COASTAL SERVICES

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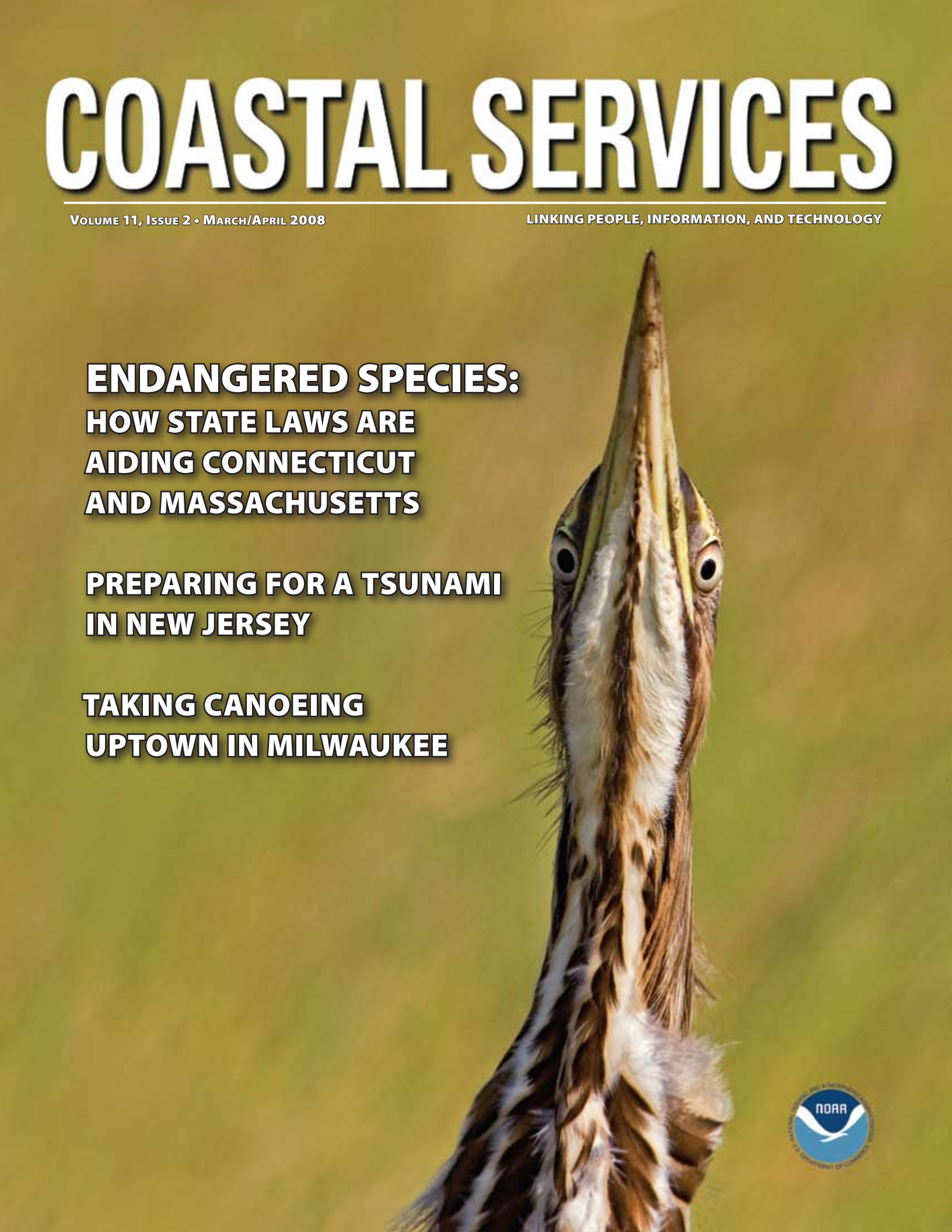
LINKING PEOPLE, INFORMATION, AND TECHNOLOGY



ENDANGERED SPECIES:
HOW STATE LAWS ARE AIDING CONNECTICUT AND MASSACHUSETTS

PREPARING FOR A TSUNAMI IN NEW JERSEY

TAKING CANOEING UPTOWN IN MILWAUKEE

From the Director

As long as the majority of our nation's population wishes to live and play in the coastal zone, pressures on wildlife habitat will continue. This means a growing list of coastal management issues—from docks to dredge permits, coastal construction to marsh restoration—will address threatened or endangered species.

While most people have heard about the national Endangered Species Act, state regulations are often quietly protecting species that have state or regional importance.

In the cover story of this edition of *Coastal Services*, we look at the issue of endangered species and how state laws are aiding coastal resource managers in Connecticut and Massachusetts.

Also in this edition, we examine how a National Estuarine Research Reserve workshop led to the expansion of a regional Beach Conditions Report in Southwest Florida. The report provides the public with an abundance of beach information, including information about the presence of harmful algal blooms.

The information gathered for the Beach Conditions Report by lifeguards and county and park employees is shared with the National Oceanic and Atmospheric Administration (NOAA), which formulates a harmful algal bloom forecast.

The NOAA Harmful Algal Bloom Forecasting System is a collaborative effort of the Coastal Services Center, National Centers for Coastal Ocean Science, Center for Operational Oceanographic Products and Services, and CoastWatch, as well as a variety of state programs within the Gulf of Mexico.

The NOAA forecasting system alerts the public to county beach conditions that could impact human health and provides timely information to coastal managers regarding monitoring strategies.

The Center plays a key role in the project by translating scientific data and new technologies into a useful product for the coastal management community. For more information on the Harmful Algal Bloom Forecasting System, go to *www.csc.noaa.gov/crs/habf/*.

Other articles in this edition of *Coastal Services* cover New Jersey's efforts to prepare for a tsunami, and the Milwaukee Urban Water Trail, one of a growing number of water trails around the country.

We hope you find the articles in this edition interesting and informative. As always, we'd love to hear your feedback. ❖

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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National Ocean Service
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Cover photo of an American bittern by Paul J. Fusco

Back issues of *Coastal Services* can be viewed at *www.csc.noaa.gov/magazine/*

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News and Notes

Coastal Management Fellowship Program Survey Results

Everyone's a winner who participates in the Coastal Management Fellowship program. Newly graduated students get invaluable work experience. The host organization gets a smart employee. And coastal communities get a workforce better prepared to meet the challenges of today and tomorrow.

The fellowship program sponsored by the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center provides postgraduate students with two-year job opportunities with state regulatory programs. The program has been in existence since 1996, and thus far 22 states and 62 fellows have participated.

Recently, GEARS (Global Evaluation and Applied Research Solutions, Inc.) completed an intensive review of the program, and the results are impressive.

From the Fellows

Comments from current and recent graduates of the program include the following:

- The fellowship program allows the fellows to learn a great deal about project management in a relatively short period of time at a relatively early stage in their careers.
- This fellowship gives recent graduates a chance to start their careers with "a BANG, not a whimper."
- Fellows recommend the program to other students because it offers a great introduction to working with state government on real natural resource policy and management issues.

Negative comments had to do with disappointment at the amount of time their mentors were able to spend with them, the politically charged atmosphere surrounding the work, or the fact that their projects weren't as well-defined as they would have liked. Discovering these little truths, however, is a big part of the learning experience.

Host Organizations

Host organizations were universal in their praise. The projects undertaken by the fellows represent real work that must be done. The program allows the organizations to greatly stretch their budgets and in many cases obtain expertise that otherwise would have been unavailable. "We get lots of results for few dollars," said one respondent.

The long-term goal of the program, which is to create a strong community of future coastal resource managers, is also being realized, since 42 percent of past fellows work in state government and 15 percent work in federal government.

Survey Summary

- 77 percent of past fellows continue to work in this field.
- 81 percent report the program improved their ability to get future jobs.
- Past state mentors rank the program 4.5 on a 5-point scale.
- 82 percent of the fellowship projects couldn't have been completed without the fellows' contributions.
- 81 percent of all projects were soup-to-nuts efforts completed during the two-year fellowship window.

The survey not only offers information about how to improve the fellowship program, but also gives program participants insight into what makes a successful experience for the fellow and the hosting organization. ❖

To see the calendar for the Coastal Management Fellowship Program, learn more about the fellowship, and read the survey results, visit www.csc.noaa.gov/fellows.html.

Workshop Leads to Local Red Tide Data Collection in Florida

In January, the public received access to real-time beach information, including data about the presence of red tides being collected at eight beaches in Collier County, Florida. The county's participation in collecting data for a regional Beach Conditions Report was the direct result of a local decision-maker workshop on red tides.

"Current research has shown that red tides will not simply go away."

Tabitha Stadler, Rookery Bay National Estuarine Research Reserve

"This particular workshop," notes Tabitha Stadler, coastal training coordinator at Rookery Bay National Estuarine Research Reserve, "was inspired by the reserve's participation in the Gulf of Mexico Alliance."

In 2004, the governors of Alabama, Florida, Louisiana, Mississippi, and Texas teamed up with state and local governments and 13 federal agencies to create the Gulf of Mexico Alliance to increase regional collaboration and enhance the ecological and economic health of the Gulf.

"As a member of the Gulf alliance, Rookery Bay's goal is to increase partnerships that protect water quality in the Gulf of Mexico and engage the public in a meaningful way," says Stadler. "The Beach Conditions Report is an extremely valuable tool that will help lessen the impacts of red tide on our beach communities, and is helping provide data to our federal partners who are working to predict and model red tides."

Good Day for the Beach?

The Beach Conditions Report was created in 2006 by the Mote Marine Laboratory in response to public requests for current information about beach conditions.

The system, says its creator Barbara Kirkpatrick, manager of Mote's Environmental Health Program, is designed to provide twice-daily updates about beach conditions, including the presence of red tide algae, dead fish, and respiratory irritation among beachgoers, as well as wind direction and water color and condition.

The reports are collected by lifeguards, county and park personnel, and other beach monitors who input their observations into a wireless handheld computer. The phoned-in data automatically update the website and a telephone system.

The program was piloted in Sarasota County and was later expanded to counties in the north and south. With the addition of Collier County, the Beach Conditions Report covers 23 beaches along the Southwest Florida coast.

A lifeguard uses a handheld computer to automatically update the Beach Conditions Report.

The information gathered for the Beach Conditions Report is shared with the National Oceanic and Atmospheric Administration (NOAA), which formulates a harmful algal bloom forecast.

Turning the Water Red

While there are thousands of species of microscopic algae that may tint coastal waters a range of colors, only about a dozen cause harmful blooms that can result in massive fish kills, the deaths of marine mammals, contamination of shellfish beds, and human illness. The most common cause of harmful blooms in Florida and the Gulf is *Karenia brevis*, a marine dinoflagellate that can color the water red and is the source of the common name.

Since the 1840s when official observations of toxic red tides began in Florida, there have been multiple documented red tide episodes with fish kills in the Gulf of Mexico, along the East Coast of Florida, and up to the North Carolina coast.

In addition to causing neurotoxic shellfish poisoning in humans if contaminated shellfish are consumed, the organism also releases aerosolized toxins that can cause respiratory effects, such as coughing, and can be harmful to people suffering from asthma and other chronic lung diseases, says Kirkpatrick.

Billion Dollar Problem

Red tides form in patches that often dissipate just as fast as they accumulate, making predicting an event at a particular beach extremely difficult, says Rick Stumpf, oceanographer for the Center for Coastal Monitoring and Assessment in the NOAA National Ocean Service.

Stadler notes that tourism in Collier County is a billion dollar industry, and a red tide event can affect that, particularly when media accounts make it sound like the entire shoreline is impacted, even though it may be just one beach.

"Red tide is definitely a problem when it occurs, but then so are rip currents when they occur, thunderstorms, stingrays, jellyfish, sunburns," says Stumpf. "There can be a lot of serious environmental concerns that you can face when going to the beach. It's important to put red tides into context."

Community Response

Red tide was one of the issues that rose to the top of the priority list for Southwest Florida and Collier County during a series of workshops hosted in 2005 by the Gulf of Mexico Alliance, which Rookery Bay helped facilitate, says Stadler.

During those workshops, which helped the alliance develop its action plan, "the community had a lot of innovative ideas," Stadler says, "and we wanted to continue to engage with them on alliance issues."

She adds, "Current research has shown that red tides will not simply go away. The question we wanted to address was 'how can we help the community cope more effectively?'"

Open Dialogue

The reserve received funding from the Florida Coastal Management Program to continue Gulf alliance community workshops, which were kicked off in January of 2007. In addition to red tides, workshops addressed water management with regard to climate change and sustainable development.

What made the workshops so effective, says Lee Yokel, environmental education coordinator for the Gulf of Mexico Alliance, is that the reserve "brought in informed people and set the stage for an honest and open dialogue."

As a result of the red tide workshop, it was the community and county's decision to expand the Beach Conditions Report into Collier County.

This decision is not only helping beach visitors, but it's also enhancing NOAA's forecast ability, says Stumpf. The local information is being built into red tide forecasts and is being used to evaluate forecast information, such as satellite data.

Open to Expansion

"I think the Beach Conditions Report could be expanded to other states, as long as each report meets local communities' needs," notes Kirkpatrick. "The workshop definitely helped. You can't just go cold into a community and say 'we're here to help.'"

"I would say the workshop was pretty successful," says Stadler. "We had a clear goal to look at a local solution. Not only are we getting the local benefit of helping keep people safe and happy, but we're also contributing a huge data set to the Gulf-wide effort to understand red tide."

She adds, "I think this could be replicated across the Gulf." ❖

To view the Beach Conditions Report, go to www.mote.org/beaches/. For more information, contact Barbara Kirkpatrick at (941) 388-4441, ext. 226. For more information on the red tide workshop, contact Tabitha Stadler at (239) 417-6310, ext. 209, or tabitha.stadler@dep.state.fl.us. For more information on the Gulf of Mexico Alliance, go to www.rookerybay.org/CTP-GOMA.html, or www.supportthegulf.org. You may also contact Lee Yokel at (251) 861-8201, or lyokel@disl.org.

Photos courtesy of Mote Marine Laboratory

Endangered Species:

How State Laws are Aiding Connecticut and Massachusetts

"Nothing is more priceless and more worthy of preservation than the rich array of animal life with which our country has been blessed."

President Nixon, upon signing the national Endangered Species Act

While the national Endangered Species Act receives a lot of attention, it is often state regulations that are the first line of defense in protecting species that have state or regional importance. Increasingly, coastal resource managers are having to balance development and recreational activities along our nation's shoreline with the habitat needs of endangered or threatened species.

"Habitat loss is the most significant threat to endangered species," notes Scott Melvin, senior zoologist for the Natural Heritage and Endangered Species Program in the Massachusetts Division of Fisheries and Wildlife. "Given human population trends in this country, it's probably going to continue to be a significant threat.

"The coastline in Connecticut is highly developed," says Greg Chasko, assistant director of the Connecticut Department of Environmental Protection's Wildlife Division. "People and wildlife competing for space along the coast is a significant issue in Connecticut."

This article looks at the issue of endangered species and how state laws in Connecticut and Massachusetts are impacting coastal management.

Long List

"There are a lot of things we review with the coastal zone program" for endangered species impacts, notes Jenny Dickson, wildlife biologist with Connecticut's Wildlife Division. These include "dock permits, dredge permits, construction activities affecting beaches, dunes, and tidal wetlands, issues of marsh restoration, doing phragmites control. The list is pretty long."

Melvin adds energy issues to the list. "It could be oil spills or the siting and installation of wind-power facilities. Really, any development in the coastal zone" could impact an endangered or threatened species.

He also includes managing animals that prey upon endangered coastal species as a management issue.

"Recreational management is a huge issue for endangered species," adds Susi von Oettingen, an endangered species specialist with the New England Field Office of the U.S. Fish and Wildlife Service. "Several species have literally been crushed out of existence through much of their range."

National Law

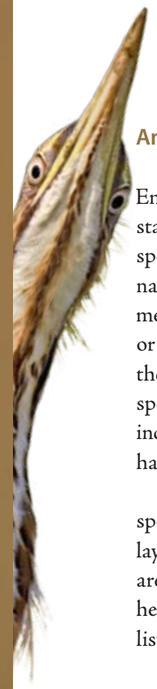
In 1973, President Nixon signed the national Endangered Species Act to protect species and their ecosystems. The act encompasses birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses, and trees.

The act prohibits federal agencies from doing anything that may jeopardize endangered or threatened species, and forbids the harming, harassing, or killing of endangered animals without a permit. The act also requires that critical habitat be designated for a species.

The U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service share responsibility for administration of the act. NOAA handles marine species, and Fish and Wildlife has responsibility over freshwater fish and all other species, and maintains the list of over 1,500 endangered and 300 threatened species.

The short-eared owl, American bittern (center), and seaside sparrow (right) are on Connecticut's list of threatened, endangered, and special concern species.

Photos by and courtesy of Paul J. Fusco



Another Layer

According to the State Environmental Resource Center, 45 states have their own endangered species acts, which model the national law and provide a mechanism for listing endangered or threatened species and prohibit the taking of, or trafficking in, listed species. A number of states also include species recovery or critical habitat designation.

As a result, state endangered species acts can provide a second layer of protection for species that are already federally listed, and also help a state protect non-federally listed species.

"A lot of species that are of conservation concern in Connecticut are not a concern on a national scale," explains Dickson.

She points to the example of the saltmarsh sharp-tailed sparrow, which is found only in the coastal saltmarshes of the eastern U.S. "We have a responsibility for the global population of that species. If we only looked at the federally listed species, it would be overlooked, to our detriment."

Mirror Image

Both Connecticut's and Massachusetts' endangered species acts mirror the federal act, says Julie Victoria, wildlife biologist with Connecticut's Wildlife Division.

In Massachusetts, however, coastal habitat is specifically addressed in a second state law—the Massachusetts Wetlands Protection Act—that prohibits harmful alterations to the wetland habitats of rare wildlife species.

The Wetlands Protection Act has been an "especially effective tool for protecting the habitats of rare coastal waterbirds," Melvin says. "These include coastal beaches, dunes, intertidal areas, and wetland resource areas." It is administered at the local level, providing "a whole network of local administrators to review projects."

Both Connecticut's and Massachusetts' managers say they coordinate closely with other state and federal agencies, private organizations, and individuals when addressing endangered species issues.

Sustained Efforts

The endangered species acts in both states have been successful in avoiding or mitigating adverse impacts to endangered and threatened resources.

"The piping plover is a positive example," says Melvin. "Both the Atlantic coastal population and Massachusetts' population have increased substantially over 20 plus years of intensive management."

What's worked, says Dickson, is "having conversations up front about a project that may impact a rare species and coming up with creative solutions before we end up having a problem."

Getting Harder

Even as the state and national endangered species acts have resulted in the protection and recovery of certain species and the reduction of some environmental threats, other risks still exist, and many species will require sustained management efforts, Melvin says.

"I think it's going to get harder," he says. "We have a finite habitat base, a growing population with no end in sight, and our economic system is based on sustaining never-ending growth. Something will have to give."

"Historically, we've been more reactive than proactive in terms of endangered species management," says Dickson. "It's much more economical and easier if we keep species from becoming endangered in the first place." ❖

For more information on Connecticut's Endangered Species Act, contact Greg Chasko at (860) 424-3011, or greg.chasko@po.state.ct.us. You may also contact Jenny Dickson at (860) 675-8130, or jenny.dickson@po.state.ct.us, or Julie Victoria at (860) 642-7239, or julie.victoria@po.state.ct.us. For more information on Massachusetts' Endangered Species Act, contact Scott Melvin at (508) 389-6345, or scott.melvin@state.ma.us.

ADDITIONAL RESOURCES

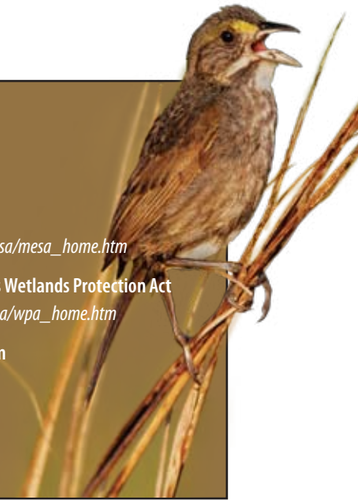
Information on the Connecticut Endangered Species Act
www.ct.gov/dep/endangeredspecies

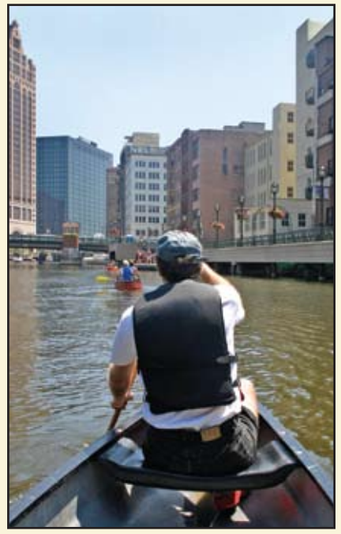
Information on the Massachusetts Endangered Species Act
www.mass.gov/dfwele/dfw/nhesp_temp/regulatory_review/mesa/mesa_home.htm

Information on endangered species and the Massachusetts Wetlands Protection Act
www.mass.gov/dfwele/dfw/nhesp_temp/regulatory_review/wpa/wpa_home.htm

U.S. Fish and Wildlife Service's Endangered Species Program
www.fws.gov/endangered/

National Oceanic and Atmospheric Administration (NOAA) Fisheries' Office of Protected Resources
www.nmfs.noaa.gov/pr/laws/esa/





Taking Canoeing Uptown in Milwaukee

> *"We've seen a flood of urban water trail development."*
>
> *Angie Tornes, National Park Service*

High-rises, restaurants, and a river walk may not be the typical scenery for canoeists or kayakers, but these are the urban scenes that have been incorporated into a 25-mile urban water trail along Milwaukee's rivers. This is an example of a growing number of water trails around the country that are helping residents reconnect with rivers that may have a long history of industrial use.

"This is a national trend in water trails," says Angie Tornes, natural and recreation resource planner for the National Park Service's Rivers and Trails Program. "We've seen a flood of urban water trail development."

The Milwaukee Urban Water Trail "connects people with and encourages responsible use of our rivers and Lake Michigan," says Cheryl Nenn, Milwaukee Riverkeeper for Friends of Milwaukee's Rivers. "By getting people out on the water, more people will be inspired to become stewards of our rivers."

Mike Friis, program manager for the Wisconsin Coastal Management Program, which helped fund the development of the Milwaukee water trail, notes, "It's nice to be part of something that's fairly new, is well received, and where we can still be creative in messaging or marketing."

Knowing Where to Go

A water trail is a mapped route along a river, lake, or coastline that gives residents and tourists the information they need to safely and legally access and navigate a waterway in a kayak or canoe. Educational information on the history and natural features of the waterway typically is provided, as is information on recreational areas and camping sites.

While camping is not encouraged along Milwaukee's Urban Water Trail, good places to park your canoe and grab a burger are provided.

"Milwaukee's a unique city and a good portion of it is walkable, so we give information on nearby historical, natural, and cultural points of interest," notes Nenn.

Other areas with urban water trails include New York City, Seattle, San Francisco, Chicago, and along the Chesapeake Bay, says Tornes.

Diverse Route

The Milwaukee Urban Water Trail includes 33 access sites and portages, and routes paddlers through the urban portions of the Milwaukee, Menomonee, and Kinnickinnic rivers. It passes through portions of five cities and two counties, and connects the three rivers to paddling opportunities on Lake Michigan.

While some of the route is an "urban canyon of buildings, boats, and piers," Nenn says a surprising amount of the trail passes through suburban areas and city and county parks.

"You really can escape from the urban environment," agrees Friis. "You paddle out of the woods into a nicely redeveloped area where they've reused factories as condos and restaurants. It's a really diverse experience."

The opportunity to easily paddle through both natural settings and urban areas makes Milwaukee's trail unique, notes Tornes.

Word of Mouth

Water trails typically are created as a result of public interest, says Tornes, and the Milwaukee trail was no exception. A series of public efforts to improve water quality on the rivers resulted in more people wanting access.

"We were getting lots of calls from people wanting to paddle the rivers but not knowing where it was safe and legal to put in," says Nenn. "We had nothing to give them as far as resources."

As a result, unofficial and often unsafe access points were being used by people who unknowingly may have been trespassing on private property or damaging sensitive shorelines.

Trail Building

A collaborative partnership was created by the Friends of Milwaukee's Rivers with the National Park Service's Rivers and Trails Program, the Wisconsin Department of Natural Resources, the City of Milwaukee, Milwaukee County Parks, several private landowners, environmental groups, and concerned citizens to create the water trail.

Nenn notes that unlike a hiking or bicycling trail, "you don't necessarily need to acquire land or invest in landscape improvements."

Instead, the group worked for two years examining other water trails around the country, and doing an inventory of the rivers' access sites and historic and natural areas.

"We spent a lot of time paddling the rivers looking at the condition of the banks and launch areas," Nenn says. "We had to determine which areas couldn't be used because they were causing natural resource damage, and figure out who owns what."

Students at the Milwaukee Institute of Art and Design created a logo, which was used on a website, printed map, and extensive trail signage.

Official Release

The water trail map was released in fall 2005 in both paper form and on-line at *www.mkeriverkeeper.org.* Since its release, more than 10,000 maps have been distributed, and thousands have visited the website. Nenn says plans include revising and reprinting the map next year.

Special events are held on the trail every year, including "Canoes and Brews," which is a guided trip to a local brewpub.

"People are increasingly realizing that they don't have to drive up north to enjoy going canoeing or kayaking," Nenn says. "Instead, they can enjoy the rivers right in their own backyards."

Gap Analysis

Another outcome of the water trail process was the creation of a report that identifies gaps in access and provides decision makers, landowners, and interest groups with information on how to physically improve and enhance existing water access sites and associated facilities.

"I feel really good about the trail," Nenn says. "There was clearly a need and a lot of interest, and a lot of people worked together to make this happen. It's been a great project." ❖

To view the Milwaukee Urban Water Trail, point your browser to www.mkeriverkeeper.org/watertrail/map.htm. You may also contact Cheryl Nenn at (414) 287-0207, or cheryl_nenn@mkeriverkeeper.org. You can reach Mike Friis at (608) 267-7982, or michael.friis@wisconsin.gov, and Angie Tornes at (414) 297-3605, or angie_tornes@nps.gov.

ADDITIONAL RESOURCES

For more information on creating a river trail, go to

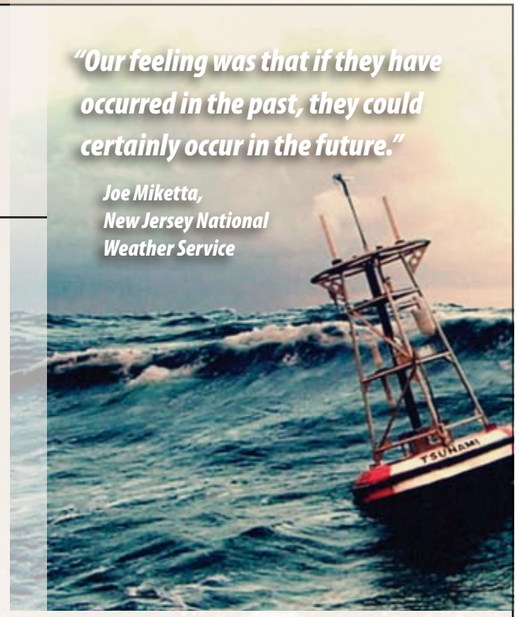
The Chesapeake Bay Gateways Network's Water Trail Toolbox: How to Plan, Build, and Manage a Water Trail at *www.baygateways.net/watertrailtools.cfm*

The Florida Fish and Wildlife Conservation Commission's Guidelines for Creating Paddling Trails at *http://myfwc.com/Boating/Paddling/index.htm*

The National Park Service's website on River Projects: Water Trails at *www.nps.gov/ncrc/portals/rivers/projpg/watertrails.htm*

Page 6 photo by Eddee Daniel; photos courtesy of Friends of Milwaukee's Rivers

Preparing for a Tsunami in New Jersey



According to 1884 newspaper reports, a 5.6 magnitude earthquake near Philadelphia generated huge waves that backed up the rising tide in New Jersey's Delaware River, overflowing wharves and snapping dock lines. This is just one historic account in New Jersey that researchers now believe was a tsunami.

While the probability of a large tsunami impacting the coast of New Jersey is small, research has revealed that the U.S.'s mid-Atlantic region could experience a damaging tsunami. As a result, federal and state partners in New Jersey and Delaware worked together to create a tsunami awareness brochure geared toward coastal communities and residents.

"Our feeling was that if they have occurred in the past, they could certainly occur in the future," says Joe Miketta, warning coordination meteorologist with the Mount Holly, New Jersey, office of the National Oceanic and Atmospheric Administration (NOAA) National Weather Service. "Our goal was not to scare people but to let them know that tsunamis can happen here, and what can be done to protect themselves next time tsunami waves move ashore."

"One of the challenges," notes Tom Herrington, director of the Stevens–New Jersey Sea Grant Cooperative Extension in Coastal Processes, "was reaching a local audience that feels this isn't a threat."

Common Causes

A tsunami, or "harbor wave" in Japanese, is a series of waves that can be caused by earthquakes, aboveground and underwater landslides, volcanic eruptions, explosions, and meteoric impacts. Tsunamis in the Atlantic Basin are most commonly generated by earthquakes and landslides.

After the massive destruction of the December 2004 Indian Ocean tsunami, Miketta notes, "I think we're all aware of what a tsunami can do."

Promoting Awareness

To develop a brochure that describes tsunamis, their potential dangers, and ways to prepare for them, the New Jersey Marine Sciences Consortium and its New Jersey Sea Grant Extension Program collaborated with the Stevens Institute of Technology, National Weather Service, New Jersey Office of Emergency Management, Delaware Emergency Management Agency, and University of Delaware Sea Grant.

"We talked with them about the dangers of a tsunami, and we brainstormed with the experts at the universities to determine what the danger really is, the relative frequency, and what the public could do," Miketta says.

What's Realistic?

The experts determined that a 50-foot wave hitting the coast of New Jersey would be extremely unlikely, while a wave in the 10-foot range would be more probable.

This guidance was important, says Herrington, because the standard advice for avoiding a tsunami is to climb atop a hill or cliff—something that is nearly impossible to do along the low elevations of the New Jersey and Delaware coastlines.

The most reasonable response plan for the area, Herrington says, was to encourage people to find a strong multi-story structure, such as a parking garage, and go to the highest level.

The brochure warns people to seek higher ground if they feel an earthquake or if the ocean rapidly recedes, and explains that a tsunami experienced in the mid-Atlantic region might be generated by an earthquake or landslide in Puerto Rico, Portugal, or the Canary Islands.

Spreading the Word

In addition to being available on-line, 10,000 brochures were printed and distributed last year by the partners, as well as by coastal communities that gave them to new residents and vacation renters.

Miketta and other weather service staff members also provide tsunami-awareness training to beach patrols and lifeguards, as well as to local emergency managers.

Their goal, Miketta says, is that people know what to do if NOAA offshore buoys detect a tsunami and the weather service issues a warning.

"Obviously this topic is important to every coastal region in the world," says Herrington. "There's a lot of information about tsunamis out there, but little is geared towards the East Coast. It's important to really tailor this information to your community's needs." ❖

For more information on tsunamis, point your browser to www.erh.noaa.gov/er/phi/reports/tsunami.htm or www.tsunami.noaa.gov. For information on the National Weather Service's TsunamiReady program, go to www.tsunamiready.noaa.gov. For information on the National Tsunami Hazard Mitigation Program, go to www.pmel.noaa.gov/tsunami-hazard/. To view the New Jersey Tsunami Awareness brochure, go to www.njmsc.org/Sea_Grant/PublicationPDFs/Tsunami_NJSG06650.pdf. You may also contact Joe Miketta at (609) 261-6602, ext. 223, or Joseph.Miketta@noaa.gov, or Tom Herrington at (201) 216-5320, or Thomas.Herrington@stevens.edu.

Photo courtesy of NOAA Pacific Marine Environmental Laboratory

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