chesapeake Bay TMDLs. In the coastal zones of Virginia, DCR staff have overseen the development of nutrient management plans covering 3,440.42 acres during the reporting period (4/1/2017 – 9/30/2017). Many plans are active for up to three years, but all new or revised acreage developed in the coastal zones during the reporting period is summarized in the following table:

Table 1: Planned nutrient management acreage by land use and costal management zones. Plans started between 4/1/2017 – 9/30/2017.

| CZM Basin | Number Of Plans | CZM Crop Acres | CZM Hay Acres | CZM Pasture Acres | CZM Specialty Acres | Total |
|------------------------|-----------------|-----------------|---------------|-------------------|---------------------|-----------------|
| Albemarle Sound | 1 | - | 113.65 | - | - | 113.65 |
| Atlantic Ocean | - | - | - | - | - | - |
| Chesapeake Bay Coastal | 2 | - | - | - | - | - |
| Chowan | 4 | 689.37 | - | - | - | 689.37 |
| James | 7 | 1,388.13 | 43.50 | - | - | 1431.63 |
| Potomac | - | - | - | - | - | - |
| Rappahannock | 1 | 954.34 | - | - | - | 954.34 |
| York | 1 | 251.43 | - | - | - | 251.43 |
| Total: | 14 | 3,283.27 | 157.15 | 0 | 0 | 3,440.42 |

b) DCR - Division of Natural Heritage

This report lists projects and activities conducted by the Department of Conservation and Recreation, Division of Natural Heritage (DCR-NH) during this period that were not funded by or otherwise reported to the VCZMP.

Inventory

Shorebirds Breeding on Wreck Island NAP – 4/20/17

The Wreck Island NAP shorebird breeding season is off to an early start. A site visit on April 20 found 2 Brown Pelican nesting colonies and breeding activity at the heron rookery. Numerous pairs of American Oystercatchers were also exhibiting breeding behavior. A preliminary count indicated approximately 500 Brown Pelicans within the colonies and nests were evident. Wreck Island NAP is an important breeding ground

for a wide variety of shorebirds. In addition to Brown Pelicans and American Oystercatchers, the island supports Black Skimmers, Common Terns, Gull-billed Terns, Least Terns and Piping Plovers. Royal Terns have also utilized the island in the past. The heron rookery supports Great and Snowy Egrets, White and Glossy Ibis, Tri-colored Herons, Little Blue Herons and Black-crowned Herons. Wreck Island NAP is a barrier island located off the Atlantic Ocean coast of the Eastern Shore of Virginia. It is anticipated that additional species of shorebirds will begin utilizing the island's breeding grounds in the next few weeks.



Brown Pelicans at Wreck Island Natural Area Preserve



White Ibis flying over Wreck Island NAP

Heritage Inventory Staff Discover Globally Rare Plants – 4/24/17

Populations of two globally rare species - Virginia Least Trillium (*Trillium pusillum* var. *virginianum* - G3T2/S2) and New Jersey Rush (*Juncus caesariensis* - G2G3/S2) - were discovered by botany staff during a recent inventory of property near the Chickahominy River in Charles City. Well over a thousand Trillium plants were found in a low, wet, hardwood forest. The New Jersey Rush population was found in an adjacent seepage habitat and is apparently much smaller. At this time of year, the latter species is immature and difficult to spot so a revisit will be made to re-assess the true extent of the population. The habitats found on the property hold

promise for other exciting botanical finds later this field season.



Virginia Least Trillium (*Trillium pusillum* var. *virginianum* - G3T2/S2)

Rare plants thrive at Cherry Orchard Bog Natural Area Preserve – 4/27/17

The DCR-Natural Heritage Chief Biologist and Staff Botanist visited the Cherry Orchard Bog NAP on April 27. During this visit, they noted at least 1,000 individuals of Cuthbert’s turtlehead (*Chelone cuthberti*, G3/S2) as well as new sub-populations of sandhills lily (*Lilium pyrophilum* G2/S2). Both of these globally-rare plant species depend on open-canopy, boggy wetlands that were historically fire-maintained. With 15 years of silvicultural and fire management by Natural Heritage stewardship staff, this habitat that has been restored over much of the 8-acre wetland for which the NAP was named “Cherry Orchard Bog.” Though portions of the wetland would still benefit from opening the canopy, the job thus far has made excellent additional habitat for most of the site’s 16 rare species.



Cherry Orchard Bog Natural Area Preserve



Chelone cuthbertii Gary P. Fleming
© DCR Natural Heritage

Cuthbert's turtlehead (*Chelone cuthbertii*)

Rare Plant Discovered in Prince George County – 5/16/17

The Natural Heritage Program zoologist and protection specialist recently visited a property that is being considered for an open space easement by the Department of Forestry in Prince George County. Although no new occurrences of rare animals were found, a population of Virginia least trillium (*Trillium pusillum* var. *virginianum*; G3T2/S2) was discovered. This is the first documented occurrence of this rare plant in Prince George County. Additional inventory work on this property, which supports large blocks of mature bottomland forest, is scheduled for later in the growing season and may turn up more natural heritage resources.



Virginia least trillium (*Trillium pusillum* var. *virginianum*; G3T2 S2)

Three New Element Occurrences Documented At Bush Mill Stream Natural Area Preserve – 5/19/17

Natural Heritage Vegetation Ecologists and the Chesapeake Bay Steward recently conducted a field inventory of the more remote wetlands and marsh-fronting bluffs at Bush Mill Stream Natural Area Preserve. The survey identified two new, significant natural community occurrences and a new rare plant population. The steep, north-facing bluffs above the tidal wetlands along Bush Mill stream support a mature stand of Northern Coastal Plain / Piedmont Oak – Beech / Heath Forest (G4S3) with White Oaks and American Beeches exceeding one meter (40 inches) in diameter and a very dense understory of Mountain Laurel. Three ravine bottoms at the site support a very large occurrence of the globally uncommon Coastal Plain / Outer Piedmont Acidic Seepage Swamp (G3S3) community type that is characterized by a dense herbaceous flora of Skunk-cabbage, ferns, and sedges. Both communities are in outstanding condition and lack any introduced or invasive plants. A population of the state-rare Bog Fern (*Parathelypteris simulata*, G4S1) consisting of thousands of plants over several acres is associated with the seepage swamp. The results of the inventory give Bush Mill Stream NAP an enhanced standing among the state's Chesapeake Bay region preserves, and indicate the value of conducting periodic surveys, even on sites that are thought to be well-documented.



Part of a large occurrence of Coastal Plain / Outer Piedmont Acidic Seepage Swamp (G3S3) recently documented at Bush Mill Stream Natural Area Preserve. The leafy herb in the foreground is Skunk-cabbage (*Symplocarpus foetidus*).



A new occurrence of Bog Fern (*Parathelypteris simulata*, G4S1) was recently documented at Bush Mill Stream Natural Area Preserve. This is a northern fern that occurs in widely scattered populations in seven counties of Virginia.

New Rare Plant Population Documented In Elklick Woodlands State Natural Area Preserve – 7/17/17

A population of Rough Hedgenettle (*Stachys aspera*, G4/S2) was recently discovered in the Elklick Woodlands Natural Area Preserve during a joint inventory by Natural Heritage and Fairfax County Park Authority ecologists. This species was not previously known to occur in the preserve, but was known historically from a site approximately two miles to the south. It is a member of the mint family that occurs in a few discrete wetland habitats across the state, but is highly scattered. The population at Elklick contains an estimated 300-400 plants and occupies a wet swale in a power line right-of-way through the preserve. The Elklick Woodlands State Natural Area Preserve is owned and managed by Fairfax County Park Authority in consultation with DCR Natural Heritage.



Rough Hedgenettle (*Stachys aspera*, G4/S2). Photos by Gary P. Fleming.

Rare Plant Population Rediscovered in York County – 7/13/17

DCR Natural Heritage Stewardship staff rediscovered a population of Slender Marsh-pink (*Sabatia campanulata* – G5/S2) adjacent to Grafton Ponds Natural Area Preserve in York County. This population, first documented in 1986 but not seen since 1997 despite multiple surveys, appears healthy and has increased in size to well over 300 plants. Slender Marsh-pink is a beautiful but rarely encountered species occurring in wet, open habitats. Historically, this plant would have occurred more frequently within sunny, wet seeps and woodlands maintained by frequent fire. Today, the few remaining populations are often found in seepage areas within power-line right-of-ways. While most populations are known from the coastal plain and outer piedmont, Slender Marsh-pink can also be found at a few sites in Virginia's mountains.



Outstanding occurrence of the state-rare Slender Marsh-pink rediscovered in York County.

Significant Donation of Moth Specimens to Smithsonian Institution – 7/31/17

Entomologists from the National Museum of Natural History, Smithsonian Institution (Washington, DC) recently picked up a donation of moth specimens from the DCR Division of Natural Heritage. The donation included over 30,000 individuals representing more than 800 species of moths collected by Natural Heritage Zoologists and other staff and collaborators. Sampling for the moths occurred between 1985 and 2016 in Natural Area Preserves, State Parks, National Forests, military bases, and many other collecting sites throughout Virginia. This long-term project by the Natural Heritage Zoologists has been the largest sampling of moths in the state of Virginia and helped to determine the distribution, diversity, and conservation status of the fauna. Previously, Virginia was among the most poorly represented states in the Lepidoptera (butterflies and moths) collection of the National Museum of Natural History. The DCR Division of Natural Heritage donation now provides the majority of Virginia moths in this collection.



Boxes of pinned moths stacked and ready to be taken to the National Museum of Natural History.

Heritage Stewardship and Inventory Staff and Partners Update Rare Plant Records – 8/16/17

DCR's Chief Biologist and Chesapeake Bay Region Steward joined the Peninsula Master Naturalists RareQuest team leader and Newport News Waterworks staff to update rare plant records in Newport News Park. The effort resulted in the discovery of a very robust population of slender marsh-pink (*Sabatia campanulata*; G5/S2) as well as the rediscovery of a small population of the same species last observed in 1995. The survey also resulted in the discovery of two individuals of large spreading pogonia (*Cleistesiopsis divaricata*; G4/S1), a fire-dependent orchid that has never before been documented north of the James River in Virginia. A species occurring in wet pine savannas, boggy streamheads, and pocosin openings, large spreading pogonia is now nearly entirely restricted to artificially maintained transmission line rights-of-way that mimic the open conditions associated with frequent natural fire.



Large Spreading Pogonia (*Cleistesiosopsis divaricata*; G4/S1), first observation north of the James River on August 16, 2017.

Summer Bat Netting at SE Virginia Natural Areas Stays Hot – 8/21/17

2016 bat surveys at southeast region Virginia Natural Area Preserves produced some excellent results, and the 2017 season produced some interesting finds as well. Natural Heritage Zoologists and stewards began trapping bats at South Quay Natural Area Preserve and Chub Sandhills NAP in July, 2017 and continued through mid-August. South Quay Sandhills NAP still remains the hotspot for trapping with 108 individuals and 6 species of bats captured over 6 nights. Among the six species were the state endangered Tri-colored bat (*Perimyotis subflavus*), and Eastern big-eared bat (*Corynorhinus rafinesquii*), as well as 2 individuals of the federally threatened Northern long-eared bat (*Myotis septentrionalis*). Chub Sandhills NAP produced captures of two juvenile Eastern big-eared bats, and surveys at Antioch Pines NAP produced new Element Occurrences for the Southeastern myotis (*Myotis austroriparius*), and the state endangered Tri-colored bat (*Perimyotis subflavus*). Other species captured at these preserves included the more common Evening bat (*Nycticeius humeralis*), Eastern red bat (*Lasiurus borealis*), and Big brown bat (*Eptesicus fuscus*). Bat detectors were deployed at these preserves in addition to mist netting efforts, and preliminary analysis of data collected suggests that at least two additional species may be present at the preserves. These species are the Silver-haired bat (*Lasionycteris noctivagans*), and the Hoary bat (*Lasiurus cinereus*), neither of which have been verified by mist netting.



A state endangered Eastern big-eared bat (*Corynorhinus rafinesquii*) captured at South Quay Sandhills NAP



A federally threatened Northern long-eared bat (*Myotis septentrionalis*) captured at South Quay Sandhills NAP



State endangered Tri-colored bat (*Perimyotis subflavus*) captured at Antioch Pines NAP during 2017 surveys

Rare Plant Documented For First Time in Nearly Half a Century – 9/5/17

DCR's Chesapeake Bay Region Steward discovered a new population of cream-flowered tick-trefoil (*Desmodium ochroleucum*; G2SH) at Cumberland Marsh Natural Area Preserve in New Kent County. Last documented in Virginia in 1969 and presumed lost, cream-flowered tick-trefoil is only known from about two-dozen sites (totaling roughly 700 plants) across its range in the Mid-Atlantic and Southeast. Virginia's newly discovered population totals many plants, displays evidence of ample new seedling recruitment, and is likely one of the largest known populations of the species. Throughout most of its range, cream-flowered tick-trefoil is typically found in glades and open woodlands over calcium-rich substrata like limestone. Previous collections in Virginia were made from unremarkable places like along roads through immature, low-diversity woods. The New Kent County population co-occurs with other calcium-lovers like nettle-leaf noseburn (*Tragia urticifolia*), yellow giant hyssop (*Agastache neptoides*), and wild columbine (*Aquilegia canadensis*), indicating the site is underlain by nutrient rich alluvial sediment and possibly even Native American shell middens. DCR will continue to work with The Nature Conservancy to manage the site to promote the open clearings this extremely rare species favors. This rediscovery underscores the need for continued field inventory by Natural Heritage Inventory and Stewardship Biologists across Virginia's changing landscape. Moreover, this serves as a reminder of the treasures protected by and managed on Virginia's Natural Area Preserve System.



Desmodium ochroleucum



Desmodium ochroleucum; G2SH

Prescribed Burning

Natural Heritage Division Assists with Prescribed Burns – 4/1/17

Staff from DCR Natural Heritage along with State Parks, AmeriCorps, and Department of Game and Inland Fisheries (DGIF) assisted the Department of Forestry (DOF) with a 119-acre burn at South Quay State Forest (SF). This burn also treated a small portion of the adjacent South Quay Sandhill Natural Area Preserve (NAP). This burn was conducted to control vegetation in a 4-year-old longleaf pine restoration area on the State Forest and to remove woody debris on the NAP to prepare the area for fall longleaf pine planting. On the same day, DCR staff assisted The Nature Conservancy (TNC) with burning three units at Piney Grove Preserve. These burns were conducted to maintain and enhance habitat for the federally endangered red cockaded woodpecker. On April 5, DCR staff assisted the US Fish & Wildlife Service (FWS) with grassland burning to enhance

wildlife habitat at Rappahannock River Valley National Wildlife Refuge, and on April 11, they assisted DOF with a 304-acre burn at Big Woods SF to reduce understory fuel build-up in mature loblolly pine stands. All of these burns relied on cooperation and assistance from all members of the interagency fire community that includes DCR, TNC, DOF, DGIF, AmeriCorps and FWS.



March 30, 2017 burn at South Quay State Forest & South Quay Sandhills NAP



April 5, 2017 burn at Rappahannock River Valley National Wildlife Refuge

Spring 2017 Prescribed Burns Completed on Eastern Natural Area Preserves – 4/14/17 & 4/16/17

On April 14, DCR Natural Heritage staff conducted a 96-acre prescribed burn at Antioch Pines Natural Area Preserve and on April 16 burned an additional 78-acre unit at Blackwater Ecological Preserve. These were the final two burn projects on the “to do” list for the current fiscal year on eastern state natural area preserves. A total of 586 acres (11 units) were burned on eastern NAPs in FY17. This success was made possible in part by a strong interagency partnership with DCR State Parks, The Nature Conservancy, U.S. Fish and Wildlife Service, Department of Game and Inland Fisheries, Department of Forestry and AmeriCorps.



DCR Natural Heritage staff and fire management partners completed the last two scheduled spring 2017 prescribed burn projects on eastern natural area preserves on April 14 and 16.

Natural Heritage Prescribed Burn Summary through June 2017 –

During the first half of 2017, DCR’s Natural Heritage (DCR-NH) natural areas stewards completed 16 prescribed burn projects on state natural area preserves (NAPs) across Virginia. These were conducted on just 10 burn days on NAPs. A total of 393 acres was burned (321 acres west; 393 acres east) for the objectives of improving rare species habitat, restoring and/or maintaining natural communities, controlling invasive species and reducing hazardous fuel accumulations. DCR-NH fire management staff also assisted partners with 31 prescribed burns on 23 separate burn days totaling 4,898 acres (781 acres west; 4,117 acres east). Many of these partner-assist burns occurred on the same day when other DCR-NH staff was also burning on NAPs. Partner-assist burns were conducted on lands managed by DCR-State Parks, The Nature Conservancy, Department of Forestry, Department of Game and Inland Fisheries, U.S. Fish & Wildlife Service and U.S. Forest Service. These agencies/organizations also provided critical assistance to DCR-NH, enabling multiple burns to take place simultaneously across the state on suitable burn days.



Prescribed burns conducted by DCR on state natural area preserves such as Antioch Pines NAP above are often enabled by close working partnerships with other agencies. For example, the U.S. Fish and Wildlife Service provided trained AmeriCorps volunteers for burns conducted on DCR-managed lands during 2017. In turn, DCR provided assistance to USFWS, as well as to other agencies.

Natural Area Preserve Stewardship

Portions of Dameron Marsh and Bethel Beach Natural Area Preserves Closed to Accommodate Seasonal Wildlife Activity – 5/1/17

The sandy shorelines at Dameron Marsh Natural Area Preserve and a portion of the sand spit at Bethel Beach Natural Area Preserve are temporarily closed to allow for shore-nesting bird and the federally and state listed northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*, G3/S2) activity. Repeated disturbance by humans and unleashed dogs can cause shore-nesting birds to abandon their nesting sites. The 2016 breeding season was a banner year for Least Tern (*Sternula antillarum*, G4S2) nesting at Bethel Beach NAP, with over one hundred

nesting pairs observed. With help from the public in honoring the temporary closure, the habitat values will persist and wildlife viewing opportunities at Bethel Beach NAP will continue in the future.



Temporary closure and educational signage at Bethel Beach Natural Area Preserve

Visitation at Crow's Nest Natural Area Preserve after April 1st Opening – 4/1/17 to 5/1/17

On Saturday, April 1, 2017, the Raven Road Access entrance road, interior parking area and eight miles of hiking trails were opened to the public at Crow's Nest Natural Area Preserve. Visitation on April 1st following the opening event with Governor McAuliffe was low, but on Sunday increased markedly. The interior parking area was at capacity for several hours on Sunday afternoon, and a number of visitors were either held at the gate until a parking spot opened or asked to return at a later time. Visitation was similarly busy and near capacity the following weekend of April 8-9; however, while parking capacity reached maximum on several occasions, no visitors needed to be asked to return later or wait for parking space to open up. Visitation numbers were slightly lower the weekend of the April 15-16, and lower again on the weekend of April 22-23 likely because of the cooler, rainy weather. Raven Road Access visitation on the first full open day (Sunday April 2) was estimated at 300 visitors. Since then, visitation has been between 150 and 250 persons per day on weekends and between 50 and 100 on Thursday and Friday. Raven Road Access is closed on Monday-Wednesday. Public response to DCR's opening of Crow's Nest hiking trails has been nearly all positive. The few complaints have been about Raven Road Access being open only on Thursday-Sunday (not seven days per week) and that visitors can no longer park at the entrance gate and walk in. It has been observed that many drivers on the single-lane entrance road are not using the turn-outs to pass other vehicles. Rather, they are pulling over to the far right road edge and squeezing past on-coming traffic. Additional signage noting the presence and encouraging use of the turn-outs will be installed the week of May 1.



Visitors to the interior of Crow’s Nest have enjoyed hiking on the extensive trail system within the 2,872-acre preserve.

Old-Growth Forest Network Recognizes Crow’s Nest – 7/9/17

Crow’s Nest Natural Area Preserve was designated as part of the Old-Growth Forest Network (OGFN), an organization with the mission of promoting public awareness of, access to and protection of the remaining stands of old growth forest in the United States. Crow’s Nest supports one of the best remaining old-age coastal plain hardwood forests in Virginia. After a short ceremony, participants at the event hiked the 3-mile Accokeek Creek Loop Trail where they experienced the diverse, mature hardwoods at Crow’s Nest. OGFN and DCR Natural Heritage staff were joined by participants from the Virginia Department of Forestry, Northern Virginia Conservation Trust, Virginia Native Plant Society and local chapters of the Virginia Tree Stewards and Master Naturalists.



Participants of the Old-Growth Forest Network event at Crow’s Nest Natural Area Preserve.

Loblolly Pine Removal for Longleaf Restoration at Cherry Orchard Bog Preserve – 7/24/17

During summer of 2017, harvesting has been completed of an 83-acre loblolly pine stand in order to begin the longleaf pine restoration process at Cherry Orchard Bog Natural Area Preserve in Prince George County. Loggers removed the loblolly pines while leaving select other species including shortleaf pine, oaks and

hickories. The residual hardwoods and shortleaf will contribute to the community diversity of the site, and would have been natural components of the historical northern longleaf forest that once occupied this part of Virginia. A prescribed burn will be conducted in late summer to complete preparations for planting with containerized longleaf pine seedlings in fall or early winter of 2018.

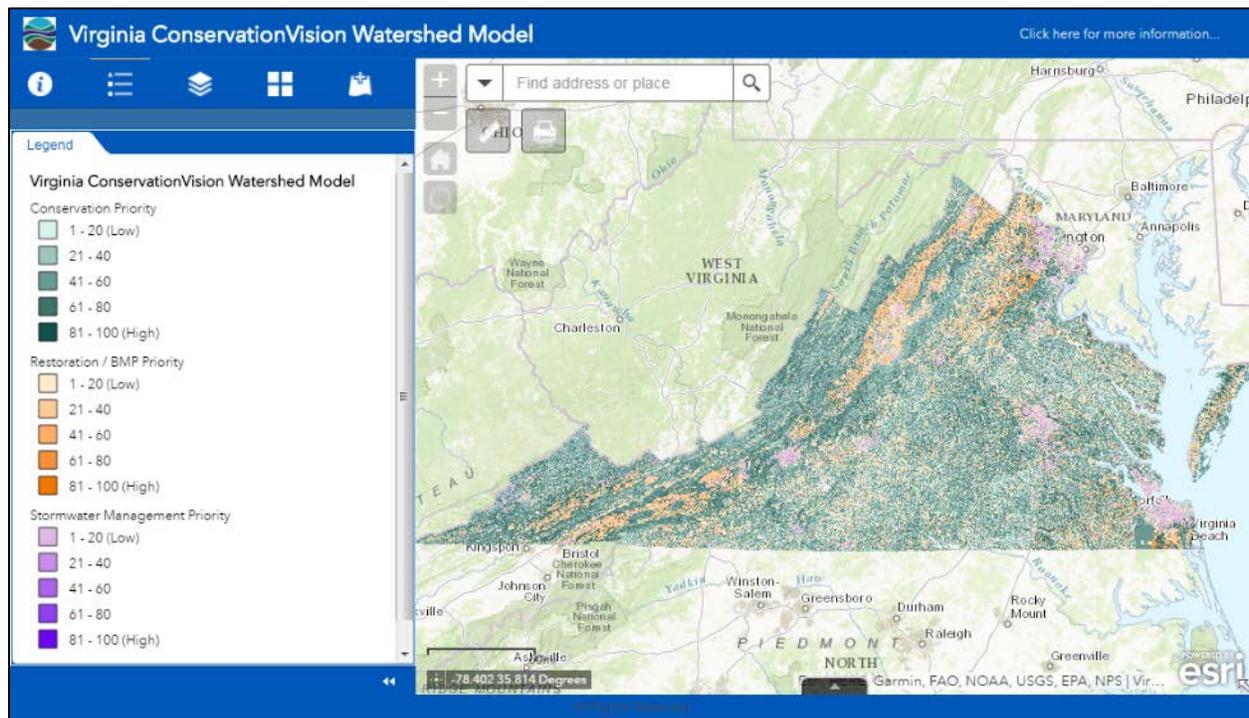


Recently-harvested longleaf restoration site at Cherry Orchard Bog Natural Area Preserve. Next steps will be prescribed burning and planting with containerized longleaf pine seedlings.

Information Management

Natural Heritage Program's Data Management Section Debuts New ConservationVision Model –5/16/17

The new Virginia ConservationVision Watershed Model is now available for online mapping and data downloads. The purpose of the model is to establish priorities for conservation of existing land cover; restoration or implementation of best management practices (BMPs); or stormwater management, throughout the Commonwealth. The Watershed Model incorporates characteristics of land cover type; topography; soils; landscape position relative to hydrological features and drinking water sources; and subwatershed integrity based on landscape composition, aquatic species assemblages, and estimated pollution loads. The Natural Heritage Landscape Ecologist presented the model at the Richmond Region GIS Users group meeting on May 16, and will present it again at the State Agencies GIS meeting on June 6. More information about the model is available at <http://www.dcr.virginia.gov/natural-heritage/vaconviswater>.



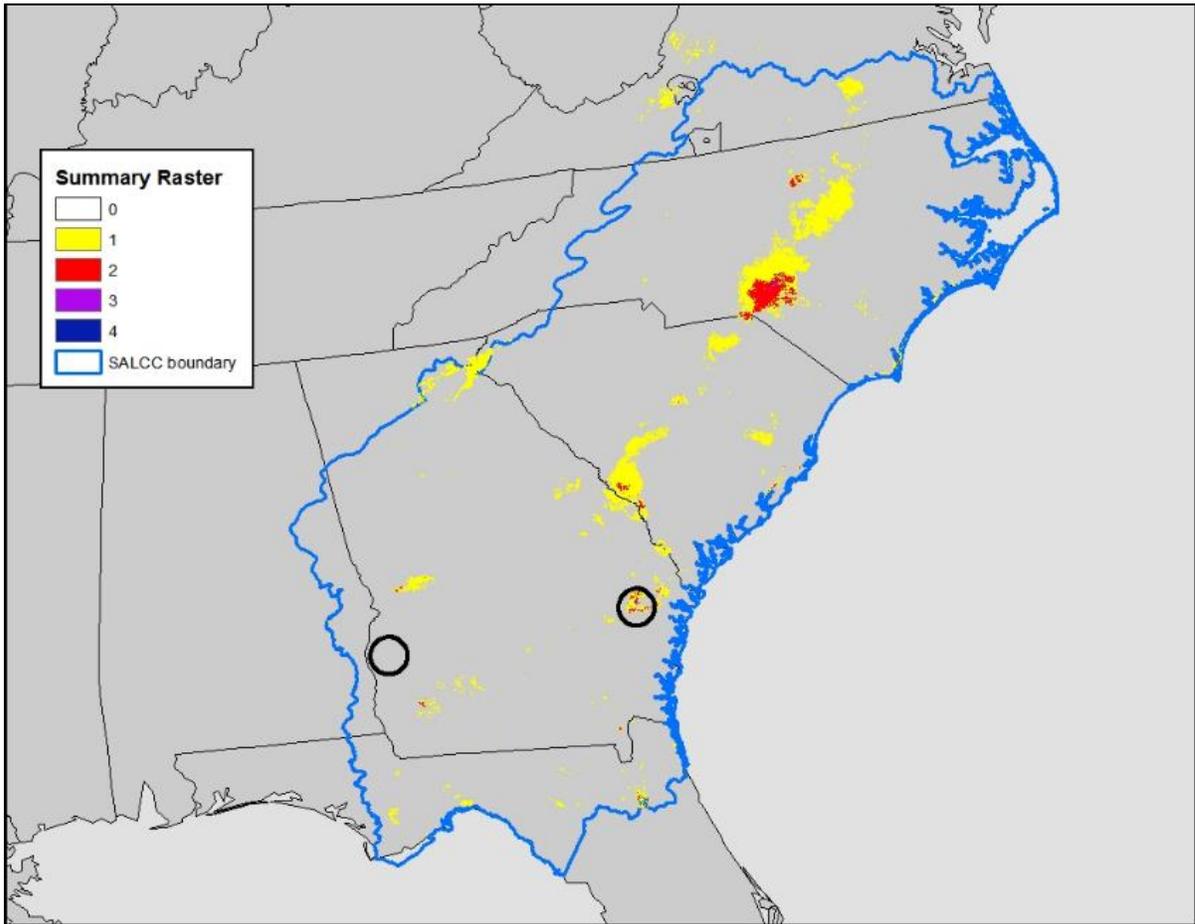
Screenshot of the completed Watershed Model

Incorporation of VCU's INSTAR Healthy Waters data into Biotics Database – 6/27/17

Natural Heritage has completed entry of 148 new aquatic natural community element occurrences (EOs) into the Biotics database. Biotics is a GIS-based conservation data management system, used to track Virginia's rare, threatened, or endangered species and natural communities. The new aquatic community EOs are the result of a collaboration with VCU to adapt their [INSTAR \(Interactive Stream Assessment Resource\)](#) data to Natural Heritage methodology. Healthy Waters INSTAR data represents fish and macroinvertebrate assemblages, instream habitat, and stream health assessment ratings at both the watershed and stream reach scale. When stream reaches ranked in INSTAR as "Outstanding" and "Healthy" are integrated into Biotics, Stream Conservation Units (SCUs) are mapped, then prioritized for their conservation values, shared with partners for conservation decision-making, and used in environmental review. In this update 104 new Stream Conservation Units were created and 27 existing SCUs were updated. A total of 347 mapped aquatic natural communities are now included in Biotics.

Webinar presented to South Atlantic LCC – 7/24/17

The DCR-Natural Heritage (DCR-NH) Species Modeling Project Manager and the Chief of Conservation Services from Florida Natural Areas Inventory (FNAI) presented an update on their collaborative work entitled 'Integration of At-risk and Range Restricted Species Models and Strategic Conservation Information into the South Atlantic Land Conservation Cooperative (SALCC) Conservation Blueprint – Progress Report'. FNAI and DNH have been working on this project since 2015 and will finalize the modeling products and write conservation action reports for 10 selected species this fall. This has been a unique opportunity to leverage the strength of the Natural Heritage network on a broader, regional scale by including data from multiple states, and working collaboratively to develop a unified methodology along with the NY and PA Natural Heritage Programs. The webinar was open to all members of the SALCC and was attended by state and federal conservation professionals.



The model output maps indicating predicted suitable habitat for 10 species were ‘stacked’ to create a summary map. The values shown indicate the number of overlapping map outputs. The black circles indicate where four models overlap. Note the large blocks of habitat situated along the Fall zone.

Outreach and Education

Heritage Staff Presents Webinar to Pennsylvania Heritage Program – 4/4/17

The Species Modeling Project Manager co-presented a webinar with Pennsylvania Natural Heritage Program (NHP), entitled ‘Species Distribution Modeling Update on Eastern Regional Projects’ to NatureServe and the network of Natural Heritage Programs. The talk focused on the processes, decisions, and lessons learned from two regional projects (together encompassing areas from Maine to Florida) being worked on collaboratively with New York NHP, PA NHP, and Florida Natural Areas Inventory. These projects are unique in their scale and offer the network an opportunity to think through methods and protocols as we begin to conduct species distribution modeling at a national (i.e., lower 48 states) level. The presentation was intended to set the stage for focused discussions during an all-day session at the annual Biodiversity without Boundaries conference in Ottawa Canada April 11th.

Staff attends Environment VA April 2017 – 4/4/17 – 4/6/17

DCR Natural Heritage Project Review Coordinator attended the 28th Annual Environment Virginia Symposium April 4-6 at the Virginia Military Institute (VMI) in Lexington. The symposium’s concurrent sessions covered various environmental topics including coastal resiliency tools, climate change and DEQ regulatory updates. Governor Terry McAuliffe addressed conference participants for the third consecutive year and recognized the 40th year of the Virginia Environmental Endowment. Among the Governor’s Environmental Excellence Awards presented at the symposium were the Fort AP Hill Compatible Use Buffer Program protecting several natural heritage resources documented at the base, the Fairfax County Park Authority Huntley Meadows Park Wetland

Restoration benefitting natural heritage resources supported by the wetlands, and the James City County Department of Parks and Recreation –The Freedom Park Multi-Use Trail through coordination with DCR-Natural Heritage and United States Fish and Wildlife Service (USFWS) re-aligned the trail to avoid impacts to a rare orchid documented nearby.



Fort AP Hill receiving the Governor’s Environmental Excellence Award



Green roof atop the VMI training facility

A tour of VMI’s New LEED Gold Corps Training Facility was also provided by one of VMI’s cadets highlighting the green roof as one of the environmentally friendly components of the new facility.

Stewardship Staff Gives Native Plant Presentation – 4/10/17

The Eastern Shore Region Steward gave a presentation on the native plants of Accomack and Northampton Counties for the Friends of the Cape Charles Library. The presentation was part of the library’s “Afternoon Tea” program, which offers topics of interest combined with a formal afternoon tea. The presentation focused on native plants suitable for home landscapes. The basis was the illustrated guide, *Native Plants of Accomack and Northampton*, produced as part of the “Plant ES Natives Campaign”, a regional partnership initiative to encourage the use of native plants. Copies of the guide were given to the 45 attendees.

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Natural Heritage Landscape Ecologist Presents at National Conference in Baltimore – 4/10/17-4/12/17

The Natural Heritage Landscape Ecologist, Kirsten Hazler, attended the annual conference of the U.S. chapter of the International Association for Landscape Ecology (IALE) in Baltimore, MD. This year’s theme was “People, Places, Patterns: Linking Landscape Heterogeneity and Socio-Environmental Systems”. From April 10 through 12, there were three plenary talks; eight concurrent sessions of short oral presentations on diverse topics such as green infrastructure, species distribution modeling, landscape change, climate change, policy and planning; and a scientific poster session. Hazler presented some of her recent work in a poster titled “Automated delineation of Conservation Sites in Virginia”.



Automated delineation of Conservation Sites in Virginia

Kirsten R. Hazler, Virginia Natural Heritage Program, 600 East Main Street, Richmond, VA 23219
Kirsten.Hazler@dcr.virginia.gov



Introduction: Context and Objective

A Natural Heritage Conservation Site is:

- A non-regulatory boundary surrounding one or more mapped locations of rare species and/or significant natural communities

A Conservation Site is used for:

- Providing locations of key biodiversity areas without revealing sensitive species' precise locations
- Prioritizing conservation efforts, such as land acquisition for Natural Area Preserves
- Targeting biological inventory efforts
- Flagging development projects that may impact Natural Heritage resources

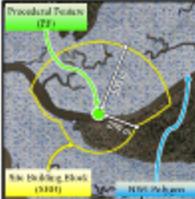
Objective: Standardized site delineation

Replace manual digitizing with an automated process to:

- Reduce individual subjectivity in applying delineation rules
- Increase consistency and defensibility
- Improve efficiency and reduce staff workload

Methods: The Automation Process

1. Buffer Procedural Features to create Site Building Blocks



- Buffer distances vary by feature type, but 250 m is typical.
- Additional habitat cut to 500 m is added for certain wetland species intersecting National Wetlands Inventory (NWI) polygons.

2. Shrink-wrap Site Building Blocks to create Conservation Sites



- Site Building Blocks less than ~500 m from each other coalesce into Conservation Sites
- In more complex situations, the Conservation Site may be modified to exclude unsuitable areas such as roads, open water, or developed areas (see example below).

3. Modify Conservation Sites by excluding unsuitable areas



- In this example, the initial "shrink-wrap" process combines all SBBs into a single preliminary site.
- Further processing uses open water features (blue) to split the preliminary site into two, and modifies the boundaries to produce final Conservation Sites.
- Water features < 20 m wide are ignored in processing, as demonstrated by the narrower creeks here which do not affect site boundary.

4. Expand Conservation Sites in larger habitat cores (future)

Results: Automation vs. Manual Delineation

- Automation in a test area produced 334 Conservation Sites.
- Relative to the original, manually delineated sites, automated sites can be broken down into the following categories:

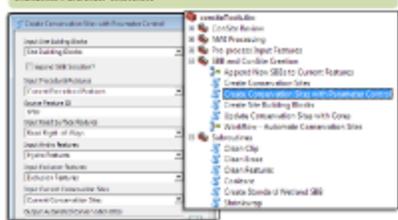
| Code | Definition | # of Sites | % of Sites |
|------|---|------------|------------|
| B | Boundary change only: The automated site corresponds directly to a manual site, but the boundary has changed to some extent (from significant to negligible) | 225 | 67% |
| S | Split: The automated site is one of several split off from a manual site. | 79 | 24% |
| M | Merge: The automated site is a merger of two or more manual sites. Some cases may also involve a split. | 22 | 7% |
| N | New: The automated site is new, not corresponding to any manual site. This is due to new procedural features being mapped since sites were last edited. | 8 | 2% |

Implementation: Data and Tools

Input data requirements

- Procedural Features – mapped locations of rare species and communities, digitized by Natural Heritage staff
- Wetlands – from National Wetlands Inventory
- Hydrography – open water, from National Hydrography Dataset
- Road surfaces – derived from Virginia Road Centerlines dataset
- Exclusion features – polygons representing developed areas, manually digitized or derived from high-resolution land cover
- Natural Cores – large, unfragmented habitat blocks derived from land cover by Natural Heritage (future addition)

Current ArcGIS toolbox



Discussion

10 biologists = 10 different opinions on site delineation.

- Coding the automation process forces our program to come to consensus on specific site delineation rules.
- Automation enables us to apply standard delineation rules consistently across the state.

Flexibility is key:

- Getting the process and parameters right takes time, patience, and lots of feedback from field biologists and other staff!
- Expanding the coalesce distance for sites in habitat cores will eliminate many of the splits, generate site boundaries that diverge less from original manual delineations, and encourage conservation of larger landscape blocks.

Inertia is real and change is hard. But it's worth it.

- Changing from manual to automated delineation will require major workflow changes and much staff time initially.
- After initial conversion, it will finally be possible to quickly incorporate site boundaries with dynamic field data on a regular basis.

ACKNOWLEDGEMENTS

This project builds on previous work at several colleagues at the Virginia Natural Heritage Program. In particular, the SBB concept, along with its associated documentation for Conservation Site delineation manual, procedure, and Maps, thanks to all who provided feedback along the way, especially Karen Peterson and Cary Fleming; to Chris Leung for his encouragement, his direct feedback for getting me from one to pursue the initiative, his mentors, critics, and staff helping prepare, get data, and to the Information Management staff who will be implementing the system overhaul.

Biodiversity Without Boundaries – 4/10/17 to 4/13/17

The DCR Natural Heritage Species Modeling Project Manager attended NatureServe’s Biodiversity without Boundaries annual conference in Ottawa, Ontario Canada. She presented an overview of Virginia DCR Natural Heritage’s species distribution modeling projects and uses in Virginia, and participated in a working group focused on developing a national collaboration to model the distribution of T&E species across the lower 48 states. Participants at the conference included representatives from partner state Natural Heritage programs, several Canadian Conservation Data Centers and the US Geological Survey, with additional members calling in.

The Natural Heritage Chief Biologist presented a “lessons learned” talk about the RareQuest project. RareQuest was developed to engage Virginia Master Naturalists in fieldwork to help Natural Heritage biologists observe and update aging records of Natural Heritage Resources. The take-home message was that, while perhaps not the most efficient way to collect field information, this project strengthened the partnership between DCR and the Virginia Master Naturalists which will have many benefits in the long term. This presentation was offered in the Citizen Science portion of the conference and other members offered helpful ideas for the use of social media platforms such as eBird and iNaturalist to harvest information and build a community of skilled naturalists that could benefit our Department

Heritage Staff attend International Conference in Ottawa, Canada – 4/10/17 – 4/14/17

The Natural Heritage Information Manager attended the Biodiversity without Boundaries (BWB) conference the week of April 10, organized annually by NatureServe to bring together U.S. Natural Heritage Programs, Canadian Information Data Centers, and other conservation and industry professionals from throughout the western hemisphere. The conference included several presentations, a workshop, and after-hours discussions about Species Distribution Modeling (SDM). The Virginia Natural Heritage Program (VNHP) has become one

of the country's leaders in SDM and is currently coordinating work with three other heritage programs on several large projects covering states from Maine to Florida. This work and experience is contributing enormously to NatureServe's national effort to enable heritage mapping and modeling centers, including VNHP, to model the distributions of listed species across the conterminous United States. Federal and private industry partners contributing to this effort also participated in the SDM events at BWB. The USGS Branch Chief for Eco-Science Synthesis presented his team's work on Biodiversity Information Serving Our Nation (BISON) to support conversation on active collaboration. The Team Leader of Regulatory Affairs and Crop Protection at Syngenta, a company that provides products and solutions for agriculture and which is a potential funder of the NatureServe effort, articulated how SDM could be used in assessments of potential impacts of pesticides on listed species. The Information Manager contributed to discussions and decisions on modeling standards, data needs and specifications, and budgets, and will continue to contribute to a workgroup on product standards. These types of collaborations are vital for improving methods, data, and products, and for realizing funding, for the SDM efforts of VNHP, NatureServe, and the heritage network.

Heritage Staff Attend New Kent County Envirothon – 4/22/17

DCR-Natural Heritage was represented by project review staff at the New Kent County Envirothon/Earth Day event at the New Kent Virginia Cooperative Extension Office. DCR-Natural Heritage set up a large display board with general information about the Natural Heritage Program, Natural Area Preserves (NAPs), and specific rare species information that focused on New Kent County. Children were engaged using paper "fortune tellers" about species habitat, a species mix and match game, species cutouts to color and place on habitat banners, and a Bald Cypress-Tupelo Swamp diorama. Adults were encouraged to ask questions about the Natural Heritage Program and were pleased to know there was a Natural Area Preserve, Cumberland Marsh, less than 3 miles away from the event location. Native plant brochures, and NAP guides were also handed out. Approximately 40 individuals stopped by the booth and walked away with a better understanding of the DCR-Natural Heritage Program.



Project review staff at 2017 New Kent County Envirothon



Educational diorama of the Bald Cypress-Tupelo Swamp, one of Virginia's Natural Communities

Heritage Protection Staff Presentation to Land Trusts – 4/26/17

Heritage Protection staff presented a program entitled, “Working Together to Achieve a Comprehensive Commonwealth Conservation Vision” to the Virginia United Land Trust’s annual Board meeting in Williamsburg on April 26. Representatives of at least 14 Land Trusts, DGIF, DOF, and VDACS, and DCR were all in attendance. The presentation was built on the results of 30 years of data collection and data management by the DCR-Natural Heritage on the distribution of biological resources across the Commonwealth and their protection status. An overview of Virginia’s most critical locations for biological conservation and their status was provided, along with the relative importance of conservation lands held by various public and private entities. A *Comprehensive Commonwealth Conservation Vision (CCCV)* was proposed along with a preliminary concept of what this Vision would look like and how it was derived. A call for concerted and collaborative action from all participants in support of the CCCV was made and well received by the potential partner organizations. The draft CCCV was proposed as follows: The native biological diversity of the Commonwealth will be effectively and efficiently conserved on a comprehensive network of protected lands. These lands will be adequately protected, adequately managed & restored, and treasured by Virginia citizens.

Heritage Protection Staff Co-facilitate Discussion at Statewide Conference – 4/27/17

DCR-Natural Heritage Protection staff co-facilitated a roundtable discussion entitled, “Carrying Capacity on Public Lands” at the first joint meeting of the Statewide Trails Advisory Committee and the Virginia United Land Trusts at the Statewide Land Conservation and Greenways Conference on April 27. Active participants included the Horse Council, Appalachian Trail Conservancy, State Parks, DCR-Planning & Recreation Resources, The Nature Conservancy, and Department of Forestry. Examples of over-used and resource impacted sites were discussed and potential alternatives were considered, as were user groups who had insufficient access to places to carry out all of their desired activities. One of the group’s concerns was that “the public” didn’t recognize important distinctions between types of public lands with different management objectives. Among the many ideas discussed was ‘could better education and interpretation help solve the problems?’, and whether coordination across the spectrum of publicly managed lands could alleviate certain pressures by more clearly communicating the types of public-uses that are most compatible with these lands. Realities of limited management resources, public perceptions, and quota systems were also discussed (see below).



Buffalo Mountain Natural Area Preserve summit in 2005 (left) & 2014 (right). Sites with rocky summits like Buffalo Mountain, which are already facing stresses from climate change, featured prominently in discussions of “Carrying Capacity on Public Lands” at the first joint meeting of the Statewide Trails Advisory Committee and the Virginia United Land Trusts at the Statewide Land Conservation and Greenways Conference. For the first time, the Appalachian Trail managers are considering a quota system and key nodes along the trail are considering closures due to related issues of overuse.

Natural Heritage Participates in the South Atlantic LCC Conservation Blueprint Review

<http://www.southatlanticlcc.org/> - 4/27/17

The Information Manager and Species Modeling Project Manager attended a workshop led by the South Atlantic LCC to review and comment on the draft version of the Conservation Blueprint 2.2. The Blueprint (<http://www.southatlanticlcc.org/blueprint/>) extends from southern Virginia to northern Florida and includes the Piedmont, Coastal Plain, and adjacent marine habitat. It uses natural ecosystem indicators and cultural resources to identify shared conservation priorities across the region. The review of version 2.2 includes multiple hands-on workshops held across the region. The Richmond-based workshop was hosted at VDGIF headquarters and included representatives from federal and state government, and private companies. Input included ideas for improving input data, supporting the use of the Blueprint, and promoting the Blueprint as a resource.



South Atlantic LCC Conservation Blueprint 2.1

Staff Presents at Fort A.P. Hill Earth Day Event – 4/27/17

The DCR-Natural Heritage Locality Liaison participated in the Fort A.P. Hill 2017 Earth Day Event. There were approximately 1,745 students, teachers and parents, and 63 exhibitors participating in the event. The Natural Heritage display included information and images of resources in Caroline County as well as a terrarium housing a northern purple pitcher plant. Hands-on activities included making a pitcher plant “fly catcher” and a paper “fortune teller” that provides information on four rare species and their habitats.



Locality Liaison with display at Fort A. P. Hill 2017 Earth Day Event

Heritage Staff Gives Presentation to Multi-agency Federal Working Group – 4/28/17

The Species Modeling Project Manager and the Project Review Manager were invited to present a webinar entitled “Increases in Environmental Review and Data Sharing Efficiency via Predictive Species Distribution Models in Virginia” to the Biodiversity and Ecosystem Informatics Work Group (BioEco) of the Committee on Environment, Natural Resources & Sustainability's Subcommittee on Ecological Systems. The BioEco working group was established to improve coordination of Federal biodiversity and ecosystem informatics activities, and eventually to coordinate or meld its products with those of the non-Federal sector, as well as with international efforts. Agencies represented on the talk include USGS, USDA, NPS, USFS, NRCS, NOAA, NASA, and DOS.

Heritage Attends Petersburg Riverfest Event – 4/29/17

Project Review Staff represented DCR-Natural Heritage at the Friends of the Lower Appomattox River (FOLAR) Riverfest at Appomattox River Park in Petersburg. General information about the Natural Heritage Program, native and invasive species, and specific rare species information that focused on FOLAR's six localities within the Appomattox watershed was on display. Children were encouraged to interact through paper “fortune tellers” about species habitat, and a make-your-own Northern pitcher plant activity. Adults were encouraged to ask questions about the Natural Heritage Program, and were excited to learn about the rare species in their area. Native plant brochures, Healthy Waters Program booklets, and Natural Area Preserve public access guides were also handed out. Approximately 140 individuals stopped by the booth, gaining a better understanding of the Natural Heritage Program.



Natural Heritage Display Booth at the FOLAR Riverfest in Petersburg.



Make your own Northern Pitcher Plant display

Master Naturalist Field Trip visits Blackwater Ecological Preserve – 5/6/17

The DCR Natural Heritage Southeast Region Steward led a field trip at Blackwater Ecological Preserve for the 2017 class of the Historic Southside Chapter of the Virginia Master Naturalists. The students learned about fire ecology, the longleaf pine ecosystem, and species of plants and animals associated with fire-maintained longleaf pine communities. The 15 aspiring Master Naturalists also had a chance to participate in a hands-on tree identification exercise using plant identification keys. Staff from the Department of Forestry assisted with this field trip.

VA Native Plant Society Visits Hickory Hollow Natural Area Preserve – 5/10/17

On Wednesday, May 10, DCR's Chesapeake Bay Region Steward led a field trip for the Virginia Native Plant Society at Hickory Hollow Natural Area Preserve in Lancaster County, Virginia. The 15 participants got an up-close look at the 254 acre Natural Area Preserve that hosts several rare plants and natural communities as well as numerous plants normally found in the mountains. The trip culminated in a walk down a boardwalk that juts into Cabin Swamp, a globally rare coastal plain basic seepage swamp that is home to an extraordinary diversity of native plants. Part of a multi-day Northern Neck foray, participants also visited Dameron Marsh Natural Area Preserve and Hughlett Point Natural Area Preserve the following day.

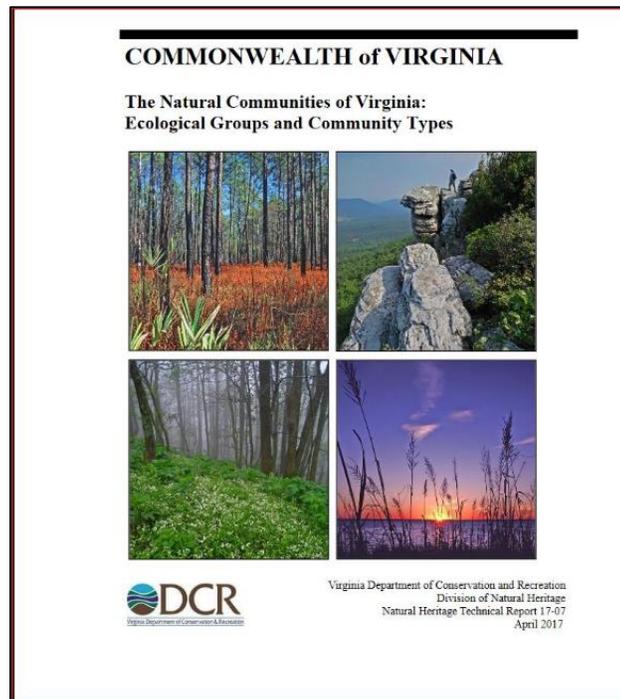
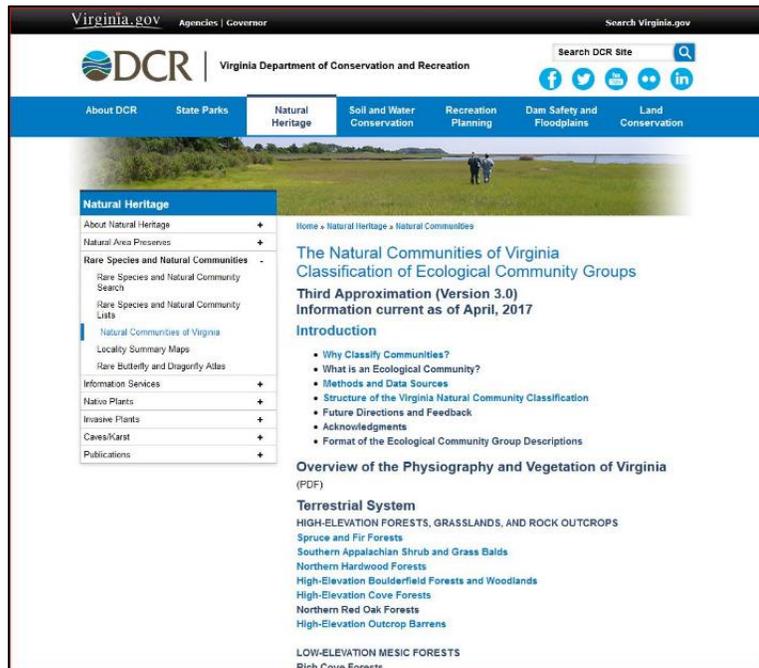


VA Native Plant Society members walking in Cabin Swamp

New Natural Communities of Virginia Website is Now Online – 5/15/17

A major update to The Natural Communities of Virginia web content is now complete and available through DCR's website. [The Natural Communities of Virginia: a Classification of Ecological Community Groups and Community Types \(Third approximation, Version 3.0\)](#) is the latest in a series of successive versions of the natural community classification since the initial hard-copy publication in 2001. The new web site is more richly illustrated, with nearly 1500 captioned natural community photos added in gallery-style pages linked from the Ecological Group pages. Ecological Community Group range maps have been added and the classification itself has been updated and refined to reflect recent state-wide and range-wide analyses. Plant species compositional summary tables for each Community Type are available as downloadable MS Excel tables on each Ecological Community Group page. In addition to conceptual and nomenclatural changes to Ecological Groups and Community Types, refinements to the organization levels of the classification have been made that we hope will improve the user's experience.

In concert with the web content update, the Natural Heritage resource list, [Natural Communities of Virginia: Ecological Groups and Community Types: a listing with conservation status ranks](#) (PDF) has been updated to reflect recent classification changes. All changes since the 2013 version are listed in Appendix A. This downloadable document can function as a hardcopy list or an interactive digital document that links to further information about Virginia's Natural Communities. Natural Communities are central to the Division of Natural Heritage's mission of documenting, protecting, and managing Virginia's biodiversity. The Ecological Community Groups and Community types defined in this hierarchical classification developed by DCR-DNH Ecologists, provide ecosystem targets for inventory, mapping, research, monitoring, restoration, and conservation.



Screenshots from the updated website

Natural Heritage Stewardship Staff Presents to Virginia Native Plant Society – 5/18/17

DCR’s Chesapeake Bay Region Steward served as the speaker for the monthly meeting of the Northern Neck Chapter of the Virginia Native Plant Society. Presenting “Virginia’s Vanishing Orchids,” he introduced the 20+ attendees to the 26 state-listed rare orchid species in Virginia. Additionally, the current status of Virginia orchid conservation and immediate threats to rare orchids were discussed. Virginia is rich in orchid diversity with 62 native taxa having been recorded from across the state. However, 26 of these species are imperiled (S2), critically imperiled (S1), or presumed extirpated (SH) in the Commonwealth.



Heritage staff attends NatureServe Core Methodology Training – 5/23/17-5/25/17

Virginia DCR Natural Heritage Program's Data and GIS Specialist served as a trainer for NatureServe's Core Methodology Training in Arlington, Virginia from May 23-25. Core Methodology Training (CMT) is a hands-on introduction to standards, methods, and tools that are integral to the success of the NatureServe Network. Training consisted of several webinars and three in-person training days, including an afternoon collecting field data on a rare community and rare plant species at Cabin John Island in Great Falls Maryland. Sessions were held on species and ecosystem mapping and viability assessment, the use of NatureServe Network information, and challenges and opportunities in biodiversity conservation. Over 30 attendees from Natural Heritage Programs, Canadian Conservation Data Centres, and partnering agencies represented 14 states (including Virginia), Navajo Nation, and British Columbia. Core Methodology Training supports the consistent use of Natural Heritage standards and methods, and facilitates active partnership across the Network. Trainees gained a better understanding of the methodology behind their organizations' work, and how their local conservation efforts support the Natural Heritage Network to facilitate conservation impacts on a global scale.



CMT Trainees studying a floodplain forest natural community at Cabin John Island in the Potomac Gorge at Great Falls, Maryland.



CMT Trainers Don Faber-Langendoen, Senior Research Ecologist for NatureServe, and Danielle Kulas, GIS and Data Specialist with Virginia DCR's Natural Heritage Program.

Eagle Scout Project at Crow's Nest – 6/3/17

Scouts and parents with troop 850 with assistance from DCR staff assisted Cameron Close with his Eagle Scout Project at Crow's Nest Natural Area Preserve in Stafford County. Cameron's project involved the installation of 48-feet of boardwalk along a wet stretch of the Accokeek Creek Overlook Trail, located approximately 1/3 of a mile from the Brooke Road parking lot at Crow's Nest. In addition, six Eastern Redbud (*Cercis canadensis*) trees were planted in the median island within the parking lot. Approximately 15 people assisted in the completion of the project.



Crew at work on boardwalk (left), and new boardwalk section (right)

Webinar on ArcGIS Online Use, the Collector App, and Lessons Learned for the NatureServe Network – 6/8/17
The DCR Natural Heritage Data and GIS Specialist gave a webinar to NatureServe Network members entitled: ArcGIS Online, the Collector App, and Lessons Learned. The webinar gave an overview of VA Heritage’s many ArcGIS Online efforts, including hosting conservation planning models, RareQuest (a citizen science project), and a Natural Area Preserve operations database. The webinar primarily focused on the Program’s mobile data collection efforts and painted a broad but comprehensive workflow summary. The presenter discussed project design and implementation, gathering data with the Collector App, expert data review, and finally, data entry into Biotics, a web-based information management system to maintain data related to biological diversity used by most Natural Heritage Programs. Lessons learned included programmatic and technological limitations, room for improvement, as well as positive takeaways. Mobile data collection via the Collector App and ArcGIS Online has proven to be an avenue for harnessing previously untapped sources of data for the Virginia Natural Heritage Program, and many other programs are interested in following suit. The webinar was recorded and posted [online](#) for those who could not attend. About 40 Network members from North America attended the webinar, asked engaging questions, and gave great feedback.

Natural Heritage Staff Contributes to Community Helpers Study Trip – 6/9/17

The Eastern Operations Steward – Law Enforcement was involved in a “community helpers study trip” to Beaverdam Park, in Gloucester. Organized by the Officers from the Virginia Marine Resources Commission, second grade students from Botetourt Elementary School participated in several hands-on stations to learn about fishing, wildlife, bike safety, and patrol vehicles. Students also were able to learn about the different roles of the law enforcement in the agencies represented. Students learned how “park rangers” help take care of public lands through prescribed fire, trails building, and other management activities, in addition to our roles as officers. A highlight for the students was the patrol vehicle display, where the students were able to explore patrol vehicle and try on some duty gear and wildland fire PPE. Approximately 100 students participated, with assistance from DCR-Natural Heritage, DGIF, the Gloucester County Sheriff’s Office, New Kent County Sheriff’s Office, VMRC, and the York-Poquoson Sheriff’s Office. The Gloucester Wal-Mart generously donated all of the supplies for a picnic lunch, and a local tackle shop donated bait and tackle supplies for fishing.

Virginia Hosts National Dragonfly Society Meeting – 6/7/17 – 6/12/17

The annual meeting of the Dragonfly Society of the Americas was held in Virginia for the first time. Approximately 90 attendees came from 26 states ranging from New Hampshire and Vermont south to Florida and Texas and west to Arizona, Oregon, and Washington, as well as Ontario, Canada and Brisbane, Australia. Pre-meeting field trip destinations included Chub Sandhill Natural Area Preserve and Pocahontas State Park, as well as various locations along the James River. The main meeting was held at Mary Baldwin University in Staunton, with field trips to various destinations in western Virginia. The Natural Heritage Staff Zoologist was a key member of the planning/host committee for the meeting. He organized and moderated the oral presentation program, prepared checklists of known species distribution records, led field trips, and gave the opening

presentation entitled “History and Current Status of Odonatology in Virginia, with Emphasis on the Distribution and Conservation of the Fauna.” A total of 105 species of dragonflies and damselflies was observed during the field trips, thus accounting for more than half of Virginia’s fauna of 195 species, the second highest total of any state. Among these were 12 rare species monitored as natural heritage resources by the Division of Natural Heritage, yielding four new element occurrence records and updates for 11 other occurrences.

Two Natural Heritage Staff Graduate from Virginia Natural Resources Leadership Institute – 6/19/17
The Northern Region Steward and Species Modeling Project Manager received certificates of completion from the Virginia Natural Resources Leadership Institute (VNRLI, <http://vnrl.ienvirginia.edu>). The mission of VNRLI is ‘to develop leaders in the Commonwealth who can help groups involved in contentious natural resources issues move beyond conflict toward consensus building and collaborative problem solving.’ The curriculum included six three-day meetings (each set in different regions of Virginia) with field trips, panel discussions, guest lectures, small and large group discussions, related readings and peer coaching. Participants included colleagues from non-profits, state and federal agencies, and private corporations. VNRLI is a collaborative effort by the Institute for Environmental Negotiation at the UVA, Virginia Cooperative Extension at VA Tech, Virginia DCR and Virginia DOF.

Natural Heritage at Richmond Kickers Game – 6/24/17

The Natural Heritage Program gathered in the field-level party area at a Richmond Kickers game for good food, comradery, and an exciting soccer match. The party was well attended by friends and family of Natural Heritage staff as well as colleagues from DCR, who all personally purchased special tickets to reserve the Party Deck. Natural Heritage signs and a staffed display board were used to provide information about the Natural Heritage Program.



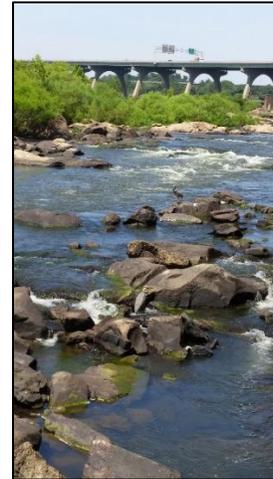
Natural Heritage Staff educated the public about the program’s mission at the game.

Heritage Staff Gives Invasive Species Presentation – 6/25/17

DCR Stewardship Biologist joined a panel presenting invasive species issues and strategies to Nelson County residents. Held at the Rockfish Valley Community Center, the panel included representatives from the Department of Game and Inland Fisheries, Department of Forestry, Blue Ridge PRISM, USDA Natural Resources Conservation Service, and Conservation Services, Inc. Over 50 people attended the event, which took place from 2 to 4:30 pm. The DCR Stewardship Biologist presented a clear definition of invasive species, alerted attendees to the growing threat of wavyleaf grass, and shared information about two apps to assist identification and mapping of invasive species. Participating organizations loaded tables with information handouts. The event was sponsored by Devil’s Backbone Brewery.

Community Service-Pipeline Trail Clean-Up – 6/29/17

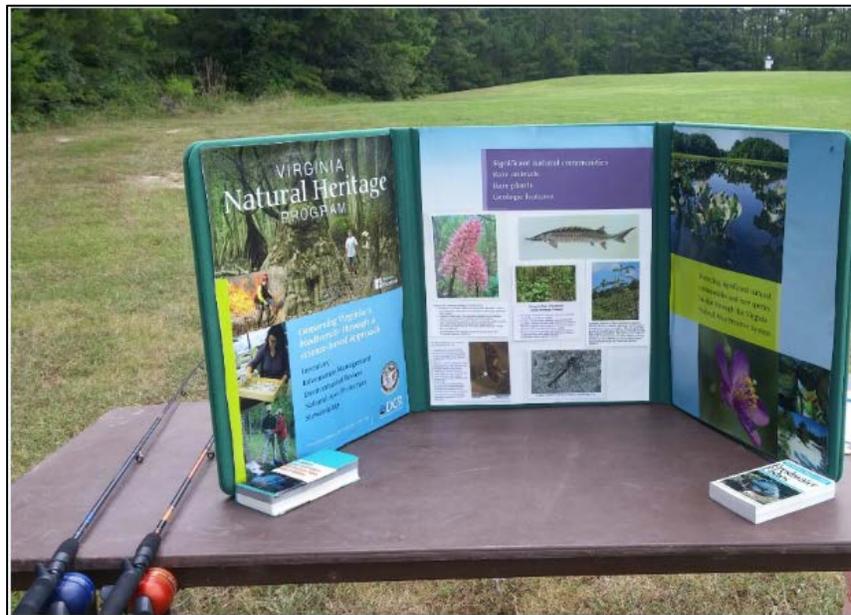
Heritage Staff participated in a clean-up along the James River Pipeline Trail. In total, 4 bags of trash and 2 bags of recyclable items were collected including tires, shoes, glass bottles, etc. The DIY clean-up was sponsored by the James River Association.



Heritage Staff- Left to Right- Andrew Summers, Megan Rollins, Alli Baird, Tyler Meader, David Boyd, and Rene' Hypes-not pictured

Heritage Outreach at Henrico Adventure Race – 7/28/17

The Natural Heritage Project Review Coordinator manned one of the checkpoints for an adventure race held at Dorey Park in Henrico County. The race was the finale event of a week-long camp where children developed skills in geocaching, archery, canoeing, bicycling, and many other outdoor activities. Natural Heritage was represented at the event with a display board of natural heritage resources found in Henrico County. Seventeen children and more than twenty adults including volunteers and parents participated in the event.



Henrico Adventure Race- Natural Heritage Display at Checkpoint 6

Citizen Science Box Turtle Population Survey and Monitoring Workshop – 7/31/17

Members of the Eastern Shore Virginia Master Naturalist Chapter gathered at Savage Neck Dunes Natural Area Preserve to learn about surveying and monitoring for box turtle populations. The workshop was led by Dr. Pablo Delis, Professor in Biology (Herpetology) at Shippensburg University (Pennsylvania) who is conducting reptile and amphibian surveys at Savage Neck Dunes as part of his research on the Eastern Shore. Dr. Delis

presented information on common reptiles and amphibians of the Eastern Shore and facilitated a field-based workshop on box turtle life history, habitat and monitoring methods. Master Naturalists were taught how to handle turtles, gather relevant data such as sex, size and approximate age, and how to mark turtles for a mark-recapture study. This was a valuable learning experience for Master Naturalists and provided new knowledge about the box turtle population at Savage Neck Dunes NAP.



Master Naturalists learn about reptiles and amphibians of the Eastern Shore and how to monitor box turtle populations.

Natural Heritage Staff Engage with the Public at Maymont Park Festival – 8/6/17

The Natural Heritage Program was represented by project review and protection staff at the “RARE at Maymont” Festival on Sunday, August 6. At least 680 people visited the exhibit, featuring a live purple pitcher plant, dragonfly specimens, hands-on activities, Natural Area Preserve information, and more. Other exhibitors included PBS, Virginia Sea Grant Fellows, Maymont’s Environmental Education Program, Virginia Master Naturalists, and many others. The event was organized in conjunction with a new PBS television series called Rare: Creatures of the Photo Ark which is airing now.



Natural Heritage staff working with a visitor to the Heritage table during the Rare at Maymont festival

Workshop on Marine Debris Emergency Response – 8/2/17-8/3/17

DCR’s Eastern Shore Region Steward participated in a stakeholder workshop on Marine Debris Emergency Response. Organized by NOAA’s Marine Debris Program, the workshop brought together coastal resource staff from federal, state and local agencies to discuss available resources and current challenges in responding to marine debris emergencies. The goal was to gain a better understanding of the roles of coastal stakeholder agencies and produce a regional guide that can be used to coordinate cleanup efforts after severe marine and near-shore debris-generating events. The Eastern Shore Region Steward presented an overview of how DCR responds to debris emergencies, with a focus on the challenges presented by the presence of Natural Heritage Resources.

Presentation at the American Chemical Society – 8/20/17

The DCR-Natural Heritage (DCR-NH) Director gave an invited presentation at the 254th annual conference of the American Chemical Society in Washington, D.C. This year's conference, attended by private and government sector professionals from an array of related fields, was themed Chemistry's Impact on the Global Economy. A talk entitled "Making better environmental decisions using Virginia's Natural Heritage Data Explorer (NHDE)" was delivered in the session, "Risk Assessment & Beyond: Innovative Approaches to Meet FIFRA [Federal Insecticide, Fungicide and Rodenticide Act] & ESA [Endangered Species Act] Consultation Needs". This talk shared innovations, efficiencies and success of the use of DCR-NH's NHDE as well as the use of Species Distribution Modeling in the environmental review process. Approximately 40 attendees representing universities, federal natural resources agencies, state Natural Heritage Programs, non-profits and private corporations were present.

Heritage Staff Meet with Public at Films On The Floodwall Event in Richmond – 9/13/17

DCR-Natural Heritage Project Review staff participated in the Films on the Floodwall film screening. The event was held at Diversity Park, and screens locally made films that focus on the James River. The Natural Heritage display board focused on the Atlantic sturgeon and the St. Croix snaketail, to illustrate some of the species that rely on the James River and the importance of efforts to continue improving the overall health of the river.



Natural Heritage Staff Gives Educational Presentation to Soil & Water Division Staff – 9/21/17

The Natural Heritage Project Review Coordinator presented an overview of the Natural Heritage program to 15 DCR Division of Soil and Water (DSW) staff at the Tappahannock Regional Office. The Virginia Wetland Catalog and the Virginia ConservationVision models emphasizing the Agricultural model were included in the presentation as potential tools for the DSW and the Soil and Water Conservation Districts (SWCDs) they work with. The Conservation Planning Tool developed by DSW was also highlighted. This tool includes natural heritage data and is used by some SWCDs to conduct preliminary screening for rare, threatened, and endangered species. Future Natural Heritage Data Explorer (NHDE) training sessions were proposed by the group for SWCDs within the Warrenton District and at the Virginia Association of SWCDs summer meeting in 2018.

Heritage Staff Volunteer at Maymont Park – 9/27/17

Five DCR-Natural Heritage volunteers assisted Maymont with a revitalization project at the Children's Farm. The Natural Heritage volunteers moved and spread a large amount of woodchips to the natural play area, which got immediate use upon completion. The volunteers educated the staff at Maymont and the public about the mission and work of the Natural Heritage Program.



DCR-Natural Heritage staff at Maymont volunteer event

Land Conservation

Natural Heritage Data Management Totals for FY2016:

Activity 04-01-17 – 9-30-17

New Mapped Locations (EOs) - 50_
Updated Mapped Locations (EOs) - 98
New Conservation Sites – 23
Updated Conservation Sites - 39

Total Number in Database:

Animal Mapped Locations (EOs) – 603
Plant Mapped Locations (EOs) – 1211
Community Mapped Locations – 572
Conservation Sites – 582

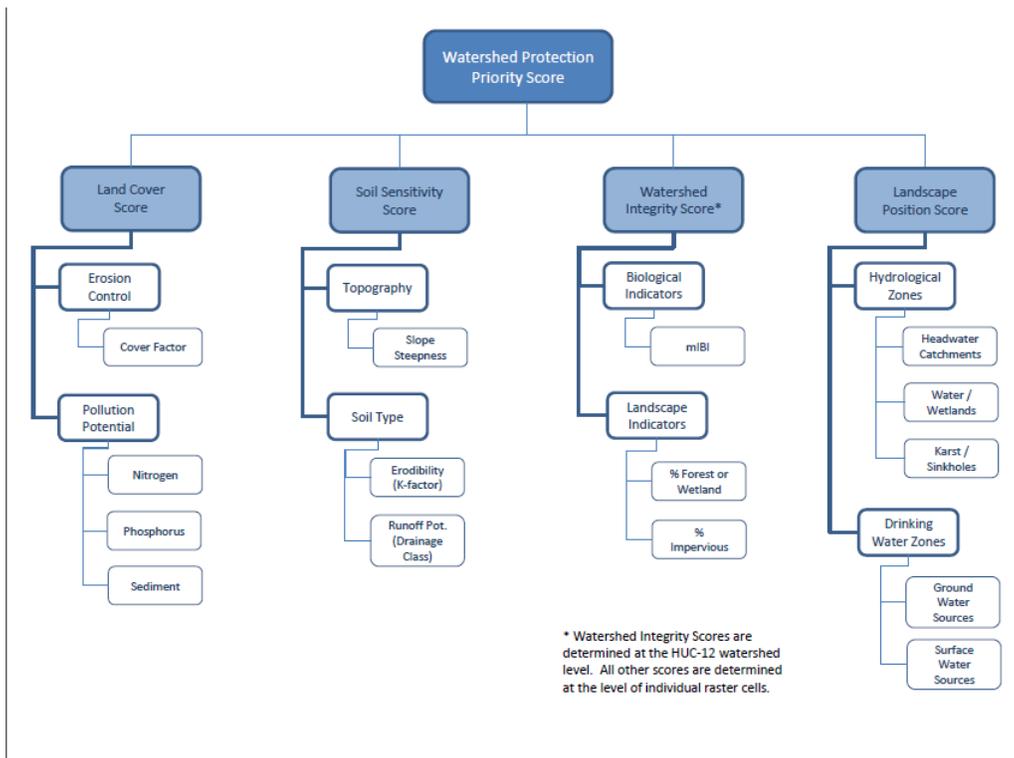
Managed Areas: (Acres added 04-01-16 – 9-30-17) -54, 737.21 Acres
Mapped Tracts: (total in coastal zone) – 4291 Tracts
Mapped Managed Areas: (total in coastal zone) - 3194 Managed Areas

For the grant reporting period, the Environmental Scientist/Analyst with the Virginia Commonwealth University, Center for Environmental Studies in the Department of Life Sciences continued to serve as the Program Manager of the Virginia Healthy Waters Program at the Virginia Department of Conservation and Recreation, Division of Natural Heritage.

The Healthy Waters Program is supported through funding from several grant sources including the VA CZM Section 306, US EPA Section 319 Nonpoint Source Program, and the Chesapeake Bay Implementation Grant. These sources fund various aspects of the Program including the administration and oversight, Program growth and expansion, improvement in capacity, acquisition and analysis of new data and data integration.

Programmatically, the assessment of program resources and needs has continued to determine gaps and areas of improvement. Data integration, geographic expansion and data re-sampling continue to be the top focal areas of the analysis with immediate attention addressed to integrate existing INSTAR data into the DNH data explorer and the creation of new Ecological Occurrences (EOs) and Stream Conservation Units (SCUs). Challenges to administering the Program are development of new data to complete the statewide coverage, and the resource and staffing needs to conduct field assessments. For the 2017 field season, two Heritage staff participated with the VCU field crew and were supported with CZM funding. This increased capacity in the program is a critical advancement in the program within the Division of Natural Heritage and permits the collection of data by additional field personnel aside from specific grant related activities. This process provides the Healthy Waters Program the ability to identify and track trends in Healthy Waters.

While VDCR DNH has directed staff to include collecting data relevant to the HWP, the data will be in a raw form still requiring the development of models to interpret such information to make relevant to the Program, as a whole. The development of an INSTAR model is typically done on a basin scale to provide for comparable results within a defined area. The collection of raw data will permit an additional cataloging of resources to further inform the development of an INSTAR model when resources are present for the specific region or basin. The Watershed Integrity Model, used and developed by the Natural Heritage Division and VCU, has been updated and streamlined to improve the utility and integrate new data from the latest sampling. The new model is referred to as the ConservationVision Watershed Model. This new tool includes four primary components are: Watershed Integrity, Landscape Position, Soil Sensitivity, and Land Cover. A survey was distributed to stakeholders and potential users of the new model to obtain feedback on the changes and proposed weighting of various parameters. The components of the model were informed by the integration of factors and weighting of parameters that included hydrological zones, topography, and pollution potential. Presentations have been made at several venues to vet the new model.



The Program Manager continued to participate in the Chesapeake Bay Program Healthy Watershed Goal Implementation Team to coordinate the involvement of VA Departments of Conservation and Recreation, Environmental Quality and Forestry. To continue the progress being made by the Commonwealth, the HW Program Manager coordinated with the Heritage Division staff to begin the process of conducting a threat assessment to the 2014 HW sites in the Chesapeake Bay. The outcome is an identified list of HW sites that are most vulnerable to changes and most likely to be lost to future changes.

Additionally, during the reporting period, the Program Manager worked with Heritage data manager staff to begin the prioritization of ecologically healthy SCUs in the Commonwealth. This prioritization process would directly inform the identification of the most valuable SCUs to focus conservation and protection actions ensuring ecologically healthy aquatic conditions are maintained. This activity bridges the DNH Sections of Healthy Waters, Protection and Stewardship. The HWP also met with USEPA Region 3 Office to discuss better integrating HWP data into the Watershed Resources Registry (<http://watershedresourcesregistry.com/>).

c) DCR – Division of Outdoor Recreation

Virginia Outdoors Plan

The Virginia Inventory of Outdoor Recreation Facilities and the Virginia Outdoors Survey has recently been completed. Results are on the DCR website at <http://www.dcr.virginia.gov/recreational-planning/vop>.

The 2017 inventory of outdoor recreation facilities was completed by 92 percent of Virginia localities. The inventory records the public outdoor recreation facilities located in each jurisdiction. DCR is working with localities and the National Recreation and Parks Association to use this data to populate a national recreation database.

The Virginia Outdoors Demand Survey is the foundation for the Virginia Outdoors Plan. DCR conducts the survey every five years to gauge the level at which Virginians participate in specific outdoor recreation activities. In 2017, the random survey was administered by the University of Virginia Center for Survey Research. The survey was mailed to nearly 14,000 households, and 3,375 responded.

5) Department of Game and Inland Fisheries (DGIF)

Fisheries

1. Stream Monitoring, Adult Anadromous Fishes:

Weekly boat electrofishing for adult anadromous fish began at the beginning of March 2017 on several Chesapeake Bay tributaries and continued through early June. The James River was sampled in the tidal/non-tidal interface area at the lower end of the fall zone and other fall zone areas such as just below Boshers Dam (vertical slot fishway). The Rappahannock was sampled in the tidal area just below the tidal/non-tidal interface at Fredericksburg and at Motts Run (five miles upstream of the former Embrey Dam that was removed in 2004/2005). The Chickahominy River was sampled above and below Walkers Dam (Denil fishway). The Appomattox was not sampled in 2017 due to the two project technicians moving on to full time employment and delays in hiring approval for one technician. Rappahannock tributary sampling for herring was limited to one day for the same reason.

A total of 94 adult American Shad were collected from the James for otolith analysis (oxytetracycline mark on hatchery fish) in 2017 just short of the annual goal of at least 100 (last achieved in 2015). A total of only 39 American Shad were collected from the upper tidal Rappahannock (only six in 2016, 13 in 2015, and 65 in 2014). Otoliths were extracted during the spring and origin analysis is in progress.

Boat electrofishing data is expressed as catch per unit of effort (CPUE) and is used to track the inter-annual trend of relative run strength per target species. On the James in 2017, American Shad catch rates were below the long-term averages at most sites. James Hickory Shad and Alewife were also less abundant than average while Blueback Herring catch rates were well above the long-term average. On the Rappahannock, American Shad, Hickory Shad, and Blueback Herring catch rates were above average while Alewife was unusually below average. It's worth noting that a few Hickory Shad and Alewife were found in the Rappahannock about five miles upstream of the Embrey removal project. This is not unusual for Alewife but Hickory Shad were last documented this far upstream in 2005.

Alewife and Blueback Herring were documented upstream of the double channel Denil fishway at Walkers Dam on the Chickahominy River as part of the inaugural effort to obtain a herring run count through the fishway using an electronic counter. Making an actual run count estimate was not possible due to technical difficulty with the new electronic counting device. However, a substantial amount of useful information was obtained about herring passage at this facility (e.g., successful periodic trapping of herring in the fishway exit channel). The manufacturer is working on the device and it will be redeployed in spring 2018 to try again to work toward the goal of establishing an annual run count at this location. With the absence of commercial and recreational harvest numbers this type of run count is critical to evaluating the overall health of herring populations.

Striped Bass were also collected in the upper tidal James and upper tidal Rappahannock boat electrofishing samples. In addition to CPUE, length and weight data was collected for additional analysis. In both rivers the 2017 CPUE was higher than the 15 year averages.

2. Stream Monitoring, Juvenile Anadromous Fishes:

2016 Update: Juvenile alosine push net sampling was conducted from June into early September on the James (Boshers pool) and on the tidal Rappahannock from June through July. No alosine juveniles were found in the Boshers pool. In the tidal Rappahannock, over four sample nights, the average American Shad density from six pushes per night ranged from 0.9/100m³ of water sampled to 3.8/100m³. Blueback Herring ranged from 2.6/100m³ to 147/100m³ and Alewife ranged from 0/100m³ to 2.9/100m³. Boat electrofishing began in August and continued through September also resulting in the collection of target fish from the tidal Rappahannock at Fredericksburg and Port Royal. American Shad juveniles were not found in boat electrofishing samples in the Boshers pool. However, in October, a few Blueback Herring juveniles showed up in other community sampling conducted 37 miles upstream of Boshers Dam at Cartersville. Blueback Herring were not observed passing through the fishway but a few have been counted in past years so it is possible that some herring did pass the fishway and successfully spawned in the spring of 2016. A total of 90 American Shad were collected by boat electrofishing in the tidal James and two in the fall zone upstream of Brown's Island Dam (second dam upstream in Richmond). These two shad were of hatchery origin. Of the 90 upper tidal James shad that were processed 25.6% were wild and 74.4% were of hatchery origin. This confirms survival of some portion of the shad fry stocked upstream of Boshers Dam (only one million in 2016) and some natural reproduction in the system. All Rappahannock American Shad juveniles in 2016 are known to be of wild origin. Sampling is still conducted on the Rappahannock to monitor habitat use, relative abundance and growth rates, which are also goals on the James.

2017 Progress: Sampling using a bow-mounted push net was conducted from June into early September on the tidal James and in the Boshers pool from June through August. Push netting was conducted on the tidal Rappahannock from June through July. Rappahannock collections were typical for American Shad and herring juveniles. American Shad juveniles were again absent in the Boshers pool in 2017 (last collected in Boshers pool in 2015) while four American Shad juveniles were collected in the tidal reach and the wild to hatchery ratio was 1:1.

Boat electrofishing for juveniles was conducted in July and August on the tidal Rappahannock at Fredericksburg and Port Royal resulting in typical numbers for American Shad and Blueback Herring. More sampling may be conducted in October and November to monitor outmigration. Shad juveniles were absent from electrofishing in the Boshers pool on the James in July and August. Only 1.8 million American Shad fry were stocked at upstream locations in 2017. This may help to explain the reduced opportunity to collect juveniles upstream of Boshers Dam in 2017. Typically, electrofishing in the tidal James, especially at some of the power plant discharge locations, results in the collection of American Shad but to date in 2017 American Shad have been absent in samples. Blueback Herring were found in the tidal James earlier in the summer but were absent in collections until the end of September. Boat electrofishing will continue in October and November to collect American Shad for origin analysis and to monitor outmigration. Oxytetracycline treatment of fry in the hatchery results in a visible ring in the otoliths (earstones) under black light. Otoliths are extracted from the American Shad juveniles collected in the James and examined to determine origin. American Shad fry stocking operations have ceased on the Rappahannock so all juveniles collected are known to be of wild origin.

3. Boshers Dam Vertical Slot Fishway (James River mile 113):

2016 Update: In 2016, the 15 minute per hour digital video sub-sampling approach was modified to randomly select the ¼ hour increment. The total number of a given species is estimated by multiplying the 15-minute count by a factor of four. In 2015 a total of 1359 hours (1159 day and 200 night) of digital video were reviewed yielding an estimate of 68 American Shad with 94% passing during daytime hours (0600 to 2100). In 2016, 1184 daytime hours reviewed resulted in an estimate of only 36 American Shad passed. The Sea Lamprey estimate for 2016 is 2,840, which is similar to the 2015 estimate. The nighttime hourly passage rate for Sea Lamprey was 7.1/hr while the daytime rate was 1.2/hr. The Gizzard Shad passage estimate for 2015 is 74,288 and 65,456 for 2016. The long-term average for Gizzard Shad passage is approximately 82,000 passed annually. It is worth reiterating here that the boat electrofishing CPUE in 2016 just below Boshers Dam was

also much lower than in 2015 continuing the declining trend. The American Shad passage estimates for 2012-2016 are as follows: 188, 180, 24, 68 and 36. The 18-year average is 179 with peaks of 751 in 2002 and 696 in 2011. The Chesapeake Bay Program submits an annual Bay health report and one of the indicators used is American Shad abundance. The Boshers fishway count is one of the essential components of the American Shad abundance indicator.

4. Fish Passage Projects:

Harvell Dam was removed from the Appomattox River in the summer of 2014. Photo documentation of the site for five years is a requirement of the USACE permit. The first and second year reports have been accepted by the USACE permit representative. Photos were taken in June 2017 for the third year report.

A nature-like fishway at a raised culvert on Claiborne Run (tidal Rappahannock tributary at Fredericksburg) was completed in 2015 as part of Stafford County's mitigation plan for the construction of Rocky Pen Run Reservoir. We are continuing to work with the Stafford County's consulting firm to monitor the site for all fish species to document colonization of the stream restoration structure and passage of migratory species. Weekly monitoring was scheduled for spring 2017 but only one sample was conducted due to a lack of fish passage staff.

The removal of Monumental Mills Dam from the Hazel River in Culpeper County was completed in October 2016. Under the advice of the Office of the Attorney General (DGIF's legal counsel) the DGIF acquired the dam (only the dam, no land) in July 2016 to provide the best path forward for removal. Removal of the dam began on October 6, 2016 and was completed on October 11th. The first 75 feet of the dam on river left down to the natural stream bottom was demolished with a hydraulic hammer mounted on a track-hoe. The next 20' was tapered off at an angle from the bottom to the top and the final 40', roughly, on river right was left untouched. A track excavator was used to remove the debris from the river. This achieved restoring the bank-full capacity of the stream channel based on a nearby reference cross section. Per the historical MOA the concrete foundation of an old hydropower facility on river right had to be preserved. Leaving a portion of the dam "as is" on river right created a buffer for the old hydropower building remains. Upon lowering the water level the remains of a timber and rock crib dam were discovered approximately 50' upstream of Monumental Mills Dam. The feature was documented by the U.S. Fish & Wildlife Service's (USFWS) historical firm (photos and sketch) and after obtaining Virginia Department of Historic Resources/Virginia State Historic Preservation Office and USFWS permission this structure was also removed except for an example section that was left intact on the river-right bank. Both DGIF and USFWS partners continue to visit the site to monitor post-removal conditions that have been encouraging to date.

Chandlers Dam, a DGIF operated fishing lake dam near Montross failed in 2015. A Denil fishway was constructed in 1995 when the dam was reconstructed following a failure at that time. The 2015 failure occurred at the principal spillway and under the adjacent fishway. Major renovations are being planned for the dam including building a pool and weir fishway to provide passage for American Eel, resident fish species and possibly herring if they reach the dam during any future springs. Downstream beaver activity is likely the limiting factor for herring migration upstream to this dam. The project is undergoing further review and additional field testing may be needed to refine the dam reconstruction design and possibly the fish passage design as well. No timeline for completion is available at this time.

5. American Shad Egg Collection from Potomac River:

The DGIF conducted American shad egg taking efforts in the spring of 2017. This marked the twenty-sixth season overall since American shad restoration efforts began in 1992. Eggs collected from this river were used to stock the James River for restoration purposes. This was the first year eggs collected on the Potomac River in the vicinity of Fort Belvoir were used to stock the James River. Egg collections were contracted to a private consulting firm; this firm conducted drift gill netting efforts on 13 nights. Strip-spawned eggs were sent to the Harrison Lake National Fish Hatchery (HLNFH). Hatchery-raised fish were marked with oxytetracycline

(OTC). HLNFH stocked a total of 1.8 million OTC tagged shad fry in the upper main stem of the James River at Scottsville (JRK 300).

6. Stream Fish Community and Recreational Fisheries Stream/River Sampling Summary:

During this reporting period, using boat electrofishing techniques primarily, DGIF conducted survey work, on sections of a multitude of streams which drain into the geographic area covered by the CZMP. Extensive sampling of stream fish communities occurred in the James, Rappahannock, Shenandoah, and York drainages. Relative abundance indices were generally obtained for all species surveyed, for recreationally important species additional parameters were examined, including analyses of age structure and growth rates based on examination of otoliths.

7. Tidal River Catfish Monitoring and Population Trend Detection

In 2017, DGIF Fisheries biologists sampled catfish in two rivers: 1. James River below Richmond (Henrico County/Chesterfield County) downstream to near Chickahominy River confluence (James City County/Surry County), and 2. Pamunkey River within King William County/New Kent County boundaries.

These surveys occurred as part of an ongoing effort to monitor the catfish assemblage in Virginia tidal systems – tributaries of Chesapeake Bay – that began in the mid-1990's; a primary focus on the introduced blue catfish populations which occur in these systems. Blue catfish populations all Virginia tidal systems (Rappahannock, York, James) where blue catfish have been established for several decades are experiencing declines in individual growth associated with increasing density (fish per area). These shifts in growth combined with ongoing changes in various other population parameters for blue catfish make it difficult to determine what the eventual impacts of this introduced species will be on other resources and species of concern in these tidal systems.

A mark-recapture effort to evaluate the population of Flathead Catfish was completed in May 2017. This study focused on areas within the Dutch Gap Conservation Area on the James River.

8. Tidal River Blue Catfish Diet and Modeling Research Project:

Given the variability observed in blue catfish food habits in Virginia tidal rivers, DGIF has contracted with researchers at Virginia Tech to conduct a multi-year, multi-river, multi-habitat, multi-seasonal assessment of blue catfish food habits. At the conclusion of the multiyear fieldwork component of the study the researchers have been asked to assess blue catfish diet, and model impacts on other species at the population level.

The goal of this project is to develop the data required to inform discussions and assessments of potential impacts of blue catfish on other species in the Chesapeake Bay watershed. Data that are currently lacking – we lack the understanding to make informed statements of impact in most cases.

9. Tidal River Catfish Monitoring and Population Trend Detection:

In 2017, DGIF Fisheries biologists sampled catfish on the James River below Richmond (Henrico County/Chesterfield County) downstream to near Chickahominy River confluence (James City County/Surry County).

This survey occurred as part of an ongoing effort to monitor the catfish assemblage in Virginia tidal systems – tributaries of Chesapeake Bay – that began in the mid-1990's; a primary focus on the introduced blue catfish populations which occur in these systems. Biological data (length and weight) and age and growth data was collected during the surveys. Blue catfish populations occur in all Virginia tidal systems (Rappahannock, York, James) and have been established for several decades. Currently populations are experiencing declines in individual growth associated with increasing density (fish per area). These shifts in growth combined with ongoing changes in various other population parameters for blue catfish make it difficult to determine what the

eventual impacts of this introduced species will be on other resources and species of concern in these tidal systems.

10. Chickahominy River Largemouth Bass Stocking Project:

In June 2017, DGIF biologists stocked 114,000 fingerling 2-inch largemouth bass into mainstem and tributaries of the Chickahominy River. Stockings targeted at locations with ample habitat (woody debris/vegetation). Previous stocking evaluations showed high contribution of stocked fish existing in the fishery following stocking, and the project likely improved angling. Sampling will occur in fall 2017 to evaluate success of recent stockings.

11. Assessment of Critical Habitats for Recovering the Chesapeake Bay Atlantic Sturgeon Distinct Population Segment:

In 2017, DGIF biologists conducted periodic maintenance of the James River Atlantic sturgeon receiver array, conducting receiver maintenance and data download and maintenance for 26–28 receiver stations distributed in the tidal river from Richmond (Henrico County/Chesterfield County) downstream to Newport News (Newport News/Isle of Wight Count). Receiver deployment is intended to be part of an ongoing effort to track Atlantic sturgeon movements within the tidal James River system. DGIF conducts this maintenance in cooperation with NOAA, U.S. Fish and Wildlife Service, Virginia Commonwealth University, and Virginia Institute of Marine Science.

II. Migratory Game Birds:

1. Breeding Waterfowl Survey:

Virginia participates in an Atlantic Flyway breeding waterfowl survey in the spring of each year. Breeding data collected in Virginia is combined with traditional breeding survey data from the northern breeding regions to allow the Atlantic Flyway to more effectively manage its waterfowl populations. The survey results are being used to develop Adaptive Harvest Management models specific to the Atlantic flyway.

In Virginia, 165 plots (each 1km x 1km) were surveyed in April/May 2017 to assess the numbers of local-breeding waterfowl. The mallard pair estimate (19,131) decreased 10% (21,140) from 2016. Black duck pair estimates (1537) increased 81% from last year (292). Wood duck pair estimates (15,167) decreased 21% from last year's estimate (18,399). The breeding pair estimate for Canada geese (36,233) decreased 15% from 2016 (41,871).

2. Resident Canada goose Banding:

In June and July of 2017, 754 resident Canada geese were captured and banded in Virginia's Coastal Zone as part of an Atlantic Flyway resident Canada goose monitoring project. Band recovery information is used to evaluate survival, movements, population estimation, migration corridors and for discerning breeding and wintering affiliations. Information from banding studies has helped develop specific management strategies including special hunting seasons, such as those for resident Canada geese. Data collected on resident geese in Virginia during the past 10 years has been used to delineate local goose distribution and density within the state. This information was used to support the September resident Canada goose season that has been conducted in Virginia since 1993.

3. Pre-season Waterfowl banding:

DGIF conducted pre-season waterfowl banding efforts during August and September of 2017, prior to the fall and winter waterfowl hunting seasons. Birds were captured by "night-lighting" from an airboat and with baited swim in traps in five locations in Virginia's Coastal Zone. In 2017, there were a total of 364 ducks banded, including 253 wood ducks, 11 mallards, 2 green-winged teal, 5 blue-winged teal and 1 Northern pintail. This banding data provides important information used to manage populations, establish hunting seasons and evaluate other management programs. Specific objectives of pre-season waterfowl banding is to determine: 1) distribution of harvest from breeding and wintering areas, 2) changes in harvest pressure as measured by

recovery and harvest rates, 3) annual and long-term survival rates of specific populations. The focal species in Virginia pre-season banding efforts are wood ducks that breed locally throughout the states.

4. King Rail and Clapper Rail:

The King rail, a priority species in the VA Wildlife Action Plan, is primarily associated with freshwater marshes. The lower-ranked clapper rail is associated with coastal saline marshes and is more abundant than the King rail in VA. Due to the secretive nature of these species during the breeding season, they are most effectively documented via their responses to call-broadcast surveys. However, the vocal characteristics of the two species overlap broadly, such that it is difficult to distinguish between them with reliability and consistency. In fact, identification to species is most often surmised based on characteristics of the surrounding habitat. This problem is further complicated because the two species can hybridize in areas of co-occurrence, further adding to the potential for misidentification. Within VA, the two species are thought to be abundant, sympatric and potentially hybridizing on the Mattaponi and Pamunkey Rivers in an area of intermediate salinity. Addressing conservation efforts toward the higher-priority King rail in this geographic area requires reliable information on its status, distribution, abundance and habitat use. This in turn requires a methodology to reliably identify the species in the field or through post-field analysis of the data collected. This is being addressed through a three-year contract with West Virginia University (WVU) with participation by DGIF. This project draws on links between acoustic monitoring, genetics, morphology and ecology.

2014 was a pilot year during which various rail trapping techniques were tested. Unfortunately none were successful, with the exception of dip net captures via airboat, which for various reasons were deemed not appropriate for use during the rail breeding season. Work in 2015 focused on marshes along the Pamunkey River, and included lethal collection of rails (as a substitute for live captures), deployment of autonomous recording units (ARUs) in target marshes, playback surveys targeting the two rail species, and vegetation sampling. The third and final year of field data collection took place in 2016 in the marshes along the Mattaponi River and duplicated the protocols used in 2015.

In order to allow more time for analysis and interpretation of the data collected, the project timeline has been extended until May 2018. As such, there are currently no updates to report. A manuscript arising from the work, 'Diel Variation in Detection and Vocalization Rates of King (*Rallus elegans*) and Clapper (*R. crepitans*) Rails in Intracoastal Waterways' is currently in press, to be published in *Waterbirds* in September 2017.

III. Wetlands:

1. Mitigation Banking:

DGIF continues to participate on the Inter-Agency Review Team that oversees stream and wetland mitigation banking and provide input on new banks all over Virginia, including the coastal zone. Numerous proposals have been made for new banks and/or additions to existing banks within the coastal region of Virginia during this reporting cycle. DGIF is also now part of the IRT overseeing the Virginia Aquatic Resources Trust Fund projects.

IV. Nongame Species Monitoring and Research:

1. Nongame Birds:

a. Bald Eagles

Bald Eagle populations have increased dramatically over the past 30 years across North America. The Chesapeake Bay Region (CBR), which houses one of the densest populations of Bald Eagles in North America, has experienced nearly a 20-fold increase of breeding pairs of Bald Eagles, since the 1970s. During the early 1970s VA had only ~30 breeding pairs of Bald Eagles; there are now more than 1,000 breeding pairs in the coastal plain during 2017, and more than 2,000 across the CBR. Moreover, the CBR houses thousands of migrant Bald Eagles from northern and southern states during mid-winter and mid-summer, respectively. In addition, there are large numbers of resident, non-breeding individuals, of multiple age classes, that exploit the CBR's rich prey resources and high quality habitat. As populations of Bald Eagles have increased so have

conflicts with human activities. Two of the most pressing management issues wildlife agencies face in the Mid-Atlantic region are: 1) eagle collisions with military and civilian aircraft and 2) the potential negative impacts that commercial wind facilities may have on eagles due to strikes with turbines. Both of these issues are important to human safety and economic development, as well as conservation of VA's natural resources. In addition, although bald eagle populations have recovered, human activity still impacts them and it is important to understand the scope and consequences of these impacts to eagles.

Air-strike: The extremely high abundance of non-breeding eagles and the high density of breeding pairs in the coastal plain of VA correlate with an increase in the number of eagles struck by aircraft in the commonwealth over time (4 collisions with aircraft in 2010, 2 in 2011, greater than 6 in 2014, and several in 2015 and 2016). Due to the large size of Bald Eagles they are ranked as an extremely high air-strike hazard to civilian and military aircraft (Dolbeer and Wright 2009). Currently, DGIF, USDA-WS, and numerous airports and military Air Stations are dealing with ongoing efforts to reduce the risk of air-strikes with eagles. Although, none of these bird strikes has led to human fatalities, the risk is always present and the economic damage is significant. The DGIF and USDA-WS are faced with novel management challenges throughout the commonwealth, related to issues concerning reduction of strike hazard with eagles. Due to a lack of scientific information concerning ranging behavior and flight characteristics of Bald Eagles, scientifically sound management recommendation are at present, challenging to make or implement. The first goal of this project is to acquire information that will enable wildlife managers the ability to make sound and scientifically based decisions to abate air-strikes with Bald Eagles. The primary way this project will acquire these vital data is to model risk to aircraft from bird strike using highly detailed data on how Bald Eagles fly and use airspace. These models will include elements of circadian rhythms, interactions with weather, and the influence that landscape has on eagle behavior. DGIF proposed to telemeter 30 adult individuals from nesting pairs, 30 nestlings, and 30 non-breeding eagles with high resolution GPS-GSM telemetry systems. These units provide data on the birds GPS location, including location and flight altitude, at 15-minute intervals. DGIF will also program units so that one day out of every two weeks they will collect data at 30 second intervals, so DGIF can sample intimate details of eagle flight. With these data in hand, DGIF can then evaluate the risk that Bald Eagles pose to aircraft at different times of year. Risk assessment will provide managers and pilots with quantitative information on relative probabilities of encountering Bald Eagles at certain times of day, year, and altitude. Further, flight data and ranging behavior of eagles can be used for the following: 1) identify time periods (daily and seasonally) when strike potential is high for military training exercises, 2) evaluate flight paths at military and civilian air stations in the context of space used by the local eagle population, 3) determine the effectiveness of and need for nest removal near airports, 4) identify weather conditions and landscape features that increase strike potential. The information DGIF provide can then be incorporated into comprehensive BASH programs at the numerous military and civilian air stations across VA and will serve as a model for nationwide programs.

To date, DGIF biologists have telemetered approximately 74 Bald Eagles of every age class. Delays in the purchasing of telemetry equipment have severely impacted our ability to deploy telemetry. In spite of these delays, DGIF believes it has been moderately successful in moving towards completion of objectives. Out of 109 transmitters purchased (by DGIF and DOD), 74 have been deployed and we plan to deploy the remaining 35 transmitters within the next two years. To date, among the 74 individuals tagged, we have documented 4.1 million GPS locations. All Bald Eagles tagged flew within 5 miles of Virginia airports and 69% (51 eagles) flew within 1 mile of airports. Telemetry data and home range output will be used as the foundation for statistical and probabilistic models that identify risk to birds from aircraft and wind turbines. Key data are landform (habitat and Ecological Land Unit (ELU) datasets), weather data (such as NCEP reanalysis weather datasets) and data on aircraft flight patterns and existing proposed wind turbine locations. This modeling exercise will initiate once we have approximately two years of telemetry data as the foundation for our modeling.

b. Golden eagles

Demography is among the most critical of fields for conservation, yet population biology is not well understood for most species of conservation concern. In eastern North America, golden eagles (*Aquila chrysaetos*) are threatened by a variety of anthropogenic impacts including lead poisoning, collision with wind turbines and habitat loss. Because eagles in general are at the top of the food chain, they are considered to be indicators of environmental quality. Recent research on movement ecology of golden eagles by West Virginia University and numerous conservation partners (including VDGIF) resulted in tremendous knowledge and information gained such as winter and breeding home range size and use, use of topography and landscape during migration, influence of weather on migration patterns, and identification of core wintering ranges and new breeding locations. However, virtually no effort has been expended to estimate the most basic parameters of this population, including size, age structure, and survivorship rates. Basic demographic data are needed to better assess and manage this vulnerable population of eagles. Monitoring bait locations with wildlife trail cameras offers a useful tool for occupancy modeling and assessment of age structure of this unique population. The goal of this project is to develop effective estimates of population size, survival rates, age structure, and habitat use of eastern golden eagles. DGIF will accomplish this goal by camera-trapping and recording their presence at bait sites across VA and eastern North America. In addition, DGIF will analyze the large datasets of telemetered eagles to assess winter ranging behavior and factors that influence habitat use. Further, select samples of roost sites through eastern North America, including Virginia, will have habitat assessed on the ground for important micro-habitat features. Select roost sites will be surveyed during the spring of 2018.

Camera trapping through 2017 has proceeded as in previous years. Camera traps were operated at approximately 200 sites in eastern North America, including two sites within the state of Virginia. Because of delays in federal permitting from the Bird Banding Lab, we did not deploy RFID tags on golden eagles in Virginia. DGIF has published two papers on results of the camera trapping work and are working on papers with several other collaborators at Purdue University, Boise State University, and Clemson University. A final project report will estimate demographic parameters of eastern golden eagle populations in Virginia and, as appropriate for comparison, outside Virginia. This report will form the foundation of 1-3 peer-reviewed publications on this topic. DGIF has completed and published an analysis of these data in conjunction with colleagues at Virginia Polytechnic University. Because the camera trap data failed to meet some of the assumptions required for occupancy models, the postdoc on this project used a different approach that provided important estimates of demography that can be used for management.

To date, three publications stemming from this project are published at peer-reviewed scientific journals. Two stem from the camera trapping efforts and both rely on the network of camera trappers within and outside of the state of Virginia. One focuses on use of telemetry data and habitat characteristics of those data. Finally, two more publications are expected, one nearly complete, the other will be completed by approximately the time this funding expires. Publications from this project are as follows:

Miller, T. A., R. P. Brooks, M. J. Lanzone, J. Cooper, K. O'Malley, D. Brandes, A. Duerr, and T. E. Katzner. In Press. Space use and home range characteristics of Golden Eagles (*Aquila chrysaetos*) in eastern North America during breeding season and winter. *The Condor: Ornithological Applications*. *In press*.

Katzner, T.E., T.A. Miller, J. Rodrigue & S. Shaffer. 2015. A most dangerous game: death and injury to birds from porcupine quills. *Wilson Journal of Ornithology*. 127: 102 - 108.

Jachowski, D.S, T. Katzner, J. L. Rodrigue and W.M. Ford. 2015. Monitoring landscape-level distribution and migration phenology of raptors using a volunteer camera trap network. *Wildlife Society Bulletin*. 39(3): 553-563. DOI: 10.1002/wsb.571.

c. Falconry

DGIF continues to maintain a good relationship with falconers to address issues related to capture and management of wild raptors for falconry purposes, and to the potential impacts of falconry on wild raptor populations. Further, DGIF administers the falconry program through inspection of falconry facilities and

requiring falconry tests to apprentice falconers. Moreover, DGIF spends significant time with the Virginia Falconers Association to better administer falconry testing, administer inspections, and education of the public to the craft of falconry. DGIF implemented our 2017 program for the take of passage Peregrine Falcons for the fall of 2017. DGIF will select 4 falconers this year from a pool of 6 applicants. Virginia was allocated 5 falcons for the fall 2017 trapping season by the Atlantic Flyway Council. Interest in the take of Peregrine Falcons increased slightly during 2017 (6 applicants). During 2016, DGIF only had four eligible applicants apply for the program.

d. Peregrine Falcons

Peregrine falcons formerly bred throughout the Appalachian Mountains of the eastern US, but were extirpated as breeders throughout this region by the early 1960s. Nationally-coordinated recovery efforts starting in the 1970s were successful in establishing a breeding population in VA's Coastal Plain and less successful in returning the species to its former range in the Virginia mountains. Current conservation efforts in VA are focused on both populations. Coastal Plain peregrine monitoring and management is executed through a partnership with the Center for Conservation Biology at the College of William and Mary & VA Commonwealth University, as well as a number of stakeholders.

The total VA peregrine population consisted of 27-28 pairs (B. Watts, personal communication), including a coastal population of 25 pairs, a breeding pair in the northern Piedmont and one to two pairs in the mountains. DGIF monitors and manages a nest site on a hi-rise in downtown where a pair has bred since 2003 (included in the coastal total; see <http://blog.wildlife.virginia.gov/falcon-cam/> for breeding season blog).

Re-establishment of the cliff-nesting peregrine population in the western part of the state includes annual hacking of chicks from the VA Coastal Plain. Chicks are obtained from nest sites where productivity is low because of high mortality during fledging events and are hacked at Shenandoah National Park (SNP). Five males and 4 females from 3 VA bridge sites (James River Bridge, Downing Bridge and Mills Godwin Bridge) and one power plant (Possum Point) were hacked at SNP in 2017 (B. Watts personal communication). DGIF provided planning assistance and frozen quail for the 2017 hacking effort.

e. Red-cockaded Woodpeckers

The Piney Grove Preserve in Sussex County is owned by TNC and represents the only known red-cockaded woodpecker site in VA and the northernmost population of the species across its range. Management and monitoring of this population is conducted annually by the College of William and Mary & VA Commonwealth University (CCB) with support from DGIF and other partners. Monitoring is conducted via a post-breeding winter survey and a spring pre-breeding survey, in addition to annual nest monitoring and banding activities; results are reported to us on a calendar year basis. Watts et al. (2017) report the following. A total of 84 red-cockaded woodpeckers were identified in 2016. An all-time high of 64 adult birds were distributed among 13 potential breeding groups. Twelve of the groups attempted to breed, producing 16 fledglings. Surveys in the early winter identified 54 birds roosting in 14 cluster areas, including 44 adults and 10 of the 16 birds that fledged in 2016.

In FY17, DGIF participated in translocation efforts of red-cockaded woodpeckers to the Great Dismal Swamp NWR in Suffolk, VA as part of a team that included the South Carolina Department of Natural Resources, MPJ Wildlife Consulting, USFWS, The Nature Conservancy, CCB and volunteer biologists. This effort seeks not only to re-establish a breeding population in an area in which it historically occurred, but to better secure the viability of the Virginia population by expanding its range beyond the one current known site, which is vulnerable to potential stochastic events. Four hatch year males and four hatch year females were translocated from the Carolina Sandhills NWR donor population in late October 2016. Two additional males were translocated from Carolina Sandhills NWR by USFWS and CCB personnel in mid-November. These efforts led to the establishment of two breeding pairs, both of which laid eggs. One nest was lost to predation, but the

other one successfully fledged two females. These events mark a milestone for the nascent efforts to reestablish a population of the species at the Great Dismal Swamp.

2. Avian Scavengers:

Lead has, for several millennia, been recognized as dangerous to humans. More recently, lead has also proven to be toxic to wildlife. In fact, lead has no physiological value to vertebrates (Pain 1995) and is a potent neurotoxin. When developing humans are exposed to lead, consequences can include impaired cognitive function, as well as less severe but still highly relevant changes in blood pressure and blood chemistry (Hu et al. 1998). Likewise, in wildlife, exposure to lead usually results in either lethal or demographically consequential sub-lethal effects, including changes in behavior, reproductive output, and long-term survivorship. Historically, lead has entered into the environment through a number of different mechanisms. Some of these sources included paint manufacturing and various industries, as well as shotgun pellets; all of these sources of lead exposure are now tightly controlled. More recently concern has been raised about lead exposure from rifle bullets used in hunting (Watson et al. 2009). Elevated blood lead levels have been documented in people who rely on hunted meat as a protein source, although these studies were not able to differentiate between lead from shotguns and rifles (Tsuji et al. 2008a, b). Wildlife too, is impacted by spent lead bullets and an increasing number of studies point to this as the predominant modern source of lead poisoning in scavenging birds. In particular, California condors (*Gymnogyps californianus*; Cade 2007), common ravens (*Corvus corax*; Craighead and Bedrosian 2008), golden eagles (*Aquila chrysaetos*; Kenntner et al. 2007) and bald eagles (*Haliaeetus leucocephalus*; Clark and Scheuhammer 2003) have all shown lead poisoning from spent lead ammunition. This lead enters into the environment either through big-game hunting, where it appears primarily in offal piles, or through “sport” hunting of rodents such as prairie dogs (*Cynomys ludovicianus*; Pauli and Buskirk 2007). In the eastern United States, rifles are used for hunting big game (deer, elk, bear) and rodents (squirrels and woodchuck, primarily). A number of scavenging wildlife are potentially at risk from lead exposure; these include mammals (Canids, Felids, Procyonids, Ursids, etc.), as well as birds (eagles, vultures, Corvids, and many others). Thus, there is a need both to determine the degree to which lead from spent bullets is entering the ecosystem and to understand the threat that lead presents to wildlife and to people. Satisfying this need is of particular importance because of the high political visibility of the concern over the continued use of, and the EPA's recent consideration of a ban, on lead bullets. There is currently no comprehensive data set or research that provides scientifically based information related to base-line blood lead-levels in avian scavengers, sources of lead contamination (i.e., industrial lead in the environment or lead from ammunition), and temporal associations with lead toxicosis. In this project, we are assessing lead concentrations in blood and other tissues of avian scavengers throughout VA. Primary species groups include Corvids, Eagles, Vultures and Buteos, as well as Osprey.

To date, DGIF has sampled blood from 615 birds in Virginia. This included 17 American crows, 159 Bald eagles, 21 Black vultures, one Common raven, 20 Golden eagles, 257 Osprey, 49 Red-shouldered hawks, 37 Red-tailed hawks, and 40 Turkey vultures. A total of 482 blood samples from Virginia were sent for lead analyses and 134 are not analyzed. Of those tested, 6 birds were above 40ug/dL (elevated level) and the remaining were < 40ug/dL (low level). All samples are analyzed for lead isotope ratios. To date these ratios are nearly all consistent with published isotope ratios for lead ammunition. DGIF has also recently developed multivariate approaches to analysis of lead isotope data that will provide further insight into sources of lead.

In addition to the above progress, since the last report, a graduate student (Vincent Slabe) has continued his education at WVU and led field research activities. In spring 2017, Slabe advanced to PhD candidacy. He will collect some data in summer 2017 and, with luck, substantial data in autumn 2017. DGIF's goal is to finish field data collection before spring 2018; at that point DGIF will begin summarizing and writing up the results.

This work is being paired with a nationwide project to understand the effects of lead poisoning of bald and golden eagles. For that project, DGIF has collected 2238 samples from 31 states. Of these samples, 274 (12%) are from Virginia.

Further, DGIF has published peer-reviewed papers, given conference presentations and organized a conference workshop on lead poisoning, as follows:

Peer-reviewed publications:

Franzen-Klein, D., D. McRuer, V.A. Slabe & T. Katzner. 2017. The use of lead isotope analysis to identify potential sources of lead toxicosis in a juvenile bald eagle (*Haliaeetus leucocephalus*) with numerous ventricular foreign bodies. *Journal of Avian Medicine and Surgery*. *In press*.

Katzner, TE, MJ Stuber, VA Slabe, JT Anderson, JL Cooper, LL Rhea & BA Millsap. 2018. Origins of lead in populations of raptors. *Animal Conservation*. *In review*.

Conference Presentations & Sessions Organized

Session organizers: Lead and Raptors. Annual Meeting of the Raptor Research Foundation. Cape May, NJ, USA.

Slabe, V.A., J. Cooper, D. McRuer & T.Katzner. 2016. Blood lead levels of piscivorous raptors in the coastal plain of Virginia. Raptor Research Foundation Annual Conference. Cape May, NJ. Oral presentation.

3. Land Birds: 2ND Virginia Breeding Bird Atlas:

DGIF has partnered with the VA Society of Ornithology (VSO) for a second VA Breeding Bird Atlas (VABBA2), which was officially launched in April of 2016. The project has several objectives, including: 1) documenting the current distribution of VA's breeding birds; 2) assessing changes in species distribution since the first VA BBA (1985-1989); 3) collecting information on species of interest for which current data are lacking and for which targeted surveys may yield low returns on effort; 4) collecting data on the abundance of VA's breeding birds via a point count approach; and 5) engaging birders, ornithologists, government agencies, non-governmental organizations, K-12 students and educators, institutions of higher education, and industry in the pursuit of scientific information and a broad conservation message.

Like the first Virginia BBA, this Atlas engages skilled volunteer citizen scientists to collect information on breeding birds across the Commonwealth. The basic survey unit is the Atlas Block, which consists of 1/6 of a USGS quadrangle. In order to achieve survey coverage across the state, the southeastern Block within each quadrangle is designated as a Priority Block, and volunteers are encouraged to target Priority Blocks. The aim is to maximize the number of avian species designated as Confirmed Breeders (based on various criteria) for each Block that is surveyed. Data collection for the VABBA2 is set to take place over a 5-year period, with calendar year 2017 marking the second such year.

The Atlas Coordinator is responsible for overall implementation of the VABBA2, and acts as the public face of the Atlas. Among her many tasks are engaging in extensive communication/outreach, recruitment and training of volunteer Atlasers; directing Regional Coordinators in similar tasks; and overseeing overall project management. During the performance period, DGIF continued to coordinate on a consistent basis with the Atlas Coordinator in order to guide, plan and implement various aspects of the Atlas project, provide operational support and to keep apprised of the project's progress.

Through the work of the Atlas Coordinator, with support from the Atlas Steering Committee, DGIF and outside partners, the following activities took place during the performance period:

- An ancillary Priority Species Database (<https://vafwis.dgif.virginia.gov/BBA2/PrioritySpecies/>) was created. This allows for data entry by volunteers for designated species of interest at the point-specific or coordinate level, which often is not possible in eBird because bird checklists are being submitted as part of a 'travelling count' (i.e. the observer was not stationary but atlasing over a variable distance). The database allows for reporting of additional data not collected by eBird.
- A Personal Breeding Data Summary Tool (<http://amjv.org/index.php/vabba2/contacts>) was created to

allow individual volunteers to track the breeding status they documented for each species.

- The VABBA2 website (www.vabba2.org) was maintained and the Atlas Facebook page (<https://www.facebook.com/vabba2/>) and VABBA2 list-serve were kept active and served as critical means of communicating updates and guidance to volunteers as the breeding season progressed.
- In addition to the above communications, as well as numerous e-mail conversations with individual volunteers, the Atlas Coordinator gave four regional recruitment and training workshops, including one at the annual Virginia Society of Ornithology meeting; all were well-attended and well-received.
- Media stories promoting the Atlas included a Virginia Tech feature story that led to a regional news interview, as well as a story published in DGIF's Virginia Wildlife magazine.
- An Atlas eStore (<http://www.cafepress.com/vabba2>) was launched in March 2017; the eStore functions primarily as a promotional tool, rather than for fundraising purposes

In terms of performance metrics:

- During the performance period, 18,000+ eBird checklists were submitted through the VABBA2 portal by volunteer Atlasers for 2017
- Cumulative data since project inception amounted to data for 70% of designated Atlas Priority Blocks (n = 798), with 213 species reported and 159 species having been confirmed as breeders
- Cumulative data since project inception amounted to data for 63% of all Atlas blocks (n = 4399), with 243 species reported and 184 species having been confirmed as breeders.
- In 2017, 203 new blocks were assigned observers, bringing the cumulative total since project inception to 545 blocks with assigned observers (90% of these are Priority Blocks)
- Over 16,000 hours of volunteer survey effort were expended during the performance period.

Work continues on development of criteria for designating Atlas block completion (i.e. when survey effort for a block is no longer needed); on assessment of geographic data gaps in coverage; on implementation of blockbusting efforts; on initializing data review and clean-up; and on developing strategies for future recruitment and retention of volunteers on a geographically-targeted basis.

Abundance data adds a third dimension to species distribution data by not only informing us of where a species occurs, but in what numbers. Like other modern Breeding Bird Atlases, the VABBA2 extends beyond the traditional volunteer-based Atlas methodology to collect complementary data on avian abundance across the state. Geographically speaking, this will result in the broadest empirical benchmark in Virginia history on the Commonwealth's breeding game and nongame birds. These data will in turn be used to a) generate credible species population estimates, which will allow us to better evaluate the status of VA's avian species and, in conjunction with population trends from other sources, to set tangible population-level goals; b) generate statewide species-specific density maps to guide on-the-ground conservation and management actions; and c) enable comparisons to future data so as to assess changes in population numbers, effectiveness of management and conservation actions and progress in achieving conservation goals. This quantitative approach is being implemented through a contract with CMI.

During the performance period, a block-based point count sampling scheme was developed by a team that included personnel from CMI, DGIF and Dr. Andy Wilson of Gettysburg College (who has analyzed point count data for the 2nd PA and OH BBAs). Based on modeling approaches taken for the 2nd WI BBA, it was decided that sampling roughly one half of VA's blocks, for a total of 2,448 blocks, would yield the data necessary to meet our objectives. Block to be sampled were selected systematically, following a checkerboard pattern across the state. Within each block, up to 16 points were randomly generated along secondary roads, with the objective of surveying 8 points per block; adjustments will be necessary in some blocks that do not contain a sufficient amount of road length to achieve this goal. A total of 16,498 target points were generated, with an additional 14,397 points as back-up (in the event that individual target points are inaccessible on the ground).

A survey protocol was developed following 5-minute variable radius point count methodologies, with the goal of surveying each target point once during the 4-year project period. Distances to detected birds are to be estimated with the help of range finders. Data will be recorded on paper sheets, entered on electronic devices in the field and transferred to a specially-developed online database, with surveys taking place in May, June and into July.

2017 marked the first year of data collection under this 4-year effort. Seven full-time technicians were hired and divided into an Eastern and a Western team so as to distribute effort to different areas of the state. Two different training sessions (one per team) were conducted for survey protocols, device usage, familiarity with species identifications, and consistencies with distance estimations. A total of ~2,420 points, comprising ~15% of the target total, were surveyed. These included 2 broad geographic areas within the Coastal Plain.

DGIF partnered with the VA Society of Ornithology (VSO) for a second VA Breeding Bird Atlas (VABBA2), which was officially launched during FY16. The project has several objectives, including: 1) documenting the current distribution of VA's breeding birds ; 2) assessing changes in species distribution since the first VA BBA (1985-1989); 3) collecting information on species of interest for which current data are lacking and for which targeted surveys may yield low returns on effort; 4) collecting data on the abundance of VA's breeding birds via a point count approach in order to a) generate species-specific density maps to guide on-the-ground conservation and management actions; b) generate credible species population estimates; and 5) enabling comparisons to future data so as to assess changes in population numbers, effectiveness of management and conservation actions and progress in achieving conservation goals; 6) engaging birders, ornithologists, government agencies, non-governmental organizations, K-12 students and educators, institutions of higher education, and industry in the pursuit of scientific information and a broad conservation message.

In FY16, an Atlas Coordinator was hired through the Conservation Management Institute at Virginia Tech; Regional Coordinators were identified to aid with recruitment of Atlas volunteers; DGIF partnered with the Cornell Lab of Ornithology to use eBird as the official VABBA2 data entry portal; a steering committee and various technical teams were formed in order to guide, plan for and implement the Atlas; a VABBA2 website was launched (www.vabba2.org) that includes an Atlas Block sign-up tool; an Atlas Facebook page was created; extensive volunteer recruitment and training took place via social media, in-person presentations and workshops coordinated/implemented by the Atlas Coordinator; the Atlas was officially kicked off in April 2016. As of the end of the performance period, ~8,700 eBird checklists have been submitted by volunteer Atlasers. These included data for 1/3 of designated Atlas priority blocks and ~28% of overall blocks. As of the end of FY16, planning is underway for expanded volunteer recruitment for next year's field season; for the creation of a stand-alone priority species database; and for design of the point count component of the VABBA2, to be implemented in years 2-5 of the project

4. Waterbirds:

a. Piping Plovers and Wilson's Plovers

The 32th Annual Virginia Plover Survey (VPS) was conducted from June 1 - June 9, 2017 to obtain statewide breeding population estimates for the federally threatened Piping Plover (*Charadrius melodus*) and the state endangered Wilson's Plover (*Charadrius wilsonia*). VPS participants examined all suitable nesting habitats shared by both species of plovers in coastal Virginia.

A total of 220 Piping Plover breeding pairs and seven unpaired single adults (lone adults that did not appear to be defending a territory, mate, nest or brood) were observed during the 2017 survey. This year's survey pair total was slightly above last year's total of 218 pairs. Breeding distribution did not change in 2017; all pairs were confined to the barrier islands (Assateague Island to Fisherman Island) with the majority of birds occurring on the northern half of the island chain (Assateague Island to Cedar Island). The preliminary 2017 end-of-season Piping Plover breeding pair total which includes additional pairs discovered during productivity studies after the breeding survey was 266, which is a 9% decrease from last year's record end-of-season total.

The large discrepancy between the survey and end-of-season totals was due in large part to the cool, wet spring that delayed the onset of the piping plover breeding.

A total of 29 Wilson's Plover breeding pairs and zero single adults were recorded during the 2017 VPS. The end-of-season total of 39 pairs reflects a slight decrease from last year's total of 40 pairs. The large discrepancy between the survey and end-of-season totals was also due in large part to the cool, wet spring that delayed the onset of the Wilson's plover breeding. Wilson's Plover breeding activity was confined to four northern barrier islands. Prior to 2006, up to 25% of the state's breeding population was reported on the southern islands (Parramore Island - Fisherman Island; DGIF unpubl. data). It is not clear why Wilson's Plovers have remained absent from the southern islands since then.

b. Plover breeding productivity

Staff from The Nature Conservancy's Virginia Coast Reserve (VCR), Chincoteague National Wildlife Refuge, Wallops Flight Facility, Fisherman Island NWR and DGIF monitored the breeding success of 98% of Virginia's Piping Plover breeding population in 2017. This year's statewide preliminary productivity estimate was 0.72 fledged young per pair, well below the value (0.93 fledged young per pair) necessary to maintain a stable population in the Atlantic coast Southern Recovery Unit (Delaware – North Carolina) and the lowest estimate since 1997.

DGIF staff and two USFWS volunteers monitored the breeding success of 85% of Virginia's 2017 Wilson's Plover breeding population. A total of 27 young fledged among the 33 pairs monitored which yielded a productivity estimate of 0.82 fledged young per pair. This year's productivity estimate is the lowest since DGIF began monitoring the species reproductive success in 2004 and it is the second time the estimate fell below 1.00 fledged young per pair.

c. 2017 Annual Atlantic Coast Least Tern Survey

In 2017, DGIF staff coordinated the 12th annual Atlantic coast least tern (*Sterna antillarum*) breeding survey in Virginia, an effort which began in 2006. The survey window for the southern mid-Atlantic states (MD – NC) is June 1 – 15. Least terns are one of the more difficult seabird species for which to obtain accurate breeding population estimates. They are highly ephemeral (abandon one site in favor of another often several times during a single breeding season), patchy in distribution within colonies, and eggs are small and well-camouflaged making them difficult to see. Thus, the information gathered by participating Atlantic coast states are viewed as trend data rather than actual population estimates and efforts are made by the states to maintain a similar level of effort from year to year within in the survey window. Several methods have been used to survey least terns. However, results from a study examining the accuracy and precision of each of these techniques suggested that incubating adult counts yield the most accurate estimates with the least amount of disturbance to the birds (Matthew D. Hillman, pers. comm.) As such, Virginia survey participants continue to use this method at most colonies.

In 2017, DGIF counted 713 least tern breeding pairs at 58 colonies. This represents a 26% decrease from last year's record total. The majority (80%) of breeding pairs occurred on Virginia's barrier islands, 10% on rooftops in the tidewater area, 6% on the western shore of the Chesapeake Bay and 4% at Craney Island Dredge Material Management Area in Portsmouth.

d. American Oystercatcher Productivity Studies in the Seaside Marshes

American Oystercatcher productivity has been monitored at varying sites and at varying degrees of intensity along the Virginia barrier islands and in the seaside marshes since 2001. This year, DGIF staff once again agreed to take over the ongoing productivity studies in the marshes located east of the Town of Wachapreague and on a sand shoal in Wachapreague Inlet. DGIF monitored a total of 19 pairs and 26 nesting attempts, which

produced a total of 13 young (0.68 fledged young per pair). DGIF banded seven of the 13 fledged young as part of an on-going mark-recapture study in Virginia.

e. Black-necked stile breeding activity in Chincoteague Bay, VA

DGIF has known for some time that black-necked stilts (*Himantopus mexicanus*) nest in the southern marshes of Chincoteague Bay adjacent to the 175 Causeway, but to date no effort has been made to examine reproductive success or establish breeding population size. This year, DGIF staff attempted to locate nests and, at a minimum, determine hatch success. Between May 24 and June 19 we conducted three surveys and located 10 nests. Clutch size ranged from 3 - 4 eggs. DGIF was unable to assess hatch success and locate young because the only viewing platform from where we could observe birds without disturbing them was the 175 Causeway, which proved too dangerous for staff. In the future, DGIF hopes to erect some kind of elevated viewing platform in the low marsh that will allow us to observe breeding pairs and broods through the nesting season. The only other location where stilts nest in Virginia is the Craney Island Dredge Material Management Area in Portsmouth which currently supports over 100 breeding pairs (Bill Williams, pers. comm.).

5. Atlantic Slope Freshwater Mussel Propagation:

The VA Department of Game & Inland Fisheries continued its cooperative Atlantic Slope freshwater mussel propagation facility with the U.S. Fish & Wildlife Services' Harrison Lake National Fish Hatchery in Charles City, which marks the 10th year of production and 11th year of operation at the VA Fisheries and Aquatic Wildlife Center (VFAWC). Propagation started in February and ended in August resulting in the production of over 1.1 million juvenile mussels from eight species, which was well over DGIF's target number of 747,000 juveniles. VFAWC continued propagation with the federal and state endangered James spiny mussel (*Parvaspina collina*, JSM) and the state threatened and federally petitioned green floater (*Lasmsgona subviridis*) and increased efforts in the Roanoke basin. DGIF continued to release propagated mussels from our 2014-2016 stocks, with nearly 16,000 tagged mussels of 7 species released in the lower Nottoway River, near Franklin, the Meherrin River in Emporia, and Rock Island Creek near Scottsville. Additional mussels will be released in October and November 2017 with any remaining mussels released in 2018. Juvenile mussels from our 2017 stock will start to be released in 2018, depending on species and size. All mussels were or will be tagged for future monitoring of survival and reproduction.

6. Sea Turtles:

Nest management

In the past, Back Bay NWR staff and volunteers conducted sea turtle nest patrols from the VA/NC state line to Ft. Story Military Reservation (hereafter referred to as the southern mainland beaches) and all nests found were relocated to the refuge and planted behind the primary dune system. This practice is no longer condoned by the USFWS or the DGIF. During the performance period, the VDGIF prepared a sea turtle conservation plan template for the City of Virginia Beach (City) to assist the City in its efforts to develop a comprehensive Sea Turtle Conservation Plan that will avoid and minimize the impacts of artificial lighting and other human impacts on nesting and hatchling sea turtles within City boundaries. During this performance, the City made no progress on developing a conservation plan because of staff shortages. DGIF plans to reinstate discussions with the City on this matter during the next performance period.

So far, a total of 11 loggerhead and 2 green sea turtle nests have been documented in Virginia this year. Both green turtle nests were laid at False Cape State Park within several 100 meters of each other. Virginia's first green turtle was reported in 2005 and there had been no additional activity until this year. Of the 11 loggerhead nests discovered this year, five were laid on Assateague Island, two were laid on beaches owned by the City of Virginia Beach, two were deposited at Dam Neck Naval Base, one at Back Bay NWR and one at False Cape State Park. One egg was collected from each clutch as part of an ongoing regional loggerhead sea turtle genetics study that identifies individual nesting females and maternal relationships (mother/daughter and mother granddaughter pairs) by way of maternally inherited mitochondrial DNA markers. Preliminary results from this

study suggest females nesting in Virginia exhibit low within-season site fidelity and often nest out- of- state before arriving in Virginia to nest.

7. Lower Chickahominy Watershed Herpetological Survey:

The Chickahominy River is an 87-mile-long river named after the Chickahominy Indian Tribe. Its headwaters begin just northwest of Richmond as the border between Henrico and Hanover counties, and flows in a southeasterly direction until its confluence with the James River. The lower section of the watershed serves as the border between Charles City, New Kent and James City counties. Historically, this region has been primarily an agricultural community. Although it continues to serve as an agricultural area, it also serves as a major source of drinking water for the lower York-James Peninsula and for outdoor recreational activities (i.e. boating, hunting and fishing), and as a focal area for wildlife conservation.

According to the Virginia Fish and Wildlife Information System (VaFWIS), 69 species of reptile and amphibian have been documented within the lower Chickahominy River watershed. To better understand the distribution of the herpetofauna, DGIF conducted an intensive 6-month herpetological survey of the lower section of the watershed and selected tributaries. DGIF documented 64 of the 69 species known to occur in this region, including a new county record for Scarlet Kingsnake and a new location for the recently described Atlantic Coast Leopard Frog.

To aid in the management of this taxonomic group in this region, DGIF produced 64 maps showing location and abundance of each species observed, list of observed species and number of observations, provided Management Recommendations, and produced two manuscripts *in prep* on the new county record and the observation of anophthalmia (absence of one or both eyes) in an adult Eastern Kingsnake. A spreadsheet of species observations was also submitted to VaFWIS to be entered into the database. Funding for this project was partially supported through a Virginia Coastal Zone Management Program grant.

8. Chicken Turtle Surveys and Monitoring

The Eastern Chicken Turtle (*Deirochelys reticularia*) is a semi-aquatic turtle that reaches the northern extreme of its range in southeastern Virginia and is listed as State Endangered. Its distribution within Virginia is limited to First Landing State Park (FLSP) in the City of Virginia Beach and on a private farm in Isle of Wight County, the latter commonly referred to as the Cat Ponds. In 2007 we began an annual, 2-week survey and monitoring program at the Cat Ponds site. In 2017, DGIF trapped from May 15th -24th resulting in the capture of 2 unmarked and 6 recaptured turtles. Trapping success was poor, because of an unusual dry period that occurred. To date DGIF has trapped and marked 31 turtles at the Cat Ponds; 2 hatchlings, 3 juveniles, 10 males, and 15 females. It should also be noted that 2 unmarked Chicken Turtles, including a 3 year-old, were also captured at FLSP, which demonstrates reproduction is still occurring at this site. Funding for this project was partially supported through USFWS State Wildlife Grants.

V. Invasive Species

1. Nutria:

Nutria (*Myocastor coypus*) were first confirmed in Virginia near Back Bay in 1956, and are believed to have entered Virginia from North Carolina via the North Landing River. Nutria exhibit high reproductive potential; theoretically increasing from a single pair to 16,000 individuals in just three years. Nutria can be extremely destructive to marsh vegetation, possessing voracious appetites and consuming a quarter of their body weight daily, feeding on the tender roots of marsh grasses and succulent portions of aquatic vegetation. These activities result in significant adverse impacts upon native wildlife and natural communities. The core Virginia population is centered south of the James River, in the Back Bay / Virginia Beach area, with confirmed reports as far south and west as Southampton and Prince George counties. The pristine and ecologically intact marsh systems of coastal Virginia north of the James River are considered to be threatened by nutria due to the close proximate confirmations. Early detection and rapid response is viewed as the most effective means of

preventing nutria range expansion; unfortunately, detecting an individual or small population of nutria in a vast natural marsh can be very difficult due to lack of evidence and accessing the habitats.

In response to this dilemma, DGIF has decided to use the best most efficient methods to detect them and that is to inform and rely on our constituents and the general public to provide sightings and to then investigate those sightings. To inform and solicit sighting reports we have placed nutria identification signs at boat ramps near likely invasion sites, and have performed educational demonstrations and presentations, focusing identifying nutria, how to report, and our investigative methods. To investigate, we have trained and deployed an employee canine team to facilitate detection of nutria and its range expansion. This method uses dogs to find nutria scat in the same way a bomb or narcotics dog are used. It is a very efficient, non-invasive and through way of finding evidence and during this report term (April – September) we investigated 8 reported nutria sightings in the “Early Detection, Rapid Response” nutria management zone north of the James River. Each sighting location is different and requires different amounts of effort but often include searching the exact location of the sighting and the neighboring marsh lands and shorelines for miles in either direction. These search areas included portions of Powhatan Creek, Chickahominy River, Chickahominy Lake, Piankatank River, The Dragon Run, Willets and Butler Creek, Severn River, the East River, North River and Ware River of Mobjack Bay, the City of Hampton and Deep Creek in the City of Newport News. No evidence of nutria at these sites was detected and the sites will be monitored and searched periodically with canines to ensure this remains true.

SECTION B.3 FEDERAL CONSISTENCY

During the period of April 1, 2017 and September 30, 2017, the Office of Environmental Impact Review/Federal Consistency (OEIR) reviewed 104 development projects and management plans for consistency with the Virginia Coastal Zone Management Program (CZMP). This represents 71% of the total amount of projects reviewed (147) during this period. Major state projects accounted for 31 projects, 1 was a State Corporation Commission review, 10 were National Environmental Policy Act (NEPA) documents without a federal consistency component, 49 were federal actions, and 54 were federally funded projects. The 49 federal actions included 11 federal agency activities, 20 federal licenses and approvals, and 0 outer continental shelf projects. The 49 federal agency activities included 19 projects submitted under the residual category pursuant to the federal consistency regulation (15 CFR 930.31(c)), which consisted of U. S. Department of Housing and Urban Development (HUD) mortgage insurance projects. All federal consistency determinations and federal consistency certifications were completed within the established legal deadlines.

The OEIR continues to provide informal training on federal consistency requirements to consultants who prepare consistency documents for federal agencies and applicants for federal permits and maintains a website for Federal Consistency Reviews which can be accessed through DEQ's main webpage or found at <http://www.deq.virginia.gov/Programs/EnvironmentalImpactReview.aspx> The OEIR webpage is updated weekly.

Table 1 depicts federal projects in Tidewater Virginia reviewed from 4-1-17 to 9-30-17.

| TYPE OF FEDERAL PROJECTS REVIEWED* | NUMBER OF PROJECTS COMPLETED | REVIEW PERIOD |
|---|-------------------------------------|----------------------|
| *Direct Federal Actions | 49 | 30-60 Days |
| ** Federal Activities (approvals & permits) | 20 | 90 Days |
| ***Federally Funded Projects | 54 | 30 Days |
| Outer Continental Shelf | 0 | 45-60 Days |
| TOTAL | 104 | 30-90 DAYS |

*Includes 19 FCDs reviewed under the residual category of Subpart C of the Regulations. (HUD Mortgage Insurance and United States Department of Agriculture (USDA) funding).

**These are projects reviewed under Subpart D of the Regulations. These projects include individual permits issued pursuant to Section 404 of the Clean Water Act administered by the U.S. Army Corps of Engineers. Nationwide and regional general permits are certified every five years or as requested by the Norfolk District U.S. Army Corps of Engineers.

*** These include federal assistance to state and local government reviewed under Subpart F.

FEDERAL PROJECTS REVIEWED FOR CONSISTENCY WITH THE VCP from 4/1/17 to 9/30/17

I. Federal Agency Projects

The following projects are examples of federal agency projects subject to Subpart C of 15 CFR 930.33(a).

Revision and Reissuance of the 2017 Nationwide Permits

The U.S. Army Corps of Engineers (Corps) issues nationwide permits (NWP) to authorize certain activities that require Department of the Army permits under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899. The purpose of this regulatory action is to reissue 50 existing NWPs and to issue two new NWPs. In addition, one new general condition is being issued. The NWPs can only be issued for a period of no more than five years and cannot be extended. These 52 NWPs went into effect on March 19, 2017 and will expire on March 18, 2022. The NWPs authorize activities that have no more than minimal individual and cumulative adverse environmental effects. The NWPs authorize a variety of activities, such as aids to navigation, utility line crossings, erosion control activities, road crossings, stream and wetland restoration activities, residential developments, mining activities, commercial shellfish aquaculture activities, and agricultural activities. The two new NWPs authorize the removal of low-head dams (NWP 53) and the construction and maintenance of living shorelines (NWP 54).

Some NWP activities may proceed without notifying the Corps, as long as those activities comply with all applicable terms and conditions of the NWPs, including regional conditions imposed by division engineers. Other NWP activities cannot proceed until the project proponent has submitted a pre-construction notification to the Corps, and for most NWPs that require pre-construction notifications the Corps has 45 days to notify the project proponent whether the activity is authorized by NWP.

Corps Districts may add, after public review and consultation, regional conditions (RCs) to nationwide permits in order to protect local aquatic ecosystems, or to minimize adverse effects on fish or shellfish spawning, wildlife nesting or other ecologically critical areas. Accordingly, the regional conditions developed by the Corps Norfolk District are included in this review. Furthermore, the Baltimore District is proposing to adopt the Norfolk District's RCs in certain military installations of northern Virginia within the regulatory geographic boundaries of the Baltimore District (i.e., Fort Belvoir, Fort Myer, and the Pentagon). However, the Baltimore District will not suspend NWP 14 and 29 for use in Fort Belvoir, Fort Myer, or the Pentagon because the current State Program General Permit (SPGP01) in Virginia is not applicable to these military installations. Therefore, the Baltimore District is proposing to add the same RCs to NWP 14 and 29 for use in Fort Belvoir, Fort Myer, and the Pentagon as those proposed in the District of Columbia.

Omnibus Essential Fish Habitat Amendment 2

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) proposes to implement Amendment 2 to the Omnibus Essential Fish Habitat (EFH). The New England Fishery Management Council's Omnibus EFH Amendment 2 is needed to:

- 1) Comply with the Magnuson-Stevens Fishery Conservation and Management Act's requirements to update EFH designations and minimize adverse effects of fishing on such habitat to the extent practicable, and
- 2) to improve protections and reduce impacts on juvenile and spawning groundfish.

If implemented, the measures recommended by the Council would:

- update the EFH designations for all Council-managed stocks and lifestages;
- designate Habitat Areas of Particular Concern; and
- revise the spatial management of habitat protection.

This would be accomplished by:

- establishing habitat management areas, with a variety of gear restrictions, throughout the New England region, designed to minimize to the extent practicable the adverse effects of fishing on EFH, including reducing impacts on juvenile groundfish;
- establishing seasonal spawning protections for groundfish in the Gulf of Mexico and Georges Bank, designed to balance the need for seasonal spawning protection and maximizing the societal net benefits from the groundfish stocks;
- establishing Dedicated Habitat Research Areas; and
- revising the framework provisions and administrative issues for spatial management reviews in the future.

Pursuant to provisions of 15 CFR 930 et seq. and section 307 of the Coastal Zone Management Act of 1972, as amended, the NMFS has determined that the Omnibus Essential Fish Habitat Amendment 2 is consistent to the maximum extent practicable.

NASA Langley Research Center Master Plan

The National Aeronautics and Space Administration (NASA) submitted a SEA and FCD for the NASA Langley Research Center Master Plan update for the construction and operation of the Flight Dynamics Research Facility (FDRF) at Langley Research Center (LaRC) in the City of Hampton, in a different location than was formerly proposed in the June 2013 NASA LaRC Master Plan. The new site for the FDRF is between Building 1200 and Building 1208 and utilizes a commercial off-the-shelf design for cost-efficiency. The new site is located on Langley Boulevard, between North Dryden Street and Doolittle Road. The building footprint would be up to 1,200 square meters and the structure would be 45.1 meters in height. The new FDRF would be a state-of-the-art flight dynamics experimental testing facility containing a single vertical up-flow wind tunnel that is needed to support the growing demand for highly reliable Computational Fluid Dynamics predictions of

advanced vehicle flight mechanics, stability and control characteristics. The FDRF will replace the existing Flight Mechanics Facilities at LaRC, including the 12-Foot Low Speed Tunnel and the 20-Foot Vertical Spin Tunnel which are over 75 years old and will be demolished. Salvageable materials from these buildings will be reused in the FDRF. The construction is proposed to commence in Fiscal Year (FY) 2019 or FY2020. Based on DEQ's review of the federal consistency determination (FCD) and the comments from reviewing agencies, DEQ concurs that the proposal is consistent, to the maximum extent practicable, with the enforceable policies of the Virginia Coastal Zone Management Program provided the applicant obtains all required permits and authorizations with respect to subaqueous lands impacts and coastal lands management and Chesapeake Bay Preservation Areas.

Pier R3 Maintenance Dredging at Naval Weapons Station Yorktown

The Department of the Navy (Navy) proposes to conduct maintenance dredging of the outboard slips and approaches at Pier R3 located on the south bank of the York River at U.S. Naval Weapons Station Yorktown in York County, Virginia. The dredge area (Dredge Area A) is approximately 96,480 square yards (SY) and is located on the east side of Pier R3. The area will be dredged to a maximum depth of 44 feet below mean lower low water (MLLW). Additional maintenance dredging events are anticipated to be required every 3 to 4 years. For each maintenance dredging event, approximately 76,598 cubic yards (CY) of material will be removed via clamshell dredge, placed into and transported in bottom dumping scows, and disposed in the Norfolk Ocean Disposal Site (NODS) located approximately 14 miles east of Norfolk in the Atlantic Ocean. Based on DEQ's review of the FCD and the comments from reviewing agencies, DEQ concurs that the proposal is consistent, to the maximum extent practicable, with the enforceable policies of the Virginia Coastal Zone Management Program provided the applicant obtains all required permits and authorizations with respect to subaqueous lands impacts and coastal lands management and Chesapeake Bay Preservation Areas.

II. Residual Category

The following consistency determinations were submitted as a residual category of Subpart C pursuant to the federal consistency regulation 15 CFR 930.31(c).

336 Sampson's Wharf Road Replacement

The U.S. Department of Housing and Urban Development (HUD) proposes to provide HOME Investment Partnership grant funding through the Virginia Department of Housing and Community Development (DHCD) to Bay Aging (applicant) for the construction of a replacement home, well and septic system in Northumberland County. The one-acre project site is located at 336 Sampson's Wharf Road in the community of Heathsville. The existing mobile home on site will be removed and a new 24-foot x 32-foot single-story replacement home will be constructed with a septic system and artesian well. Based on DEQ's review of the FCD, DEQ concurs that the proposal is consistent, to the maximum extent practicable, with the enforceable policies of the Virginia Coastal Zone Management Program provided the applicant obtains all required permits and authorizations with respect to subaqueous lands impacts and coastal lands management and Chesapeake Bay Preservation Areas.

Glen Arbor 14300 Jeffries Road Rehabilitation

DEQ completed a coordinated review of an FCD submitted by the U.S. Department of Housing and Urban Development (HUD). HUD proposes to provide mortgage insurance under HUD Section 223(f) to BPMS Glen Arbor, LLC, which will finance the rehabilitation of the Glen Arbor Apartments located at 14300 Jeffries Road in Woodbridge (Prince William County), Virginia. The 209-unit multifamily residential complex is comprised of ten three-story brick apartment buildings. Building 14300 contains an administrative leasing office and a maintenance room, and the grounds feature two playgrounds, a soccer field, basketball court, an in-ground swimming pool and associated pool house. The structures were built between 1972 and 1975 and last renovated in 2007. The rehabilitation work includes the demolition of the baby pool structure and existing pool house and construction of a new 2,750 square foot clubhouse. According to the FCD, the project is consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Zone Management (CZM)

Program. Based on DEQ's review of the FCD and the comments from reviewing agencies, DEQ concurs that the proposal is consistent, to the maximum extent practicable, with the enforceable policies of the Virginia Coastal Zone Management Program provided the applicant obtains all required permits and authorizations with respect to impacts to erosion and sediment control, stormwater management, air pollution control, point source pollution control, and coastal lands management.

III. Federal Activities (Permits, Licenses and Approval)

These projects were reviewed pursuant to Subpart D of the Consistency Regulations (15 CFR §930.53)

Atlantic Coast Pipeline Project

Dominion Transmission, Inc. (Dominion) on behalf of Atlantic Coast Pipeline, LLC (Atlantic) submitted a federal consistency certification (FCC) to DEQ for the portion of the Atlantic Coast Pipeline (ACP) in the cities of Suffolk and Chesapeake. Dominion proposes to construct approximately 44.7 miles of a 20-inch-diameter natural gas transmission pipeline in Virginia's Coastal Zone Management Area between the Blackwater River in Suffolk and the project's termination at the Elizabeth River metering and regulating station in Chesapeake. This portion of the ACP would include part of the new lateral pipeline, four new valves, and a new metering and regulating station. As proposed, the construction corridor in non-agricultural uplands and in wetlands will generally measure 75 feet in width with a 25-foot-wide spoil side and 50-foot-wide working side. In areas where full width topsoil segregation is required (e.g., agricultural areas), an additional 25 feet of temporary construction workspace will be needed to store topsoil. Additional temporary workspace measuring 25 by 100 feet will typically be required on both sides of the corridor and both sides of the crossing at wetlands, waterbodies, roads and railroads. In addition, additional temporary workspace will be required for pull back areas and drill pads where horizontal directional drill, or installation of the pipeline under a waterbody, is proposed. Following construction of the ACP pipeline, land within the temporary construction right-of-way will be restored, and a 50-foot-wide permanent easement will be maintained for operation of the pipeline.

Atlantic will utilize existing roads to the extent practicable but new roads may be necessary. Other construction-related activities would include clearing and grading land, trenching, installation and testing of the pipeline, commissioning, cleanup and restoration. A total of 128 waterbodies would be crossed by the ACP in Suffolk and Chesapeake. In the coastal zone, approximately 140.8 acres of wetlands would be temporarily impacted by construction of the ACP facilities. The FCC indicates that approximately 40.6 acres of forested/shrub wetlands would be permanently converted to herbaceous wetlands along the pipeline and 1.2 acres of wetlands would be lost, due to permanent impacts, at facilities (e.g., access roads and one metering and regulating station). Dominion is not proposing the construction of a compressor station in Suffolk or Chesapeake. Based on DEQ's review of the FCC and the comments from reviewing agencies, DEQ concurs that the proposal is consistent, to the maximum extent practicable, with the enforceable policies of the Virginia Coastal Zone Management Program provided the applicant obtains all required permits and authorizations with respect to impacts to erosion and sediment control, stormwater management, air pollution control, point source pollution control, and coastal lands management.

Port Haywood Dredging

DEQ completed a coordinated review of a Federal Consistency Certification (FCC) submitted by Harbor Dredge and Dock (applicant) for the proposed Port Haywood Dredging Project in Mathews County. The applicant is seeking the issuance of a U.S. Army Corps of Engineers (Corps) permit pursuant to Section 404 of the Clean Water Act (CWA) for impacts to jurisdictional waters of the United States from the proposed project. The project proposes to dredge the entrance of a channel starting at the dock of 228 Riverview Road in Port Haywood and extending to the East River. The dredging is being completed to aid navigation. The spoils will be placed at an inland location at the same address. The applicant finds that the proposed action is consistent with the enforceable policies of the Virginia Coastal Zone Management Program. Based on DEQ's review of the FCC and the comments from reviewing agencies, DEQ concurs that the proposal is consistent, to the maximum extent practicable, with the enforceable policies of the Virginia Coastal Zone Management Program provided

the applicant obtains all required permits and authorizations with respect to subaqueous lands impacts and coastal lands management and Chesapeake Bay Preservation Areas.

Comcast Fiber Extension, Manassas Regional Airport

Comcast Communications of Virginia is proposing to install a fiber line to the Virginia Railway Express Broad Run Station, which is located at 10637 Pipe Lane near the Manassas Regional Airport. The line will need to be installed across airport property in the City of Manassas and Prince William County. The airport submitted a federal consistency certification (FCC) for the proposed project because the airport must meet Federal Aviation Administration requirements. The project area is in the road right-of-way along Wakeman Drive and Observation Road, and terminates off airport property at the Broad Run Station. The installation will require trenching and boring which may cross existing utilities such as storm pipes, sanitary lines, fiber, primary and secondary utility lines. According to the FCC, the project will be consistent with the enforceable policies of the Virginia CZM Program. Reviewers generally agree with the finding. Based on a review of the FCC and the comments submitted by agencies administering the applicable enforceable policies of the Virginia CZM Program, DEQ concurs that the proposal is consistent with the Virginia CZM Program provided all applicable permits and approvals are obtained.

Moore's Point Development

DEQ completed a coordinated review of a Federal Consistency Certification (FCC) submitted by Moore's Point, LLC (applicant) for the proposed Moore's Point development in the City of Suffolk, Virginia. The applicant is seeking the issuance of a U.S. Army Corps of Engineers (Corps) individual permit pursuant to Section 404 of the Clean Water Act (CWA) for impacts to jurisdictional waters of the United States from the proposed project. The applicant proposes to construct 161 residential units on 48.855 acres located between Nansemond Parkway and Portsmouth Boulevard. The subdivision is primarily located on uplands. However, construction of the two subdivision access roads will require unavoidable impacts to a total of 0.63-acres of forested wetlands. An additional 0.259-acre of wetland will be temporarily impacted by the construction of the two access roads. The applicant finds that the proposed action is consistent with the enforceable policies of the Virginia Coastal Zone Management Program. Based on DEQ's review of the FCC and the comments from reviewing agencies, DEQ concurs that the proposal is consistent, to the maximum extent practicable, with the enforceable policies of the Virginia Coastal Zone Management Program provided the applicant obtains all required permits and authorizations with respect to erosion and sediment control, wetlands impacts, coastal lands management and Chesapeake Bay Preservation Areas, and air pollution control.

IV. Outer Continental Shelf Activities

No projects were reviewed during the time period of this report for this category.

V. Federal Funds

DEQ completed the reviews of 54 projects from April 1, 2017 to September 30, 2017 that were submitted under 15 CFR, Part 930, Subpart F for federal financial assistance to state and local governments. The projects break out as follows:

Examples of Federally –funded projects which were reviewed:

Locklies Marina Improvements

The Virginia Department of Health (VDH) proposes to use U. S. Fish and Wildlife Service Boating Infrastructure Grant (BIG) funding to make improvements to the Locklies Marina located on Locklies Creek in Middlesex County. VDH receives BIGs to provide funding to Virginia localities and private sector entities for the development and maintenance of boating infrastructure facilities. This particular grant will fund engineering/permitting activities, fixed/floating dock and gangway access, pilings, floating wave attenuation, demolition, installation of light/electrical/water pedestals, and a breaker panel. The owner also seeks to

construct a docking matrix with the capacity to moor an additional 15 transient vessels. The docks will also support lighting, electrical and water pedestals. An onshore sanitary facility consisting of a sink, commode, and shower will also be constructed inside of an existing structure. The activities are consistent with the Virginia CZM Program provided the applicant obtains and complies with applicable permits and approvals related to the enforceable policies of the Program.

Homeowners Safe at Home Program, U. S. Department of Housing and Urban Development Funded Program Rebuilding Together of Richmond is proposing to carry out its Homeowner Safe At Home Program for five extremely low to moderately low income homeowners (at 80% or less AMI) who live in the Matoaca magisterial district (1007.01 census tract) of Chesterfield County. The work will take place at locations to be determined. Expected range of cost of repairs per home is \$8,000 to \$10,000. Homeowners will receive home assessments, interior repairs, and minor exterior repairs. Exterior repairs to homes will include roof repairs or replacement, exterior door repairs or replacement, exterior painting, porch and ramp repair, gutters, and siding and trim repair. Interior repairs will include the addition of handrails and grab bars, lighting improvements, addition of deadbolts, locks and security doors, and installation of smoke alarms and CO2 detectors. Funding for the program will come from Chesterfield County's U. S. Department of Housing and Urban Development (HUD) Community Development Block Grant (CDGB) funding. The activities are consistent with the Virginia CZM Program provided the applicant obtains and complies with applicable permits and approvals related to the enforceable policies of the Program.

Aqueduct Apartments Renovation

The Newport News Redevelopment and Housing Authority (NNRHA or applicant) proposes to renovate the Aqueduct Apartments at 13244 Aqueduct Drive in the City of Newport News, Virginia. The Aqueduct Apartments are owned by NNRHA and consist of 262 apartment units designated as public housing. The site also contains a community center/rental management office. Constructed in 1971 and 1972, the property encompasses roughly 18.57 acres of urbanized and fully developed land. Project activities include the repair of existing masonry firewalls, exterior masonry, and the replacement of masonry rowlock on all window sills. Gutters and soffits will be repaired and replaced and the HVAC, heat pump, and compressor units will be replaced on approximately 130 units. Federal funding for the project will come from the U.S. Department of Housing and Urban Development (HUD). The activities are consistent with the Virginia CZM Program provided the applicant obtains and complies with applicable permits and approvals related to the enforceable policies of the Program.

SECTION B.4 PROGRAM CHANGES

During the reporting period the Virginia CZM Program continued efforts to develop draft narrative enforceable policies. Work focused on policies implemented by the Virginia Marine Resources Commission (VMRC) and the Virginia Department of Environmental Quality (DEQ). Topics included fisheries, tidal wetlands, non-tidal wetlands, beaches, dunes, and submerged lands. Three advisory committee meetings were held by the William & Mary Coastal Policy Center (CPC) supported by a Virginia CZM grant. CPC staff organized the advisory committee meetings and drafted narrative policies for consideration by the committee. The advisory committee consisted of representatives from NOAA, VMRC, DEQ, the Office of the Attorney General, the Department of Defense, and the Hampton Roads Planning District Commission. CZM staff also worked with the CPC to refine the scope of work for developing narrative policies for the Virginia Department of Health and the remainder of those under DEQ.