

COASTAL SERVICES

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LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

BEACH GROOMING: Raking Through the Issues in California

**New Flooding Observation
and Prediction System
May Help Save Lives**

**Collaboratively Managing
Marine Resources in
American Samoa**



FROM THE DIRECTOR

Reading *Coastal Services* helps you find out about successful coastal resource management programs and projects. Attending Coastal GeoTools 2009 will help you find out about technology and how it is being successfully used for coastal management.

The theme for Coastal GeoTools 2009, being held March 2 to 5 in Myrtle Beach, South Carolina, is "Building the Digital Coast," a new initiative that provides easy access to organized and relevant data, tools, and technical training.

Many partners have joined with the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center to develop the Digital Coast. Phase one is currently available by pointing your browser to www.csc.noaa.gov/digitalcoast/.

Phase two, which will be released in early 2009, will include more partner data and information. Current Digital Coast partners include the Association of State Floodplain Managers, the Coastal States Organization, the National Association of Counties, the National States Geographic Information Council, and The Nature Conservancy.

The GeoTools registration deadline is January 31, 2009.

To get your technology fix before the conference, *Coastal Services* features an article on an experimental forecast system that has the potential to aid emergency managers during hazardous weather events, enable coastal planners to make better-informed decisions about locating infrastructure, and even eventually provide resource managers with the capability to monitor water quality.

The Coastal and Inland Flooding Observation and Warning project, or CI-FLOW, uses the latest in radar technology to detect how much rain is falling, incorporates the latest in two-dimensional river modeling to predict how water will flow through the hydrologic system, and uses the latest in storm surge models to get accurate predictions of water levels in the vulnerable flat coastal regions.

The North Carolina and South Carolina Sea Grant programs, several NOAA agencies, and other partners are working together on the CI-FLOW project. This is a good example of "One NOAA," where regional collaborations cut across NOAA line offices to better serve our customers. ❖



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

Achieving Higher Degrees of Stakeholder Participation

Understanding the natural science is not enough. For coastal management initiatives to be effective, understanding the people side of the equation is equally important.

Top-down, agency-driven decision-making models are quietly becoming a thing of the past. Stakeholder participation is now seen as a fundamental operational component—a way to improve public support, reduce conflict, increase compliance, and help organizations make better policies and decisions.

The Nuts and Bolts of It

Engaging the public in coastal management has its costs. The process can be time-consuming, labor-intensive, confrontational, and expensive. If improperly managed, the process can create new conflicts or escalate existing challenges. Organizations need to do their homework, and do it well, to fully realize the benefits and side-step potential negatives.

Following some general rules can help organizations increase their chances of success.

The first rule is to determine when stakeholder participation is needed. Minor decisions and emergency situations are generally not appropriate. Complex situations with far-reaching impacts, on the other hand, usually warrant stakeholder involvement.

Next, some thought needs to go into defining who the stakeholders are. It is tempting to include "anyone who visits the beach" in a list, or some other equally broad statement. But a more methodical analysis can help an organization not only define the appropriate stakeholders, but also help answer some of the finer questions surrounding the participatory process, including the best meeting method, the optimal time and day for the meeting, and possible conflicts among stakeholders.

Many processes can be used to get people involved:

- Advisory group or task force
- Public meeting or town meeting
- Open house
- Workshop
- Charrette
- Field trip
- Retreat
- Focus group
- Poll or survey

The issue at hand, the stakeholders, schedules and time frames, level of input desired, and

agency capabilities are some of the factors that determine whether, how, and when stakeholder participation should be solicited.

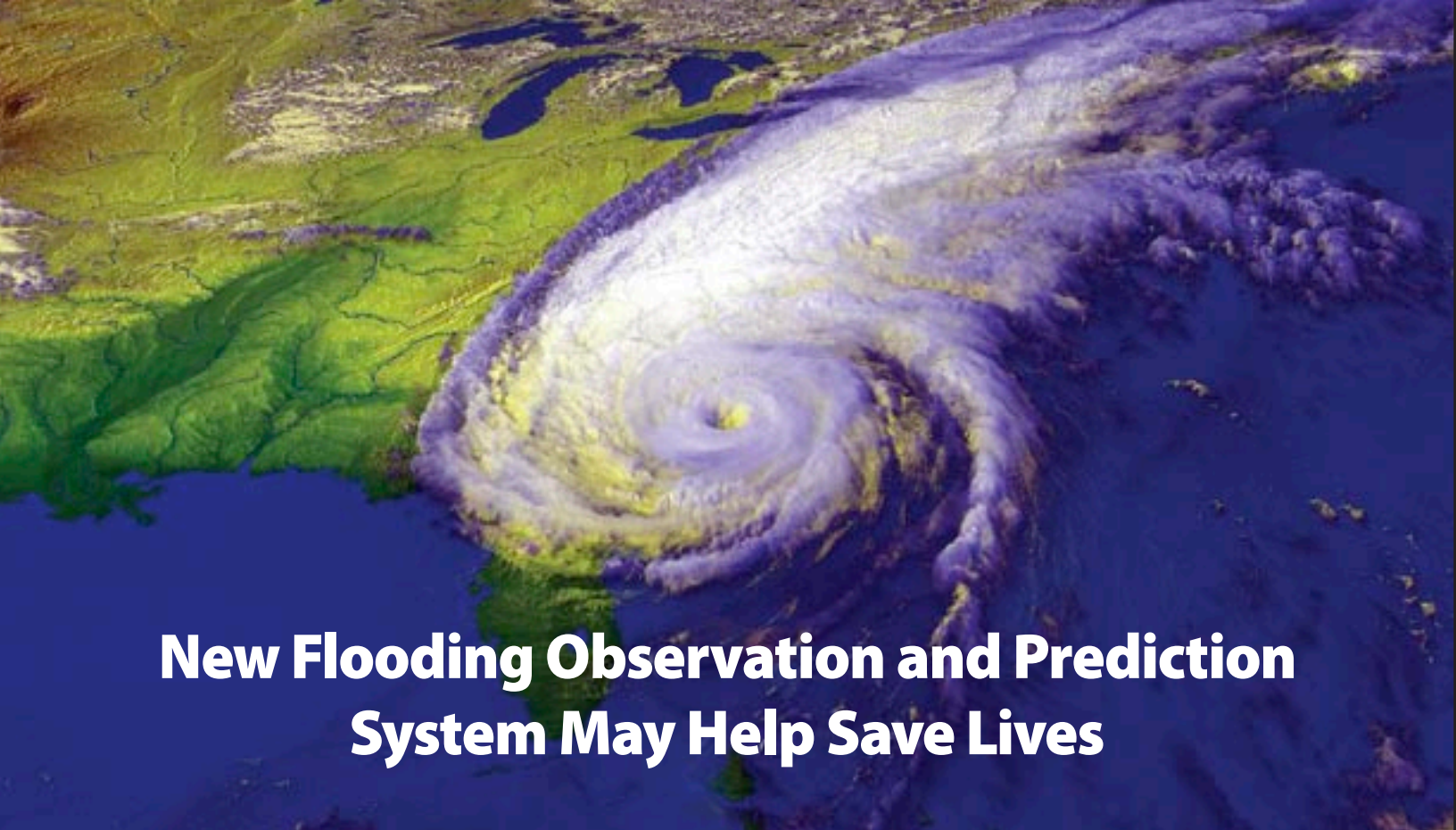
Getting Help from the NOAA Coastal Services Center

The NOAA Coastal Services Center's Human Dimensions program provides technical assistance to coastal management professionals addressing complex, human-based problems. The Center's free publication, "Introduction to Stakeholder Participation," is a good starting point for information. Then, the Center can help organizations define their goals and challenges, design and evaluate an appropriate public participation process, and in some cases move the process along by providing a trained facilitator. ❖

To access these and other social science services, visit the Center's website at www.csc.noaa.gov and look under "Technical Assistance," or contact the Human Dimensions program manager, Tricia Ryan, at Tricia.Ryan@noaa.gov.



Introduction to Stakeholder Participation
Order this publication from Zac.Hart@noaa.gov.



New Flooding Observation and Prediction System May Help Save Lives

In 1999, Hurricane Floyd caught many inland North Carolina residents off guard when it dropped massive amounts of rain, causing significant loss of life, property damage, and environmental pollution. Since then, an extensive partnership of state, federal, and academic coastal resource managers and scientists has been working on a project designed to help improve forecasts of coastal and inland flooding.

This summer, components of the experimental forecast system were tested in North Carolina during Tropical Storm Hanna—and passed.

“This is very encouraging, and a long time coming,” says Jack Thigpen, North Carolina Sea Grant Extension director.

The Coastal and Inland Flooding Observation and Warning project, or CI-FLOW, still faces an extensive assessment period leading up to

a “real-time example run of the system,” but project partners are hopeful that the system may be ready in North Carolina in time for the 2009 hurricane season, says Suzanne Van Cooten, the National Oceanic and Atmospheric Administration (NOAA) National Sea Grant weather and climate extension specialist.

CI-FLOW information could aid emergency managers during hazardous weather events, enable coastal planners to make better-informed decisions about locating infrastructure, and potentially provide resource managers with the capability to monitor water quality, impacting decision-making on everything from drinking water to fish habitat. Researchers would also have additional data on estuaries.

Once initial testing is complete, system capacities may be demonstrated in regional test

“This is very encouraging, and a long time coming.”

Jack Thigpen, North Carolina Sea Grant Extension

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sites for three to five years before being available to augment national storm forecasts, Thigpen says.

Combining Measurements

In February 2000, the North Carolina and South Carolina Sea Grant programs, several NOAA agencies, and other partners began work on the CI-FLOW project.

The goal of CI-FLOW, Thigpen says, is to “develop a method by which we can accurately measure water levels and potentially water quality in a coastal river basin, and predict what the water level will be in the future.”

“In the past,” says Thigpen, “we’ve done a good job with the measurements that we have in predicting rainfall and floodwaters coming down the river and storm surge coming in from the sound and ocean,” but CI-FLOW is the first attempt at combining all three of these components.

“It’s something that’s not been done and needs to be done,” says Van Cooten. “When you have a tropical land-falling system, it’s not the coastal storm surge that kills the most people, because existing forecast predictions are being used to urge people to evacuate.” The majority of people are killed by inland flooding.

She adds, “Currently, water level predictions that combine both storm surge and inland water level information are not available” to emergency managers in coastal watersheds. “These are the people who are responsible for evacuating people and getting first responders back in after a flood event. This will also help planners know that where they put a shelter is actually safe.”

NOAA partners in the development of CI-FLOW include the National Severe Storms Laboratory, National Sea Grant College Program, National Weather Service Weather Forecast Offices of North and South Carolina, National Weather Service Hydrology Laboratory, National Weather Service Southeast River Forecast Center, NOAA in the Carolinas, NOAA’s Southeast and Caribbean Regional Team, and the Coastal Services Center. Other partners include the University of Oklahoma, North Carolina State University, University of North Carolina at Chapel Hill, and Texas Sea Grant.

Testing, Testing

The system is now being tested in the Tar-Pamlico and Neuse River basins in North Carolina—the area where Hurricane Floyd claimed 51 lives and caused six million dollars in losses to businesses and agriculture.

CI-FLOW uses information from a variety of sources, including existing North Carolina stream flow gauges, weather monitoring information, and rainfall estimates produced by the National Severe Storms Laboratory. CI-FLOW predictions are compared to historical data to determine accuracy.

When Tropical Storm Hanna hit the North Carolina coast on September 6, components of the project underwent their first critical test, says Van Cooten.

The system forecast storm surge of one to three feet, and a research facility reported a three-foot storm surge on the eastern end of Albemarle Sound. It also accurately forecast how the surge would affect inland regions.

Predicting Water Quality

Eventually, the system will also factor in land use and soil permeability to help determine the amount of rainwater expected to run off the land surface into a river. This not only affects flooding estimates, but also may help predict post-storm water quality.

Using this information could be particularly important for communities that use a river as a water source, Thigpen says.

“If you have a big slug of water coming down the river that has a high level of contamination,” he says, water resource managers “would be able to cut off their

drinking water intake supply before that arrived and keep it shut until it passed by so that they wouldn’t run the risk of having that contaminated water in their system.”

This information would be beneficial in the event of a toxic spill upstream and may help track saltwater intrusion resulting from sea level rise, as well as nutrient levels and the resulting impact on environmental resources, such as fish and their spawning habitats.

National Framework

Although the tests during Tropical Storm Hanna were “very encouraging,” Van Cooten says the complete CI-FLOW system will undergo an extensive assessment by researchers and forecasters in December and a full test-case in April 2009 to ensure “we are on the right track.”

When testing is complete in North Carolina, plans are to begin regional testing of CI-FLOW in South Carolina and Texas, and possibly additional areas, says Thigpen. “Once we’ve got things lined up, this can expand to other parts of the country.”

He adds, “The main thing is to help NOAA and state partners provide more accurate information to the public. CI-FLOW could help do this on a wide range of topics.” ❖

For more information, point your browser to www.nssl.noaa.gov/projects/ciflow/. You may also contact Jack Thigpen at (919) 515-3012, or jack_thigpen@ncsu.edu, or Suzanne Van Cooten at (405) 325-6320, or suzanne.van.cooten@noaa.gov.

Beach Grooming: Raking Through the Issues in California

California is famous for its golden sandy beaches, attracting millions of tourists and their dollars every year. To keep the beaches tourist-brochure perfect, workers may mechanically rake a beach to remove trash left by beach goers, as well as kelp and debris washed ashore by the tides.

Researchers are finding that raking also can sweep away a myriad of small creatures that are vital to ecosystem health.

As a result, local beach managers, researchers, the California Coastal Commission, and others have teamed up to develop and encourage more ecologically friendly beach management practices, and to help educate the public about the need for more natural beaches.

“We’re trying to be more proactive than reactive,” says Karen Martin, a professor of biology at Pepperdine University in Malibu. “We’re definitely moving in the right direction here.”

Catchall

Beach grooming is practiced in many states and throughout the world, but the term is a catchall describing a variety of methods of raking, sieving, and bulldozing sand to remove material from a beach.

It is estimated that over a hundred miles of Southern California beaches are groomed, primarily by tractors with forks on the front and rakes on the rear. Six-wheel dump trucks haul kelp, trash, and debris off the beaches.

In San Diego, beach grooming has been regularly practiced since the 1960s, with reports of

beach grooming from the 40s and 50s, says Dennis Simmons, beach manager for the city’s Park and Recreation Department.

Their operations consist of raking up and removing excess kelp, cleaning the sand of debris, which can include fire rings and dead animals such as seals and whales, and making sure lifeguards have emergency access to the water. They also empty 1,000 fifty-five-gallon trashcans and provide overall beach management, trail management, and bluff maintenance, Simmons says.

He notes that 35 to 40 percent of the city’s beaches are physically maintained, and the ones that are groomed “are the ones that have the greatest impact as far as our patrons are concerned.”

Beaches as Business

California’s beaches are recognized as an enormous economic

engine in the state, drawing in billions of tourist dollars every year.

“We have 2 million people living in San Diego and 20 million tourists every year,” notes Simmons. “This is a significant economic issue, as well as an overall safety and cleanliness issue.”

He notes that San Diego beaches that receive grooming are often in large urban areas and are used daily by thousands of visitors year-round.

Beaches as Ecosystems

Ecologically, the state’s beaches are just as rich, says Jenny Dugan, associate research biologist at the Marine Science Institute at the University of California in Santa Barbara.

Each year, from March through July, grunion lay eggs in the sand on the beaches in Southern California, including many of the beaches in San Diego.



A snowy plover chick with a kelp-inhabiting beach hopper in its bill.

“We’re trying to be more proactive than reactive.”

Karen Martin,
Pepperdine University

Grunion are fish that come ashore in California during particularly high nighttime tides to reproduce and lay their eggs. The eggs develop out of water while buried in the sand and hatch two weeks later when high tides enable the baby grunion to reach the sea.

Dugan notes that beach wrack—or the piles of kelp and plant and animal remains that are washed ashore by waves—are a valuable part of the marine ecosystem, providing microhabitat for a variety of animals. Many of these animals provide vital resources for shorebirds.

“While this may appear to beach visitors as unsightly debris, wrack accumulates and breaks down as a result of natural processes,” Dugan says. “Grooming removes or destroys the wrack and degrades the beach habitat.”

Cause for Concern

In the late 1990s, conservationists and scientists began expressing concerns that beach grooming could be harmful to birds and other species that reproduce and forage on the coast.

Simmons and the San Diego beach maintenance staff agreed to work with Martin to research the impact beach grooming had on the buried grunion eggs and later with Dugan to study the recovery of the animals dependent on beach wrack.

“You can’t ignore the public and various concerned groups,” Simmons says. “We share the



A beach with grooming above the high-tide mark.

concerns with them and want to find balance. We needed to find out what was happening.”

Research Results

Martin’s and Dugan’s research showed that aggressive mechanized grooming removes significant amounts of wrack and sand, and disturbs or destroys countless beach organisms, including grunion eggs.

Grooming also strips beaches of native plants and “embryo dunes,” making the shoreline more vulnerable to erosion.

“Wrack is an important coastal resource,” says Dugan. “The coastal ecosystem will benefit from changing or improving the management of this particular resource.”

With the research in hand, Simmons began educating his staff to recognize and avoid sensitive grunion breeding areas during spawning season and validated the city’s practice of not grooming below the line of high tide.

Coming Together

Simmons began calling beach managers from around the state to come together to talk about the research and how to improve beach-management practices in general.

In 2004, Martin hosted the first meeting of beach managers at Pepperdine University to discuss ecologically sound management practices and to educate beach managers and state agencies about the importance of protecting, restoring, and enhancing natural beach resources.

The working group for Beach Management in Ecologically Sensitive Areas meets twice a year. The group is in the process of incorporating as a nonprofit educational organization, the Beach Ecology Coalition.

“We plan to examine some standard practices,” Martin says, “and from those we can develop some options for best practices.”

For instance, during grunion season, almost all public beaches across the state now only groom beaches following a protocol distributed through the group, notes Jonna Engel, staff ecologist with the California Coastal Commission.

“Nothing is groomed below the highest high-tide mark, which is adjusted every two weeks to help the operators of the grooming tractors stay higher on the shore than the recently deposited eggs,” she says.

Continued on Page 9

Ten Years of Smart Growth in Mississippi



When Hurricane Katrina struck the Mississippi coast, local communities, state agencies, and the business community—including developers and real estate agents—were already familiar with smart growth concepts, which has helped speed the state’s post-storm recovery. These concepts were introduced through an annual smart growth conference hosted by Mississippi coastal resource managers.

“I can’t think of anything that’s cast such a wide net of bringing so many people together to talk,” says Lolly Barnes, vice president of White House Properties in Biloxi. “This has been important to the coast because we had a track record leading up to Hurricane Katrina. We all knew each other, and the ideas were out there for how we could rebuild well.”

Next year marks the 10th anniversary of the annual Coastal Development Strategies (Smart Growth) Conference hosted by the Mississippi Department of Marine Resources Office of Coastal Management and Planning.

“It is the oldest and largest smart growth conference nationally,” says Tina Shumate, office director. “The

conference has grown from 25 attendees in 2000 to more than 500.”

The conference began, Shumate says, as a way to bring environmentalists and developers together to help plan for casino growth along the coast, and each year has had a different focus.

It has evolved from rolling out tools, such as the Stormwater Management Toolbox and GIS (geographic information system) Land Suitability Model, to helping the coast attain national heritage status, rebuilding after the storm, and sharing information about climate issues such as sea level rise.

“We’ve tried to keep up with anything new that affects our coastal areas,” Shumate says.

It is the networking opportunities that really make the conference stand out, says Liz Ford, a volunteer with the City of Pascagoula and a conference attendee.

The conference draws elected officials, city and county staff members, contractors, developers, bankers, planners, zoning officials, real estate agents and appraisers, engineers, landowners, students, lawyers, environmentalists, resource managers, and representatives of industry, federal and state agencies, boards of supervisors, and private and corporate entities, as well as others committed to rebuilding the Gulf Coast.

The coming conference, being held May 12 and 13, 2009, in Biloxi, will present information on sustainable development, heritage

“We’ve tried to keep up with anything new that affects our coastal areas.”

*Tina Shumate
Mississippi Office of Coastal
Management and Planning*

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tourism, green building, working waterfronts, livable and walkable communities, the Gulf Opportunity Zone (GO Zone) affordable housing tax credit, and insurance issues.

In addition to networking opportunities, Shumate says many in the business community, such as real estate agents and appraisers, have been attracted to the conferences for the opportunity to earn up to 10 hours of continuing education credit.

She notes that it was community leaders asking for the conference after Katrina that enabled it to continue.

“The value of the smart growth conference has been its longevity,” says Lolly Barnes. “It’s all tied back to these seeds that were planted and have been growing for a while here.” ❖

For more information on the Coastal Development Strategies (Smart Growth) Conference, point your browser to www.dmr.state.ms.us/CMP/CRMP/Conference/09/conference.htm. You may also contact Tina Shumate at (228) 523-4122, or tina.shumate@dmr.ms.gov, Susan Perkins at (228) 523-4124, or susan.perkins@dmr.ms.gov, or Leslie Young at (228) 523-4123, or leslie.young@dmr.ms.gov.

Collaboratively Managing Marine Resources in American Samoa

More and more, management of coastal resources is moving away from a top-down approach where government dictates community actions to one where multiple stakeholders are included in determining management measures. Nowhere is this collaborative approach more embraced than in American Samoa, where a communal way of life is part of the traditional culture.

“It would be disrespectful for someone of my age to talk to a chief.”

*Selaina Vaitautolu,
American Samoa Community
Fisheries Management Program*

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“American Samoa is very unique in that resources in the majority of the territory are communally owned,” says Alyssa Edwards of American Samoa’s Coral Reef Advisory Group. “Land is communally held and people live under a village *matai*—or chief—system.”

The Community Fisheries Management Program was initiated by the American Samoa Department of Marine and Wildlife Resources to work through the *matai* system to establish village marine protected areas to help address marine resource issues.

“This approach promotes conservation management,” says Selaina Vaitautolu, the Community

Fisheries Management Program manager. “This is an opportunity for us to highlight the importance of our marine resources and demonstrate the link between how what happens on the land affects the ocean—and in turn affects the availability of resources.”

It also enables the villagers to share the information they know about the “causes and remedies” to many environmental concerns, and empowers them to choose the management measures that will be put in place in their village, says Vaitautolu.

Ten villages on the main island of Tutuila are participating in the voluntary co-management program.

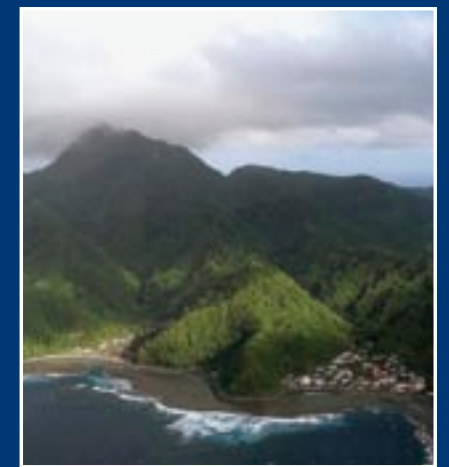
Vaitautolu says that environmental issues on the island are often “very village-specific—therefore the management needs to be site-specific. The problems to be addressed through the protected areas are identified by the communities that we work with.”

Issues addressed through the protected area may include pollution, destructive fishing methods, or fishing by people outside the village.

To participate in the program, which began in 2001, a village council or chief may approach the department, or the department, through the appropriate cultural hierarchy, may approach a village.

“It would be disrespectful for someone of my age to talk to a chief,” Vaitautolu explains.

Once on board, “we work with the community to get the history of the



sites, the resources that may be found in the area, or may have been found in years back, and the problems that are currently occurring,” she says.

When the community’s resource concerns are known, other agencies or community groups are identified that can help implement the co-management measures.

To ensure a consistent approach, the department “drafted and finalized a set of regulations that take into consideration issues that may occur across all 10 villages,” Vaitautolu says. When creating a village’s management plan, the council and *matai* can choose from this “menu of regulations to determine what works best for the village.”

Vaitautolu notes that this approach to resource management is very staff and time intensive, but she expects the program to continue to grow.

“It’s worth it because of the response of the chiefs,” she says. “They are the best promoters of the program.” ❖

For more information on American Samoa’s Community Fisheries Management Program, contact Selaina Vaitautolu at (684) 633-4456, or taahinemanua@yahoo.com.

Using a Blog to Expand Education Programming's Reach in New York

The experience of Great Lakes teachers participating in an intensive shipboard education program is reaching a broader audience through the use of technology. A Web-based "blog" lets computer users tap into what the 16 instructors learned during the weeklong voyage.

"We wanted to take this information out to stakeholders, as well," says Helen Domske, education specialist for New York Sea Grant.

"It's really had a multiplier effect," adds Paul Focazio, New York Sea Grant Web content manager.

A blog is a webpage that is typically created by individuals to provide commentary or describe personal events. Blog entries are commonly displayed in reverse-chronological order and can include graphics, video, and links to other websites. The term "blog" is a contraction of the term "Web log."

The Shipboard and Shoreline Science program blog was more than just an on-line travel diary, says Domske, who led the excursion's educational programming. "This incorporated true science."

From July 13 to 19, educators lived and learned aboard the U.S. Environmental Protection Agency's 180-foot research vessel *Peter L. Wise Lake Guardian*, studying Lake Ontario alongside the ship's researchers.

"It's really had a multiplier effect."

*Paul Focazio,
New York Sea Grant*

During the program, which was sponsored by the Centers for Ocean Sciences Education Excellence (COSEE) Great Lakes, educators collected and analyzed data, learned about the interactions of water, weather, and aquatic life, and studied the parallels between Lake Ontario and the world's oceans. Domske worked with the teachers to develop journals and teaching tools to bring back to their classrooms.

Focazio created the blog by shadowing the educators and writing entries about the information they were learning and their reactions. "I was constantly in production mode," he says.

"We really wanted to make people realize that science was going on, and to teach them about the science itself," Domske notes. "We wanted to avoid the pitfall of trying to make it too personal or too cutesy."

"We deal with such a wide range of audiences," Focazio adds, "that the blog needed to be user-friendly and interesting and informative."

He says the blog has been accessed by "everyday people,



teachers, students, the media, legislators, and people in NOAA (National Oceanic and Atmospheric Administration) and other organizations."

E-mails received during the voyage and almost 10,000 visitors to the blog between July and October indicate to Focazio and Domske that they met their goal of expanding the impact of the onboard program.

Since the blog was hosted on COSEE's website, the only expense was "the time to create it," she says.

"I think a blog could be an addendum to most educational experiences," Domske says. "I don't think it is just limited to teacher or educational programs. This would be a great way to show people what's going on with a restoration project, for instance."

Focazio adds, "We're definitely implementing blogging technology to cover other events and experiences in the future." ❖

To view the Shipboard and Shoreline Science program blog, point your browser to <http://coseegreatlakes.net/weblog/category/lake-ontario-exploration-workshop/>. For more information, you may contact Helen Domske at (716) 645-3610, ext. 3, or hmd4@cornell.edu, or Paul Focazio at (315) 312-3042, or Paul.Focazio@stonybrook.edu.

Continued from Page 5

Alternative Approach

Besides participating in the meetings of the beach managers group, the California Coastal Commission has formed a beach grooming work group.

The work group is looking at "several beach grooming alternatives that are being discussed, promoted, and in several cases implemented by cities through permit conditions," Engel says. Cities and counties are also being encouraged to voluntarily change their local coastal plans to address beach grooming.

Alternatives being promoted, she says, include no grooming, hand grooming, seasonal grooming, zonal or rotational grooming, and threshold grooming, or wrack removal beyond a certain density or height.

Changing Views

To educate the public and beach managers about these alternative practices and their benefits, the California Coastal Commission and the Beach Ecology Coalition plan to create a statewide natural beach ecosystem awareness campaign and to develop a statewide best beach management practices guide.

"We understand that the tourist draw is really important, but we feel that with education we can perhaps change the public's viewpoint on what is a desirable beach," Engel says.

Simmons also encourages other beach and coastal managers to start a dialogue with those performing beach grooming in their state.

"It's very important," Simmons says. "The best way to address issues is to first get them out on the table and talk about them." ❖

For more information on beach grooming in California, contact Karen Martin at (310) 506-4808, or Karen.Martin@pepperdine.edu, Jenny Dugan at (805)893-2675, or j_dugan@lifesci.ucsb.edu, or Jonna D. Engel at (805) 585-1821, or jengel@coastal.ca.gov. For more information on beach grooming in San Diego, contact Dennis Simmons at (858) 581-9975, or DJSimmons@sandiego.gov.

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Registration**

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GeoTools is where coastal professionals go to learn about technology and coastal management. This conference usually sells out before the registration deadline, so please don't delay.

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