Winter 1-1-2001

The Virginia Wetlands Report Vol. 16, No. 1

Virginia Institute of Marine Science

The Virginia Wetlands Report
Winter/Spring 2001
Vol. 16, No. 1
Wetlands Program

The VIMS Teaching Marsh: A Tidal Wetland Restoration and Education Project

Karen Duhring

Purpose & Planning

The Teaching Marsh at VIMS is a new educational resource located at the boat basin of the Gloucester Point campus. The original concept for the Teaching Marsh was developed over 10 years ago at the Center for Coastal Resources Management. As part of its advisory activities, the Center sponsors tidal wetlands education opportunities, including field lessons. Due to the variety and geographic distribution of tidal wetlands, it was a logistical challenge to transport students to and access different marshes for field learning opportunities. The creation of a tidal wetlands demonstration area at VIMS, or a "Teaching Marsh", would alleviate this challenge, while still providing invaluable field experience as a compliment to standard lectures.

The main objective of the VIMS Teaching Marsh is to provide a demonstration area for the 37+ wetland plant species listed in the Tidal Wetlands Act of 1972 (Table 1). In addition to wetland plant identification, the Teaching Marsh provides an opportunity to demonstrate tidal wetland community features, such as vegetation zones brought about by tidal range and elevation. Also, the high productivity of tidal wetlands is demonstrated by the types and diversity of fish and wildlife present. The important wetland function of filtering stormwater runoff before it reaches a Chesapeake Bay tributary can also be demonstrated.

Thanks to the generous support of an anonymous donor, The Garden Club of Gloucester, The Owens Foundation, Sassafras Farm, and Second Nature Landscaping, the idea hatched some ten years ago has become the VIMS Teaching Marsh and is available for research projects and tours.

Design & Construction

Dr. Bill Roberts and Walter Priest of the Center's Wetlands Program were responsible for designing and constructing the Teaching Marsh. An existing tidal marsh restoration project at the VIMS Boat Basin and a stormwater outfall from the Coleman Bridge (US 17) determined the project's location. After a new riprap structure was installed along the boat channel ten years ago, tidal marsh vegetation was also planted to illustrate how structures and vegetation can be combined for shoreline stabilization. The Coleman Bridge stormwater outfall was located at an existing, natural tidal marsh impacted by 6-8 feet of fill and construction debris from a bridge expansion project. Stormwater runoff from the bridge continued to be directed through the remnants of this marsh and provided the central point for the new Teaching Marsh.

Tidal wetlands vary in geographical location and salinity ranges, with certain plant assemblages adapted to different conditions. Since the VIMS campus is located near the mouth of the York River, the salinity is too high for freshwater wetland species to occur naturally. It was necessary to design the Teaching Marsh with separate tidal salt marsh and freshwater components. Another design element was a permanent pool in both wetland areas, particularly the salt marsh so it was not completely drained during low tide.

Construction of the Teaching Marsh took place during the summer of 1999. First, the depth of existing fill was determined to be 6-8 feet above the natural wetland soils. Excavation and removal of this fill was needed to achieve the correct elevations for wetland restoration. However, a small area adjacent to the boat channel was left undisturbed to illustrate which plant species (e.g. red cedar, *Juniperus virginiana*) will grow on artificial fill and dredge material.

Approximately one acre of fill was excavated and used to construct berms separating the fresh and salt-water components. Interpretive walkways were planned along the top of the berms. A contained, upland dredged material disposal site was also constructed with extra fill material removed from the Teaching Marsh. This containment area will be used during future maintenance dredging of the boat channel and basin where the VIMS fleet of research vessels is stationed.

The target grade for this wetland restoration was a 20:1 slope, with slightly steeper banks in the freshwater pond. After excavating and final grading, the extent of high and low tides was monitored over an extended period to determine where planting zones should be established. After the planting areas were staked out, over 12,000 plants were ordered from wholesale nurseries in Virginia and Maryland. The plant stock ranged in size from 2-inch peat pots to 5-gallon containers and the herbaceous species were planted on 12-inch centers. Shrubs and trees were planted further apart.

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:

The VIMS Teaching Marsh: A Tidal Wetland Restoration and Education Project 1
An Overview of Permitted Tidal Wetland Impacts for 2000 5
The Stinging Sea Nettle 6
Calendar of Upcoming Events 8
Wetlands Management Symposium Focuses on Technology and Conservation 8

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.

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.

Printed on recycled paper

Staff from the Center for Coastal Resources Management planted all but 10 of the 37 tidal wetland species listed in the Tidal Wetlands Act. Some of the more aggressive species, such as reed grass (*Phragmites australis*) and cattail (*Typha* spp.) were not planted. Reed grass was already present at the site and readily colonized the marsh and adjacent banks after excavation and grading. Some of the listed tidal wetland plants, such as water hemp and wild rice, were not commercially available.

The saltwater marsh was designed to include typical vegetation communities. A "low marsh" between mean low and mean high water was planted predominantly with saltmarsh cordgrass (*Spartina alterniflora).* A "mid-marsh" (generally inundated only during above normal high tides) contains a variety of species, including saltmarsh bulrush (*Scirpus robustus*), black needle-rush (*Juncus roemerianus*), three-square (*Scirpus americanus*) and big cordgrass (*Spartina cynosuroides*). The "high marsh zone" at elevations inundated only during extreme high tide events, was planted with saltgrass (*Distichlis spicata)* and saltmeadow hay (*Spartina patens).* A fringe of saltbushes, including marsh elder (*Iva frutescens*), groundsel *bush (Baccharis halimifolia*) and myrtles (*Myrica* spp.) was planted around the perimeter of the high marsh to illustrate how this shrub zone defines the landward extent of tidal wetlands.

A flat area was also included in the design of the saltwater marsh. This area is only inundated during extreme tides and subsequently there are high salinity levels in the soil due to evaporation. Plant species, such as saltwort (*Salicornia* spp.) and sea oxeye (*Borrichia frutescens*), that prefer irregularly flooded, high salinity areas were planted in this zone. Finally, one area of the saltwater marsh was left open to demonstrate the importance of non-vegetated mud and sand flats, particularly when they are located adjacent to vegetated wetlands. Non-vegetated wetlands are the preferred habitat for a variety of bottom-dwelling animals, or benthos, including clams, worms, snails, and mussels.

The freshwater pond is directly connected to a larger stormwater retention pond that collects runoff from the Coleman Bridge. A backflow prevention device to inhibit tidal inundation into the freshwater pond was installed. Although the freshwater component of the Teaching Marsh is not actually tidal, the various plant species can still survive because they also commonly occur in non-tidal streams, lakes and ponds. A riprap spillway was constructed over the berm between the ponds to prevent flooding of the adjacent roadway and parking lot during heavy rainfall events. During drought, a simple control structure prevents complete drawdown of the pond.

The freshwater wetland was designed to include permanent open water for yellow pond lily (*Nuphar luteum*). Various emergent species were planted along shallow shelves around the pond edge. These included arrowhead (*Sagittaria latifolia*), bultongue (*Sagittaria falcata*), pickerelweed (*Pontedaria cordata*), arrow arum (*Peltandra virginica*), sweet flag (*Acorus calamus*) and soft rush (*Juncus effusus*). Wetland shrubs and trees were planted along the banks of the freshwater pond, including alder (*Alnus serrulata*), buttonbush (*Cephalanthus occidentalis*), spice bush (*Lindera benzoin*), marsh hibiscus (*Hibiscus moscheutos*) and marsh mallow (*Kosteletzkya virginica*).

The Teaching Marsh construction was completed in the fall of 1999, just one week before Hurricane Floyd, during which the entire vicinity of the new project was inundated. A majority of the plants survived this event, but there was severe erosion along the unvegetated berms and walkways. Overall survival of the planted stock could not be determined until the following spring. After repairing the erosion damage and cleaning up hurricane debris, the first group tours were led through the new marsh during fall public events.

The First Year - 2000

Almost all of the planted stock showed signs of new growth in the spring of 2000. One area of black needlerush (*Juncus roemerianus*) did not survive, probably because the individual plants were not planted deep enough and they were washed away during the hurricane event. Another black needlerush area may be inundated too frequently for optimum growth. This plant is typically found landward of mean high water. None of the planted saltmarsh bulrush (*Scirpus robustus*) survived even though planted in three different areas. Failure of this species may be due to unsuitable salinity levels or because it was not healthy stock. The perimeter edge of salt bushes was also planted at an elevation above periodic storm tide events. Small seedlings have spread into the adjacent high marsh at lower elevations demonstrating a range of suitable habitat.

The VIMS Teaching Marsh, newly planted.

Bare intertidal areas remaining in the late spring were planted with more saltmarsh cordgrass. Additional species not included in the first installation were also planted, including saltwort, sea oxeye, and salt marsh aster. The saltbushes were also pruned to encourage branching.

Staff at the Center for Coastal Resources Management surveyed the Teaching Marsh to provide a scaled map. Karen Duhring and Dr. Bill Roberts designed and published an interpretive brochure following numbered stations. The 15-page pamphlet highlights the vegetation communities at the Teaching Marsh, as well as the important functions and values of tidal wetlands.

The VIMS Teaching Marsh after one year.

Over 200 plant identification plates were ordered and installed. A local trophy shop provided plates engraved with common and scientific names of the plants. The identification plates were adhered to small acrylic posts and inserted next to a corresponding plant. Red numbered plates were also installed to provide sequential viewing stations identified in the brochure.

The Gloucester Garden Club sponsored an official dedication of the VIMS Teaching Marsh on April 15, 2000, during the annual VIMS Open House. Unfortunately, inclement weather prevented the ceremony from being held outdoors in the Teaching Marsh as planned and the official ribbon-cutting ceremony was celebrated indoors. In spite of the rain, several people toured the new marsh and expressed interest in returning to monitor its progress.

One of the last components of the Teaching Marsh to be installed was a "Butterfly Garden", which was planted along the main entrance road to the Boat Basin in July 2000. Over 30 species of flowering perennials native to the coastal plain of Virginia were planted based on a garden design by Denise Greene of Sassafras Farm in Hayes. The Butterfly Garden contains a native species of goldenrod, milkweed, aster, coneflower, sunflower and other plants that provide food and habitat for butterflies and their caterpillars. The main objective of this section is to demonstrate how native plants can be decoratively used in any garden to provide color, diversity and habitat.

Teaching Marsh Visitors During the First Year

Since it opened for visitors, over 300 people of all interest levels and ages have visited the Teaching Marsh. The first large group tours were held during the summer of 2000. Over 150 high school students from Richmond and Northern Virginia visited the Teaching Marsh. Younger children (6-8 yrs.) attending the

Gloucester County summer Marine Science Camp also came to learn about tidal wetlands at the Teaching Marsh. Issues discussed with the students included stormwater runoff, plant and animal adaptations, pollution and wildlife habitat.

Sixty-eight participants attended a Tidal Wetlands course taught by Dr. Bill Roberts and sponsored annually by the Center for Coastal Resources Management. A field session conducted in the Teaching Marsh reviewed the relationship of the plant communities to the extent of tidal inundation, as well as nutrient cycling, identification of fish caught in the marsh and other issues of interest to the participants.

Another 37 adults participated in applied research related to experiential learning, by comparing lessons learned via lecture to that retained after a direct experience in the Teaching Marsh.

Other groups that received guided tours of the Teaching Marsh during 2000 included the College of William and Mary Alumni Association, the Alliance for Chesapeake Bay and the Outdoor Writers Association.

High School Student Projects

The Center for Coastal Resources Management sponsored two Governor's School students during the summer of 2000. These high school students were directed to investigate and report findings related to research at the Teaching Marsh. Alan Mehrzad's research project was titled "The Correlation Between the Water Quality and Benthic Communities of the VIMS Teaching Marsh." Alan collected water and sediment samples from various locations to correlate the water quality of stormwater before and after flowing through the Teaching Marsh and comparing the results to analysis of benthic communities, a standard biological indicator of stream pollution.

Courtney Barker conducted "A Study of the Vegetation and Community Structure of the VIMS Teaching Marsh" to generate the first baseline GIS map of the Teaching Marsh. Although the GPS unit Courtney used to map the vegetative communities did not have enough resolution, her project outlined a useful protocol to monitor and study changes in vegetation communities, stem densities and tidal flows.

Bill Roberts (L) uses the Teaching Marsh as backdrop for lesson in wetland plant ecology.

Ashley Smith studied the tolerance of a wetland tree species, red maple (*Acer rubrum*) to various salinity regimes within the Teaching Marsh. Her findings illustrated the sensitivity of some wetland species to slight elevations in salinity, emphasizing the need to understand the physical characteristics of a marsh restoration site before selecting and installing any plant materials.

The Teaching Marsh was featured in the regional Hampton Roads Gardening & Home Magazine in August 2000. The feature article introduced the new demonstration area to the entire Hampton Roads community. Many people have visited the Teaching Marsh or contacted VIMS to schedule tours as a result of this publicity.

Maintenance Program

A majority of this habitat demonstration area is self-sustaining. Grass must be periodically removed from the gravel walkways. The plant identification plates are cleaned and replaced when necessary, and litter is removed. Only limited horticultural type maintenance is needed.

To encourage natural reseeding and distribution, maintenance of the Teaching Marsh must be selective. Desirable species must be recognized and left in place. Pioneering plants that quickly colonize open areas such as the Teaching Marsh are removed, once during the spring and again in late summer before going to seed. Some of the nuisance species managed in the Teaching Marsh include fennel, vetch, nut grass, and Bermuda grass. Dock (*Rumex* spp.) and reed grass (*Phragmites australis*) are actually listed in the official definition of vegetated wetlands, but they can also outcompete other desirable plants. Vines that compete for moisture and nutrients are removed before they become entangled in the trees and shrubs. Insects are closely observed and identified, and the host plants monitored for severe damage, before pest control methods are selected.

During the winter when the marsh plants are dormant, the only maintenance performed is a weekly patrol for litter, primarily blown into the Teaching Marsh area from the Coleman Bridge and the adjacent public park and boat ramp. The backflow prevention device is also cleaned out periodically. During the summer rainy season, the water level in the freshwater pond is carefully monitored. If the Boat Basin entrance road is threatened by flooding, the

Continued on page 7

An Overview of Permitted Tidal Wetland Impacts for 2000

Tom Barnard

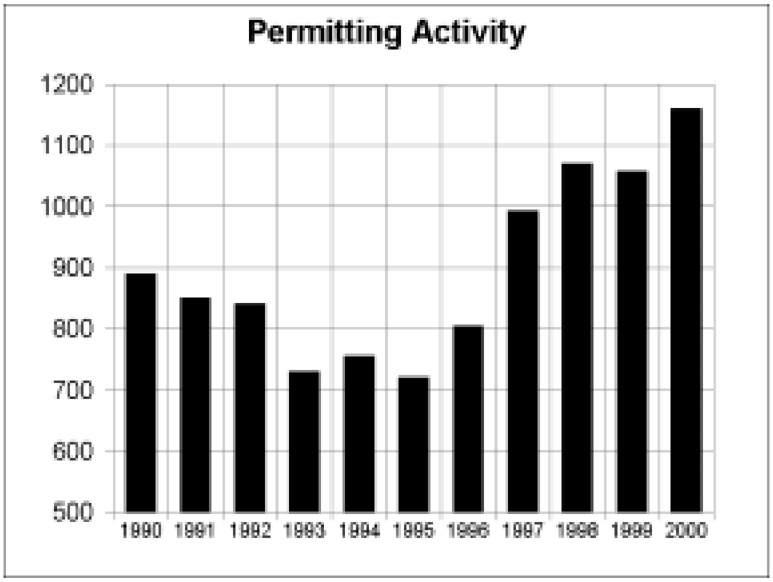


Figure 1. Annual tidal permit application review activity in Virginia during the decade of the 1990's.

The year 2000 was a very busy one in terms of permit activity in tidal Virginia. The previous record year (1998) was easily surpassed by almost 100 applications. After a drop in activity to below 800 application reviews per year in the middle of the decade, 2000 continued a rapid increase in permit activity that began in 1996 (Figure 1). Based on VIMS permit activity records through the first two months of this year, 2001 is on a pace that is similar to that of 2000 and may be another record year.

The following is a brief summary of permitted tidal wetland impacts in Virginia, based on the data base maintained by the Wetlands Program of the Virginia Institute of Marine Science. Scientists from the program visit each application site and enter the data directly into the data base as part of their application review process. Maintenance of this data base and presentation of these data would not be possible without the funding of the Virginia Coastal Resources Management Program (NOAA) and the efforts of personnel from both the Wetlands and Comprehensive Coastal Inventory Programs of the Center for Coastal Resources Management at VIMS.

The data indicate that for the year 2000, local wetlands boards and the Virginia Marine Resources Commission permitted 20.7 miles of shoreline alterations. That is, 20.7 miles of new shoreline hardening using either riprap revetment or vertical bulkhead. This number compares to an annual average of 19.2 miles which has occurred over the 13 years that the data base has been in existence (1988-2000). The primary reasons for shoreline hardening are protection against erosion and the effects of gradual sea level rise. The data also indicate the preference for the use of riprap over bulkheads which is a further extension of a previously identified trend (Figure. 2). The figure also demonstrates that the year 2000 was an average year for total length of shoreline hardening.

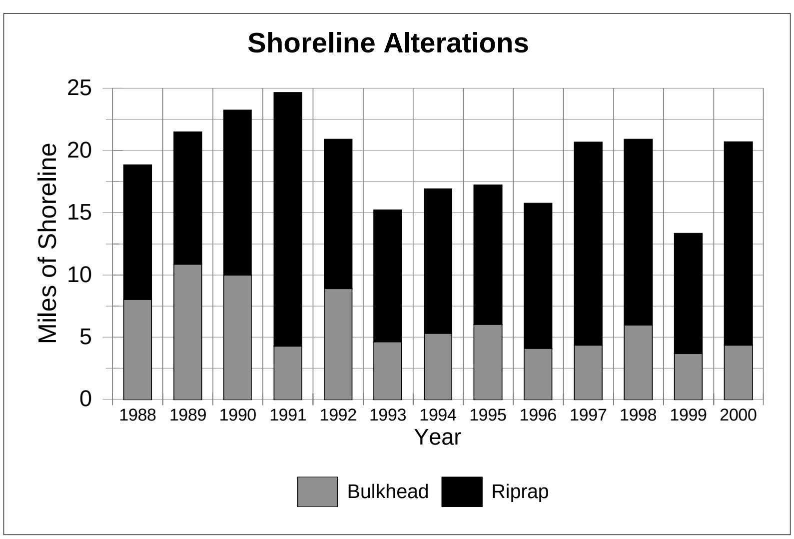


Figure 2. Annual miles of Virginia shoreline hardened using riprap or bulkhead.

Even though 2000 was a record year in terms of permit activity, this was not reflected in permitted wetland impacts. The data base indicates that the 22.6 acre total for vegetated and non-vegetated wetland impacts permitted in 2000 was well below the annual average recorded since 1988 and far below the record impact year of 1990 when over 80 acres of wetland impacts were permitted. Again, as in most previous years, the data indicate that a majority of the impacts allowed were in non-vegetated as opposed to vegetated wetlands (Figure 3).

The data also demonstrate that of all the shoreline activities requiring a permit, the most wetlands impacts, totaling 7.6 acres, occurred as a result of riprap revetments. The second highest level of impact resulted from general fill within wetlands and totaled 4.7 acres. These totals were followed by bulkhead installation and riprap toe protection ranking third and fourth with annual totals of 1.8 and 1.4 acres of wetland impact, respectively.

Even though the numbers for 2000 are smaller than

Continued on page 7

Wetland Denizens

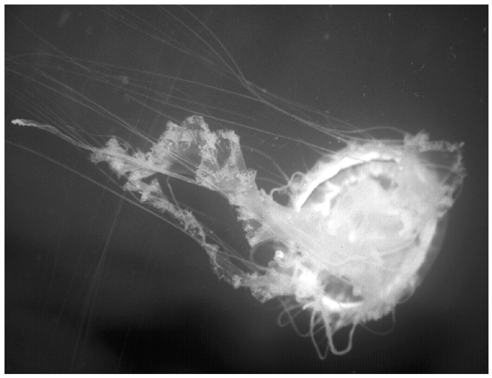
The Stinging Sea Nettle (Jellyfish)

Bill Roberts

As the summer sun heats the waters of the Chesapeake Bay one's thoughts turn to a refreshing swim on a hot, hazy afternoon. Unfortunately, as the summer progresses, these warmer temperatures present an ideal environment for the ubiquitous stinging sea nettle, *Chrysaora quinquecirrha*, which matures in the Bay along with other species of jellyfish.

Jellyfish belong to the biological phylum Cnidaria (ny-DEHR-ee-uh), also referred to as Coelenterata (so-lin-terr-RAH-ta). Included in this phylum are the corals, which compose our coral reefs, and sea anemones. This group of sea creatures is named for their common characteristic, that we all have experienced, painfully I should add, at sometime in our lives: the stinging cell called a cnidocyte (NYD-uh-syt). Each stinging cell contains a trigger, a stinging organelle called a nematocyst (neh-MAT-oh-sist) and a potentially painful dose of toxins which irritates and inflames the skin, forming painful rashes. Whenever an unsuspecting fish or an unlucky swimmer comes in contact with the trigger mechanism of the cnidocyte (stinging cell) it discharges the nematocyst and its toxins much like a harpoon into the unfortunate victim. All Cnidarians are carnivores. When small and immature they feed on zooplankton containing copepods and the larvae of fish and crabs. As they grow in size the Cnidarians switch to larger prey items such as small fish and shrimp. The toxins stun the prey which is then drawn into the centrally located mouth and forced into the digestive system. The hapless fish is consumed as a meal while we are doomed to hours of painful itching, burning and stinging.

Another common characteristic of the Cnidarians is their radial symmetry, meaning that no matter how the organism is divided through the central axis, both sides are identical. The body parts of Cnidarians are arranged in a circular fashion around the central axis, much like the spokes of a wheel. This radial symmetry allows the Cndarians to react to stimuli equally well from all sides.



Stinging nettle medusa

Cnidarians can occur as one of two basic body forms in their life cycle. The stinging sea nettle begins life as a free-swimming cylindrical larvae called a planula (plah-NU-la) which become part of the Bay's floating plankton. The planula soon attach themselves to shells, pilings, seaweeds and other submerged strata. These attached planula develop into a polyp (PAHL-uhp) which is generally a benthic life form characterized by a cylindrical body that has an opening at one end, the mouth, usually surrounded by tentacles. These Polyps form large colonies and each may be specialized for feeding, defense or reproduction. These polyp colonies overwinter and as the Bay's waters warm in the spring, the sessile or stationary reproductive polyps produce the more commonly recognized life form of jellyfish, the medusa. The immature medusa is a free-floating stage resembling an inverted bowl called a bell and eventually develops into the mature stinging sea nettle. By mid-summer, the mature sea nettles populate the higher salinity waters of the Bay and its tributaries and are ready to prowl the Bay in search of small fish and unwary swimmers. During years of high rainfall that generally lower the Bay's salinity, jellyfish are usually less of a problem. While a formidable predator itself, this jellyfish is also prey for several species of fish, sea turtles and crustaceans. Fortunately, since the stinging sea nettle is mostly water, it takes a lot to make a meal! By summer's end the medusa forms both male and female gonads which produce gametes that unite to form the free-swimming planula. As fall approaches and cooler water temperatures arrive, this and most other jellyfish, disappear.

The stinging sea nettle is not a strong swimmer but is capable of locomotion by rhythmic contractions and expansions of the medusa bell. Generally it uses the changing tides and associated currents to distribute itself throughout the Bay in search of food.

For more detailed information concerning the life cycle of the stinging sea nettle and other jellyfish common to the Chesapeake Bay, please consult *Life in the Chesapeake Bay*, by A.J and R.L. Lippson.

Treatment for a Jellyfish Sting

Treatment consists of removing the tentacles, preferably with gloves, washing the affected area with seawater, immersing the part in vinegar for 20 to 30 minutes, applying a dry powder or shaving soap and scraping the area with a sharp knife to remove any nemacysts embedded in the skin, washing the area thoroughly with soapy water, and then applying a corticosteroid-analgesic-antihistamine ointment. Systematic manifestations are best treated symptomatically.

An Overview of Permitted Tidal Wetland Impacts for 2000
continued from page 5

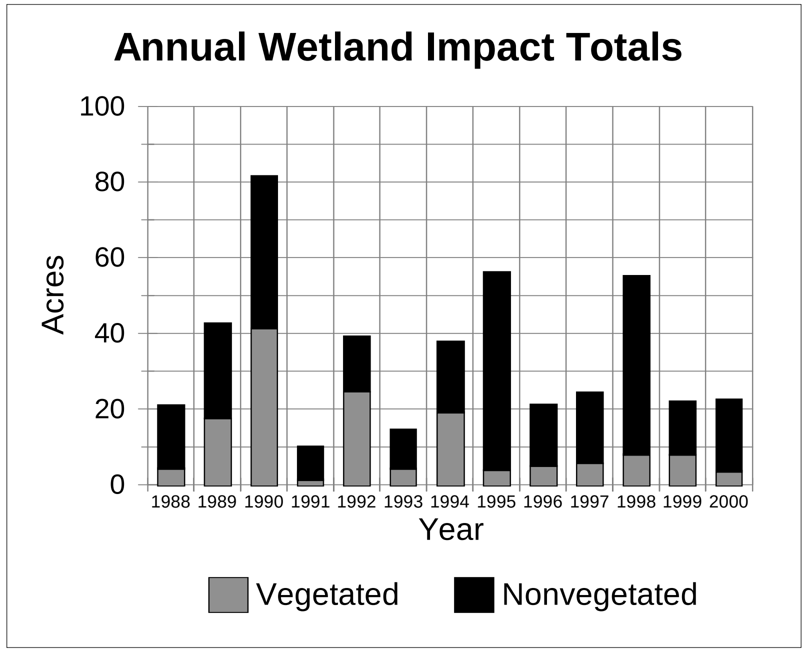


Figure 3. Annual permitted vegetated and non-vegetated wetland impacts.

most of the previously studied 13 years, permitted activities continue to adversely affect relatively large areas of the ecologically higher rated Group I wetlands. 2000 was the fifth lowest year for total impacts to the salt marsh cordgrass, *Spartina alterniflora,* community (0.9 acres) and the fifth highest for impacts to intertidal beach habitat (2.7 acres). This may only be a function of a given community's position in the landscape (fringing intertidal) or may involve many other factors. Further analysis will be necessary if this question and the many others that these data may generate are to be fully answered.

Finally, the data base indicates that the permit process produced 3.3 acres of compensatory mitigation compared to the previously mentioned 22.6 acres of wetlands impact. Even though it is clear that all of the 22.6 acres are not direct losses of wetlands, it also appears to be true, based on preliminary analysis, that losses were much greater than the 3.3 acres of compensatory mitigation. What is not clear at this time is whether the combination of these 3.3 acres and the other wetlands restoration programs within the state equal or exceed the actual wetland losses occurring annually and therefore whether the Commonwealth continues to lose marshes at a steady rate or is beginning to approach the goal of no net loss of wetland resources.

More details from the data base will be forthcoming in a VIMS technical report due out later this year. Anyone wishing to view data for specific localities and/or watersheds can query the data base directly from the VIMS home page at: http://www.vims.edu/ccrm/ .

VIMS Teaching Marsh
continued from page 4

control structure is opened to allow the pond level to fall.

The Second Year – 2001

Several projects have already been completed in 2001. Nancy Wilson, with the Information Technology & Networking Services department, set up a virtual tour of the Teaching Marsh on the VIMS web site. This online tour is based on the original brochure. It includes photographs and plant identification drawings, in addition to the narrative text describing each numbered station. Related links to other web sites are also provided.

Several volunteers have been recruited to assist with routine maintenance and leading tours through the Teaching Marsh. Training sessions are planned and reference materials will be provided for the volunteer docents. Routine maintenance of the Teaching Marsh will begin in April, 2001 and will continue until October.

Summer courses being planned by the Center for Coastal Resources Management this summer may include sessions in the Teaching Marsh, including courses on Wetland Delineation, Wetland Mitigation and Wetland Plant Identification.

For More Information

If you would like more information about the VIMS Teaching Marsh or this summer's course offerings, please contact Dr. Bill Roberts, Wetlands Education Coordinator, Center for Coastal Resources Management at (804) 684-7395 or wlr@vims.edu. You can also visit the VIMS web site at www.vims.edu. A link to the Teaching Marsh can be found in the Ongoing Research section of the Home Page.

Calendar of Upcoming Events

May 15-18, 2001 **VIMS Wetland Plant Identification Course**, Gloucester Point
For more information contact Dr. Bill Roberts, wlr@vims.edu or (804) 684-7395 or 684-7380

May 14-16, 2001 **Assessing the Health of Wetland Life: Policy, Science & Practice.**
Sponsored by EPA and running concurrently with:

May 16-18, 2001 **Communities Working for Wetlands Conference,** Orlando, Fla.
Sponsored by The Isaac Walton League of America and EPA.
For Information updates contact, www.iwla.org/sos/awm

May 27-June 1 **22nd Annual Meeting of the Society of Wetland Scientists**, Chicago
Contact: (217) 333-2888, (FAX) 333-9561, or www.sws.org/chicago/.

July 15-19, 2001 **Coastal Zone 2001, Hands Across the Water-Linking Land, Lake and Sea.** Cleveland.
Contact: (843) 740-1279 or email Jan.Kucklick@noaa.gov

Wetlands Management Symposium Focuses on Technology and Conservation

The Twentieth Annual Virginia Wetlands Management Symposium was held on February 24, 2001 with the Turner Hall auditorium on the Hampton University campus accommodating 126 pre-registrants. The symposium is sponsored each year by the Hampton University Center for Marine and Coastal Environmental Studies and the Virginia Marine Resources Commission, Habitat Management Division. Four of the featured speakers were from the Center for Coastal Resources Management at the Virginia Institute of Marine Science with one each from the Department of Environmental Quality, the Chesapeake Bay Local Assistance Department, the Division of Game and Inland Fisheries and the Marine Resources Commission. Each of the talks was well received and generated numerous questions from the interested attendees.

Karen Duhring of VIMS was the first speaker and her talk illustrated how Global Positioning System (GPS), Geographic Information System (GIS) and new computer technologies have been utilized to create an improved VIMS Shoreline Permit Application Report. The new format delivers significantly more technical information than the old format while the time lost to mailing is eliminated through the posting of the report on the web. In response to questions from attendees, it was explained that the VIMS comments are written in the context of, and are notably enhanced by, the new technologies and much more than a few color illustrations is lost if the report is not considered as a package.

Shep Moon of the Chesapeake Bay Local Assistance Department spoke next regarding the problem his agency is encountering where localities are meshing wetlands and riparian buffer management. The problem is with the apparent perception in many localities that since a shoreline erosion control structure is an allowed use in the Chesapeake Bay Preservation Act, it exempts permitees from having to maintain or restore the natural vegetation in the Resource Protection Area landward of a permitted structure. His agency is trying to spread the word that a shoreline permit does not automatically exempt a homeowner from preserving the riparian buffer on his property.

Ellen Gilinsky of DEQ next brought everyone up to date with the development of Virginia's Non-tidal Wetlands Regulations and the plans to implement the controversial new law in October of 2001.

Dave Norris illustrated for the group the programs in place under Virginia's Wetland Restoration Initiative and this paralleled very well with Tom Barnard's talk which reported annual net losses of tidal wetlands in the state according to the VIMS permit data base. (See related article on page 5 in this issue.)

Kirk Havens and Lyle Varnell reported on their research. Kirk described his monitoring of the aggressive invader, *Phragmites australis*, in created wetlands and potential methods of controlling the plant. Lyle's talk stimulated a great deal of discussion among the attendees as he demonstrated how he had used field data from natural creek marshes to create a mathematical model that can be used to design a created wetland and eliminate much of the guess work which has led to failures and/or extended establishment periods in previous attempts at anthropogenic wetland creation.

Jay Woodward of the Marine Resources Commission reported on the Lancaster County Wetland Board's efforts, using their civil charge receipts, to vegetate eroding areas along the Belle Isle State Park shoreline. This was a successful, cooperative effort that may serve as a model for future environmental enhancements.

There being no bills before the Legislature pertinent to tidal wetlands, the symposium ended after an open forum in which several issues of concern were introduced and discussed by those in attendance.