

COASTAL SERVICES

VOLUME 7, ISSUE 5 • SEPTEMBER/OCTOBER 2004

LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

TSUNAMI! **Preparing Hawaii for the Next Big Wave**

Turning Adversaries into Partners in the Gulf of Maine

Golf Gets Gooney in Oregon



From the Director

Hurricanes, earthquakes, tornados, floods, landslides, wildfires, volcanic eruptions—the list of natural hazards that coastal communities may face is long and can be frightening. The one that might not make most coastal resource managers' lists is Hawaii's number one natural disaster killer—tsunamis.

Experts say it is a question of "when," not "if," another tsunami strikes the Hawaiian Islands or elsewhere along our nation's shoreline. It's been almost 30 years since our country has experienced a damaging tsunami, and in that time we have seen major development in our coastal areas.

Depending on when and where the next wave strikes, our country could pay a high price in lost lives and damaged property.

The cover story of this edition of *Coastal Services* looks at this natural phenomenon and how Hawaii, along with other state and federal partners, has worked to prepare the islands and its people for the inevitable wave that will come.

Another region of the country that is vulnerable to tsunamis is the Pacific Northwest. To increase public awareness of this vulnerability, and to address the potential impacts of tsunamis and earthquakes to port and harbor communities, the National Oceanic and Atmospheric

Administration's (NOAA) Coastal Services Center helped develop the Protecting Our Ports and Harbors Web site, www.csc.noaa.gov/products/tsunamis/index.htm.

Another tool developed by the NOAA Coastal Services Center to help coastal communities prepare for and reduce their vulnerability to hazards is the Community Vulnerability Assessment Tool.

Accessible over the Internet by going to www.csc.noaa.gov/products/nchaz/startup.htm, this CD-ROM contains a methodology that helps local and state governments determine and prioritize their localities' vulnerability to coastal hazards.

The hazard that every coastal community faces is storms. The Coastal Storms Initiative (CSI) is a nationwide effort led by NOAA to lessen the impacts of and help coastal communities plan for, respond to, and recover from coastal storms. For more information on the CSI, go to www.csc.noaa.gov/csi/.

We hope these tools and resources help you ensure that your coastal communities are better prepared when the next disaster strikes.



Margaret A. Davidson

National Oceanic and Atmospheric Administration

U.S. Secretary of Commerce
Donald L. Evans

Under Secretary of Commerce for Oceans and Atmosphere, and Administrator, National Oceanic and Atmospheric Administration (NOAA)
Conrad C. Lautenbacher Jr.
Vice Admiral, U.S. Navy (Ret.)

Assistant Administrator for Ocean Services and Coastal Zone Management, National Ocean Service
Dr. Rick Spinrad

NOAA Coastal Services Center

Director: Margaret A. Davidson

Deputy Director: Jeff Payne

Coastal Information Services,
Branch Chief: Nicholas Schmidt, acting

Resource Management Services,
Branch Chief: Beth McCandless

Coastal Management Services,
Branch Chief: Paul Scholz

Communications Director:
Donna McCaskill

Magazine Writer and Editor:
Hanna Goss

Copy Editor: Gerald Esch

Graphic Designer: Frank Ruopoli

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

To subscribe to *Coastal Services*, please direct correspondence to:

Hanna Goss
NOAA Coastal Services Center
2234 South Hobson Avenue
Charleston, SC 29405-2413
Phone: (843) 740-1332
Fax: (843) 740-1313
E-mail: Hanna.Goss@noaa.gov

For more information about the Coastal Services Center, call (843) 740-1200 or visit our home page on the Internet: www.csc.noaa.gov

NOAA/CSC/20405-PUB

Coastal Services is produced bimonthly as a trade journal for coastal resource managers. Editorial content is unofficial and not authority for action. Views and opinions expressed may not reflect those of the Department of Commerce or NOAA.

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.



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Coastal Services Center

News and Notes:

Making Presentations Work

A recent study by the American Management Association confirmed that communication skills are, by far, the key competence required for successful leadership. This column offers several tips to improve your presentation skills.

1. Remember your primary goal: COMMUNICATION.

Too often the objective of a presentation seems to be getting as many points in as possible during the assigned time. While keeping to the time limit is laudable, achieving a rapport with your audience is what you are really after. Tailor your presentation in a way that makes it easy for your audience to focus and understand.

2. Have a message.

Voluminous does not translate into understanding. Instead of trying to say everything you know about a subject, think about what you want your primary take-home message to be and let the presentation reinforce or support this message. For this column, for instance, the primary message is "Communication should be the goal of your presentation." The other points support this message. Making point after point without a central message confuses the audience.

3. Open with the good stuff.

Too many people make presentations like they write technical papers. They start with the list of partners, talk about the financial and personnel obstacles they had to overcome, and discuss how they organized the effort. The results, or conclusions, are saved for the end. Most people's eyes have converted to screen-saver mode by this time. Get to the

point (remember that message you developed?) in the beginning and use the remaining time to support that point and add details. Don't forget to restate your message as you summarize your presentation at the end.

4. Remember your audience.

When you are deciding what your primary message is going to be, think about the audience. Are you talking to homeowners, who are mostly interested in how the subject is going to affect property values? Or is it a group of lawmakers, who are interested in the policy implications? Your basic facts will be the same, but audience interests will help you decide where to place the emphasis and spend the most time.

5. Don't be a slave to PowerPoint.

Many speakers like PowerPoint because it helps them stay organized and keeps the focus on the screen instead of the speaker. While this is helpful for the speaker, PowerPoint can be a negative tool from the

audience's perspective. The audience will pay attention and retain more of the message if you maintain eye contact with them. This is hard to do when your focus (and theirs) is on the screen. Furthermore, PowerPoint shows often seem very scripted, which makes the audience hesitant to ask questions or stay engaged.

Work to keep connected with the audience, and aim to use only two to four slides per 30 minutes. For complex tables, give your audience handouts to refer to.

An organization such as Toastmasters is a wonderful forum for practicing presentation skills. Consider joining a local club to help you improve your skills. Visit www.toastmasters.org for more tips and to find a club near you. ❖

To get additional presentation tips, contact Donna McCaskill, communications manager of the National Oceanic and Atmospheric Administration's Coastal Services Center. Her e-mail address is Donna.Mccaskill@noaa.gov.



Research Using Two Heads Better than One in the Gulf of Maine



The relationship between researchers and commercial fishermen has sometimes been adversarial. But in the Gulf of Maine and other areas of the U.S., adversaries have turned into partners in an effort to help better manage the ocean ecosystem.

"In the past, there was so much contention between scientists and the resource users; there wasn't a lot of trust and cooperation," says Rollie Barnaby, educator for the University of New Hampshire Sea Grant Cooperative Extension. "In order to make that connection and the research more relevant, it's important to get users involved in the research."

What began about 12 years ago as a project-by-project effort to bring fishermen and researchers together has turned into a regional effort that receives significant congressional funding.

One of the largest and most successful efforts to organize and fund cooperative research has come from the Northeast Consortium, an organizational partnership between

the University of New Hampshire, University of Maine, Massachusetts Institute of Technology, and Woods Hole Oceanographic Institution.

Collaborative research meshes fishermen's experience and knowledge of the resources and vessel operations with scientists' methodology and experience, saving time and money, and improving coastal management decision making.

The researcher-fisherman partnership also gives scientists access to more vessels and provides economic incentives for the fishing community.

Bad Blood

During the 1980s and 1990s, the debate over proposed fishing restrictions on Georges Bank and in the Gulf of Maine soured relationships between researchers and commercial fishermen.

"Fisheries were declining and everybody was pointing fingers at everyone else," recalls David

"We're looking at real questions that have real answers that we needed yesterday."

**David Goethel,
New Hampshire
Commercial Fisherman**

Goethel, a New Hampshire commercial fisherman. "There was a lot of frustration on the part of the fishing industry that they couldn't participate. Scientists were frustrated because they were doing their very best, but everybody was saying that wasn't good enough."

Goethel says he recognized the research role fishermen could have in the 1980s after being asked to take shrimp researchers out on his boat to test experimental fishing gear. "I thought right off the bat that had I been involved from day one, it would have been a better program."

Goethel adds, "Fishermen know a lot about gear and how to do things—the nuts and bolts of putting together an experiment. What was lacking was the scientific rigor of being able to go out and test something."

Equal Experts

Barnaby, a former commercial fisherman, also recognized that fishermen and researchers have "different knowledge, expertise, and training, but both know a lot about the marine environment."

In his work with Sea Grant, Barnaby made sure fishermen were a part of all the research grants in which he was involved. "Enough scientists did work with fishermen to realize the importance of working together."

Fishermen also were going through some hard financial times. "It used to be that you caught all the fish you needed and wanted," Barnaby says. "If that was still the case, cooperative research might have been harder to institute."

Coming Together

Support for bringing researchers and fishermen together came from U.S. Senator Judd Gregg of New Hampshire. In 1998, New Hampshire Sea Grant received \$300,000 to launch the Northeast Consortium. Since 1999, the Northeast Consortium has encouraged and funded co-equal partnerships among commercial fishermen, researchers, and other stakeholders. The consortium receives \$5 million annually from the National Oceanic and Atmospheric Administration (NOAA) Marine Fisheries Service to fund cooperative research projects.

Participating commercial fishing vessels from New Hampshire, Maine, and Massachusetts are equipped and used as research platforms, and researchers come from the four partnering research institutions.

"The Northeast Consortium illustrates the best of Sea Grant," says Ann Bucklin, director of the New Hampshire Sea Grant College Program. "Partnership building, nonadvocacy participation by all stakeholders, conflict resolution—these are core Sea Grant extension values."

Asking the Right Questions

Each year, the Northeast Consortium funds over 30 new cooperative research development projects, with each project lasting from one to three years. Bucklin says the consortium is currently managing over 100 projects involving more than 260 fishermen.

Goethel notes that in the Northeast, probably one fisherman in six is involved or has been involved in the past in a cooperative research project.

Research areas include development of selective gear technology, monitoring marine

protected areas, fish habitat studies, and oceanographic and meteorological monitoring.

To be successful, Goethel says, the research question has to be interesting to both the fisherman and scientist. "There isn't a lot of theoretical research going on. We're looking at real questions that have real answers that we needed yesterday."

It Gets Competitive

To receive research funds, scientists and fishermen team and submit planning letters to an annual open competition that is reviewed by a 30-member panel made up of fishermen, scientists, and representatives of governmental and nongovernmental agencies and organizations.

Barnaby says that typically less than half of those teams might be invited to submit full proposals, and that only half of those proposals might be funded.

Because most projects last two to three years, projects that began in 2000 and 2001 are "just now wrapping up," Bucklin says. The consortium is now focusing on ensuring that cooperative research data are used by fisheries and ocean managers.

Trust and Communication

In addition to improving resource decision making, benefits of cooperative research include improved relationships between stakeholders and more of a buy-in to research results and resulting regulations, research being conducted on more vessels, and diversifying fishermen's income.

"It builds trust and encourages communication when you bring factions together to solve problems," notes Bucklin. "It's helped the fishing community with employment options, helping reduce overcapacity without fishermen having to accept a government bailout or sit on the beach."

Goethel says, "A lot of fishermen like learning more about the ocean

and really like the idea that what they know is being used for something and counts for something."

Still, there are fishermen out there who want nothing to do with the research. But they are the minority, Barnaby says. "The majority sees the benefits and enjoys it."

He adds, "It's an excellent way to do research. I would encourage other researchers to use the users." ❖

To learn more about the Northeast Consortium, point your browser to www.northeastconsortium.org. You may contact Rollie Barnaby at (603) 679-5616, or rollie.barnaby@unh.edu, or Ann Bucklin at (603) 862-0122, or ann.bucklin@unh.edu. You may contact David Goethel at egoethel@comcast.net. For help in getting involved in cooperative research, visit www.fishresearch.org.



Gulf of Maine researchers are taking advantage of commercial fishermen's vessels and knowledge of the ecosystem, which has helped turn adversaries into partners.

Tsunami!

PREPARING HAWAII FOR THE NEXT BIG WAVE

On April 1, 1946, a magnitude 7.1 earthquake in the Aleutian Islands off the coast of Alaska generated a tsunami that five hours later struck the Hawaiian Islands with waves of 20 to 32 feet. The tsunami claimed the lives of 159 people and caused \$26 million in damage.

"Tsunamis are Hawaii's number one natural disaster killer."

**Brian Yanagi,
Hawaii's State Civil
Defense Division**

At 1:05 a.m. on May 23, 1960, 15 hours after a magnitude 9.5 earthquake struck offshore of Chile, a tsunami crashed into Hilo, Hawaii, killing 61 people and destroying 537 homes and businesses. Cost of the damage totaled over \$23 million.

On November 29, 1975, a magnitude 7.2 earthquake occurred locally in the area of Kalapana, Hawaii, that within minutes generated a tsunami that reportedly reached heights of 47 feet. As a result of the earthquake and tsunami, two people were killed, including the leader of a Boy Scout troop on a camping trip, and \$4.1 million was done in property damage.

It is only a matter of time before another tsunami strikes the Hawaiian Islands or elsewhere along the nation's shoreline. Since the last tsunami catastrophe in the U.S.,

development along the coastlines has skyrocketed, as have the potential damages.

Hawaii has worked hard to prepare the islands and its people for the inevitable wave that will come and has joined other Pacific states and the federal government in an effort to help save lives and property when the next tsunami does strike.

Knowing the Risk

Ten major tsunamis over the past decade have occurred in the Pacific basin, killing more than 4,000 people. Since 1900, tsunami events affecting the U.S. and its territories have been responsible for almost 470 fatalities and hundreds of millions of dollars in property damage.

The Hawaiian Islands, in particular, lie directly in the path of tsunamis created by most of the Pacific Ocean's subduction zones.

"Tsunamis are Hawaii's number one natural disaster killer," says Brian Yanagi, Earthquake-Tsunami-Volcano program manager for Hawaii's State Civil Defense.

The Pacific Northwest states of Alaska, Washington, Oregon, and California are vulnerable to tsunamis, as are islands in the Caribbean.

Although tsunamis are rare along the Atlantic coastline, a severe earthquake on November 18, 1929, in the Grand Banks of Newfoundland generated a tsunami that caused considerable damage and loss of life at Placentia Bay, Newfoundland.

Wave after Wave

A tsunami, or "harbor wave" in Japanese, is a series of waves usually caused by underwater earthquakes and occasionally by underwater volcanic eruptions and landslides.

Sometimes incorrectly referred to as tidal waves, tsunamis can either be generated by a distant earthquake that occurs anywhere in the Pacific Rim, or local earthquakes that happen just offshore.

The impact of a tsunami is "very similar to a hurricane storm surge where you have abrupt flooding," says Eddie Bernard, director of the National Oceanic and Atmospheric Administration's (NOAA) Pacific Marine Environmental Laboratory in Seattle.

Unlike hurricanes, tsunamis can travel at speeds up to 600 miles per hour in the open ocean and cannot be felt by ships or seen from the air. An earthquake in the Pacific Rim could generate tsunamis that could damage multiple state coastlines.

Learning from Experience

"Hawaii is the most tsunami prepared of all states," Bernard acknowledges.

After the devastating losses from the 1946 and 1960 tsunamis, Hawaii built a statewide tsunami emergency response system. The system includes unified state and county emergency plans, evacuation maps that are published in telephone books, a coordinated statewide siren system tied into an emergency alert

system, and frontline emergency response personnel, Yanagi says.

But since Hawaii has not experienced a tsunami in almost 30 years, the islands' collective guard may be down.

"An entire generation has grown up on the islands and has not observed or witnessed the destructive power of a tsunami," Yanagi says. "There is a tremendous public awareness learning curve we are always trying to overcome."

The National Tsunami Hazard Mitigation Program (NTHMP), a partnership created in 1996 between the five Pacific states, NOAA, the Federal Emergency Management Agency, and the U.S. Geological Survey to reduce tsunami hazards along U.S. coastlines, has reenergized Hawaii's tsunami mitigation efforts, Yanagi says.

A Burst of Energy

As a result of the funding and collaborative efforts coming out of the NTHMP, Hawaii has upgraded its state and county civil defense emergency operations centers, created a tsunami video and brochure, developed a tsunami curriculum for fourth and fifth graders, conducted training workshops for the media and tourist industry, and partnered with many organizations to help educate the public.

Much of this progress has been the work of the Hawaii Tsunami Technical Review Committee, which partners with the state coastal zone management program, as well as other state, county, and federal agencies and the scientific and emergency management communities, so that "the best available science can be understood and applied in the real world," says Ann Ogata-Deal, planning and policy analyst with the Hawaii Coastal Zone Management Program.

The committee's training programs have specifically targeted hotel security and management, and



One sign of an impending tsunami is that water can withdraw from the shoreline. Just before a tsunami struck the Island of Oahu in 1957, people walked out to the exposed reef to search for fish.

Photo by A. Yamauchi and courtesy of Honolulu Star Bulletin

other representatives of the tourism industry. "We have a huge tourist population that, with the exception of the Japanese, knows very little about tsunamis," Yanagi says. It is the responsibility of a hotel's management to ensure that its guests get to safety when a tsunami evacuation order is issued.

Heed the Warning

Although Hawaii is fortunate to have a federal warning system and statewide tsunami emergency response system in place, the decision to order an evacuation is not easy and must be made quickly.

Kwok Fai Cheung, professor and chair of Ocean and Resources Engineering at the University of Hawaii, notes that tsunami evacuation takes about three hours. "If it takes a tsunami five hours to travel from Alaska to Hawaii, that means you only have two hours to decide if it's going to be a destructive tsunami or not."

A false alarm is costly and impacts the credibility of future warnings.

A major benefit of the NTHMP for the state has been the upgrade of the seismic network, enabling the tsunami warning centers in Alaska and Hawaii to locate and size earthquakes faster and more accurately, and the development of technology to measure tsunamis in the deep ocean.

This was proven on November 17, 2003, when an Alaskan tsunami warning was cancelled because real-time deep ocean data showed the tsunami would not be damaging, Bernard says. Canceling this warning averted an evacuation in Hawaii, saving the state an estimated \$68 million in lost productivity.

Hawaii Sea Grant also is funding research efforts led by Cheung that will help improve prediction methods for tsunamis. A tsunami run-up simulation model, which when combined with an inundation

Casting a Net to Capture Metadata in the Southeast

The amount of research conducted around the nation, or even within a region, is staggering. If the resulting data are not widely shared or easily accessible, then efforts might be duplicated, wasting time and money, and coastal resource managers may miss key information that could help them in their decision-making processes.

Very early in the Cast-Net project it was recognized that metadata was a critical component of successfully linking databases across the region.

"There's a real bottleneck when trying to find and access data," says Madilyn Fletcher, director of the Baruch Institute for Marine and Coastal Sciences at the University of South Carolina.

"We recognized that one of the main impediments to being able to access the many databases that exist among the various marine labs was that there was no inventory or central catalogue identifying the various databases."

To create such a catalogue for accessing data there needs to be metadata, or information about the data.

To help address the issue in the Southeast, five regional research institutions partnered to create Cast-Net, a program that developed an on-line, user-friendly tool that allows researchers to easily write, edit, and access metadata that meets Federal

Geographic Data Committee (FGDC) standards.

After being used successfully for the past two years, a new and improved version of the Cast-Net tool will soon be released as Meta-Door.

Information Overload

There is a tremendous amount of research data that exists, which can be overwhelming for busy coastal resource managers.

Elizabeth L. Wenner, senior marine scientist with the South Carolina Marine Resources Research Institute, notes that in a past project to access water quality data for all the National Estuarine Research Reserves (NERRs) around the country, staff members had to sort through 7 million metadata records.

"We had to pull that information in and go through the metadata in order to determine what data to keep," Wenner says. Even with several people working on the project, sorting through all the data took four months.

Casting a Wide Net

Cast-Net was developed by the Southern Association of Marine Laboratories (SAML) and the Southeastern Universities Research Association to help improve connectivity between coastal observing systems in the Southeast U.S.

The name, says Fletcher, signifies "casting the net wider" to include as many coastal ocean observing systems and laboratories as possible.

The institutions working together to cast that net are the Baruch Institute, Dauphin Island Sea Lab in Alabama, the Louisiana Universities Marine Consortium,



Members of the Cast-Net/Meta-Door project team provide an overview of the system to database managers.

the Skidaway Institute of Oceanography of the University System of Georgia, and the University of Southern Mississippi.

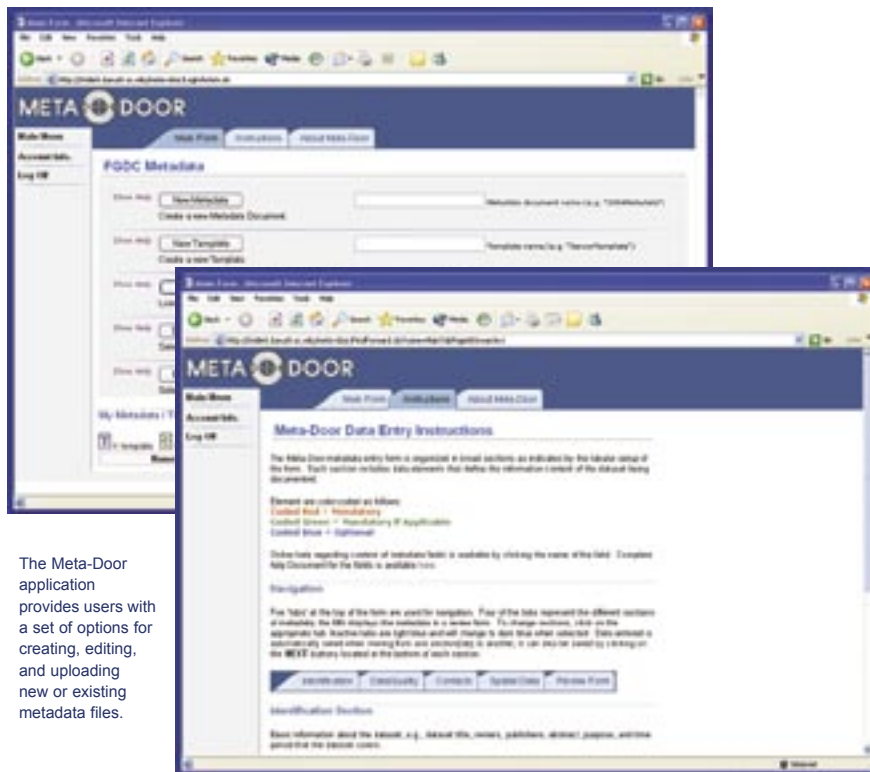
Very early in the Cast-Net project it was recognized that metadata was a critical component of successfully linking databases across the region.

"The problem," says Fletcher, "was that for metadata to exist, someone at each home laboratory had to create metadata and document it in a way that it could be incorporated into a central catalogue."

To do this, the metadata entries needed to be short and easily searchable using consistent language.

"The bottleneck almost always existed in the marine laboratories with their shortage of personnel," Fletcher notes. "How could we address that problem? We decided to make an on-line metadata entry tool, which could be accessed at the individual laboratories and could lead the metadata entry person through the process in a way that would result in

Images courtesy of University of South Carolina



The Meta-Door application provides users with a set of options for creating, editing, and uploading new or existing metadata files.

metadata records that had a basic consistency and met existing national standards.”

Right in Style

Creating the Automated Cast-Net Entry Tool involved the review and adoption of metadata standards, development of style sheets, integration into the Cast-Net servers, and data verification programming.

After beta testing Cast-Net, members of the project committee held training workshops and one-on-one tutorials for staff members of interested SAML labs.

In addition to general use by those labs, Cast-Net has been used in the implementation of a number of specific research and environmental programs, such as the Land Use–Coastal Ecosystem Study (LU-CES), a multidisciplinary effort to study and document the relationship between changing land use and its effects on marine ecosystems.

“The valuable role Cast-Net is playing through the University of South Carolina,” says Rick DeVoe, executive director of the South

Carolina Sea Grant Consortium, “is to serve as the database management and information portal for all the data collected by the 24 scientists” involved in LU-CES.

Fletcher notes that while efforts to promote Cast-Net have focused thus far on academic laboratories, “some of the richest data sets exist in state agency systems. As we facilitate the development of metadata records, it is essential to do it in a way that can be easily accessed by agencies and managers who can use them for informed decision making and doing the jobs they have to do.”

The Net Results

“I think one of the things that is really valuable about Cast-Net is that it is easy to use,” says Sam Walker, a National Oceanic and Atmospheric Administration NERR graduate research fellow at the University of South Carolina. “You always hear that with digital technology, but this is, in fact, very user friendly.”

This ease of use, Walker says, is facilitated by it being Internet

accessible and interactive “so that you don’t have to finish everything all at once, which is good for managers and users strapped for time.”

He adds, “I used Cast-Net for two years, and it worked better than anything else we had.”

Entering Another Door

As with any digital application, Walker and other Cast-Net users also found limitations. The next generation of Cast-Net will be Meta-Door, which is expected to be beta tested and ready for public use by early 2005.

Walker notes, “Cast-Net really focuses on documenting data. Meta-Door takes the next step to facilitating the use of data.”

Meta-Door, developed within the context of the Carolinas Coastal Ocean Observing and Prediction System, “is designed to handle the needs of a broad range of contemporary users of ocean, coastal, and environmental data,” and will provide “greater reliability, flexibility, and potential for enhancements,” Fletcher says.

Fletcher notes that coastal managers will be able to use Meta-Door to examine “water quality issues, erosion issues, fisheries issues—one of the things we anticipate this system allowing us to do is mine a variety of data sets.”

Walker, who has been beta testing Meta-Door, is excited about the new product. “It’s excellent. I’ve been working on and off with FGDC-compliant tools pretty much since they started about 10 years ago. This is definitely the most effective and efficient tool I’ve seen on-line.” ❖

For more information on Cast-Net, go to www.cast-net.org. You also may contact Madilyn Fletcher at (803) 777-5288, or fletcher@biol.sc.edu. For more information on Federal Geographic Data Committee metadata standards, go to www.fgdc.gov.

Taking Golf from Grass to Goo in Oregon

The object of the game is to find the most signs of life, and thus learn about the estuarine environment. Getting to whack a lemon or lime with a golf club, and slog and dig through mud are bonuses. The winner takes home a one-of-a-kind trophy.

The game is Gooley Golf. It's one of a variety of educational programs offered each summer by the South Slough National Estuarine Research Reserve in Charleston, Oregon.

"It's a hands-on experience on a tidelflat," says Heather Lester, the reserve's education program specialist. "It gives people a chance to get face to face with the life that's under their feet."

"Everything's the rough out there."

**Tom Gaskill,
South Slough National
Estuarine Research Reserve**

The rules of a Gooley Golf tournament are simple. Players use a golf club to hit a "detrital ball" (really a lemon or lime) out onto a mudflat. Eelgrass beds are out of bounds. Wherever the ball lands is where the contestant digs.



Celeste Carlisle, a former South Slough reserve educator, helps score a Gooley Golf Tournament.



A young player prepares to whack his detrital ball.

Photos courtesy of South Slough National Estuarine Research Reserve

Using the club to draw a circle about a yard radius around the ball, the player has two minutes to dig like crazy to find as many critters, or signs of critters, as possible. Each sign of life receives points—with points increasing for the rarity of the species. After filling back in the hole, it is then the next contestant's turn.

After each player has had at least two turns, the points are added up. The contestant with the most points wins a hand-made trophy made out of shells and other "intertidal-life remnants," says Tom Gaskill, South Slough's education program coordinator. "It's definitely something people would like to have in their homes."

As with any golf game, proper attire on the course is required. "Everything's the rough out there,"

notes Gaskill, so knee-high boots, such as Wellingtons, are the standard footwear. Players should be willing to have the rest of their clothing "stink for a little while."

The reserve hosted its sixth annual Gooley Golf Tournament in July. The number of contestants is limited to 15 to ensure reserve staff members can make the game both fun and educational. Most of the participants, Lester says, are families.

The program has been equally successful at educating secondary audiences, such as people digging for clams who become intrigued by the Gooley Golf spectacle and come over to ask questions.

"This style of hands-on interpretation out in the field—taking it to where people actually are—is a very effective methodology for reaching a user group that we wouldn't reach otherwise," Gaskill says.

The media is another audience the program is reaching. "The name is intriguing and has drawn in a lot of reporters," Gaskill says. "This is an audience that coastal managers shouldn't forget."

Not only is Gooley Golf "a fun and engaging activity," Gaskill says, but "the educational value is really something we feel is worthwhile. People walk away with the experience and understanding that the diversity of life under their feet needs to be respected." ❖

For more information on Gooley Golf, contact Heather Lester at heather.lester@state.or.us, or Tom Gaskill at tom.gaskill@state.or.us. Either can be reached by calling (541) 888-5558.

Continued from Page 5

risk assessment model, will help civil defense agencies develop better inundation maps and evacuation plans, issue warnings during a tsunami event, and plan for long-term coastal land use.

Out of Harm's Way?

Experts agree that it's not a question of "if" another tsunami will strike the U.S. coastline, but "when."

"The ultimate challenge for coastal resource managers and planners," notes Bernard, "is to move homes and people away from the coastline" and out of harm's way.

It was only after two devastating tsunamis that permanent land use changes were incorporated into the City of Hilo, Yanagi says. "They learned the hard way about land use planning for natural hazards."

Even though it is politically difficult to direct development away from the coast, Ogata-Deal hopes that it won't take another catastrophe for land use planners to incorporate hazards mitigation.

She notes that federally mandated state and county multihazard mitigation strategies will soon be complete.

The research and information that these mitigation strategies provide may help "persuade decision makers to open their minds to new approaches to mitigate natural hazards. Serious consideration of novel planning approaches is one of our greatest challenges, but holds the most promise for the future," she says. ❖

For more information on tsunamis, go to www.geophys.washington.edu/tsunami/, www.csc.noaa.gov/products/tsunamis/, or www.tsunami.org. For more information on Hawaii's tsunami mitigation efforts, contact Brian Yanagi at (808) 733-4301, ext. 552, or byanagi@scd.hawaii.gov. You may also contact Ann Ogata-Deal at (808) 587-2804, or Aogata-Deal@dbedt.hawaii.gov. For information on the National Tsunami Hazard Mitigation Program, go to www.pmel.noaa.gov/tsunami-hazard/, or contact Eddie Bernard at (206) 526-6800, or Eddie.N.Bernard@noaa.gov.

Calling All CZ Programs . . . **Do You Need a Fellow?**

The Coastal Management Fellowship Program brings the nation's top postgraduate students in the field of coastal resource management to state coastal zone management programs. Do you have an important project that you could use some help with?

The deadline for states to submit a project proposal is October 15, 2004.

See the Web site www.csc.noaa.gov/cms/fellows.html for details.

Looking for Funds in All the Right Places?

The NOAA Coastal Services Center is seeking grant and cooperative agreement proposals for fiscal year 2005. Visit this site to learn about these and other funding opportunities!

Now accepting applications
www.csc.noaa.gov/funding/





NOAA Coastal Services Center
LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

MARK YOUR CALENDARS!

Visit www.csc.noaa.gov's upcoming events section to learn about these and other learning opportunities!

2005

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	MARCH 7	MARCH 8	MARCH 9	MARCH 10		
	 <p>GeoTools March 7–10, 2005 • Myrtle Beach, South Carolina A conference devoted to helping state coastal resource managers effectively use technology. www.csc.noaa.gov/geotools/</p>					
MAY 8	MAY 9	MAY 10	MAY 11			
<p>Solutions to Coastal Disasters Conference May 8–11, 2005 • Charleston, South Carolina Conference topics will focus on science, tools, management, and solutions. www.asce.org/conferences/cd05/</p>						
JULY 17	JULY 18	JULY 19	JULY 20	JULY 21		
 <p>Coastal Zone 05 July 17–21, 2005 • New Orleans, Louisiana The nation's largest international conference for the coastal resource management community. www.csc.noaa.gov/cz/</p>						

NOAA Coastal Services Center
 2234 South Hobson Avenue
 Charleston, SC 29405-2413

PRST STD
 POSTAGE & FEES PAID
 NOAA COASTAL
 SERVICES CENTER
 PERMIT NO. G-19



This paper is made with 100% recycled fiber and contains at least 25% post-consumer waste.