

CURRENTS

THE NEWSLETTER OF HEAL THE BAY VOLUME 21 NUMBER 2 SUMMER 2007

The Fight Against Marine Debris



Plastic debris removed from the stomach of a dead albatross



CURRENTS

current(s) adj or n 1: belonging to the present time 2: a movement of water in a certain direction 3: the prevailing public opinion or belief 4: the newsletter of Heal the Bay



Heal the Bay.

Heal the Bay is a nonprofit environmental organization dedicated to making Southern California coastal waters and watersheds, including Santa Monica Bay, safe, healthy and clean. We use research, education, community action and advocacy to pursue our mission.

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Table of Contents

Letter from the Executive Director.....1

Contaminated Fish Report Released2

Paradise Cove and Escondido Beach3

Partners and Members3

Dorothy Green Honored4

Earth Month5

Sewage Spill Audit6

Beach Report Card6

UCLA's Stone Canyon Creek7

Bad Religion Benefit Concert7

Cover Story: Marine Debris8

Rocky Reef Renovation10

Grunion Greeters Workshop11

Annual Dinner12

New Swimmer Health Effects13

Critter Corner14

Staff Updates.....15

Thank You/Acknowledgements.....17

On the Cover: Plastic debris found in the stomach of a fledgling dead Laysan Albatross on Kure Atoll. All of the plastic in this picture was fed to the chick by its parents. Photo by Cynthia Vanderlip.

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Marine Debris: The Pacific Protection Initiative

In perhaps Heal the Bay's most ambitious endeavor to date, the organization is taking on one of the world's oceans most critical pollution problems: marine debris. Non-degradable marine debris, predominantly plastics, wreaks havoc on aquatic life in rivers, lakes, bays, beaches and the open ocean—both adjacent to urban areas and at some of the most remote locations on the face of the planet. We've all seen the gut wrenching photos of seals strangled by fishing nets and sea turtles choked to death by plastic bags. Many of you have volunteered for beach or creek cleanups and have been repulsed by the sheer overwhelming numbers of Styrofoam cups, chip bags, and bottle caps.

Heal the Bay could lead a beach or creek cleanup every day and still not make a dent in the amount of trash smothering habitat and causing substantial harm to aquatic life. In fact, Heal the Bay does lead an average of nearly one cleanup per day, and, through our advocacy efforts, we also were instrumental in the creation and passage of the zero trash limits for the Los Angeles River and Ballona Creek. Despite these important and successful efforts, it is not enough to keep our beaches from looking like a landfill after every rain. Clean up after clean up demonstrates that plastic trash, predominantly single use food packaging, makes up nearly three quarters of the trash collected. Our frustration at the lack of measurable progress on plastic trash reduction led us to help intro-

duce the most far reaching marine debris legislation ever attempted in the country. These five bills were introduced shortly after the state's Ocean Protection Council, chaired by Resources Secretary Mike Chrisman with Cal-EPA Secretary Linda Adams and Lieutenant Governor John Garamendi, passed a far reaching, comprehensive marine debris reduction resolution that signaled to California and beyond that marine debris is a global crisis that will take drastic measures to solve.

Recently, I read Rachel Carson's environmental classic, "Silent Spring" to my oldest son Zack. It had been over twenty years since I read the 1962 treatise on the colossal environmental harm caused by persistent chemicals applied by mankind for pest, fungus and weed control, and I was struck at how relevant the book remains to this day. The legacy of those chemicals, most long since banned for manufacture and application, was generations of ecological and public health harm that are still with us today. One only has to look at the DDT and PCB contaminated Channel Island Bald Eagle population and local fish caught off of Palos Verdes to see the folly of our reliance on persistent chemicals released to the environment. Here we are 45 years later, yet society still hasn't learned that the price of convenience can be catastrophic. Cheaper costs to manufacture non-degradable packaging increase company profits and often provide greater convenience to the

consumer, but they don't decrease environmental harm.

The Ocean Protection Council resolution and the five marine debris bills we are supporting and sponsoring signal a shift in the thinking of Californians. If the bills become law and the resolution gets implemented, then California will have made a choice that fishing gear can't be abandoned to slaughter marine life for decades to come. Food packaging can't be manufactured for single use with no hope of future recycling. Plastic pellets, or nurdles, won't be ingested by fish and birds, because they no longer will be released to the marine environment. And food packaging won't contain toxic chemicals that pose cancer and birth defect risks. As a result, maybe our lives will be a little less convenient, but the trade-off is that sea bird, fish, sea turtle, and marine mammal populations will have the chance to flourish, and every trip to our beaches and streams will leave us with memories of beauty rather than blight. That should be a trade we're all willing to make.

Please keep close track of our website and do what you can to help us pass the Marine Debris Pacific Protection Initiative by writing letters and making phone calls when requested. The rivers, beaches and oceans need your help.



Mark Gold
President,
Heal the Bay

Contaminated Fish Report Released

By Hallie Jones

In March 2007, the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Environmental Protection Agency released a report on

levels of contamination were found in fish caught in Ventura County, Long Beach, Seal Beach and Huntington Beach. Of all species analyzed, Pacific mackerel, opaleye and jacksmelt had the lowest levels of contamination. Overall, the levels of contamination in fish were similar to those found in fish

lower the contaminant concentrations in fish. Because DDTs and PCBs accumulate in fatty tissue, filleting the fish and discarding the skin, guts, and head lower the concentrations of these carcinogens. The program also recommends that consumers grill the fish to allow any excess fat to drip off the fish.

The recently released report on contaminated fish stemmed from a 2002 agreement between the EPA, NOAA, the U.S. Fish and Wildlife Service, the National Park Service, California Department of Fish and Game, California State Lands Commission and California Department of Parks and Recreation to undertake a multi-purpose survey of contaminants in marine fish along the Southern California coast. The report's goals were: to provide solid data on fish contamination in the area; provide data for use in assessing the current no-take zone around the Palos Verdes shelf; look at suitable locations for artificial reef projects that restore fishing opportunities to the public; and support the EPA's Superfund Palos Verdes shelf cleanup.

Next, the Office of Environmental Health Hazard Assessment (OEHHA) will complete a risk assessment based on the results of the study. OEHHA will use the risk assessment to develop risk management recommendations to protect public health. Also, the Department of Fish and Game will use the results to determine if additional or expanded fishing bans are needed. Heal the Bay will advocate for the completion of these efforts as soon as possible.



Photo by Frankie Oralla

Southern California fish contamination. The report included an analysis of 1,200 fish caught between Point Dume in Malibu to Dana Point in Orange County for DDTs and PCBs (both known carcinogens), as well as three other contaminants.

Unfortunately, the study shows that fish contamination is much more widespread (both geographically and by number of impacted species) than we might have hoped. As expected, the most contaminated fish were white croaker (a bottom dwelling non-migratory fish) caught near the source of DDT contamination—a 100-ton deposit of DDT released off of the coast of Palos Verdes between 1947 and 1982. The study also shows that white croaker caught as far north as the Redondo Beach Pier are highly contaminated. Disturbingly, other non-bottom-dwelling species, like kelp bass, barred sand bass, scorpionfish and rockfish, were highly contaminated as well. The highest levels of contamination, other than the Palos Verdes area, were found in fish caught in Horseshoe Kelp, San Pedro Bay and near the Cabrillo Pier. Much lower

from a study completed over 15 years ago.

A 1996 Heal the Bay study showed that locally caught contaminated white croaker was highly available in local supermarkets, specifically Asian markets. After 10 years of outreach and education, however, a 2004/2005 EPA study showed that only six of 68 Asian supermarkets surveyed sold white croaker.

Heal the Bay's Angler Outreach Program works to educate subsistence anglers (people who fish for food, not just for sport) on the dangers of eating contaminated fish, and white croaker in particular. "This report doesn't change how we're working with and educating subsistence anglers," said James Alamillo, who runs the Heal the Bay Angler Outreach Program. "We will continue to tell people to avoid eating white croaker. What the report could impact, however, is the commercial no-fishing zone off of Palos Verdes that was established to protect the public health of croaker consumers."

The Angler Outreach Program also educates people on cooking techniques that

Malibu Beaches Studied

By Hallie Jones and Mike Grimmer

Over the past several years, Heal the Bay has observed that Paradise Cove and Escondido Beach in Malibu have continual, persistent bacteria pollution problems. Both scored poorly on this past year's Beach Report Card—Escondido Beach, in fact, was the worst beach in California and Paradise Cove was one of the most polluted beaches in Los Angeles County.

Under AB 538, counties must take steps to identify and stop sources of persistent bacterial pollution. When faced with lasting bacteria problems at local beaches, municipalities are required to undertake a Source Identification Study, which helps pinpoint the source of bacteria and provide some insight as to how to abate the

pollution problem. The County of Los Angeles, responsible for both of these beaches along with the City of Malibu, recently decided to try to end the pollution problems at Paradise Cove and Escondido Beach once and for all. The County of LA hired the Southern California Coastal Water Research Project (SCCWRP) and Heal the Bay; our team of water quality sampling and analysis experts designed and implemented a Source ID study at each of these creeks.

The beach pollution problems stem from Ramirez Creek at Paradise Cove and Escondido Creek—creeks that outfall onto these beaches. Beginning in March 2007, our team and LA County took water samples from numerous

sites in and around the creeks. Using the methods developed by our Stream Team, we analyzed those samples in our lab, looking for fecal bacteria and specific indicators that will help focus our search on human and/or animal sources. The samples will also be sent out to SCCWRP for further analysis to look for optical brighteners (detergent additives that indicate a septic component of the contamination), and bacteria and viruses using molecular techniques. These tests will narrow the potential sources of high bacteria to the creeks.

This project has the potential to end a risk to public health, and we commend the County for taking steps to identify and stop the problem.



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Dorothy Green Honored with Award

By Tom Fleming



U.S. EPA Administrator Steve Johnson honors Dorothy Green with the President's Service Award.

On February 26th, 2007, the U.S. Environmental Protection Agency honored Dorothy Green, Heal the Bay's beloved Founding President, with the President's Volunteer Service Award. She is one of the first environmental advocates to receive the President's Volunteer Service Award.

The award, given to volunteers nationwide, recognizes the outstanding contri-

bution of those who have made volunteering and serving a central part of their lives. Dorothy was honored for her three decades of volunteer service and for her leadership in protecting California's water quality.

A leader in California water policy for over thirty years, Dorothy's steadfast devotion, energy and commitment to improving the world in which we all live

is an inspiring example of how one person can make a tremendous and lasting difference.

Dorothy's many volunteer achievements are impressive and could fill an entire book. Her most notable accomplishments include:

- Founded Heal the Bay in 1985 and has continued to serve in countless capacities ever since, including on our Board of Directors.
- Started the Los Angeles and San Gabriel Rivers Watershed Council.
- Helped establish the Public Officials for Water and Environmental Reform (POWER), which sponsors the annual California Water Policy Conference that Dorothy has chaired for the past 17 years.
- Helped launch the California Water Impact Network, the goal of which is to move the state towards a sustainable water future.

From all of us at Heal the Bay, heartfelt congratulations to Dorothy on a well-deserved award and recognition!

YogaWorks Grand Opening in Pacific Palisades!

On Saturday, March 3rd, YogaWorks hosted a full day of festivities at the Pacific Palisades studio in celebration of its grand opening. The day featured a special class schedule with star teachers, beginners' orientations and additional innovative programming. All classes were free, with the studio accepting donations on behalf of Heal the Bay.

"Personally, I've been a big supporter of Heal the Bay for more than 10 years," said Phil Swain, President and COO of YogaWorks. "The organization not only has a huge impact on protecting water quality, it also does a great job of raising awareness," he said. "Professionally, it's a no-brainer. Our economy is so dependent on tourism and our beaches that I feel, as a business person, it's in my own best interest to support a group like Heal the Bay."

April was Earth Month!

By Hallie Jones

Heal the Bay celebrated Earth Month with restoration projects, neighborhood festivals, community speeches, talks to school groups, and a multitude of beach cleanups. Thank so much to those who made all of our cleanups and celebrations a success, especially the volunteers who donated their time to Earth Month and Heal the Bay.

"Nothin' But Sand" Beach Cleanup

On April 21st, our volunteer crew lead the largest Nothin' But Sand cleanup ever at the Santa Monica Pier, with a record-breaking 720 volunteers participating.

Compton Creek Bike Path & Equestrian Trail Cleanup

Also on April 21st, Heal the Bay helped to spruce up the Compton Creek bike path and equestrian trail. These waterway cleanups help prevent the winter's trash from making its way into Compton Creek and the Los Angeles River and out to the ocean through Long Beach.



All photos by Meredith McCarthy, Jyoti Gaur and James Alamillo.



Aquarium Earth Day Celebration

The Santa Monica Pier Aquarium staff and volunteers were busy with a special Earth Day celebration the weekend of April 21st and 22nd. Visitors participated in Earth Day arts and crafts projects, lectures about pollution, Aquarium tours, face painting, Earth Day themed stories and movies and beach cleanups.

Malibu Creek State Park Restoration

Heal the Bay held a special restoration project in Malibu Creek State Park on April 28th. These cleanups and restoration helped keep the largest natural creek draining into the Santa Monica Bay clean and healthy.



Sewage Spill Audit Released

By Tom Fleming

In a report released on January 24th, 2007, the Los Angeles County auditor-controller disclosed that more than 90 percent of sewage spills in LA County since 2002 were neither officially recorded nor cleaned up. Specifically, of the 208 sewage spills over 1,000 gallons since 2002 (totaling 11.9 million gallons), only 19 were properly reported to the LA County Health Department, leaving over 9.7 million gallons of spilled raw sewage unaccounted for.

When a sewage spill has impacted the beach, the local California health agency is required by law to notify the media, establish a telephone hotline number to inform the public, and close the beach, prohibiting contact with the contaminat-

ed water. The beach must remain closed for at least 72 hours after the source has been identified, the spill ceases and sampling results indicate compliance with state standards.

Unfortunately, the audit showed that the Health Department closed beaches in only 2.6 percent of the more than 200 spills investigated. This means that countless swimmers, surfers and other beachgoers were unnecessarily exposed to potentially contaminated water. Fecal bacteria and viruses, like that found in raw sewage, can cause respiratory and ear infections, skin rashes, and gastrointestinal illness.

The audit contained 15 recommendations to address the failures in the spill notification process, and we're happy to report

that these recommendations were adopted by the LA County Board of Supervisors at their January 30th meeting. Heal the Bay strongly supports these recommendations, which cover such diverse topics as setting guidelines and standards for maintenance of sewage systems and setting timelines and procedures for notification when a sewage spill happens.

As a result of the audit, Assemblymembers Ted Lieu and Julia Brownley introduced legislation mandating implementation of a number of the County recommendations statewide.

You can find a copy of the full audit, the 15 specific recommendations, as well as related LA Times articles and an editorial, on our website at www.healthebay.org/news.

Annual Beach Report Card Released

By Hallie Jones

On May 23rd, Heal the Bay released our 17th Annual Beach Report Card, grading beaches up and down the California coast based on their levels of bacterial pollution.

Not surprisingly, water quality was generally good in Southern California—primarily because of the severe lack of rain. Rainfall washes pollutants from city streets through the stormdrain system and into the ocean, meaning that dry weather usu-

ally means better water quality.

Los Angeles continues to have water quality problems at some local beaches. Check the full annual report at www.healthebay.org/brc to learn more.

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Special thanks to the Westside Chronicle! This local newspaper donated a series of full-page ads for both Coastal Cleanup Day 2006 and the Meet the Locals campaign for the Santa Monica Pier Aquarium. Thanks for your support of Heal the Bay and the Aquarium.

UCLA's Stone Canyon Creek

By Hallie Jones

From November 2005 through the Spring of 2007, Heal the Bay's Stream Team field crews were hard at work on a different stream—Stone Canyon Creek, which runs directly through the UCLA campus. Throughout much of this time period, each month the Stream Team held a Stone Canyon Creek restoration in conjunction with UCLA student volunteers and faculty.

Stone Canyon Creek runs just west of the Anderson School of Management at UCLA. This portion of the creek is the last naturally banked stream on campus, and one of the last natural creeks in the area. While the creek originally was planted with native sycamores and other native plants and trees, over the

years those native plants have been pushed out by English Ivy, Vinca, and other invasive species.

As part of UCLA's larger sustainability efforts, and, specifically, part of a focus on improving the creek's habitat both on and off campus, the Stream Team joined the effort to remove this invasive vegetation and replant native trees and plants. Invasive plants compete with native plants, and thus choke out native habitat for local birds, insects, and other animals.

Heal the Bay's crews and UCLA volunteers first plotted the vegetation surrounding the creek, and tackled the enormous job of removing the incredible

amounts of invasive vegetation that had grown up around the creek. All vegetation was removed mechanically—meaning no herbicides were used. Once the invasive plants were removed, volunteers planted native vegetation along the banks of the creek. The native plants, including California Bay and Hummingbird Sage, were monitored for a period of time following planting and provided supplemental water when needed.

Heal the Bay hopes that projects like the Stone Canyon Creek restoration will help educate students and alert Los Angeles residents to the wonderful resources that our creeks can offer—and focus even more attention on the restoration of these neglected treasures.

Bad Religion at the Santa Monica Civic

On April 6th KROQ FM held an unprecedented concert benefiting Heal the Bay. The evening featured Bad Religion plus special guests Tiger Army/The Briggs at the historic Santa Monica Civic.

The joining together of these three bands combined with the backdrop of the Santa Monica Bay was the perfect setting for this special event and helped raise awareness and funds for Heal the Bay.

The show was put on by Right Arm Entertainment. Gary Spivack of the entertainment company said: "this became a natural for Right Arm

Entertainment to include Heal the Bay. It was our vision with KROQ to do a concert at the historic Santa Monica Civic together—to bring rock music back to this great venue."

"The SM Civic is literally at the doorstep of the Santa Monica Bay—an area where I was raised," Spivack continued. "It was time to help and give back some by putting on a great show at a great venue for a great



Photo by Sean Murphy

organization like Heal the Bay."

For updated information on Heal the Bay events, please visit www.healthebay.org.

Heal the Bay Tackles

By Sarah Abramson and Kirsten James

The Problem

Since the 1970s, marine debris, which is simply man-made trash and materials that litter our beaches and sea, has been widely recognized as a threat to the marine environment. Despite past efforts to control marine debris, the quantity of debris in oceans and on beaches is increasing dramatically world-wide. An estimated 80 percent of marine debris comes from land-based sources, while only 20 percent comes from the sea-based sources, like shipping and boating.

The majority of marine debris is comprised of plastic materials. An estimated 60 to 80 percent of all marine debris (and 90 percent of floating debris) is plastic. Plastic persists in the marine environment for a long time, and may never truly biodegrade at sea. In fact, plastics are so durable that predictions of the time it takes various types of plastics to break down range from hundreds of years to never. A study conducted by the Algalita

Marine Research Foundation in the Mid-Pacific Gyre (an area of high pressure with a convergence of ocean currents), found six times more plastic particles than plankton in these waters.



Photo by Cynthia Vanderlip

Marine debris threatens health of the marine ecosystem, and has injured or killed at least 267 species of marine animals world-wide. More than one million seabirds, 100,000 marine mammals, and countless fish have died in the north Pacific from

ingesting or becoming entangled in marine debris. Marine debris is particularly detrimental to sea turtles as well. There are many documented cases of marine life becoming entangled in marine debris; abandoned fishing gear can threaten mobility, increase susceptibility to predation, and cause drowning. The ingestion by marine life of plastic fragments and other marine debris—like lighters, plastic bags, pieces of polystyrene (Styrofoam) and bottle caps that mimic prey—is also common.



Photo provided by Sea Turtles Restoration Project

The albatross, along with many other seabirds, are surface feeders that typically forage on a broad range of fish and squid; unfortunately these birds commonly mistake plastic for their natural prey. Ingesting plastic can clog the digestive system, making it difficult to get the proper nutrients needed for survival. Plastic marine debris can also carry dangerous chemicals, like PCBs and DDT that are not water-soluble and adhere to the plastics. Ingesting these

plastics may cause build up of these poisons in the bodies of sea creatures, as well as their predators.

Marine debris is becoming a globally recognized environmental problem and Heal the Bay is poised to influence the debate on changes necessary to stem the tide of trash.

Ocean Protection Council Resolution on Marine Debris

On February 8th, 2007 the bipartisan Ocean Protection Council, which includes Lieutenant Governor John Garamendi, Resources Secretary Mike Chrisman and California EPA Secretary Linda Adams and oversees California's ocean and coastal resources and sets the state's overall ocean policy, approved a landmark resolution urging the state to take strong action to reduce marine debris. The resolution was strengthened with amendments suggested by Heal the Bay. In a Santa Monica hearing room packed with environmental groups, students, and scientific experts on the topic of marine debris, the Council voted unanimously to pass a resolution to crack down on single-use plastic



Photo provided by California Coastal Commission

Marine Debris



Photo by Cynthia Vanderlip

food containers, ban plastic packaging containing toxic chemicals, enforce laws against industrial polluters, and involve the entire Pacific coastline from Canada to Mexico in efforts to reduce marine debris.

The final resolution directs State entities to develop plans with milestones and target dates to reduce marine debris from plastic food packaging and abandoned fishing gear. It also calls for a phased ban on a wide variety of toxins commonly used in plastics that end up as marine debris; an addition to the California Redemption Value (CRV) to include all plastic; and tougher enforcement against litter and, in particular, enforcement against industrial dumping of plastic resin pellets known commonly as “nurdles.”

Although the Council’s resolution is not regulation, it could be a catalyst for state and potentially nationwide change in how plastics and marine debris are managed. It will be exciting to see how this

strong statement by the Ocean Protection Council is carried out on legislative and administrative fronts.

Meanwhile, Heal the Bay is actively involved in advocating for statewide marine debris legislation this year to implement some of the OPC recommendations. The following is a summary of marine debris related bills—listed with the Senator or Assemblyperson who has introduced each piece of legislation that Heal the Bay is either sponsoring or supporting.

This series of legislation makes up the Pacific Protection Initiative, an organized effort by Heal the Bay, Environment California and the San Diego Baykeeper to address the problem of marine debris. Please visit www.healthebay.org to sign and send a letter to State lawmakers asking for their support on these bills, or contact your local representative and urge their support.

SB 898 Sen. Joseph S. Simitian, Palo Alto

This bill calls for the creation of guidelines and programs to remove and properly dispose of derelict fishing gear.

SB 899 (Simitian)**

SB 899 targets toxic constituents in plastic. If adopted, this bill would identify the “worst offenders” of toxic additives to plastics such as Bisphenol-A which mimics the sex hormone estrogen. The bill would provide for a phase-out of these toxics, and has already been passed by the State Senate.

AB 258Assemblyman Paul Krekorian, Glendale**

If adopted, this bill would promote zero discharge of preproduction plastics or “nurdles” from plastic industry facilities. AB 258 would require the State Water Resources Control Board and Regional Water Quality Control Boards to implement a program



Photo by Claire Johnson Fackler



Photo by Cynthia Vanderlip

to control discharges of preproduction plastic from point and non-point sources. Specifically, this mandated program would require plastic manufacturing, handling, and transportation facilities to implement both structural and non-structural best management practices to control discharges of preproduction plastics. *(Continued on page 16)*

Rocky Reef Exhibit Facelift

By Randi Parent

When visitors enter the Santa Monica Pier Aquarium, they are struck first by the beauty of California's rocky reef habitat exhibit, where moray eels swim amid a riot of pink club-tipped anemones and tiny, brightly striped blue banded gobies.



Photo by Tara Crow

The importance of providing a glimpse into this unique habitat can't be overstated. Urban runoff and marine debris pollute and damage the rocky reef outcroppings along the Southern California bight. But as visitors walk through the Aquarium doors, they instantly appreciate the ecological importance and natural beauty of the rocky reef. With that appreciation comes the desire for conservation and stewardship—the cornerstones of Heal the Bay's mission.

The Aquarium's rocky reef exhibit was beginning to show signs of its age; scratches to the acrylic panels made it difficult to clearly view the animals within, water damage on the exhibit stand and rust appearing on the decorative framework were all indications

that an overhaul was overdue. The exhibit was also no longer a suitable habitat for the animals on display. The three moray eels—which have become the unofficial greeters to all Aquarium visitors—were constantly attempting to find rocky cracks and crevices in which to hide.

With financing provided by a California Coastal Conservancy (CCC) grant, this spring the 469-gallon tank was removed for renovation. The CCC grant for \$650,000 was awarded to the Aquarium in April 2006 to be

used over a three-year period for upgrades to the marine center and its exhibits. The rocky reef exhibit remodel cost about \$20,000, and included the installation of new signage and modified exhibit lighting.

To shut down the tank, Aquarists José Bacallao and Brianne Emhiser had to first relocate all the animals. The three moray eels and the black-eyed gobies were temporarily kept in resting tanks out of public view because suitable accommodations aren't available in the main gallery. The blue banded and zebra gobies moved to the phylum discovery exhibit and the club-tipped anemones were divided between that tank and the adjacent octopus exhibit. The aggregating anemones were relocated to the touch tanks and the pier habitat exhibit.

Then, Herculean members of the Aquarium staff lifted the tank—which weighs between 500 and 600 pounds without the water—and transported it to CalAqua in Ontario for refurbishing. This process costs about \$1,000, which is still a bargain compared to purchasing a new tank for about \$5,000. Bacallao himself did the plumbing design and installation.

Meanwhile, the David L. Manwarren Corporation, an internationally known designer and fabricator of exhibits for aquariums, zoos, and museums based in Rancho Cucamonga, began work on the design and construction of the fabricated rock work that would become the improved rocky reef habitat. Using fiberglass and cement, the Manwarren Corp. created a new, lifelike rocky environment for the animals.

Manwarren has constructed more than 800 individual exhibits world wide, including exhibits for the Monterey Bay Aquarium and the Cabrillo Marine Aquarium.

The fabricated rock is easier for the aquaristing staff to care for and the concentration of this manufactured rock creates the proper environment for the eels [learn more about the moray eel in this issue's "Critter Corner", page 14].

As the tank is reestablished in its original space just inside the Aquarium's doors, the aquaristing staff is beginning the process of reintroducing the eels, fish and other organisms to their rocky reef home. In addition to the animals
(Continued on page 13)

Grunion Greeters Workshop

By Randi Parent

For the third year in a row, the Aquarium this spring hosted a workshop to train volunteers to assist in a study of the California grunion, *Leuresthes tenuis*, a tiny silver-sided fish that is one of very few marine species that leaves the water to reproduce.

The “Grunion Greeters” training program is run by Pepperdine University’s Dr. Karen Martin, who leads a group of researchers studying the grunion and the overall ecological health of the sandy beach environment.

Grunion greeters head for the beach on designated evenings to observe and record information about the fish during the spawning season, which peaks between the months of April and June. The information is documented in a data base that is part of a state-wide assessment program used to improve beach management practices and preserve and protect wildlife at beach habitats.

Found from Point Conception to Baja California, the five-inch long fish catch the waves to shore at the end of the highest tides associated with the full or new moon; prime viewing usually takes place late in the evening, anywhere from after 10:00 p.m. to around midnight. The female burrows halfway into the sand, twisting her body and tail to dig out a nest for eggs. After she deposits her eggs, the male joins her in the sandy nest, releasing a substance called “milt” that fertilizes the eggs.

Spawning takes about 30 seconds, and the eggs may be fertilized by as many

as eight males. Female grunion lay between 1,600 and 3,600 eggs at a time before retreating on the outgoing waves. Predators include shore birds, isopods, flies, sand worms and beetles, which feast on the eggs. The surviving eggs are left to incubate in the moist sand, tucked away until the next highest tides of the month occur about 10 days later. When the high tides cover them again, they hatch and catch a wave out into the ocean.

The Aquarium’s Santa Monica Bay Room was packed March 29th with grunion greeter volunteers-in-training, who viewed a power point presentation complete with photos of beaches covered with the shiny grunion.

The Pepperdine research team puts together a list of beaches from as far north as Marin and south to San Diego where grunion spawning activity is expected; volunteers are given a calendar of dates when peak runs are likely to occur and asked to sign up for specific sites. Following an evening of grunion greeting, volunteers log their observations on an interactive website.



Photo by Doug Martin

The grunion study began in 2002 in San Diego, when concern that beach grooming by heavy machinery was harming the incubating grunion eggs united residents, scientists and environmental groups, coastal municipalities and beach managers to study the impact.

Be sure to visit www.grunion.org for more information and visit a local beach during the grunion run.

Helping Hands Bring Back the Beach

By Hallie Jones

Our 16th Annual Bring Back the Beach benefit dinner took place on May 31st at Barker Hangar in Santa Monica, honoring Governor Arnold Schwarzenegger, National Geographic, and Brian Wilson. Our next issue will include photos from the event and details on the evening's entertainment.

Heal the Bay was proud to have Michael and Jena King as honorary chairs of our annual dinner committee. We thank them for their leadership on the event and their incredibly generous sponsorship.



For the second year, the Four Seasons Resort Maui donated a stay at the beautiful and breathtaking Wailea Coast resort. The package included a five night spectacular ocean view room, a fabulous dinner, and even included spa services! For more information, visit www.fourseasons.com/maui.

Also, once again Ford Motor Company donated a new Ford Escape Hybrid as the star of our auction! The new 2008 Ford Escape Hybrid raises the bar as the most environmentally-focused SUV available. Ford Motor Company is very pleased to have worked with Heal the Bay since 1995. This is the fourth consecutive year that Ford has provided Heal the Bay a vehicle to use in fundraising at the Bring Back the Beach dinner.

This is the extensively re-designed 2008 model of America's best-selling compact SUV, and America's most fuel-efficient SUV. The 2008 Escape Hybrid offers an all-new interior with seating surfaces that are made from 100 percent post-industrial materials. This technology, in place of conventional virgin fibers, is estimated to conserve 600,000 gallons of water, 1.8 million pounds of carbon dioxide equivalents and more than 7 million kilowatt hours of electricity annually. With innovative cool blue instrument lighting, a center console large enough to hold a laptop computer and removable bins to tailor interior storage to user needs, the Escape Hybrid reaches a new level of innovation in its class. It also offers a sublime driving experience with improved quietness and recalibrated electronics that make the transition between its 70kw electric motor and its 2.3 liter Atkinson cycle gasoline engine more seamless than ever.

For more information on the Escape Hybrid, visit www.fordvehicles.com/suvs/escapehybrid.

Heal the Bay thanks both the Four Seasons Resort Maui and Ford Motor Company for their incredible support.

New Swimmer Health Effects Study

By Mark Gold

This summer, Heal the Bay will join the Southern California Coastal Water Research Project, UC Berkeley, the Orange County Sanitation Districts and others in the initiation of a three-year, \$4.5 million health effects study on swimmers at runoff contaminated beaches. The study, funded by the State of California, National Institute of Health, National Oceanic and Atmospheric Administration, and the city of Dana Point, will focus on two chronically polluted beaches: Doheny Beach in Dana Point and Surfrider Beach in Malibu. Both of these beaches are perennially on Heal the Bay's annual list of Beach Bums on the Beach Report Card.

This isn't Heal the Bay's first involvement in a critical health effects study. As you may recall, we participated in the 1995 Santa Monica Bay Restoration Commission epidemiology study led by Dr. Robert Haile at USC, which found that one out of every 25 people that swam in front of a flowing storm drain came down with stomach flu or an upper respiratory infection. This study will follow a similar design—comparing the health risks of swimming in polluted water near a fecal bacteria source

(creek or storm drain) versus swimming at a clean beach nearby. Also, the incidence of illness in swimmers versus non-swimmers at the same beach will be analyzed. Beachgoers will be interviewed on three occasions: as they arrive at the beach, as they are leaving and 10 to 12 days after their visit to the beach in order to assess if there were any adverse health outcomes such as stomach flu, upper respiratory infections, ear aches or skin rashes during that time period.

The big difference in this study is that it will be the most comprehensive health effects study ever undertaken in regards to the number of microbes that will be analyzed in the water. Currently, up to 30 analytical techniques could be used to analyze beach water for over a dozen different microbes. Nearly all of these microbes have never been used before in a health effects study. Researchers from around the country will analyze samples from water at Doheny and Surfrider beaches.

The study will begin at Doheny Beach this Memorial Day and is scheduled to proceed until the end of the Labor Day weekend. Next year, the study will occur



Chronically polluted Doheny Beach.

at both Doheny and Surfrider Beaches. The potential ramifications of this study could be enormous, because the Environmental Protection Agency is currently developing new national beach water quality criteria by 2012. The results of this study could have a tremendous impact on national criteria development that will drive beach water quality monitoring, health warnings, discharge permit limits, water quality assessments for impaired waters, and Total Maximum Daily Loads for decades to come.

SMPA's Rocky Reef Exhibit Facelift

Continued from page 10

that previously resided in this exhibit, other reef fish like scorpion fish and certain species of rock fish, and the

garibaldi (the California state marine fish) will become part of this exhibit over the course of the summer.

We encourage you to make a visit to the Aquarium this summer to check out this restored and improved exhibit.

The California Moray Eel

By Nick Fash

Gymnothorax mordax

Every visitor to the Santa Monica Pier Aquarium is greeted at the entrance by the toothy grin of one of the most misunderstood fishes in our local waters, the California moray eel (*Gymnothorax mordax*). The moray is a snake-like fish that is often seen protruding from a

large California morays. These fish can reach five feet in length and can live for more than thirty years.

Over 200 species of moray eels in the family *Muraenidae* are found throughout the world's tropical and temperate seas. All morays, including the California moray, lack pectoral and pelvic fins as well as scales. This, as well as having a long slender snake-like body, allows them to maneuver in and out of small crevices in rocky outcroppings and reefs without damaging their scales and fins. The moray

eel was so prized by the ancient Romans that they were kept by emperors and even worshipped. In fact the Roman emperor Licinius, who ruled from 308 to 324 AD, even changed his family's surname to *Muraena* because of his intense love of these amazing fish.

While the California moray can be found in rocky crevices from Baja California north to Point Conception, their greatest numbers can be found around San Clemente and Santa Catalina Islands. Interestingly, researchers speculate that the water around Catalina is too cold for the morays to reproduce. What we do know is that morays reproduce in the warm waters off Baja California, and the larvae then drift northward with the current.

The California morays are the first organisms you see upon entering the Aquarium, and the last you see when leaving, making them a prominent attraction. Many people confuse the moray with the electric eel. In fact, electric eels are not true eels at all, but a close relative to knifefish, found only in the fresh waters of the Amazon and Orinoco basins in South America.

A nocturnal hunter, the California moray does not rely upon its eyesight, which is poor, and instead utilizes its well developed sense of smell to track down its prey. Under the cover of darkness morays seek out their favorite prey, the octopus, but also eat small fishes, crabs, lobsters and shrimp. Strangely enough, many morays share a crevice in the rocky reef with red rock shrimp, which clean them of parasites. They also share crevices with mature lobsters, but these are usually far too large to be prey for a moray.

Some species of morays have a toxic flesh that can cause great discomfort if consumed. The California moray on the other hand does not and is sometimes taken by anglers and spear fisherman. While there is not a major fishery in Southern California for morays, they are a wonderful surprise for divers who encounter these tranquil and elegant fishes in their wild domain. For the rest of us, these strange fish can be viewed at the Santa Monica Pier Aquarium in their newly redesigned rocky reef exhibit. Come see for yourself why the Romans treated them like gods!

rocky crevice, motionless, exposing its sharp canine teeth to all who pass by. In fact, the species name, *mordax*, means "prone to bite", but this is hardly the case. Morays actually tend to bite only if a diver or swimmer has mistakenly stuck a hand into a crevice occupied by a moray. The newly redesigned rocky reef exhibit is home to three

Photo by Randy Smith

Heal the Bay Welcomes New Staff!

Polly Barrowman—Staff Scientist

Polly grew up in the hills of Pinwherry in south west Scotland and moved with her family to the United States at the age of 15. She graduated from Western Michigan University with a B.S. in Biology, and a minor in Chemistry. During this time she spent a summer in Turkey, volunteering in a program to protect sea turtles along the Mediterranean coast, and was also actively involved in a women's rights group. She returned to Scotland to attend

an outstanding Master's program at the University of Aberdeen where she completed a degree in Environmental Microbiology. Prior to joining Heal the Bay, she worked as a Research Technician for The Scripps Research Institute. At Heal the Bay, she hopes that she can use her technical skills and microbiological knowledge to make a measurable difference in water quality along California's coast.

Eveline Bravo—Beach Programs Manager

Eveline is a recent graduate of the University of California at Los Angeles, where she received a bachelor's degree in the study of philosophy. Eveline was raised in the city of Compton, and she and her family worked hard to have the Bravo children well educated and on their way to achieving greater success than her parents could have ever imagined. She is proud to be living proof of the ability to continuously overcome adversity. Eveline is looking forward to continuing her personal and professional growth at Heal the

Bay, and, with notions of becoming involved in environmental law, appears to be headed towards a life-long commitment and career in the environmental field.



From left to right: Scott Buhl, Aaron Kind and Brianne Emhiser.

Scott Buhl—Volunteer and Public Programs Coordinator, SMPA

Scott is originally from the California central coast town of Arroyo Grande. A marine biology major at UCLA, Scott spent part of his senior year conducting reef checks in Hawaii and Fiji, as well as interning at the California Wildlife Center in Malibu. After graduation, Scott spent a summer interning at the Aquarium of the Pacific working with the seals, sea lions and sea otters. He has also worked as an educational outreach presenter for The Animals Guys Inc., where he learned the ropes of being an exotic animal trainer. Scott is ready to spread his true passion for the ocean and its inhabitants as a member of the Heal the Bay staff.

Refugio "Reg" Mata—Volunteer Coordinator

Reg was born in San Miguel De Allende in the state of Guanajuato, Mexico, and moved to California about 14 years ago. He graduated from CSU, Northridge with a B.A. in Anthropology and was a Naval



Photo by Hallie Jones

From left to right: Polly Barrowman, Refugio Mata, Jyoti Gaur and Eveline Bravo.

Reservist at Port Hueneme and San Diego. Prior to joining Heal the Bay, he worked as a Community Coordinator for the Working People's Alliance (the non-profit arm of the labor unions) in Ventura County. Reg continues to be actively involved in the community advocating for issues ranging from healthcare to voter engagement to environmental protection.

Aaron Kind—Education Specialist, SMPA

Aaron hails from the small town of Centerville, in north central Montana. After attending elementary school, junior high and high school all in the same building, Aaron received his degree in anthropology from Montana State University, Bozeman. Since graduating, he has worked from the border of Canada to the Mexican border as a Native American Cultural Interpreter, archaeologist for the U.S. Bureau of Land Management, river ranger, paleontology technician, pipe line worker, welder's helper, refinery worker and ranch hand, among many other positions. An outdoor enthusiast, Aaron particularly enjoys fly-fishing, and would welcome tips on local fishing spots.

(Continued on page 16)

Staff Updates

Continued from page 15

Brianne Emhiser—Aquarist, SMPA

Brianne has a lifelong passion for the ocean. In high school, she even spent a semester at sea living, learning, and working aboard a traditional fishing schooner. She received a Bachelor of Science in biology from Allegheny College in Pennsylvania. After graduation, she took a position in the tropical gallery at the New England Aquarium in Boston. She then became an aquarist at UnderWater

World Guam, living there for 18 months before joining Heal the Bay. She's thrilled to be in Santa Monica working for a non-profit organization dealing with an issue so close to her heart: the conservation of our oceans.

Jyoti Gaur—Speakers Bureau Manager

Jyoti is a recent graduate of UC, San Diego where she majored in environmental systems with a minor in biology. Jyoti

has always been passionate about sustainability and protecting the environment. She was an active leader in sustainability at UCSD where she founded an environmental club, facilitated sustainability meetings with staff and students, and organized the largest Earth Day celebration in UCSD's history. Jyoti is extremely excited to be working as Speaker's Bureau Manager and is looking forward to contributing to Heal the Bay's growth.

Heal the Bay Tackles Marine Debris

Continued from page 9

To track the success of this program, the state board and regional boards would require the dischargers to implement a monitoring and reporting program.

AB 904*** Assemblyman Mike Feuer, West Hollywood

AB 904 prohibits a food provider from distributing food service packaging to a consumer, unless the food service packaging is either compostable packaging or recyclable packaging after a date to be determined. After July 1, 2012, the packaging must either be recovered for composting at a rate of 25 percent or more or recovered for recycling at a rate of 25 percent or more. Any person in violation is subject to significant fines.

AB 820*** Assemblywoman Betty Karnette, Long Beach

This bill prohibits the sale or distribution of expanded polystyrene food containers at state facilities after January 1, 2009. This applies to all state buildings, including campuses of California Community Colleges, California State Universities and the University of California upon approval by the Board of Regents of the University of California.

**These bills are currently in draft form and are subject to amendments.*

***Bills sponsored by Heal the Bay*

****Bills strongly supported by Heal the Bay*

MARINE DEBRIS FACTOIDS

- Roughly 60–80% of all marine debris, and 90% of floating debris is plastic.
- A study conducted by the Algalita Marine Research Foundation in the North Pacific Gyre found six times the mass of plastic particles than plankton in these waters.
- Pre-production plastic pellets or “nurdles” were estimated to comprise 98% of the beach debris collected in an Orange County Beach Debris study.
- Over 46,000 pieces of plastic litter are floating on every square mile of ocean today.
- Plastic particles have been found to concentrate such chemicals to one million times the levels found in the water itself.
- Expanded polystyrene easily breaks down into smaller pieces; is buoyant and can easily be carried by water and wind. It is not biodegradable, and as a result persists in the environment for hundreds, and possibly thousands of years.
- Marine debris has impacted at least 267 species worldwide, primarily through ingestion, and entanglement.

Thank You

The following list represents gifts from December 1, 2006 to February 28, 2007. *In-kind donation.

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Deborah Weissmann
Mark Winogrand
Michelle & Lynn Wood

Aquadoption

Aquadoptions at Heal the Bay's Santa Monica Pier Aquarium are a great way to express a special connection with the marine life of Santa Monica Bay. Aquadoptions have been acquired for the following:

Evan
Lili Boyle
Little Dolphins by the Sea Preschool
Devon & Ian Ostheimer

In Honor Of

A wonderful way to commemorate a special occasion, milestone or birthday for friends or family is to make a donation to Heal the Bay in their honor. The following people have been honored recently:

Debra Balamos
Seri and Matt Barisic
Merrill Barr
Chris & Tish Bedrosian
Arman Bernstein & Family
Brandon Birkmeyer
Ron & Barbara Boyd
Debra Balamos
Lili Boyle
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Ruthie Seroussi and Michael
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Steve Turner
Mignonne Walker
David Weiss
the Whitehouse
Tamara Winer
Tim Wood
Susan & Dave Yamate

In Memory Of

Donations have been made to Heal the Bay in memory of the following people who have recently passed away. We at Heal the Bay extend our sympathies to the family and friends of:

Aunt Kitty and Uncle Al
Michael Blumenberg
Sean Bonita
Jake Excel-Ananda
Owen Furey
Arthur Gold
Paul Gold
Jim Hadley
Louise Hicks
Joanne
Kai
Daniel Kanan
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