

SEA GRANT NEWS

“Coastal Science Serving California”

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Sea Grant
California

Cover—Graduate students Erica Jarvis and Chris Mull assessing the condition of a sport fish before releasing it. Credit: Derek Smith.

Below—thankyouocean.org

The California Ocean Communicators Alliance has launched a public awareness campaign to help Californians...

- Learn about the ocean,
- Experience the ocean,
- Respect the ocean,
- Choose the ocean,
- Make a difference.

The ocean is vital to life and touches us every day. The ocean gives so much to California: food, water, commerce, recreation and quiet contemplation. Even medicines that heal us and the air we breathe come from the ocean. Yet today, the ocean is in trouble. Our ocean faces the threat of pollution, marine debris, endangered populations, beach erosion and more. You can help. By learning about the ocean, getting involved in ocean activities and voicing your opinion to lawmakers, you can join the millions of Californians who are saying, “Thank You, Ocean!”

Please visit: [//ThankYouOcean.org](http://ThankYouOcean.org)

Your California portal to ocean information



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Released Sport Fish Can Survive

If you've been on a sport-fishing boat and seen the bulging eyes and distended intestines of caught fish, you might wonder if there is any point tossing them back.

Amazingly, the answer is "yes," for some species—if they are returned to depth quickly. "Fish that look terrible when they are brought up actually can survive if you get them back down fast enough," said biology professor Chris Lowe of California State University, Long Beach. Lowe received California Sea Grant support to study mortality rates of caught-and-released sheephead—a popular sport fish that inhabits kelp forests and is part of a complex of nearshore fishes that also includes rockfishes.

As with human divers, fish that experience rapid pressure change can suffer a host of physiological problems, including air embolisms and strokes. Many also have an internal ballasting mechanism, an air bladder that during a rapid ascent can swell with enough force to push a fish's stomach out through its mouth or distend its eyes. Anglers call these grotesque fish "popped." Boats fishing



This bocaccio has been hauled up from depth quickly and is suffering from "barotrauma," a fish's version of the "bends." Rapid pressure change has forced its stomach through its mouth. Amazingly, this grotesque-looking creature can survive if handled properly. Photo credit: Chris Lowe, CSULB

for rockfishes typically leave behind a slick of "floaters," fish too inflated to sink, Lowe said. "These fish are sitting ducks for sea gulls and sea lions."

According to Lowe, deflating a sheephead's swim bladder significantly increases its post-release chances of survival. These fish, he said, have been observed to resume normal activities eight hours after being released.

More recently, Lowe and graduate student Erica Jarvis have been looking at whether "barotrauma" in bocaccio and other rockfishes could similarly be reversed by quickly returning them to deep water. Again, the answer was "yes."

In experiments conducted off Palos Verdes in Los Angeles in summer 2006 and funded by USC Sea Grant, Lowe and Jarvis

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New Director of NOAA's National Sea Grant Program



Leon Cammen. Photo credit: NOAA/National Sea Grant College Program

Dr. Leon Cammen has been named the new director of the National Sea Grant College Program. He replaces former director Ronald Baird, who retired in February 2006.

Cammen, a zoologist by training, has been with Sea Grant since 1990 and during this time has served as a program officer, research director, acting deputy director and most recently as acting director. He continues to serve as program manager for NOAA's ecosystem research program, a position he has held since 1994.

The national program works closely with the network of 30 university-based programs located in coastal and Great Lakes states, and Puerto Rico. California Sea Grant is the largest of the 30 programs. ■ ■ ■

Researchers Nearing Commercially Viable Cure to Abalone Disease

California Sea Grant biologists have discovered that the antibiotic oxytetracycline (OTC) administered orally in abalone feed cures the deadly abalone disease known as withering syndrome. They are now working on developing a single, low-dose cure that would significantly lower the labor and rearing costs of treating infected animals.

"We are excited about the results," said George Trevelyan, director of research and development at The Abalone Farm in San Luis Obispo County and a



The Abalone Farm, Cayucos, California. Photo: Brad Buckley, <http://www.marinephotobank.org/>

collaborator on the Sea Grant-led project.

Withering syndrome is a highly contagious, water-borne bacterial infection spread

through abalone feces. The disease causes severe atrophy of an abalone's foot muscle, the part normally eaten by people. Warm

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Professor Carolyn Friedman is working to develop a cure for the abalone disease known as withering syndrome. Photo courtesy University of Washington, Seattle

water triggers disease outbreaks. The 1997–98 El Niño, for example, resulted in the loss of about \$1.5-million worth of product at the state's two largest abalone culture facilities, one of them being The Abalone Farm. Some farms went out of business.

“We saw our largest, most valuable abalones wither away,” Trevelyan said. “A single-dose treatment would be pretty major for us.”

The interest in developing a single-dose cure stems from a series of experiments led by professor Carolyn Friedman of the School of Aquatic and Fishery Sciences at the University of Washington in Seattle and colleagues at UC Davis and the California Department of Fish and Game. In these studies, infected abalones were administered 20- and 30-day oral

OTC treatments. A month later the abalones were tested for the presence of the rickettsia-like pathogen that causes withering syndrome. All tested negative.

A quirk in abalone physiology, however, has impeded the full-scale commercial use of the antibiotic as a treatment for withering syndrome. Abalones accumulate antibiotic in their digestive gland, Friedman explained.

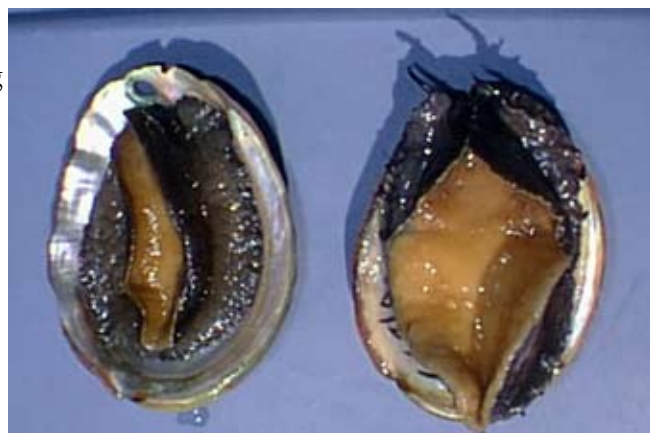
As a result, it takes an inordinately long time for antibiotic residues to drop below the FDA health standard that allows the animals to be sold for human consumption.

In one series of experiments, it took nine months after a 20-day treatment for antibiotic residues to drop

to acceptable levels, Friedman said. For abalones approaching harvest, this translates into nine months of extra culture time—a significant increase in the cost of rearing animals that otherwise would reach market size in three to four years.

“Before we were asking, ‘how much OTC for how long’ to get rid of withering syndrome,” Friedman said. “Now we are looking to find the dose that results in a certain level of OTC in the digestive gland that allows an abalone to purge itself of the pathogen.”

This has led to shorter and shorter treatment regimes, ending now in efforts to develop a single-dose cure. The dosage most recently tested has a 90 percent efficacy rate and requires a three- to four-month clearing time. ■ ■ ■



A diseased abalone (left) and its healthy counterpart (right). Photo © J. Moore, California Department of Fish and Game

New Marine Advisor in Ventura Area



Monique Myers. Photo credit: Kris Kvilekval

Monique Myers is California Sea Grant's new coastal community development advisor in the Ventura area. Funding for the new position was provided by a special "Coastal Community Development" initiative from NOAA's National Sea Grant Office to benefit coastal communities.

"Monique has an excellent background to help us with natural resource concerns related to coastal community development," said Paul Olin, director of the California Sea Grant Extension Program. "She is also no stranger to Southern California and has earned a solid reputation as an engaging educator and highly capable researcher. We are delighted to have her join our program."

Currently, Myers is conducting a needs assessment in the Ventura area. Some potential topics that she has identified are:

- Reducing urban sprawl amidst new home construction (a.k.a. smart growth).
- Helping to restore the Ormond Beach wetland in Oxnard.
- Assisting with implementation of the Clean Water Act.
- Protecting native stream communities from the spread of the prolific New Zealand mudsnail.



Rock covered with the invasive New Zealand mudsnail. Photo credit: U.S. Fish and Wildlife Service

Myers serves on a national Sea Grant network advisory board that is developing a survey questionnaire to gather information about coastal access issues. She will also be working with a local planner and builder to provide information to people interested in learning about creating "green" buildings.

Myers earned her doctorate in environmental science and engineering from UCLA in 2003. Her thesis examined the potential of using public volunteers to monitor the effects of marine protected areas on benthic communities.

Most recently she was a postdoctoral fellow at UC Santa Barbara. There, she worked on an EPA project that investigated indicators of wetland health. She has also been a program director for the USC and UCLA Centers for Ocean Sciences Education Excellence (COSEE) and hopes to continue making marine science accessible the public.

Myers is based at the University of California Cooperative Extension office in Ventura County, (805) 645-1469, email: nicmyers@ucdavis.edu. ■ ■ ■

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caught 43 rockfish, representing 11 different species, in waters about 250 feet deep. These fish were placed in wire cages and lowered back down.

Two days later, the biologists donned dive gear and returned to the cages to assess the fish. Twenty-six fish were found alive and were released. Two fish were missing from the cages and 15 were dead. This represents an overall survivorship of 63 percent, across all species.

Other experiments led by Lowe have shown that fish returned to the bottom within ten minutes of being caught had 90 percent survival rates.

“Generally, we thought most rockfish, unless brought up from very shallow water, died,” said Marty Golden, the Pacific Coast recreational fisheries coordinator for NOAA Fisheries in Long Beach. “This research is adding a whole new level to the possibility of getting undersized fish

back in the water alive.”

With appropriate angler education, the research could eventually lead to easing some restrictions on sportfishing, Golden said. ■ ■ ■



Canary, bocaccio and yelloweye rockfish.
Photo: Rick Starr

Stop Aquatic Invaders on Our Coast! Free Bilingual Poster



California Sea Grant marine advisor Leigh Taylor Johnson wants boaters to know the problems caused by invasive species, to be able to recognize common invasive fouling organisms, and to learn how to prevent their spread.

This large (2 ft by 3 ft), colorful, bilingual, educational poster, “Stop Aquatic Invaders on Our Coast! / ¡Detenga el Transporte de Especies Invasoras Acuáticas en Nuestras Costas!” is free to marinas, harbormasters, fishers, boat owners and anyone else interested in learning more about preventing the spread of invasive species via boat hulls.

To order a copy, please email your name and postal address to Steve Gabrysh, California Sea Grant Communications at pubadmin@ucsd.edu, or fax your request, name and address to 858-453-2948. ■ ■ ■

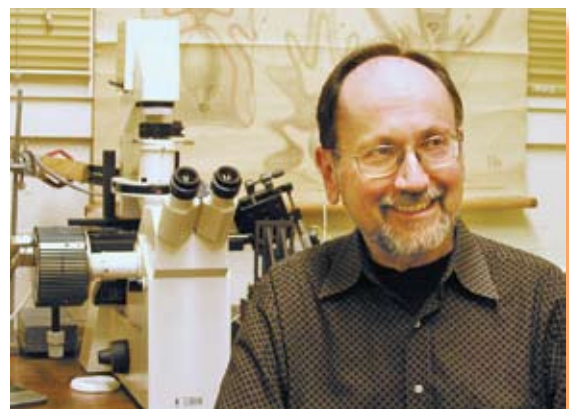
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Stanford Biologist Wins Award

Professor David Epel has won the 2006 Ed Ricketts Memorial Award from the NOAA Monterey Bay National Marine Sanctuary in recognition of a lifetime of achievement in marine science.

Epel holds the Jane and Marshall Steel, Jr. Professorship in marine science at Stanford's Hopkins Marine Station and has been the recipient of several California Sea Grant research grants. His most recent grant showed that relatively small amounts of synthetic fragrance compounds known as nitro-musks can impair marine organisms. ■ ■ ■



Professor David Epel. Photo credit: Chris Patton, Hopkins Marine Station