The Virginia Wetlands Report

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Wetlands Program

Annual Summary of Permitted Tidal Wetland Impacts - 2004

By Karen Duhring

The Wetlands Program has maintained a database since 1988 to track cumulative impacts to Virginia's coastal resources authorized through the permitting process. Program scientists have produced over 1000 advisory reports each year for the past seven years. In 2004, 1077 reviews were performed. Each project assessment includes estimated impact areas based on a site visit and information provided in the permit documents. The Wetlands Program database is continuously updated as new project information is received from Local Wetlands Boards and the Virginia Marine Resources Commission.

Permit decisions made at the federal level by the US Army Corps of Engineers are not included. This particular database tracks approved tidal wetland impact areas as depicted in permit documents, not the actual impacts that occur as a result of project construction or completion. Shoreline inventories, which document structures, land use, geomorphology, etc., are available for some Virginia localities through the CCRM Comprehensive Coastal Inventory program.

2004 Tidal Wetland Permit Activity

Final permit decisions were made for 765 permit applications that included tidal wetlands in 2004. This annual summary documents the cumulative impacts of these projects within the calendar year and also compares 2004 to records from the last 12 years (1993-2004).

For the purposes of this database, the activity footprint, or "impact" area, is distinguished from "fill" areas that result in the permanent conversion of tidal wetlands into upland habitat. Impacts are assigned to temporary and beneficial activities, such as dredging and public beach nourishment, as well as adverse actions such as general fill.

"Fill" is defined as the permanent loss of tidal wetlands through conversion into upland habitat. The cumulative "fill" area is of greatest concern for tidal wetlands management. These definitions are intended only for this database and may not be consistent with other regulatory agencies.

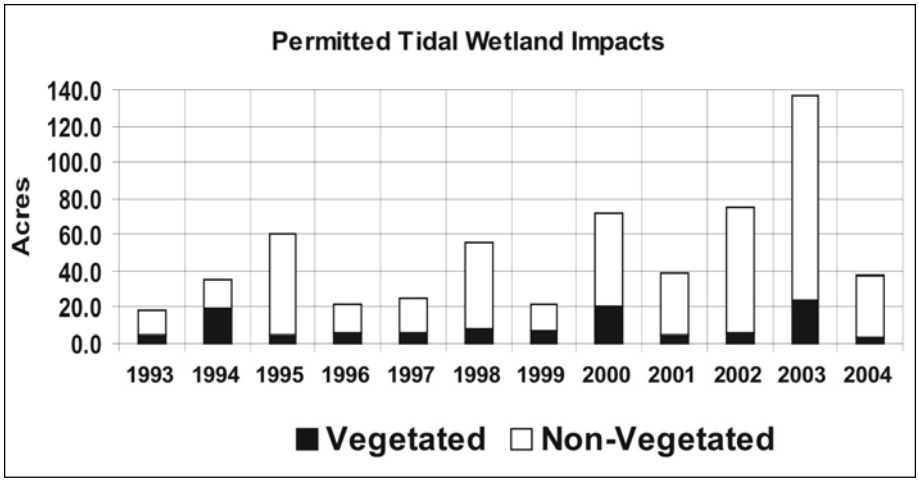

***Figure 1**. Permitted impact areas to vegetated and non-vegetated tidal wetlands, 1993 – 2004. Annual variation in non-vegetated wetland impact area typically depends on the number of large beach nourishment projects.*

Permitted Tidal Wetland Impacts

The permitted impact area in 2004 was 37.2 acres of tidal wetlands. This is less than the previously reported average of 42 acres each year since 1993 and much less than 2003 when over 136 acres of impact was authorized (Figure 1). The permitted impacts include 3.6 acres of vegetated tidal wetlands and 33.6 acres of non-vegetated tidal wetlands, particularly intertidal beaches (14.2 acres) and mud flats (11.4 acres).

Large beach nourishment and channel maintenance projects have increased the total impact area in recent years. This was the case again in 2004. Most of the permitted impact to intertidal beaches in 2004 was associated with one public beach nourishment project. Compared to 2003, the overall impacts resulting from these large projects were substantially reduced. Nine large beach nourishment projects were approved in that year.

Federal channel maintenance projects on Virginia's Eastern Shore include aquatic disposal of the material into adjacent tidal wetland and subaqueous areas because sufficient upland area is not available in close proximity to the waterway. The 11.4 acres of mud flat impacts permitted in 2004 were entirely from one dredging project. Neither type of project converts tidal wetlands into upland habitat and there is no associated "fill" area.

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The views expressed herein are those of the authors and do not necessarily reflect the views of NOAA or any of its subagencies or DEQ.

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Permitted Tidal Wetland Fill Area

The permitted "fill" area indicates the acreage of permanent tidal wetland loss. The estimated fill area permitted in 2004 was 6.4 acres, which is actually the lowest amount recorded since 1993. The average area of permitted fill has been 11.4 acres each year since 1993 and a cumulative total of 132 acres of tidal wetland fill was approved from 1993-2004.

Erosion control structures displace tidal wetlands by design if they cannot be located entirely in upland areas. The largest cumulative loss of wetlands in 2004 was the result of these structures and associated backfill. The largest permitted fill areas were assigned to rock revetments (3.1 acres), bulkheads (1.4 acres), and bulkhead toe revetments (0.8 acres). Almost 80 acres of tidal wetland fill has been approved over the past 12 years for new and replacement erosion control structures.

2004 Compensatory Mitigation Wetlands

The Commonwealth's Wetlands Mitigation-Compensation policy for tidal wetlands defines "mitigation" as all actions, both taken and not taken, which eliminate or materially reduce the adverse effects of a proposed activity on the living and nonliving components of a wetland system or their ability to interact. "Sequencing" refers to the practice of first considering avoidance of the wetland if possible followed by minimization of the loss with compensation considered only after all possible measures to avoid and minimize wetland impacts have been exhausted.

The term "compensation" means actions taken which have the effect of substituting some form of wetland resource for those lost or significantly disturbed due to a permitted development activity; generally habitat creation or restoration. Compensation is therefore a subset of mitigation.

"Mitigation wetlands" are narrowly defined for this database and include any restored or constructed tidal wetland intended to gain wetland from non-wetland area that is permitted by and reported through the state and local permitting process. This definition does not include preservation of tidal wetlands unless it is required by permit and it is legally binding. Conversions from one type of wetland to another, such as planting marsh vegetation in a non-vegetated sand flat area, are not included. There may be other bona fide tidal wetland creation and restoration projects not accounted for in this assessment, particularly if they are associated with state transportation projects and federal permit requirements.

In 2004, only 4 permits out of the 765 cases analyzed for this summary included mitigated tidal wetlands that meet the above criteria. The total area of mitigated tidal wetlands in 2004 was 0.37 acres (Figure 2). This is the lowest amount recorded in the past five years and the second lowest annual amount on record since 1993.

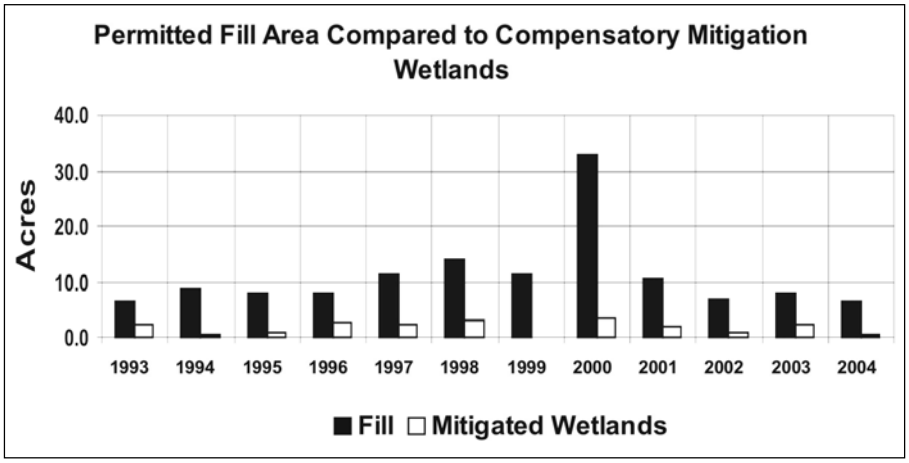

Figure 2. *The cumulative fill area permitted over the past twelve years is 132.0 acres compared to 20.3 acres of compensatory mitigation wetland area for the time period 1993-2004.*

Comparing the total amount of permitted fill with the area of required compensation wetlands indicates if the policy goal of "no net loss" of permitted wetlands is being achieved. During the period 1993-2004, the cumulative fill or permanent loss of tidal wetlands was approximately 132 acres. Only 20.3 acres of compensatory mitigation was required during the same time period.

This places a greater management burden on "sequencing" at the beginning of the process. According to the state's mitigation/compensation policy, each activity permitted to occur in tidal wetlands should be clearly water-dependent in nature and its need to be in the wetlands clearly demonstrated no matter how small the proposed wetland losses appear to be.

Erosion Control Structures

There is a growing concern for the ecological impacts of extensive shoreline modification to protect property from erosion (Figure 3). These concerns are not limited to tidal wetlands but also to other resources such as riparian areas and fisheries habitat impacted because of these structures.

In 2004, approximately 19.8 miles of new erosion control structures were authorized, which is higher than the previously reported average of 18.5 miles each year (Figure 4). Another 6.4 miles of shoreline modification was also permitted during 2004 for replacement structures. The replacement of existing structures may not add to the total length of hardened shoreline, but there is additional fill and loss of wetland resource as well as secondary impacts from shoreline construction, such as suspended sediment and removal of riparian vegetation for water access.

Since 1993, the cumulative total of approved shoreline structures is 229.2 miles. In addition to linear shoreline modification, the combined effect of many structures includes the approved loss of wetland area. Ten acres of permitted impact in 2004 were associated with erosion control structures, including both new structures (8.3 acres) and replacement structures (1.7 acres). Rock revetments continue to be permitted more than bulkheads, but even rock structures include fill areas. Although the total fill area permitted in 2004 was the lowest amount recorded in recent years, about 80 acres of permitted fill has been approved for new and replacement erosion control structures since 1993.

Many of these projects are certainly justified to protect private property from erosion. However, dramatic changes in ecological conditions are inevitable if these trends continue. New approaches and guidance are now being explored to balance the private and public benefits of erosion control with private and public detriments due to lost ecological services provided by the shallow water habitat and tidal wetlands displaced or otherwise affected by erosion control structures.

Figure 3. *Piecemeal installation of erosion control structures by individual property owners results in cumulative impacts on living resources, such as tidal wetlands, important fisheries and riparian buffers.*

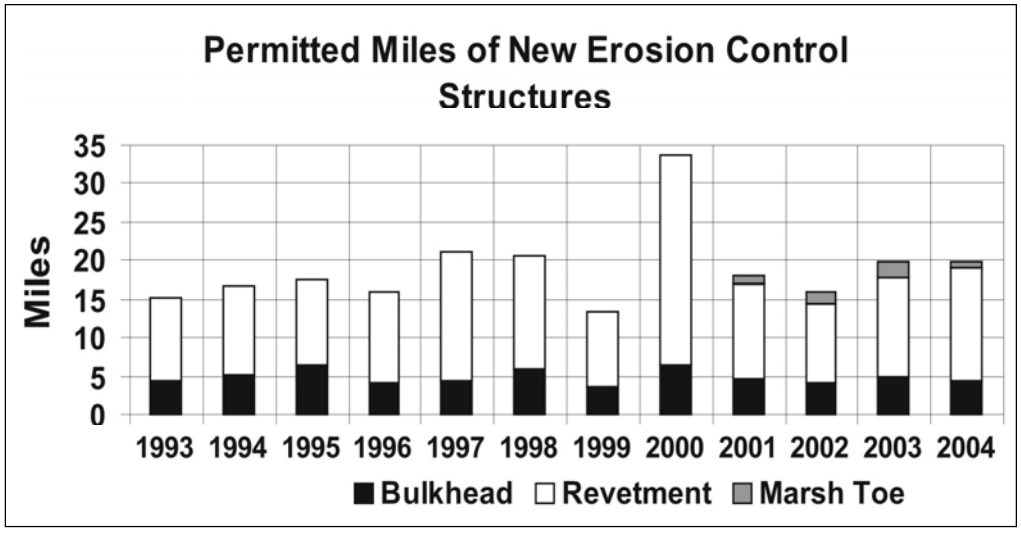

Figure 4. *The cumulative length of shoreline modification approved for new bulkheads and revetments is 229.2 miles during the time period, 1993 - 2004.*

Maintenance of the Wetlands Program database would not be possible without funding from the Virginia Coastal Resources Management Program (NOAA) and the efforts of VIMS personnel from both the Wetlands Program and the Comprehensive Coastal Inventory at the Center for Coastal Resources Management.

Beaks & Bills

Clapper Rail

(Rallus longirostris)

by Julie G. Bradshaw

"Kek-kek-kek-kek-kek" Unless you're very patient or lucky, this call is all you're likely to experience of the clapper rail, a secretive bird of Virginia's salt marshes. The clapper rail is one of several species of rails found in Virginia. All have compact chicken-like bodies of various sizes and coloration, with large feet that allow them to walk without sinking into the often-mucky substrate of the marshes that they inhabit. The expression "thin as a rail", while not originating in ornithology, certainly is descriptive of this group of birds. Rails have narrow bodies that allow them to move easily through the dense marsh grass.

Photo: Walter I. Priest, III

The clapper rail is 14-16 inches from the tip of its long bill to the tip of its tail, and has a gray-brown back and dull reddish brown chest and belly, gray cheeks, and dull black and white barring on the flanks. King and Virginia rails have similar markings, but are both found primarily in freshwater marshes. Virginia rails are much smaller, about 9-10 inches long. King rails are slightly larger, up to 19 inches long. King and clapper rails sometimes hybridize where their ranges overlap in brackish areas.

The clapper rail, also known as the marsh hen or mud hen, breeds primarily in saltmarsh cordgrass (*Spartina alterniflora*) marshes, but also in black needlerush marshes (*Juncus roemerianus*). Fiddler crabs are the main prey of clapper rails, but they are opportunistic feeders, and will also eat snails, mud worms, grasshoppers and other available invertebrates. Mice and birds have also been found in the stomachs of clappers.

Clapper rails nest in late May to early June. Nests are built primarily by the male and are a platform of dead vegetation, approximately 8-10 inches in diameter, often with a canopy or dome over the nest cup, which conceals the nest from overhead predators such as harriers and gulls. The nest often includes a ramp leading up to the platform.

The greatest density of nesting clappers found by Meanley (1985) in his many years of studying this species was 4 pairs per acre in a 10-acre marsh, resulting in a nesting territory size of approximately ¼ acre (or 0.1 hectare). However, this breeding territory must be found within the context of a larger marsh. Bryan Watts, of the Center for Conservation Biology at William & Mary, did not find any clapper rails in the 0.1-hectare marshes that he studied, but they were found in half of the 1-hectare (2.5 acre) and all of the 5-hectare (12.4 acre) marshes he surveyed from Grandview Beach, Hampton to New Point Comfort, Mathews County (Watts, 1992 and 1993).

Clappers lay 8-10 eggs, which are incubated for about 3 weeks by both parents. The chicks are covered with black down for the first month. They are usually independent by about 6 weeks of age. The parents then sometimes re-nest. Re-nesting also occurs after storms or high tides destroy nests.

Within the marsh, clappers are most often found near tidal guts or pools, where the cordgrass is tallest and most of the fiddler crabs are found. Clappers rarely fly during the summer, preferring to walk slowly and deliberately through the marsh. When flushed, they are very clumsy-looking flyers. But once they get going, they can fly as fast as ducks, which serves them well during their annual migration.

The eastern subspecies of clapper rails are found on the Atlantic Coast of the U.S. from New England to Florida. Rails from the Chesapeake Bay have been shown to migrate, beginning in August, to as far south as northeast Florida. Birds from New England and New Jersey may be found spending the winter in Chesapeake Bay marshes. Clappers are not as closely tied to salt marshes during winter, and were reported by Meanley upriver as far as Hog Island, Surry County, on the James River, and to Tappahannock, Essex County, on the Rappahannock River. They arrive back on breeding grounds and begin courtship in April.

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Tidal Wetlands Seminar Draws Crowd

Over 130 people from all over Tidewater Virginia were in attendance at the Virginia Institute of Marine Science (VIMS) on March the 9th for a seminar dealing with tidal wetlands ecology, management issues such as "no net loss," new legislation and the advent of online permit applications, as well as an introduction to the management implications for preserving and restoring "living shorelines." The diverse group of individuals present were representing wetlands boards, local and state planning and engineering staff, environmental consulting firms, real estate agencies, non-governmental organizations and shoreline property owners, to name a few. Speakers were primarily scientists from the Wetlands Program of the Center for Coastal Resources Management at VIMS and they were joined on the agenda by David Burke representing the Keith Campbell Foundation and Tony Watkinson, Deputy Chief of the Habitat Management Division of the Virginia Marine Resources Commission.

The morning session contained descriptions of the seventeen vegetated and nonvegetated tidal wetland communities in Virginia with notes about their ecology, a discussion of the various jurisdictions involved with shoreline permitting, and presentation of the criteria for evaluating proposed wetland alterations.

After a break for lunch speakers turned the group's attention to the total amount of wetland impacts permitted in 2004 and how this compared with the previous twelve years VIMS has been maintaining a data base (See lead article this issue). This led into a discussion of compensatory mitigation and how well the Commonwealth is meeting its goal of "no net loss" of permitted wetlands. David Burke, then spoke of the Living Shorelines Stewardship Initiative (LSSI) and how this concept is being implemented in Maryland and is being introduced in Virginia. (See Vol. 19, #2 of this newsletter for additional information regarding the LSSI in Virginia). Mr. Burke was followed by Tony Watkinson who spoke on General Assembly actions and wetland board administrative matters.

Networking was highlighted as a very important activity by seminar attendees.

David O'Brien talks to seminar participants about wetlands assessment criteria and the rationales supporting them.

Reaction to the meeting was generally favorable with evaluation forms stating that the attendees found the topics interesting, timely and informative. Coming out as both the best part of the program and the most important was the topic of "Living Shorelines." Finishing a close second in both categories was jurisdictions/permitting process. Topics requested for future seminars were, in decreasing order of popularity, shoreline issues, mitigation/restoration, case studies, plant identification and Chesapeake Bay Preservation Act issues.

The next workshop/seminar is scheduled for the 16th of June at VIMS.

A Level I Protocol for Assessing Wetland Condition by Hydrologic Unit within the Coastal Plain

By Kirk J. Havens

Wetlands play a crucial role in the maintenance of the aquatic health of our streams, rivers and the Chesapeake Bay. There is general consensus that wetlands can be very valuable elements in a landscape. Their natural capacity to improve water quality, trap sediments, moderate floods, recharge groundwater, provide habitat, and create aesthetic and recreational amenities have led policy makers to seek to assess their condition. The capacity of a wetland to perform various functions in a landscape is determined, in part, by both its classified type (i.e. whether it is forested, shrub, or emergent) and its location in a landscape. The consequences of any land management activities are naturally integrated in watersheds, making watersheds the logical study units. The research project described here assesses the condition of nontidal wetlands by hydrologic unit for the coastal plain of Virginia, USA utilizing geographic information system (GIS) technology in what is termed a Level I assessment. Level I assessments are generally conducted remotely and, in this case, all mapped National Wetlands Inventory (NWI) nontidal wetlands are assessed using satellite-derived data. The GIS protocol analyzes wetland type, hydroperiod, size, proximity to other wetlands, percent landcover types within the wetland drainage area (such as agriculture, developed, and forested), proximity to roads, road type, and road alignment. These landscape metrics are analyzed in regard to habitat and water quality function for each individual wetland. To determine the surrounding landuse proportion regarding the habitat function, three areas are analyzed: landuse immediately adjacent the wetland, landuse within 200m of the wetland, and landuse between 200m and 1000m of the wetland. For the water quality function, the same distances are used but are only analyzed within the contributing drainage area of the wetland (Figure 1).

It takes considerable computing time for the analysis since every mapped nontidal wetland in the Commonwealth is being analyzed. On average, it takes about 2 minutes per wetland for the GIS computation. There are over 223,000 mapped nontidal wetland units in the Commonwealth resulting in about 310 days of 24 hr computing time to complete the project. Presently about 50% of the Commonwealth has been completed (Figure 2).

The information from this project can be used in state and local planning processes for consideration of wetlands and aquatic health based upon locally identified priorities. Individuals or developers will be able to use the information as part of their planning process as well. The Commonwealth of Virginia has adopted the method as part of a long-term strategy for wetland monitoring and assessment. A similar assessment method is being conducted for tidal wetlands.

Figure 1. GIS analysis of surrounding landuse metrics including contributing wetland drainage area.

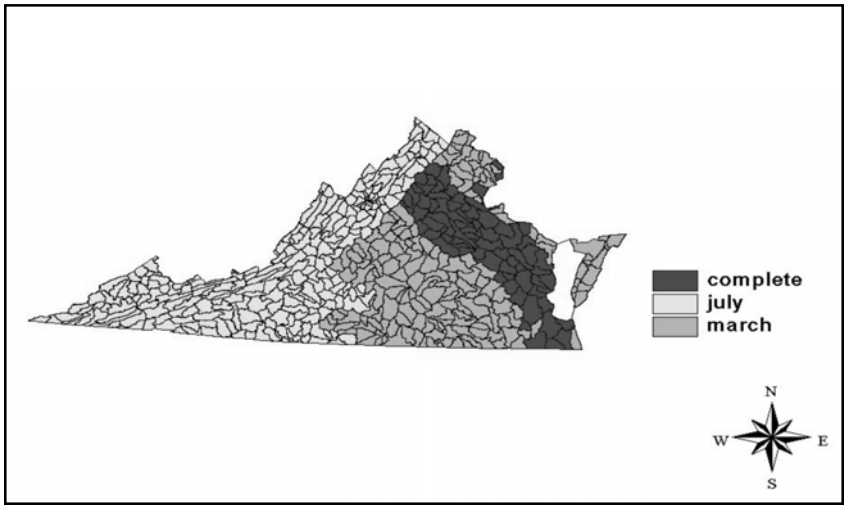


Figure 2. GIS analysis schedule for Virginia's nontidal wetlands.

Take a Wetland to Lunch.... Or Take your Lunch to a Wetland

By Pam Mason

May is American Wetlands Month. The first American Wetlands Month was celebrated in 1991 by several federal agencies and nonprofit partners. This year's theme is "It pays to save wetlands." The take home message is that wetlands naturally provide services that have economic value.

For America Wetlands Month, consider visiting a local wetland, and why not bring a picnic and stay awhile. Regardless of where you live, there are varied opportunities to explore diverse wetlands communities throughout Virginia. Look for wetlands in your local, regional and state parks, as well as state and national wildlife refugees and natural areas. Many highlight the wetlands communities with trails and educational materials.

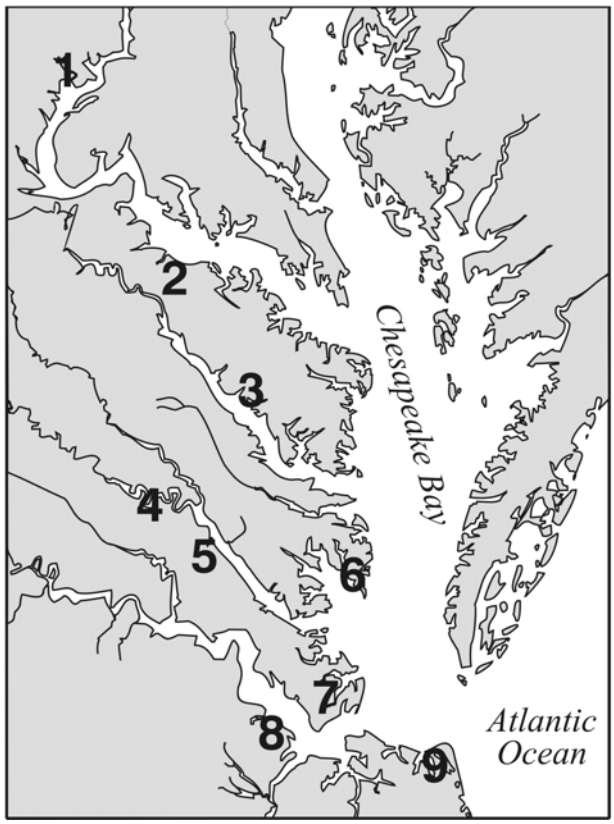
1. Mason Neck Wildlife Refuge in Fairfax County offers two different trails to and over the tidal marsh; the Woodmarsh Trail and the Great Marsh Trail. Interpretive literature is available at the trailheads. 14416 Jefferson Davis Highway, Suite 20, Woodbridge, VA 22191 (703) 690-1297.

2. Westmoreland State Park in Westmoreland County is located along the Potomac River. The park offers trails that access the River and wetland communities. Take the Big Meadow Interpretive Trail to view Yellow Swamp where from late May through August the Yellow Flag is blooming. 1650 State Park Road, Montross, VA 22520 (804) 493-8821.

3. Belle Isle State Park is located in Lancaster County. The park is situated along the Rappahannock River and Mulberry and Deep Creeks. Several trails, an observation blind and picnic facilities on the River offer great opportunities to observe wetland habits and wetland denizens. 1632 Belle Isle Road, Lancaster, VA 22503 (804) 462-5030.

4. The Nature Conservancy's Cumberland Marsh Preserve provides access to freshwater tidal marsh along the Pamunkey River in New Kent County. A boardwalk and observation deck with interpretive signs allow the visitor to get up close and personal with the marsh. (434) 295-6106 or Dept. Conservation and Recreation (804) 445-9117.

5. York River State Park is located in York County. Notable are the diverse wetlands found in Taskinas Creek and the education materials available. 5526 Riverview Road, Williamsburg, Va. 23188-6732 (757) 566-3036.



6. New Point Comfort Natural Area Preserve is on the Chesapeake Bay in Mathews County. The preserve is a great place to launch a canoe or kayak. The tidal marsh, nonvegetated flats and shallow waters provide opportunity to view coastal fauna; waterbirds, herons and fiddler and blue crabs. (434) 295-6106 or Dept. Conservation and Recreation (804) 445-9117.

7. Sandy Bottom Nature Park in the City of Hampton has platforms and trails to access the nontidal lake, woods and wetlands. Interpretive materials are available. www.hampton.gov/parks.

8. Ragged Island Wildlife Management Area is on the James River at the southern terminus of the James River Bridge. The management area has a marsh boardwalk and a short trail to a sandy beach along the River. www.dgif.state.va.us

9. First Landing State Park is located near the mouth of the Chesapeake Bay in Virginia Beach. The park has a diverse coastal ecosystem with tidal marsh, dunes, and cypress swamp. There are miles of trails including a boardwalk through the cypress swamp. 2500 Shore Drive, Virginia Beach, VA 23451-1415 (757) 412- 2300.

Information on State Parks may be found on the Dept. Conservation and Recreation Website: www.dcr.state.va.us. Information on Wetlands Month may be found on EPAs website http://www.epa.gov/owow/wetlands/awm/

Calendar of Upcoming Events

June 5-10, 2005 **International Wetlands Meeting of the South Atlantic Chapter of the Society of Wetland Scientists (SWS).** Charleston, SC. http://www.sws.org

May 21, 2005 **Marine Science Day at the Virginia Institute of Marine Science**
A family-oriented open house at VIMS. Tours, boat rides, beach seining, GPS treasure hunt, equipment displays, research presentations and more. http://www.vims.edu

June 16, 2005 **VIMS Tidal Wetlands Workshop**
Agenda in preparation. Watch the Center for Coastal Resources Management homepage. Announcement and details coming via email.

July 17-21 **COASTAL ZONE 05. Balancing on the Edge. New Orleans, Louisiana.**
Gale.Peek@noaa.gov

Oct. 16-21, 2005 **Estuarine Research Federation Meeting. Norfolk, Virginia. ESTUARINE INTERACTIONS: Biological-Physical Feedbacks and Adaptations.**
http://www.sgmeet.com/erf2005/contact.htm

Oct. 25-28, 2005 **Eighth Annual Wetlands and Watersheds Workshop; Aquatic Systems and Water Quality. Atlantic City, NJ**. The workshop will focus on aquatic systems and how they fit into watersheds. Abstracts due by May 31, 2005. Information contact: Frank@wetlandsworkgroup.org

Dec. 5-7, 2005 **Environmental Results Using Market-Based Approaches. Atlantic City, NJ.**
Sponsored by EPA, this conference seeks to examine market-based environmental tools currently in use in various media. Participants will gain an understanding of the methods and the science behind them, and the legal considerations, limitations and drivers for each. Abstracts due by May 31, 2005. seligman.andrew@epa.gov

Clapper Rail
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Although some western subspecies of the clapper rail are endangered, the eastern subspecies populations seem to be fairly stable, as long as marshes are preserved and not further degraded. It was encouraging to learn that a clapper rail with chicks was observed in 1989 using the Hampton Salt Ponds mitigation marsh which had been restored only 2 years previously (personal communication, Tom Barnard and Pam Mason). This 1.5-acre marsh is adjacent to a similar-sized natural marsh and is in the vicinity of other extensive marshes, enhancing its value to the rails.

Clapper rails are legally hunted in Virginia during fall migration. One hunting method involves waiting for a "marsh hen tide", an extreme high tide, during which hunters pole their boats through the marsh. The rails are concentrated in the highest parts of the marsh and are more easily accessed and flushed than during lower water levels.

Aside from humans, predators of the clapper rail or its eggs include raccoons, fish crows, harriers, short-eared owls, great blue herons, and gulls. In populated areas, dogs and cats may take rails and their young. Although probably an unusual occurrence, Carlson et al. (2002) found that tiger sharks they caught had fed on clapper rails.

If you're not able to spot this elusive species on your next summertime visit to a coastal saltmarsh, you may be able to see the pair currently at the Virginia Living Museum in Newport News. Even these will require some patience to view, as the "habitarium" in which they live is quite similar to their dense natural habitat. If your computer is properly configured, you can hear the clapper rail's call at http://www.mbr-pwrc.usgs.gov/Infocenter/Song/h2110so.wav.

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