

Appendix A

New Kent County, Virginia, Natural Heritage Resources

Natural heritage resources as defined by the Virginia Department of Conservation and Recreation – Division of Natural Heritage (DCR) are the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations such as caves and karst features. New Kent County is currently home to 37 distinct types of natural heritage resources with 74 total occurrences throughout the county (Table I: Natural Heritage Resources). In addition, DCR has identified 28 conservation sites as areas necessary for their survival. New Kent County also has one Natural Area Preserve, Cumberland Marsh.

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

An example of a conservation site in New Kent County is the Diascund Creek – Wilcox Neck Conservation Site. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. Diascund Creek – Wilcox Neck Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources associated with this conservation site are:

<i>Haliaeetus leucocephalus</i>	Bald eagle	G5/S2S3B,S3N/NL/LT
<i>Eriocaulon parkeri</i>	Parker's pipewort	G3/S2/NL/NL
<i>Problema bulenta</i>	Rare skipper	G2G3/S1/NL/NL
<i>Bacopa innominata</i>	Tropical water-hyssop	G3G5/S2/NL/NL
	Tidal Bald Cypress Forest/ Woodland	G3/SNR/NL/NL
	Tidal Freshwater Marsh	G3G4/SNR/NL/NL



Bald Eagle
Photo by DCR staff ©2003

The Bald eagle breeds from Alaska eastward through Canada and the Great Lakes region, along coastal areas off the Pacific and Atlantic Oceans, and the Gulf of Mexico, and in pockets throughout the western United States (NatureServe, 2009). In Virginia, it primarily breeds along the large Atlantic slope rivers (James, Rappahannock, Potomac, etc) with a few records at inland sites near large reservoirs (Byrd, 1991). Bald eagle nest sites are often found in the midst of large wooded areas near marshes or other bodies of water (Byrd, 1991). Bald eagles feed on fish, waterfowl, seabirds (Campbell et. al., 1990), various mammals and carrion (Terres, 1980). Please note that this species is currently classified as threatened by the Virginia Department of Game and Inland Fisheries (VDGIF).

Threats to this species include human disturbance of nest sites (Byrd, 1991), habitat loss, biocide contamination, decreasing food supply and illegal shooting (Herkert, 1992).



Parker's Pipewort
Photo by Bruce Sorrie – Center for Plant Conservation #1695

Parker's Pipewort is classified as very rare to uncommon in Virginia. This diminutive pipewort species displays a grayish-white button flower and often occurs with other rare mudwort species in the intertidal zone of tidal regions from Maine to North Carolina. Potential threats include activities that alter natural river currents causing sedimentation, which could inhibit germination of seeds or smother seedlings, and/or erosion of the habitat. Other potential threats include activities that result in increased salinity levels, water pollution, and displacement by aggressive species (J. C. Ludwig, 1996). Parker's pipewort is known from 21 current occurrences in Virginia, and 9 historic occurrences.



A Rare Skipper
Photo by DCR staff © 2003

The Rare skipper is a small, yellow-orange butterfly species that inhabits tidal marshes from New Jersey south to Georgia (NatureServe, 2009). In Virginia, it is recorded from tidal sections of the James and York River drainages. This species occurs in wetlands along tidal rivers, but may range out as much as half a kilometer in search of nectar (NatureServe, 2009). The best nectar flower is swamp milkweed, but common milkweed, dogbane, and buttonbush are also highly favored. The caterpillars probably feed on giant cord grass (*Spartina cynosuroides*) and species of wild rice (*Zizania* and *Zizaniopsis*) (Glassberg, 1999).

Threats to the Rare skipper include mosquito spraying and habitat loss (NatureServe, 2009). Please note that this is designated as a species of concern by the U.S. Fish and Wildlife Service (USFWS); however, this is not a legal status.



Tropical water-hyssop

Tropical water-hyssop has been documented in the meandering sections of tidal tributaries to the Chesapeake Bay on narrow shores or on the borders of freshwater marshes (Porter, 1991; Rawinski, 1987). Threats to tropical water-hyssop in Virginia include erosion and activities leading to wetland destruction such as shoreline development activities, impoundments, and marina development (Virginia Natural Heritage Program, 1988). Tropical water-hyssop is currently known from 13 locations in Virginia, of which 5 occurrences are historic.



Wilcox Neck
Tidal Bald Cypress Forest/Woodland
Photo by Gary Fleming © 2008

The Tidal Bald Cypress Forest/Woodland is tidally flooded woodland that occurs on low channel floodplains that are subjected to irregular tidal flooding. It is characterized by pronounced hummock-and-hollow microtopography and receives regular tidal inundation. The vegetation is dominated by an open canopy of Bald cypress, with associated trees including red maple and green ash. The shrub layer is often quite diverse, including swamp loostrife, swamp rose, sweet pepperbush, sweetbells, smooth alder, and wax myrtle. The herbaceous layer is comprised of arrow arum, pickerelweed,

halberd-leaved tear-thumb, common wood-reed, smallspike false nettle, rose mallow, dotted smartweed, jewelweed, and others.



Tidal Freshwater Marsh
Photo by Irv Wilson © 2008

The Tidal Freshwater Marsh community in New Kent, the Pickerelweed Tidal Marsh, is co-dominated by leafy forbs arrow arum and pickerelweed. Associated species can include wild rice, duck potato, sweet leaf, halberdleaf tearthumb, swamp smartweed, arrowleaf tearthumb, and beggar ticks spp. Species occurring less frequently can include cattail spp. and jewelweed. This community occurs low within freshwater tidal marshes on muck substrates of variable depth. There is a long duration of tidal flooding, and the community is exposed only for a short period of time each day when the tide is out.

Freshwater tidal marshes are naturally dynamic systems that are best developed where there is a major input of freshwater, a daily tidal range of at least 0.5 m, and a geomorphology that tends to constrict and magnify tidal influence in the upper reaches of the estuary (Odum et al. 1984). They are subject to diurnal flooding by tides and seasonal and episodic flooding from river discharge. Plant composition of freshwater tidal marshes generally occurs as a mosaic of patches dominated by a few or a single species. Species composition is determined by species life history characteristics, especially life form, phenology and mode of regeneration in response to microhabitat conditions, and the frequency and duration of flooding. Plant composition has seasonal variation.



Cumberland Marsh Natural Area Preserve
Photo by Irv Wilson © 2007

Cumberland Marsh Natural Area Preserve

This preserve is 1193 acres of freshwater tidal marsh and upland buffer along the Pamunkey River about 30 miles east of Richmond. Cumberland Marsh supports perhaps the greatest biological diversity on the Pamunkey River, including nesting bald eagles, osprey, great blue herons and egrets as well as the sensitive joint-vetch, a federally threatened member of the pea family. Situated along the Atlantic Flyway, the marsh is important migratory and wintering habitat for waterfowl.

Cumberland Marsh Natural Area Preserve is owned and managed by The Nature Conservancy (TNC). Facilities include a handicapped accessible boardwalk and observation platform with interpretive signs. For visitation information, contact the Virginia Chapter of TNC at (434) 295-6106.

Potential Threats to Natural Heritage Resources

Natural Heritage resources within New Kent County are primarily threatened by the development of natural areas and forested lands. Pollution as a result of development is of particular concern for tidal marshes which depend upon water quality. Fragmentation of forests and the introduction of invasive species, both flora and fauna, can have a direct effect on the survival of many native species. Alteration of the local hydrology by land disturbance and ditching can also change or eliminate habitat for natural heritage resources and provide access to the invasive species.

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Appendix:

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

Natural Heritage State Ranks

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

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

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

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

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

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

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

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

S#? - Inexact or uncertain numeric rank.

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

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

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

SNR - Unranked; state rank not yet assessed.

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

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

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

FEDERAL LEGAL STATUS

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

LE - Listed Endangered

LT - Listed Threatened

PE - Proposed Endangered

PT - Proposed Threatened

C - Candidate (formerly C1 - Candidate category 1)

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

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

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

NL – no federal legal status

STATE LEGAL STATUS

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

LE - Listed Endangered

PE - Proposed Endangered

SC - Special Concern - animals that merit special concern according to VDGIF (not a regulatory category)
LT - Listed Threatened
PT - Proposed Threatened
C - Candidate
NL - no state legal status

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

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

Conservation Sites Ranking

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

Conservation Site Ranks:

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

Legal Status of Site:

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

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Group Name	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	FWS - Species of Concern	Site Name
Natural Community	Bald Cypress - Tupelo Swamp	Bald Cypress - Tupelo Swamp	G3G4	SNR				LOWER CHICKAHOMINY RIVER
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		GODDINS POND HABITAT ZONE
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		ELTHAM MARSH HABITAT ZONE
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		ST. PETERS SWAMP HABITAT ZONE
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		UPPER DIASCUND CREEK HABITAT ZONE
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		DAVIS POND HABITAT ZONE
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		CUMBERLAND MARSH - CHAMBERLAYNE POINT
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		FERRY CREEK HABITAT ZONE
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		DIASCUND CREEK-WILCOX NECK
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		PAMUNKEY SANDPIT HABITAT ZONE
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		HILL MARSH
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		PUTNEYS MILL HABITAT ZONE
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		WARE CREEK
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		HILL MARSH
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		LOWER CHICKAHOMINY RIVER
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		CHESTNUT GROVE LANDING HABITAT ZONE
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		CHESTNUT GROVE LANDING HABITAT ZONE
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		MILL CREEK HABITAT ZONE
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		MORGAN LANDING HABITAT ZONE
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		COOK LANDING HABITAT ZONE
Vertebrate Animal	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2S3B,S3N		LT		WARRENEYE NATURE TRAIL HABITAT ZONE
Natural Community	Basic Oak - Hickory Forest	Basic Oak - Hickory Forest	G3G4	SNR				
Vascular Plant	<i>Dichanthelium consanguineum</i>	Blood Witchgrass	G5	S1?				
Vascular Plant	<i>Cuscuta cephalanthi</i>	Button-bush Dodder	G5	S1?				
Vascular Plant	<i>Cabomba caroliniana</i>	Carolina Fanwort	G3G5	S2				CHICKAHOMINY RIVER - SHIPYARD CREEK - DIASCUND CREEK SCU
Natural Community	Coastal Plain / Piedmont Acidic	Coastal Plain / Piedmont Acidic	G3?	SNR				PROVIDENCE FORGE FISHING AND HUNTING CLUB
Natural Community	Coastal Plain Depression Wetla	Coastal Plain Depression Wetla	G4G5	SNR				NEW KENT POND HABITAT ZONE
Vascular Plant	<i>Xyris difformis</i> var. <i>curtissii</i>	Curtiss' Yellow-eyed-grass	G5T5	S1				
Vascular Plant	<i>Solidago latissimifolia</i>	Elliott Goldenrod	G5	S2				
Vascular Plant	<i>Utricularia striata</i>	Fibrous Bladderwort	G4G5	S1				
Nonvascular Plant	<i>Sphagnum flexuosum</i>	Flexuose Peatmoss	G5	S1S2				
Natural Community	Fluvial Terrace Woodland	Fluvial Terrace Woodland	G3	SNR				LOWER CHICKAHOMINY RIVER
Vertebrate Animal	<i>Regina rigida</i>	Glossy Crayfish Snake	G5	S1				DIASCUND CREEK-WILCOX NECK,
Vascular Plant	<i>Pityopsis graminifolia</i> var. <i>tenuif</i>	Grass-leaved Golden-aster	G5T5?	S1				CHICKAHOMINY RIVER - SHIPYARD CREEK - DIASCUND CREEK SCU
Vascular Plant	<i>Trichostema setaceum</i>	Narrow-leaved Blue-curfs	G5	S2				LOWER CHICKAHOMINY RIVER
Vascular Plant								LOWER CHICKAHOMINY RIVER

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Vascular Plant	Nuphar sagittifolia	Narrow-leaved Spatterdock	G2	S1				CHICKAHOMINY RIVER - SHIPYARD CREEK - DIASCUND CREEK SCU
Natural Community	Non-Riverine Flatwood / Swamp	Non-Riverine Flatwood / Swamp	G2?	SNR				LOWER CHICKAHOMINY RIVER
Vascular Plant	Micranthemum micranthemoide: Nuttall's Micranthemum		GH	SH				
Vascular Plant	Micranthemum micranthemoide: Nuttall's Micranthemum		GH	SH				
Vascular Plant	Micranthemum micranthemoide: Nuttall's Micranthemum		GH	SH				
Vascular Plant	Micranthemum micranthemoide: Nuttall's Micranthemum		GH	SH				
Natural Community	Oak / Heath Forest	Oak / Heath Forest	G4	SNR				PROVIDENCE FORGE FISHING AND HUNTING CLUB
Vascular Plant	Eriocaulon parkeri	Parker's Pipewort	G3	S2				WALNUT SHORE
Vascular Plant	Eriocaulon parkeri	Parker's Pipewort	G3	S2				CUMBERLAND MARSH - CHAMBERLAYNE POINT
Vascular Plant	Eriocaulon parkeri	Parker's Pipewort	G3	S2				DIASCUND CREEK-WILCOX NECK
Vascular Plant	Eriocaulon parkeri	Parker's Pipewort	G3	S2				DIASCUND CREEK-WILCOX NECK
Vascular Plant	Eriocaulon parkeri	Parker's Pipewort	G3	S2				
Vascular Plant	Eriocaulon parkeri	Parker's Pipewort	G3	S2				
Invertebrate Animal	Problema bulenta	Rare Skipper	G2G3	S1				DIASCUND CREEK-WILCOX NECK
								MACON CREEK MARSHES, CLAYBORNE CREEK WETLANDS, CUMBERLAND MARSH - CHAMBERLAYNE POINT
Vascular Plant	Aeschynomene virginica	Sensitive Joint-vetch	G2	S2	LT	LT		
Vascular Plant	Aeschynomene virginica	Sensitive Joint-vetch	G2	S2	LT	LT		
Vascular Plant	Sabatia campanulata	Slender Marsh Pink	G5	S2				
Vascular Plant	Isotria medeoloides	Small Whorled Pogonia	G2	S2	LT	LE		
Vascular Plant	Isotria medeoloides	Small Whorled Pogonia	G2	S2	LT	LE		
Vascular Plant	Penstemon australis	Southern Beardtongue	G5	S2				
Vascular Plant	Penstemon australis	Southern Beardtongue	G5	S2				
Vascular Plant	Potamogeton spirillus	Spiral Pondweed	G5	S1				
Natural Community	Tidal Bald Cypress Forest / Wood	Tidal Bald Cypress Forest / Wood	G3	SNR				DIASCUND CREEK-WILCOX NECK
Natural Community	Tidal Freshwater Marsh	Tidal Freshwater Marsh	G3G4	SNR				DIASCUND CREEK-WILCOX NECK
Natural Community	Tidal Freshwater Marsh	Tidal Freshwater Marsh	G4?	SNR				WARE CREEK
Natural Community	Tidal Freshwater Marsh	Tidal Freshwater Marsh	G4?	SNR				SWEET HALL MARSH, HILL MARSH, COUSIAC MARSH
Natural Community	Tidal Freshwater Marsh	Tidal Freshwater Marsh	G4?	SNR				MACON CREEK MARSHES, PUTNEYS MILL HABITAT ZONE, CLAYBORNE CREEK WETLANDS, CUMBERLAND MARSH - CHAMBERLAYNE POINT
Natural Community	Tidal Freshwater Marsh	Tidal Freshwater Marsh	G4?	SNR				MACON CREEK MARSHES, SWEET HALL MARSH, PAMUNKEY INDIAN ISLAND, CLAYBORNE CREEK WETLANDS, CUMBERLAND MARSH - CHAMBERLAYNE POINT, COHOKE MARSH, COUSIAC MARSH
Natural Community	Tidal Hardwood Swamp	Tidal Hardwood Swamp	G3	SNR				WARE CREEK
Natural Community	Tidal Mesohaline / Polyhaline Marsh	Tidal Mesohaline / Polyhaline Marsh	G4	SNR				WARE CREEK
Natural Community	Tidal Oligohaline Marsh	Tidal Oligohaline Marsh	G4	SNR				WARE CREEK
Vascular Plant	Lysimachia radicans	Trailing Loosestrife	G4G5	SH				
Vascular Plant	Bacopa innominata	Tropical Water-hyssop	G3G5	S2				DIASCUND CREEK-WILCOX NECK
Vascular Plant	Bacopa innominata	Tropical Water-hyssop	G3G5	S2				
Vascular Plant	Bacopa innominata	Tropical Water-hyssop	G3G5	S2				

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Vascular Plant	Bacopa innominata	Tropical Water-hyssop	G3G5	S2		DIASCUND CREEK-WILCOX NECK, LOWER
Vascular Plant	Bacopa innominata	Tropical Water-hyssop	G3G5	S2		CHICKAHOMINY RIVER
Vascular Plant	Trillium pusillum var. virginianum	Virginia Least Trillium	G3T2	S2	SOC	DIASCUND CREEK-WILCOX NECK
Vascular Plant	Didiplas diandra	Water-purslane	G5	S1		RUMLEY MARSH TRIBUTARY
Vascular Plant	Isoetes hyemalis	Winter Quillwort	G2G3	S1?	SOC	CHICKAHOMINY RIVER - SHIPYARD CREEK - DIASCUND CREEK SCU

Natural Area Preserves

Cumberland Marsh Natural Area Preserve