COASTAL SERVICES

LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

SOCIAL MARKETING:
Selling Behavior Change around the Chesapeake Bay

Regulating Access to Coastal Islands in South Carolina

Looking Back to Determine the Future at Elkhorn Slough

FROM THE DIRECTOR

The well-being of our coasts is a national issue. More than 50 percent of the nation's population lives on the coast, and nearly 60 percent of the nation's gross national product comes from coastal counties. Yet we have not done a good job of representing the fact that the issues that are important for our coastal communities are important for the nation.

Part of the problem may be in how we communicate. As a coastal resource management community, we have established a familiar vocabulary full of scientific jargon and acronyms that we use to present the many issues challenging our coastlines. We have assumed that if we present the problems, people will become part of the solution.

Perhaps we haven't been communicating in simple language or with a message that gets people to act to improve the problems.

In the cover story of this edition of *Coastal Services*, you will read how coastal managers around the Chesapeake Bay are embracing commercial marketing techniques to focus their message to change people's behavior.

Effectively communicating coastal issues is even more critical as our nation—and the world—face accelerated cycles that will cause extreme events in climate and weather.

We as coastal managers need to be helping build resilient coastal communities, which include everything from infrastructure to the economy, to culture and the environment. It includes everything from disaster mitigation to sustainable ecosystems to adaptive economics.

One way to be resilient is to study and thoroughly understand an ecosystem's history in order to decide how best to adapt to the range of variability that a system naturally undergoes.

This edition also features a look at Elkhorn Slough National Estuarine Research Reserve's historical ecology project, which is helping reserve staff members plan for and set restoration goals.

The National Oceanic and Atmospheric Administration (NOAA) is examining its own history this year as it celebrates 200 years of science, service, and stewardship. To learn more about how NOAA has impacted our everyday lives throughout its history, go to http://celebrating200years.noaa.gov/. ❖

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.

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

News and Notes

Coastal Conservation and Habitat Restoration Planning Services

Protecting or restoring an ecosystem is often a complex, expensive, and controversial process. Collaborative efforts that combine the expertise of many organizations and key stakeholders represent the most effective method.

The National Oceanic and Atmospheric Administration (NOAA) believes in this approach, and the NOAA Coastal Services Center in particular is dedicated to bringing together traditional and nontraditional groups in the decision-making process. The Center also provides the expertise, training, data, and other services needed to help partners attain their conservation and restoration planning goals.

The Center's Web site showcases many of the organization's past efforts, as well as data and tools developed for the broader conservation and restoration community. This article provides an overview of the products and services available to potential partners.

TOOLS AND SERVICES

Technology and Data

The Center helps partners select and use appropriate data and technology to make their initiatives more strategic and effective. Examples include prioritization methodologies, remote sensing data, software and visualization tools, and spatial approaches using geographic information system (GIS) technology. With these tools, users can better understand landscape, seascape, and human factors and visualize potential stressors and threats.

Technology and data are also used to find solutions and prioritize conservation and restoration efforts. Maps created with remote sensing data, for example, are used to detect changes in land cover over time. This data layer can also be input into a GIS to help answer "what if" questions—what would happen if a golf course community were put at this site? Or an industrial park? GIS maps help decision makers analyze and communicate potential impacts.

Partnership Building

Amazing results can occur when nontraditional partners such as representatives from working waterfronts and commercial fishing entities band together to identify common goals and priorities.

Exploring partnership opportunities and providing the framework needed to make these unions successful is a Center specialty. Services in this arena include needs assessments, seed funding for collaborative planning, and process identification and facilitation.

Another effective means of advancing conservation and restoration techniques comes through interactions within the professional community. For this reason, the Center sponsors conference sessions, plans workshops, and provides other venues to address conservation and restoration issues and hatch new ideas and techniques.

Training

Training courses that enhance both process and technical skills are available to help the conservation and restoration community build new skills. Some course topics include project design and evaluation, facilitation and collaborative processes, GIS, and spatial analysis. The courses can be brought to the local site, and many are available via the Web.

The Center also provides topic-specific, information-based Web sites where people can learn about current projects, methods, and techniques that support successful conservation and habitat restoration planning. The sites include networking pages, best practices information, and other conservation and restoration topics. ❖

Visit the Web site, www.csc.noaa.gov/cons_rest/, to see how the NOAA Coastal Services Center can help you with your conservation and restoration needs.

Regulating Access to Coastal Islands in South Carolina

*T*here are about 3,500 marsh islands of varying size along South Carolina's coast that provide critical habitat for wildlife. But there also is interest by developers and landowners in building bridges or other forms of access to some of these islands as a first step towards their development.

After the South Carolina Supreme Court threw out part of the state's regulations for providing access to small islands in 2005, the South Carolina Department of Health and Environmental Control's Office of Ocean and Coastal Resource Management assembled a six-member committee representing diverse interest groups to provide regulatory recommendations for providing protection and reasonable access to coastal islands.

The resulting regulations provide "very concrete guidelines to apply to applications for an island bridge or dock," says Elizabeth von Kolnitz, director of coastal planning for the coastal program. "It takes the guesswork out and allows permitting staff to more effectively administer our regulatory programs."

Legal Challenge

Of the state's marsh islands, about 2,395 don't have access or some form of legal protection. The state had two regulatory approaches in place for permitting bridges to coastal islands—the transportation-projects regulation for larger islands, and the more stringent access-to-small-islands regulation for smaller, more environmentally sensitive islands.

In 1998, the coastal program received an application from LandTech of Charleston, L.L.C., for a permit to build a bridge to the 30-acre Park Island in the town of Mt. Pleasant. Deeming Park Island a small island, the coastal program considered the permit application under the access-to-small-islands regulation, and granted the permit.

The decision was subsequently appealed by nearby residents and environmental groups, who argued that although Park Island was a small island, the criteria for granting a permit for bridge access had not been met. LandTech claimed that Park Island was not a small island and that the project should have been considered under the transportation-projects regulation.

The appeal ended up with the South Carolina Supreme Court, which surprised many by nullifying the access-to-small-islands regulation, citing its "vagueness" and lack of definition of "small." The court ruled that the evaluation of all bridge permit applications defaulted to the more lenient transportation-project regulation.

Taking Initiative

The coastal program recognized that the state would benefit from comprehensive regulations for permitting coastal island access, which would require legislative approval. To prepare for this, the program examined the issues and conducted an inventory of the state's islands.

"It takes the guesswork out and allows permitting staff to more effectively administer our regulatory programs."

Elizabeth von Kolnitz,
South Carolina Department of Health and Environmental
Control's Office of Ocean and Coastal Resource Management

The state Department of Natural Resources conducted a study on the islands' ecological importance, finding that coastal islands provide critical habitat for diverse wildlife—including being home to several species of rare plants.

Coastal program staff members worked with the National Oceanic and Atmospheric Administration's (NOAA) Coastal Services Center to do an inventory of the state's marsh islands and develop a geographic information system (GIS) data layer that accurately delineates geographic features of marsh islands greater than 0.125 acres in size.

Von Kolnitz notes that island bridges also create aesthetic issues and often cross lands held in the public trust.

After the supreme court's ruling, a concurrent resolution by the South Carolina General Assembly encouraged coastal regulators to collaborate with stakeholders in developing and proposing permanent regulations.

By the People

The state coastal program assembled a six-member committee comprising diverse interest groups, including conservationists, developers, and legal professionals. The group met six times from July through September 2005 and hammered out regulatory recommendations for the state Department of Health and Environmental Control board and general assembly.

"It was tough," recalls Matt Sloan, president of the Daniel Island Company, developers of a 4,000-acre coastal island community in Charleston. "It got very heated, but we quickly found that there was a lot of common ground on this topic."

Going the Distance

The committee used the island inventory GIS layer to create a marsh island matrix to compare islands for size and distance from the mainland. This allowed the group to develop bridge permit eligibility based on size and distance.

The committee's comprehensive recommendations also included density limits and required a comprehensive review, environmental assessments, wetland preservation, buffers and enhanced stormwater plans, more restrictive septic tank requirements, and lighting restrictions. The recommendations were flexible enough to allow for special exceptions.

The committee's recommendations were unanimously approved by the Department of Health and Environmental Control's board in October 2005.

Compromise

The committee's recommendations were less warmly received when they went up for legislative review before the Committee on Agriculture, Natural Resources, and Environmental Affairs.

"Their concerns were that some things were already governed" under other regulations, von Kolnitz says. "They recommended we withdraw it and make amendments."

Requirements cut out of the compromise regulations include lighting, density limits, buffers, and septic tank and stormwater measures.

The South Carolina General Assembly passed the compromise regulations in April 2006, and they became effective on June 23, 2006. As of November 9, 2006, the coastal program had received applications for four island vehicular bridges, one pedestrian bridge, and four docks.

Changing Dynamics

"The lesson that we learned," says Sloan, "is that we didn't understand the dynamic between DHEC [Department of Health and Environmental Control] and the elected officials. . . In hindsight, had we early on gone to the legislative committee and asked what they were interested in seeing and where they were comfortable seeing the boundaries for DHEC, we would have gotten there quicker. I'm not saying it would have been better, but it would have been quicker."

"What we got," says von Kolnitz, "were still very good regulations. Some performance characteristics did get taken out, but what we did get was very good."

She adds, "We were very happy with the final regulations that passed." ❖

For more information on South Carolina's regulations of access to coastal islands, contact Elizabeth von Kolnitz at (843) 747-4323, Ext. 136, or vonkoleb@dhec.sc.gov. For more information on the stakeholders committee, contact Matt Sloan at (843) 971-3500, or matt.sloan@danielisland.com.

SOCIAL MARKETING:
Selling Behavior Change
around the Chesapeake Bay

SPRING RAINS WASH EXCESS FERTILIZER FROM OUR AREA TO THE CHESAPEAKE BAY, WHERE BLUE CRABS HAVE BEEN RAPIDLY DISAPPEARING. SO SKIP THE LAWN FERTILIZER UNTIL FALL. THE LUNCH YOU SAVE MAY BE YOUR OWN.
Find out how to keep the Blue Crabs coming at
www.chesapeakeclub.org

SAVE THE CRABS
THEN EAT 'EM

According to polls, the number of people who say they are concerned about the environment continues to rise, but their everyday behavior that could influence the environment is not changing. Coastal resource managers around the Chesapeake Bay are embracing commercial marketing techniques as a way to go beyond just raising public awareness about water-quality issues to getting people to act to improve the problem.

"The assumption has always been that if we present the problem to people, they will take it upon themselves to become part of the solution," says Gary Waugh, public relations manager with the Virginia Department of Conservation and Recreation. "With social marketing, you find the catalyst that makes that person take that step."

For the past two years, the Chesapeake Bay Program has sponsored an extensive media campaign in the metro Washington, D.C., area to prevent spring fertilizer use, which is particularly harmful to bay water quality.

The effort has been so successful that Virginia's Coastal Zone Management program is using its coastal nonpoint source funding to help bring the campaign to two of the state's largest coastal urban areas.

Reconnecting

"This is a different approach than any of us in the coastal management field have ever really taken," acknowledges Laura McKay, Virginia Coastal Zone Management Program manager.

"Most of us in the field," McKay says, "are trained in science, government, and policy. Even the way we are trained to write and communicate is formal, academic, and for a bureaucratic style that does not translate well to the general public. That could be one of the major roots of our environmental problems today is that we simply don't communicate issues in clear and compelling ways to the general public."

She adds, "I believe what we really need to do is reconnect with the rest of society and use common language that everyone can understand, and beyond that be savvy about using effective commercial marketing techniques."

Finding the Humor

The $300,000-a-year D.C. campaign asked homeowners to hold off on fertilizing their lawns until the fall to prevent the runoff from damaging the Chesapeake Bay, where crabs and oysters are already at risk.

With the slogan "Save the Crabs . . . Then Eat 'Em," the intent of the campaign, says Waugh, who helped lead the effort for the Chesapeake Bay Program as a former chair of its communication and education subcommittee, was to trade a message of guilt for a humorous appeal to the taste buds.

"The lunch you save may be your own," reads a newspaper ad that ran in the *Washington Post* and *Express*, a free publication handed out to commuters using the subway. This and similar messages also appeared on billboards in Union Station, which is heavily used by commuters from Virginia, Maryland, and Pennsylvania—all partners in the Chesapeake Bay Program.

Television advertising also was employed. One ad shows an unhappy diner biting into a sandwich of grass clippings instead of a crab cake.

The campaign also incorporated brochures, restaurant coasters, and a Web site, and enlisted a number of lawn care companies and chefs to promote the campaign.

> *"This is a different approach than any of us in the coastal management field have ever really taken."*
>
> *Laura McKay,*
> *Virginia Coastal Zone*
> *Management Program*

Join the Club

To the public, the spring campaigns were sponsored by the Chesapeake Club, rather than the Chesapeake Bay Program or a listing of all the participating government agencies and nonprofit organizations.

"This does not look like a government campaign," notes Waugh. "The Chesapeake Club is its own brand."

He adds, "We came up with the concept of the Chesapeake Club as something you would want to join, to give people a sense of ownership when they participated."

The whole campaign has a *"Southern Living* or regional lifestyle feel," Waugh says. The Web site, for instance, is lifestyle-oriented with information on "home," "places to go on the bay," and listings of the participating restaurants and lawn services.

The environmental education and campaign messages, Waugh says, are "sprinkled throughout" rather than being the focus of the message.
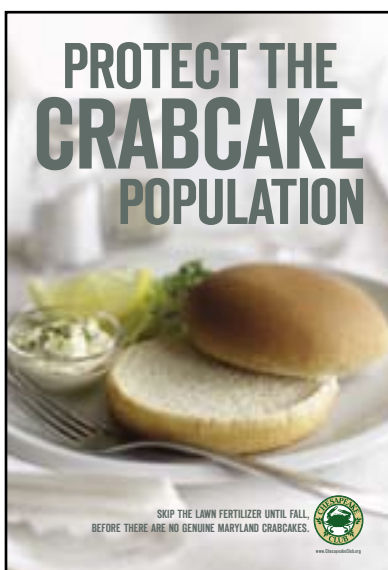
Discovering Social Marketing

Waugh had never heard of social marketing when the Chesapeake Bay Program decided to do a marketing campaign in 2001, but "we basically knew we wanted to target the audience that we'd had a hard time reaching before. We were looking for that audience that's not already engaged—the average suburban homeowner."

After several years of developing support and funding for a marketing campaign, four advertising agencies were interviewed for the job. One of the companies was the nonprofit Academy for Educational Development (AED).

Continued

Additional Information on Social Marketing

- *www.deq.virginia.gov/coastal/ neczmpps.htm* – Virginia's Coastal Zone Management Program Web site provides an Academy for Educational Development presentation on social marketing, a public relations mini-workshop, a social marketing plan starter, and suggested social marketing reading and Web sites.

- *www.deq.virginia.gov/coastal/ documents/magss06-72.pdf* – A *Virginia Coastal Zone Management* magazine article on social marketing.

- *http://aed.org/* – The Academy for Educational Development's Web site provides numerous social marketing case studies.

- *www.cbsm.com* – The Web site of Environmental Psychologist Doug McKenzie-Mohr focuses on environmental community-based social marketing. Features include an on-line guide on community-based social marketing, searchable databases of articles, downloadable reports, case studies, and an e-mail list.

- *www.social-marketing.org* – The Web site for the Social Marketing Institute provides background on social marketing, as well as case studies and information on conferences.

- *http://hsc.usf.edu/medicine/ntcsm/ TLM/index.htm* – The National Training Collaborative for Social Marketing on-line mini-course from the University of South Florida.

PROTECT THE
CRABCAKE
POPULATION

SKIP THE LAWN FERTILIZER UNTIL FALL,
BEFORE THERE ARE NO GENUINE MARYLAND CRABCAKES.

SPRING FERTILIZING
HELPS **GROW** OUR
DEPENDENCE ON
LOUISIANA

THERE'S JUST SOMETHING WRONG ABOUT
HAVING TO IMPORT CRABMEAT TO THE CHESAPEAKE.

"They were the only ones who talked about the concept of social marketing—of reaching the public with a message using the same types of techniques folks in the private sector use when marketing a product," Waugh says. "More than just using the media, this was selling behavior change rather than a product."

He says AED explained that people will change their behavior when they believe the benefit they will receive is greater than the "cost." To do this, you must understand the target audience's perceptions and responses, and develop a campaign that focuses on the benefits of their actions while minimizing the "price." You have to place the message where your audience is most likely to see it, and you must use a variety of marketing tools to reach them, using simple, consistent messages. Evaluation is a critical part of the campaign.

AED was hired for the job.

Focusing on Behavior

Changing when people fertilize their lawns was chosen as the behavior to address because nutrient reduction is one of the primary goals of the Chesapeake Bay Program, and lawn care is a large contributor to nitrogen loading in the bay.

Waugh says informal focus groups were used to determine what people value most about the bay—seafood.

The D.C. market was targeted because it was the biggest suburban market in the bay area. "We could reach roughly four million people in the market and hit all of our partner jurisdictions," Waugh explains.

Survey Says

A survey taken after the first year of the campaign found 72 percent of those contacted had seen the campaign, and 44 percent remembered its key message. Of respondents exposed to the campaign, 40 percent said they would use fertilizer in the spring, while 46 percent of respondents who were not exposed to the campaign said they would fertilize in the spring.

These results suggest the campaign was successfully raising people's awareness, says Laura McKay. "This was very dramatic. It's not the end point of behavior change, but it's a very important first step."

Getting on Board

McKay hopes to tap into this success by bringing the campaign to Richmond and Hampton Roads, the two largest media markets along the bay in Virginia. The coastal program is investing $110,000 of its coastal nonpoint funding toward the $200,000 media campaign for the two cities.

Waugh says the campaigns will be similar to the one that ran in D.C. "Frankly, we're not changing the message that much. We think it will resonate just as well and maybe even better than in D.C."

One difference is the contract with AED has expired, so the communities are being asked to step in as partners to develop the support of local restaurants and lawn care businesses.

New Approach

"This will be a new approach for us," says McKay. "We've always tried to get our message out, but we've never thought about getting it out in this particular way. I hope that this will be a breakthrough."

"My feeling is," McKay says, "given the state we are in today, we need to look at how much money we invest in science and research versus how much we invest in trying to change people's behavior. It's terribly lopsided right now."

She adds, "We don't have the luxury of time to invest huge amounts in understanding precisely how much nitrogen is coming from precisely where. We know there is too much coming from too many sources. We need to act on what we already do know." ❖

For more information on the "Save the Crabs . . . Then Eat 'Em" social marketing campaign, point your browser to www.chesapeakeclub.org/media.htm. You may also contact Laura McKay at (804) 698-4323, or laura.mckay@deq.virginia.gov—or Virginia Witmer at virginia.witmer@ deq.virginia.gov. Contact Gary Waugh at (804) 786-5045, or gary.waugh@ dcr.virginia.gov.

THE **LUNCH** YOU SAVE MAY BE YOUR OWN

PRESERVE THE RAW BAR.
HOLD OFF ON THE FERTILIZER UNTIL LATER THIS FALL.
www.ChesapeakeClub.org

Looking Back to Determine the Future at Elkhorn Slough

Those who cannot remember the past are condemned to repeat it.
George Santayana

The idea behind historical ecology is that, in order to decide today how to restore a degraded ecosystem, one must study and thoroughly understand its history to determine why and how its habitat was lost. A California National Estuarine Research Reserve is undertaking a historical ecology project to help plan for and set restoration goals.

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"Historical ecology plays a real key part in planning for future restoration and habitat management."

Eric Van Dyke,
Elkhorn Slough National
Estuarine Research Reserve

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"There's a misunderstanding among the restoration community that there's an ideal point in history to use as a reference point for restoring a site," says Eric Van Dyke, geographical ecologist with Elkhorn Slough National Estuarine Research Reserve near Monterey. "There needs to be an understanding that there is a range of variability that a system will naturally undergo. What we have to do is separate out what naturally transpired and what was caused as a result of humans."

Van Dyke and other Elkhorn Slough staff members are using a variety of historical sources to construct a geographic information system (GIS) of past environments in the watershed to determine the causes that underlie changes in habitat structures.

Big Changes

Habitat at the reserve is "changing rapidly," says Van Dyke. "Marsh vegetation is being lost, and substantial areas are changing from vegetation to mudflats or open water.

"The question asked was, 'why?'"

To get a long-term perspective on what was happening, the "historic record would have to be looked at."

Hypothesis Testing

The reserve hired Van Dyke to help conduct a historical ecology project. Van Dyke explains that historical ecology is a relatively new field of ecological study that "is really based on science."

"It's not social science; it's science looking at past evidence," he says. "You're still following the scientific method of hypothesis testing; you're just not proving it using real-time lab or fieldwork.

In beginning the reserve's project, Van Dyke reviewed work using applied historical ecology done by the U.S. Geological Survey and the San Francisco Estuary Institute.

Backwards in Time

The reserve staff members worked backwards in time, beginning with current digital orthophotographs and working their

Award-Winning Handbook Helps Stabilize Shoreline in Vermont

*I*n the rush to protect homes and roads from dangerously eroding shorelines, homeowners and even municipal officials may make uninformed decisions that can actually make the problem worse. In some cases, if the homes or roads had been built in a less erosion-prone area, the problem wouldn't exist at all.

Coastal resource managers in Vermont have developed an award-winning handbook that clearly lays out erosion-control options for city officials and lakefront residents, and provides guidance on how to plan stabilization activities.

> *"We decided to take the Monty Python approach and do something completely different."*
>
> *Jurij Homziak,*
> *Lake Champlain Sea Grant*

"Shoreline erosion is a significant threat to coastal communities in northern Lake Champlain, and sediment from erosion is a leading cause of water-quality impairment in Vermont," notes Jurij Homziak, executive director and watershed specialist for Lake Champlain Sea Grant.

The Shoreline Stabilization Handbook for Lake Champlain and Other Inland Lakes defines lake erosion issues in easy-to-understand language and evaluates 19 techniques for erosion control and stabilization. It provides detailed information on each option's cost, level of effort, environmental impact, and permitting requirements in both Vermont and New York.

The handbook resulted from discussions initiated by the Northwest Regional Planning Commission after winter ice left northern Lake Champlain with serious erosion problems, Homziak explains.

The planning commission, Lake Champlain Sea Grant, and representatives from about 30 state and federal agencies, local municipalities, and regional organizations around the lake identified the need for a comprehensive approach to shoreline stabilization.

Homziak, Northwest Regional Planning Commission Assistant Director Bonnie Waninger, and Susan Warren, aquatic biologist with the Vermont Department of Environmental Conservation's Water Quality Division, co-edited the handbook.

"We all agreed that a lot of extension handbooks just sit on people's desks," says Homziak. "We decided to take the Monty Python approach and do something completely different."

An engineering firm provided the technical information, which was reviewed by the participating groups. A copywriter was hired to translate the resulting highly technical text into reader-friendly language, and a professional graphic artist designed the publication, which features commissioned watercolors instead of photographs.

"We wanted it to be visually friendly, and we wanted it to really stand out," Homziak says.

The result, he says, is that "planners can't put it down. We've gotten as much feedback on the way the material is presented as the content."

The publication has received numerous awards, including its selection by the American Planning Association in 2006 as the outstanding planning tool.

While broadly applicable, Homziak says the approaches described in the publication may be most useful in upland areas rather than coastal.

He adds, "This may not be the standard Sea Grant area, but we have to think about the whole watershed and take a mountains-to-the-sea type of approach." ❖

To view The Shoreline Stabilization Handbook for Lake Champlain and Other Inland Lakes, point your browser to www.uvm.edu/~seagrant/extension/erosion.html. For more information, you may contact Jurij Homziak at (802) 656-0682, or Jurij.Homziak@uvm.edu.

way backwards in decadal increments while collecting a set of reference points.

The Staff "obtained, converted to digital format, georectified, mosaiced, and interpreted 26 historic maps and charts dating from 1853 to 1925, and 13 aerial photograph flights taken between 1931 and 2003," says Van Dyke.

Other sources of evidence include surveys, historic T-sheets (topographic maps), written documents, such as local newspaper accounts, and even interviews with descendants of families who lived in the area in the 1800s.

Detailed metadata were collected for each data layer.

Towards the Future

Doing the historical ecology project has changed some long-held assumptions about the impacts of old dredging and channel projects that had occurred on the reserve.

In addition, the reserve has received funding to conduct an extensive tidal wetland planning project, Van Dyke says. The result will be a management plan that "understands the changes we're dealing with," which will help improve the effectiveness of reserve habitat restoration projects.

"Historical ecology plays a real key part in planning for future restoration and habitat management," Van Dyke says.

He adds, "I would recommend it. I can't imagine any of the wetlands systems not being informed by historic evidence." ❖

For more information on Elkhorn Slough National Estuarine Research Reserve's historical ecology project, contact Eric Van Dyke at (831) 728-2822, or vandyke@elkhornslough.org.

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www.csc.noaa.gov/landcover/

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