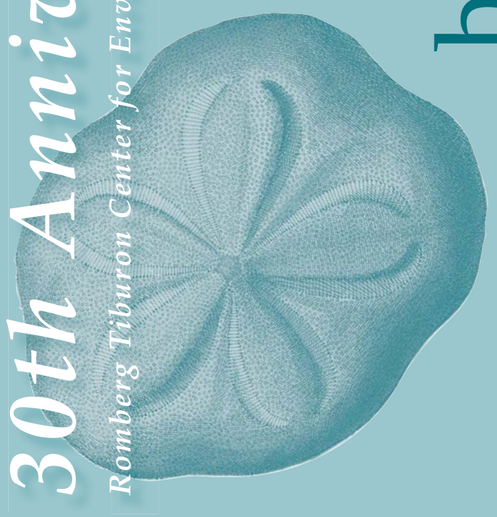
30th Anniversary

Romberg Tiburon Center for Environmental Studies

bayside



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Celebrating 30 Years of Science, Education and Stewardship

What can you get for a buck? Three decades ago, Paul F. Romberg, a biologist, botanist, and then-President of San Francisco State University, obtained a federal lease on 23 acres of the San Francisco Bay shoreline in Tiburon for the grand sum of $1. His vision was to develop the government surplus property into a field station and marine laboratory dedicated to the study of the Bay. On April 3, 1978, a 30-year educational lease was signed, establishing San Francisco State University's Tiburon Center for Environmental Studies (TCES). When Romberg passed away in 1983, the Center was renamed in his honor as the Romberg Tiburon Center for Environmental Studies (RTC).

RTC's waterfront during the Net Depot days.

The site first came into use in 1877 when a packing plant to dry, process and ship codfish was constructed. At the turn of the century, the Navy purchased the property for use as a coaling station for its ships. During construction of the Golden Gate Bridge in the 1930's, the Roebling's Sons Company used the north warehouse to spin the bridge's hanger cables. From 1931 to 1940, the Navy loaned the base to the State of California, which established its first nautical training school (later to become the California Maritime Academy).

During World War II the facility served an important mission when it was used for the construction of anti-submarine and anti-torpedo nets that protected the mouth of the Golden Gate from enemy invasion. The Navy Net Depot was active until 1958 when its service was terminated and the property was transferred from the Navy to the Department of Commerce. In the 1960's, the property became part of NOAA's Southwest Fisheries Center. The NOAA acres were officially granted to SFSU in 2007, when a Congressional Act under NOAA's budget gave the last waterfront acreage to SFSU. With the fulfillment of the original 30 year lease on April 3, 2008, the entire property now belongs to SFSU and its future as an environmental center is sealed.

Over the last 30 years, RTC has worked to transform the military buildings for use by the Center's arts and sciences community. The historic Officer's Club was converted into the Bay Conference Center, and the Commanding Officer's Residence, built in 1904, has been renovated into the Ohrenschall Guest Center. Scientists and artists use the former barracks as labs and studio spaces. RTC's main research facility, with 11 state-of-the-art labs, two classrooms, a conference room and offices, is located in the historic Navy Net Depot warehouse. A waterfront greenhouse and bay water system were added in 1982.

Most importantly, RTC has grown and expanded its research and education efforts. Initially, there were only two scientists and few students on site, with students traveling to the main campus to take classes. Now, up to seven lecture and laboratory courses for undergraduate and graduate students alike are taught each semester at RTC. Discovery Day, the Center's annual open house, began in 1989 and attracts more than 1,200 visitors each fall. An outreach program, formalized with the hiring of a full-time Outreach Coordinator in 2000, conducts a wide range of professional development courses, teacher training and extended learning classes every year.

Plans for continued development of the Center have taken on new urgency and focus. With the future of the site secured, and the Center's master planning effort set to begin this spring, big changes are in store for the "Navy Net Depot." Director Toby Garfield is full of ideas to continue increasing the caliber of RTC science, education, stewardship and community service that has been the Center's mission from the start.

"Paul Romberg would certainly be pleased with how far we have come in the 30-years since SFSU hung its name on the front gate," Garfield recently observed from his 2nd floor office in the former warehouse. With his view of the Bay obscured only by the flurry of activity around an ongoing eelgrass experiment in the waterside greenhouse, Garfield continued, "We currently have 15 scientists, seven postdoctoral researchers, ten research technicians, 23 graduate students, eight undergraduates, a large support staff, volunteers and an outreach program. NOAA is back, represented by the SF Bay NERR, and visiting scientists from other institutions regularly collaborate with our faculty. The potential for this place is enormous. I look forward to setting in motion the next 30 years of development and returning the waterfront to a serviceable deep water port for the benefit of the research community."

From left to right: The waterfront with functioning deep water port; RTC's current waterfront, a graduate student performing bayside research in the greenhouse lab.

RTC in Action: Scientists respond to Bay Bridge oil spill

At 8:30 a.m. on November 7th, the container ship *Cosco Busan* collided with a Bay Bridge tower. As a result of the impact, a 90-foot gash in the ship's hull released nearly 60,000 gallons of bunker fuel into the San Francisco Bay. The fuel quickly spread throughout the Bay, coastal wetlands and beaches.

Many RTC scientists and partner organizations quickly set out to research the effects from the spill. RTC Director Toby Garfield's lab responded immediately, providing state and federal agencies with predictions of the currents and oil movement. These predictions were based on monitoring equipment deployed in central San Francisco Bay and the Gulf of the Farallones. The crew onboard RTC's Research Vessel *Questuary* were dispatched to help scientists collect samples of plants, animals, and bacteria from throughout the Bay and along the coastline.

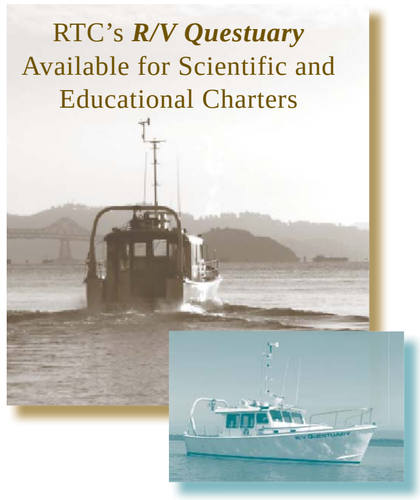
Two RTC scientists with current research on the Bay were in unique positions to monitor effects of the spill. Katharyn Boyer is assessing any damage to the eelgrass beds that she and her students had been working on in the Bay. Immediately after the spill they visited both oiled and un-oiled beds to monitor plant and animal densities and their physiological responses to the oil. Boyer's lab is currently conducting their second phase of monitoring, which will

The *R/V Questuary* enroute to field sites on the Bay.

include collection of tagged root structures to look for changes in growth due to oil exposure. The efforts of Sarah Cohen's lab also involve long term work in oiled and un-oiled areas, including student projects on marine invertebrates such as colonial sea squirts and sea stars.

A number of partner organizations and visiting scientists also participated in the oil spill response. Jaime Kooser, Manager of the SF Bay National Estuarine Research Reserve (NERR) is a member of NOAA's Natural Resource Damage Assessment (NRDA) team for salt marshes, mudflats and coastal lagoons. Thankfully, monitoring at the NERR's China Camp site showed that oil from the spill did not reach the marshes in the Reserve. Adjunct Professor of Biology, Matt Ashby of Taxon, Inc., collected water samples to assess the proliferation of marine microbes known to biodegrade petroleum. Interestingly, this was already a focus for his lab, and research in this area began before the spill. Postdoctoral researcher Chela Zabin collected oysters and sediment for NOAA, RTC and her (*continued on page 2*)....

RTC's *R/V Questuary* Available for Scientific and Educational Charters



- *Operates throughout San Francisco Bay, from the Upper Delta to the Golden Gate*
- *Outfitted for scientific research with modern navigation, A-frame, a winch with conducting wire, CTD carousel, and underway data acquisition systems*
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bayside

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RTC Classes

SUMMER 2008 Short Course

Biol 8001
Intro to San Francisco Bay Ecology

For more information visit http://cel.sfsu.edu

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Biological Oceanography

Chem 680
Chemical Oceanography

Biol 863
Marine Symbiosis

For more information visit http://rtc.sfsu.edu

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Advanced Wetland Delineation
Biol 9016, schedule #93708
Thursday, Friday, Saturday, June 12-14, 2008
Cost: $535
Prerequisites: Basic Wetland Delineation Course
Instructor: Tim DeGraff
Location: RTC Campus

Wetland Bird Ecology
Biol 9015, schedule # 93707
Friday, June 20, 2008
Cost $215
Instructors: Hildie Spautz and Letitia Grenier, Ph.D.
Location: RTC campus

For more information visit:
http://online.sfsu.edu/~wetlands

Or call Aimee Good 415/819-2073.

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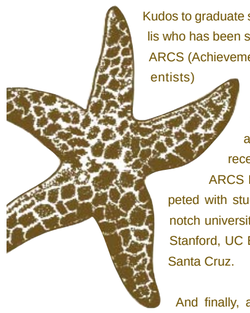
A MESSAGE FROM THE DIRECTOR

Romberg Tiburon Center celebrates its 30th Anniversary this year. Since 1978, RTC scientists and students have dedicated themselves to research on San Francisco Bay and its surrounding environments. Both have made major contributions to the advancement of science and our understanding of marine and estuarine habitats, the physical processes happening around us, and the need to promote stewardship of our environment through education and outreach. Stay tuned to the RTC website and the local press for stories of RTC's continuing efforts and contributions.

Our 30th Anniversary is a perfect time to launch RTC's Master Planning Initiative. With the campus-wide University phase of planning complete, RTC is ready to begin its own planning. Funds awarded through a National Science Foundation grant will be combined with funds raised by RTC to get the process in motion this spring. Local stakeholders are strongly encouraged to participate. If you are interested; please do not hesitate to contact us.

On April 4, RTC celebrated the donation of a new vessel to the marine operations fleet. The *Salty Dog* was generously donated to the Center by Annelies Atchley. This vessel has special meaning to RTC and our community because it belonged to Annelies' late husband, Dr. Bill Atchley, who was a dedicated board member since 2000 (Chair from 2002 – 2004). Bill was a strong supporter of RTC field sciences and up until illness prevented him, he regularly took scientists and students out on his boat to perform eelgrass research. The *Salty Dog* will be a wonderful reminder of Bill and his passion for environmental Conservation, Preservation and Restoration.

Thanks to RTC Education and Outreach Coordinator, Erin Blackwood, and 14 dedicated RTC volunteers, the 2008 Northern California Regional Ocean Science Bowl was a huge success! Next year the "Bowl" will take place under its new moniker, "The Sea Lion Bowl," and will make the move from Monterey to the SFSU campus. The entire College of Science and Engineering plans to participate, which will add to the educational caliber of the event. Congratulations to the winning team from Mission San Jose High School. Erin escorted the team to the national competition this year held in Seward, Alaska, where they went on to win 2nd place!



Kudos to graduate student Stephanie Kiriakopolis who has been selected to receive a $10,000 ARCS (Achievement Rewards for College Scientists) award. The ARCS award is a very prestigious scholarship; SFSU is the only CSU and non-Ph.D. campus that receives allocations from the ARCS Foundation. Stephanie competed with students from many other top-notch universities in the Bay Area such as Stanford, UC Berkeley, UC Davis, and UC Santa Cruz.

And finally, a big congratulations to the following 2008 RTC Graduates: Allegra Briggs, Lindsay Carr, Jeana Drake, Eric Galassi, Matt Gough, Alison Gould, Ulrika Lidstrom, Jenny Murphy, Regina Radan and Amelia Ryan. Please join us for our Graduation Ceremony on May 22 at 5 p.m. in the Bay Conference Center.

Best regards,

Toby

PI Profile: Sarah Cohen

Sarah Cohen was born to be a marine scientist. Cohen's parents were marine biologists at the Smithsonian Institution and put her in the water with a mask and snorkel before she could swim. Other relatives worked as biologists across the country. It was the family business. Cohen spent summers visiting relatives and their fish collections on road trips to the West Coast. Like other kids, she went to the mall on weekends. Unlike other kids, it was the Capitol Mall, to visit museums rather than stores.

Cohen briefly considered history as a college major, but her genes won out, and she ultimately graduated from Swarthmore College with a degree in biology. Before settling on zoology at the University of Washington for her graduate studies, she worked in Seattle conducting research in areas as diverse as reproductive endocrinology and salmon viruses.

In the Zoology Department at UW, Cohen was required to take a field course. She chose a larval ecology course at the Friday Harbor Laboratories on San Juan Island, and was quickly hooked on invertebrates. She returned each spring and summer to teach other unsuspecting students about the wonders of marine animals without backbones.

For her post-doctoral fellowship, Cohen went to Stanford University's Hopkins Marine Station to study the evolution of tissue recognition systems in tunicates, a group of invertebrates that are closely related to other chordates. She continues to study many aspects of these fascinating creatures at Romberg Tiburon Center today.

Before coming to RTC in the Fall of 2003 as Assistant Professor of Biology, Cohen had diverse work experiences including research on fish mating in an underwater habitat in Florida, administrative work as Assistant Director of Shoals Marine Laboratory, research on lobster populations at Harvard, and research on adaptations of estuarine fish to contaminants. She enjoys Romberg Tiburon Center as a place to combine laboratory study with field work. Cohen's work at RTC focuses on the ecological and evolutionary genetics of many invertebrate and estuarine fish populations, and how genetics can inform the conservation of marine and estuarine organisms. In addition, she collaborates with Kathy Boyer on an eelgrass restoration project that has emphasized conservation and enhancement of genetic diversity.

Cohen continues to educate the next generation of scientists. She teaches Marine Ecology, Molecular Evolution and Conservation, Molecular Approaches to Oceanography, Marine Ecology and Evolution, and seminars on special topics such as Invasion Biology at RTC and on main campus in San Francisco.

It seems fitting that Cohen should end up researching the genetics of marine organisms. After all, marine biology is in her genes.

From left to right: Cohen with her students in the wetlab; the Cohen Lab wins the "Best Display" contest at RTC'S annual Discovery Day open house; Cohen and students sampling off the RTC monitoring pier.

The *Salty Dog* joins RTC's Research Fleet

The *Salty Dog*, the pride of the late Dr. William Atchley of Tiburon, has officially joined the RTC research fleet. "The *Salty Dog* rounds out our existing fleet perfectly," said RTC Director and Oceanographer Toby Garfield. "It is a flat bottomed, shallow draft, outboard-driven boat like our Boston Whalers but its cabin provides a platform and shelter for our electronic equipment that we previously had only on the *Questuary*." He added that with the required training students and faculty will be certified to operate the vessel.

Annelies Atchley and Toby Garfield at the dockside celebration.

Dr. Atchley's widow, Annelies, was honored with a dockside reception when the *Salty Dog's* ownership was transferred on April 4. "This boat was Bill's tree house and I felt it embodied his spirit," she said. "At first I dreaded giving the *Salty Dog* away but when I saw Bill's fellow board members and all the students, staff, faculty, researchers whose work would be enhanced by it, giving away the boat became a happy occasion. Bill's spirit is still on the *Salty Dog* and it is great that it has a good home and will perform a valuable function."

Spill Response cont...

University of California, Davis studies. A visiting NOAA research team from the Northwest Fisheries Science Center in Seattle, together with staff from their Ecotoxicology and Environmental Assessment Programs, joined the efforts by researching the potential impacts of the spill on herring embryos and larvae.

To date, RTC-based scientists have provided data to several governmental agencies including the Gulf of the Farallones and Cordell Bank National Marine Sanctuaries, and the California Oil Spill Prevention and Response program. As with any environmental disaster, pre and post event monitoring is essential, so the research and data collection continues. RTC scientists have decades of baseline data on SF Bay organisms, and this information will prove to be invaluable as they attempt to answer questions about the effects of the spill.

"As the only academic marine lab located on San Francisco Bay, we are heavily invested in the health of the Bay," Director Garfield said. "The expertise of each of these scientists and their work in response to the spill speaks well of the quality of the information RTC and its partners will contribute to our national knowledge of the effects of oil spills."

Changing Climate Leads to Changing Marshes

As the global climate changes, tidal marshes within San Francisco Bay National Estuarine Research Reserve (NERR) will likely fare better than other marshes in the Bay Area. The dry grasslands that surround the marshes at Rush Ranch and China Camp were protected from development, leaving room for the marshes to retreat back as the sea level rises. Despite this rare level of protection, however, scientists still expect that climate change will impact even these relatively pristine tidal marshes.

San Francisco Bay NERR's System-Wide Monitoring Program is ideally situated to assess some of the basic questions related to climate change, such as: Is the average salinity of the water near Rush Ranch increasing? Are there greater temperature extremes in the shallow waters surrounding China Camp? We recently doubled the capabilities of our water-quality monitoring program so that we can better answer these basic but critical questions. To understand more complex ecological effects of climate change on the Bay's marshes, the NERR Research Coordinator, Dr. Drew Talley, and colleagues from San Francisco State University, The University of San Francisco, and the University of California at Berkeley are conducting interdisciplinary research at tidal wetlands throughout the estuary. Their research examines how fish living in the estuary (like salmon and striped bass) depend on freshwater, brackish, and saltwater marshes. They will then use computer models to predict how future changes in water salinity associated with climate change may affect the long-term health of fish populations in the San Francisco Estuary.

Our education programs are also actively addressing the potential effects of climate change. For example, the Coastal Training Program recently co-sponsored a weeklong "Climate Camp" for people who manage lands that will be impacted by climate change. Over 150 people from 30 countries gathered in San Francisco to learn about the science of global climate change, improve their ability to communicate about it, and create plans for how they will manage their lands and programs in response to the changes. You can learn more about the impact of climate change on tidal marshes by attending one of our public education programs; visiting www.sfbaynerr.org for current offerings or contacting our Education Coordinator.

The National Estuarine Research Reserve System is a network of protected areas established for long-term research, education and stewardship of the nation's estuaries. Each NERR is a partnership between the federal and state government. The San Francisco Bay NERR is a partnership among National Oceanic and Atmospheric Administration, San Francisco State University, California State Parks, Solano Land Trust and the Bay Conservation and Development Commission.

Grad Student on the Go: Stephanie Kiriakopolis

When *bayside* was asked to catch up with this graduate student, it wasn't an easy task! Stephanie Kiriakopolos joined RTC in the spring of 2006 and she hasn't slowed down since. As a student in Kathy Boyer's lab, Stephanie is actively involved with eelgrass restoration projects in San Francisco Bay. Add her role as the RTC Student Association President and her job as Ohrenschall Guest Center Caretaker to her thesis research, and you've got one enthusiastic and motivated student!

Stephanie grew up on a farm in Forestville, which is one hour north of San Francisco. She attended UC Santa Cruz, earning two Bachelor of Arts degrees for Biology and Environmental Sciences.

Bayside finally got a chance to meet up with Stephanie for an interview:

What made you want to become a marine biologist? I actually never planned to become a marine biologist. Before deciding to pursue a masters degree my research focus was in terrestrial botany and physiological ecology (*i.e.* how plants respond to their environment). It wasn't until I decided to continue my education that I decided to study plants in aquatic ecosystems, like wetlands. I had no idea that I would end up actually under the water and in love with research on submerged aquatic vegetation.

What can you tell us about your thesis? My thesis is on *Zostera marina* (commonly known as eelgrass). The primary focus of my research is to look at eelgrass populations and identify the potential abiotic (nonliving) environmental factors that can impact why different populations of eelgrass in San Francisco Bay grow at different depths or show differences in morphology (*i.e.* physical appearance). Eelgrass is classified as a foundation species because it creates habitat that other organisms rely on. Specifically, the leaf blades of the plants create a vertical structure in areas that would otherwise be just water and mud. Marine organisms use the leaf blades as a surface to settle and grow or to lay eggs. Dense patches of eelgrass create a safe place for young fish and smaller animals to hide, thus eelgrass beds are known as nurseries of the estuaries. Eelgrass acreage in San Francisco Bay has been greatly reduced because of human caused disturbances. Efforts to protect and restore these plant populations because of their importance to other marine organisms will be enhanced by research to understand these plants better.

What are your career plans? I will start a Ph.D. program in August of 2009 (place to be decided). Following completion of schooling, any job I take will have to allow me to be active in research even if it means I make less money. I also would like to live in other countries like Asia and Europe. Each estuary is unique and there is so much to learn by studying marine life in different parts of the world. Eventually, at some point in my career, I would like to become a director of an active research facility.

What do you do for fun? Travel! I've been to Costa Rica, Mexico, fifteen states of the US, the Caribbean, and almost every country in Europe. In addition, I would like to travel to China, Japan and Africa. I love to stay active so I am also involved in various volunteer activities – I am a member of the Restoration Committee for the SF Bay Subtidal Habitat Goals Project, I also serve as the RTC Student Association President, the RTC student representative on the RTC Board of Directors, and the SFSU College of Science and Engineering advisory committee. I am an active volunteer kayaking guide with the not for profit Environmental Traveling Companions, which provides outdoor adventures to people with special needs. I also can never turn down a great hike or a good book!