

Sci-TEK Incorporates Traditional Ecological Knowledge

Traditional ecological knowledge (TEK) is gained from observing and experiencing the environment over time. It is often passed down from one generation to another through oral history. It focuses on the relationship between humans and nature. Though invaluable, this first-hand ecosystem information can be difficult to capture, analyze and quantify. This type of observational knowledge often takes a back seat to physical science data and modeling when management decisions are made. Instead, citizen input on government undertakings affecting the environment – like coastal restoration – is usually acquired at public meetings, which may become contentious, and where the opinions expressed by the stakeholders in attendance may not be representative of the broader affected community.

Matthew Bethel, Louisiana Sea Grant's assistant executive director of research, leads a team of physical and social scientists, including researchers at the University of New Orleans' Center for Hazards Assessment, Response and Technology (UNO-CHART) and Kansas State University's Department of Geography, who have incorporated TEK into the formula for guiding the best use of limited coastal restoration funds. They focused on the Barataria Basin in southeast Louisiana, which has experienced some of the highest rates of land loss in the region. Researchers used peer referrals collected at boat launches, marinas, seafood processing plants and community meeting places near the study area to identify the individuals who were the most knowledgeable TEK "experts" to partner with on this work. They sought local fishers most respected for having reliable, in-depth and experiential knowledge of the Barataria Basin ecosystem gained through their harvests. Ultimately, 13 resident fishers, trappers and hunters participated. These TEK experts took the research team and other collaborating agency scientists and managers on field trips by car and by boat throughout the area to provide their TEK, to learn the relevant science, and to illustrate their perspectives on coastal restoration issues. The conversations were recorded, and routes, points of interest and relevant notes and images were logged using GPS and mobile GIS technology. More than 120 hours of audio were transcribed and coded. Researchers identified themes through initial

qualitative data analysis, then reexamined the data using axial coding – a process in which information is assembled in new ways to identify the most relevant data.

Researchers identified four main issues that emerged from the TEK data analyses: ridge restoration, freshwater diversion planning, marsh creation and freshwater diversion operation. They used remote sensing, science-based data sets and GIS to produce maps that represent the local experts' TEK for restoration project prioritization and aligned it with planned restoration projects to establish feasibility and set priorities. TEK experts verified that both the interpretation of the data and the maps were accurate.

While TEK experts shared a plethora of important personal and cultural knowledge, not all of it could be incorporated.

"This was a mapping project. If it couldn't be mapped, it couldn't be included," Bethel said.

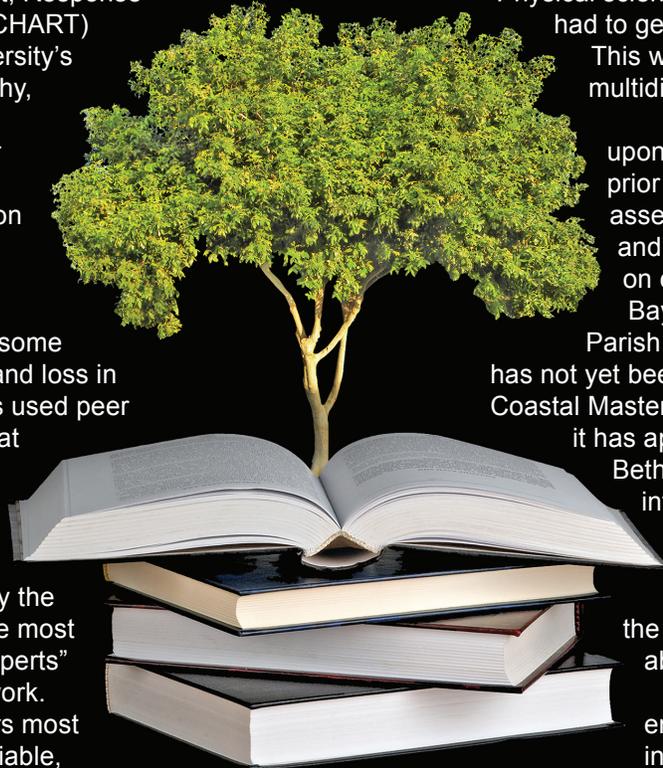
"Physical scientists and social scientists had to get into each other's heads. This work required a true multidisciplinary approach."

This endeavor built upon insights gained in the team's prior TEK work published in 2011 assessing the impacts of current and historical ecosystem change on community viability in Grand Bayou Village in Plaquemines Parish. While the Sci-TEK method has not yet been implemented in the 2017 Coastal Master Plan planning process, it has applicability in many areas.

Bethel has been contacted by interested agencies, physical and social scientists and graduate students across the country and around the world wanting to learn more about this innovative process of stakeholder engagement and knowledge integration. He also envisions the incorporation of Sci-TEK methods in Sea Grant's mission of research, education and outreach.

"We would like this to be a model for Sea Grant programs to utilize in their community engagement and stakeholder knowledge integration efforts to help inform strategic and programmatic decisions," he said. "This process can help get at stakeholder needs, issues and priorities. The method is still evolving to ensure the process developed meets the needs of the Sea Grant model, and working with marine Extension is a big part of that."

While TEK experts on the project offered the scientists a richer view of the coastal environment as



Sci-TEK

they had experienced it, Bethel noted the value of the two-way dialogue that emerged, allowing scientists to explain what they do.

“The setting was very important to elicit the conversation where we gained all this data,” Bethel explained. “It was not just taking – we shared information. We helped answer questions that the TEK experts had, such as why the state does a particular type of sampling. This two-way exchange of information helped the TEK expert collaborators become more familiar with the capabilities and limitations of scientific and geospatial data and mapping products. This new knowledge, added to their existing knowledge and experience, makes the TEK experts even better equipped to make informed recommendations regarding coastal protection and restoration activities. Part of the goal of this project was to get interested scientists out of Baton Rouge to experience that same dynamic. They would make remarks that it was a different ball game. There was sharing of information instead of shouting.”

The Sci-TEK project was funded by the Coastal Protection and Restoration Authority of Louisiana with support provided by the Louisiana Sea Grant College Program.



Louisiana Sea Grant recently reorganized its Advisory Council, and the group met in early October to learn about the program’s history and strategic initiatives. Council members concluded LSG is moving in the right direction and should stay the course in its research, extension and education efforts. Pictured, LSG and LSU AgCenter Extension agent Thomas Hymel discusses Sea Grant’s direct marketing and commercial fishing professionalism outreach initiatives. A listing of Advisory Council and NGO Advisory Council members can be found at www.laseagrant.org/about/advisory-council/.

Delcambre Port Waterfront Expansion Opens to Fishermen, Public

The community of Delcambre has a new boat launch that can handle four boats at a time, as well as a new 7,500 square-foot pavilion for its seafood and farmers market. The \$4 million project – called Bayou Carlin Cove – also includes a public fishing pier.

Louisiana Sea Grant worked with local officials in their efforts to acquire a \$3.4 million federal community development grant and \$600,000 from the Twin Parish Port District for the project. Previously, the 14-acre Bayou Carlin Cove site had no parking and could only handle one boat at a time. Now, the facility boasts enough space for multiple fishermen

to sell their catch directly to the public, and there is room for future expansion such as an RV park and boat storage warehouse.

In 2005, Hurricane Rita devastated Delcambre. It was flooded again by Hurricane Ike in 2008. Facilitated by LSG, the LSU Landscape Architecture Department and ULL Architecture and Design programs developed concept redevelopment plans for the town that were used in their grant applications.

For a video tour of the facilities, visit <http://tinyurl.com/delcambredock>.



New Delcambre boat launch.



WORKING ON WATER SUMMIT

WETLANDS DAY

SEA TO TABLE

CATCH LOUISIANA!

OCEAN COMMOTION

Fall has been a busy outreach season for Louisiana Sea Grant. Among the activities where LSG was either an event partner or host included (from top down):

1. Working on the Water Summit in St. Bernard. The event was designed to provide commercial fisherman with information about business opportunities in coastal restoration, eco-tourism and disaster response. Pictured is Louisiana Agriculture Commissioner Mike Strain addressing the crowd. Co-hosts included Meraux Foundation, Nunez Community College, TruFund, St. Bernard Department of Tourism, RPC, GNO Inc., Workforce Investment Board Planning District One, St. Bernard Chamber of Commerce, Accion, Small Business Administration, Lafourche/Terrebonne Soil and Water Conservation District, NOLA Vibe, LSU AgCenter, Louisiana Small Business Development Center, St. Bernard Parish Government, St. Bernard Economic Development Foundation, St. Bernard Port/Harbor and Terminal District, Save Louisiana Coalition, St. Bernard Seafood and Farmers Market, Louisiana Seafood Promotion and Marketing Board, and St. Bernard Sheriff's Office.

2. Wetlands Day at Bogue Chitto State Park in Franklinton. Louisiana Sea Grant personnel joined employees from the Louisiana Department of Wildlife and Fisheries, 4-H and St. Tammany Mosquito Control to conduct educational activities for the event. Elementary school students learned how critters living in the muddy bottoms of waterways are indicators of the health of the pond or stream, how mosquitos breed and are controlled, how different bird species feed, what fish can be found in the wetlands, and students went on a self-guided nature scavenger hunt.

3. Sea to Table in both the Greater New Orleans Area and Baton Rouge. The four events, held at Whole Foods Markets, provided consumers with information on how to purchase quality, fresh seafood; pair seafood with wines; and provided participants with samples of Gulf seafood. Additional hosts were the Audubon Nature Institute GULF, LSU AgCenter and Whole Foods.

4. Catch Louisiana! at the Bucktown Marina in Metairie. New York Times journalist and seafood writer Paul Greenberg (pictured) headlined the event, which showcased a bounty from Lake Pontchartrain. The event promoted locally caught seafood, and participants learned about the role, quality and availability of regional seafood, while sampling shrimp and other species harvested from the lake. Co-hosts included the Lake Pontchartrain Basin Foundation, Louisiana Department of Wildlife and Fisheries, Lake Pontchartrain Fishermen's Association, and the Louisiana Seafood Promotion and Marketing Board.

5. Ocean Commotion in Baton Rouge. The 17th Annual Ocean Commotion attracted nearly 2,000 K-8 graders to the Pete Maravich Assembly Center on the LSU campus. The event offers students an opportunity to learn about a host of issues that range far beyond ocean-exclusive themes in a lively, hands-on learning environment. Exhibit topics included coastal marshes and wetlands, invasive species, local ecosystems, boating safety and Louisiana geology and wildlife. More than 60 presenters from private business, universities around the state, government agencies, non-profit and private educational organizations participated.

Resilient Communities Projects Announced

Louisiana Sea Grant announced it is funding five new projects concentrating on the program's Resilient Communities focus area. One is a research project and the others are scientific synthesis efforts – where existing data is used to develop new models to explain or test a problem. Below is a synopsis of the two-year projects, along with a list of the investigators and their affiliations.

Research Project:

Preparing Local Governments to Be Financially Resilient to Natural Disasters

Matt Fannin, LSU AgCenter, principal investigator
Ashok Mishra, LSU AgCenter, associate investigator
Carol Franze, Louisiana Sea Grant/LSU AgCenter, associate investigator

When tropical storms and other coastal disasters strike, debris cleanup and payment for the cleanup takes a backseat to making sure citizens have food, water and shelter. Because of this, debris removal and cleanup decisions are often made without fully understanding the financial costs and consequences – resulting in wasted time and money. This project, which builds on a previous Sea Grant-funded project, will develop a debris financing and cleanup procurement decision-making tool to be used by local governments in their disaster management planning.

Synthesis Projects:

A Framework to Connect Climate Adaptation Alternatives to Coastal Louisiana Communities

Jeff Carney, LSU Coastal Sustainability Studio (CSS), principal investigator
Emily Powell, LSU CSS, co-principal investigator
Patrick Michaels, LSU CSS, associate investigator
Jacob Mitchell, LSU CSS, associate investigator

The compound effects of land loss, sea level rise and climate change continue to pose a serious threat to communities across coastal Louisiana. Levees and other structural measures are one method of addressing flooding and storm surge. This project, however, will focus on alternative non-structural methods that are equally as useful and beneficial for coping with flooding risks. The investigators will demonstrate a range of techniques and options communities can adopt, and they will develop a tool to help communities easily assess their risks and identify potential non-structural solutions.

Building Community Resilience to a Changing Louisiana Coastline through Restoration of Key Ecosystem Components

Tim Carruthers, The Water Institute of the Gulf (TWIG), principal investigator
Scott Hemmerling, TWIG, co-principal investigator

Human populations in coastal areas are vulnerable to storm surge, sea level rise and climate change, yet Louisiana coastal communities have persisted. Among the state's broader stakeholder communities there

is a lack of information on the potential benefits of ecosystem-based restoration options at a parish, basin or coast-wide scale that could enhance local community resilience. The objective of this project is to develop a suite of resources to inform a broader range of community stakeholders, scientists, coastal managers and decision makers to fill that knowledge gap.

Comprehensive and Integrated Louisiana Water Code Project

Mark Davis, Tulane University, principal investigator
Jim Wilkins, Louisiana Sea Grant, co-principal investigator
Christopher Dalborn, Tulane University, associate investigator

Rising seas, collapsing coasts and ever-evolving demands on water resources for energy development, coastal restoration and healthy coastal ecosystems, as well as increasing human consumption and a myriad of other uses, are forcing the state to reassess its relationship with water. Though relatively water rich, Louisiana shares its water resources and stewardship challenges with other states and the nation. The objective of this project is to develop a model water legal code for the State of Louisiana that is grounded in both traditional water rights and responsibilities – public and private – and that is responsive to evolving dynamics of water supplies and use.

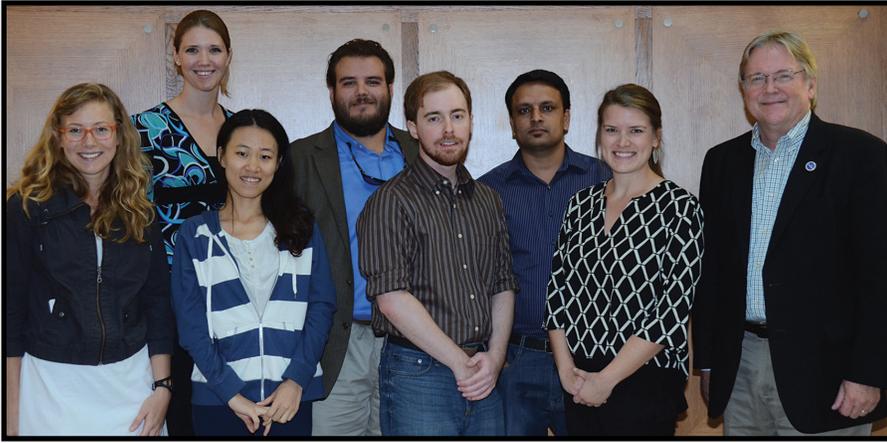
A Synthesis of Resilience Measurement Methods of Indices

Nina Lam, LSU, principal investigator
Yi Qiang, LSU, associate investigator

Coastal zones throughout the globe are facing a critical challenge: How to develop and promote resilience for coastal communities in light of the various coastal threats? Community resilience analysis is a transparent way to represent the complex human/environment interaction. This project will focus on: 1) What are the definitions and semantics of resilience across disciplines and hazards? 2) What are the state-of-the-art community resilience measurement methods regarding natural hazards? 3) Which indicators have been used? 4) What are the most representative indicators? From this effort, a Web-based application will be developed for researchers and general users to choose a definition, indicator and method to calculate resilience of coastal Louisiana communities.

The resilience proposal solicitation process began in June, with a submission deadline of Aug. 6. An external review panel reviewed all proposals submitted by the deadline and advised Louisiana Sea Grant on which proposals to consider for funding. Proposals were reviewed for the following attributes: scientific merit, utility and anticipated benefits; relevance to Louisiana Sea Grant's program priorities; extension and outreach plans; investigator qualifications; and budget requirements.

Students Present Research in Three Minutes or Less



Seven LSU graduate students conducting research relevant to coastal issues competed for travel funding by explaining their research in no more than 180 seconds and with no more than three PowerPoint slides. Coastal Communications Clips, hosted by Louisiana Sea Grant, was held in early October. Participating students were (from left) Grace Cagle, Victoria Barker, Weiqi Chen, Clay Tucker, Gil Ouellette, Puspa Adhikari and Kristin Foss. Also pictured is Robert Twilley, Louisiana Sea Grant executive director. Winners were Cagle, Barker and Ouelette. Each received \$500 in conference travel funds.

“Coastal Communications Clips focuses on the ability of students to consolidate their ideas and to crystalize their research discoveries,” said Twilley. “This exercise develops students’ capacities to effectively explain their research significance in common language.”

Louisiana Sea Grant plans to hold CCC each fall. And the competition may be expanded to other campuses throughout South Louisiana.

For more information, visit www.laseagrants.org/outreach/ladia/coastal-communication-clips/.

Commercial Fishing Workshops Slated



A number of workshops and training events for commercial fishermen are scheduled in 2015 as part of the Louisiana Fisheries Forward program, a partnership between Louisiana Sea Grant (LSG), the LSU AgCenter and the Louisiana Department of Wildlife and Fisheries.

“Commercial fishermen who participate in these outreach activities will see the benefit,” said Robert Twilley, LSG executive director. “The overall goal is to improve the economic viability and resource stewardship of Louisiana’s commercial fishing industry.”

The workshops will provide opportunities for hands-on learning and are free to all participants. Events scheduled to date are:

- Louisiana Fisheries Forward Summit – March 11 – Houma
- Vermilion Bay Area Shrimpers Summit – March 24 – Delcambre
- Vermilion Bay Area Crabbers Summit – March 25 – Delcambre
- Terrebonne Parish Dock Day – April 7 – Dulac
- Lafourche Parish Dock Day – April 22 – Larose

For more details on the workshops, as well as for information on other training events, visit www.laseagrants.org/resources/calendar/.

Message from the Executive Director

application (ap-li-key-shun)

1. the act of putting to a special use or purpose
2. the special use or purpose to which something is put
3. the quality of being usable for a particular purpose or in a special way; relevance

Over the past year, I’ve used this forum to discuss LaDIA (Discovery-Integration-Application). The program’s objective is to create stronger connections, primarily through better communication, among university researchers and residents of Louisiana’s coastal communities.

We’ve talked previously about the Discovery and Integration aspects of LaDIA. This column I want to talk about Application, which you can see demonstrated in-part, in the cover story about how researchers are using traditional ecological knowledge (TEK) in their work to enrich feedback from local communities.

Moreover, one of the pillars of Sea Grant is applied research – seeking solutions to real-world issues faced by our state, our communities and our citizens. Examples include the recent research synthesis projects Louisiana Sea Grant funded, as well as future omnibus projects we’re currently soliciting.

But application isn’t limited to research and researchers. Business owners are applying what they learn at Sea Grant-sponsored ecotourism workshops to boost their bottom line. Fishermen are improving their revenue stream by using best practices and new technologies they discover through Sea Grant Extension efforts. And middle school pupils are teaching fellow students about coastal stewardship and species at events like Ocean Commotion.

Throughout its history, Louisiana Sea Grant has funded research, conducted outreach and extended knowledge relevant to our state’s needs – building the application we need for a sustainable future. We pledge to continue that mission in application, and enhance it with LaDIA.

Robert Twilley, Ph.D.

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Statements of Interest Being Accepted

Louisiana Sea Grant (LSG) is accepting statements of interest for the program's 2016-18 omnibus funding cycle. Submitting a statement of interest is the first step in applying for Sea Grant research funding.

"Faculty at Louisiana academic institutions and marine research laboratories of higher education can apply," said Robert Twilley, LSG executive director. "Graduate student support, as well as extension and outreach, are important elements in both preliminary and full proposals, and they – along with relevance to Sea Grant strategic research priorities – are factors in the selection process," he added.

Research focus areas and areas of research emphasis include:

- Healthy Coastal Ecosystems – Generating, synthesizing and communicating credible information from the physical, environmental and social sciences to support ecosystem-based approaches to managing and restoring the coastal environment.
- Resilient Communities and Economies – Supporting vibrant and resilient coastal communities and economies that include working waterfronts, an abundance of recreation and tourism opportunities, and coastal access for all citizens.
- Sustainable Fisheries and Aquaculture – Supporting a safe and sustainable supply of seafood to meet public demand.

The deadline for statement of interest submission is Feb. 6, 2015. An external panel will review statements, and the principal investigators of projects identified as best meeting Louisiana Sea Grant's research objectives will be asked to submit full proposals. Another external panel will then review full proposals for scientific merit.

Project funding averages about \$80,000 per year for up to two years. The funding cycle is from Feb. 1, 2016, through Jan. 31, 2018.

Additional information, guidelines and forms for statement of interest submission can be found at www.laseagrant.org/research/rfp/.