

COASTAL SERVICES

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LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

SMART GROWTH: Changing the Course of Development in Hawaii

**Turning Marine
Debris into Energy
in New Hampshire**

**Helping Coastal
Managers Communicate
about Climate Change**



FROM THE DIRECTOR

Since the end of World War II, communities across the country have followed a pattern of growth and development that has moved people out of urban centers into bucolic suburban areas. While many considered this “getting one’s own piece of paradise,” it also meant putting more miles between homes, stores, and jobs—making people dependent on automobiles.

After more than 60 years, many have come to realize that these conventional patterns of growth and development can result in traffic and pollution. This is particularly troublesome for coastal communities where runoff from more roads degrades water quality, and increased traffic impacts air and water and is considered a significant source of carbon emissions contributing to climate change.

In the cover story of this edition of *Coastal Services*, we focus on how the University of Hawaii Sea Grant program is helping to create a more comprehensive approach to regional planning throughout the Hawaiian Islands using smart growth principles.

In addition to the lessons learned in Hawaii, the National Oceanic and Atmospheric Administration’s (NOAA) Coastal Services Center offers training and tools that can

help coastal resource managers change how community planning and development is done.

The Coastal Community Planning and Development training course developed by NOAA, the U.S. Environmental Protection Agency, and state coastal resource management agencies provides managers with the background, examples, and strategies to support alternative development efforts. For more information on this introductory, two-day course, point your browser to www.csc.noaa.gov/training/ccpd.html.

One of the most challenging aspects of changing planning and development strategies is incorporating peoples’ experiences, culture, and understanding of issues.

Introduction to Stakeholder Participation, the second in a series of Center publications developed to help coastal managers use social science tools, presents guidance on effectively incorporating stakeholder involvement. To view the publication or other Center social science tools, go to www.csc.noaa.gov/cms/human_dimensions/focus_socialsci.html.



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

Publication Highlights Strategies to Meet the Climate Change Challenge

At times, coastal professionals who are beginning to address emerging climate change impacts may feel like they face an overwhelming task. Climate change is far-reaching, potentially increasing the intensity of everything from nonpoint source pollution to natural hazards such as hurricanes and flooding.

However, coastal resource managers around the nation are already making significant strides in tackling the multiple threats posed by climate change. Some states strive to make their communities more resilient to natural hazards. Others have tackled “smart growth” innovations that can help their communities mitigate, or adapt to, the coming changes. Still others are working to reduce runoff and improve water quality.

A publication of the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center, *Local Strategies for Addressing Climate Change*, spotlights some of the tools, programs, and projects that are already in place to address issues related to climate change. The publication contains articles previously published in the Center’s industry magazine for coastal professionals, *Coastal Services*. These innovative strategies were pioneered by specific state

programs and may well be adaptable to other programs or states facing related issues.

Another useful publication feature is a quick reference guide to the types of Center products and services that help coastal professionals address issues related to climate change. These include the following:

- Topographic and bathymetric data
- Data assistance
- Visualization tools
- Social science technical assistance
- Trainings in coastal community planning and coastal inundation mapping

Stories of Success

Some of the local- and state-led strategies featured in the publication include the following:

- Hazards such as flooding—resulting from sea level rise and an increase in the severity of tropical storms and hurricanes—are predicted consequences of climate change. With the debut of the StormSmart Coasts website, Massachusetts is preparing communities to “bounce back” after natural disasters. The Web resource consolidates and simplifies information on everything from

hazard identification and mapping to legal information and funding.

- Climate change is likely to increase certain water pollution problems, including polluted stormwater runoff. But sometimes it’s hard to persuade homeowners that some simple steps can reduce runoff and improve water quality. In Minnesota, an award-winning website uses real-time stream-monitoring data to paint a picture of what’s happening in the Lake Superior watershed. The website also incorporates the data into community information venues, classroom curricula, and case studies, and the site includes a toolkit for reducing stormwater impacts.

- Rhode Island is proactively responding to sea level rise predictions by updating building codes and developing related coastal regulations. These regulations not only explain the science of sea level rise and provide historical data, but they also will help the coastal council and others in the state better manage development and related concerns. ❖

To download *Local Strategies for Addressing Climate Change*, visit www.csc.noaa.gov/magazine/climatechangestrategies.pdf. To receive a hard copy of the publication, contact Donna.McCaskill@noaa.gov.

Turning Marine Debris into Energy in New Hampshire

Tons of marine debris—everything from fishing nets to trash dumped overboard—can be found in coastal waters and is washed up on shorelines around the country. Not only can this debris be fatal to wildlife, but it can hinder commercial fishermen and drive tourists from beaches. It is also cumbersome to collect, and disposal is challenging.

“It’s not uncommon to go clean a third of a mile of beach in New Hampshire and pick up 200 pounds of debris.”

Jen Kennedy, Blue Ocean Society for Marine Conservation

Coastal resource managers in New Hampshire have not only developed a program to remove and help keep marine debris out of the ocean, but they have solved the disposal dilemma as well by turning the debris into an energy source.

“So much gear has already been recycled since the program started in April of last year,” says Ken La Valley, assistant extension professor of biological sciences for New Hampshire Sea Grant and the University of New Hampshire Cooperative Extension. “This is a big deal for New Hampshire because we’re such a small state.”

The Marine Debris to Energy Project involves collecting derelict or damaged fishing gear and

converting it into energy via a waste-to-energy plant in Massachusetts.

The program is also helping to better characterize the sources and location of marine debris using a Web-based geographic information system (GIS), and is working to alleviate the problem through education and outreach.

Massachusetts is doing a similar campaign called “Fishing for Energy,” and other marine debris recycling programs are happening on the West Coast and in the Hawaiian Islands.

Lost or Abandoned

Marine debris, which includes nets, lines, crab and shrimp traps and pots, and other recreational or commercial fishing equipment that has been lost or abandoned in the marine environment, is a global problem that severely impacts marine ecosystems and poses significant economic and safety issues.

“A lot of people aren’t aware that marine debris is a problem,” notes Jen Kennedy, director of the Blue Ocean Society for Marine Conservation. “It’s not uncommon to go clean a third of a mile of beach in New Hampshire and pick up 200 pounds of debris.”

Modern nets and fishing line are made of synthetic materials that have been in use since the 1940s and take decades—even hundreds of years—to break down, making landfill disposal unwise, notes Jenna Jambeck, research assistant professor for the Department of Civil and Environmental Engineering at the University of New Hampshire.

Scientists estimate that debris ingestion, entanglement, or both affects 43 percent of all marine mammal species worldwide. In 2007, the Provincetown Center for Coastal Studies confirmed 30 cases of entangled whales in Northeast U.S. and Canadian waters.

Potential Snare

Debris can also clog vessel intake valves or snare propellers, potentially stranding recreational and commercial fishermen, endangering boat crews and passengers with vessel capsizings, and entangling divers and swimmers.

It’s also a “real economic problem for commercial fishermen,” says La Valley. “What happens when you get a \$10,000 net hung up on a derelict fishing pot?”

Coastal communities dependent on tourism can experience negative economic impacts if marine debris washes up on beaches. “We are so dependent on tourism,” says Kennedy. “Our beaches need to be clean and healthy for the people to visit, and for the marine life that depends on them.”

Coming Together

In 2005, Jambeck teamed up with Kennedy to analyze the type and location of debris being collected in the nonprofit’s volunteer beach-cleaning efforts.

“What we found,” Jambeck says, “is that of the 14 beaches being monitored, 4 had greater than 50 percent of debris coming from ocean-based sources.”

“New Hampshire,” Kennedy adds, “had a higher percentage of fishing gear on its beaches than a number of other states, including Florida.”

La Valley, who had been hearing fishermen complaining about the impacts marine debris was having, joined the collaborative effort and brought the fishing community to the table.

The team received a grant from the National Oceanic and Atmospheric Administration’s (NOAA) Marine Debris Program to conduct the project.

Waste to Energy

The project centers on a special dumpster that Waste Management of New Hampshire agreed to place at the centralized Yankee Fishermen’s Cooperative in Seabrook, New Hampshire. Here recreational and commercial fishermen can trash their own damaged gear or the derelict gear that they find.

The debris is then taken by Waste Management to a Wheelabrator waste-to-energy plant in North Andover, Massachusetts, where it’s burned to generate electricity, says Jambeck. What cannot be turned into energy, such as certain metals, is separated out and recycled or disposed of.

The partnership also placed five bins for monofilament fishing line in strategic places along the state’s coastline for collection and recycling.

La Valley says that about 4 tons of marine debris has been collected so far.



When and Where

A unique feature of the New Hampshire project, says La Valley, is the ongoing effort to document where marine debris is located and using the information for education and outreach.

A website with a GIS mapping database has been created so that beach cleanup volunteers, commercial and recreational fishermen, and others can document where they find marine debris. Soon, users of the site—including educators and local decision makers—will be able to generate reports and maps detailing what types of debris have been found.

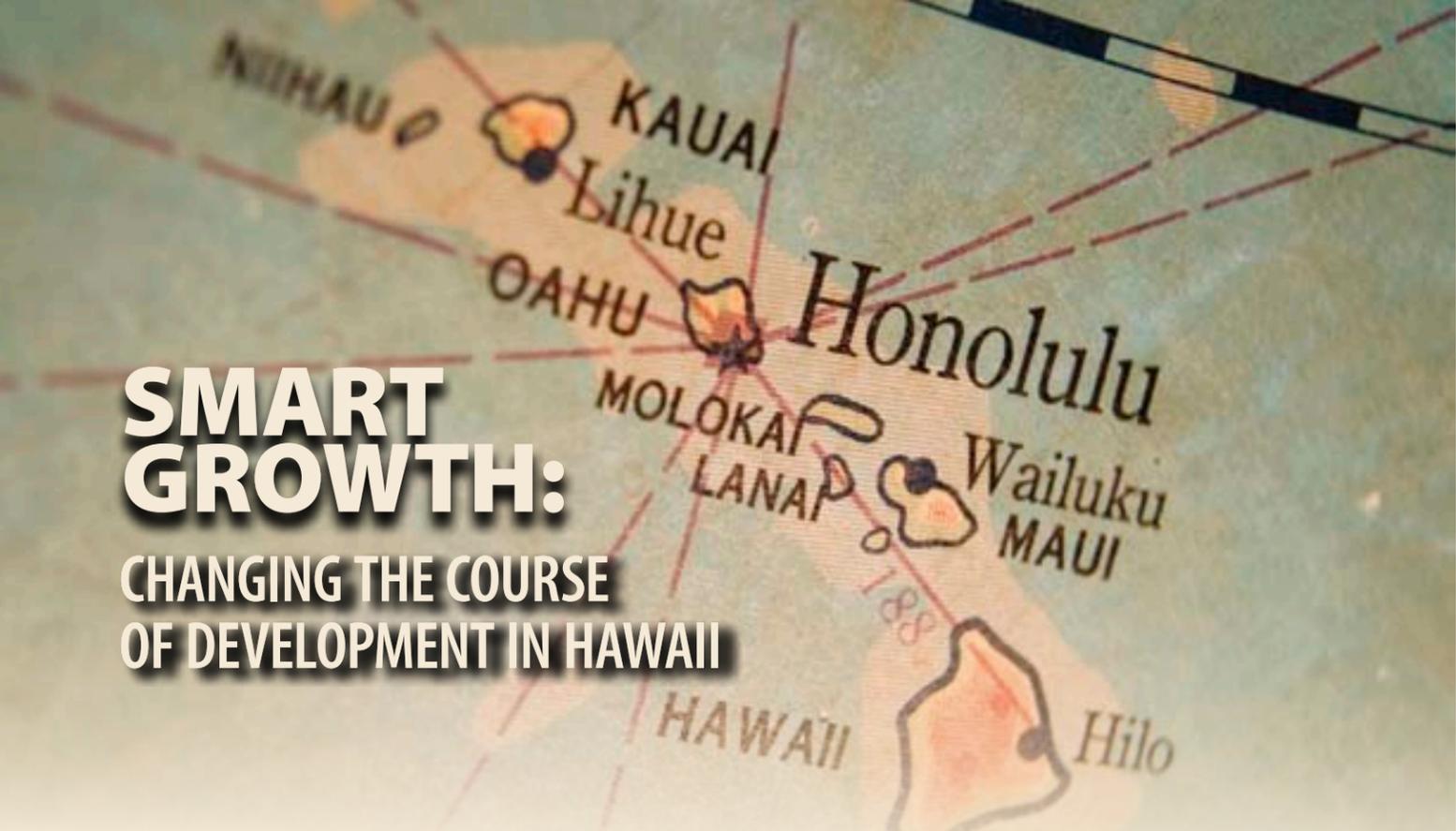
Multibeam sonar is also being used to document derelict gear under the ocean surface. The next step, La Valley says, will be to address the removal of the nearly 300 derelict lobster traps that have been documented, which will take legislative action.

“It’s currently illegal to move someone else’s lobster pots, even if they’re derelict,” he explains.

“These types of projects have value beyond getting rid of fishing gear and cleaning up the beach,” La Valley says. “They provide the opportunity for building partnerships between the different stakeholders.”

He adds, “The seeds of those relationships grow into other projects and other relationships. It’s more valuable than the stated goals of the project.” ❖

To learn more about the New Hampshire Marine Debris to Energy Project, go to <http://cecf1.unh.edu/debris/>. You may also contact Jen Kennedy at (603) 431-0260, or jen@blueoceansociety.org; Jenna Jambeck at (603) 862-4023, or Jenna.Jambeck@unh.edu; or Ken La Valley at (603) 862-4343, or ken.lavalley@unh.edu.



SMART GROWTH: CHANGING THE COURSE OF DEVELOPMENT IN HAWAII

Decisions about what, where, and how communities are built have profound impacts, not only on the land and sea environments, but on people's daily lives. Everything from the schools children attend to the length of daily commutes and the amount of exercise engaged in are impacted by decisions made long before ground is ever broken on a development.

Coastal resource managers in Hawaii are working to help developers and local government officials take a more holistic approach to land-use decision-making using smart growth principles.

"Not only are we more effectively addressing our mission, goals, and objectives, but we're also making them relevant to people's everyday lives," notes Gordon Grau, director of the University of Hawaii Sea Grant College Program. "When we're talking about somebody sitting

in traffic for three hours to get to work or to get their kids to school, it resonates with people. We're translating the environmental issues that we've always dealt with in terms of how it's affecting people every day."

Through the University of Hawaii Sea Grant Center for Smart Building and Community Design, Sea Grant and many partners brought a national team of smart growth experts to Hawaii to work with local landowners, developers, and city planners—and are providing ongoing support—to help create a more comprehensive approach to regional planning.

As a result, a development of about 12,000 new housing units and commercial space on Oahu has been designed to minimize its coastal environmental impacts, and smart growth principles are being incorporated in development and redevelopment projects across the islands.

Past Planning

Like many communities across the country, development in Hawaii has spread out from urban centers, taking over lands traditionally used for agriculture, putting longer distances between homes, stores, and jobs, and making people dependent on their cars.

"We have made over the past 40 years every mistake in land-use planning that a community can make," says Jeremy Harris, the former mayor of Honolulu. "We've adopted laws that encouraged sprawl. . . We've ended up with horrendous traffic and pollution."

Sprawling development is blamed for everything from wasting tax money by increasing the need for new roads, new water and sewer lines, new schools, and augmented police and fire protection, to adding to rates of obesity, since the options of walking and bicycling are less practical.

"We're translating the environmental issues that we've always dealt with in terms of how it's affecting people every day."

Gordon Grau, University of Hawaii Sea Grant College Program

More roads mean more stormwater runoff, which degrades water quality. Traffic resulting from sprawling urban areas impacts air and water and is considered a significant source of carbon emissions contributing to climate change.

"The major contributors to the problems in coastal waters and watersheds have to do with what we're doing on land," Grau says. "That recognition should change the way we approach environmental problems," including water quality, ecosystem and habitat management, coastal hazard mitigation, and other Sea Grant priority issues.

Creating Sustainability

In general, smart or green growth is simply creative development strategies that can preserve natural lands and critical environmental areas, protect water and air quality, and reuse already developed land.

Smart growth neighborhoods typically are designed to have shops, offices, schools, churches, parks, and other amenities near homes so that residents and visitors have the options of walking, bicycling, taking public transportation, or driving.

A greater mix of housing can make it possible for people to live their lives in one community, from the young couple buying their first home to senior citizens looking to downsize.

"What smart growth promises, and I believe that it can and does deliver, is that balance between responsible development, which allows us to preserve open space through proper use of higher densities, while at the same time providing an increase in quality of life," says Eric Crispin, the former director of Planning and Permitting for the City of Honolulu.

The high quality of life in these communities typically makes them economically competitive, creates business opportunities, and improves the local tax base, notes Stephen Meder, director of the Center for Smart Building and Community Design and a faculty member of the University of Hawaii School of Architecture.

Meder says that smart growth's focus on reducing stormwater impacts and protecting natural environmental buffers can also help prevent flooding and lessen the impacts of coastal hazards, such as tsunamis, hurricanes, and storm surge, thereby increasing community resilience.

The features that distinguish smart growth in a community vary from place to place and even project to project, depending on the local natural and cultural resources, existing social situations, and the economic and political forces behind land development, management, and zoning.

Introducing Concepts

Soon after the Center for Smart Building and Community

Design was created in 2004, Sea Grant began working with the City and County of Honolulu, the U.S. Environmental Protection Agency's Development, Community, and Environment Division, and local developers to bring smart growth experts from across the country to the island of Oahu to introduce the concepts during a multi-day workshop.

The workshop focused on the benefits and challenges of implementing smart growth principles in two existing projects—the new development of Kapolei, where large-scale planning activities were underway, and the redevelopment of Kailua.

"We had a packed house," Meder says. "We were really fortunate that every developer building homes in the area came," as did landowners, city planners, and other stakeholders.

Fostering Change

The city continued the momentum created by the workshop by bringing the experts back for subsequent meetings, and developers in both Kapolei and Kailua revised their plans to incorporate some of the ideas presented by the team.

The workshop "definitely fostered some of the thought behind the planning of Ho'opili," says Mike Jones, president of D.R. Horton-Hawaii Division, which is planning the 11,750-home and commercial development in Kapolei.

Jones notes that D.R. Horton hired several of the experts who presented at the workshop to help design the project. As a result, Ho'opili has had extensive community involvement and plans center on mass transit and various modes of transportation

Continued on Page 9

Teaming Up to Address Stormwater along Lake Superior

When federal regulations compelled smaller municipalities and larger organizations to begin managing stormwater runoff and communicating with the public about their efforts, officials around the Lake Superior shoreline decided to take a regional approach. Their collaborative efforts have proven to be cost effective and have improved and standardized the stormwater messages reaching the public.

“Consolidating resources doesn’t just save time and money,” says Chris Kleist, the City of Duluth’s stormwater coordinator. “It allows us to work faster and share ideas more effectively.”

The Regional Stormwater Protection Team is a partnership of 26 local and regional governments, agencies, nonprofits, colleges, and universities that was formed in 2003 in response to Phase II Stormwater Regulations established by the U.S. Environmental Protection Agency. Both the Lake Superior Coastal Program and Minnesota Sea Grant Program have staff members on the team and have provided other support.

Funding and staff limitations inspired the participating agencies and organizations to sign a memorandum of understanding agreeing to share resources to protect and enhance the region’s water resources by coordinating educational programs and technical assistance.

“Instead of doing our own programs and offering separate

workshops and trainings, we all agreed to put our heads together and share our knowledge and money,” says Kleist, one of the co-chairs of the group.

The team has developed a media campaign that includes everything from brochures to three 30-second “Watershed Moment” television public service announcements. The group also hosts family-oriented Lake Superior Watershed Festivals, offers training workshops for construction and maintenance crews, and has created a live mascot, Rex, who hands out doggy bags to pet owners at various events.

Team members also contribute technical and outreach information to www.lakesuperiorstreams.org. The interactive website provides real-time water quality data from regional streams and incorporates the data into community information, classroom curricula, case studies, and tools for contractors, developers, and decision makers.

All of the group’s activities focus on strategies to protect existing resources and prevent the high costs of trying to restore water quality later, notes Kate Kubiak, conservation specialist with the South St. Louis Soil and Water Conservation District, and the other team co-chair.

While team members pay dues, more than \$225,000 in project funding has come from the coastal program over the past four years.

“One of the things that has been really valuable about the group,” says Pat Collins, program manager for

“Consolidating resources doesn’t just save time and money; it allows us to work faster and share ideas more effectively.”

Chris Kleist, City of Duluth



Rex giving some doggy bags to Pat Collins.

Minnesota’s Lake Superior Coastal Program, “is that they take advantage of the synergy that you get when you bring together different agencies and organizations that share the same goals relative to stormwater management and protection.” ❖

For more information on the Regional Stormwater Protection Team, go to www.duluthstreams.org/stormwater/rspt.html, or contact Chris Kleist at (218) 730-4130, or ckleist@duluthmn.gov, or Kate Kubiak at (218) 723-4867, or kate.kubiak@southstlouisswcd.org. You may also contact Pat Collins at (218) 834-1443, or Pat.Collins@dnr.state.mn.us.

Guide Helping Coastal Managers Communicate about Climate Change

Coastal resource managers often joke that it is the same 20 to 30 people who are engaged in environmental issues in their communities. As more and more coastal areas feel the effects of climate change, reaching a broader audience with information and inspiring action is becoming even more important.

“Many communities are struggling with how to effectively get the message out about climate change.”

Missy Stults, ICLEI – Local Governments for Sustainability

“Many communities are struggling with how to effectively get the message out about climate change,” says Missy Stults, senior program officer for ICLEI – Local Governments for Sustainability. “They are unsure of how to convey the facts or inspire the action that needs to be taken. A lot of people don’t know what’s going on.”

To help communities engage the public in their climate protection efforts, ICLEI has created an “Outreach and Communications Guide.” The guide, Stults says, can support coastal management efforts to “create successful community outreach campaigns, reach out to

local media, host climate action events, and develop materials that reflect local circumstances and inspire local climate action.”

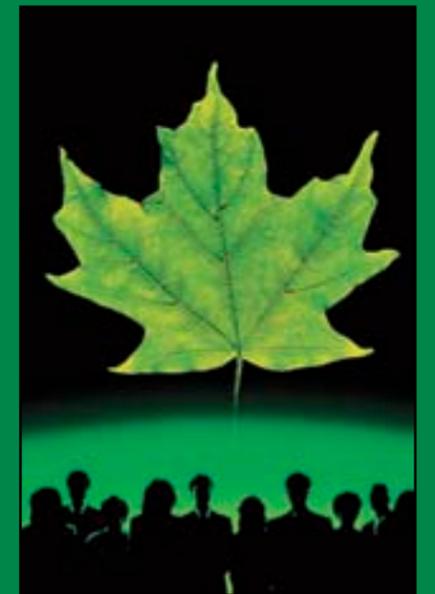
Published on-line in January, the 39-page guide contains an array of steps and methodologies for communication and outreach efforts. The guide provides information on general communications strategies, communications myths and facts, ways to identify audiences, and climate-specific communication.

The guidebook also features examples of communications strategies that have been successfully implemented in communities around the country. “That’s really the heart of the guidebook,” Stults says. “We looked to our members to find examples of what has worked.”

In addition, ten communities worked with ICLEI to help develop the guide by selecting the content focus and providing guidance and feedback. Futerra, a London-based communications company focused on sustainability and corporate responsibility, also vetted the guide.

Stults cautions that because the topic of communications is so broad, the guide focuses on ways to distribute a message but does not include information on gathering feedback from constituents.

She also notes that examples provided in the guide thus far focus on climate change mitigation efforts, where communities are working to reduce sources of greenhouse gases, but that the communications methodologies



presented would also apply to actions that managers are taking to help communities and ecosystems adapt to changing climate conditions.

“What’s nice about the guide,” Stults says, “is that it’s a living document, and we will continue putting examples on-line as our members use the guide and e-mail us stories. The guide will evolve over time.”

She adds, “The challenge is that we could spend years developing a guide on such an important topic. We had to stop and say ‘this is good enough for now,’ and I think the result is a pretty solid launching pad for engaging your community in climate protection.” ❖

To download ICLEI’s “Outreach and Communications Guide,” point your browser to www.iclei.org/action-center/engaging-your-community/outreach-and-communications-guide. For more information, you may contact Missy Stults at (617) 960-3420, ext. 203, or melissa.stults@iclei.org.

Using Climate Change Education to Empower Kids in the Gulf of Mexico

Climate change is expected to increase the severity of tropical storms and hurricanes. While no individual storm can be attributed to climate change, Hurricane Katrina illustrated the vulnerability of the Gulf Coast to extreme storm events, leaving many coastal residents—particularly children—feeling defenseless in the face of the changing climate.

“After the camp, the kids were empowered, connected, and educated, which is what you want from a project involving public outreach.”

Tom Herder, Mobile Bay National Estuary Program

Last summer, a group of 24 teenagers who experienced the devastation of Katrina firsthand went from powerless to empowered during a two-week Climate Change Camp in coastal Alabama, where they learned about the science, environmental impacts and responses, and policy questions resulting from climate change.

“We wanted to give them a proactive attitude about what they can do about climate and weather events in their future,” says Kate Graves, former Southeast Climate Program officer for the World Wildlife Fund–U.S. (WWF) and organizer of the camp, which was part of the organization’s Southeast Climate Witness Program.

While the Climate Camp was a one-time WWF event, Graves hopes that coastal resource management and other organizations will be able to take the program and reproduce it on a local level.

With funding for the camp from the Allianz Foundation for North America, Graves first developed an interdisciplinary climate change curriculum for high school classes. She worked with educators in Alabama, Louisiana, and Mississippi to promote the program and developed criteria for selecting the students. All the participants were between the ages of 15 and 18, and had been displaced by Hurricane Katrina.

During the program, the teens met with researchers from the University of South Alabama at Mobile and regional and national scientists to learn about climate change issues and the coastal ecosystem. They also participated in restoration projects organized by the Mobile Bay National Estuary Program.

“My role,” notes Tom Herder, science communicator for the Mobile Bay Estuary Program, “was to put them to work and involve them in some activity to remediate the effects of the storm.”

Herder partnered with U.S. Fish and Wildlife staff members at Bon Secour National Wildlife Refuge in southern Alabama, where half the students completed a dune-plant restoration. Two days later, the rest



Campers completing a marsh-grass restoration.

of the students completed a marsh-grass restoration in Mobile Bay.

Getting hands-on with the restoration projects “really gave the kids power over the circumstances of Katrina,” Herder says. “They got to give back some of what the storm had taken away. After the camp, the kids were empowered, connected, and educated, which is what you want from a project involving public outreach.”

“Definitely other organizations could do this program in the future,” Graves says. “We did this on a large scale because we had the opportunity, but it could be done on a much smaller scale.”

She adds, “There is value in keeping it local and helping kids understand what’s happening with climate change in their own ecosystems.” ❖

For more information on the WWF Allianz Climate Camp, point your browser to www.worldwildlife.org/climate/curriculum/item5943.html. You may also contact Kate Graves at kgraves@islandpress.org, or Tom Herder at (251) 431-6409, or therder@mobilebaynep.com.

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Continued from Page 5

options, including pedestrian and bike paths. The project also will feature a mix of housing and commercial uses.

Ripple Effect

“The workshop was a phenomenal success,” says Meder. “The success is showing a number of years later, not only in the development of Kapolei, but in other parts of the state, as well. We’re seeing the ripple effects.”

The Center for Smart Building and Community Design has gone on to provide smart growth assistance to other community groups, local governments, and developers that has resulted in planning changes and the development of new codes and ordinances addressing shoreline setbacks. Several books and manuals have been contributed to, including a coastal hazard mitigation guidebook that was used in the aftermath of Hurricane Katrina.

“Sea Grant really turned the light on in the room,” says Crispin. “They showed us that doing the same thing will only yield the same results of sprawl.”

He adds, “They showed us that there is a different and better way that can be profitable, while allowing greater quality of life and sustaining the environment at the same time.” ❖

For more information on smart growth, point your browser to www.epa.gov/smartgrowth/. For information on the Hawaii Sea Grant Center for Smart Building and Community Design, go to www.soest.hawaii.edu/seagrant/. For more information on smart growth efforts in Hawaii, contact Gordon Grau at (808) 956-7031, or sgdir@hawaii.edu, or Stephen Meder at (808) 956-7031, or smeder@hawaii.edu. For more information on the Ho’opili development, go to www.hoopilioahu.com.



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