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## Science of the Sea

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by Bob Andelman

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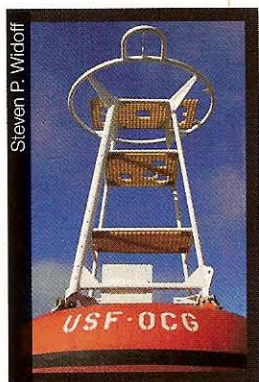


# Science of the Sea



USF's College of Marine Science grew out of a WWII shack with far more termites than professors and students. Dr. Peter Betzer recalls how this high-tech research cluster emerged to stand among the nation's elite.

by Bob Andelman  
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AN AWFUL LOT OF WATER SURROUNDS FLORIDA. As a result, marine science agencies could choose to locate almost anywhere. And yet the biggest cluster of them in the southeastern United States is in downtown St. Petersburg.

In fact, the third largest cluster in the entire nation is here, quietly tucked away at and around the University of South Florida's Bayboro Harbor campus. Many people around town think the College of Marine Science is USF St. Petersburg.

A thriving array of local, state and federal agencies – in addition to a growing assortment of private companies – have combined resources with USF's world-renowned College of Marine Science to employ hundreds of people and attract tens of millions of dollars annually in public and private research dollars.

*Roll call, please:*

*USF College of Marine Science; USGS; NOAA National Marine Fisheries Service Southeast Regional Office; Florida Fish and Wildlife Research Institute; Florida Institute of Oceanography; Eckerd College; Center for Ocean Technology; Center for Coastal Ocean Mapping; Institute for Marine Remote Sensing; Mote Marine/USF Center of Excellence in Marine Science; Tampa Bay Watch; Tampa Bay Estuary Program.*

And waiting in the wings, perhaps – SRI International, a prestigious Silicon Valley institution, based in Menlo Park, CA, and founded by Stanford University, that was attracted to USF by the Center for Ocean Technology's research and development in the field of micro- and nanotechnology sensors. As this issue of MADDUX BUSINESS REPORT went to press, SRI's interest in St. Petersburg was one of the business community's worst-kept secrets, despite all the principals being sworn to secrecy.

"You've got federal, state and university agencies all collaborating quite nicely," says Peter Betzer, dean of the College of Marine Science ([www.marine.usf.edu](http://www.marine.usf.edu)). "We're getting 85 to 90 percent of the top young scientists who apply to our program. That never used to happen."

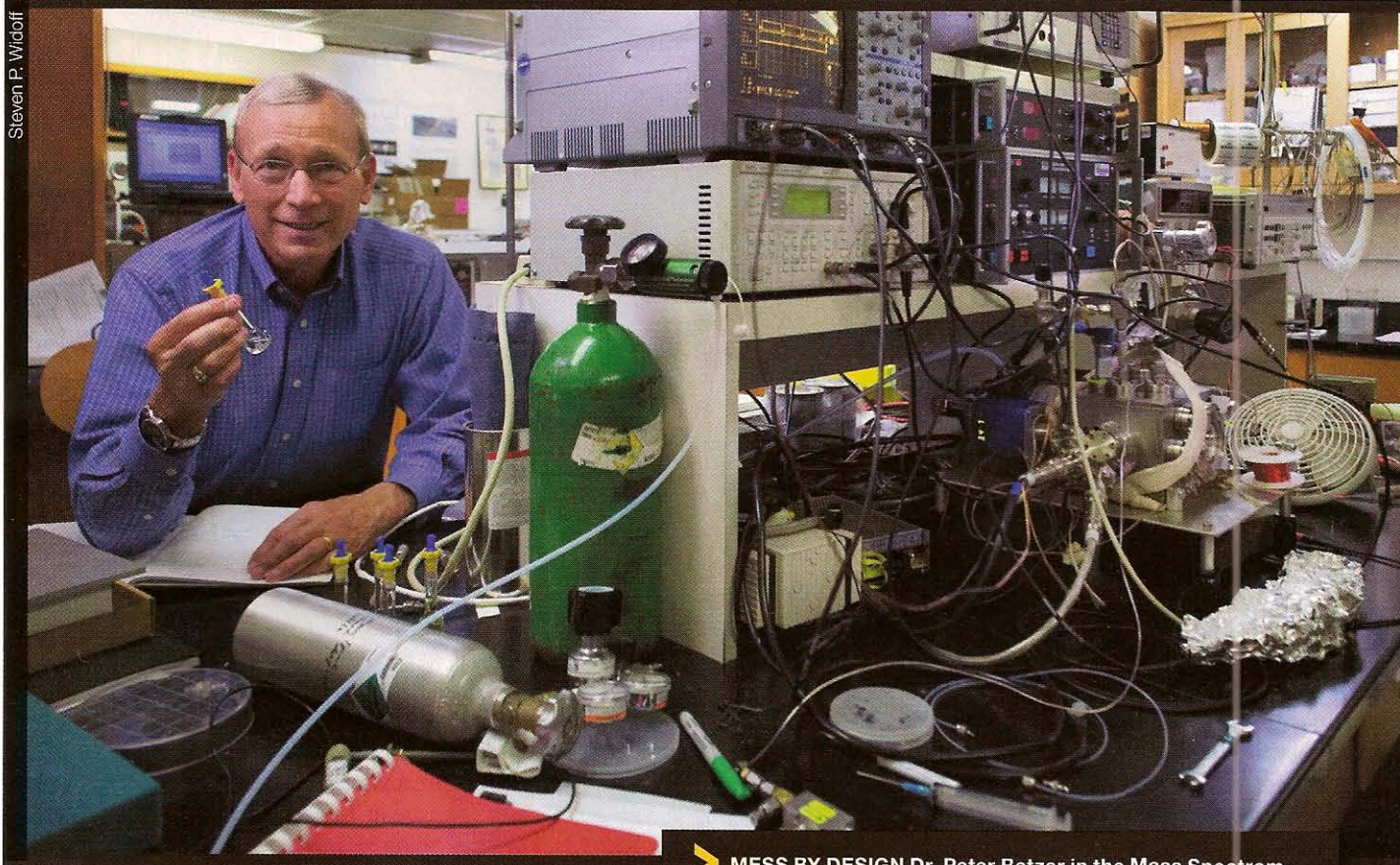
Arguably, the only similar marine research destinations still ahead of the USF cluster are Woods Hole in Maine and the Scripps Institute of Oceanography in California. Both of those programs are more mature, have larger ships and submersibles, and have more related businesses nearby.

"But beyond that, some of the other oceanography institutes around the country lack the cluster we have here," says Carol Steele, business development manager for USF's Center for Ocean Technology. "Woods Hole doesn't have the diversity of agencies we have here – and our agencies and related small businesses are growing."

"We're really poised to definitively become one of the big three in the country – and distinctive as the only one without major shipping assets. The others have that," Betzer says. "My prediction is that we should – that we will – ascend to that level. Not to become like them but to be on the same scale but distinctive in many ways."

"We have more geological colleagues at USGS than USF has at its main campus in





**MESS BY DESIGN** Dr. Peter Betzer in the Mass Spectrometer lab where research on the miniaturization of spectrometers will revolutionize their application.

Tampa," he continues. "And biologists? There are 350 of them next door to our college at Florida Department of Natural Resources. We have the makings of a giant College of Marine Science. We are basically a stand-alone operation. We don't need and don't rely upon science programs on the other side. Why do we need to be hooked up with Tampa? It ought to work the other way – they ought to be hooked up here. They'd benefit."

## The Story Behind the USGS Story

The big turning point for USF – and Betzer – was when the call from the United States Geological Survey came in the fall of '87.

"Bonnie McGregor called from Reston, VA, and she said, 'We're going to move our USGS facility in Woods Hole some place else and there will be a competition among sites all over the U.S. Would you be interested?'"

Betzer says it was like being hit by a bolt of lightning, in a good way. "I met with our business community. We'd get the equivalent of the USF geology department times two, instantly. Kent Fanning (now associate dean) and I spent the next two months writing a monster proposal of 700 pages. We even wrote a letter for (then USF president) John Lott Brown to sign. He said, 'Sure, I'll sign it.

**LISA ROBBINS Ph. D.**  
Senior Scientist, USGS



But you guys don't have a chance."

Betzer hand-carried USF's proposal to Woods Hole and handed the eight-pound document to the head of the USGS review team, Bob Halley. "We're really excited," Betzer told him.

"Okay, great," Halley said, "but there are 27 other groups vying for it."

The main competition, in the end, boiled down to Columbia University, the University of Rhode Island and a combined bid from Duke University, North Carolina State and the University of North Carolina/Chapel Hill.

"I went home and (wife) Susan said, 'The city ought to just give the USGS the Studebaker Building. It's just full of pigeons and drunks.'

**“An unusual place – a gem.”**

"The very next day, I was driving my car and who was out pulling weeds in his yard? (Then St. Petersburg mayor) Bob Ulrich. I

said, 'Hey, Bob....'"

The city offered the Studebaker Building; an architecture firm volunteered its services; and the *St. Petersburg Times* put up \$100,000 to endow an eminent scholars lecture series. "It was unbelievable," says Betzer.



USF was the last group to be visited by the USGS decision makers. By coincidence, an eminent scholar from Duke was visiting the Bayboro campus during that time. The next day, the Duke professor cried "uncle." "There's no way we can compete with this," he told Betzer.

The final decision was announced in March 1988. It was no contest; the USGS selection committee chose USF by a vote of 10-0. Halley was so impressed with USF's bid that he personally moved to St. Petersburg. And he's still here.

Lisa Robbins spent more than 11 years at USF's College of Marine Science before trading a career in education for one in government service and the USGS ([Coastal.er.usgs.gov](http://Coastal.er.usgs.gov)). "Our mission at the USGS is to provide unbiased, scientific information for the public, for mitigation of hazards and also for public safety, and to provide information about natural resources," she says. "One of our largest projects is looking at how storms such as hurricanes erode or deposit sediment."

The USGS has since doubled its presence by building an adjacent facility that approximated the original building. And it is in the midst of constructing a third contiguous structure. It has been a major attractor when other agencies and institutions have considered relocating or expanding.

"We work with the people in this cluster of scientists a lot," says Robbins, who stepped down last December after more than six years as director for USGS's Center for Coastal and Watershed Studies in the Florida Integrated Science Center. She has continued on staff as a senior scientist. "It makes it an unusual place – a gem, frankly. Each institution has its own mission but they all feed into each other."

The other federal agency in the Bayboro cluster is the National Oceanographic & Atmospheric Agency's (NOAA) National Marine Fisheries Service Southeast Region.

"We're responsible for managing fisheries in federal waters of the southeastern United States," says southeast regional administrator Roy Crabtree. "Our region extends from South Carolina to Texas and includes the U.S. Virgin Islands and Puerto Rico. We do all federal fishery regulations from three miles to 200 miles out."

NOAA ([sero.nmfs.noaa.gov](http://sero.nmfs.noaa.gov)), which has been here for almost 20 years, is responsible for protected resources such as whales, dolphins and sea turtles.

## Of Fish and Politics

The Florida Fish and Wildlife Research Institute (FWRI) waited a long, long time for Bayboro's marine science cluster to develop – several decades, in fact. The institute ([research.myfwc.com](http://research.myfwc.com)), which is the research arm of the Florida

Fish and Wildlife Conservation Commission, can track its local ancestry back to the mid-1950s when a laboratory was first established here to work on red tide issues. That was before the university arrived.

"We all kind of came up together," says FWRI director Gil McRae. "One of the things that helped us grow was the partnerships with USF, the National Marine Fisheries Service and the USGS."

FWRI oversees 600 employees statewide, more than half of which are in St. Petersburg across three buildings, one of

which is the Knight Oceanographic Research Center.

Of all the facilities at USF St. Petersburg and the College of Marine Science, the towering jewel is the Knight Center. It was the first time in Florida history that two state agencies – one educational in orientation, one not – had built a building together.

As Betzer recounts, the city's business community again went to bat. Arrangements were made in 1990 for him to personally make his case in Tallahassee with the help of State Rep. Mary Grizzle, who represented St. Petersburg.

Standing in Grizzle's office, she said, "Peter, you'll have your chance. I'll call Gwen and you'll get your three minutes."

"Gwen" was Gwen Margolis, then president of the Florida



**HELP US**  
NOAA recently added Elkhorn and Staghorn coral to the endangered species list.



## St. Pete Worldwide

On top of its other distinctions, USF's College of Marine Science has become a destination for scientific meetings. In 2004 alone, such meetings accounted for almost 6,000 room-nights downtown.

"We're talking about people coming from all over the world," Dr. Peter Betzer says. "It gives our students, our whole community, an opportunity to listen to the latest and greatest. And the people who make decisions about research money and science go away with a very positive impression of St. Petersburg."

In August, COMS 2006 – the 11th Annual Commercialization of Micro and Nano Systems conference – was sponsored by the USF Center for Ocean Technology ([cot.marine.usf.edu](http://cot.marine.usf.edu)) and held at the Renaissance Vinoy Resort. It drew more than 300 scientific experts from around the world to downtown St. Petersburg. "To me, that's mind blowing," Betzer says, shaking his head. "The last time this group came together, in 2005, was in Baden-Baden, Germany."

Next year, COMS will meet in Melbourne, Australia.





## >> The Florida Institute of Oceanography and More

And then there's the Florida Institute of Oceanography (FIO), which has a grandiose name, doesn't it? "It makes you think of great big buildings full of researchers," says its director, John Ogden. "But it's not that at all. We are here to serve the needs of the ocean services community here and of greater Florida. We are a consortium of 20 members, including all 11 state universities, the University of Miami, the Department of Environmental Protection, the Florida Wildlife Conservation Commission, Mote Marine Laboratory, Nova Southeastern University, Eckerd College and the Florida Institute of Technology."

FIO, which has 21 employees, offers shared-use facilities, particularly the two research ships based at Bayboro Harbor, the 71-foot *Bellows* and 102-foot *Suncoaster*. They operate year-round in support of marine science educational and research projects for everybody in the state,

Senate. Grizzle asked her to come to her office and within minutes, she was in the doorway, looking like a million other things were on her mind.

"Gwen," Grizzle said by way of introduction, "Dr. Peter Betzer would like to have a building."

As far as Betzer was concerned, Margolis looked "like she ate carburetors for breakfast. She was looking right through me like, 'Okay, buster, let's hear it.'"

But Margolis spoke to Grizzle, not Betzer: "Mary, how long have you been in the legislature?"

"Twenty-eight years."

"Have you ever had a building?"

"No."

"You have one now."

And Margolis walked out of the office.

"And we had \$190 million," Betzer says, laughing. Four years later, the Knight Center opened.

### He Came, He Saw, He Stayed. But Why?

Betzer, 64, had to get close to retirement before sharing some of the stories he has with MADDUX BUSINESS REPORT. Yet at certain points in his career the likelihood of his telling any tales about USF's marine science efforts seemed, at best, remote.

St. Petersburg is the last place Betzer and physician wife Susan ever dreamed of spending 36 years. Not because it was so bad, but because they hadn't even heard of the University of South Florida in 1971.

"I was fresh out of grad school, excited about science," he recalls. "I was at an international meeting and the head of the

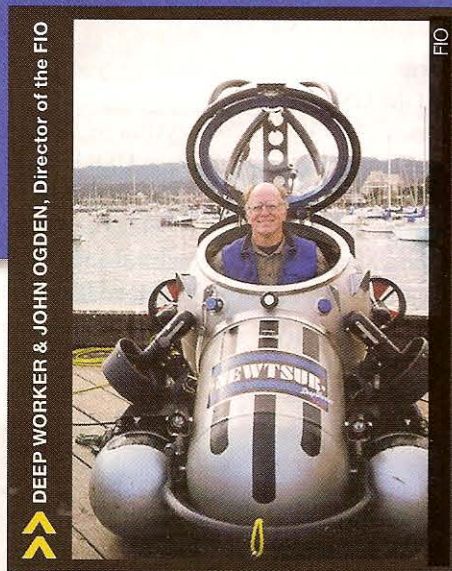
taking hundreds of people out on the ocean annually.

Other marine science organizations in St. Petersburg include:

- The USF Center for Ocean Technology, which started in 1994 shortly after the USGS arrived. Its efforts are focused on technology development marrying basic marine research with the needs of the Department of Defense, particularly in mine counter-terrorism measures and mass spectrometer development. It also operates a clean room manufacturing and research center at the STAR Center in Largo. COT attracts between \$6 million and \$9 million annually in research funding.

- The Tampa Bay Estuary Program, which is a partnership of governments and agencies in the Tampa Bay area created to develop a cleanup and restoration plan for Tampa Bay.

- Tampa Bay Watch is a nonprofit environmental stewardship program for Tampa Bay.



session lost a speaker at the last minute and asked me to speak. Ken Carter – one of three original USF marine science instructors – was in the audience and thought, 'We oughta' get this guy to USF.' I didn't even know there was a USF. We did not want to come to Florida but thought maybe it was a good place to start. We'd stay two years and get out."

How could he resist? The marine science department consisted of two antique wood shacks from World War II and all the termites the professors could squash.

In those days, the department reported to a dean in Tampa. "The chairman of our department wanted to see what I was made of so he sent me to a chairman's meeting in Tampa," Betzer says. "I had no business being there with these full professors." At the end of the meeting, the dean took me aside and said, 'The marine science group in St. Petersburg will never amount to anything. If you're smart, you'll resign and join the biology department in Tampa, where you belong.'

"I went home and told my wife, 'We've made a horrible mistake.'"

That was also the day Betzer found something deep within him that hadn't been there the day before. A gauntlet had been thrown down. He picked it up, mentally flipped his counter-parts in Tampa a one-finger marine valedictory salute and made a commitment to the Bayboro campus that would only grow stronger and stronger.

But he and Carter and another faculty member, Carl Riggs, were going to need help.

"We went to (then *St. Petersburg Times* publisher) Jack Lake and *St. Petersburg Progress* around 1976 and said, 'We're a good group of young people, we're doing exciting stuff that has



important ramifications for the world's oceans, we're going all over the world doing research.' Lake and the city's business leaders liked the idea that St. Petersburg had something distinctive that Tampa did not have, something they could build upon. Everything else had to be shared with Tampa. But not this."

Two years later, Florida's state universities were given the opportunity to choose one center of excellence that could be grown with state funds. Much to the staff's astonishment, USF's Tampa-based administrators picked the marine science department in St. Petersburg.

"After that, things were a lot better," Betzer says.

The funding attracted "really good, incredible scientists," he says. It also gave USF a Ph.D. program in marine science and put an end to efforts that would have merged the USF and Florida State University marine science programs.

"I honestly believe the St. Petersburg business community forced the Board of Regents to give us the program," Betzer says. "Prior to the decision, Kent Fanning and I made a presentation to the regents in Orlando and this woman called us 'academic bozos.' She was an idiot. Then, all of a sudden we got our Ph.D. program."

How?

"The head of the regents had her yacht at the St. Petersburg



**Lake realized things we didn't."**

Yacht Club. I believe she was told that either USF got its own marine science Ph.D. program or she could move her yacht – permanently. There was a flip-flop by this person, no question.

"It was Lake," Betzer reveals. "He was a killer, no question. He was incredibly smart and aggressive. Look what the city invested just to get the university going here. They bought all the land for the

school and gave it to the state. We wouldn't have this but for the St. Petersburg business community. Fortunately, Lake liked us. And he realized things we didn't, that, for example, if we got a big research complex, meetings would follow, and our graduates would stay in the area."

After more than three and a half decades, the Peter Betzer era at USF is drawing to a close, with his voluntary retirement set for mid-2007.

"He's been instrumental in this cluster becoming the synergistic center of marine research," says Gil McRae, FWRI director. "It's through his efforts that we've grown into a nationally recognized center for marine research. We'll certainly miss Peter and his leadership.

"But he's left a legacy that will endure." ■

## >> Businesses That Are All Wet

The marine science cluster at USF St. Petersburg has plenty of university and governmental agencies. What's missing are businesses feeding off the complex's research. The cluster has on occasion spun out real companies. Probably the most successful is Ocean Optics Inc. ([www.oceanoptics.com](http://www.oceanoptics.com)) in Dunedin, founded in 1989 by Mike Morris, a graduate of the marine science department. The manufacturer of miniature spectrometers and optical sensing components was subsequently sold to U.K.-based Halma p.l.c. for a reported \$50 million.

"If you have strong science, you bring in clusters of businesses that are related to it," says Dr. Peter Betzer, dean of USF's College of Marine Science. "That is where this complex is going. We're going to add a third part to this complex – technological business."

One of the people that Betzer expects to lead that effort will be Michael Max, CEO and head of research at St. Petersburg-based Marine Desalination Systems LLC (MDS; [www.mdswater.com](http://www.mdswater.com)). Max, according to Betzer, "is a top-notch scientist, a first-rate intellect."

MDS, which has nine employees, receives funding for its desalination projects from the Office of Naval Research, with

whom it has two contracts. "Small, innovative companies are where all the innovation is taking place," Max says.

Max started his company in Washington, DC, in 1999 but recently relocated to St. Petersburg. "When I originally set up the company, I tried to do development using contractors and found it was impossible," he says. "I found I was going to have to set up our own library. We also needed easy access to fresh seawater, which was warmish; a nearby university from which I could hope to get most of my employees; a good airport; good road network, not overcrowded; and proximity to a school of marine science. I looked at a lot of areas and St. Petersburg popped right up as a good place to go."

Another local company, Intelligent Micro Patterning LLC ([www.intelligenttmp.com](http://www.intelligenttmp.com)), is the first commercial spin-off from USF's

Center for Ocean Technology. It opened in July 2001 and did \$1 million in revenues last year. Intelligent has four fulltime employees that it supplements with independent contractors on staff at USF.

"We make high-precision, electro-optical equipment used for microlithography," says CEO Jay Sasserath.



**TINY SHINY** Ocean Optics products help researchers measure both color and fluorescence.