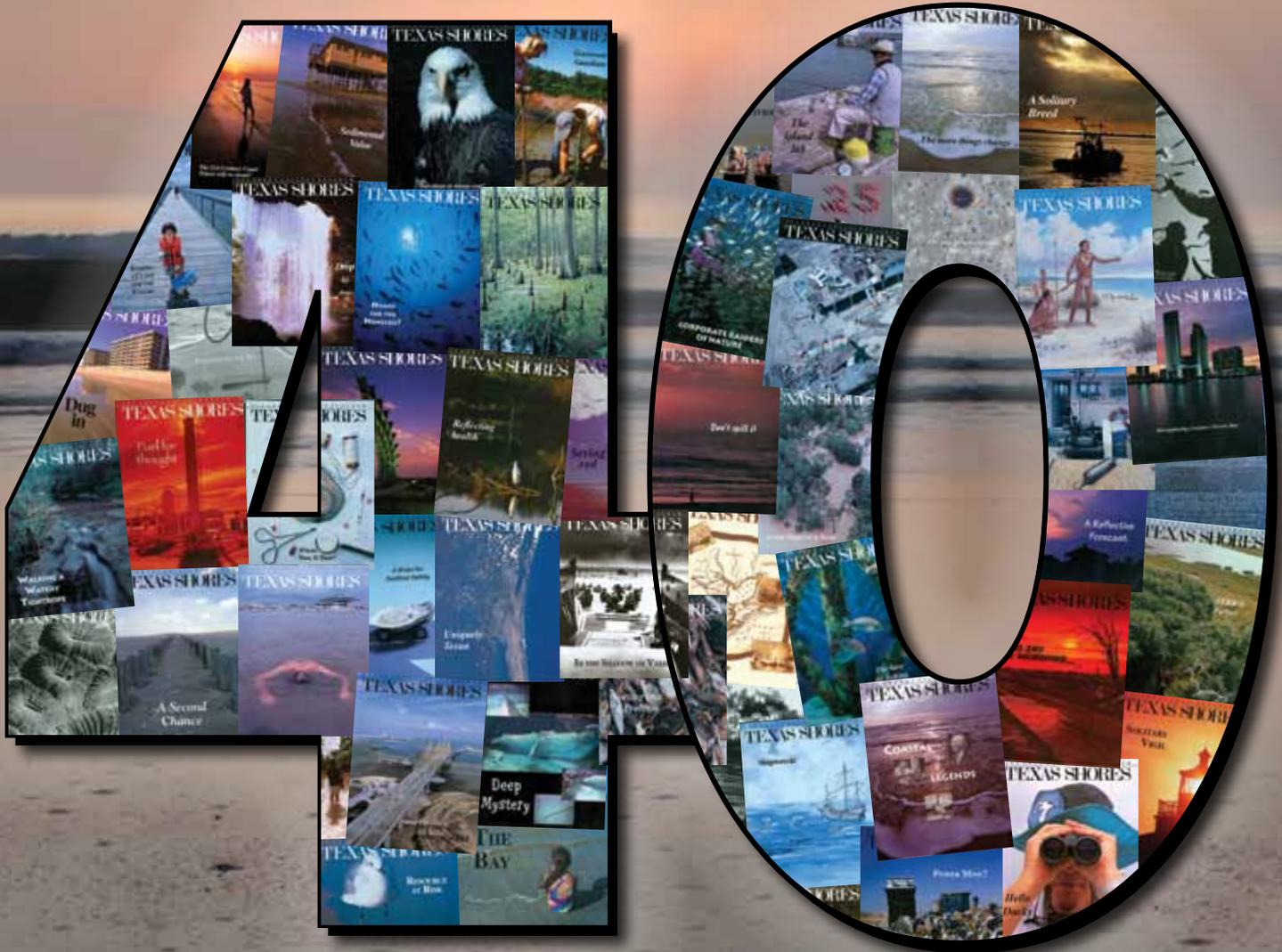


# Texas Shores

Winter 2012

Texas Sea Grant College Program



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TEXAS SHORES is published quarterly by the Texas Sea Grant College Program in an effort to promote a better understanding of the Texas marine environment. Sea Grant is a partnership of university, government and industry focusing on marine research, education and outreach. Nationally, Sea Grant began in 1966 with the passage of the Sea Grant Program and College Act. Patterned after the Land Grant Act of the 1860s, the Sea Grant concept is a broad-based scientific effort to better the world for all those living in and out of the sea.

In 1968, Texas A&M University was among the nation's first six institutional award recipients. Three years later the school was designated a Sea Grant College.

Sea Grant is a matching funds program. The Texas Sea Grant College Program itself is made possible through an institutional award from the National Oceanic and Atmospheric Administration, U.S. Department of Commerce, as well as appropriations from the Texas Legislature and local governments.

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# Sea Grant

Texas



# Ruby year for a Texas gem

By Mike L. Downey

The Texas Sea Grant College Program is as unique now as it was when it was founded 40 years ago. The Sea Grant concept was conceived outside the box of traditional governmental agencies in 1966 and it has remained ... well ... out there.

Sea Grant owes its uniqueness to its ability to combine research, outreach and education into one entity. Every state that borders an ocean or the Great Lakes, as well as Puerto Rico, has at least one Sea Grant Program. Sea Grant's founding legislation required that state programs be associated with institutes of higher education so Sea Grant's people could capture the academic capacities of the universities in which they were housed, and use the knowledge there to help average citizens make wise decisions about using and conserving their coastal and marine resources.

September 2011 through August 2012 is Texas Sea Grant's 40th year of service to Texans — its ruby anniversary. During the past four decades, Texas Sea Grant (TXSG) has helped Texans learn from and about their coastal waters while nurturing stewardship for these precious ecosystems. The program has funded research on coastal erosion, pollution, endangered sea turtles, freshwater inflows, hurricanes, coastal development and harmful algal blooms, to



Photo courtesy Dr. John C. Calboun, Jr.

## Texas Sea Grant College designation ceremony

name a few issues; through its outreach program it started the forerunner to the Texas Adopt-A-Beach Program, staked Christmas trees to beaches in order to form artificial dunes, helped reunite boat owners with vessels blown inland by Hurricane Ike, saved Texas shrimpers millions of dollars in fuel costs and collected more than 800 miles of used fishing line that would have otherwise endangered aquatic and terrestrial wildlife.

Yet, TXSG remains one of the best-kept secrets in the state, and the National Sea Grant Network suffers from a similar anonymity, begging the most commonly asked question, "What is Sea Grant?"

There is no short answer, which lends to the program's identity crisis. Strictly speaking, TXSG is a partnership of university, government and industry focusing on marine

research, education and outreach. It receives about 70 percent of its funding through the National Sea Grant Program, which is part of the National Oceanic and Atmospheric Administration (NOAA). The Texas Legislature and Texas A&M University, where the program's headquarters is located, provide the other 30 percent of TXSG's budget. TXSG is considered a non-academic research center within the College of Geosciences at Texas A&M. The program's outreach efforts include a communications program and an exten-

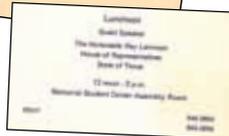
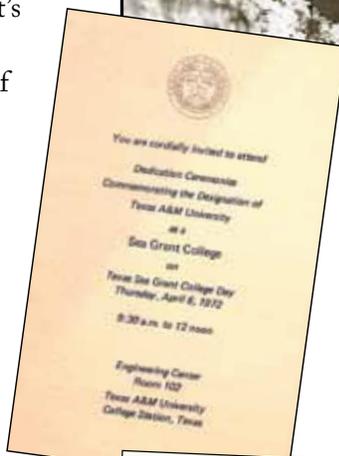


Photo courtesy Dr. John C. Calboun, Jr.

In 1971, Four universities are the first to achieve Sea Grant College status: Oregon State University, University of Rhode Island, Texas A&M University, and University of Washington

sion program comprising specialists in a number of fields and county coastal and marine resources agents who bring science to Texans in partnership with the Texas AgriLife Extension Service and commissioners courts in participating coastal counties.

Without doubt, TXSG has been a very good investment for Texas Legislators. The program has consistently brought in \$6 of outside funding for every \$1 in state money it receives and awarded more than \$50 million in grants to the top marine researchers at 24 Texas universities and institutions. The average grant amounts have risen from about \$20,000 per project per year to almost \$100,000 per project per year.

The lifeblood of TXSG is encouraging Texans to volunteer for marine-related projects. During 2011 alone, the program marshaled volunteers who contributed an astonishing 55,000 hours of work, valued at almost \$1.2 million dollars. These activities ranged from restoring more than 5,000 acres of dunes and wetlands to planting almost 32,400 plants to developing eight miles of nature trails. Volunteers also restored degraded ecosystems in 30 coastal communities.

Between the program's research, outreach and education activities, there are few Texans who have not directly or indirectly benefitted from TXSG's existence — a creation attributable not to the federal government, but a man as visionary as Sea Grant itself.

## Land Grant goes to Sea

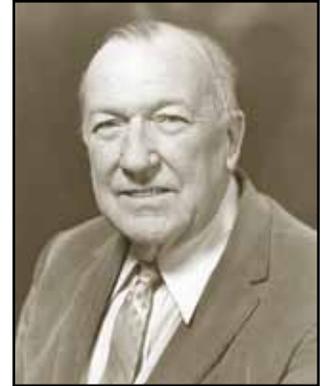
The Sea Grant concept was born of the fertile, questioning mind of Dr. Athelstan Spilhaus in the early 1960s.



Sunset at a local pier in Port Aransas

Photo by Tanya Baker

Spilhaus, an internationally renowned inventor, author and scientist, was at the time the Dean of the Institute of Technology at the University of Minnesota — a Land Grant College. Spilhaus was well aware that institutions like the University of Minnesota (and Texas A&M) were developed through the Morrill Acts of 1862 and 1890, and the Smith-Lever Act of 1914.



Dr. Athelstan Spilhaus

The Morrill Acts provided that states could receive federal lands provided they used the land (or proceeds from its sale) to create agricultural and mechanical arts colleges. The Smith-Lever Act created cooperative extension programs with the intent of disseminating knowledge gained at Land Grant institutions to the farmers, ranchers and homemakers who could best use the information.

Spilhaus saw similarities between people who struggled to work the land in the mid-1800s and people who struggled to make their living from the sea in the 1960s. The fishermen were trying to protect declining fish stocks from encroachment by world leaders in fishing like Russia, Norway, China, Peru and Japan. Simply trying to safeguard the fish populations would not be sufficient. Spilhaus reasoned that the solution was in better knowledge of the resource and improved production methods, which would require a multi-faceted approach to the situation.

“Why, to promote the relationship between academic, state, federal and industrial institutions in fisheries, do we not do what wise men had done for the better cultivation of the land a century ago?” Spilhaus asked the assembled crowd during his 1963 keynote address to the American Fisheries Society. “Why not have ‘Sea Grant Colleges?’”

Spilhaus reflected on the thoughts that led to his historic words 33 years later, during an interview he gave to *Texas Shores* magazine in 1996 for a story on TXSG's 25th Anniversary.

“Everyone involved with marine issues at that time worried about the relationship between industry, government and the universities,” he said a little less than two years before his death. “Land Grant Colleges had taken engineering, botany and academic subjects out of the colleges and put them to work on land. That proved to be so successful in bringing government, academia and the farmers together, why not have a Sea Grant Program? I said something during my address that caught everyone’s fancy — instead of land-based county agents, we would have county agents in hip boots carrying their knowledge to fishermen on trawlers and fishing vessels.”

For certain, Spilhaus’ keynote address made a deep impression on Dr. Saul Saila, professor of Oceanography at the University of Rhode Island (URI). Saila thought the Sea Grant concept was so great that he convinced Rhode Island Senator Claiborne Pell (best known today for founding the university educational grant system that bears his name) to look into the possibility of getting a Sea Grant Program for URI.

“It wasn’t long before Claiborne Pell called, but I didn’t know who he was,” Spilhaus said during his 1996 interview. “When he said he was the senator from Rhode Island, I remarked that he had a Land Grant College (URI) there. ‘Yes, we do,’ he said. ‘But you don’t have any land,’ I said. ‘Sea Grant is a natural for you.’ He became enthusiastic and that was the beginning of my thinking of taking it further.”

Pell and Rep. Paul Rodgers of Florida became ardent supporters of the Sea Grant idea. They found a strong ally in Texas Congressman Olin Teague, whose district included the area around Texas A&M, and favorable public sentiment toward science in the relatively few years since Sputnik’s 1957 launch. As historian John Miloy noted in his book, *Creating the College of the Sea: The Origin of the Sea Grant Program*, “During the Sixties the public was acutely aware of science and technology, and oceanography became an important field of interest. It had not always been that way.”

With the backing of academics like Spilhaus, support from influential politicians like Pell, Rogers and Teague, and favorable public opinion, the National Sea Grant



Rhode Island Senator Claiborne Pell

College and Program Act passed Congress and was signed into law by President Lyndon Johnson on October 15, 1966, a scant three years after its first public mention.

The fledgling Sea Grant Program was nestled in the National Science Foundation and its first advisory panel chosen. Among the panel members was Dr. John C. Calhoun Jr. who was Texas A&M Vice President and the Texas A&M University System’s Vice Chancellor for Programs.

Calhoun is largely responsible for Texas A&M being one of the nation’s original Sea Grant Colleges and he served as TXSG’s first director — not bad for a petroleum engineer.

The Sea Grant advisory panel was charged with reviewing university proposals from across the nation to determine where the first Sea Grant funds would be distributed in the late 1960s. From his vantage point on the panel, Calhoun saw serious problems with Texas A&M’s proposal. He had a heightened awareness of marine issues gained from his service as science advisor to U.S. Secretary of the Interior Stuart Udall from 1963 to 1965.

“I thought the proposal that Texas A&M submitted was doomed for failure, with a focus on the Department of Oceanography rather than on the university as a whole,” Calhoun, now in his 90s and retired from Texas A&M since 1983, said in an email interview. “The A&M proposal in no way reflected bringing an entire university concern to bear on issues of the marine environment.”

He took that news to legendary Texas A&M University President and System Chancellor Earl Rudder.

“Mr. Rudder’s response was typical of many of his responses when I would bring up an issue for his discussion. He said, in effect, to do what I needed to do to solve the problem,” Calhoun said.

He resigned from the NSF advisory panel because he didn’t think it was appropriate to remain while making the case for Texas A&M to be one of the original Sea Grant grantees with himself as its designated director (a position he held first from 1968-1972 and again from 1974-1976). In the mid-1960s there was no program office at the university to launch such broad issues like Sea Grant for the university. However, Calhoun’s A&M



Dr. John C. Calhoun Jr.

System office did oversee programs like water resources and the Gulf University Research Consortium (GURC), he recalled.

“Realistically then, seeing no other place at A&M for a broad focus such as envisioned by the Sea Grant concept, I decided I had to undertake the Sea Grant directorship myself,” Calhoun said.

With Calhoun’s guidance, Texas A&M submitted a second and ultimately successful proposal that made it one of the first six universities to receive Sea Grant funds in 1969. In 1971 Texas A&M became one of the first four universities in the nation to have its Sea Grant efforts gain status as an institutional program.

The second proposal owed its success in large part to its inclusion of the university’s Marine Biology Laboratory in Galveston and its driving force, Dr. Sammy Ray. The laboratory’s established research and education programs matched well with Sea Grant’s mission and, combined with the university’s oceanography programs, gave Texas A&M an edge in the Sea Grant sweepstakes.

“We served a definite purpose,” Ray said on the occasion of TXSG’s 25th Anniversary. “We were already doing what Sea Grant wanted to do. We provided much of the ammunition used for writing the proposal to get Sea Grant at Texas A&M because we gave them instant programs. Fisheries and aquaculture were where we really got our start and we put our best foot forward for Sea Grant.”

TXSG would return the favor, helping Ray turn a small, poorly funded laboratory on the Gulf of Mexico into Texas A&M University at Galveston (TAMUG).

## The school that Sammy built

In the late 1960s, the Marine Biology Laboratory was running on a budget of \$25,000 per year, “and \$4,000 of that was used to pay the light bill,” said Ray, now Professor Emeritus of Marine Biology and one of the world’s foremost oyster experts. “We couldn’t even afford a Xerox machine. We ran copies on an old mimeograph.”

There had been attempts to close the lab and Ray admits he had considered leaving the island to join an out-of-state university, but he elected to stick it out in Galveston. It proved to be a fortuitous decision.

“Once we meshed with Texas Sea Grant, thanks to John Calhoun, funding for the marine lab increased drastically,” Ray said. “We received funding for facilities and support for our programs. Texas Sea Grant gave research funds to various researchers doing work in Galveston who used the lab as their headquarters. Their funding helped

us get more support from other places and really increased the activity at our Fort Crockett campus.

“I would venture to say that we wouldn’t have what we have in Galveston today if Sea Grant had not come along,” Ray said. “Their funding became the core of the marine sciences section of Texas A&M at Galveston.”

The 92-year-old Ray continues to work in his laboratory every day, advancing the science of oyster biology he began studying in the 1950s. “Any day I don’t do research is not a good day,” he said.

TXSG funding enabled him to launch his Oyster Sentinel website (<http://www.oystersentinel.org/>) that uses the eastern oyster, *Crassostrea virginica*, to monitor the environmental health of estuaries along the Gulf of Mexico from Texas to Florida.

In addition to his groundbreaking work with oysters, Ray is best known for his summer Sea Camp program, a hands-on marine adventure for students aged 10-16, long sponsored by TAMUG and TXSG.

“Sea Camp is the best thing I’ve done despite all my science,” Ray said. “Since 1986, I’ve only missed one day in June and July with those 40 to 60 kids because I had to speak in Washington, D.C.”

Some of his campers have ended up attending TAMUG.

“I didn’t intend it to be a recruiting tool,” Ray said. “But anytime I can talk to kids, I tell them education is the key to getting out of where you are and to where you want to be.”



Dr. Sammy Ray

Photo by Stephan Myers

TXSG excels at communicating marine science to the general public – making it understandable to Texans through efforts like the Floating Classroom Program and the now-revived *Texas Shores* magazine, believes Dr. Larry McKinney, executive director of the Harte Research Institute for Gulf of Mexico Studies and current chair of TXSG’s advisory panel.

“I routinely ordered extra issues of *Texas Shores* for its focus on the Texas coast,” McKinney said. “It was useful with legislators and other groups.”

TXSG has a key role bringing marine scientists together to address problems, he said, adding that the program provides a fundamental service to the academic community by providing funding for applied science rather than basic science research.

“By providing funding, Texas Sea Grant finds scientists to help answer questions in the marine environment,” McKinney said.

Among the more innovative projects funded by TXSG is a one-of-a-kind web-based coastal atlas detailing a multitude of facets found along the more than 3,300 miles of Texas coast and available to the public for free.

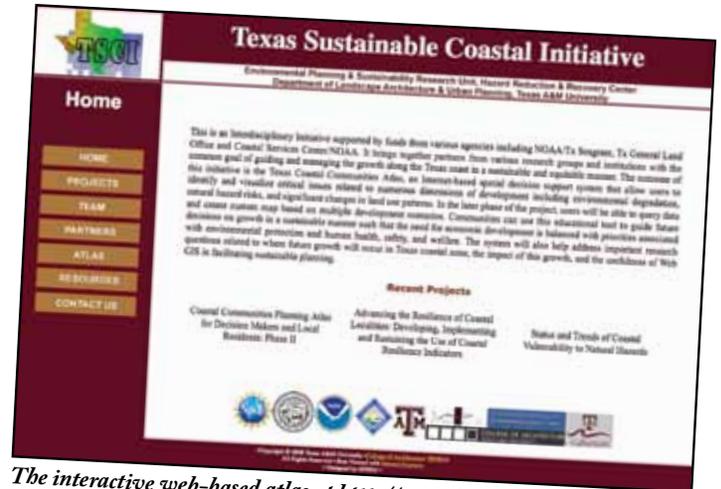
The Texas Coastal Communities Atlas was developed over a six-year period by Dr. Samuel Brody, professor of marine sciences at TAMUG, where he also heads the Center for Texas Beaches and Shores (CTBS). The CTBS is dedicated to the conservation and protection of the Texas’ shorelines, bays and waterways through research in cooperation with government and private sector agencies.

The interactive web-based atlas (<http://coastalatlus.tamug.edu/>) allows anyone to access, free of charge, more than 100 layers of data about the Texas coast. The comprehensive database, which contains information like demographics, flood zones, and even the number and locations of helipads, can project “what-if” scenarios based on proposed development plans to reveal potential problems like erosion.

“We wanted a platform for scientific research that was put together in a way that someone could browse on the Internet,” Brody said.

The unique project started with a meeting in College Station between TXSG’s late associate director, Ralph Rayburn, Brody and then-director Dr. Robert Stickney.

“Ralph asked about an innovative future to connect citizens with research,” Brody recalled, so Brody pitched his idea of a coastal atlas, something that already existed in a large binder, but he told them he wanted it to be web based.



The interactive web-based atlas at <http://coastalatlus.tamug.edu>

Over the next few years, Brody was able to leverage his TXSG funding to get more grants from the Texas General Land Office, NOAA and others. His team created the software and the computer programming that would become the online coastal website. He hired Texas A&M students “on the cutting edge to make it all happen,” Brody said.

“The system combines computer programming with GIS (Global Information Systems), so everyone had to be cross-trained,” Brody noted. “At the time, there wasn’t any off-the-shelf software to develop this infrastructure.”

Brody’s distinctive creative team included students from China, Texas, Indonesia, and Korea. Brody believes that cultural diversity led to a more pioneering project.

“All those diverse disciplines and differences helped; we had lots of arguments,” Brody recalled. “Now those students are professors and industry leaders; they all got great jobs.”

Brody noted that applied research like the coastal atlas is a challenge to get funding for, “but it makes a difference in people’s lives.”

## The garden that Bright built

Dr. Steve Gittings faced a bleak financial situation in 1992, as the first program manager for the newly created Flower Garden Banks National Marine Sanctuary (FGBNMS). There was little money in his meager budget to do the things required to manage the northernmost coral reefs in the U.S. and pay for a place to manage from. He had spent most of his first budget maintaining nine mooring buoys at the sanctuary, located about 100 miles south of the Texas-Louisiana border, but was struggling to find office space where he could put the furniture he’d

acquired after it had been abandoned and donated by an oil company.

TXSG's director at the time, Dr. Thomas Bright, came to Gittings' rescue.

"Texas Sea Grant put me up in a cubbyhole for a couple of years," Gittings said, who served as program manager until 1998. "Tom and Sea Grant really saved my life then; it was very generous."



Photo courtesy FGBNMS

Dr. Thomas Bright

Bright's munificence was by no means surprising; it was merely his latest deed in an ongoing effort to nurture the FGBNMS and Gittings — Bright's student and a budding scientist.

Bright had been conducting research at the Flower Garden during the 20 years leading up to the area's designation as a marine sanctuary. As recounted in a history of the sanctuary posted on the FGBNMS website:

*Dr. Bright and his graduate students at Texas A&M University worked steadily to explore the banks and conduct research that would ultimately form much of the knowledge base for managing the resources. Not content to merely collect data, Dr. Bright took an active role in seeking protected status for the Flower Garden Banks. When researchers captured an anchoring incident on video, he made certain the video became a catalyst in the designation process. Considered by many to be the 'father' of the sanctuary, Dr. Bright was not about to allow a minor issue like funding impede its success. As Director of Texas Sea Grant, he established a partnership with the fledgling sanctuary. Part of Sea Grant's contribution to the partnership included free office space in its College Station facility during the sanctuary's first year. Although it may seem an odd location for a marine protected area's base of operations, it actually helped solidify the sanctuary's close ties with the research community.*

Gittings, now science coordinator for the nation's national marine sanctuaries, forged his working relationship with Bright and TXSG in the mid-1980s, when he was still a graduate student.

TXSG published his field guide to barnacles in 1986, and it was Bright who convinced Gittings to do research on a damaged coral reef. "That became my Ph.D.

study, which ultimately got me my job at Flower Garden Banks," Gittings said.

TXSG's marine agents helped Gittings make contacts with various organizations that eventually allowed him to leverage his federal money in a way that effectively doubled his budget each. The agents also gave Gittings many helpful hints.

"The agents were great people, and through them, I learned enough to get the job done," he said.

## Agent 001

As with their Land Grant counterparts, the Texas Sea Grant Extension (TXSGE) program's county agents and specialists have a long history of taking applied research results and transferring them to stakeholders who can best use the information, and it all began with Joe Surovik.

In 1971, Surovik left his long-time position developing catfish ponds with the U.S. Department of Agriculture's Soil Conservation Service to take a job as Calhoun County Marine Agent — the first marine agent position in the country — with the fledgling TXSG.

"It was an opportunity to work for Texas A&M. I didn't know what to do, but I was a graduate of Texas A&M, and we're supposed to know everything, so I took it," laughed Surovik, who retired in 1995 after 24 years with TXSG and now runs a fishing guide service out of Port O'Connor, Texas. "I thought this was going to be the first government agency that would really serve the people they represent, the Texas coastal fishing community."

As Surovik recalls, the first constituent he spoke with was not very impressed with this new breed of county agent.

"Captain Howard Lewis was sitting on the back of his boat, the *Bookie Doodle*, working on a shrimp net. I introduced myself and said I was going to learn about their industry, help solve their problems, and improve their quality of life" Surovik said. "Capt. Lewis replied that he did what he wanted to do every day, and how are you going to improve on that?"

Surovik decided on the spot to make Lewis



Joe Surovik

the first member of his marine advisory committee, also the first one of its kind formed by a TXSG agent. He built his committee as he traveled his county, talking to people and periodically asking individuals to join.

“We met once a month,” Surovik said. “I’d get information from them and then we’d use it. Every day was a new day to me.”

In the early days of his work, Surovik spent a great deal of time getting to know the shrimp fishermen. Long-time Sea Grant Fisheries Specialist Gary Graham also was part of that early effort with the commercial seafood industry, Surovik said.

“We spent a lot of time with shrimpers’ gear, like improving the net’s design to catch more shrimp” Surovik said. The new Sea Grant agent also suggested ways for shrimpers to increase the quality of their catch, like using ice to preserve the shrimp better. Getting the shrimpers to heed his advice was not always an easy sell.

“Shrimpers saw me as the ‘government man,’ so it was a heck of a challenge,” Surovik said.

During the late 1970s and into the early 1980s, Surovik found himself thrust into the midst of violent competition between groups of Vietnamese and Texas shrimpers fighting over fishing grounds. The casualties included a friend of Surovik’s — a crabber who was shot to death — and a number of destroyed shrimp boats.

“There were wars between these groups, and I had to walk the fence between all of them waving a white flag,” Surovik said.

Eventually, getting the fishermen involved with the community began to improve the relationship between not only TXSG and community members, but between the shrimpers themselves.

“The shrimpers didn’t mingle well back then,” Surovik said. “If you fished out of Port O’Connor, you didn’t hang out with the fishermen that were out of Port Lavaca. Even though these two groups fished much of the same area, and shared similar circumstances, they never thought about working together to improve their situation.”

Surovik hosted a meeting in Port Lavaca between local fishermen and NOAA representatives to talk about the purpose of TXSG, discuss the problems the fishermen were facing and explore ways to improve their businesses.

“This meeting brought all the shrimpers together under a common focus. I helped them to work together to help themselves,” Surovik said. “Getting them to understand the possibility that they could work together for the benefit of all helped ease the wars between the groups.”

Surovik also left an indelible mark of sorts in Brazoria County, where TXSG lobbied successfully to create its third county marine agent position. Surovik thought the job would be perfect for a friend of his, the man who was

chairman of Surovik’s own county advisory committee — an intelligent and affable fish house manager and part-time preacher named Charles Moss.

A friend once remarked that Charles Moss’ greatest quality — the one that made him a natural county marine agent — was his genuine love of and concern for people. His passion for the Texas coast and affection for people were evident in everything he did during the quarter century he was Brazoria County’s marine agent.

Moss is credited with saving the county at least \$750,000 during his tenure by finding inexpensive solutions to large problems, like rallying volunteers (largely youth groups) to

collect discarded Christmas trees and then stake the trees down on Brazoria County beaches, where they caught blowing sand and formed artificial dunes that countered beach erosion.

Texas owes its Adopt-A-Beach Program to Moss’ artificial dune project. As Moss told the story during an interview in 2005, just two years before his death, “One year we ran out of Christmas trees and we said to the kids, ‘Don’t waste your time out here. Here are some plastic sacks, let’s clean up the area.’”

At the same time, Moss had been taking local 4-H Club members to three beaches, each characterized by varying degrees of human impact – from almost none to heavily used. The kids divided the beach into grids, collected all of the items within the grids that must have



Texas shrimper  
*Texas Sea Grant file photo*

been left by humans and then entered the data into a computer to track their findings.

When Garry Mauro took office as Texas Land Commissioner in 1982, he wanted to implement a statewide beach cleanup program. He used Moss' trash characterization and collection projects as an organizational model, and he had the good sense to recruit Moss to serve on the task force that developed the framework for the Adopt-A-Beach Program.

Moss refused to claim credit for the Adopt-A-Beach Program, but it was clearly his idea. To this day, Adopt-A-Beach volunteers catalogue the trash they collect — 8,100 tons to date — just as Moss' volunteers did.

Moss had an affinity for teaching children. He introduced about 2,000 children each year to the wonders of coastal marshes without ever leaving their classrooms. He did so with his mini-marsh, a compilation of a small plastic wading pool, several gallon jugs of saltwater, bundles of marsh grasses, chunks of mud and whatever fish crabs and shrimp he could beg off local fishermen.

Moss would tote his portable marsh into Brazoria County schools, set it up in an open space and delight students with lessons on what marshes mean to the general ecology.

He also lobbied for and won a place for beach safety training during "Safety Town," a required course for every child planning to attend a Brazoria County school. Safety Town originally taught students about the local fire and police departments and other aspects of how to remain safe, but Moss expanded the lessons to teach things like "the most dangerous critter on the beach is an automob-

ile," or "how water moves so they understood undertow and what a wave does and how it works," Moss said.

Moss had a way of teaching children in terms that helped them remember the lessons, said Rich Tillman, the man who replaced Moss following his 1996 retirement.

"To teach kids to wear shoes at the beach to prevent getting cut, Charles' saying was, 'Shoes don't bleed,'" Tillman said. "It worked because little kids hate the sight of blood."

Tillman, who first joined TXSG in 1983 as marine agent in Aransas and San Patricio counties, continued many of Moss' programs because they were so successful.

"I picked up Charlie's *Dunes Day* project of putting Christmas trees on the beach to control erosion," said Tillman, who retired in 2010. "The project required a thousand trees per mile of beach, and with 21 miles of beach, that's a lot of trees. The beach erosion rate is higher on the coastal area without barrier islands. It takes lots of volunteer effort to keep the beaches."

### 'My office is the road'

Gary Graham has set the gold standard for what it means to be a TXSGE staffer. For more than 40 years, TXSG's Fisheries Specialist has worked with Texas' commercial fishermen, usually one-on-one at a dock or aboard a boat, to help them adopt the newest gear, comply with the most recent regulations or navigate the latest contentious issue.

He was instrumental in helping shrimpers around the Gulf of Mexico find, test and install turtle excluder



*Texas Sea Grant file photo*

*Charles Moss demonstrates his mini-marsh to Brazoria County elementary school students*

and bycatch reduction devices (TEDs and BRDs) that did their respective jobs the most efficiently while allowing the smallest amount of shrimp loss. More recently, Graham's research into more hydrodynamic fishing gear has helped Texas shrimpers save 2.4 million gallons of fuel, valued at \$5.7 million, in 2010 alone. During the past three years, the Texas shrimp fleet saved about 7.3 million gallons of fuel valued at \$17.7 million, and it realized additional savings through the less frequent need to change oil or complete major engine overhauls. Had this gear not been utilized, many vessels would have been parked at the docks because they would have been too expensive to operate, costing about 200 people their jobs.

Throughout his career, Graham has set the example of the type of caring, committed service to Texans that is now the hallmark of the TXSGE program — a quality that cannot be cultivated sitting behind a desk.

“I spend a lot of time in the field,” Graham said. “I like that. My office is the road. After 41 years, I still get excited about the people I work with.”

Graham’s reputation and expertise has pulled him in many directions over the decades, and now is no different. Although he’s semi-retired and officially works just 50 percent time, he continues to be one of the busiest people at TXSG.

As 2011 was coming to a close, Graham found himself on the road again, this time to ensure that shrimpers along the Gulf coast continue using TEDs as prescribed by federal law. A TED is essentially a metal grate installed at an angle in a shrimp net to prevent sea turtles from being caught and possibly killed. The space between the bars of the grate allows shrimp to pass through the TED and into the back of the net. Turtles are too large to fit between the bars. When they contact the bars, the angle of the TED helps direct the turtles in the direction of an escape flap in the net.

Shrimpers were adamantly opposed to TEDs in the early 1980s, when the federal government first mandated them, because they were seen as just a hole in the net where shrimp could escape. Graham knew that the shrimping industry was going to be forced to install the devices and unless shrimpers participated in the process, they would also be forced to use whatever gear the government selected.

He partnered with late Georgia Sea Grant specialist Dave Harrington and several cooperating shrimpers to test not only the best design for a TED, but also the best place within a net to put it. In the end, the group modified equipment that was already used by shrimpers to exclude jellyfish.

“That modification is used today,”



Photo by Jim Hiney

Marine Fisheries Specialist, Gary Graham, shows shrimp fishing gear to TXSG’s 2012 John A. Knauss Marine Policy Fellows

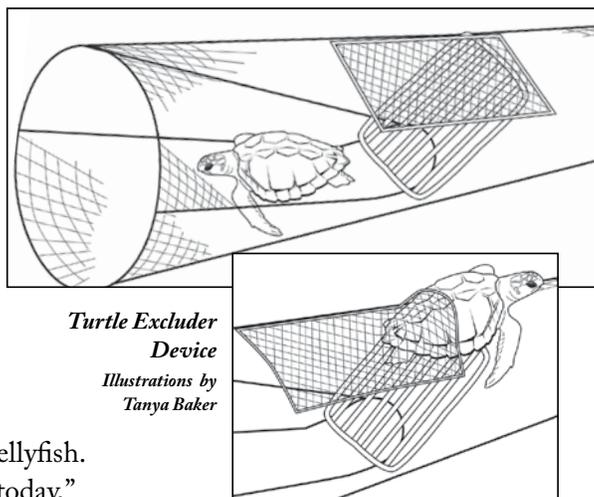
Graham said proudly. “Cooperation with TEDs has to be collaboration; it has to be an exchange.”

Graham used his collaborative cooperation model again as the specter of federally mandated BRDs arose. BRDs are similar to TEDs, but they are designed to decrease the amount of sea life other than shrimp — the fish and other species collectively known as “unintended catch” — that wind up in shrimp nets.

“We’d hold a workshop on TEDs or BRDs or something else, but then each shrimper would ask you to look at his gear,” Graham said. “I’ve found the less efficient but most effective way to get things done is to be on the waterfront one-on-one.”

Time has proven that Graham’s approach works. In 1990, he was a member of a National Academy of Sciences committee that found just 740 Kemp’s ridley sea turtle nests at their main nesting beach at Rancho Nuevo, Mexico. At an average of just over three nests dug per turtle, that meant about 250 females had come ashore to lay eggs. Graham found himself wondering at that time if the turtles had a large enough gene pool remaining to ensure survival of the species.

“This year, 9,000 turtles were sighted in the same area in one day,” Graham said. “That’s what keeps



Turtle Excluder Device  
Illustrations by Tanya Baker



*Photo by Jim Hiney*

**Texas Gulf shrimp**

me going. Thank God I lived to see that recovery taking place, to see a species on the brink of extinction and to rebound.”

Most recently, Gulf of Mexico fisheries — predominantly the shrimp industry — found itself cast in a bad light that was not of its own making. The Deepwater Horizon oil spill spewed almost 5 million barrels of oil into the Gulf of Mexico, contaminating not only the Gulf’s waters, floor and some coastline, but also the integrity of its seafood. “We were bombarded with inquiries about the safety and quality of Gulf shrimp,” said Chuck Anderson, retail marketing manager with Philly Seafood. “There are still news stories and blogs that question the safety of seafood from the Gulf of Mexico. There is much mystery and misinformation out there about seafood.”

TXSG stepped in with its Harvest Open Waters (HOW) program, which focused on preventing oil-tainted seafood from reaching the marketplace. HOW centered on a series of workshops that trained seafood producers, buyers and state agency representatives to detect by smell extremely small amounts of oil in seafood.

“The HOW program developed by Texas Sea Grant was instrumental in our all-out campaign to assure corporate seafood buyers, seafood managers, and chefs across the USA that Texas shrimp were safe,” Anderson said.

“Through the HOW program, our clients were able to educate their seafood managers, chefs and end consumers about what was really happening during the Gulf oil spill. Our customers were appreciative of the timely and detailed information we provided, which we received from Texas Sea Grant.”

Philly Seafood, a family-owned business that operates a fleet of 37 shrimp boats and employs 150 Texans, continues to put HOW labels on its products to reassure its clients (Philly is Texas grocery giant HEB’s primary supplier of Gulf shrimp) that its commitment to quality control is ongoing.

“Texas Sea Grant was a lifesaver,” Anderson said. “It provided timely and ongoing updates about what was being done to ensure seafood safety. Texas Sea Grant responded to the BP oil spill quickly because it was so important. I am sure they put on hold many other projects they were working on at the time.”

**A big blow... literally**

Hurricane Ike in 2008 had “pretty much destroyed” the Galveston Island State Park, said Julie Massey, the Texas Sea Grant Coastal and Marine Resources Agent for Galveston County.

The 2,000-acre park was covered with debris, and the visitor’s center was wrecked. TPWD, which operates the state parks, predicted it would take seven to 10 years and



*Photo courtesy Julie Massey*

*A few of Julie Massey’s Master Naturalist volunteers replant a dune as part of their restoration efforts*

\$12 million to open the park again. Galveston Island State Park is not just another state park; of the 125 state parks, it is one of the most popular.

“Seven to 10 years — the volunteers and the community said that was just unacceptable,” Massey said.

The 183-member Galveston Bay Area Texas Master Naturalists, working with the Friends of the Galveston Island State Park and other volunteer groups, helped to restore the park so it was able to open to the public again in an astonishing six months. Massey, who is the Master Naturalists’ adviser and their self-described “cheerleader,” said the group worked with TPWD personnel at the park, replanting the dunes and constructing dune fencing. “Now the state is doing a plan for the new development of the park, and the Master Naturalists are contributing to the planning process.”

The group also is involved in education projects. Every summer Master Naturalist volunteers and the Friends of Galveston Island State Park conduct Camp Wild, a weeklong day camp for 65 elementary-age students. “We have people who take off work and use their vacation time to help with the camp,” Massey said. The camp participants go kayaking, fishing and birding, do beach exploration, dissect owl pellets, fish and squid, and learn about insects.

Massey and the Master Naturalists also teach a four-day mini-Master Naturalists course for public school teachers to bring more natural resource lessons into the classroom.

“We need to engage the next generation and introduce them to our coastal resources so they value them,” Massey said. “We sometimes have stipends so there’s no charge for the teachers, and I’ve received comments from them that it is the best training they’ve ever attended.”

The group’s other projects include conducting Kemp’s ridley sea turtle nest monitoring in cooperation with Texas A&M University-Galveston, restoring wetlands to support TXSG Coastal Community Development Specialist John Jacob’s projects, and monitoring water quality as part of the Texas Stream Team, a statewide monitoring program. “The Master Naturalists started doing this when funding for programs to do water quality monitoring were cut in Galveston County. The Master Naturalists stepped up to fill in the gap,” Massey said.

Over the past 10 years, the steady work of these volunteers across her county has totaled 191,000 service hours at a value of more than \$4 million.



Photo by Rhonda Cummins

*Terrie Looney helped crab fishermen in her counties apply for federal aid in the wake of Hurricane Ike*

Hurricane Ike affected more than Galveston State Park, and — like Massey — two other enterprising TXSG county coastal and marine resources agents were able to assist those who were hit hard by the storm.

TXSG extension agents are not emergency first responders, but when Hurricane Ike slammed into the Texas coast in 2008, two coastal and marine resources agents crafted a unique — and award-winning — response that was a boon to nearly three dozen boat owners.

Terrie Looney, the agent for Jefferson and Chambers counties, and Rhonda Cummins, the agent for Calhoun County, teamed up in the aftermath of the hurricane to try to help Texans on the upper coast.

“Sea Grant marine agents didn’t have an official role, but we brainstormed what to do,” Looney said.

Cummins, who had recently left Galveston Island after eight years there to take the county agent job in Port Lavaca, was still invested in the Galveston community but wasn’t in a position to provide aid there after Ike. “Calhoun County wasn’t greatly affected by the storm, but I felt like I had to help somebody, so I called Terrie, and she said to come on up. It was one of those times where you don’t know what else to do.”

As someone who had lived on a boat for 12 years — seven of them in Galveston — Cummins was concerned about the many storm-tossed boats she saw in media coverage and while checking areas of Jefferson and Chambers counties with Looney and Looney’s husband. “As a boat owner, I was thinking, ‘These are people like me who are worried about their boats that they can’t get to,’ so Terrie

and I cooked up the idea to tag these inland boats and track them back to the owners.”

For several days, they took photographs of hull identification numbers, noted GPS locations, left business cards and attempted to contact owners with help from TPWD. In time, they were able to document and return 30 vessels to their owners, “although in some cases, it was just a part,” Looney said.

Their biggest success story was a 27-foot sailboat found four miles inland in a pasture among some trees but relatively undamaged. Cummins thought she saw a mast poking through the trees, “so I tramped through the field, and there it was.” The owner turned out to be a grandfather who had the boat at Crystal Beach and had planned to teach his grandchildren how to sail on it. He was later able to retrieve his boat and return it to the water.

“Hurricane Ike is always going to be a cornerstone of my career,” Cummins said. “It was one of those situations where you don’t know what to do, but you have to do something. I did what I could and helped as much as I was able.”

Looney’s efforts didn’t end with the boat owner identification project — she remained busy for six months after Hurricane Ike made landfall. “It was 18-hour days, seven days a week for months. We finally had to cut back to 12-hour days, six days a week.”

The recovery effort led to the eventual rebuilding of several crab houses and boathouses, the marina, dock spaces, the fire department and restaurants. There are still houses abandoned from the 2008 hurricane, still homes with roof damage, still some people as of September living in Federal Emergency Management Administration

(FEMA) trailers, she said, “but life goes on and you continue to go forward. You fix what you can. We’re semi-back to normal.”

For their boat tagging effort and other projects that provided assistance after Hurricane Ike, Cummins and Looney received the National Assembly of Sea Grant Extension Program Leaders’ Superior Outreach Award. TXSG’s Galveston County Agent Julie Massey and Seafood Specialist Mike Haby also received the award for separate efforts: Massey for her role in helping clean up Galveston Island State Park after the storm and Haby for the work he did in assessing damage to the Texas oyster fishing industry.

Cummins said she appreciated the recognition, but her goal was to help people who needed it, and of more importance to her is what to do the next time a hurricane hits the coast. “We need an organized plan, a clearer set of procedures, when we go into an area after a hurricane,” she said. “We proved that we can fill the gaps to help our traditional clientele better than anyone else can. With some organization, we can do that kind of work after every storm, not just Ike.”

Back in Calhoun County, Cummins, a former high school math teacher, has begun working with middle school students on a boat-building project that engages them in teambuilding and problem-solving while showing them “how to use math for a real reason and to work with tools using their hands and heads.” During the school year, seventh-grade students at Port Lavaca’s Our Lady of the Gulf Catholic School built a boxy wooden puddle duck racer. Cummins later taught them boating skills using the simple boat they constructed and other vessels on the county’s inland bays during their eighth-grade year, helping them learn to appreciate their



*Photo by Terrie Looney*  
**Rbonda Cummins catalogs a boat blown inland by Hurricane Ike**



*Photo by Terrie Looney*

**Boat displaced during hurricane Ike**

home's natural resources in the process. She has also repeated the process with a local 4-H group, and teaches kayaking to youth and adult groups.

Her other informal educational projects include a low-power AM radio station that can be heard along the six-mile stretch between Magnolia Beach and Indianola. "You can tune in your car radio as you drive down the beach and learn by listening, just like in some of the national parks." Volunteers write the scripts, which focus on the marine environment of the Lavaca and Matagorda Bay area: the ship channel, boating safety, plants and marine life, and local history.

Like Cummins, Looney is also a former teacher who sees marine education as one of her principal roles. She teaches a two-week class about environmental issues for public school teachers and conducts Camp Seaport, an annual program for 20 Port Arthur students a year that focuses on the coast, marine industry and career opportunities available in their community. At Lamar University, Looney works with the JASON Project, a program geared to get students in the fourth through eighth grades involved in science through hands-on training and real world discovery. Almost 10,000 students attended this year's event.

She also is the regional coordinator for the National Ocean Sciences Bowl, a college-bowl style competition for high school students that focuses on marine and coastal science. TXSG hosts the two Texas regional NOSB competitions, the Dolphin Challenge for the



Photo by Jim Hiney

**Karma docked in Corpus Christi**

northern part of the state, held in Galveston, and the Loggerhead Challenge, the competition held in Corpus Christi for the southern part of the state. Winners from the 23 regional competitions around the country meet in the spring at the national competition.

One of her other marine education efforts is with the Waterborne Education Center in Chambers County, which does hands-on science training on the water and in the marsh. Looney said the center used to have two vessels for use, but Hurricane Ike took one, so only the 45-foot Moss Bluff — a retired Coast Guard buoy tender — is still used for educational trips.

Further down the coast, TXSG provides its own on-the-water educational experience for students who wouldn't otherwise have the opportunity.

## A Classroom afloat

Education permeates TXSG at all levels, and its Floating Classroom Program is a prime example of the program's success. Since 2001, when the first group went out on the 57-foot former working shrimp boat, the *Karma* has welcomed more than 45,000 students aboard for a hands-on program that includes lessons on everything from wildlife to water quality to marine transportation and industry.

Environmental Quality Specialist Dr. Russ Miget is largely responsible for TXSG obtaining the boat and converting it for educational use, taking the idea from a similar program operated at the University of Texas Marine Science Institute in Port Aransas. "I knew what these people had, and I was envious," he said.



Photo by Jim Hiney

**Team members collaborate during a National Ocean Sciences Bowl regional competition in College Station**



Texas Sea Grant file photo

*A naturalist teaches students about marine science on the back deck of the Karma*

His opportunity came in 1999 when Virginia Corn, the widow of shrimp boat Captain Rick Corn, whom Miget had known personally and professionally, offered to sell Corn's boat to TXSG for half its value. With help from a Texas General Land Office Coastal Management Program grant, the program bought the vessel. A year in a shipyard brought the boat up to U.S. Coast Guard safety standards to take schoolchildren out onto the water; meanwhile, Miget was busy with other preparations. "I developed a number of tests and activities, all aligned with state educational curricula. Our program is built around the logistics of the schools."

A typical school bus carries 50 students, but the *Karma* can only carry 25 at a time, so the program also established a shoreside learning center. While half of a group was on the water for a two-hour trip, the other half was engaged with demonstrations and experiments. When the *Karma* returned, the students would swap places.

For the first 10 years, the Floating Classroom was berthed in Matagorda and directed by Marine Education Specialist Willie Younger, who is credited by Miget for establishing the program's reputation. Now retired, Younger looked back fondly on his years on the *Karma*.

One of his favorites stories includes a special teaching moment involving an endangered species. Returning to port with the shrimp net in the water to harvest fish for the students to observe, they hauled up something heavy and bulky that they first thought was a truck tire, not uncommon for the Gulf Intracoastal Waterway. "But when it broke the surface we saw it was a rare biological catch — we had netted an endangered Kemp's ridley sea

turtle about two feet wide and sadly missing a front flipper." The program's marine educators had, not 90 minutes earlier, discussed the co-dependent nature of predatory-prey relationships in the pre-cruise orientation.

"This capture of a turtle with a flipper bitten off by its only non-human enemy, the shark, provided poignant emphasis to a key part of the class' voyage of discovery," Younger said.

He also recalled a less-serious memory, when an eel they had netted escaped his grasp and landed on the shoulders of a young girl in front of him. "She not only squealed loud enough to wake the dead, she made a flatfooted leap which, if she'd been a bit closer to the railing, would have cast her overboard."

When Younger retired in 2009 after 18 years with TXSG, the program saw an opportunity to move the *Karma* to an area with a larger population to serve more students. In its new berth in Corpus Christi, the boat serves about 4,200 area students a year, ranging from fourth grade to high school, compared to roughly 2,000 participants a year in Matagorda, and dockside activities now can incorporate trips to local fisheries or the Texas State Aquarium. The *Karma* still serves Matagorda, however, with a weeklong stay at its former homeport each year to serve the students there, and travels to other ports along the coast to offer its services.

On the boat, students collect and observe marine life from microscopic plankton to adult fish, crabs and shrimp, and learn about salinity, density and heat capacity. The marine educators also exploit other teaching opportunities during the trip, from a passing cargo vessel to a pod of dolphins.

Miget said he has found the students to be full of attention on the boat trips, something he feels is really making a difference. "I don't think I've had a single kid say anything negative, and I've had hundreds of letters from school kids about these trips being the coolest things they've done. We have kids from Corpus Christi sometimes who have lived two blocks from the water and have never been on it."

While Younger was running the Floating Classroom Program, he was also part of another success story that had ramifications not just for Texas but the entire nation.

## A BIG stone's throw from disaster

The demise of the Gulf Intracoastal Waterway (GIWW) along the Texas coast in the late 1980s — and its more than \$35 billion in worth and 145,000 jobs — was averted in part by Younger's tenacious efforts.



*Willie Younger*

At the time, Younger was working to stop Sargent Beach in Matagorda County from eroding. It is one of the few places along the Texas coast where the GIWW, an inland canal system stretching from Florida to Mexico, is not protected by a barrier island. Although the narrow strip of beach was the only thing between the GIWW and the rough waters of the Gulf of Mexico, Younger said that he found a lack of understanding of the depth of the danger from the Intracoastal Waterway being breached by the Gulf.

During his investigations on how to protect the beach and the GIWW, he approached the U.S. Army Corps of Engineers, who are responsible for the nation's marine-related infrastructure.

"The Corps doesn't initiate anything; they can act only through Congressional mandate," Younger said. However, studies by the Corps and others had shown that the beach was eroding at 60 feet per year, so in 20 years the beach would be gone, he said, and with it the use of the GIWW.

Younger took his appeal to the Gulf Intracoastal Canal Association and the Texas Department of Commerce, whose representatives actually stopped his presentation. "We would give presentations with photos showing the beach was less than 200 feet in some places, and they would say they hoped we solved our problem with Sargent Beach. They thought it was just a beach problem, and they didn't see the concern was with the Intracoastal Waterway."

He said he then tried to get the shipping and petrochemical companies interested, but hit apathy and resistance. Other attempts included trying to persuade Congressman Max Sweeney to sponsor a conference looking at the GIWW issue. Eventually, with the behind-the-scenes help of Texas Senator Lloyd Bentsen, a conference was organized that brought together federal agencies such as the Coast Guard, the Department of Transportation, the Corps of Engineers, and other interested parties.

"Things begin to happen after that."

Younger continued his efforts. He sought support from the Victoria Barge Canal Association, which represents the small canal in Texas that connects to the GIWW. The group arranged for petrochemical representatives to lunch at a restaurant on the canal. "As they were walking up these stairs to the restaurant on the banks of the canal, one said, gosh, he could put his foot in the Gulf of Mexico. They immediately went back and started making calls to Washington, D.C."

More events unfolded following that visit, including a helicopter flight over the GIWW along the Texas coast by the undersecretary of the Corps of Engineers, and the Valero Energy Corporation released a statement that the company would be bankrupt in three weeks if the GIWW were breached at Sargent Beach, he said. "From then, it was reaching the right people to get the 20-year process into an eight-year one with bids and plans."

Younger persevered and the result was a solution that saved both Sargent Beach and the GIWW — construction of a eight-foot-thick revetment wall, 7.8 miles long and comprising more than 80,000 five-ton granite rocks 30 feet high.

His actions are just one example of TXSG's initiative in spotting problems and working to find solutions that support marine and coastal industries. The program's efforts to help the shrimp industry navigate through rough economic waters is another.

## A light in the 'darkest days'

In the early 2000s, record levels of low-priced, imported shrimp were destroying a once-vibrant industry.

"Operators were literally watching their businesses evaporate," said TXSG Seafood Marketing Specialist Mike Haby. "The time period between 2001 and 2005 were about the darkest days in the economic history of the shrimp fishery."



*Mike Haby*

In September 2003, Haby submitted a petition to allow Texas commercial fishermen to be eligible for the United States Department of Agriculture (USDA) Trade Adjustment Assistance for Farmers (TAA) program. The purpose of TAA is to help agricultural producers adjust



*Photo by Stephan Myers*

*TXSG Fisheries Specialist Gary Graham (right) works with Texas Parks and Wildlife staff on bycatch reduction devices*

to import competition by providing technical assistance, retraining, education and cash benefits.

Haby recalled that he had less than three weeks to pull together the application. “We were lucky to get the petition in.”

His efforts paid off. The Foreign Agricultural Service approved the petition Haby prepared, giving individual shrimp fishermen the opportunity to apply for program benefits. Shortly after receiving approval, Haby worked with USDA to expand program benefits from boat owners to non-owning captains and crew members who also shared production risk. Then, beginning in 2004, TXSG began a series of quality improvement training workshops, which were required for the fishermen to qualify for any cash benefits under TAA. An additional challenge was reaching the large number of shrimpers who speak only Vietnamese or Spanish, in addition to English-language presentations. “From Port Arthur to Port Isabel, we trained 2,200 people in 10 days,” Haby said.

Under TAA, cash benefits of up to \$10,000 were available to qualifying fishermen for losses from 2002 and 2003, with actual awards based on two factors: pounds of shrimp caught in the “program year” and a per-pound payment based on a comparison of dockside prices over the five preceding years and current prices. “This was because of the growth of imports, particularly farm-raised shrimp, and the reduction in dockside prices for local shrimp,” Haby said.

More than 1,000 Texas shrimp fishermen received TAA payments for both the 2002 and 2003 seasons. For the first TAA cycle, Texas shrimp producers received the highest per pound payment across all Gulf and South Atlantic states. Of the total cash payments paid out nationally for the 2002 seasons from all TAA petitions, which included shrimp, concord grapes, Maine blueberries, Florida lychees, California olives and farm-raised catfish, 41 cents of every dollar came to the Texas coast. TAA payments for Texas shrimp producers totaled \$4.6 million in 2004 and \$6.2 million in 2005.

In 2009, a re-engineered TAA surfaced. The Southern Shrimp Alliance asked Haby to prepare another petition that encompassed the entire Gulf and South Atlantic shrimp fishery. The group submitted this petition on behalf of the southeastern U.S. shrimp industry, and it was one of only three of the 11 submitted nationwide that was approved. Official approval was received in June 2010.



*Photo by Patrick Riley (of Western Seafood)*

*Converting the traditional Kaplan propeller to the Rice Skewed Wheel provides an additional 6% fuel saving in the shrimp trawl fishery.*

The new TAA program places a greater emphasis on training and business planning with the goal of helping shrimpers adjust to the impact of farm-raised imports, Haby said. Instead of basing a cash benefit on the pounds of shrimp caught multiplied by a state-specific formula, under the new program, cash benefits are based on the applicant completing 12 hours of training and then undertaking a long-term business adjustment plan. The cash benefit is \$12,000, with the first \$4,000 paid upon the completion of 12 hours of training and preparation of a brief discussion of the challenges to the applicant's business, what he learned from the training, and how this new knowledge will be used in his business. "The remainder of the cash benefit, \$8,000, is paid upon the applicant completing a long-term business adjustment plan with the assistance of a consultant/coach."

As before, in Texas there is the necessity of presenting all this information to shrimpers in three first languages: Vietnamese, Spanish and English. TXSG's training focused on helping shrimpers address both sides of the profitability equation. On the revenue side, the program reviewed the steps necessary to produce premium-quality, defect-free shrimp, which would ensure full market prices.

"Imported farm-raised shrimp has increased 75 percent in the past 15 years, and most of that farm-raised supply is visually perfect. Because U.S. shrimp supplies now mostly consist of farm-raised imports, visual perfection is the new expectation," Haby said.

With fuel prices high and forecasted to climb continuously for the foreseeable future, additional training discussed the results of TXSG research between 2005-2010 that found, evaluated and adapted new fuel-saving trawl gear for the offshore fishery. A refresher course on



*Photo courtesy Dr. John Jacob*

*A closeup of a participant using a light pen to manage GIS on the weTable*

the proper installation and use of turtle excluder devices (TEDs) was also included in the training curriculum.

"Using proven towing, back-deck handling and on-board freezing procedures, domestic fishermen can meet market expectations for visually perfect shrimp that also have an attribute unavailable from farm-raised shrimp — a sweet, rich, savory, marine-like taste," Haby said.

Haby and his colleagues have used their decades-long work with industry to help it overcome significant challenges. For example, the work with fuel-saving trawl gear has now created a pathway for the remaining operators to harvest the same amount of shrimp, but do so with less fuel — a large, growing production expense. Likewise, quality-improvement work has helped producers meet market expectations for perfect-looking shrimp and receive full market prices.

## Growing right

The population of Texas is projected to double in the next 30 to 40 years, and at least a quarter of the new arrivals are expected to move to coastal cities. With those kinds of development pressures, coastal communities need to make plans now that will also incorporate the need to protect natural resources and quality of life, according to TXSG Coastal Community Planning Specialist John Jacob.

"It's about coastal planning, about smart growth," Jacob said. "The dilemma is balancing the place we are now with where we're going in the future. If we grow right on the coast, we could be bigger and have a better quality of life to boot. Without smart growth, we could lose our envi-



*Photo courtesy Dr. John Jacob*

*A weTable setup- the Wiimote device is atop the projector. The image is cast onto the table.*



Photo courtesy Dr. John Jacob

**Studying soils with Dr. John Jacob**

ronment.”

He directs the Texas Coastal Watershed Program (TCWP), leading efforts to educate communities and individuals about how their use of the land can influence water quality from their front door all the way to the coast. “Everyone lives in a watershed, which is simply where water drains from wherever you are into a river, lake, bayou or bay. Whatever you do where you live impacts those waterways.”

Since 2000, Jacob and his group, which is headquartered in Houston, have been working on coastal community development using everything from cutting-edge technology to being “in the weeds” doing wetlands restoration work.

Two of their high-tech tools are the weTable and the Community Health And Resource Management (CHARM) software model. The weTable uses Wii gaming technology to turn an ordinary tabletop into an interactive computer interface by projecting a computer screen onto the table’s surface, giving groups of people in a workshop setting the ability to use maps and data to help define planning priorities and strategies. CHARM is a GIS-based software model that lets coastal residents and local officials immediately see the impacts of different development projections on community resilience and natural resources. The TCWP staffers developed an interface that uses data sets that were previously developed for the TXSG-funded Coastal Communities Planning Atlas to show impacts ranging from pollutant runoff to water

consumption to storm surge damage under different development scenarios. “We are using technology to make things more accessible to allow people to interact with complex data,” Jacob said.

TCWP also teaches sustainable landscaping techniques through workshops and brochures — “Landscapes that are both beautiful and non-polluting are our goal” — and the group is a partner in the Sheldon Lake State Park wetlands restoration, planting grasses to restore a critical freshwater wetland system. Under TCWP’s guidance, the Clear Creek Independent School District is using newer technology to replicate nature with a constructed wetland, to demonstrate that nature can exist in the cities. “Smart growth includes walkable cities that will lead to resilient coastal cities,” Jacob said.

TXSG is achieving these goals by also exploring new kinds of collaborations to leverage the resources of multiple entities. The creation of the state’s first Coastal Community Development Agent position was a partnership between TXSG and the Mission-Aransas National Estuarine Research Reserve (NERR) with funding from a NOAA grant. Heather Wade was hired to fill the position in mid-2011 and is headquartered at The University of Texas Marine Science Institute in Port Aransas, the home of the NERR.

“Texas’ population, particularly its coastal population, is growing and putting additional pressure on natural resources, but we’re not getting any additional funding under the current economic situation to hire more county agents or specialists,” said Logan Respass, TXSG’s Associate Director and head of its Extension Program. “This partnership between Texas A&M and The University of Texas is a creative way to overcome this problem.”

The Mission-Aransas NERR is one of the largest in the National Estuarine Research Reserve System of federally designated areas, which are designed to promote the sustainable use of the nation’s coasts and oceans through scientific research, education and coastal stewardship. Wade’s territory includes all or parts of Aransas, Refugio, Nueces, San Patricio and Calhoun counties, where she is working with small coastal communities with limited planning resources to support their efforts in sustainable development.

Partnership was also the key to saving hundreds of sea turtles during a brutal cold snap in early 2011, when the efforts of a single organization would have fallen far short.

## Saving cold-stunned sea turtles

Trained volunteers led by TXSG Cameron County Coastal and Marine Resources Agent Tony Reisinger were among the hundreds of individuals that joined forces in early 2011 for one of the state's largest rescues of cold-stunned sea turtles.

When a particularly strong winter cold front blows through the state, the combination of rapidly dropping temperatures and high winds can quickly and dramatically lower the water temperature in shallow bodies of water like the Lower Laguna Madre. If the temperature drops too quickly for sea turtles, which are cold-blooded animals, to adapt, they are sent into a coma-like state known as cold stunning. Cold-stunned turtles can barely move or may be completely immobile.

"Left unattended, many of them die," Reisinger said. He monitors the weather reports for predictions of such cold snaps so he can mobilize 30 specially trained Coastal Naturalist volunteers to scan local beaches and tidal flats for the sea turtles.

In February 2011, volunteers from several organizations involved in the effort rescued nearly 900 animals — which can weigh up to 100 pounds — often wading into the freezing cold water at low tide to do so, and took them to two rehabilitation locations on South Padre Island, Sea Turtle Inc. and The University of Texas-Pan American's Coastal Studies Laboratory. When those two local centers were filled to capacity, some turtles were transported to facilities as far away as Corpus Christi, he said.

To be able to respond to this type of marine emergency, Coastal Naturalists have to have special training to handle marine mammals and endangered species like



Photo by Seth Patterson

*Members of the Rio Grande Valley Chapter of the Texas Master Naturalists joined other volunteers in recovering 859 cold-stunned green sea turtles in the lower Laguna Madre during recent freezes. Pictured is Gwyn Carmaen*

sea turtles. Many of these volunteers also decide to attend additional training to become members of the Rio Grande Valley Chapter of the Texas Master Naturalists. The Texas Master Naturalist program requires 40 hours of training and at least 40 hours of volunteer time each year. The hours worked by the Rio Grande Valley group, which Reisinger sponsors through TXSG, is valued at more than \$200,000 a year. "Since we started in 2002, you could say we've had an impact of \$2 million over the years. Texas Sea Grant depends on volunteers to help our communities."

Now in his 30th year in Cameron County, he also leads a special group of more than 30 volunteers known as the Red Tide Rangers, some of who are also Coastal Naturalists. This group is trained to collect water samples and do cell counts for the microscopic red tide algae, *Karenia brevis*. When algal blooms occur, the high levels of the red tide algae produce neurotoxins that can kill marine life. The algae cell counts are transmitted to NOAA and the data appear as part of a regular bulletin on harmful algal blooms. Started in Cameron County, the Red Tide Rangers project is being replicated at other parts of the Texas coast.

Reisinger's first love is fisheries, and his work in collaboration with Gary Graham to help Brownsville shrimpers has made a significant impact on the fuel efficiency of the shrimp fleet. "They've saved millions of dollars in fuel costs," Reisinger noted.

He is optimistic about the fishing industry and its ability to achieve sustainability. "It'll survive. They will adapt to change and deal with regulation," he said.

TXSG is steadily impacting the quality of life on the coast for not only its inhabitants, but for the entire state, according to Reisinger. "The longer I work, the more difference I see that Texas Sea Grant makes." He points to something as simple as environmental groups and shrimpers working together. "Texas Sea Grant has a niche as the place where someone can talk to people about problems and turn them into opportunities."

One problem that another extension agent turned into a solution involves another environmental hazard for sea turtles and other marine and freshwater species — fishing line.

## Miles and miles of fishing line

What began with a school project has grown into a statewide effort that has collected 820 miles of discarded fishing line and saved the lives of countless marine animals.

John O'Connell, the Matagorda County Coastal and Marine Resources Agent, has coordinated the Monofilament Recovery and Recycling Program (MRRP) since its inception in 2004. Like many TXSG projects, it relies



*Photo courtesy John O'Connell*

*Discarded monofilament fishing line*



*Photo courtesy John O'Connell*

### *Sea turtle injured by monofilament*

heavily on volunteers, who empty collection bins constructed of PVC pipe that are typically placed at fishing piers, boat ramps and bait camps near bodies of water popular with recreational fishermen and boaters. The line is recycled by Pure Fishing's Berkley Conservation Institute. About 300 bins have been set up throughout the state so far.

O'Connell said it all began with a Port Aransas schoolteacher whose students were seeing loose fishing line around the area. She called TXSG Marine Business Management Specialist Dewayne Hollin to see if something could be done. O'Connell, who was the Calhoun County agent at the time, had seen a presentation about a monofilament recovery program being conducted in Florida at a Sea Grant event the previous year, and he volunteered to coordinate a program for the school. "We started with three bins, and it grew from there."

TXSG provides educational brochures and the collection bins, when they are available, or instructions on how to construct a bin for do-it-yourselfers; the volunteer identifies a placement site, installs and maintains the bin, empties it regularly and sends the monofilament in for recycling. "It's all volunteer-driven," O'Connell said.

Monofilament line is another name for single-strand, high-density nylon fishing line that is used on fishing reels. In addition to the harm to boat motors if the line wraps around the propeller, the list of marine life that can die or lose legs or wings to fishing line is a long one: pelicans, herons, seagulls and other shorebirds, turtles, dolphins and on and on.

“You see birds with one leg because the other has been amputated from being tangled in line,” O’Connell said. Monofilament fishing line takes up to 600 years to decompose, so it’s going to be around for a long time, he added.

Discarded fishing line endangers humans as well. As a scuba diver, O’Connell was a victim himself on a dive in a lake when monofilament line wrapped around his leg while he was underwater. “Your first instinct is to panic. I always dive with a knife, and we humans have opposable thumbs to untangle the line, but birds, animals and fish don’t.”

An important part of keeping monofilament away from where it can do harm is to make sure it doesn’t get loose in the environment in the first place, which can happen even before the fishing starts. O’Connell said he has seen anglers who have improperly placed their rods and reels on the sides of their vehicles for travel. “They place their line poles vertically, and the entire spool unwinds. I’ve seen long strands lying along the highways near lakes and the coast. Anglers need to secure their rods.”

Even if someone doesn’t have access to MRRP bins to recycle the line, O’Connell urged that people reduce the danger to wildlife by cutting the line into four- to six-inch lengths, which keeps any sections that might blow out of the landfill or be removed by nesting birds from being long enough to cause harm.

In addition to MRRP, O’Connell is busy with other efforts, including directing the Mid-Coast Master Naturalists program. One of its big projects is a turtle patrol that looks for nesting sea turtles — Kemp’s ridley and others — and collects the eggs for safe hatching, O’Connell said. “They patrol the beaches five days a week on ATVs and beach mules, and they were the first to document nesting on Matagorda Island.”

Like the other TXSG-directed chapters, the Mid-Coast Master Naturalists have contributed greatly to Matagorda County. Over 11 years, they’ve volunteered 85,340 hours, valued at \$2 million dollars, and reached 145,000 people through their activities. “I couldn’t reach that many people without the volunteers,” he said.

The group’s other projects include restoring nature trails at the Aransas National Wildlife Refuge (ANWR) on the Blackjack Peninsula and running weekend van tours for visitors to the ANWR to see whooping cranes and other birds, he said.

## ‘A great ride’

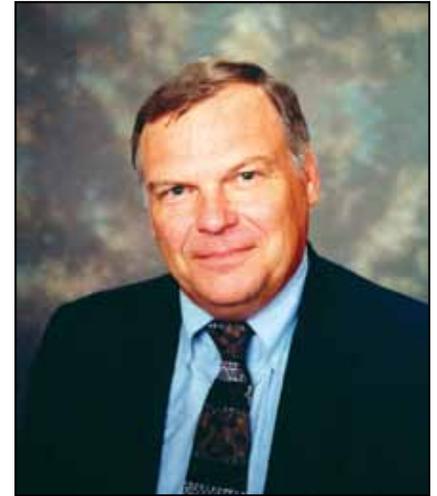
At 15 years, Stickney has the longest tenure as a TXSG director, but his connection to the program goes back even further: “I had my first grant from Sea Grant in 1971 when I was in Georgia trying to culture flounders,” he said. “So I’ve been on that side of things, that is, trying to compete for grants.”

Stickney, who had spent nine years in the 1970s and 1980s at Texas A&M, was already interested in returning to Texas when he applied for the director’s position, and he said he’s never regretted the decision. “It’s been a great ride. This is the best job at a university you could ever have. Our marine science community in Texas can match anybody anywhere.”

Looking back over the years he was director, from 1996 to 2011, he said TXSG has seen both big events and small accomplishments that over time added up to huge impacts. He pointed to the program’s work with the shrimping industry, particularly by Fisheries Specialist Gary Graham, whose decades of knowledge and experience have made him a trusted source of assistance for shrimpers not only in Texas but also throughout the Gulf of Mexico and southern Atlantic states. The fishermen’s respect for Graham has given him access to help them adapt to technological changes, including adding turtle excluder devices (TEDs) and bycatch reduction devices (BRDs) to the trawl nets, and new propellers and improved nets that are lighter and much stronger.

“When Gary said, ‘Do this,’ to the shrimpers and then showed them how, in reference to the BRDs and TEDs, there was 95 percent compliance,” Stickney said, adding that such TXSG outreach activities are “where the rubber meets the road” in terms of applied research having an impact on the lives of the people of Texas.

He is also proud of the Floating Classroom Program, which started on his watch in 2001. “Through the program, we dealt with kids who had lived near the water all of their lives, but they had never seen a live shrimp,” he said.



*Dr. Robert Stickney*

Another venture that has grown to have tremendous benefits for the Texas coast is the TXSG-led volunteers who clean beaches, plant marsh grasses and do controlled burns and other activities that restore the coastal environment. “The volunteers are making a difference to the coastal landscape, and a Texas Sea Grant survey estimates that the volunteer work in recent years has been valued at \$1 million annually.”

He said his biggest frustration over the years was that he felt TXSG was the best-kept secret in the state, maybe even the nation. “We had the capability to help in so many areas, and we were not able to become fully engaged.”

Stickney acknowledged that part of Sea Grant’s lack of visibility is related to funding. “We’ve had very little increase in the past 15 years. You just can’t do much as dollars shrink due to inflation. We’re been around a long time; we’re just part of the scenery, and it’s new programs that get the attention of Congress. Texas Sea Grant and the other 30 Sea Grant programs in all the coastal and Great Lakes states are a national treasure that are being underutilized.”

In fall 2011, Stickney passed the leadership of TXSG to Dr. Pamela Plotkin, the program’s first female director, whose goals include seeking additional revenue to support the program and increasing its visibility statewide.

**Giving back**

Before Plotkin earned her Ph.D. and built a reputation as a marine scientist and administrator, she was a graduate student at Texas A&M finishing her thesis for her master’s degree.

“I remember talking with my girlfriends about what we wanted to do when we ‘grew up,’ and I said, ‘I want to be the first female director of Texas Sea Grant’ ... and they all started laughing,” Plotkin recalled, laughing herself.

As she moved on to her doctoral work, also at Texas A&M, Plotkin received a Texas Sea Grant Fellowship to

support her studies of the oceanic migrations of sea turtles, and in 1994, during her last year of graduate school, she was selected to represent Texas in Washington, D.C., as a Dean John A. Knauss Marine Policy Fellow.

As a Knauss Fellow, Plotkin earned a U.S. Department of Commerce Bronze Medal Award for Superior Federal Services for her work with NOAA’s National Marine Fisheries Service to protect sea turtles. That work included assisting in the development of multi-lateral agreements to protect sea turtles in the Western Hemisphere, negotiating a turtle excluder device technology transfer program between the U.S. government and India, and working with key stakeholders to develop plans to reduce the incidental capture of sea turtles in pelagic longline fisheries.

“My year as a Marine Policy Fellow provided me with an on-the-ground view into the world of public policy, introduced me to interdisciplinary working groups, and in many ways shaped my future,” she said. “Sea Grant has been such an integral part of my career, supporting me in one way or the other.”

Plotkin has spent most of her academic life as a researcher and faculty member, but she had moved into administration during the past decade as part of the next phase of her career. She wanted to continue in administration, but in something that was science-based. “I’m so glad to be back at Texas A&M; I never felt quite at home anywhere else as I had here. This is the perfect opportunity for me to give back to Aggieland.”

She said TXSG needs additional sources of revenue beyond its state and federal budgets if it wants to keep pace with the state’s needs for its services. “We need funding to enhance our outreach. Twelve agents and specialists are not enough to do a thorough job, even with shared funding with Texas AgriLife Extension. These folks are our crown jewels.”

Additionally, she wants to do work force development to engage more students in marine research. More funds can mean just a little bit more money for someone to do research, she said. “We need more people in the pipeline to inspire the next generation of leaders in marine education.”

Enhancing TXSG’s profile with its constituents — the people of Texas — is another of her priorities. In addition to reviving *Texas Shores* magazine, she also plans to expand the program’s reach with Facebook and other social networks, and develop a strategic communications plan that builds on the program’s strengths, defines who



Dr. Pamela Plotkin

TXSG’s audiences are, and determines a strategy for reaching them.

“We need to look for opportunities to engage the public,” Plotkin said. “This organization does so much to impact the lives of Texans, and I want everyone to know what Texas Sea Grant does.”

As an organization, TXSG also needs to anticipate hazards and be ready to assist with whatever is needed, she added. “Texas Sea Grant can mobilize and respond quickly to coastal issues compared to other government entities.”

### The next 40, and beyond

As TXSG enters its fifth decade, there is no shortage of issues facing the Texas coast. Traditional work areas like aquaculture, fisheries, pollution, freshwater inflows, erosion and coastal community development will most likely be complicated by climate change, which includes sea level rise, and increasing coastal populations — which by itself will put a significant amount of pressure on the state’s marine resources.

One immediate problem, notes Joe Surovik, is that the state’s commercial shrimp industry is rapidly aging.

“The fishing industry is becoming an old industry,” he



*Photo by Jim Hiney*

*House Resolution 2163, introduced by District 14 Rep. Fred Brown (R-Bryan), praised Texas Sea Grant for its body of work that “has helped foster the wise use and conservation of the marine environment of the Lone Star State, helping to ensure that the Texas coast will remain a valuable resource for future generations.” Picture are District 14 Rep. Fred Brown and Dr. Robert Stickney*

said. “About 60 percent of those making a living fishing are 55 to 60 years old, and there are no new people. It is

## TXSG owes its success to its staff. Here are some, but by no means all, of the people who have made the program what it is today.



**Annette Hegen**  
1977



**Dewayne Hollin**  
1972-Present



**Feenan Jennings**  
1978-1985



**Lauriston King**  
1978-1987



**Ken Pagens**  
1978-1995



**Russ Miget**  
1980-Present



**Allen Martin**  
1969-1998



**Joe Surovik**  
1971



**Mel Russell**  
1973-1979



**Charles Moss**  
1974-1996



**Gary Graham**  
1976-Present



**Worth Nowlin**  
1977-1978





*Photo courtesy Tony Reisinger*

*Students, like these pulling a seine in Cameron County, are a major focus of TXSG's education efforts*

“Something has to be done,” he said.

The challenges facing the fishing industry are just a small sample of the types of problems that TXSG will face as it, too, continues to mature and develop. “Texas Sea Grant will need to find solutions to and do outreach on all of these issues as well as the new challenges that will arise,” said Plotkin.

Philly Seafood’s Chuck Anderson hopes TXSG’s outreach programs will continue their tradition of disseminating the best, most current information possible because “we cannot get this kind of unbiased, science-based, business-friendly support, anywhere else.”

To meet this challenge, Plotkin will continue looking for solutions that, if not outside the box, are at least outside-business-as-usual. Delivering the keynote address to a graduate student conference in College Station recently, Plotkin outlined her vision for TXSG’s future. In her vision, TXSG will:

- broaden its research focus to include interdisciplinary research approaches that will address complex societal problems.

hard work and cheap imports are making it impossible for Texas shrimpers to compete.”

The state’s ongoing drought is complicating matters for commercial fishermen by increasing the salinity of the estuarine waters that juvenile shrimp and many species of recreationally and commercially important fish use as a nursery grounds.

Not to mention, Surovik said, the prolonged red tide is also adversely impacting the state’s fishing and oyster industries.



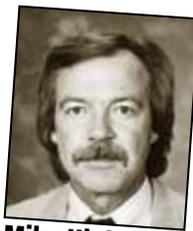
**Bob Nailon**  
1983



**Tom Bright**  
1985-1993



**John O'Connell**  
1986-Present



**Mike Hightower**  
1987



**Eric Graham**  
1990-Present



**Julie Massey**  
1992-Present



**Amy Broussard**  
1974-2006



**Willie Younger**  
1981



**Mike Haby**  
1982-Present



**Tony Reisinger**  
1982-Present



**Richard Tillman**  
1983-2010



**Granvil Treece**  
1983-Present

1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998

- support faculty and students in new and innovative ways.
- expand partnerships beyond those organizations that TXSG has traditionally sought out.
- find non-traditional ways to increase the amount of funds coming into the program, like receiving revenue from the sale of TXSG license plates. Additional revenue will allow TXSG to fund more research projects while increasing the amount available for each project.

Sometime in early 2012, TXSG should realize one of Plotkin’s most immediate goals — moving the program back on campus. For the past 20 years, TXSG has been located in commercial office buildings in Bryan and College Station, where it suffered from lack of visibility — an out-of-sight-out-of-mind predicament — within the College of Geosciences and the university.

The move on campus will better allow TXSG to “capture the academic *potential* of our university because *capacity* infers that there is a limit there,” said Plotkin, noting the difference between her vision and the original intent behind associating Sea Grant programs within institutions of higher education. “I don’t think there is a limit to what Texas Sea Grant can do.” ✓



Photo by Jim Hiney

Dr. Kate Miller, Dean of the College of Geosciences and Plotkin help celebrate TXSG’s 40th Anniversary during a reception at Texas A&M in October 2011

Cindie Powell and Jim Hiney contributed to this story.



**Ralph Rayburn**  
1999-2008



**Cindie Powell**  
2005-Present



**Tanya Baker**  
2006-Present



**Rhonda Cummins**  
2007-Present



**Heather Wade**  
2011-Present



**Pamela Plotkin**  
2011-Present



**Terry Poehl**  
1994-Present



**Jim Hiney**  
1995-Present



**John Jacob**  
1997-Present



**Terrie Looney**  
1998-Present



**Peggy Foster**  
1998-Present



**Logan Respos**  
1998-Present

1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011

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# Texas Sea Grant loses a revered colleague

## Ralph Rayburn, Associate Director and Extension Leader

The death in early 2008 of Ralph Rayburn, Associate Director and Extension Leader of Texas Sea Grant, was a profound loss both personally and professionally for the organization.

“Texas Sea Grant, the Sea Grant Network and a host of individuals across the nation lost a revered colleague and friend with the passing of Ralph Rayburn,” said Dr. Robert Stickney, a former Texas Sea Grant Director. “His death came as a shock to everyone, and we appreciate the outpouring of expressions of sympathy that we received. Ralph was everyone’s friend and was fully dedicated to Sea Grant’s ideals. He will be sorely missed.”

Rayburn dedicated his career to understanding and protecting the nation’s marine resources. His work touched thousands of lives through the research, conservation and education initiatives he developed. He first joined Texas Sea Grant in 1978 as the marine agent for Aransas and San Patricio counties, and left the program a couple of years later to become the executive director of the Texas Shrimp Association (TSA), an offshore shrimp industry trade organization.

During his 12-year tenure with TSA, Rayburn was instrumental in bringing about the Texas Shrimp Closure — a 45- to 60-day annual moratorium on shrimp fishing in waters off the Texas coast that allows shrimp to grow to a larger, more valuable size. He also helped resolve a long-standing dispute between conservationists and shrimp fishermen over incidental catches of sea turtles in shrimp trawls.

“Ralph Rayburn influenced a generation of Gulf Coast fishermen and fisheries managers with his ability to achieve common sense solutions to protect resources while assisting fishermen,” said Jim Balsiger, regional administrator for Alaska and former national acting administrator for NOAA National Marine Fisheries Service.

Rayburn moved from the TSA to the Texas Parks and Wildlife Department (TPWD), where he served in several capacities. As head of the department’s Coastal Fisheries Division, he implemented the state’s shrimp management and artificial reef programs. He spent his last eight years with TPWD as director of intergovernmental affairs, where he was the agency’s liaison with the Texas Legislature, U.S. Congress and other governmental and non-governmental agencies.

Rayburn was named Texas Sea Grant’s Associate Director for Outreach in September 1999, taking over leadership of an extension program that included six marine agents and seven marine specialists. Among his many achievements while with Sea Grant, Rayburn implemented a series of brown bag lunches in Washington D.C. that brought legislators together with regulators and scientists

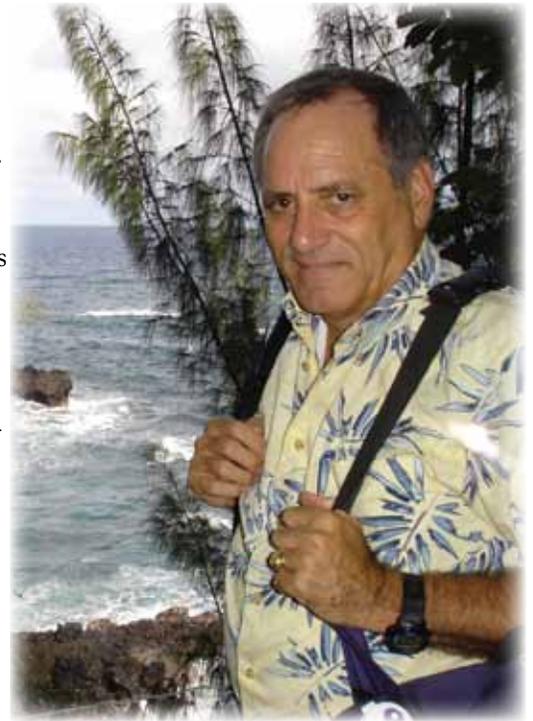
to discuss critical issues facing the marine environment. “His enthusiasm was infectious, his work ethic was legendary, and his integrity was beyond question,” said Jim Hiney, Texas Sea Grant communications coordinator.

To ensure Rayburn will be remembered in the decades to come, Texas Sea Grant established a scholarship in his honor. Thanks to contributions from his family, friends and colleagues, the endowment for the Ralph Rayburn Texas Sea Grant Scholarship in Texas A&M University’s Department of Oceanography reached its goal in 2011, and the first \$1,000 scholarship was awarded in Fall 2011 to doctoral student Jennifer Hertzberg.

“It’s a great honor to receive this scholarship, which was established in memory of a man who dedicated his life to serving others,” said Hertzberg, a New York native who is studying the ocean’s past for clues about how climate change may affect its future.

Her research focuses on examining microfossils of marine organisms that were alive thousands of years ago, obtained from deep-sea sediment cores, to reconstruct what the oceans and climate were like over time and determine how they reacted to past periods of abrupt climate change. Her findings may give scientists a clue about how today’s marine environments will respond to climate change. Hertzberg has undergraduate degrees in geology and astronomy from the University of Massachusetts-Amherst and a master’s degree in marine and atmospheric science from the State University of New York-Stony Brook.

Texas Sea Grant also memorialized Rayburn by naming the Sportsmanship Award of the regional competition of the National Ocean Sciences Bowl for him. In



*Continued on page 31*

# Request for Gulf of Mexico Hydrological Restoration Projects

*Do you know of a hydrological restoration project that is not funded?*

## Wanted

Information about restoration projects that remove or modify anthropogenic barriers to restore historic tidal estuarine and freshwater exchange to **benefit coastal and marine fisheries habitat**. Projects ideas can cost **up to \$5 million**.

## Who

People from local governments, county governments, state governments, non-profit organizations, businesses, communities, homeowner associations, universities and other organizations may submit projects to the Sea Grant Associate Director and Extension Leader listed below.

## How

Discuss the project with a Sea Grant extension agent and answer a few basic questions about the project. It takes **less than one hour** to provide the information for the inventory, which can be completed through a face-to-face meeting or over the phone.

## Why

Hydrological restoration projects can provide a large impact at a relatively low cost. An inventory of these potential restoration projects will be developed and shared with numerous groups that fund on-the-ground restoration. The Gulf of Mexico Sea Grant College Programs and NOAA Restoration Center are providing this service to emphasize to funding agencies the need for these types of projects and increasing the likelihood that hydrological restoration projects will be implemented throughout the region.

## Benefits

Projects will be shared with **multiple funding sources** that are currently soliciting projects for funding or intend to fund projects in the near future. Building this inventory demonstrates the demand for these types of projects; and allows your project to get more exposure to potential resources. The projects in the inventory also can be prioritized based on funding source objectives. Funding sources that will receive this inventory include, but are not limited to, the following groups:

### National Funding Sources

- Natural Resource Damage Assessment
- Estuary Restoration Act funds (up to \$5 million per project)
- U.S. Fish and Wildlife Coastal Programs
- National Fish and Wildlife Foundation

### Regional Funding Sources

- NOAA Restoration Center/Sea Grant annual RFP (up to \$100,000 per project)
- Other NOAA Restoration Center Partnerships
  - Gulf of Mexico Foundation
  - Fish America Foundation
  - Southeast Aquatic Resources Partnership
  - The Nature Conservancy

### State Funding Sources

- Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA in Louisiana)
- Coastal Preserves Program, DMR in Mississippi
- Other state resource agencies

## Regional partnership between the NOAA Restoration Center and the Gulf of Mexico Sea Grant College Programs

For Texas Projects Contact:

Logan Respass, Texas Sea Grant

L-Respass@tamu.edu

979.845.7526



Science At Work For Texans  
<http://texas-sea-grant.tamu.edu>

this college bowl-style contest, high school students from throughout northern Texas demonstrate their knowledge of marine and coastal science. Winners of the Ralph Rayburn Sportsmanship Award are recognized for their positive attitude, respect for their opponents and gracious behavior during the competition.

“Ralph Rayburn embodied the spirit of the Sportsmanship Award throughout his life,” Hiney said. “He made an impact on the lives of the people he came in

contact with and was simply a man of great integrity, intelligence and generosity.”

*Note: Additional donations to the Ralph Rayburn Texas Sea Grant Scholarship endowment, to support deserving graduate students, can be sent to Terry Poehl, Texas Sea Grant’s Assistant Director, at the Texas Sea Grant College Program, Texas A&M University, MS 4115, College Station, TX, 77843. Checks should be made payable to the Texas A&M Foundation.*

# Hooked on Seafood

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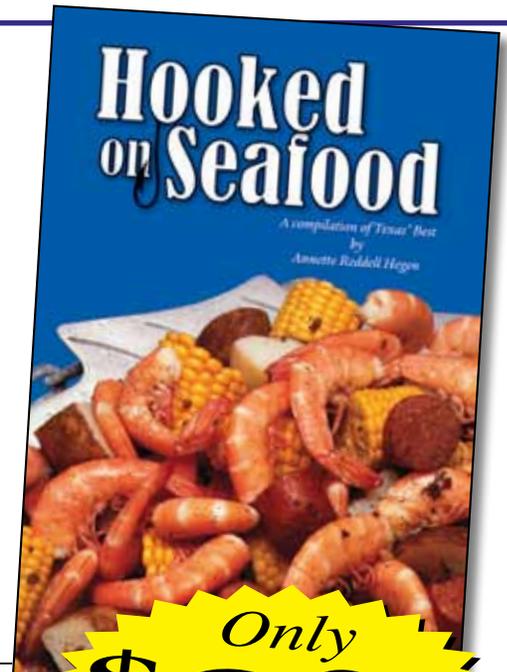
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# Investigating the Marine Environment in the 21st Century

Dr. Violetta F. Lien. 830 pages.

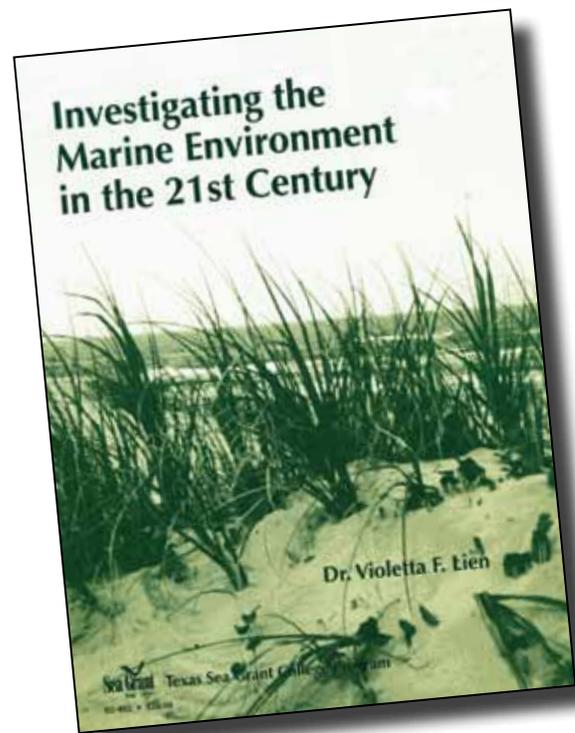
Grades 7-8. TAMU-SG-02-402. \$7.00.

This 13-part follow-up to Dr. Lien's widely used *Investigating the Marine Environment and Its Resources* fills the current void in available marine education materials. Activities are designed to help students become more knowledgeable about the marine environment and its resources through emphasis on the Texas coastal zone and the Gulf of Mexico. The activities are designed for both traditional and integrated science courses, but also provide marine activities for social studies, language arts and mathematics courses or for interdisciplinary thematic units. The book provides current, in-depth information for classroom use and is correlated to the Texas Essential Knowledge Skills in science, mathematics, social studies and language arts. It also meets national standards in these fields.

Being a resource manual for teachers, this book contains more activities than a teacher can use in a year. Each teacher is encouraged to select those activities most applicable to the individual's objectives. Although the book is designed for middle school, the activities can be adapted and incorporated into upper elementary and high school classes as well.

This marine resource manual not only contributes to teachers' and students' knowledge of the marine environment but also to skills that are needed. Process skills, higher-order thinking, sound reasoning, problem-solving, interactive communication skills and inquiry are stressed. While providing activities that can be used to develop these skills with guidance, the teacher is the key to the use of the activities. The activities are not worksheets or cookbook laboratory activities but rather are guides to inquiry or problem solving. Teachers can use the questions as a guide to facilitate the students' thinking and problem-solving skills through discussions, activities, projects and presentations.

Teachers can use this book as a resource to take students on a voyage to Earth's final frontier and to facilitate their becoming marine "literate" and developing skills for the 21st century.



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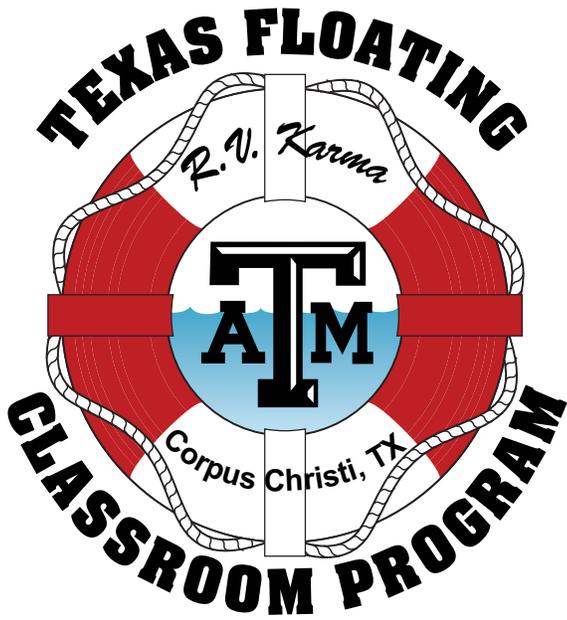
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