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Making Waves

For 25 Years, the Oceanography Camp for Girls at USF's College of Marine Science Has Been Nurturing Female Scientists of the Future

By Dave Scheiber, USF Foundation



Campers and staff exit the ferry for a day at Caladesi Island, led by director Teresa Greely (right)

The seagulls gliding beneath the cloudless, blue sky at Caladesi Island have some special guests on a recent morning in late June. The line of visitors, fresh off a short ferry ride from dockside in Dunedin, lug coolers, backpacks and wagons along a winding wooden path. In minutes, they step onto a stretch of pristine white sand – and into a world of wonder and discovery.

The members of this mostly female entourage have not come to bask in the sun or stroll along the surf of a beach regularly ranked as one of the best on the planet. These girls just want to have fun by working, watching and learning.

They are here to study the unseen, longshore currents beneath the placid Gulf of Mexico water; measure the impact of tides, wind and storms on the physical formation of the beach; analyze all manner of plants and shells scattered beneath their feet; and unearth the barrier island's hidden history by examining various sediment layers in the sand.





But they are also here for another important reason – to bond unselfconsciously in a risk-free learning environment, and immerse themselves in a common passion for math, biology, chemistry and a fascination of the ocean.

It is a realm that has traditionally attracted more school-age boys than girls, and more professional men than women. Yet for a select group of female students entering ninth grade in Pinellas County, the University of South Florida's College of Marine Science annual Oceanography Camp for Girls (OCG) has been offering a rare glimpse into the mysteries of the sea and the physical science that surrounds it for 25 years.

Supported by substantial annual support from Duke Energy, as well as private backing through endowments, the camp is designed to remove social barriers in the learning process while

building confidence in doing science – and a greater sense of self. And, at the same time, it has been leveling the sandy playing field, encouraging teenage girls to explore the options for careers in marine science, where males once dominated the ranks.

On this particular field trip, 15 girls – accompanied by staff, USF graduate students, camp alumni and volunteers– delve into endless details of their natural surroundings, and will be followed by a second shift of 15 the next day, as part of the camp's three-week learning experience.

“We share a lot about what we know about the ocean during these field trips, but the real idea is to understand *how* we know what we know,” says Dr. Teresa Greely, faculty director of education and outreach in USF's College of Marine Science, and camp fixture since its second year in 1992.

The camp was born out of a National Science Foundation concern at the time that not enough girls were gravitating to the field. “We certainly have been very successful statistically in seeing more women pursue science careers, but the trend has always been for females to choose the biological or life sciences and some chemistry,” Greely adds. “We still have a deficit in the physical and geological sciences in oceanography.”



But there is certainly no shortage of interest among the campers. Before breaking into four rotating study groups, where they will conduct experiments, ask questions and get a chance to do some hands-on ocean science, the girls stand in a circle on the beach. Greely explains the tasks they will be tackling beneath the mid-day sun – and gives them a quick break to enjoy some of the snack bars and drinks they've packed for the day.

“I think we're ready!” she announces minutes later. “How do we feel, OCG?!”

In unison, the girls respond with a loud, youthful camp chant: “*We feel good – oh, we feel so good! Ab...Ab...Ab-Ab-Ab!*” With that, a day of learning by the sea begins.

Greely leads four girls knee-deep into surf, where they hold bottles of a non-toxic, fluorescent green indicator dye that will provide one of the many lessons of the trip.

Standing in the mild waves – careful to do the stingray shuffle as they move – Greely and her group run a retractable measuring line into the water. Then the teacher asks her students which direction they believe the current is moving, based on

what they can see on the surface. On cue, she asks two of the students to release the colored liquid beneath the water – “I promise you’ll survive!” she yells with a laugh – and they all watch as the green concoction spreads in the opposite direction of the Gulf’s surface movement.



“We were making our prediction of what we could see on the surface,” Greely says to the girls. “But we can’t see what it’s doing underneath. So this is all part of understanding how longshore currents work.”

Near the entrance to the beach, staff co-leader Paul Aunspaugh, a military veteran and retired science teacher, works with his four campers on methods of measuring beach's shape and features. He has run lines into the vegetation at the top of the beach, ensuring that nobody accidentally steps on the state-protected sea oats in the vicinity. Then he discusses a surveying gauge called a transit, mounted to a tripod, that takes the measurements. “What’s the unit of measure we’ll use?” he asks. When a camper offers “inches” as an answer, he gently sets the record straight: “Oh, that’s a bad word in science. Inches don’t exist. It’s meters – and we’ll be doing centimeters.”



At the same time, two USF graduate students serving on the staff – Shaniqua Gladney and Tess Rivenbark – have tossed random grids called “transects” in the sand to help their group study plant life. The idea is to look at different types of plants in

different regions of the beach and determine how they have adapted on a beach, as opposed to a back yard.

“Any ideas what this one is?” Rivenbark asks, pointing to some small plants with leaves spread apart. The girls are stumped, so she replies: “This is sort of a wacky one – a Fiddle Leaf Morning Glory. It can close up its leaves when it’s getting too much sun. And it’s another plant that helps to hold the sand on the beach – both with its root system, and with leaves that catch and hold the sand.”



Tess Rivenbark (left) and Shaniqua Gladney

In another area, USF doctoral candidate Elizabeth Brown discusses the varying layers of sand sediment from the impressive hole – or “sediment pit” – she has diligently dug.

“This is the paleontology and sediment station, and it’s where we teach the girls how to interpret the history of the world and the environment by looking into the earth, instead of at the surface of it,” says Brown, whose PhD focus is geological oceanography with focus in micropaleontology. She earned her bachelor’s in geology from Amhurst and is now in her fifth year as a camp science mentor. “All of earth’s history gets preserved as new layers buried beneath itself,” she adds, “so that’s why we learn so much from digging into it.”



Kara Vadman (left) and Elizabeth Brown offer insights on sediment layers

Kara Vadman, a USF graduate student also studying geological oceanography, is helping out at the pit as well. On a break from doing research on a ship in Antarctica, Vadman finds enormous value in learning to communicate complex ideas in more understandable terms to the girls.

“One of our mantras in my undergraduate program at Colgate was ‘learn to teach, teach to learn,’” she says. “So by teaching these girls, we’re learning how to better explain these concepts that we’re still trying to study ourselves. By making it more simple, we can actually make the complexities easier for us and others to grasp.”

It’s just one more part of the OCG’s learn-by-doing experience: The girls help educate the teachers, too.

While the Caladesi expedition is in full swing, an entirely different scene unfolds in the camp 40 miles to the south at the USF College of Marine Science in St. Petersburg. Some 15 other girls, accompanied by a cadre of volunteer counselors and staff members, are immersed in career day and various hands-on sessions to gain greater insight into oceanography as a potential profession.

They start the day doing a Skype interview with Lt. Claire Surrey-Marsden of the National Oceanic Atmospheric Administration, who talks about how she was drawn to the field and her life experiences along the way.

“She showed the girls that you can be a mom and a wife and still travel and do all these amazing occupational things as a female – that nothing limits you,” says Dr. Angela Lodge, a former school social worker and youth development expert who has spent the past 17 years at the camp helping in an array of capacities.



Dr. Angela Lodge has played a key role with OCG camp for years

to be smart,” Lodge says. “Of course, lots of girls love math and science. I feel that Oceanography Camp for Girls is a great place to have teens at this age – they can feel comfortable and confident in their knowledge. And a day like today – career day – opens up so many doors to areas they can enter: geology, biology, education and outreach. That’s the beauty of oceanography – it encompasses all of it.”

For 2007 camp alumna Kelly Vasbinder, the chance to pour herself into those topics after graduating from Southside Fundamental Middle School was too much to pass up.

“When I was very young I started to get more excited about science, and we’d do a lot of ocean science in class,” she recalls. “I started to wonder what a career in marine science would be like. This camp was everything I thought it would be and more. It gave me a taste of a wide variety of fields to understand where my interests lay.”



Kelly Vasbinder, an '07 camp alumna (right), and Lindsey Dornberger, are both working on their doctoral degrees – and helping campers learn.

Vasbinder became an International Baccalaureate student at St. Petersburg High, earned her B.A. in biology at Florida State and came to USF as a marine science doctoral candidate. She has also returned to the camp that started her on her way, working as a counselor to help girls she sees in herself.

“It’s amazing – it feels like coming full circle, to see kids who are just starting where I began,” she says. “And now I know even more what an impact this camp makes.”

The sentiment is shared by the various college undergraduates who return each summer to volunteer. “We all just joke about how we came to camp and never left,” says Emily Ritz, now attending Furman University in South Carolina. “The camp made such a difference in my life. When I was in eighth grade, for instance, I never would have thought that I’d one day spend a month in Iceland during college studying geology.”

Before the day ends, the campers will gather around a large table to watch a wax machine replicate shifting forces that shape the ocean floor. And they’ll attend a class that specializes in team-building exercises, focusing on intuitive thinking and learning.

The work all connects to a daily inspirational quote provided by Dr. Lodge, who, on this day, has chosen these words for the girls: “Passion and teamwork can turn a bunch of ordinary folks into an unbeatable winning team.”



Campers watch a wax simulation of the formation of the ocean floor

Among the biggest fans of the Oceanography Camp for Girls – beyond the girls and counselors themselves – is Duke Energy, which has supported the endeavor through its foundation with a vital yearly gift of \$25,000. Duke sees the camp as a perfect match for its outreach.

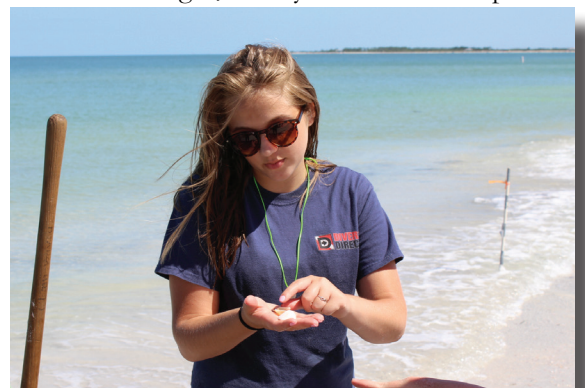
“We’ve had a long-term relationship with the University of South Florida and the Oceanography Camp and it’s been so neat to watch it grow,” says Gregory Wright, community affairs manager for the power company. “Education was always an important priority to Progress Energy, and after we merged with them four years ago, we made a decision that in Florida we would continue to emphasize education and STEM (Science, Technology, Engineering and Math) as one of our priorities.”

Wright attended the second of the Caladesi Island trips to observe the process first-hand. “I really enjoyed hearing from the girls what they get out of this camp – how it’s so much better than just sitting in a classroom,” he says. “They’re actually able to apply what they’re learning.”

One moment underscored that observation, when a manatee curiously swam toward Wright, Greely and several campers as they stood in the water to conduct their longshore drift current experiment. “You couldn’t have scripted that better,” Wright says, laughing. “They were getting one lesson, but here’s yet another. None of us will forget that.”

Another person equally excited about the camp’s success is College of Marine Science Dean Dr. Jacqueline Dixon. “We’re giving these girls a memorable learning experience,” she says. “And at the same time, we’re nurturing a new generation of scientists.”

Back at the beach on Day One, Alayna Robertson, an Azeala Middle



School graduate set to enter Osceola High, talks about her experience. “I love this camp,” she says. “I’m definitely going to come back as a counselor.”

Just like Brooke Loney did. She had a strong interest in marine science at Madeira Beach Fundamental, located on the waterfront, and a teacher encouraged her to enroll in the camp. It changed her life. “I sailed aboard a research vessel, worked in a microbiology lab and did so many things I never would have done anywhere else,” she says. She continued her science focus at Osceola High and now at Florida Gulf Coast University, and always returns as part of the staff.

“We think about what the camp does for the girls, but the other story is what happens to our graduate students and how they continue to learn,” Greely says. “For all of those who return to help, they’re learning to take their science and communicate it in an effective way to a non-scientific audience and the public in general. And they learn from each other, too.”

Greely was a graduate student herself when the camp began and it was her very first teaching opportunity. “I just feel very privileged to do this,” she says. “We’re able to show teens what the options for science are. They become part of this wonderful learning process, and it’s one that can last a lifetime.

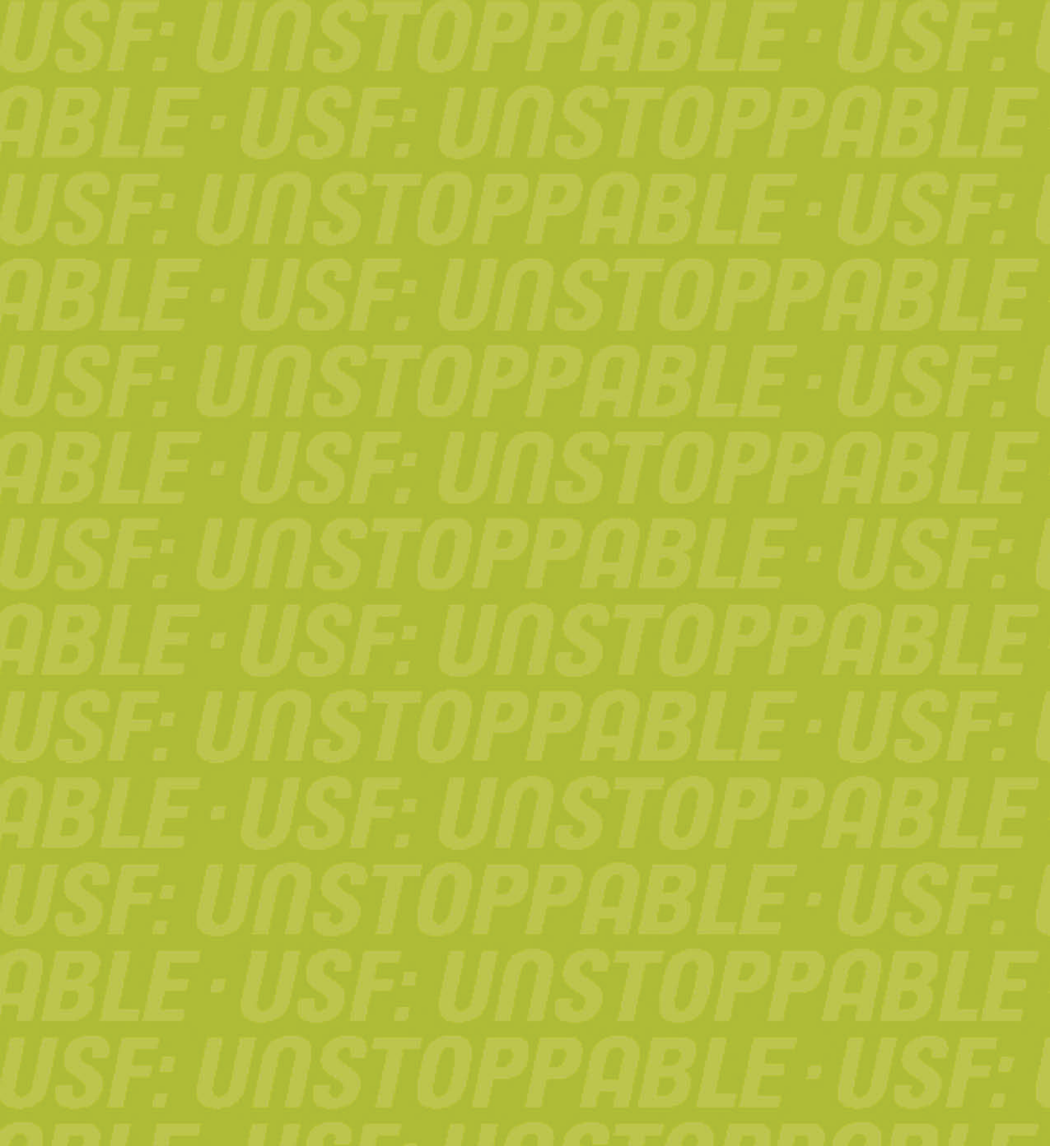
With that, Greely goes back to work in the water with a new group of girls, seagulls floating above on a day filled with endless possibilities.



A tourist stops to ask if she can take a picture of the Oceanography Camp for Girls T-shirt worn by Kara Vadman



For more information about Oceanography Camp for Girls, a program run by the College of Marine Science at the University of South Florida, contact the college's Director of Development Howard Rutherford at (727) 553-3376 or email him at hrutherford@usf.edu



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