

# COASTAL SERVICES

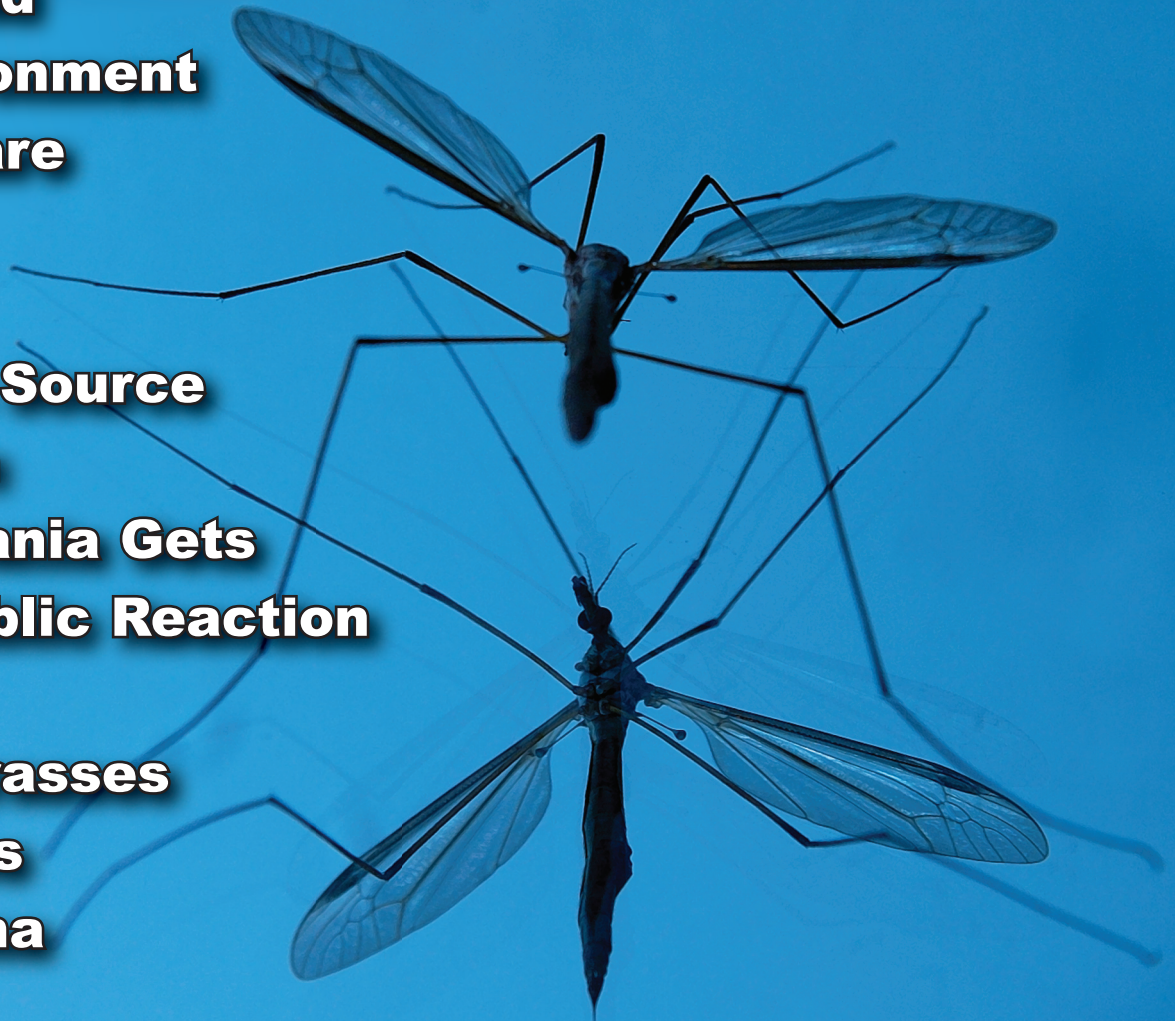
VOLUME 8, ISSUE 5 • SEPTEMBER/OCTOBER 2005

LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

## **MOSQUITO CONTROL: Balancing Public Health and the Environment in Delaware**

## **Nonpoint Source Project in Pennsylvania Gets Mixed Public Reaction**

## **Taking Grasses to Classes in Alabama**



## From the Director

The itch of summer is more than the common yearning for a vacation during the hottest part of the year. It is the bite of pesky mosquitoes that often make coastal wetlands and marshes their home.

Not only are mosquitoes a nuisance for many coastal residents, but they can drive away tourists and otherwise impact local economies. The bite of a mosquito also can make you sick.

The primary concern today for mosquito-borne disease is viral encephalitis, often caused by the West Nile virus.

Experts believe West Nile virus is a seasonal epidemic in North America that flares up in the summer and continues into the fall. Since 1999, when West Nile was first identified in the U.S., the virus has caused nearly 17,000 cases of human illness, including more than 650 deaths.

When people die, communities can panic, prompting emergency requests to coastal management programs to dredge mosquito ditches, drain wetlands, or spray pesticides on sensitive environmental areas. Under these circumstances, it can be difficult for coastal resource managers to justify environmental concerns.

The common enmity between mosquito control programs where environmental protection is not the primary mission and natural

resource programs may make these situations even thornier.

In the cover story of this edition of *Coastal Services*, we will take a look at mosquito control in Delaware, where proactive collaboration between coastal resource managers and mosquito control program officials is helping to head off conflicts between agencies and is addressing many environmental concerns before there is a crisis.

Also in this edition, you can read about an award-winning nonpoint source pollution project outside of Philadelphia that has raised the ire of some residents. You will also learn about a new partnership for cooperative coastal conservation between coastal land trust organizations and the National Oceanic and Atmospheric Administration's (NOAA) Coastal Services Center.

To find out more about collaborating with these important coastal resource managers, be sure to attend the National Land Conservation Conference: Rally 2005 from October 14 to 17 in Madison, Wisconsin. To register, go to [www.lta.org/training/rally.htm](http://www.lta.org/training/rally.htm).



Margaret A. Davidson

The mission of the NOAA Coastal Services Center is to support the environmental, social, and economic well being of the coast by linking people, information, and technology.



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## News and Notes

### A New Partnership – Coastal Land Trust Organizations

The 10-year anniversary of the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center was an opportunity to assess past performances and look for ways to increase future successes.

These discussions led to the realization that an important coastal resource manager was not being served—coastal land trust organizations.

Land trusts are nonprofit organizations that help landowners find viable ways to protect their lands. These efforts include conservation easements (permanent deed restrictions) and acquiring land outright for conservation reasons or to maintain working farms, forests, or wilderness areas. In the coastal zone, preserving scenic views, public access points, and unique coastal habitats also comes into play.

The nation's 1,500-plus land trusts have been very successful, having protected more than 9.3 million acres of land.

Initial needs assessments show that coastal land trusts can benefit from many of the same services the Center currently offers to other constituents. To test the waters, the Center is working with a coalition of land conservation organizations in coastal Maine.

#### Offering a Helping Hand

The Maine Coast Protection Initiative was developed to increase the pace and the quality of land protection in this state. Members have agreed upon common goals and have identified the data, information, and expertise needed to reach those goals.

The NOAA Coastal Services Center is one of over 70 organizations that make up the

coalition. Other members include the Land Trust Alliance, the Maine Coast Heritage Trust, and the Maine State Planning Office (which houses the state coastal program).

Thus far the Center has provided funding, organizational support, and Web development assistance. Future contributions will include technical training and geographic information system (GIS) software and hardware. The result will be increased capabilities for the participants, as well as increased support and funding for collaborative efforts that are strategic and regional in focus.

#### Future Efforts

Lessons learned from Maine will be used as the Center pursues similar partnerships with other land conservation organizations. Initial efforts are underway in northern California. In the Pacific

Northwest, the Nature Conservancy received funding to test and improve a GIS-based system for prioritizing conservation and management actions in coastal and marine ecosystems.

Center representatives will also attend the National Land Conservation Conference to present sessions on coastal conservation performance measures and on assessing the use of GIS for an organization.

"Land trust organizations represent some of the most effective coastal management efforts in this country," says Margaret Davidson, director of the NOAA Coastal Services Center. "We want to do what we can to help them reach their goals." ❖

To learn more about potential Center land trust partnerships, please contact [Lori.Cary-Kothera@noaa.gov](mailto:Lori.Cary-Kothera@noaa.gov).



Want to know more about  
land trust  
organizations?



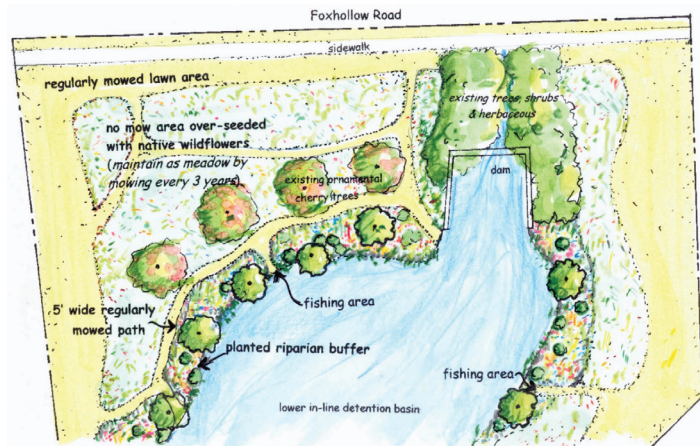
**National Land Conservation  
Conference: Rally 2005**  
October 14 to 17, 2005  
Madison, Wisconsin  
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Visit the NOAA Coastal Services Center exhibit while you are there!



# Technically Perfect Project in Pennsylvania Challenged by Public Reaction



**Y**ou can create an award-winning nonpoint source pollution project, but you can't make all residents appreciate it. This is the lesson one Pennsylvania township has learned after completing an almost technically perfect planting project to improve water quality that has some residents threatening to haul out their lawn mowers.

What has raised the ire of some residents in Lower Southampton Township outside Philadelphia was the establishment of a vegetative buffer that was designed as a "meadow" of native wildflowers and grasses around three drainage basins.

"Some people get upset because they think it looks weedy," says Nancy Minich, the project's designer and principal of NAM Planning and Design, LLC. "Beauty is in the eye of the beholder."

While community education and involvement were components of the Sweetwater Farms In-Line Detention Basin Planting and Infiltration Trench project, Minich and the township manager agree that more needed to have been done to engage and educate nearby residents before the project was completed.

The promise that the project would encourage a gaggle of about 100 aggressive geese to find new nesting sites also has not met some residents' expectations, says Township Manager Susanne McKeon.

"Residents like to come to their government for immediate help," notes McKeon. "It's difficult to convey sometimes that patience is required."

## An Outmoded System

The project site is a 10.9-acre township-owned open space, which is located in the middle of a 25-year-old residential development. When the development was built, three in-line stormwater detention basins were constructed in nearby Turkey Run stream, which is in the Neshaminy Creek Watershed.

According to the U.S. Environmental Protection Agency (EPA), Neshaminy Creek is one of four Philadelphia regional watersheds with the worst overall water quality scores. Nonpoint source pollution is cited as being the biggest problem.

The basins "would be totally outlawed now," notes Minich. "It's the worst thing you could do" because it did not allow for sediments and the nonpoint source pollution from roads, cars, and residents' fertilized lawns to drop out before entering the stream.

Instead, it captured and held the sediment and pollution, which eventually moved downstream. Compounding the problem was the township's regular mowing of the land right down to the water's edge.

## A Gaggle of Geese

The well-mown landscape and two-and-a-half acres of accessible water also made it "geese heaven," Minich says.

The open space supported "100-plus geese that were reproducing year after year," she says. "These were the most aggressive geese you have ever seen. They would bite you if you came near them."

Minich notes that the geese also were a "huge source" of pollution because their nitrogen-rich droppings washed right into the stream.

While residents complained to the township about the aggressive geese and the "messy droppings in their yards, they did not understand that acres of mown grass were actually attracting the geese," Minich says. "Geese don't like tall grass."

## A Change in Plan

In 2002, the township contracted with Minich to develop a plan to decrease downstream flooding, stop nonpoint source pollution from going right into the basins, and diminish the ideal habitat for the geese.

Instead of retrofitting the physical function of the three basins, Minich proposed a more cost-effective

**"Some people get upset because they think it looks weedy."**

**Nancy Minich,  
NAM Planning and Design, LLC**

strategy of changing how the surrounding land was managed. This included restoring the riparian buffer along the basins with native plants, creating a natural meadow.

The project was funded by a grant from the Pennsylvania Department of Environmental Protection Coastal Zone Management and was designed to comply with Phase II of the EPA's new stormwater management regulations.

The meadow was developed by a "stop mowing method," Minich says. The unmown area was lightly overseeded with a mix of native wildflower and grass seed. Meandering paths were mowed throughout to give residents and visitors access to the water for fishing and other recreational activities.

An infiltration trench was designed to capture fast-moving stormwater on a steep slope to keep it from flowing directly into the basins. Minich notes that this helps decrease nonpoint source pollution and reduces downstream flooding.

## Reaching Out

Minich and the township included public outreach as part of the project. Public meetings were held to explain the project to residents, and an educational sign was erected at the site. A brochure and informational CD-ROM were produced and distributed to residents.

Training on best management practices was provided to the township's public works staff, and area school groups participated in planting and baseline water quality testing projects.

Area residents also were encouraged to participate in a planting day, but only a handful of interested people participated, Minich says.

## Accolades

Technically, Minich says, the project was "textbook perfect. It's a model site to demonstrate the effectiveness of riparian buffers in decreasing nonpoint source pollution."

This technical success has resulted in the project being featured in an Audubon book, and getting the prestigious 2005 Planning and Analysis Merit Award from the Pennsylvania/Delaware Chapter of the American Society of Landscape Architects.



Residents' appreciation of the project, however, has been more mixed. While Township Manager McKeon notes that many are pleased with the project, some continue to complain about the attractiveness of the native vegetation and believe it is lowering their property values. Others complain about geese having moved into their well-mown yards.

"The geese have lived there a long time," explains Minich. "They aren't going to go away overnight."

To help address community concerns, the township has increased the area where it is mowing. "We did make some compromises in certain areas," acknowledges McKeon.

## Hindsight

Both Minich and McKeon say that more community education and involvement would have helped prepare residents for the long-term nature of the project and garnered more support. Minich in particular would like to see more public funding for outreach and education components of nonpoint source projects.

While McKeon describes the project as a "mixed success," she notes that the township has "no plans to do anything to reverse what we have worked on. If it continues to be successful for the environment, we will simply try to win over the folks who have a problem."

Minich notes, "You are never going to get a project that is a total 100 percent success. You can be very successful with techniques and technology. The people are always the challenge." ❖

*For more information on the Sweetwater Farms In-Line Detention Basin Planting and Infiltration Trench project, contact Nancy Minich at (215) 297-0681, or [nminich6575@comcast.net](mailto:nminich6575@comcast.net). You also may contact Susanne McKeon at (215) 357-7300, or [lstwpmgr@nmi.com](mailto:lstwpmgr@nmi.com).*

# Mosquito Control:

Balancing Public Health  
and the Environment in Delaware



**A**s the mosquito-borne West Nile virus spreads across the U.S., concerns over public health may spur emergency requests to coastal management programs to dredge mosquito ditches, drain wetlands, or spray pesticides on sensitive environmental areas. It can be challenging at best for coastal resource managers to justify environmental concerns when the public's fears are inflamed.

"Controlling pest species like mosquitoes that can also be disease vectors causing serious public health concerns in our

coastal areas is a significant coastal management issue," says David Carter, environmental program manager for the Delaware Coastal Programs. "Doing it in the least degrading manner to the environment is also a coastal issue and a clear responsibility of all involved."

As Delaware has learned, proactive collaboration between coastal resource managers and mosquito control program officials can help head off conflicts between agencies, as well as

**"If given an option, not too many people will voluntarily choose to live, work, or play where mosquitoes rule."**

**Bill Meredith,  
Delaware Mosquito  
Control Section**

address many environmental concerns, before there is a crisis.

Coastal managers and mosquito control officials "should be working together in any state," Carter says. "You've got to be realistic and balance these things."

## **The Right Place**

"Location, location, location" appears to have as much meaning for Delaware's mosquito control program as it does for siting a successful business. Of the more than 900 mosquito-control programs in the U.S., Delaware's is one of a handful housed within a state fish and wildlife agency.

"We are located as green as we can be located," says Bill

Meredith, program administrator of the Delaware Mosquito Control Section in the Division of Fish and Wildlife. Both Fish and Wildlife and Delaware Coastal Programs are located in the state's Department of Natural Resources and Environmental Control.

Meredith notes that mosquito control programs in other states are frequently located in agencies where environmental protection is not the primary mission. As a result, these programs are "often at war with people in departments of natural resources," he says. "Unpleasant battles go on in other states and locations."

Not only does Delaware's Mosquito Control Section work in the same department with the state's environmental managers, but Meredith and all the program's technical staff members are biologists, making them keenly aware of the potential impact on the environment.

Sarah Cooksey, administrator of the Delaware Coastal Program, says, "Because we have a very good relationship with our mosquito control folks, we put a lot of trust with them."

## **Sore Spots**

The largest sources of problematic coastal mosquitoes in Delaware are salt and brackish marshes along the Delaware River and Bay and around inland bays. Delaware's expansive tidal marshes, extensive swampland forests, scattered wet woodlots, and flooded swales can all produce massive swarms of mosquitoes if not controlled.

Given flight ranges of mosquitoes that vary by species from

a quarter mile up to 15 to 20 miles, these pests can torment many Delaware residents, visitors, and domestic animals.

"This is the classic conflict of living on the coast," says Carter. "The coast has bugs."

"People don't like to get bit," adds Meredith. "There is a strong public mandate in Delaware to control mosquitoes because of their adverse impacts to quality of life, public health, and local economies. . . If given an option, not too many people will voluntarily choose to live, work, or play where mosquitoes rule."

## **Health Concerns**

While mosquitoes have a high nuisance factor and can take a substantial toll on local economies based on tourism, outdoor recreation, or animal husbandry, an important reason to control mosquitoes is the potential impact on public health.

"There's a whole suite of diseases the public has forgotten about," Meredith says. "Without continuous and diligent mosquito control efforts, a former era of problematic pestilence would quickly return."

Up through the early 20<sup>th</sup> century, mosquito-borne diseases such as malaria or yellow fever occurred in Delaware and throughout the southeastern states. Meredith says it is thanks to modern mosquito control and medical practices that these diseases are now rare in the U.S.

The primary concern today in Delaware for mosquito-borne disease affecting humans is viral encephalitis, either in the form of eastern equine encephalitis or caused by West Nile virus.

"West Nile took off so quickly and affected so many

people that it served as a reminder to folks that we should always be concerned about these types of outbreaks," Meredith says.

Since it was first reported in New York in 1999, the virus has made nearly 17,000 Americans ill and killed more than 650. Human, avian, animal, or mosquito West Nile virus infections have been reported in every state except Alaska and Hawaii.

## **Don't Be Alarmed**

While the public should be aware of West Nile virus and take precautions when outdoors, such as wearing bug spray and long sleeves and pants, Meredith says people should not be overly alarmed.

"The chance that any one person is going to become ill from a single mosquito bite remains quite low," he says.

Only about one in 150 people infected with the virus will develop severe illness. About 80 percent of people who are infected will not show any symptoms at all.

## **Early Mistakes**

While state and local mosquito control efforts over the past 75 years have helped limit the severity of modern mosquito-borne disease outbreaks in the U.S., they have sometimes been at the expense of the environment.

In the 1930s, the Civilian Conservation Corps (CCC) dug parallel grid ditches across most of Delaware and other states' tidal wetlands to control mosquitoes. In Delaware, these ditches were maintained up until the mid 1960s when scientists began to understand that the ditch

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system unnecessarily drained many wetlands without controlling all mosquito production.

According to Delaware Mosquito Control Section documents published on the Internet, "The long-term negative ramifications of parallel grid ditching on wildlife and salt marsh ecosystems were dramatic." The drained wetlands lost many large ponds that were valuable nurseries for estuarine fish and invertebrates, and good habitats for waterfowl, wading birds, and shorebirds.

Coastal managers in other states report that public health concerns in the past few years have spurred emergency requests to dredge mosquito ditches that had been mostly abandoned for 20 years. Members of the public, unfamiliar with the value of wetlands, may demand that mosquito control professionals or coastal managers drain or fill wetlands because of concerns about breeding mosquitoes.

"Folks view mosquitoes as coming from the swamp and if you get rid of the swamp, you get rid of mosquitoes," Meredith explains, "and to some this unwisely and unfortunately becomes an acceptable trade-off."

Early pesticide use, such as spraying wetlands with fuel oil, arsenic Paris green, or DDT, also had severe environmental impacts.

### A New Day

Delaware's mosquito control efforts today are implemented with "minimum undesirable environmental impacts," Meredith says, "and in previously grid-ditched marshes can make environmental improvements, helping to restore valuable surface waters to coastal wetlands."

The program's priority is the elimination of mosquito breeding sites. A key technique includes

Open Marsh Water Management, used not only to alter mosquito rearing sites and to create habitats for fish that eat mosquito larvae, but also to restore grid-ditched tidal wetlands to a more natural state. The section also manages marsh water levels and tidal exchanges to help lower mosquito production over thousands of acres of Delaware's coastal impoundments.

Carter notes that the coastal program provided seven years of funding to the mosquito control program to evaluate and develop Open Marsh Water Management and other marsh restoration techniques.

The Mosquito Control Section has a lead role in the Northern Delaware Wetlands Rehabilitation Program, a collaborative effort by agencies in the Department of Natural Resources and Environmental Control to restore up to 10,000 acres of degraded urban wetlands.

"They are our leading wetlands restoration program," Carter says.

### Other Tools

"Unfortunately," Meredith says, "in many areas and situations and for many reasons, source reduction methods are not always practicable or permissible to do." It is then necessary to use insecticides.

While insecticide use can be controversial and things can and sometimes do go wrong in mosquito control, Meredith says there are "science-based dos and don'ts" for mosquito spraying that help ensure environmental compatibility. The section only uses insecticides reviewed and registered by the Environmental Protection Agency (EPA) and carefully applies them using EPA-approved methods.

Meredith says modern mosquitocides are more target-specific and break down within only a few hours to a few days after spraying, helping to avoid or reduce

some past problems associated with mosquito control spraying.

When insecticides are needed, the program first uses larvicides to treat immature mosquitoes in their breeding habitats. Meredith says this involves treating smaller areas and is less harmful to the environment.

The program commits to spraying insecticides for adult mosquitoes only as a last resort. "The environment can be protected when adulticiding by choosing the right products, by specific timing of applications within the control season or during the day, and by carefully controlling the spray rate and size of spray droplets, all of which will lessen any unintended impacts," Meredith says.

He notes that his section is spraying insecticides less than it did a generation ago.

### Part of the Plan

Mosquito control is often an issue for protected natural areas, not necessarily to protect their visitors, but to protect the communities that are within flying distance of mosquito breeding areas. This is traditionally an area of conflict between mosquito control officials and resource managers.

In Delaware, the mosquito control section partners with resource managers to treat two federal refuges, as well as a number of state wildlife areas and state parks. The issue of ensuring environmentally sound mosquito control was written into the initial management plan for the Delaware National Estuarine Research Reserve (NERR).

"If they are coming off your land, then you need to do something about it," notes Carter.

The NERR's plan addresses insecticides and their use and habitat manipulation for mosquito control.

In addition to proactively addressing mosquito control in the reserve, Carter says he would

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## Using GIS to Improve the Big Picture in Connecticut

Connecticut coastal resource managers began customizing a geographic information system (GIS) in the early 1990s to more rapidly identify an area's permitted activities and locate the file of the associated hard copy permit. The idea was to someday bypass the trip to the file room and, instead, instantly retrieve permit documents via the computer.

That vision is now a reality.

**"It lets you do a whole lot of analysis in a quick amount of time, often reducing or even eliminating the need to go to the file room, different agencies, or out in the field."**

**Kevin O'Brien,  
Office of Long Island  
Sound Programs**

For the past decade, the Connecticut Office of Long Island Sound Programs has diligently kept existing data on its Coastal Resources GIS up to date, as well as adding data layers that are helping coastal managers in their daily decision making.

In addition to retrieving scanned versions of permits dating back to 1939, coastal program staff members can use GIS on their desktop computers to study data layers such as 2003 oblique aerial photography, true color and false color infrared photography, and National Oceanic and Atmospheric Administration (NOAA) nautical charts. Staff members can quickly find the locations of tidal wetlands,

submerged aquatic vegetation, shellfish beds, and docks.

It also is helping staff members address activities out in the sound, such as the laying of submerged cable and gas pipelines, and locating liquefied natural gas facilities and infrastructure, says Kevin O'Brien, environmental analyst and GIS specialist with the Office of Long Island Sound Programs, which houses the state's coastal management program and coastal permitting programs.

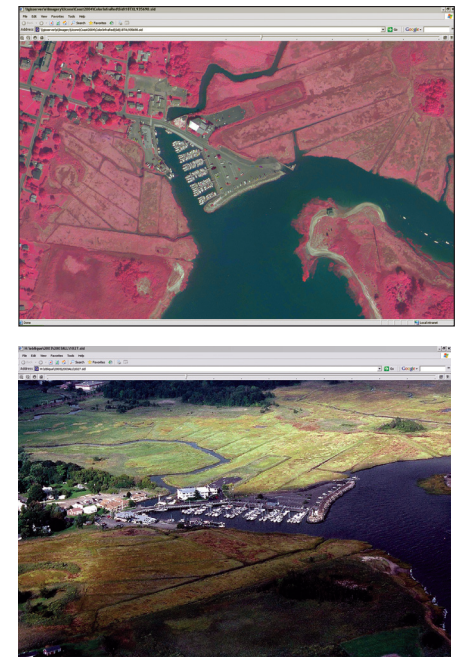
"It lets you do a whole lot of analysis in a quick amount of time, often reducing or even eliminating the need to go to the file room, different agencies, or out in the field," O'Brien notes.

In addition, Office of Long Island Sound Programs staff members have helped set up an Internet-based GIS viewer for the state's entire Department of Environmental Protection.

"There's now a lot of information available from the department as a whole via an internal Web-based server," O'Brien says. "This is another way to provide high-quality information to a lot of people very quickly."

Staff members are currently working on a system to provide a "department-wide way to manage environmental regulations and interests." When it is complete, he says, regulators will be able to "look at a site and see what permits have been assigned from the various agencies in the department. That will take us towards a more holistic approach from a regulatory and environmental interest standpoint."

The Coastal Resources GIS and other department efforts,



With a click of their mouse, coastal program staff members can study data layers such as 2003 oblique aerial photography and true color and false color infrared photography.

O'Brien notes, also may help the state's coastal managers move towards addressing ecosystems as a whole when making regulatory decisions. The need for ecosystem management was a key finding of the U.S. Commission on Ocean Policy.

"I definitely see that as something you could do with this format," O'Brien says. "We now have the tools to take a look at an entire watershed, or however you may want to define ecosystem management, and the data to support that type of investigation and analysis."

Being able to successfully use a GIS for coastal resource management depends on the amount and quality of available data, how easy the data are to access, and keeping that data up-to-date, O'Brien says.

He adds, "We're a pretty savvy GIS shop. A lot of the results we've had are really exciting." ❖

For more information on Connecticut's Coastal Resources GIS, contact Kevin O'Brien at (860) 424-3432, or kevin.obrien@po.state.ct.us.

## Taking Grasses to Classes in Alabama

**A** new program in Alabama is supplying low-cost native plants for coastal restoration projects and free labor for planting and monitoring. It's also imparting both science and environmental stewardship to area students.

The Baldwin County Grasses in Classes program being piloted by the Weeks Bay National Estuarine Research Reserve involves about 450 students from three different high schools in the restoration of coastal dunes, marshes, and grass beds. Students are growing plants in school nurseries and are volunteering with local scientists to plant and monitor the vegetation as part of agency-planned restoration projects.

**"The kids are saying this is the funnest thing they've ever done in school."**

**Margaret Sedlecky,  
Weeks Bay National  
Estuarine Research Reserve**

There has been tremendous interest in the program from federal, state, and local agencies struggling to pay for native plants and the labor necessary to implement habitat restoration projects, as well as from teachers and students, says Margaret Sedlecky, the reserve's education coordinator.

"These high school students are actually out there in waders in the field doing scientific research," Sedlecky says. "The kids are saying this is the funnest thing they've ever done in school."

Sedlecky modeled the reserve's Grasses in Classes



The first planting of student-grown submerged aquatic vegetation was this spring.

program after similar efforts in Florida being conducted by Tampa Bay Watch and in Maryland by the Department of Natural Resources and the Chesapeake Bay Foundation.

She says the organizations generously provided information on their programs' operations, which she "revised for our purposes." One of the main differences in Alabama's program is a wider selection of restoration plants being grown, including plants for dune restoration.

Dune restoration became a priority for Alabama's coastal managers after Hurricane Ivan thrashed the state's beaches last year. A survey of state and local agencies involved in habitat restoration also established a need for freshwater grasses and submerged aquatic vegetation.

Sedlecky handpicked four area teachers whom she has worked with on other projects to begin the grant-funded Baldwin County program last January. To participate, the "teachers have to agree, principals have to be aware, and somebody has

to watch the plants during the summer months so they don't dry out or are not overwatered." All the schools participating either had or are putting in irrigation systems.

The first planting of student-grown submerged aquatic vegetation was this spring. As school gets underway this fall, students will work with agency scientists to assess the health of the plants.

Sedlecky notes that half the student-grown plants will always be held back in order to propagate plants for free.

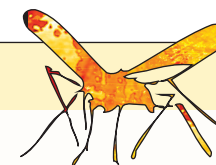
Next summer, the participating teachers will create a step-by-step manual for implementing the program and will hold teacher workshops to expand the program to other schools.

"So far so good," Sedlecky says about the success of the program.

"The students end up having ownership of habitat they helped to restore. They're not going to walk across a [fragile] section of beach, because they helped plant those grasses. That's the whole purpose," she says, "to make environmental stewards out of these kids." ❖

*For more information on the Baldwin County Grasses in Classes program, contact Margaret Sedlecky at (251) 928-9792, or [weeksbay@gulftel.com](mailto:weeksbay@gulftel.com). For more information on the Tampa Bay Watch Bay Grasses in Classes program, point your browser to [www.tampabaywatch.org/programbaygrasses.htm](http://www.tampabaywatch.org/programbaygrasses.htm). For more information on Maryland's Bay Grasses in Classes program, go to [www.dnr.state.md.us/bay/sav/bgic/grass\\_class.html](http://www.dnr.state.md.us/bay/sav/bgic/grass_class.html).*

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"welcome the chance to do sound independent research at a NERR site, to help develop some innovative state coastal program policies, and to help guide our mosquito control programs to meet their public pest control responsibilities in our coastal areas in the most environmentally friendly way possible."

### Practically Pest-Free

Many areas in Delaware formerly overrun by mosquitoes are now almost "mosquito-free, or are at least tolerable," because of the constant behind-the-scenes efforts of mosquito control personnel, Meredith says.

The goal, Carter says, is balancing the impacts on the environment with ensuring people's quality of life and health, and the economy.

"The big thing is having open dialogue on all these things," Carter says. "The real concern is that the threat to human life will really spiral out of control and we will lose focus on what we are doing from a policy perspective."

He adds, "Good science and reasonable policies will help us meet multiple objectives without endangering the public's health or damaging critical environment." ❖

*For more information on Delaware's mosquito control efforts, go to [www.dnrec.state.de.us/fw/mosquito.htm](http://www.dnrec.state.de.us/fw/mosquito.htm). You also may contact Bill Meredith at (302) 739-9917, or [William.Meredith@state.de.us](mailto:William.Meredith@state.de.us), or David Carter at (302) 739-9283, or [David.Carter@state.de.us](mailto:David.Carter@state.de.us). For more information on West Nile virus, point your browser to [www.cdc.gov](http://www.cdc.gov).*

## Hazardous Weather Coming Your Way?

**Use these tools to help you prepare!**

**Risk and Vulnerability Assessments for Your Community**  
[www.csc.noaa.gov/rva\\_tools/](http://www.csc.noaa.gov/rva_tools/)

**Hurricane Evacuation Zone Maps**  
[www.csc.noaa.gov/hez\\_tool/](http://www.csc.noaa.gov/hez_tool/)

**Flood Forecast Mapping**  
[www.csc.noaa.gov/ncflood/](http://www.csc.noaa.gov/ncflood/)

**Inland Flooding Information**  
[www.csc.noaa.gov/csp/florida/fl\\_hurrevac.html](http://www.csc.noaa.gov/csp/florida/fl_hurrevac.html)

**Historical Hurricane Tracking Site**  
<http://hurricane.csc.noaa.gov/hurricanes/>



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[www.csc.noaa.gov/training/](http://www.csc.noaa.gov/training/)

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