The Virginia Wetlands Report

Summer 2003
Vol. 18, No. 2

Editor's Note: Most of this issue of the *Virginia Wetlands Report* is devoted to presenting an historical index of all the articles that have appeared over the years in the newsletter. A number of you requested this during our recent reader survey. This effort has taken us back to our fledgling years beginning in 1986 when we were called the *Wetlands Board Bulletin*. All of the back issues are available for viewing or downloading by clicking on "resources" and then "publications" at the VIMS, Center for Coastal Resources Management web page or go directly to: http://www.ccrm.vims.edu/publications.html.

If you would like to receive any back issues of the newsletter, they are available free, upon request. Send your list and return address to: Virginia Institute of Marine Science, Center for Coastal Resources Management, P.O. Box 1346, Gloucester Point, VA 23062.

Also as a result of our reader survey, we are beginning a new feature with this issue highlighting some of the more interesting and useful web sites that we have come across. We hope you will go to the two federal agency sites we feature in this issue of the newsletter and find them both relevant and useful. If you have sites that you would like to suggest for future issues, please let us know. *-Ed.*

Cumulative Index 1986 - 2002

Animals & Insects

Vol. V, No.1	Raccoon, Golden Silk Spider.
Vol V, No. 2	Marsh Rabbit
Vol. VII (1)	Dredge Spoil Oysters. *Walter I. Priest, III*
Vol. 14, No. 1	Horseshoes Anyone? *Tom Barnard and Lyle Varnell*
Vol. 14, No. 2	Virginia Horseshoe Crab Management Up date. *Tom Barnard and Lyle Varnell*
Vol. 14, No. 3	Dragonflies: Hawks of the Insect World! *Kirk Havens*
Vol. 15, No. 1	A Crawfish by any Other Name Would Taste as Sweet. *Pam Mason*
Vol. 15, No. 1	Salt Marsh Snails. *Walter I. Priest, III*
Vol. 15, No. 2	Grass Shrimp. *Walter I. Priest, III*
Vol. 15, No. 3	Fiddler Crab. *William L. Roberts*
Vol. 16, No. 1	The Stinging Sea Nettle (Jellyfish). *William L. Roberts*
Vol. 16, No. 2	Northern Water Snake. *William L. Roberts*
Vol. 16, No. 3	Diamondback Terrapin. *Walter I. Priest, III*
Vol. 17, No. 2	Hellgrammites and Their Relatives. *Rebecca Jo Thomas*
Vol. 18, No. 1	The Common Clamworm *(Nereis succinea)*. *Rebecca Jo Thomas*

Birds

Vol. V, No.1	Virginia Rail.
Vol. V (2)	The Living Marsh: Yellow-crowned Night-heron.
Vol. V (3)	Rails. *Julie G. Bradshaw*
Vol. VI (1)	Black Duck. *Walter I. Priest, III*
Vol. VII (1)	Marsh Wren. *Julie G. Bradshaw*
No. 93-4	Little Blue Heron. *Julie G. Bradshaw*
Vol. 93-8	Swamp Sparrow. *Julie G. Bradshaw*
Vol. 93-10	Terns. *Julie G. Bradshaw*
Vol. 94-2	American Oystercatcher. *Julie G. Bradshaw*
No. 94-6	Sea Ducks: Scoters and Oldsquaw. *Julie G. Bradshaw*
No. 94-6	Death on the Chesapeake Bay: The 1994 Avian Cholera Outbreak. *Julie G. Bradshaw*
No. 94-9	Birds of the Eastern Shore. *Julie G. Bradshaw*
No. 94-9	Virginia's Eastern Shore: Gone to the Birds. *Jill Barnard*
Vol. 10, No.1	Louisiana Waterthrush. *Julie G. Bradshaw*
Vol. 10, No. 2	Prothonotary Warbler. *Julie G. Bradshaw*
Vol. 11, No.1	Black Skimmer. *Julie G. Bradshaw*
Vol. 11, No. 2	Northern Harrier, or Marsh Hawk. *Julie G. Bradshaw*
Vol. 11, No. 3	Great Blue Heron. *Julie G. Bradshaw*
Vol. 12, No.1	Double-Crested Cormorant. *Julie G. Bradshaw*
Vol. 12, No. 2	Brown Pelican. *Julie G. Bradshaw*
Vol. 12, No. 3	Barred Owl. *Julie G. Bradshaw*
Vol. 13, No.1	Northern Pintail. *Julie G. Bradshaw.*
Vol. 13, No. 2	Wood Duck. *Julie G. Bradshaw*
Vol. 13, No. 3	Tundra Swan. *Julie G. Bradshaw*
Vol. 17, No. 1	Spotted Sandpiper. *Walter I. Priest, III*

Continued on next page

Book Reviews

Dredging

Dunes & Beaches

Education

Fishes

The Virginia Wetlands Report is a quarterly publication of the Wetlands Program at the Virginia Institute of Marine Science of the College of William and Mary. Subscriptions are available without charge upon written request to: Wetlands Program, Virginia Institute of Marine Science, P.O. Box 1346, Gloucester Pt, VA 23062 USA. *Address corrections requested.*

Program Director:
Dr. Carl Hershner
Head, Wetlands Advisory Program:
Thomas A. Barnard, Jr.
Produced by:
VIMS Publication Center

In this Issue:

This report was funded, in part, by the Virginia Institute of Marine Science and by the Virginia Coastal Resources Management Program of the Department of Environmental Quality through Grant #NA97OZ0181-01 of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resources Management, under the Coastal Zone Management Act, as amended.

Vol. 11, No. 2 Bay Anchovy. *Lyle Varnell*
Vol. 11, No. 3 Weakfish. *Lyle Varnell*
Vol. 12, No.1 Atlantic Silverside. *Lyle Varnell*
Vol. 12, No. 2 Spot. *Lyle Varnell*
Vol. 12, No. 2 Fish Lesions, *Pfiesteria* and the Chesapeake Bay.
Vol. 12, No. 3 Yellow Perch. *Lyle Varnell*
Vol. 13, No. 1 Sheepshead Minnow. *Lyle Varnell*
Vol. 13, No. 2 Striped Killifish. *Lyle Varnell*
Vol. 13, No. 3 Mummichog. *Lyle Varnell*
Vol. 14, No. 1 Striped Mullet. *Lyle Varnell*
Vol. 17, No. 3 Red Drum, *Sciaenops oscellatus*. *Walter I. Priest, III*

GIS

No. 93-4 Mapping our Coastal Inventory. *Marcia Berman*
Vol. 93-8 Mapping the Coastline. *Marcia Berman*
Vol. 93-10 The Importance of Natural Resource Inventories. *Carl Hershner and Marcia Berman*
Vol. 94-2 Using Photography for Mapping. *Marcia Berman*
No. 94-9 The Virginia Geographic Information Network (VGIN). *Marcia Berman*
Vol.10, No.1 Comprehensive Coastal Inventory Develops New Tidal Wetlands Inventories. *Marcia Berman*
Vol. 10, No. 2 Sixth Annual Virginia GIS Conference. *Marcia Berman*
Vol. 11, No.1 Geographic Information System (GIS) Data Exchange- The State of the Problem. *Marcia Berman*
Vol. 11, No. 2 Geographic Information System (GIS) Data Exchange- The State of the Problem, Part 2. *Marcia Berman*
Vol. 11, No. 3 Geographic Information Systems Support Tributary Strategy Planning in Virginia. *Marcia Berman*
Vol. 12, No.1 GIS as an Educational Tool. *Marcia Berman*
Vol. 12, No. 2 GIS as a Tool for Planning and Evaluating Wetland Mitigation Compensation Sites. *Marcia Berman*
Vol. 12, No. 3 Targeting for Effective Wetlands Preservation. *Marcia Berman and Lynn M. Dancy*
Vol. 13, No.1 Classifying Satellite Imagery to Detect Land Cover Features. *Marcia Berman*
Vol. 13, No.1 Monitoring Wetlands Status and Trends: The Remote Sensing Solution. *Carl Hershner*
Vol. 13, No. 2 An Update on the Virginia Geographic Information Network. *Marcia R. Berman*
Vol. 13, No. 3 Using Remote Sensing and GIS To Perform Jurisdictional Wetlands Determinations. *Marcia Berman*
Vol. 14, No. 1 Shoreline Situation Reports: Revised, Revisited, and Updated. *Marcia Berman*
Vol. 14, No. 2 Applications for Wetlands Restoration in the Elizabeth River Watershed. *Marcia Berman*
Vol. 14, No. 3 Online Fauna and Flora Data in Virginia. *Marcia Berman*
Vol. 15, No. 1 Computing Isolated Wetlands in the Commonwealth. *Marcia Berman and Tamia Rudnicky*
Vol. 15, No. 2 A New Land Cover Data Set Now Available For Virginia's Tributaries. *Marcia Berman*
Vol. 15, No. 3 CCI Develops New Online GIS Resources. *Marcia Berman*
Vol. 16, No. 2 Shoreline Situation Report Update. *Marcia Berman*
Vol. 16, No. 3 A GIS approach for Targeting Potential Wetlands Mitigation or Restoration Sites. *Marcia Berman and Tamia Rudnicky*
Vol. 17, No. 1 Natural Resource Agencies Identify GIS Data Necessary to Address Agency Mandates. *Marcia Berman*
Vol. 17, No. 2 GPS Technology Lends Support to the Marsh Project. *Marcia Berman and Harry Berquist*
Vol. 17, No. 3 Marina Site Suitability Tool Available. *Marcia Berman, Tamia Rudnicky, Kirk Havens and Thomas Barnard*
Vol. 18, No. 1 The First Electronic Shoreline Situation Report is Released for the City of Norfolk. *Marcia Berman*

Inventory/Tracking

Vol. II, No. 1 Tidal Marsh Inventories List.
Vol. II, No. 2 Tidal Wetlands Inventories.
Vol. II, No. 2 Wetlands Tracking.
Vol. II, No. 3 Tidal Vegetated Wetlands and Shoreline Information by Political Subdivision.
Vol. II, No. 3 A Note From the Virginia Marine Resource Commission: Tracking Wetlands Permit Applications.
Vol. V (2) Status of Wetland Inventories.
Vol. 14, No. 2 Historic Wetland Loss in the Elizabeth River. *Walter I. Priest, III*
Vol. 16, No. 1 An Overview of Permitted Tidal Wetland Impacts for 2000. *Tom Barnard*
Vol. 16, No. 2 A Summary of the EPA Rapid Bioassessment of Wetland Health Workshop. *Rebecca Jo Thomas*
Vol. 18, No. 1 An Overview of Permitted Tidal Wetland Impacts for 2002. *Karen Duhring*
Vol. VI (1) Back Bay Wetlands Inventory: *Walter I. Priest, III and Sharon Dewing*

Law & Policy

Vol. I, No. 3 In the News: State in U.S. Shoreline Program
Vol. II, No. 3 Jurisdictional Boundaries for Shorelines Charts
No. 93-4 Wetlands Delineation- The Dilemma Continues

Vol. 94-2 Analysis of Functional Assessment Accuracy for Constructed Wetlands. *M. Fox, Julie G. Bradshaw, and Jim Perry*

Vol. 10, No. 2 Washington and Wetlands: Where Do Things Stand?

Vol. 11, No. 2 General Assembly Passes, and Governor Signs Wetlands Mitigation Banking Legislation.

Vol. 11, No. 3 Wetlands and Regional Watershed Management. *Katie Hopkins*

Vol. 12, No. 2 Wetlands Mitigation Banks: Creating Big Wetlands to Compensate for many Small Losses. *Carl Hershner*

Vol. 12, No. 3 Chesapeake Bay Program Wetlands Initiative- New Approach Allows the Identification of Locally Important Wetlands. *Carl Hershner*

Vol. 12, No. 3 Chesapeake Executive Council Directive.

No. 97-2 Wetlands Protection and Restoration Goals.

Vol. 13, No. 3 United States v. Wilson: Muddy Waters in the Search for Wetlands Protection. *S. Fagan and Jim Perry*

Vol. 13, No. 3 Responding to the Chesapeake Executive Council Directive for Wetlands Protection and Restoration Goals. *Carl Hershner*

Vol. 14, No. 1 Wetlands Initiative Gains Momentum. *Carl Hershner*

Vol. 15, No. 1 Virginia Debates Nontidal Wetlands Regulation. *Carl Hershner*

Vol. 15, No. 2 DEQ Implementing Nontidal Wetlands Protection Mandate. *Ellen Gilinsky*

Vol. 16, No. 3 Bay Managers Eye Recently Permitted SAV Losses. *Lyle Varnell and Jay Woodward*

Vol. 17, No. 1 Update on Virginia's New and Improved Nontidal Wetlands Program. *Ellen Gilinsky*

Vol. 17, No. 1 Studies Document Weaknesses in 404 Compensatory Mitigation. *Tom Barnard*

Miscellaneous

Vol. III, No. 3 Recycling.

Vol. 11, No. 2 Second Edition of the Virginia Wetlands Management Handbook Now Available.

Vol. 12, No.1 Medicinal Uses of Wetlands. *Pam Mason*

Vol. 13, No. 3 Wetlands: A Critical Resource in the Revolutionary War? *Pam Mason*

Vol. 14, No. 3 Natural Lighting: Colonial Necessity is Today's Craft. *Pam Mason*

Vol. 16, No. 2 Through The Years in Virginia's Wetlands: The 1970's. *Gene M. Silberhorn*

Vol. 16, No. 3 Through the Years in Virginia's Wetlands: Days in the Field. *Gene M. Silberhorn*

Vol. 17, No. 3 Virginia Wetlands Report Reader Survey Result. *Tom Barnard*

People & Meetings

Vol. 93-8 VIMS Hosts Wetlands Functional Assessment Workshop. *Carl Hershner*

Vol. 94-2 Habitat Restoration is Focus of Newly Formed Bay Program Workgroup. *Carl Hershner*

Vol. 94-2 Virginia Association of Wetlands Professionals.

No. 94-6 Wetlands Management Symposium A Success. *Tom Barnard*

Vol.10, No.1 Earthwatchers Witness Change in the Chesapeake. *Jill Barnard*

Vol. 10, No. 2 Wetlands and People. *Pam Mason*

Vol. 11, No. 1 Northern Neck Workshops Prove Profitable to Participants. *Beth Peacock*

Vol. 11, No. 2 Wetlands Management Symposium: Wetlands Compensation Survey Results.

Vol. 16, No. 1 Wetlands Management Symposium Focuses on Technology and Conservation.

Places to Visit Wetlands

No. 93-4 Seashore State Park. *Pam Mason*

No. 93-4 Ecotourism and the Chesapeake Bay. *Thomas Barnard*

Vol. 93-8 Mid-Atlantic Wetland Compensatory Mitigation Workshop. *Thomas Barnard*

Vol. 93-8 Mason Neck National Wildlife Refuge. *Pam Mason*

Vol. 93-10 Estuarine Research Reserves in Virginia. *Bland Crowder*

Vol. 93-10 The York River Reserve Sites.

Vol. 93-10 The National Estuarine Research Reserve System.

Vol. 93-10 Newport News City Park. *Pam Mason*

Vol. 94-2 Dismal Swamp National Wildlife Refuge (Part 1). *Pam Mason*

No. 94-6 Dismal Swamp National Wildlife Refuge (Part 2). *Pam Mason*

No. 94-9 York River State Park. *Pam Mason*

Vol. 10, No. 1 Corrotoman River Nature Trail. *Pam Mason*

Vol. 10, No. 1 Monkey Bottom Wetland Walkway: A Walk on the Wild Side. *Jill Barnard*

Vol. 11, No. 2 Westmoreland State Park. *Pam Mason*

Vol. 14, No. 1 The Marsh Arabs of Southern Iraq. *Pam Mason*

Plants

Vol. 1, No. 3 *Spartina alterniflora* (Saltmarsh, Smooth, or Saltwater Cordgrass).

Vol. V, No.1 Reed Grass, Arrowhead.

Vol. V, No. 2 Saltmarsh Cordgrass.

Vol. V (3) Arrow Arum.

Vol. 11, No. 3 Cranberries. *Pam Mason*

Vol. 12, No. 2 Peat: Use Through the Centuries. *Pam Mason*

Vol. 12, No. 3 Peat: Processing and Potential for Restoration. *Pam Mason*

Continued on page 6

Wetland Denizens

Killdeer: The Most Famous of Shorebirds

By Pam Mason

The staff at the Center for Coastal Resources Management have had a recent, though not entirely unique, opportunity to observe killdeer "up close and personal." As this article is written in early June, we have spent the last three weeks observing a pair of killdeer actively protecting a nest with four eggs in the gravel parking lot adjacent to the Center. As you are reading this, the chicks will be fending on their own.

Can you spot the mom and the three baby killdeer in this photo?

Some of the details regarding the killdeer life history and behavior speak to the question of why they are frequently found nesting in parking lots, driveways and other man-made landscapes.

Killdeer are members of the plover family. The Latin name *Charadrius vociferus*, and common name, come from its call. The birds call is notably loud, sounding like "kill-dee." Adult birds average 9 to 11 inches in length and weigh 3-4 ounces. Despite the shorebird moniker, killdeer summer distribution ranges far inland and includes all 50 states.

Killdeer nest on the open ground in gravel areas, golf courses, agricultural fields and pastures. Parking lots, driveways, railroad easements and gravel rooftops are common nesting locations. The nest is a shallow scrape created by the male. It is typically lined with pebbles and may have some bits of grass or wood chips also. The nest makes the perfect camouflage for the pale beige and blackish-brown speckled eggs.

The female lays four eggs that take 24 to 26 days to hatch. Both the male and female tend the nest providing warmth on cool days and shade on hot days. The open nesting location allows the birds to monitor approaching threats whereupon they will readily rise from the nest and call loudly. Given the great camouflage of the nest and eggs, once the adults have been flushed, finding the nest is difficult. However, if you manage to find the nest and are perceived as a threat, you will witness the famous defensive display known as the brokenwing act. One adult will behave as if it has a broken wing. The bird flops on the ground spreading one or both wings as if injured. The bird will steadily move away from the nest where the other parent is standing guard. This display is intended to attract your, or a predator's, attention and lead you away from the nest. Once you've been drawn sufficiently far away, the bird "recovers" and flies off.

Killdeer birds are well adapted to life on the ground. They are fairly long legged and have a large wing span, allowing them to run from predators and take flight quickly. The chicks also are adapted to life on open ground. Unlike many other birds, killdeer chicks are precocial; covered with down and able to run as soon as they hatch. Precocial birds, including chickens and ducks, stay in the egg twice as long as other birds. The newborns are able to search the ground for food, but they cannot fly and still rely on their parents for protection.

Killdeer eat insects and other invertebrates. Beetles and weevils compose a large portion of the diet which also includes other flying insects, earthworms, grubs, snails, crustacea, mosquitoes and ticks. So, while killdeer are adapted to living with humans, we can benefit from their consumption of human and agricultural pests. Killdeer are found throughout Coastal Virginia, and while you may not always see them, if they are about you will most certainly hear from them.

Back here at the Center, the cordoned off parking spaces have allowed the prospective couple a safety buffer. We "godparents" are proud of the new arrivals.

For more information:
http://www.birdwatching.com/stories/killdeer.html

http://www.cws-scf.ec.gc.ca/hww-fap/hww-fap.cfm?ID_species=22&lang=e

http://www.mbr-pwrc.usgs.gov/bbs/htm96/map617/ra2730.html

Vol. 13, No.1 Roof Thatching: *Phragmites* as a Building Material. *Pam Mason*
Vol. 13, No. 2 Wild Rice. *Pam Mason*
Vol. 14, No. 2 Recorded History was Revolutionized By a Wetland Plant. *Pam Mason*
Vol. 15, No. 2 Sago Palm. *Pam Mason*
Vol. 16, No. 2 Atlantic White Cedar. *Pam Mason*
Vol. 17, No. 1 Wetlands Yield Oriental Treats. *Pam Mason*
Vol. 17, No. 2 *Phragmites australis* (Reed Grass) Bane or Beneficence? *Kirk Havens*
Vol. 17, No. 3 Sphagnum Moss: Natural Properties Promote Historic Uses. *Pam Mason*
Vol. 18, No. 1 The Tropical Potato. *Pam Mason*

Research

Vol. III, No. 3 The Greenhouse Effect, Sea Level Rise, and Their Impact on Tidal Wetlands. *Julie G. Bradshaw*
Vol. V, No.1 Waste Assimilation by Wetlands. *Kirk J. Havens*
Vol. 10, No. 2 VIMS and DEQ Water Division Complete Joint Study of Nontidal Wetland Scientific Advisory Needs. *Lyle Varnell and Thomas Barnard*
Vol. 15, No. 3 Increasing the Probability of Success in the Construction of Marshes in Coastal Virginia. *Kirk J. Havens, Lyle M. Varnell, and Bryan D. Watts*
Vol. 17, No. 2 Impacts of Sea Level Rise Studied in Pamunkey River Marshes. *Carl Hershner*
Vol. 17, No. 3 Private Piers and Tidal Marsh Cumulative Impacts. *Tom Barnard*

Resources Law & Policy

Vol. I, No. 4 In the News: Erosion policy lacking, panel says.
Vol. II, No. 1 1987 Session Virginia Acts of Assembly.
Vol. III, No. 2 Wetland Management: An Early History.
Vol. IV, No. 1 National Wetlands Policy and Goals Recommended.
Vol. V, No.1 Another Perspective on Wetlands Management. *David G. Burke*
Vol. V, No.1 In the General Assembly. 1990.
Vol. V (2) Virginia's Nontidal Wetland Policy Debate: Reinventing the 1960's Wheel. *Carl Hershner*
Vol. 17, No. 2 Worldwide Shrimp Farming and Mangrove Wetland Losses: Are the Two Irrevocably Linked? *Pam Mason*

Structures

Vol. I, No. 4 Riprap for Shoreline Erosion Control. *Lee Hill*
No. 93-4 What is Riprap? *Walter I. Priest, III*
Vol. 93-10 Wood Preservative Treatments for Marine Construction. *Walter I. Priest, III*
Vol. 94-2 Bulkheading with Plastic. *Walter I. Priest, III*
No. 94-6 Gabions. *Walter I. Priest, III*
No. 94-9 New Brochure Encourages "Green" Solutions to Shoreline Erosion. *Jill Barnard*
No. 94-9 Marsh Grass Planting: Shoreline Stability Without Structure. *Walter I. Priest, III*
Vol.10, No.1 Gapped Breakwaters. *Walter I. Priest, III*
Vol.10, No.1 Why is riprap preferred over bulkheads? How do marsh grasses act to stabilize shorelines?
Vol. 11, No. 3 What is a groin and how does it work? *William Roberts*
Vol. 12, No. 2 Does my erosion control structure affect my neighbor's shoreline? *William Roberts*
Vol. 12, No. 3 What is marsh toe protection and how does it protect a wetland? *William Roberts*
Vol. 13, No. 2 What is riprap? Is it preferred over a bulkhead for shoreline erosion control? *William Roberts*

Wetlands Boards

Vol. I, No. 1 Analysis of Virginia's Local Wetlands Boards. *Carl Hershner, Tom Barnard, N. Bartlett Thebarge*
Vol. I, No. 1 Special Feature: Middlesex County. *Kirk Havens*
Vol. I, No. 2 Special Feature: Westmoreland County. *Kirk Havens*
Vol. I, No. 2 Marina Sitings From the Scientific Advisor's Viewpoint. *Carl Hershner*
Vol. II, No. 1 Checklist For Wetlands Board Meetings and Public Hearings.
Vol. II, No. 1 Wetland Board Opening Statement.
Vol. II, No. 2 An Example Wetlands Permit.
Vol. III, No. 2 Middlesex County/Profiles of Wetlands Board Members.
Vol. III, No. 2 Appeals to VMRC.
Vol. III, No. 3 City of Norfolk/Profiles of Wetlands Board Members.
Vol. IV, No. 1 Wetland Compensation/Restoration Checklist.
Vol. IV, No. 1 Portsmouth/Profiles of Wetlands Board Members.
Vol. IV, No. 1 Contractors and the Wetlands Board. *Bernard M. Farmer, Jr.*
Vol. VI (1) Mean High Water Mark and How to Locate it. *Carvel Blair*
Vol. VII (1) A Local Board's Experience with Civil Charges and Penalties. *Edwin Rosenberg*
Vol. 14, No. 1 Compensatory Mitigation Issues: Is the planting of nonvegetated wetlands with wetland plants an acceptable form of mitigation? *Kirk Havens*
Vol. 14, No. 1 What are benchmarks and why are they important in my permit application drawings? *William Roberts*
Vol. 15, No. 3 VIMS Shoreline Reports to Be Updated and Go Online.

Continued on next page

.../...WEB PAGE PANORAMA.../...

http://www.nos.noaa.gov/

This issue's featured home page is one that all who work with shorelands and wetlands will find useful and interesting. The address shown above is that of the National Ocean Service. Here one can find information, news, and links to all manner of web sites dealing with coastal issues and federal ocean and COASTAL programs.

Want information on sea level rise in Chesapeake Bay? Click on "Sea Levels Online." Planning a site visit to a specific river or creek and want to know when high or low tide is predicted for today, tomorrow , or several days into next month? Go to "Tidal and Current Information." Interested in real time observed tide heights compared to predicted? Go to the Center for Operational Oceanographic Services (Co-ops).

Coastal habitats, smart growth or coastal hazards your thing? Click on the Coastal Services Center and see what they have to offer. One can also find information on coral reefs, National Marine Sanctuaries, nautical charts and even resource economics.....enjoy!

http://www.epa.gov/owow/

Since we are leading off with sites maintained by federal agencies, this is an especially good one. This is the Environmental Protection Agency's Office of Wetlands Oceans and Watersheds or O WOW. Here you will find discussions of and links to numerous wetlands related subjects and what EPA involvement is with them as well as what the interested citizen can do.

Right now the site features segments on wetland mitigation, mitigation banking, constructed wetlands, watersheds (what they are, how they function, why they are important from a regulatory perspective), the impacts of golf courses, etc.

In addition, the site has discussions of dredging, river and stream restoration, how EPA plans to use Total Maximum Daily Load (TMDL) figures to protect and restore water bodies and even a section in an old favorite..... ....invasive species.

2003 CCRM Education Program Offerings

Listed below are the short courses scheduled to be offered at VIMS in the second half of 2003. Most of the courses require a minimum of eight participants before they will be conducted. For additional information about course content and costs, or to register contact Bill Roberts at (804) 684-7395 or Dawn at (804) 684-7380. Email: wlr@vims.edu or dawnf@vims.edu

July 23	Tidal Wetland Seminar
August 5-7	Advanced Wetland Plant ID
August 20-22	Wetland Plant Identification
September 16-19	Wetland ID/Delineation
October 14-17	Introduction to Riparian Buffers
November 18-20	Wetland Mitigation and Compensation
December 10-12	Winter Botany

Vol. 18, No. 1	Economics vs. Wetland Protection: How Do Wetland Boards Do It? *Thomas Barnard*

Wetlands Ecology

Vol. V (2)	Rejuvenation of the Virginia Oyster Industry. *Roger Mann,* et al.
Vol. V (3)	Submerged Aquatic Vegetation in the Chesapeake Bay: *Kirk Havens*
Vol. 10, No. 2	What are nonvegetated wetlands and why are they valuable?
Vol. 11, No.1	Grazing and Haying Activities in Wetlands. *Pamela Mason*
Vol. 11, No.1	Should I fertilize my tidal marsh? *William Roberts*
Vol. 11, No. 2	Literally, what is littoral sand movement? *William Roberts*
Vol. 13, No.1	Are nonvegetated, muddy shorelines valuable to the health of the Chesapeake Bay? *William Roberts*
Vol. 13, No. 2	An Introduction to Stressed Habitats. *James E. Perry, John E. Anderson, and Arnold F. Theisen*

Calendar of Upcoming Events

Oct. 27-31, 2003	**Wetlands Workshop 2003 Hydrology.** Holiday Inn Boardwalk. Atlantic City. Wetlands Hydrology and Regulatory Issues. For Information contact:spagnolo.ralph@epa.gov
Oct. 30-31, 2003	**30th Annual Conference on Ecosystems Restoration and Creation.** Hillsborough Community College, Tampa, FL. Contact: http://www.hccfl.edu/depts/detp/eco-conf.html
Nov. 20-23, 2003	**National Symposium: Wetlands 2003.** Landscape Scale Wetlands Assessment and Management. Nashua, New Hampshire. Sponsored by the National Association of State Wetlands Managers. http://www.aswm.org
May 15-19, 2004	**Spring Specialty Conference.** GIS and Water Resources III. Nashville, TN. Contact: http://www.awra.org
June 28-30, 2004	**Riparian Ecosystems and Buffers: Multi-scale Structure, Function and Management.** Olympic Valley, CA. Contact: http://www.awra.org/meetings/olympic2004/summer2004.doc

The Mid-Atlantic Wetland Monitoring Work Group (MAWWG)

By Kirk J. Havens

The MAWWG is a subgroup of the National Wetland Monitoring and Assessment Work Group whose mission is to assist states such as Virginia along with Native American tribes build their capacity to implement and sustain wetland assessment monitoring programs. The National Work Group concentrates on the following four issues:

1) Implementation - Identification of the elements of an adequate wetland monitoring and assessment program. Description of resource needs and identification of sources of financial support.

2) Standards and Criteria - Build the administrative and technical documentation to support adoption of water quality standards for wetlands in a manner that complements administration of the Clean Water Act Section 404/401 programs.

3) Inventory and Rapid Assessment- Increase the quality and scope of application of existing methods.

4) Biological Assessment - Help establish the scientific basis for wetland standards and criteria and contribute to the refinement and verification of existing methods used for wetland inventory and rapid assessment.

The MAWWG consists of agency personnel from the following states: Delaware, Maryland, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Virginia, and West Virginia. Current agency guidance indicates that wetlands should be included in water quality monitoring programs. Accordingly, the goal of the work group is to establish methods to monitor wetlands for incorporation into state water quality monitoring programs.

The work group has had discussions on how states might best establish programs to monitor wetlands and each state participant provides the group with updates on activities from within their respective borders. These include identifying existing monitoring program structure as well as capacities in infrastructure, data resources, parallel state programs, and personnel.

There are many questions remaining to be resolved prior to the establishment of these wetland monitoring programs. Some fundamental questions being discussed at present in MAWWG include: 1) what to measure and, 2) how to measure it.

The work group has had expert presentations on various assessment methods with a review of scores of different existing procedures. In addition, the work group continues to study and discuss how to develop appropriate rapid assessment methods.

Presently, the focus is on nontidal wetlands. Ultimately, the MAWWG hopes to have a wetland monitoring and assessment program that is linked to other surface water programs for tidal and nontidal wetlands and will support state efforts in routine regulatory work, resource planning, and reporting.

In Virginia, the Department of Environmental Quality is working with the Center for Coastal Resources Management at the Virginia Institute of Marine Science to develop wetland monitoring and assessment protocols. This work is under development and will be reported after completion.