Amphibians, Reptiles, Birds and Mammals of the York River

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ABSTRACT

The York River and its watershed support many natural vegetative communities, from aquatic grass beds to tidal marshes to a variety of woodlands. These communities support a wide variety of resident and migratory amphibians, reptiles, birds and mammals. There are eight families and 26 species of amphibians and ten families and 36 species of reptiles represented within the York River watershed. All three species of sea turtles are protected under the Endangered Species Act and the Northern diamond-backed terrapin is a species of concern. Approximately 230 bird species, resident and migratory, have been recorded within the Chesapeake Bay area. Over 50 families and 190 species of birds have been observed along the estuarine environments of the York River. Specific Reserve components support Bald Eagle nests and Great Blue Heron rookeries. Nineteen families and 50 species of mammals are represented within the York River and its watershed. Of special note is the infrequent occurrence of large marine mammals, such as the bottlenose dolphin and manatee, within the lower York River region.

INTRODUCTION

From its headwaters in the Mattaponi and Pamunkey Rivers to its entrance into the Chesapeake Bay, the York River provides a variety of riverine and estuarine habitats. Consequently the York River system supports a diverse array of vertebrates. Portions of the Chesapeake Bay National Estuarine Research Reserve in Virginia located along the York River provide opportunities for study and observation of many of these species.

The watershed of the York River supports many natural communities, including tidal freshwater marshes, tidal oligohaline marshes, tidal mesohaline and polyhaline marshes, tidal shrub swamps, tidal bald cypress forests and woodlands, tidal hardwood swamps, tidal freshwater and oligohaline aquatic beds and tidal mesohaline and polyhaline aquatic beds (http:// www.dcr.virginia.gov/natural_heritage/ncestuarine.shtml). These multiple natural vegetative communities, in turn, support a wide variety of resident and migratory birds, as well as many reptiles, amphibians, and mammals which are primarily year-round residents.

AMPHIBIANS

Amphibians within the York River watershed are dependent upon freshwater and limited by salt intrusion. All species are therefore located primarily in the upper portions of the river's tributaries or at its headwaters. Eight families and approximately 26 species of amphibians are represented in the York watershed, including species such as: marbled salamander (*Ambystoma opacum*; Figure 1), Eastern red-spotted newt (*Notophthalmus viridescens*), American toad (*Bufo americanus*), pine woods treefrog (*Hyla femoralis*), and bullfrog (*Rana catesbeiana*). The Appendix provides a listing of documented species.



Figure 1. Marbled salamander (Photo courtesy of the Virginia Fish and Wildlife Information Service)

REPTILES

Ten families and 36 species of reptiles occur along the York River and its tributaries, including 11 species of turtle, six species of lizards and 19 species of snakes. Of the four species of turtles found in brackish or salty portions of the river, three are sea turtles (commonly found near the mouth of the York River), the fourth is the Northern diamond-backed terrapin (Malaclemmys terrapin; Figure 2). This turtle is common along most portions of the lower river and its brackish tributaries where typical food items (fiddler crabs and periwinkle snails) are in abundance. Terrapins prefer open, sandy habitat for breeding where they lay eggs in sandy soils above the high tide line. Two species of sea turtles that are regular visitors to the saltier portions of the river (MANSFIELD, 2006), are the loggerhead turtle (Caretta caretta; Figure 3) and Kemp's Ridley (Lepidochelys kempii). The green sea turtle (Chelonia mydas) is relatively rare. All species of sea turtles found within the



Figure 2. Northern Diamond-backed Terrapin (Photo courtesy of the Virginia Fish and Wildlife Information Service)



Figure 3. Loggerhead Turtle (Photo courtesy of James Cook University)

US are federally protected under the Endangered Species Act (ESA). The lower Chesapeake Bay is an important developmental area for both juvenile loggerheads and Kemp's Ridleys as they move into the lower bay and York River for foraging and shelter. Between 5,000 and 10,000 sea turtles enter the Chesapeake Bay each spring and summer, and Mansfield (2006) estimates approximately 1,000 to 3,000 individuals are seasonal residents in the lower Bay. The majority are either juvenile loggerheads or Kemp's Ridleys that use the Bay as a feeding ground. Mansfield (2006) found that juvenile loggerheads and Kemp's Ridleys sea turtles spend approximately 10% of their time at the surface. Unfortunately, it is at this time that they are subject to injury and death due to encounters with vessels and humans. In the 1980s approximately 33% of Virginia's sea turtle mortalities were attributed to entanglement in large mesh pound net leaders (MANSFIELD, 2006). Winter temperatures in Virginia are too cold for the turtles to remain year round, and many individuals found in the lower bay are migrating along the East Coast of the US, or are dispersing young. Since 1979, VIMS has served as the Commonwealth of Virginia's center for the monitoring, study and conservation of endangered and threatened sea turtles within Virginia's waters. Approximately 250 to 350 sea turtles strand within Virginia's waters each year. Most strand during May and June when populations enter the bay, and in October when leaving. Sick or injured sea turtles are treated and/or

rehabilitated at the VIMS campus or other nearby rehabilitation facilities before release back into the wild.

Two families, and 20 species of snakes are known from the York River watershed. One of the most common species may be the northern water snake (*Nerodia sipedon*; Figure 4), which is frequently mistaken for the Eastern cottonmouth (*Agkistrodon piscivorous*; Figure 5). The cottonmouth is one of only two venomous snakes found in the watershed, the other being the Northern copperhead (*Agkistrodon contortrix*). A listing of reptile species documented from the York River watershed is provided in the Appendix.



Figure 4. Northern Water Snake (Photo courtesy of the University of North Carolina)



Figure 5. Eastern Cottonmouth (Photo courtesy of the Armed Forces Pest Management Board)

BIRDS

Approximately 230 bird species have been recorded from the Chesapeake Bay area, both residents and migrants. In marsh, swamp, beach and more open estuarine environments along the York River, approximately 52 families and 192 species are represented. Most species are allied with swamps and associated woodlands, and with fresh and saltwater marshes. A listing of bird species documented from the York River and its tributaries is provided in the Appendix.

Extensive low marsh areas support significant populations of Clapper Rail (*Rallus longirostris*), Seaside Sparrow (*Ammodramus maritimus*), and Marsh Wrens (*Cistothorus palustris*), while tide pools support a large diversity of breeding species, as well as, migratory species. Large high marsh areas provide habitat for breeding populations of Sedge Wrens (*Cistothorus platensis*), Northern Harriers (*Circus cyaneus*; Figure 6), Prairie Warblers



Figure 6. Northern Harrier (Photo courtesy of Coffee Creek Watershed Preserve)



Figure 7. American Oystercatcher (Photo courtesy of Daphne Bremer)

(Dendroica discolor), and Meadowlarks Eastern (Sturnella maffna). Least Terns (Sternula antillarum) and American Oystercatchers (Haematopus palliates) are found on sandy berms and barriers while scattered pine hummocks and adjacent maritime forests support significant populations of Brown-headed Nuthatches (Sitta pusilla) and Chuck-wills-widows (Caprimulgus carolinensis). Marsh, scrub and overwash habitats at the isolated marsh islands of Goodwin Islands support numerous breeding birds including the American Black Ducks (Anas rubripes) and American Oystercatchers (Haemoatopus palliates; Figure 7) (VAD-CR 2005a). American Oystercatchers are on the Audubon Watchlist and are listed as a high priority species in the U.S. Shorebird Conservation Plan.

Aerial surveys of Bald Eagle (Haliaeetus leuco-

cephalus) nests and heron nest colonies are flown annually by staff of the Center for Conservation Biology of the College of William and Mary (http://ccb.wm.edu). Historically, Goodwin Islands supported a large nesting colony of Great Blue Herons (Ardea herodias). By the late 1980s, the colony on Goodwin Islands had grown to approximately 150 pairs and had begun to split and develop other nesting colonies elsewhere. The Catlett Islands reserve site currently supports a small nesting colony of Great Blue Herons (ERDLE and HEFFERNAN, 2005b). Until a hurricane in the fall of 2003 destroyed the nest and large nest trees, at least one pair of Bald Eagles nested at Goodwin Islands, as well as at Catlett Islands. Unlike the Goodwin Islands reserve site, large nest trees are still intact at Catlett Islands, so re-nesting there is possible. Both nesting herons and Bald Eagles are sensitive to disturbance, therefore the isolated locations of these two reserve sites provide critical habitat for nest development. Currently, one Bald Eagle nest is known near the Taskinas Creek Reserve site (MYERS et al., 2008).

Unlike the herons and Bald Eagles, Osprey (*Pandion hali-aetus*) are widespread nesters in this region and appear to be more toleratant of disturbance. There are over 2,000 breeding pairs in the Chesapeake Bay area; the largest known concentration in the world (www.fws.gov/chesapeakebay/osprey. htm). Osprey nesting is common adjacent to reserve monitoring sites along the York River system (Figure 8) and the population appears to be increasing.



Figure 8. Osprey and chicks on nest near CBNERRSVA York River water quality monitoring station (Photo courtesy of Betty Neikirk, VIMS)

Threats to bird populations within the site in general and the Goodwin Islands region, in particular, include: 1) loss of habitat to the invasive marsh grass-common reed (Phragmites australis), 2) loss of habitat to sea-level rise, 3) increases in mammal populations and associated predation, and 4) human disturbance. The aggressive invasive plant, common reed, is spreading throughout Goodwin Islands and many other areas in the York River area. Although some high marshes within this system have not been degraded to the same extent as many areas within the upper Chesapeake Bay, many marshes within the system are highly threatened. Rising sea levels continue to threaten low-lying areas, and isolated marsh islands are particularly vulnerable to this ongoing process. Over the past 30 years, mammalian predators such as raccoon, fox, domestic dog and cat have had a detrimental effect on reproductive rates of marsh-bird populations. Human disturbance is a chronic problem at most locations. It is notable that at the present time Bald Eagle, Osprey and Peregrine Falcons (Falco peregrinus) have made substantial recoveries from near extirpation in this region.

MAMMALS

Approximately 19 families and 50 species of mammals are represented within the York River watershed. A listing of species documented from the York River watershed is provided in the Appendix. Most of these are small to mediumsized mammals, as there are few large mammals remaining in the area, although some large marine mammals do occur here. Some species, like muskrat (Ondatra zibethicus), raccoon (Procyon lotor), beaver (Castor canadensis), river otter (Lutra canadensis), and white-tailed deer (Odocoileus virginianus) are relatively common, while bobcats (Lynx rufus) and black bear (Ursus americanus) are uncommon. There are few significant invasive mammal species in this area, although the potential for establishment of the nutria (Myocastor coypus) in the York system is high (Chesapeake Bay Nutria Working Group 2003). The white-tailed deer (a native species) can have significant negative effects on native tree and herbaceous plant regeneration, recruitment and compositions (HORSELY et al., 2003) and can even disrupt bird populations (DECALETA, 1994). Deer avoid browsing on some invasive non-native plants, such as Japanese stilt grass (Tu, 2000) and therefore can indirectly increase the spread of these invasives. Deer were nearly hunted out of many areas in Virginia by the end of the 19th century, however factors such as the implementation of hunting laws, loss of natural predators and increases in foraging habitats has resulted in increased populations that in many areas may now exceed estimated pre-settlement deer densities (ERDLE and HEFFERNAN, 2005a). Although deer are currently in abundance overall, many mammal populations are threatened by large-scale landscape alterations and habitat fragmentation. These trends are occurring in the York River watershed, as they are everywhere. Therefore, large, unfragmented riverine forests and marshes of the reserve, as well as adjacent and nearby lands serve as critical refugia for mammals in a landscape that is increasingly altered and developed.

Large marine mammals are infrequent visitors in the York system, and generally occur close to the Chesapeake Bay and in the lowest reaches of the river. The most common marine mammal, the bottlenose dolphin (*Tursiops truncates*; Figure 9), is an occasional to frequent visitor in summer months (BLAY-LOCK, 1988). Most bottlenose dolphin are found near shore with water depths of less that 10m. It is thought that pod



Figure 9. Bottlenose dolphin common to the York River (Photo courtesy of Wikimedia Commons)

density is related to prey abundance with the main prey in this area being Atlantic croaker (Micropogon undulates), spot (Leiostomus xanthurus), and sea trout (Cynoscion sp.). Mean pod size is greatest in May and September during peak periods of migration (BLAYLOCK, 1988). Another marine mammal occasionally documented from the York River is the manatee (Trichechus manatus) (MORGAN et al., 2002). Usually manatee occurrences consist of single individuals that have traveled 800 or more miles north of its usual habitat in Florida. Occasionally these individuals succumb to cold stress in the fall and are found dead. In 1994 though, a manatee nicknamed "Chessie" was observed to have traveled up the Eastern Seaboard into the Chesapeake Bay. As water temperatures dropped, the animal was captured and released back in Florida. In 1995 that same individual again migrated north and was observed in Rhode Island, and in 2001 that same individual was again observed in Virginia. Some migration patterns and/or movements by individuals are not well understood at this time.

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APPENDIX

COMMON AMPHIBIANS, REPTILES, BIRDS AND MAMMALS OF YORK RIVER SYSTEM

AMPHIBIANS

Family Ambystomatidae-Mole salamanders *Ambystoma maculatum*-spotted salamander *Ambystoma opacum*-marbled salamander *Ambystoma mabeei*-Mabee's salamander Family Salamandridae-Newts *Notophthalmus viridescens*-Eastern red-spotted newt Family Plethodontidae-Lungless salamanders

REPTILES

Family Chelydridae-Snapping turtles Chelydra serpentine-snapping turtle Family Kinosternidae-Musk and mud turtles Sternotherus odoratus-stinkpot Kinosternon subrubrum-Eastern mud turtle Family Emydidae-Box and water turtles Clemmys guttata-spotted turtle Terrapene carolina carolina-Eastern box turtle Malaclemmys terrapin terrapin-Northern diamondback terrapin Chrysemys rubriventris rubriventris-Northern red-bellied turtle Chrysemys picta picta-Eastern painted turtle Family Cheloniidae-Sea turtles *Chelonia mydas mydas*-Atlantic green turtle Caretta caretta-Loggerhead turtle Lepidochelys kempii-Kemp's Ridley sea turtle Family Iguanidae-Iguanid lizards Sceloporus undulates-fence lizard Family Teiidae-Whiptail lizards Cnemidophorus sexlineatus sexlineatus-six-lined racerunner Family Scincidae-Skinks Scincella lateralis-ground skink Eumeces fasciatus-five-lined skink Eumeces laticeps-broad-headed skink Family Anguidae-Glass lizards Ophisaurus attenuatus-Eastern slender glass lizard Family Colubridae-Colubrid snakes *Nerodia sipedon sipedon*-Northern water snake Storeria dekayi dekayi-Northern brown snake Thamnophis sirtalis sirtalis-Eastern garter snake Thamnophis sauritus sauritus-Eastern ribbon snake Virginia valeriae-smooth earth snake Virginia striatula-rough earth snake Heterodon platyrhinos-Eastern hognose snake Diadophis punctatus edwardsi-Northern ringneck snake Carphophis amoenus amoenus-Eastern worm snake Farancia erytrogramma-rainbow snake Coluber constrictor constrictor-Northern black racer Opheodrys aestivus-rough green snake Elaphe guttata guttata-corn snake Elaphe obsoleta obsolete-black rat snake Lampropeltis getulus getulus-Eastern kingsnake Lampropeltis triangulum triangulum-Eastern milk snake Lampropeltis calligaster rhombomaculata-mole snake Cemophora coccinea-scarlet snake

Family Viperidae-Vipers and pit-vipers Agkistrodon contortrix mokeson-Northern copperhead Agkistrodon piscivorous-Eastern cottonmouth

MAMMALS

Family Didelphidae-Opossums Didelphis virginiana-Virginia opossum Family Soricidae-Shrews Sorex longirostris longirostris-Southeastern shrew Cryptotis parva-least shrew Blarina carolinensis-Southern short-tailed shrew Blarina brevicauda-Northern short-tailed shrew Sorex hoyi-pygmy shrew Family Talpidae-Moles Scalopus aquaticus-Eastern mole Condylura cristata-star-nosed mole Family Vespertilionidae-Vespertilionid bats Myotis lucifugus-little brown myotis Lasionycteris noctivagans-silver-haired bat Pipistrellus subflavus-Eastern pipistrelle Eptesicus fuscus-big brown bat Nycticeius humeralis-evening bat Lasiurus borealis-Eastern red bat Lasiurus intermedius floridanus-Northern yellow bat Family Leporidae-Hares and rabbits Sylvilagus palustris-marsh rabbit Sylvilagus floridanus-Eastern cottontail Family Sciuridae-Squirrels Marmota monax-woodchuck Tamias striatus-Eastern chipmunk Sciurus carolinensis-gray squirrel Glaucomys volans-Southern flying squirrel Family Castoridae-Beavers Castor canadensis-American beaver Family Muridae-Murid rats and mice Reithrodontomys humulis-Eastern harvest mouse Peromyscus leucopus-white-footed mouse Peromyscus gossypinus-cotton mouse Ochrotomys nuttalli-golden mouse Oryzomys palustris-marsh rice rat Sigmodon hispidus-hispid cotton rat Clethrionomys gapperi-Southern red-backed vole Microtus pennsylvanicus-meadow vole Microtus pinetorum-woodland vole Ondatra zibethicus-common muskrat Rattus norvegicus-Norway rat (introduced) Mus musculus-house mouse (introduced) Family Zapodidae-Jumping mice Zapus hudsonius hudsonius-meadow jumping mouse Family Myocastoridae-Nutria Myocastor coypus-nutria (introduced) Family Delphinidae-Dolphins Tursiops truncates-bottle-nosed dolphin Family Cervidae-Deer Odocoileus virginianus-white-tailed deer

Family Canidae-Dogs Vulpes vulpes fulva-red fox Urocyon cinereoargenteus-gray fox Canis latrans-covote Family Ursidae-Bears Ursus americanus americanus-black bear Family Procyonidae-Raccoons and weasels Procyon lotor-raccoon Mustela frenata-long-tailed weasel Mustela vison-mink Lutra canadensis-Northern river otter Family Mephitidae-Skunks Mephitis mephitis-striped skunk Family Felidae-Cats Lynx rufus-bobcat Family Phocidae-Hair seals Phoca vitulina-harbor seal Family Trichechidae-Manatees Trichechus manatus-manatee

BIRDS

Gavia immer Podiceps grisegena Podiceps auritus Podilymbus podiceps Pelecanus occidentalis Morus bassanus Phalacrocorax auritus Botaurus lentiginosus Ixobrychus exilis Nycticorax nycticorax Nyctanassa violacea Butorides virescens Bubulcus ibis Egretta caerulea Egretta rufescens Egretta tricolor Egretta thula Ardea alba Ardea herodias Plegadis falcinellus Cygnus olor Olor columbianus Chen caerulescens Branta canadensis Branta bernicla Aix sponsa Anas americana Anas strepera Anas crecca Anas carolinensis Anas platyrhynchos Anas rubripes Anas acuta Anas discors Anas cyanoptera Anas clypeata Aythya valisineria Aythya americana Aythya collaris Aythya marila Aythya affinis

Common Loon Red-Necked Grebe Horned Grebe Pied-Billed Grebe Brown Pelican Gannet Double-Crested Cormorant American Bittern Least Bittern Black-Crowned Night Heron Yellow-Crowned Night Heron Green Heron Cattle Egret Little blue Heron Reddish Egret Louisiana Heron Snowy Egret Common Egret Great Blue Heron Glossy Ibis Mute Swan Whistling Swan Snow Goose Canada Goose Brant Wood Duck American Widgeon Gadwall Common Teal Green-Winged Teal Mallard Black Duck Northern Pintail Blue-Winged Teal Cinnamon Teal Shoveler Canvasback Redhead Ring-Necked Duck Greater Scaup

Lesser Scaup

Somateria mollissima Clangula hyemalis Melanitta nigra Melanitta perspicillata Bucephala albeola Bucephala clangula Lophodytes cucultatus Mergus serrator Mergus merganser Oxyura jamaicensis Buteo lagopus Haliaeetus leucocephalus Circus cyaneus Pandion haliaetus Falco peregrinus Rallus longirostris Rallus elegans Rallus limicola Porzana carolina Gallinula chloropus Fulica americana Haematopus palliatus Charadrius vociferus Pluvialis dominica Pluvialis squatarola Scolopax minor Gallinago gallinago Catoptrophorus semipalmatus Willet Actitis macularia Tringa melanoleuca Tringa flavipes Erolia alpina Larus atricilla Larus delawarensis Larus hyperboreus Larus fuscus Larus argentatus Larus marinus Rhynchops niger Sterna maxima Sterna caspia Sterna hirundo Sterna antillarum Tyto alba Strix varia Bubo virginianus Archilochus colubris Megaceryle alcyon Dryocopus pileatus Melanerpes carolinus Picoides pubescens Picoides villosus Sphyrapicus varius Colaptes auratus Gallinula chloropus Sayornis phoebe Tachycineta bicolor Riparia riparia Hirundo rustica Corvus ossifragus Corvus brachyrhynchos Sitta carolinensis

Common Eider Oldsquaw Common Scoter Surf Scoter Bufflehead Common Goldeneye Hooded Merganser **Red-breasted Merganser** Common Merganser Ruddy Duck Rough-Legged Hawk **Bald Eagle** Marsh Hawk Osprey Peregrine Falcon Clapper Rail King Rail Virginia Rail Sora **Common Gallinule** American Coot American Oystercatcher Killdeer American Golden Plover Black-Bellied Plover American Woodcock Common Snipe Spotted Sandpiper Greater Yellowlegs Lesser Yellowlegs Dunlin Laughing Gull **Ring-Billed Gull Glaucous** Gull Lesser Black-Backed Gull Herring Gull Great Black-Backed Gull Black Skimmer Royal Tern Caspian Tern Common Tern Least Tern Barn Owl Barred Owl Great-Horned Owl Ruby-Throated Hummingbird **Belted Kingfisher** Pileated Woodpecker Red-Bellied Woodpecker Downy Woodpecker Hairy Woodpecker Easter Sapsucker Yellow-Shafted Flicker Common Gallinule Easter Phoebe Tree Swallow Bank Swallow Barn Swallow Fish Crow Common Crow White-Breasted Nuthatch

Sitta pusilla Troglodytes troglodytes Cistothorus palustris Cistothorus platensis Dumetella carolinensis Polioptila caerulea Vireo griseus Mniotilta varia Vermivora pinus Dendroica dominica Dendroica discolor Dendroica coronata Setophaga ruticilla Limnothlypis swainsonii Protonotaria citrea Geothlypis trichas Wilsonia citrina Dolichonyx oryzivorus Sturnella magna Agelaius phoeniceus Quiscalus major Molothrus ater Carduelis tristis Ammodramus maritimus Melospiza melodia Zonotrichia albicollis Carpodacus mexicanus Sayornis phoebe

Brown-Headed Nuthatch Winter Wren Long-Billed Marsh Wren Short-Billed Marsh Wren Catbird Blue-Gray Gnatcatcher White-Eyed Vireo Black and White Warbler Blue-Winged Warbler Yellow-Throated Warbler Prairie Warbler Myrtle Warbler American Redstart Swainson's Warbler Prothonotary Warbler Yellowthroat Hooded Warbler Bobolink Eastern Meadowlark Red-Winged Blackbird Boat-Tailed Grackle Cowbird American Goldfinch Seaside Sparrow Song Sparrow White-Throated Sparrow House Finch Easter Phoebe