

# COASTAL SERVICES

VOLUME 14, ISSUE 3 • MAY/JUNE 2011

LINKING PEOPLE, INFORMATION, AND TECHNOLOGY



## **ADAPTING TO CLIMATE CHANGE IMPACTS:**

**Maryland Is Turning Plans into Action**

**Mapping Resources in Ohio to Guide  
Offshore Wind Energy Development**

**Working Together to Clean Up  
Marine Debris in South Carolina**



## From the Director

With their strategic plans in place for the next five years, Maryland coastal resource managers are moving from planning for climate change impacts to implementing adaptation measures.

What they are finding so far is that implementing these measures is not requiring drastic changes. In fact, in many cases, climate change is just a new element to be added into activities that are already underway.

The lesson from coastal managers in Maryland—and around the country—is that often, by adjusting the focus of a program or project slightly, the impacts of climate change can be included in work that is already being done. You can read more about Maryland's climate change planning and implementation efforts in the cover story of this edition of *Coastal Services*.

Also in this edition, you can read about an interactive online mapping tool using new technology that is helping coastal resource managers in Ohio share information on the resources that may play a role in the placing of offshore wind turbines in Lake Erie.

Other articles look at how enlarging the group of collaborators working on marine debris in South Carolina has helped raise public awareness of the problem, led to

better reporting tools, and expanded the state's cleanup efforts, and how Washington state coastal resource managers are encouraging residents to take photographs during high winter tide events to build public awareness of the likely effects of sea level rise.

While this and every edition of *Coastal Services* are aimed at helping coastal managers around the country share information about successful programs and projects, the best way to communicate information is still face-to-face.

Coastal Zone 2011—one of the best opportunities to learn from the experiences of coastal managers from across the nation and around the world—is being held July 17 to 21 in Chicago.

This year's conference will include plenary sessions, technical presentations, special panel discussions, café conversations, poster sessions, field trips, and training opportunities. For more information on the Coastal Zone conference, go to [www.doi.gov/initiatives/CZ11/index.htm](http://www.doi.gov/initiatives/CZ11/index.htm).

I look forward to seeing you there! ❖



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

### Supplying the Socioeconomic Piece of the Coastal Management Puzzle

For coastal professionals seeking to protect the environmental health and economic vitality of their communities, socioeconomic information and data are an invaluable aid.

“For instance, knowing the facts about your community's population and economic activity can help you craft better plans for coastal hazards, sea level rise, and other impacts of climate change,” says Jeffery Adkins, an economist with the NOAA Coastal Services Center. “In the case of flooding, you won't just know the specific areas in your community that are vulnerable—you'll be better informed on the implications of that flooding for the people who live and work and play there.”

The following resources available from the Center can help coastal professionals be better informed by incorporating socioeconomic information into management and decision-making processes.

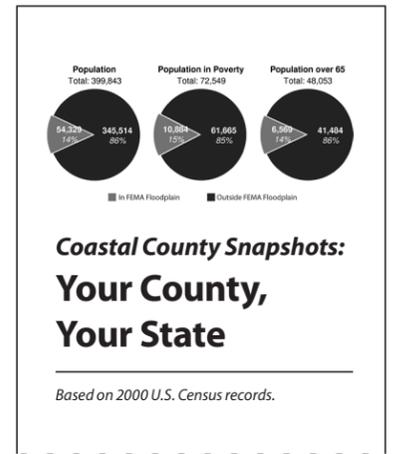
**Coastal County Snapshots** – Integrates social science data, land cover data, and other information to provide county officials with a local “snapshot” of coastal flooding and ocean and Great Lakes jobs. [www.csc.noaa.gov/snapshots/](http://www.csc.noaa.gov/snapshots/)

**Economics: National Ocean Watch (ENOW)** – Provides information on six economic sectors that depend on the oceans and Great Lakes. Preliminary ENOW data are online, with finalized data due later in 2011. [www.csc.noaa.gov/enow/](http://www.csc.noaa.gov/enow/)

**Introduction to Economics for Coastal Managers** – Outlines different ways of assigning economic value to resources and assessing the value of different management approaches. [www.csc.noaa.gov/economics/](http://www.csc.noaa.gov/economics/)

**Spatial Trends in Coastal Socioeconomics (STICS)** – Uses a map-based interface to display and download demographic and economic characteristics of jurisdictions. [www.marineconomics.noaa.gov/socioeconomics/](http://www.marineconomics.noaa.gov/socioeconomics/)

**Gross Domestic Product** – Supplies gross domestic product data from the Bureau of Economic Analysis in tabular and geospatial formats, providing totals and a breakdown by 64 industries. [www.csc.noaa.gov/digitalcoast/data/gdp/](http://www.csc.noaa.gov/digitalcoast/data/gdp/)



*Coastal County Snapshots*  
includes information on  
vulnerable local populations.

**Quarterly Census of Employment and Wages** – From the U.S. Bureau of Labor Statistics, this resource provides a quarterly count of employment and wages reported by employers covering 98 percent of U.S. jobs. [www.csc.noaa.gov/digitalcoast/data/qcew/](http://www.csc.noaa.gov/digitalcoast/data/qcew/) ❖

To learn more about the Center's socioeconomic resources, contact [Jeffery.Adkins@noaa.gov](mailto:Jeffery.Adkins@noaa.gov).

# Mapping Resources in Ohio to Guide Offshore Wind Energy Development

An interactive online mapping tool using new ESRI technology is helping coastal resource managers in Ohio share information on the resources that may play a role in the placing of offshore wind turbines in Lake Erie. The tool is designed as a first step for offshore wind developers to help determine the studies that would be required in the state's permitting process.

"With all the alternative energy discussions out there, wind turbine placement in Lake Erie is a really hot topic," says Brian George, geographic information management specialist for the Ohio Department of Natural Resources' Office of Coastal Management. "We wanted to create a tool illustrating that Lake Erie is not just a big, open body of blue water. There are a lot of different resources, uses, and users out there that have to be taken into consideration."

The Wind Turbine Placement Favorability Map Viewer allows users to select and view all or some of the thematic map layers that include bird habitat, fish habitat, commercial and sport fishing, lakebed sediments, distance from shore, land transportation, harbor navigation, shipping and ferry routes, shipwrecks, restricted areas, industries, and utilities.

The map viewer was developed using ArcGIS Viewer for Flex, which George says is a free, ready-

to-deploy application for ArcGIS Server and ArcGIS Online services. It is designed to customize the appearance, functionality, and content of mapping applications without the need for programming.

The wind turbine map viewer is the first of six applications developed using Flex that make up the Ohio Coastal Atlas Use Case toolbox. Each case viewer in the toolbox gives users the ability to view data layers related to specific issues.

## Perfect Position

According to the Ohio Energy Resources Division website, the Great Lakes region represents one of the largest offshore wind market opportunities in the world.

The region is projected to play "an important role in achieving the U.S. Department of Energy 20 percent Wind Energy Scenario"—a modeled scenario where wind provides 20 percent of U.S. electricity by 2030.

"Ohio's strategic location on the shore of the shallow and centrally located Lake Erie places it in a perfect position to serve as the home of manufacturing, installation, and support services needed to ship, install, maintain, and repair offshore wind facilities in the Great Lakes," the website says.

## Being Proactive

The Ohio Office of Coastal Management is at the forefront

*"We wanted to create a tool illustrating that Lake Erie is not just a big, open body of blue water."*

*Brian George, Ohio Office of Coastal Management*

of developing the state's rules for leasing areas of Lake Erie for wind turbine development.

"We really wanted to be proactive on the issue rather than reactive," George says. "We wanted to be out there as a department with information to let developers and members of the public know that there are a lot of things going on out there."

He adds, "We wanted to provide developers, conservationists, boaters, and other interested parties with a tool that would be their first step toward the studies that would be required to proceed with developing wind turbines in the lake."

## Starting Static

In 2007, the agency first developed a static map showing different uses and resources that would impact the placement of wind turbines in Lake Erie.

"We had collected much of the data while working on the Ohio

Coastal Atlas project," George says. The original 11-by-17-inch printed atlas included county profiles, as well as maps and data on geology, sand resources, habitat, land use and protected areas, soils, groundwater, flood hazards, ports and transportation, and boating access.

"We had so much good and useful information at our fingertips, it was easy to integrate into a mapping product," George explains. "Ninety percent of the information we incorporated into the map we had already collected for the atlas."

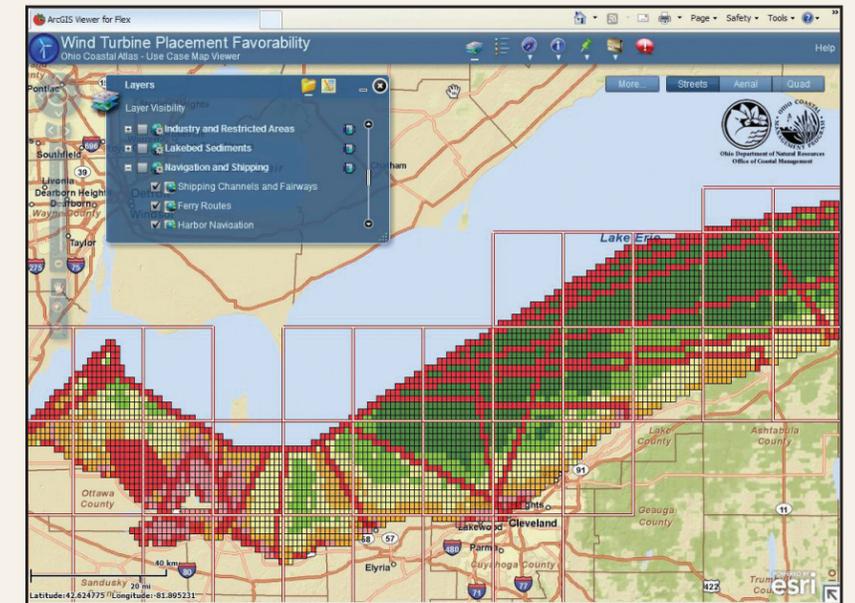
It wasn't until November 2010 that coastal staff members found the technology that easily let them translate the static map into an interactive product with multiple data layers.

## Flexibility

"It was just a stroke of luck last October that we discovered an ESRI webinar on the Flex Viewer," George says. "This uses some nice technological breakthroughs to really make interactive mapping viewers more seamless and fluid. It's really easy to understand and use."

The technology allows users to create interactive and expressive Web applications leveraging ArcGIS Server resources—such as maps, locators, feature services, and geoprocessing models—and Flex components—such as grids, trees, and charts.

After the experience of creating the wind turbine map viewer, George says he was able to easily create five additional use case map viewers looking at



A map generated by the Wind Turbine Placement Favorability Map Viewer.

Lake Erie public access, shoreline erosion, watersheds, ports and harbors, and recreational boating.

## Custom Tools

Each map viewer integrates thematic mapping layers relevant to the specific subject, and a variety of custom tools allow users to view resource layers on an index grid system, create a JPEG image, or print the map being viewed.

A custom tool for the wind turbine map viewer is that users can gather comprehensive attribute information, including lake depth, lakebed sediment, fish habitat, and limiting factor weight values.

The weight values allow viewers to look for areas that are considered more or less favorable for the location of wind turbines, George says.

"The purpose of the map viewer is not to say, 'No, you can't build here,' or 'Yes, go ahead.' It's to indicate

that they might want to pay close attention to what they are seeing in an area and make sure it wouldn't be a challenging location based on all this criteria for the development of wind turbines," he says.

George adds, "I really believe this is a powerful tool that provides good information for people interested in wind energy development in Lake Erie. I definitely think that the methodology we have used could be applied by other coastal managers in other states." ❖

To view the Wind Turbine Placement Favorability Map Viewer, go to [www.ohiodnr.com/coastal/](http://www.ohiodnr.com/coastal/) and select the "Coastal Wind" logo. To view the Ohio Coastal Atlas, go to [www.ohiodnr.com/tabid/23320/default.aspx](http://www.ohiodnr.com/tabid/23320/default.aspx). For more information, contact Brian George at (419) 626-7984 or [Brian.George@dnr.state.oh.us](mailto:Brian.George@dnr.state.oh.us).



The last house on Holland Island (shown here and on the cover), a once-thriving fishing community, collapsed in October 2010. The island was once five miles long and was home to 250 to 360 people.

## Adapting to Climate Change Impacts: Maryland Is Turning Plans into Action

Maryland recently completed phase II of its climate adaptation strategy, ending the state's strategic planning phase. Coastal resource managers and other state officials are already using the planning documents to implement state-level adaptation measures addressing current and future climate change impacts.

"We have our strategic plans in place for the next five years," says Zoë Johnson, program manager for Climate Change Policy in the Maryland Department of Natural Resources' Office for a Sustainable Future. "While these are living documents, we are done setting our

short- to medium-time vision for moving forward for planning for climate change. We are now focused on implementation."

Two climate change adaptation strategies are currently being used to guide state-level planning efforts. The first strategy, released in 2008, addresses the impacts associated with sea level rise and coastal storms. The second strategy, released early in 2011, addresses changes in precipitation patterns and increased temperature and the likely impacts to human health, agriculture, ecosystems, and the built infrastructure.

In addition to being instrumental in the development of the climate change adaptation strategies, the Maryland Department of Natural Resources has led the state in developing a specific climate change adaptation policy.

The policy has already changed how the state makes its land and infrastructure investments, and determines habitat restoration projects, Johnson says.

"The intent of the policy," she says, "is to lead by example, and along the way encourage and educate others in the methods for managing natural resources and designing facilities in light of a changing climate."

*"In a lot of ways, we're adding climate change as a new element to consider in things that are already going on."*

Zoë Johnson, Maryland  
Department of Natural Resources

### Consequences

Sea level rise, increased storm intensity, extreme drought and heat waves, and intensified wind and rainfall events are some of the consequences of climate change that are expected to impact Maryland's people, wildlife, land, and public investments.

"These impacts will affect many facets of our society and economy," Johnson says, including the state's agriculture industry, forestry and fishery resources, freshwater supply, aquatic and terrestrial ecosystems, highway system, historic and cultural landmarks, and public health.

For example, she notes that assessments of potential sea level rise impacts show that 371 miles of highways and 2,500 historic and archaeological sites are vulnerable to inundation. In a state where water quality in the Chesapeake Bay is of the highest priority, a troubling statistic for coastal managers is that thousands of septic systems are in inundation zones, including 5,200 in just one county.

"We're already seeing impacts," Johnson says. "Thirteen Chesapeake Bay islands once mapped on nautical charts have disappeared beneath the

surface, an estimated 400,000 acres of land on the state's Eastern Shore is gradually becoming submerged, and the state is currently losing approximately 580 acres of shoreline per year to erosion."

She adds, "The threat of sea level rise alone poses many resource management challenges."

### Planning

On April 20, 2007, Governor Martin O'Malley signed an executive order establishing the Maryland Commission on Climate Change and charged it with developing an action plan to address the causes of climate change and prepare for the likely impacts.

The resulting *Climate Action Plan* document, released in August 2008, addressed impacts, mitigation, and economic concerns.

A key component of the plan was the phase I adaptation strategy on sea-level rise and coastal storms, which recommended a conservation vision and suite of 19 priority policy options for sea level rise adaptation and response. View the strategy by going to [www.dnr.state.md.us/coastsmart/pdfs/comprehensive\\_strategy.pdf](http://www.dnr.state.md.us/coastsmart/pdfs/comprehensive_strategy.pdf).

The phase I adaptation strategy was developed by the Adaptation and Response Working Group—one of three working groups created by the climate change commission. The Adaptation and Response Working Group was coordinated by the Department of Natural Resources staff and included 34 representatives from local governments, nongovernmental environmental organizations, trade associations, and academic, business, and citizen groups.

In 2008, two key pieces of sea level rise adaptation policy were adopted by the state, including the Living Shorelines Protection Act to address shore erosion issues, and the strengthening of provisions in the Chesapeake and Atlantic Coastal Bays Critical Area Protection Program Act, which among other things amended jurisdictional boundaries due to sea level rise and increased a vegetated buffer requirement from 100 to 200 feet for new development.

### Phase II

The *Climate Action Plan* also recommended that the state needed to "do more work looking at other sectors' adaptation needs beyond the coastal zone and sea level rise," Johnson says.

Work on phase II of the plan began in 2009 using the *Climate Action Plan's* scientific and technical assessment and the phase I strategy to lay the foundation and framework for the development of sector-based adaptation strategies.

Six new working groups were formed to look at planning on a sector-by-sector basis, Johnson says. Ultimately, more than 80 experts collaborated and held several larger stakeholder meetings to create the phase II comprehensive strategy document, which was released on January 24, 2011.

The report outlines strategies to reduce the impacts of sea level rise, increased temperature, and changes in precipitation within the sectors of human health, agriculture, forest and terrestrial ecosystems, bay and aquatic environments, water resources, and population

*Continued*

growth and infrastructure. View the phase II strategy by going to [www.dnr.maryland.gov/climatechange/climatechange\\_phase2\\_adaptation\\_strategy.pdf](http://www.dnr.maryland.gov/climatechange/climatechange_phase2_adaptation_strategy.pdf).

Both the phase I and phase II strategies are being used by state agencies to guide and prioritize state-level activities with respect to both climate science and adaptation policy, Johnson says.

### Leading by Example

Once the content of the phase II strategy was clear, the Department of Natural Resources began developing its Building Resilience to Climate Change policy, which the agency issued in October 2010.

"This is our leading by example policy," she says. "Our idea was to start to take the concepts of mitigation-related issues recommended in the planning documents and establish policies and practices and procedures of how we're going to address those different issues."

The policy guides the department's investments in and management of land, resources, and assets to better understand, mitigate, and adapt to climate change. To do this, it establishes practices and procedures related to new land investments, facility siting and design, habitat restoration, government operations, research and monitoring, resource planning, and advocacy.

"As we clarify the practices and procedures in our agency, they will then be moved out to larger state investments and activities," Johnson says. "It's an implementing mechanism to move the state a step

further and encourage others to plan for and to mitigate the effects of climate change."

### Implementation

So far, implementing the climate change policy has not required drastic changes within the agency, Johnson says.

"In terms of implementation, we're focusing on low-cost solutions," she says. "In a lot of ways, we're adding climate change as a new element to consider in things that are already going on. Embedding climate change into existing processes does not require entering into the larger public debate."

For instance, climate change issues have been folded into existing agency work to identify and protect at-risk species and habitats, as well as land acquisition efforts. These efforts are now targeted toward areas that provide an "ecosystem service" that minimizes the effects of climate change, such as a storm surge buffer, or a wetland or habitat migration corridor, which can help shield Maryland's shoreline and interior from the impacts of sea level rise and coastal storms.

"One of the easiest ways to reduce vulnerability to climate change," Johnson says, "is to avoid placing more infrastructure in harm's way."

To address this, the agency is now siting and designing all new facilities and infrastructure to avoid or minimize anticipated climate change impacts, particularly sea level rise. For instance, the new visitor center at the Harriet Tubman State Park was designed with sea level rise in mind and will be elevated

two feet above the existing 100-year base flood elevation.

To assist local governments with reducing their climate change vulnerability, the department is administering a competitive grants program to provide financial and technical assistance with planning and permitting activities.

A series of policy tools are also under development, including sea level rise adaptation easements, community infrastructure service designations, sound investment policy criteria, and strategic partnership development.

### Progress

While Maryland has made notable progress on both the climate change and sea level rise fronts, more work remains to be done, Johnson says. "Continued progress will take time, fiscal resources, flexibility, and continual commitment."

There are also technical needs that must come from other sources, such as better climate information at finer resolutions and scales.

"We need better climate information that can be applied on the ground here in Maryland. We're having success integrating climate change considerations into other planning processes, but what we need is detailed and accurate climate information," Johnson says.

She adds, "What we have done is set the stage for undertaking future activities." ❖

*For more information on Maryland's climate change efforts, go to [www.dnr.maryland.gov/climatechange/](http://www.dnr.maryland.gov/climatechange/). You may also contact Zoë Johnson at (410) 260-8741 or [zjohnson@dnr.state.md.us](mailto:zjohnson@dnr.state.md.us).*

## Working Together to Clean Up Marine Debris in South Carolina



*"I think we all realized that this is a significant issue, and we all needed to do our part."*

*Curtis Joyner, South Carolina Department of Health and Environmental Control*

While state, federal, and local coastal resource managers have successfully worked together to remove more than 80 abandoned vessels from South Carolina's coast, marine debris continues to be a significant problem along the state's shoreline. Enlarging the group of collaborators working on the issue beyond the primary regulatory agencies has helped raise public awareness of the problem, led to better reporting tools, and expanded the state's cleanup efforts.

"I think we all realized that this is a significant issue, and we all needed to do our part," says Curtis Joyner, coastal projects manager for

the Policy and Planning Division of the South Carolina Department of Health and Environmental Control's Office of Ocean and Coastal Resource Management.

The expanded partnerships have been the result of the project, "Marine Debris and Abandoned Vessels: Identification, Reduction, and Prevention through Community-Based Education and Action," funded by the NOAA Marine Debris Program, and a two-year public awareness project sponsored by the Centers for Ocean Sciences Education Excellence (COSEE).

The three-year NOAA project has resulted in the development of a new monitoring training manual, an online marine debris reporting form, three area grid maps for community monitoring, and a document clearly defining regulatory jurisdictions.

The COSEE project brought all the partners to the table and culminated in a successful marine debris cleanup and prevention event.

### Serious Threat

Each year, more than one million residents and 15 million visitors enjoy boating, fishing, and recreating along South Carolina's coast. But the trash they leave behind—everything from abandoned vessels to cigarette butts on beaches—diminishes the beauty of the coast and creates hazards for animals and humans.

"Marine debris is a serious threat to South Carolina's beaches,

marshes, creeks, and rivers," Joyner says. Abandoned vessels can create navigational hazards for boaters and threaten wildlife if pollutants such as oil and gasoline are leaked. Debris also poses a risk to animals from toxicity, entanglement, and smothering from ingestion.

### Coordinating Efforts

In 2004, the South Carolina Office of Ocean and Coastal Resource Management, the U.S. Coast Guard, and the U.S. Army Corps of Engineers agreed to create the Marine Debris and Abandoned Vessel Removal Task Force to coordinate efforts to manage debris removal.

The coastal program was able to leverage funding from the NOAA Office of Ocean and Coastal Resource Management and the state to work with coastal municipalities to remove significant numbers of abandoned vessels and large debris from the state's coastal waters.

While the effort was successful, South Carolina is experiencing an increase in abandoned vessels, likely due to the soured economy.

### Public Awareness

In 2009, the coastal program used NOAA funding and partnered with the South Carolina Sea Grant Consortium, North Inlet-Winyah Bay National Estuarine Research Reserve, and other organizations to enhance public awareness of the

*Continued on Page 9*

# Using Social Media to Visualize Future Sea Level Rise in Washington State



Washington coastal resource managers are encouraging residents to take photographs during high winter tide events and share the images using social media. These dramatic photos are building public awareness of the likely effects of sea level rise.

“Building public awareness is such an important step in adaptation planning,” says Eli Levitt, climate impacts analyst for the Washington State Department of Ecology. “Our project engages the public on the idea that sea level is changing and helps them see the change in their own backyard. We also hope it will motivate people to ask themselves, ‘What can I do to prepare my community?’”

The Washington King Tide Photo Initiative encourages members of the public to document the highest winter king tides that occur along the state’s coast from late December through February, and upload the images to a Flickr photo-sharing site. A king tide is an especially high tide that occurs when the sun’s and moon’s gravitational pulls reinforce one another.

More than 260 photos have been uploaded to the Flickr site and show tide-related flooding at areas such as beaches, roads, and parks that are near seawalls, jetties, bridges, or other structures.

During the 2009-2010 winter season, the Washington State Department of Ecology and British Columbia’s Ministry of Environment were the first agencies on the West Coast to set up king tide photo initiatives.

Washington coastal managers begin each photo-taking season by consulting NOAA’s Tide Predictions website for king tide forecasts. The department then solicits involvement of residents through websites, Facebook, blog, and press releases. When posting images to the Flickr site, photographers note the approximate location or use Global Positioning System (GPS) coordinates to “geotag” the photos.

By the 2010-2011 winter season, agencies in Oregon and California had set up their own king tide Flickr sites, and the four partners collaborated on a West-Coast-wide photo event.

Levitt thinks the photo-sharing concept could be adapted for other coastal areas as a way to boost public awareness of sea level rise or other hazards such as coastal inundation or storm surge.

“We were fortunate to have media and Web specialists help us here to set up the site. In any

**“Our project engages the public on the idea that sea level is changing and helps them see the change in their own backyard.”**

*Eli Levitt, Washington State Department of Ecology*

case, it’s easy for organizations to build a more simplified site, even if they just have one person doing the work,” says Levitt.

He adds, “This winter, we recorded about 4,000 hits on Flickr, 4,650 hits on the agency’s king tide site, and 20 media stories, so the public awareness benefits are well worth the effort.” ❖

*For more information on the Washington King Tide Photo Initiative, contact Eli Levitt at (360) 407-6928 or eli.levitt@ecy.wa.gov.*

## More on King Tides

Washington King Tide Photo Initiative  
[www.ecy.wa.gov/climatechange/tpa\\_hightide.htm](http://www.ecy.wa.gov/climatechange/tpa_hightide.htm)

Oregon King Tide Photo Project  
[www.climateadaptationplanning.net/kingtides/](http://www.climateadaptationplanning.net/kingtides/)

California’s Bay Area King Tide Photo Initiative  
[www.flickr.com/groups/bayareakingtides/](http://www.flickr.com/groups/bayareakingtides/)

British Columbia’s King Tide Photo Initiative  
[www.env.gov.bc.ca/cas/adaptation/king\\_tide.html](http://www.env.gov.bc.ca/cas/adaptation/king_tide.html)

*Continued from Page 7*

abandoned vessel problem and to recruit volunteers to assist with the identification and preliminary assessment of abandoned vessel sites.

The partners conducted three focus groups with coastal stakeholders to identify and discuss marine debris issues in three regions of the state.

Among the needs identified were to publicly clarify the jurisdictions and responsibilities of regulatory agencies, provide public education on what constitutes marine debris, and establish a clear protocol and mechanism for reporting marine debris.

The coastal program also joined the COSEE project, which brought all the collaborators to the table and expanded to include industry partners. The group worked to host a three-day event for coastal recreational boaters, anglers, and watermen to dispose of unwanted equipment. Not only did the event help prevent boating and fishing equipment from becoming debris, it also generated significant publicity on the issue.

Working with more partners to address marine debris is making a difference, Joyner says.

“We’re doing a much better job sharing information and data,” he says. “We’re all sitting in the same room talking and working towards a common goal.”

Joyner adds, “Keeping South Carolina’s waters free of marine debris and abandoned vessels will continue to be a daunting challenge. In order for our efforts to succeed, we will need to continue to work together and combine resources.” ❖

*For more information on South Carolina’s marine debris and abandoned vessel removal efforts, go to [www.scdhec.gov/environment/ocrm/vessel\\_removal.htm](http://www.scdhec.gov/environment/ocrm/vessel_removal.htm). You may also contact Curtis Joyner at (843) 953-0205 or [joynercm@dhec.sc.gov](mailto:joynercm@dhec.sc.gov).*

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## TOPOGRAPHIC AND BATHYMETRIC DATA INVENTORY



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

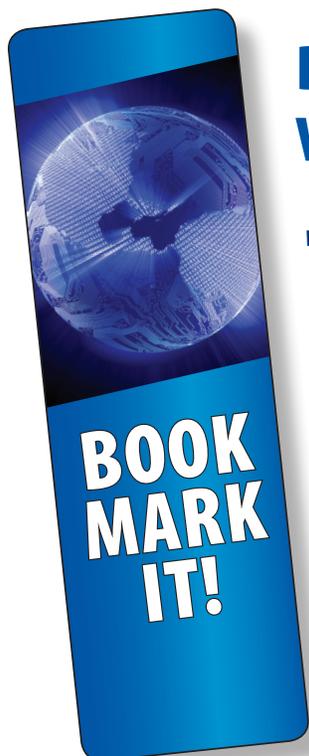
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## WE CAN HELP YOU GET THROUGH THIS.

Working with the public can be hard. Improve your team's skills with "Public Issues and Conflict Management," a training course that can be brought to your location. Visit [www.csc.noaa.gov/training/](http://www.csc.noaa.gov/training/) for details.



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