COASTAL SERVICES

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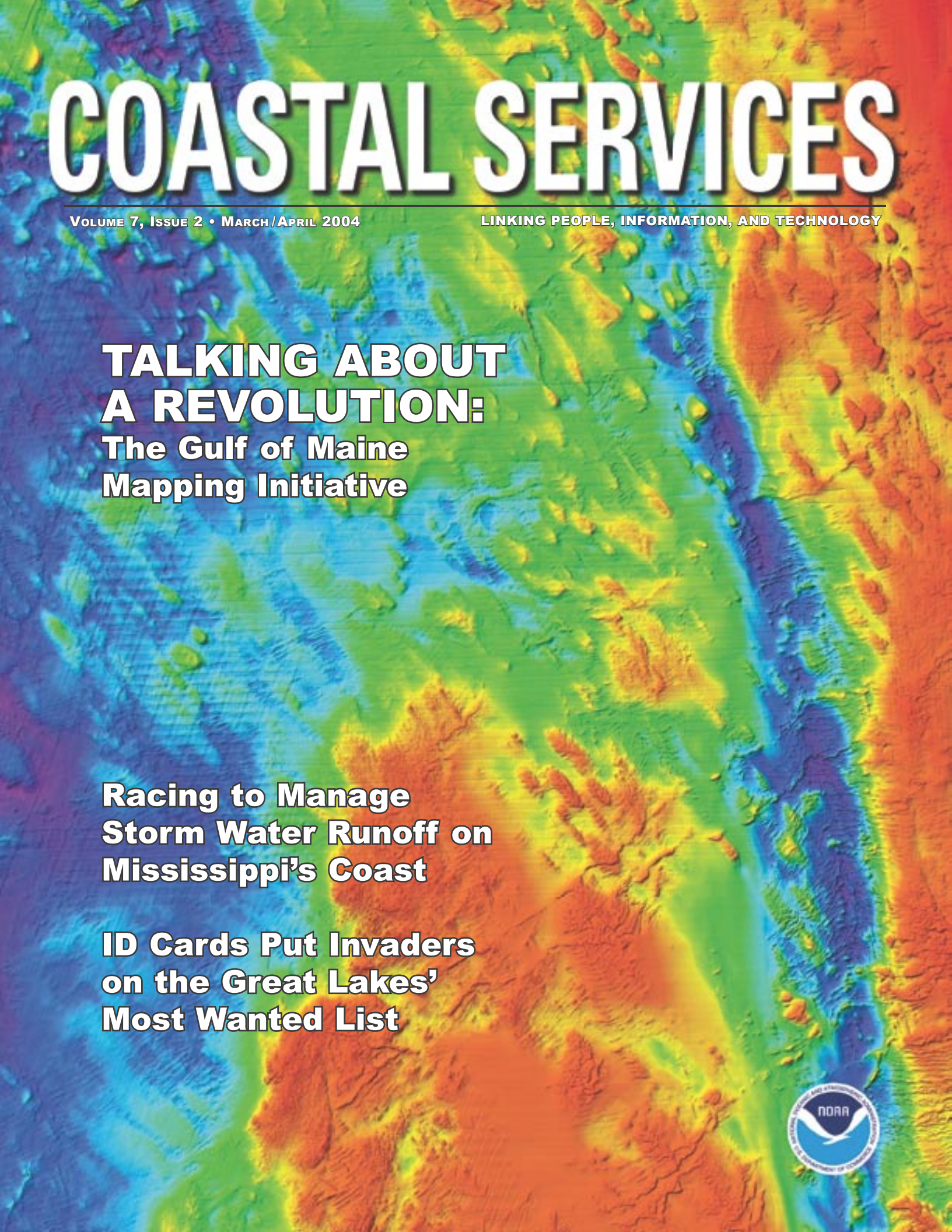
LINKING PEOPLE, INFORMATION, AND TECHNOLOGY



TALKING ABOUT A REVOLUTION:
The Gulf of Maine Mapping Initiative

Racing to Manage Storm Water Runoff on Mississippi's Coast

ID Cards Put Invaders on the Great Lakes' Most Wanted List

From the Director

Imagine coastal managers trying to do their jobs without technology such as aerial photography, geographic information systems (GIS), or even e-mail.

The technological revolution may continue for coastal resource managers as new ocean observation systems generate a wealth of data, and more and more of the ocean floor is accurately and cost-effectively mapped.

It is the belief of scientists and managers in the Gulf of Maine that detailed maps of the ocean floor will prove to be essential in managing trawling, dredging, aquaculture, mining, fiber-optic and electric power cables, oil and gas pipelines, wind farms, and other near- and offshore activities.

The cover story of this edition of *Coastal Services* looks at the Gulf of Maine Mapping Initiative (GOMMI), a collaborative proposal by U.S. and Canadian researchers and resource managers to provide the framework for mapping the entire gulf.

So far, Gulf of Maine seafloor maps have been used to route fiber-optic cable through a national marine sanctuary and assist Canadian fishermen in precisely targeting scallop habitat, thus saving time and money, and reducing ecological damage.

Ocean and coastal observation systems also will provide a wealth of information beneficial to coastal management decision making.

Discussions on the management issues that observation systems can help address, potential partnerships, and current and planned regional observation activities are on the agenda of the annual Ocean and Coastal Program Managers' Meeting being held March 9 through 11 at the Hotel Washington in Washington D.C. For more information on the conference, log on to *http://coastalmanagement.noaa.gov/pmm/*.

Other new technologies that have led to more efficient, less expensive, and more scientifically rigorous monitoring and assessment programs will be on the agenda of the U.S. Environmental Protection Agency's Environmental Monitoring and Assessment Program (EMAP) Symposium 2004. For more information on the symposium, being held May 3 through 7 at the Hotel Viking in Newport, Rhode Island, go to *www.csg.org*, and search under the keyword "EMAP."

I hope you will take part in these discussions.

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:

Coastal Management Fellowship Program

Participants at the recent orientation training for the Pacific Islands and Coral Management Assistantship programs.

There are recently graduated students out there, looking to get their feet wet (both literally and figuratively). There are state coastal management programs out there, looking for someone to lead or staff a special project. The National Oceanic and Atmospheric Administration's (NOAA) Coastal Services Center brings these two groups together through the Coastal Management Fellowship Program.

Since 1996 the program has matched postgraduate students with state coastal zone programs for a two-year opportunity. The type of work that results from this union varies widely. The 2004 project proposals, for instance, include

- Putting together a regional marine geographic information system (GIS) for Maine;
- Working toward the eradication of aquatic invaders in the Northeast region;
- Assessing and improving the groundwater program in coastal New Hampshire;
- Enhancing New Jersey's public access program;
- Protecting New York water quality through nonpoint source pollution management and habitat restoration; and
- Improving the management of Oregon's rocky shores.

To participate, coastal zone management programs submit their project proposals to the NOAA Coastal Services Center. Potential fellows apply to their local Sea Grant office. The winning candidates from each process then meet and interact during the placement workshop held each spring in Charleston, South Carolina.

To learn more about the process, visit *www.csc.noaa.gov/cms/fellows.html* or contact Carmen Nash at *Carmen.Nash@noaa.gov*, or (843) 740-1263.

Pacific Islands Assistantship

Participating in the Coastal Management Fellowship program has always been open to people and programs of the Pacific Islands, but the geographic remoteness of this region often limits participation.

To meet this challenge, the NOAA Coastal Services Center developed the Pacific Islands Assistantship Program, which serves American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and Hawaii. The program is very similar to the fellowship program, with assistants working on special projects identified by each host island.

For more information, visit the NOAA Coastal Services Center's Web site at *www.csc.noaa.gov*, or contact Darcee Killpack of the NOAA Pacific Services Center at (808) 532–3202, or *Darcee.Killpack@noaa.gov.*

Coral Management Assistantship

Another island-based program is the Coral Management Assistantship. This program was established in 2003 for the agencies responsible for managing coral reefs in the Pacific and Caribbean U.S. flag islands.

Assistants are placed with host jurisdictions for two years to support local coral management projects. This inaugural group will work on the issues of overuse, education and outreach needs, and land-based pollution concerns.

For more information, visit the Coral Management Assistantship Web site at *www.csc.noaa.gov/cms/assistants/*. You may also contact Carmen Nash of the NOAA Coastal Services Center at (843) 740–1263, or *Carmen.Nash@noaa.gov.*

POWER TOOLS:

RACING TO MANAGE STORM WATER RUNOFF ON MISSISSIPPI'S COAST

There is such a thing as having too much information. With a wide selection of national best management practices (BMPs) to choose from, many smaller coastal cities and counties in Mississippi found themselves slowed by an overabundance of information during a race to fulfill federal mandates to develop a plan to manage storm water runoff.

Which BMPs were appropriate for their area? Which were best and most cost effective? Which had been successfully implemented in similar communities?

The *Mississippi Gulf Coast Stormwater Runoff Management Toolbox* was created to help the state's 14 coastal cities and counties meet the deadline for complying with the U.S. Environmental Protection Agency's (EPA) new storm water management regulations by providing guidance toward answering these and other questions.

"We had to work swiftly to get a tool in their hands that would provide an inventory of coast-specific BMPs that they could use," says Marcia Garcia, staff officer for the Mississippi Department of Marine Resource's Comprehensive Resource Management Plan (CRMP). "Our goal was not to reinvent the wheel, but we wanted to get our arms around all this information and pull it down to some main focal points."

The CRMP's storm water toolbox provides easily accessible information on Gulf-specific pollution prevention options, vendors and products, pros and cons of selected and ranked best management practices, and examples of how to educate the public.

The toolbox, Garcia says, is a successful illustration of how the state's coastal region is working together to address growth and environmental challenges.

Not Just a Phase

Amendments to the Clean Water Act established a two-part program to improve the quality of the nation's streams, rivers, lakes, and estuaries by managing storm water runoff. Phase II of EPA's storm water program requires smaller municipalities and construction sites and urban areas adjacent to municipalities to develop, implement, and evaluate a storm water management program, and submit periodic reports.

Three coastal counties and 11 cities in Mississippi were among the communities racing to meet the March 10, 2003, deadline for developing a storm water management plan.

To assist communities in their planning process, the EPA provided a number of national BMP examples, and information was offered by watershed conservation groups, local and state government agencies, and numerous other organizations. Many examples, however, are site-specific, and what may be appropriate in one region may not be the best choice for another area of the country. Sifting through all the available information to select the most appropriate BMPs can be difficult for busy city and county staff.

The CRMP staff compiled Gulf-appropriate storm water management information from numerous sources, ranging from the EPA, the Mississippi Department of Marine Resources, and the Natural Resources Defense Council to extension materials from around the country. Using this research, an initial inventory of BMPs for the state's coast was developed.

CRMP contracted with engineers and scientists to develop a BMPs ranking report specific to coastal Mississippi. The BMPs identified in the interim toolbox were ranked based on four categories: effective pollutant reduction, costs, maintenance, and community approval.

"We waded for a year through all the information that is out there, trying to pull it down to a usable product," Garcia says. "We wanted it to suit the needs of our coastal communities and be appropriate for them."

On Target

Before CRMP began the project, it developed and distributed surveys of more than 300 stakeholders from across the state's coastal region to gain a better understanding of local concerns and awareness of storm water runoff management.

"What we wanted to do was take a look at what was available, what was not available, what people knew, and what they didn't know about storm water runoff and nonpoint source pollution," Garcia says.

The survey results showed a wide range of understanding and awareness of the topics, and helped CRMP identify local issues and concerns, which gave the toolbox its direction.

In August of 2002, CRMP provided cities and counties with an "interim deliverable" of a large three-ring binder of information on BMP options, examples of state or local programs, lists of available educational materials, case studies, resources, and other information.

Expanding the Box

Throughout the process, the nonregulatory CRMP gathered feedback on the toolbox from its stakeholders, which include local, state, and federal agencies, nonprofit organizations, businesses, and citizens. Stakeholder representatives formed a storm water task force.

"Much of the feedback was requests for more detailed information, such as getting the pros and cons associated with the best management practices," Garcia says. The stakeholders also requested a ranking of best management practices, model ordinances, and vendor information.

CRMP contracted with engineers and scientists to develop a BMP ranking report specific to coastal Mississippi. The BMPs identified in the interim toolbox were ranked based on four categories: effective pollutant reduction, costs, maintenance, and community approval.

"The unique character of Mississippi's coast and its pollution issues were taken into account when they recommended the scores," notes Garcia.

CRMP looked at cities and counties around the nation to develop model ordinances that could be customized to meet local needs. A notebook was put together with examples of storm water vendors and products.

Other tools include self-scoring checklists that communities can use to gauge how well they are addressing various aspects of managing storm water runoff, as well as general forms for inspecting, tracking, and reporting. To enhance local maps, CRMP provided the coastal cities and counties with geographic information system (GIS) storm water data layers.

Training on how to use the toolbox was offered at storm water task force meetings, stakeholder meetings, and at CRMP's annual Coastal Development Strategies Conferences. Information on the toolbox will be presented at the upcoming conference being held May 10 through 12 in Biloxi.

Funding for the toolbox came from the Mississippi Department of Environmental Quality, which administers the Mississippi Coastal Impact Assistance Program (CIAP). CIAP is a federally sponsored program that provides money for the state and counties to address issues that relate to the coastal environment and ecology.

The toolbox is now available on the Internet and is being used to help the Phase II communities in Mississippi implement their plans.

Many Levels of Success

The main measure of the toolbox's success, Garcia says, "is that the cities and counties are using it." It also helped fulfill requirements towards approval of the state's nonpoint source pollution program, has generated interest from other Gulf states, and has helped demonstrate the power of a region working together.

"It fulfills a lot, and we're very proud of it," Garcia says. "It's helped us come together as a region and understand the value of what we have here." ❖

To view the Mississippi Gulf Coast Stormwater Runoff Management Toolbox, point your browser to www.dmr.state.ms.us. Click on CRMP on the left menu. On the next page, click on Storm Water on the right menu. You may also contact Marcia Garcia at (228) 374-5022, ext. 5135, or marcia.garcia@dmr.state.ms.us. To view the national menu of BMPs for Storm Water Phase II go to http://cfpub.epa.gov/npdes/stormwater/menuofbmps/menu.cfm.

TALKING ABOUT A REVOLUTION:

The Gulf of Maine Mapping Initiative

Even with just 15 percent of the Gulf of Maine currently mapped, managers point out examples of the new imagery's power in aiding decision making.

New technologies capable of accurately and cost-effectively mapping large areas of the seafloor are helping to revolutionize coastal resource management. Coastal and marine managers and researchers in the Gulf of Maine have formed an international partnership to figure out how to best collect and use this imagery in the region.

"We are undergoing a revolution," says Brian J. Todd, a research scientist for the Geological Survey of Canada. "The introduction of multibeam sonar mapping in the 1990s is the equivalent of the introduction of aerial photography post World War I, which revolutionized the way humans saw the world. We are now at that stage in the world's oceans."

The technology is important for coastal managers, says Susan Snow-Cotter, assistant director of the Massachusetts Office of Coastal Zone Management, because with only crude maps of the seafloor to assist with decision making, "agencies that have the responsibility to manage ocean habitat have been managing virtually blind."

Even with just 15 percent of the Gulf of Maine currently mapped, managers point out examples of the new imagery's power in aiding decision making. These include using seafloor maps to successfully route fiber-optic cable through a national marine sanctuary and to assist Canadian fishermen in precisely targeting scallop habitat, thus saving time and money, and reducing ecological damage.

The Gulf of Maine Mapping Initiative (GOMMI) is a collaborative proposal by U.S. and Canadian researchers and coastal and marine resource managers to provide the framework for mapping the remaining 85 percent of the gulf. The initiative's detailed strategy is set to be released in June.

The Power of a Map

In the Gulf of Maine, trawling, dredging, aquaculture, mining, fiber-optic and electric power cables, oil and gas pipelines, wind farms, and other activities can affect seabed habitats, which support a diversity of animals and plants.

Successfully managing these activities to balance ecological impacts and conflicting uses requires detailed maps of seafloor characteristics, says Page Valentine, a research geologist with the U.S. Geological Survey. "Any application you can think of is vastly improved by having a detailed map of the bottom."

Snow-Cotter points to proposals to build energy-producing wind farms off Massachusetts' coast as an example of how difficult it is to make management decisions without adequate maps. "We're being asked to evaluate the impact of the wind farms, but we lack high-resolution maps of the area where these facilities are being proposed," she explains. "The pressure is high for us to make a decision, but with the absence of information, it's very difficult."

The Right Tool

Recent technological advances allow seafloor mapping on an unprecedented scale, says Tom Noji, division chief of the Ecosystems Processes Division of the Northeast Fisheries Science Center, a part of the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service.

New technologies are enabling researchers to survey large underwater areas to produce high-resolution bathymetric, geological, and ecological maps, which can be extremely useful as a tool for coastal and marine resource management and research.

Multibeam sonar, satellite remote sensing, Compact Airborne Spectrographic Imager (CASI), Light Detection and Ranging (LIDAR), side-scan sonar, single-beam sonar, laser line sonar, and subbottom profiling all are technologies that can be used to map the near- and offshore seabed. "The technology to do this exists now and is improving rapidly," Noji says.

A Little Here, a Little There

Some seafloor mapping of the Gulf of Maine has already been conducted. Canada, in particular, has embraced the technology and is rapidly mapping its side of the border. Previous mapping efforts, however, were done piecemeal with no regionally coordinated effort.

The mapping that has been done so far has clearly demonstrated its usefulness as a management tool.

Valentine notes that when a private company wanted to place a fiber-optic cable through Stellwagen Bank National Marine Sanctuary in 2000, managers were able to provide maps of the sanctuary floor so that a route could be found that had the least environmental impact.

"We provided them with highly detailed imagery and a suggested route, and they followed our advice," Valentine says. "Without the map, who can say what the outcome would have been. They may have been forced to go around the sanctuary." There is no question, he says, that having the map decreased project costs and ecological impacts.

Canada's Brian Todd points to the success of a government partnership with several scallop companies to map Browns Bank off Nova Scotia. The resulting three-dimensional maps of bathymetry, sediments, and benthic habitat are helping fishermen target scallop habitat, reducing fishing times and fuel usage, lessening the total area that is dragged by 74 percent, and decreasing bycatch.

He adds that the maps help the fishermen avoid hazards, reducing lost gear, and that fisheries managers are able to use the maps to monitor individual scallop beds and improve stock assessments.

Seeing the Light

When it became clear just how useful this technology was going to be, the Gulf of Maine Council on the Marine Environment, a U.S.-Canadian partnership of government and nongovernment organizations, held a workshop in 2001 bringing together scientists, researchers, and managers, each of whom have specific mapping needs.

The result of the workshop was GOMMI, a multiyear project to secure funding for and conduct a comprehensive mapping program of the region.

Snow-Cotter says, "The intent is to work together within the Gulf of Maine region to get managers and researchers together to develop a common approach for developing seafloor maps and enhancing outreach, education, and resource management."

The Gulf of Maine Council agreed to serve as the umbrella organization for the effort. Todd, Snow-Cotter, Valentine, and Noji are part of the GOMMI steering committee.

Where to Begin

Using NOAA National Ocean Service funding, GOMMI produced an easy-to-understand fact sheet that "laid out the problem, approaches for solving the problem, and our vision of the initiative," Valentine says. This four-page "science translator" was extensively distributed in the region and has been used to generate support for the initiative.

The steering committee has developed a pilot strategic plan, which includes ideas on how the initiative can be implemented. A draft plan was distributed to a peer committee for review in March 2003, and the final plan will be released at the Gulf of Maine Council meeting in June.

The plan calls for tracking and coordinating existing mapping efforts in the region, and prioritizing both coastal and offshore areas to be mapped in order to address the needs of the most users.

It also recommends that the initiative be funded over a number of years. "It's not necessary to have a large sum at the beginning," Noji says. A smaller amount received annually, or a larger amount spread out over a number of years, would help bring GOMMI to fruition.

The next step, Noji says, is to garner funding for the proposal. The steering committee also is planning another workshop to bring together researchers, managers, and users of the information, including commercial and recreational fishermen and other groups, to help prioritize areas to be mapped.

While it will still be some time before data for GOMMI-initiated regional mapping are collected, Valentine says, "It's never too early to start planning this thing. These maps will be valid for 20 years. Planning now ensures they will be useful for everyone." ❖

For more information on GOMMI, point your browser to http://sh.nefsc.noaa.gov/gommi/. To view mapping data, images, and information from Stellwagen Bank National Marine Sanctuary, go to http://woodshole.er.usgs.gov/project-pages/stellwagen/. For a directory of information about seafloor mapping in the Gulf of Maine, go to www.gulfofmaine.org. You also may contact Susan Snow-Cotter at Susan.Snow-Cotter@state.ma.us.

Cover image: Multibeam bathymetry of 526 square kilometers of German Bank, Gulf of Maine. Image courtesy of Brian J. Todd, Geological Survey of Canada (Atlantic)

South Carolina SCOREs with Oyster Restoration Program

It is not the typical role of scientists to manage a huge roster of volunteers, but researchers in South Carolina have developed a community-based program that not only increases oyster habitat at a minimum expense to taxpayers, but also expands research opportunities.

SCORE was begun in 2000 and now has more than 1,200 volunteers, who have spent 6,300 hours bagging shell and building and monitoring over 80 oyster reefs.

Increased public awareness and support are added bonuses of the South Carolina Oyster Restoration and Enhancement (SCORE) program, says Loren Coen, associate marine scientist with the South Carolina Department of Natural Resources' Marine Resources Research Institute.

SCORE was begun in 2000 and now has more than 1,200 volunteers, who have spent 6,300 hours bagging shell and building and monitoring over 80 oyster reefs at 25 sites along about 200 miles of South Carolina's shoreline.

Researchers are using the reefs to study a variety of approaches and environmental impacts to improve how the state agency builds and restores larger habitats.

"We are utilizing our reefs to learn something about restoration," Coen says. "Above and beyond that, we are creating ambassadors out in the community who are helping keep up public interest and state funds flowing."

Coen and two program staff members use a Web site and an e-mail database to coordinate volunteers who take part in various aspects of the lengthy restoration process.

During the winter, volunteers are encouraged to collect shells from oyster roasts, restaurants, and caterers. While oyster shell is considered the best material for building oyster reefs, it often ends up in landfills, or is used for driveways or other decorative purposes. With many restoration efforts along the east and gulf coasts, it is getting harder to purchase oyster shells, and the cost often is prohibitive.

Many of SCORE's volunteers participate in the South Carolina Department of Natural Resources Shell Recycling Program. Twelve drop-off sites have been established throughout the state for recycling of shell throughout the year.

The shells must sit for two months to ensure that no organic tissue remains before volunteers put the recycled and purchased shell into thousands of mesh-net bags that are about two-feet long and weigh 25 to 35 pounds each.

The bags are used to build reefs at sites scientists and regulators have carefully selected. Coen says that sites should have a gentle slope, some existing shell or a somewhat firm substrate, and be in an area that does not have too much sedimentation or boat traffic.

Sites are accessible without a boat to make it easier for volunteers to conduct weekly to monthly water-quality monitoring and related reef evaluations. So far, monitoring is showing that 22 of 25 sites are thriving.

SCORE is so successful, Coen says, that they are helping groups in Florida, Georgia, and North Carolina develop similar programs.

"I really feel this program is going well," Coen says. "The hardest thing for all the scientists here in our department and agency has been taking on the role of involving community groups and educating the public. That's not the typical role of a scientist. But without the volunteers, the program wouldn't exist." ❖

For more information on SCORE, point your browser to www3.csc.noaa.gov/scoysters/. You may also contact Nancy Hadley at (843) 953-9841 or Michael Hodges at (843) 953-9241, or hodgesm@mrd.dnr.state.sc.us. For more information on related research, contact Loren Coen at (843) 953-9152.

Photos courtesy of South Carolina Department of Natural Resources

SCORE volunteers help bag and recycle oyster shell.

Surviving Alaska's Outdoors with Sea Grant's Aid

It is every parent's nightmare; a child is lost in the woods or on the water. Will the child survive, potentially for days, until rescuers find them?

The Alaska Sea Grant Program is helping prepare the state's students for just such an outdoor emergency by offering a two-volume curriculum on "Survival Training for Alaska's Youth."

"We want our kids to spend a lot of time outside," says Dolly Garza, a marine advisory agent with the Alaska Sea Grant Marine Advisory Program, "but that means they have a chance of being lost. . . Our premise is if they learn survival skills young, they won't forget them."

While the curriculum activities were designed for southeastern Alaska, Garza notes that they could easily be adapted for other parts of the country.

While the curriculum activities were designed for southeastern Alaska, Garza notes that they could easily be adapted for other parts of the country.

Geared for 5th through 7th graders, Garza says the curriculum has successfully been used to teach students in kindergarten through the 12th grades, as well as within informal education programs, such as Girl Scouts and Boy Scouts. During the two-day training, kids are taught skills that increase their chances of survival if they find themselves in an emergency situation while boating, hunting, or hiking.

Photo courtesy of Alaska Sea Grant

Students get the opportunity to build a shelter during survival training.

Garza often gives the training but is unable to fill every request. She wrote the curriculum to be like a "cookbook that teachers could open and start using." Teachers who buy the instructor manual for $8 are supplied with up to 25 student manuals free of charge.

The curriculum, which is in its second printing, is a compilation of safety and survival materials from several sources. Covering the seven steps to survival developed by the Alaska Marine Safety Education Association, the program includes in-class lectures and accompanying activities, water exercises, and an outdoor field trip where kids put their newly learned skills to the test.

"It's a blast! Kids absolutely love this program," Garza says.

She adds, "If we are promoting people being out on the water or on the coastline we need to make sure they're safe, as well." ❖

To order "Outdoor Survival Training for Alaska's Youth," log on to www.uaf.edu/seagrant/Pubs_Videos/pubs/SG-ED-16&17.html. For more information on the curriculum, contact Dolly Garza at (907) 247-4978, or ffdag@uaf.edu.

Seven Steps to Survival

If you find yourself in an outdoor emergency, follow these seven steps:

1. **Recognition** that you're in trouble. It is important to be ready and to take action before it is too late.
2. **Inventory** of what you and your partners have, including skills and items in your pockets that may help.
3. **Shelter**, which includes planning the right clothing for your outdoor activity before you leave. Once you are in an emergency, quickly find protection from the environment to prevent hypothermia, one of the primary causes of death in survival situations.
4. **Signals** that can help search parties find you. To be effective, signals must attract attention and convey a message of distress.
5. **Water** from a clean source. You can only survive a few days without finding a clean source of water.
6. **Food** from wild plants or animals. Before venturing out, learn a few foods that can be found in the area in any season.
7. **Play** is important to avoid depression, which destroys the will to survive. It is important to keep a positive mental attitude.

Identification Cards Put Invaders on the Great Lakes' Most Wanted List

Don't leave home without them—this is what Great Lakes coastal resource managers hope people will do with credit-card-sized warnings about the region's most troublesome aquatic invaders.

"When aquatic invasive species become established, it's frustrating to know that public education could have prevented their spread," says Doug Jensen, coordinator of the University of Minnesota Sea Grant Program's Aquatic Invasive Species Information Center.

Like mini "wanted" posters, each card features a picture of a species of concern and lists the simple things that people can do to prevent its spread.

Jensen led a Great Lakes Sea Grant Network WATCH ID card project designed to raise awareness and promote effective action against aquatic invasive species among boaters, anglers, waterfowl hunters, ornamental and water gardeners, commercial fishermen, and fishery professionals. Like mini "wanted" posters, each card features a picture of a species of concern and lists the simple things that people can do to prevent its spread.

"We wanted something that was easily transportable that could fit in a wallet, tackle box, or glove box, that you could have in your hands while you were out recreating," says Jensen.

Because of the popularity of cards produced in 1994 on the invasive Eurasian ruffe, Sea Grant programs across the region, the U.S. Fish and Wildlife Service, Lake Champlain, and Ontario and Quebec, Canada, wanted to partner in the project to produce more cards for more species.

Today, there are 31 partners who buy portions of each print run, which dramatically lowers printing and production costs, and avoids duplication of effort.

A total of 68 versions of the cards based on the different species and states have been printed, Jensen says. Last year, 3.2 million cards were produced covering seven species.

Jensen says a standard format has been developed that features a high-quality color photograph of a species on the front of a folded card. Inside the card, text briefly explains the threat the species poses, how it's spreading, and what people can do to prevent it. The preventative recommendations are taken from national and regional guidelines to ensure a consistent and effective message.

The cards' only variable is the list of people to contact if the species is found, which varies from state to state and province to province. On the back of the card is a detailed diagram of the species to help with identification.

The cards are distributed at convenience stores, bait shops, and marinas—any place fishing and hunting licenses are sold—and are stocked at the beginning of May, when about 60 percent of the season's fishing licenses are acquired.

Jensen notes that states outside the region have adopted the template and developed cards for species of concern in their state or region.

"It's been one of the most enjoyable and rewarding projects I've worked on," Jensen adds. "These cards are tremendously popular. It's been a wonderful collaborative effort." ❖

For more information on the aquatic invasive species WATCH ID card project, contact Doug Jensen at (218) 726-8712, or djensen1@d.umn.edu. To obtain cards, contact any Great Lakes Sea Grant office. Minnesota cards can be ordered by pointing your browser to www.seagrant.umn.edu/pubs/freeorder.html and looking under the exotics category.

Photo courtesy of Minnesota Sea Grant

Ideas for the Next Issue

What is the biggest coastal resource management challenge in your state? How well is your program addressing it? Would your management efforts be worthy of an article in the next edition of *Coastal Services*, or would you like to read about how another state is tackling the same problem?

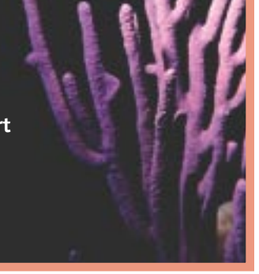
Many ideas for *Coastal Services* articles come from our readers. By letting us know what you would like to read about, you help ensure that the topics covered are timely and relevant.

Reader-generated stories in the past have examined docks and piers, golf courses, light houses, water usage, population growth, wetlands restoration, and takings. Your input will help us decide what to cover next.

To read about these topics in past editions of *Coastal Services*, point your browser to *www.csc.noaa.gov/magazine/*.

We also would like to hear what you like and dislike about *Coastal Services*, and any ideas you have for improvement. Are the articles interesting? Does the magazine come out too often, or not often enough? Does it include not enough or too much information? Our editors are open to your suggestions.

To share an idea or provide feedback, contact Hanna Goss via e-mail at Hanna.Goss@noaa.gov, or by mail at 2234 South Hobson Avenue, Charleston, SC 29405-2413. You may also contact her by phone at (843) 740-1332, or fax at (843) 740-1313.



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