



# Santa Monica Bay National Estuary Program **Annual Report 2014**



**The Santa Monica Bay National Estuary Program (SMBNEP)** is one of 28 similar programs established under Section 320 of the 1987 Clean Water Act and administered by the U.S. EPA. The SMBNEP's comprehensive plan of action for protecting and restoring Santa Monica Bay, known as the **Bay Restoration Plan (BRP)**, was approved by the State of California and the U.S. EPA in 1995 and updated in 2008 and 2013. The BRP includes goals, objectives, and milestones that guide SMBNEP's programs and projects in three priority areas: water quality, natural resources, and benefits and values to humans. The BRP also identifies the responsible lead and partner entities, and the roles of the SMBNEP in supporting, promoting, and implementing Bay restoration work.

Actions identified in the BRP have significantly improved the environmental quality of the Bay since the establishment of the SMBNEP, but full recovery of the Bay is far from certain. Steady and long-term efforts along with consistent funding are necessary to ensure that we achieve the BRP's goal of a healthy and restored Santa Monica Bay.

The SMBNEP is comprised of a partnership of the following entities:

### **Santa Monica Bay Restoration Commission**

The Santa Monica Bay Restoration Commission (SMBRC) is a non-regulatory, locally-based state entity established by an act of the California Legislature in 2002. The SMBRC is charged with overseeing and promoting the Bay Restoration Plan by securing and leveraging funding to put solutions into action, building public-private partnerships, promoting cutting-edge research and technology, facilitating stakeholder-driven consensus processes, and raising public awareness.

The SMBRC brings together local, state, and federal agencies, environmental groups, businesses, scientists, and members of the public on its 36-member Governing Board. The SMBRC is also supported by a Technical Advisory Committee, and a broad stakeholder body, the Watershed Advisory Council. ([www.smbrc.ca.gov](http://www.smbrc.ca.gov))

### **Santa Monica Bay Restoration Authority**

The Santa Monica Bay Restoration Authority (SMBRA) was created by a joint exercise of powers agreement between the SMBRC and the Los Angeles County Flood Control District and operates as a local public agency within the Santa Monica Bay Watershed and the jurisdictional boundaries of the SMBRC and the District. The purpose of the SMBRA is to broaden funding opportunities for projects within the Santa Monica Bay Watershed, and it provides an efficient method by which state agencies can fund important programs of the SMBNEP.

### **The Bay Foundation**

The Bay Foundation (TBF)—also known as the Santa Monica Bay Restoration Foundation (SMBRF)—is an independent, non-profit 501(c)(3) organization founded in 1990 and serves as the fiscal partner for the SMBNEP, annually receiving important grants and donations. The TBF provides administrative, management and program services to the NEP. The purpose of the Foundation is to contribute to the restoration and enhancement of the Santa Monica Bay and other coastal waters and to complement the work of the SMBRC through the BRP, with a focus on obtaining and expending funds not otherwise available to the SMBRC. ([www.santamonicabay.org](http://www.santamonicabay.org))



Malibu Lagoon Restoration Project at sunrise (25 October 2014).

Welcome to the 2014 Annual Report of the Santa Monica Bay National Estuary Program (SMBNEP or NEP), established in 1998. On the following pages you'll learn of the efforts of the NEP's many programs and projects. I hope you'll find our work inspiring and related to your personal interests in the environmental health of coastal Los Angeles. The SMBNEP is implemented by many partners and stakeholders throughout the Los Angeles area, who, through projects and activities, inform and affect national and international efforts related to urban coastal management. This is done directly through restoration and outreach programs and indirectly via the publication and presentation of research. Through these avenues the NEP serves the millions of residents and visitors that explore our beaches, cities and coastal ocean every year, and assist others with similar issues and concerns in the United States and abroad. We fundamentally understand that our personal health, the health of our economies and communities—essentially, our quality of life—is dependent on healthy functioning ecosystems.

The ancient truism “necessity is the mother of invention” is truly at play in our work. In creating what I conveniently call LA 2.0, we constantly challenge the Santa Monica Bay Restoration Commission's Governing Board, Technical Advisory Committee, and Watershed Advisory Council, The Bay Foundation, the Santa Monica Bay Joint Powers Authority and the many entities that contribute to the restoration of the Santa Monica Bay and the general public to find solutions to the challenges we face. I can point to some of the NEP's successes:

- ✔ Conducting cutting edge research and method development for our region's coastal wetlands and rocky reefs, leading to the protection and restoration of these highly valued ecosystems.
- ✔ Supporting our local fishermen through research and restoration efforts along Santa Monica Bay, specifically in our kelp forests.
- ✔ Investing millions in innovative engineering designs to increase the capture of rain water while reducing pollution to our creeks and beaches, as well as increasing local water supply.
- ✔ Building the infrastructure needed by boaters throughout Southern California, to keep our harbors and ocean clean.
- ✔ Hosting symposia and publishing the journal, *Urban Coast*, to disseminate the results of applied scientific work and policies that benefit Los Angeles' watersheds and communities.

I can point to our challenges as well: drought, climate change, and adapting to sea level rise. I am confident that the Santa Monica Bay National Estuary Program will continue to play a key role in addressing these threats by thoughtfully and diligently determining what needs to be done and helping find the resources needed to build or, when necessary, un-build our coast and city for our future and that of our children.

Thank you for taking the time to learn about the SMBNEP's efforts. Please consider how you can affect change by joining ours, or related efforts in assuring a bright future for our urban coast.

Best Wishes,



Tom Ford

## Rave Reviews Received for Our Programs!

Early this year, U.S. Environmental Protection Agency (US EPA) conducted a comprehensive review of the SMBNEP as part of the National Estuary Program (NEP) evaluation held once every five years. The purpose is to help US EPA determine whether the Santa Monica Bay NEP is making sufficient progress in implementing our Bay Restoration Plan and therefore merits continued funding under §320 of the Clean Water Act (CWA). The evaluation included review of a package of detailed information prepared and submitted by the SMBRC and TBF to show the breadth and depth of the projects SMBNEP carried out over the last five years, and an on-site visit by an EPA team comprised of NEP program coordinators from EPA headquarters, the Santa Monica Bay NEP program manager from EPA Region 9, and the Director of a sister NEP from San Juan Bay, Puerto Rico. During the June 10-11 visit, the team attended program briefings by the SMBRC and TBF, met and spoke with our project partners and the SMBRC and TBF board members, and visited several project sites.

The evaluation team was genuinely impressed by, and gave high marks to the amount and quality of our work, especially the innovative and collaborative nature of the work in all program areas. Accomplishments highlighted during the review process and acknowledged by EPA in its post-review findings include:

- More than \$30 million secured and leveraged for BRP implementation
- More than \$17 million awarded, and millions more leveraged, for projects that help meet the trash, pathogen, and metals TMDL reduction targets in local waterbodies
- More than 27,700 acres of Santa Monica Bay were designated as state Marine Protected Areas



Participants and staff have fun and do their part to protect the Santa Monica Bay at TBF's Coastal Clean-up Day.

- More than 1,000 acres of lands in the Bay watershed were restored or protected through land acquisition
- Restoration of more than 7 acres of kelp forest
- Full restoration of the Malibu Lagoon
- 14 green infrastructure and LID projects, including the Westside Park Rainwater Irrigation Project in the Ballona Creek watershed
- The award-winning rain harvesting program in Culver City
- Continued the expansion of the innovative Clean Bay Restaurant Certification Program
- Study on the implications of climate change for restoration of the Ballona Wetlands
- Baseline monitoring and assessment of the Ballona Wetlands Ecological Reserve
- Long-running Boater Education Program

The EPA evaluation team also worked with us to identify remaining challenges in the coming years, including securing and leveraging significant amount of funding to achieve all BRP goals and objectives, and continued respectful and appropriate engagement of all stakeholders. We are thankful for the EPA's continued support to the NEPs. We are also very thankful to our partners who worked with us to make these projects happen and who helped to demonstrate our successes during the site visit.



View of the Ballona Wetlands Ecological Reserve and Ballona Freshwater Marsh.

### Wetlands and Coastal Habitats

**Ballona Wetlands Restoration EIR** - A multi-year program of the California Dept. of Fish and Wildlife and State Coastal Conservancy to prepare technical studies, engineering plans, CEQA/NEPA documents and permit applications (which began in summer 2012) for this significant regional wetland restoration project. Ongoing. (See p. 8 of the report for expanded information.) (TBF)

**Ballona Wetlands Ecological Reserve Monitoring** - Comprehensive monitoring program evaluating the condition of the pre-restoration wetlands and adjacent habitats through biological, physical, and chemical surveys to inform the restoration process and collect baseline data. Ongoing. (See p. 9 of the report for expanded information.) (TBF)

**Malibu Lagoon Post-Restoration Monitoring** - A long-term comprehensive monitoring program led by California Dept. of Parks and Recreation evaluating the condition of the post-restoration wetlands to the project goals through biological, physical, and chemical surveys. Ongoing. (See p. 8 of the report for expanded information.) (SMBRA, TBF)

**Arroyo Sequit Creek Restoration** - A Proposition 50 grant-funded project that removes two Arizona crossings and one check dam to improve southern steelhead trout habitat. Ongoing. (See p. 10 of the report for expanded information.) (SMBRC, TBF)

**Rindge Dam Removal Study** - An assessment to inform the feasibility of restoring and enhancing the Malibu Creek ecosystem through the removal of Rindge Dam with California Dept. of Parks and Recreation, Army Corps of Engineers, and other agencies. Ongoing. (SMBRC, TBF)

**Stone Creek Restoration** - A community stream habitat restoration and education program along a Ballona Creek tributary, working with UCLA and an adjacent elementary school. Ongoing. (TBF)

**Las Virgenes Creek Crayfish Removal** - Partnering with Mountains Restoration Trust to control invasive red swamp crayfish in the Malibu Creek watershed to improve habitat for native aquatic species. (SMBRC, TBF)

**New Zealand Mudsail Survey** - An annual survey of New Zealand mudsnails, tracking this invasive species in streams throughout the Santa Monica Mountains. Ongoing. (SMBRC, TBF)

**Coordinated Monitoring Program for Southern California Estuarine Wetlands** - Partnering with EPA Wetlands Program to develop and expand a site-specific, coordinated monitoring program for Southern California estuarine wetlands. Ongoing. (SMBRA, TBF)

## Green Neighborhoods

**Proposition 84 Grant Program** - City of Inglewood Catch Basin Trash Capture (Completed), City of Santa Monica In-line Storm Drain Treatment and Infiltration Pilot Project (Completed - see p. 15 of the report for expanded information), City of Torrance Storm Water Basin Enhancement, City of Los Angeles University Park Rain Gardens, Milton Park Green Street Storm Water BMPs, City of Calabasas Catch Basin Trash Inserts, County of Los Angeles Oxford Basin Enhancement. Ongoing. (SMBRC, TBF)

**Prop 50 Grant Program** - City of Culver City Citywide BMP Treatment Train. Completed. (SMBRC, TBF)

**Clean Bay Restaurant Certification Program** - Partnering with watershed cities to certify restaurants that comply with storm water permit requirements and the Program's additional pollution prevention practices. Ongoing. (TBF)

**Water Harvesting and Energy Conservation Programs** - Two projects funded through grants from Metropolitan Water District and Los Angeles Department of Water and Power to retrofit several properties with various rainwater harvesting strategies and to educate local communities and the public about energy efficiency and water conservation. (TBF)

## Ocean

**Kelp Forest Restoration** - Giant kelp forests off of the Palos Verdes Peninsula have been reduced to 25% of their historic extent over the past 100 years. This project is designed to restore up to 150 acres of these marine forests creating a more resilient ecosystem and sustainable coastal economy. In the past 18 months the fishermen, and volunteer divers involved in this project, have restored over 20 acres of kelp forest and our monitoring results describe large increases in the size, number and health of the animals and algae living in the restoration areas. The loss of kelp forests is a global phenomenon; as this project has gained international recognition, we hope these methods prove successful in other areas around the globe. Ongoing. (See p. 13 of the report for expanded information.) (TBF)



Student volunteers working to remove invasive plants at the Stone Canyon Creek stream restoration project.

**Socio-economic Research Related to Marine Spatial Planning** - Mapping the location, type, and activity of boats along the Southern California coast, from the U.S. Mexican Border to Point Conception, to track boater responses to the establishment of the Marine Protected Area network. Ongoing. (See p. 14 of the report for expanded information.) (TBF)

**MPA Outreach** - On January 1, 2012 a network of marine protected areas was established off the coast of Southern California, including the southern Channel Islands. TBF has worked with other NGOs and stakeholders throughout Southern California to share vital information about the status of these underwater parks. (TBF)

**Green Abalone Reintroduction Pilot Project** - Green abalone, like all of the abalone species off of Southern California, have been greatly reduced in numbers as a result of overfishing and disease. This project continues to develop and refine methodologies to generate dense assemblages of green abalone in experimental plots off of our coast. Ongoing. (TBF)

**Point Dume Circulation and Sediment Transport Experiment** - Assisted researchers from UC Davis, Bodega Marine Laboratory in sediment collection and physical instrumentation deployment to characterize the alongshore and cross-shore circulation and sediment transport around Point Dume. Completed. (TBF)

**Sustainable Local Fisheries** - Partnering with CSU Dominguez Hills and local commercial fishermen to build resilient fishing communities based on sustainably caught local seafood. Ongoing. (TBF)



Staff prepare for volunteers at TBF kayak cleanup, as part of Coastal Clean-up Day and National Estuary Week's #ToastTheCoast.

**Halibut Study** - Developed and tested non-lethal methods to determine the age and sex of halibut in Santa Monica Bay. This once prevalent fish has decreased significantly in Santa Monica Bay. The data collected by this project will help identify better management for this important and prized game fish. Ongoing. (See p. 12 of the report for expanded information.) (TBF)

## Outreach

**Ballona Wetlands Outreach** - A wide variety of outreach activities including Farmer's Markets, nature tours, bird walks, science-in-action activities, educational trainings, newsletters, social media, and more. Ongoing. (TBF)

**Boater Education Program** - A multi-faceted program including publication of the Southern California Boater's Guide, a statewide Motorized Boater Survey, expanded Honey Pot Day program, and management of the statewide boating education and outreach efforts. Ongoing. (See p. 11 of the report for expanded information.) (SMBRA, TBF)

**Coastal Clean-up Day** - Annual kayak clean-up in Marina del Rey coordinated by The Bay Foundation staff. Ongoing. (TBF)

**Internship Program** - Program coordinates student and postgraduate volunteer efforts through multiple restoration and scientific data collection projects. Ongoing. (See p. 6 of the report for expanded information.) (TBF)

**Urban Coast** - A multidisciplinary journal providing a forum for information exchange and to highlight research on pressing issues

and policies that affect the conditions of urban coastal resources. Introduced [www.UrbanCoast.org](http://www.UrbanCoast.org) this year. Ongoing. (See p. 6 of the report for expanded information.) (TBF)

**Urban Coastal Research Symposium** - Annual symposium catering to scientists, agency representatives, elected officials, students, and members of the public, with focus this year on social and economic benefits of coastal habitat restoration, open space, and/or greening projects. Ongoing. (See p. 6 of the report for expanded information.) (TBF)

### **Palos Verdes Shelf Fish Contamination Education Collaborative**

- Partnering with EPA, local agencies, and community based organizations to educate local fishermen and consumers about the health risks of contaminated seafood. Ongoing. (TBF)

## Planning and Policy Development

**Financial Capacity Development** - A program to increase The Bay Foundation's cash reserve and diversify funding sources. Ongoing. (TBF)

**State of the Bay Reporting and Habitat Health Index Development** - Working with the SMBRC Technical Advisory Committee and in collaboration with local research institutions to develop the State of the Bay report, including habitat health indices for major habitats in the Bay. Ongoing. (SMBRC, TBF)

**Climate Change Adaptation** - A program in partnership with USC Sea Grant, Los Angeles Regional Collaborative for Climate Action and Sustainability, and Heal the Bay to facilitate and assist coastal jurisdictions in developing strategies for adapting climate change impacts including sea level rise and storm surge. Ongoing. (SMBRC, TBF)

**Integrated Regional Water Management Plan** - Participation in the Greater Los Angeles County Integrated Regional Water Management Planning Process. Ongoing. (SMBRC, TBF)

**Wetland Habitat Valuation** - A literature review and development of a wetland mitigation white paper on the value of vegetated coastal marsh in compensatory mitigation for lost subtidal habitat. Ongoing. (SMBRC, TBF)

## Center for Santa Monica Bay Studies Programs Update

The Center for Santa Monica Bay Studies, a partnership of Loyola Marymount University's Seaver College of Science and Engineering and The Bay Foundation, was established in 2005 to promote the study of the Santa Monica Bay for academics and students. To accomplish these goals the Center publishes *Urban Coast*, hosts a symposium, directly supports interns and volunteers, and seeks grant funding for research topics related to the Bay. In September, the Center launched [www.UrbanCoast.org](http://www.UrbanCoast.org), which serves as the



Student interns from Loyola Marymount University identifying invertebrates.

the 10,000-volunteer-hour mark with the help of more than 150 interns and volunteers, including students from more than 50 universities around the world. The program continues to provide valuable and unique learning experiences, participating first hand in a wide range of scientific survey and restoration procedures—on land and underwater. Volunteers have used their experience here to further their academic and professional careers or simply to pursue a personal passion.

**Project partners:** Loyola Marymount University's Seaver College of Science and Engineering; Loyola Marymount University Center for Urban Resilience; TBF.

online portal to the *Urban Coast* scientific, peer-reviewed journal. The website now promotes free access to all four previous issues, which showcase scientific articles discussing multidisciplinary research on environmental and social issues affecting global urban coastal areas.

The Center's Internship Program, launched in 2009, proudly passed

## Socio-Economic Focus for 2014 Urban Coastal Research Symposium

The fourth annual urban coastal research symposium entitled "Socio-Economic Analyses of Coastal Ecosystem Resilience" was held on March 12th at Loyola Marymount University (LMU) with more than 150 members of the public, scientists, agency representatives, and students in attendance. This event, co-sponsored by the Center for Urban Resilience at LMU and TBF, created an opportunity for the public to hear and participate in presentations by speakers from throughout Southern California who reported on the results of their data and projects relating

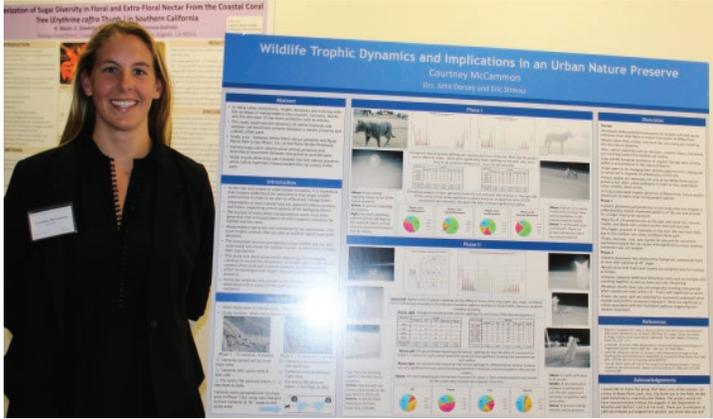


Jan Perry, general manager of the city of Los Angeles' Economic and Workforce Development Dept. (left), and Compton Mayor Aja Brown (right), opened the Urban Coastal Research Symposium.

to social and economic benefits specific to coastal restoration and open space or greening projects. Presentation topics ranged from wetland restoration to Marine Protected Areas (MPA) and watershed-level greening efforts.

Jan Perry, general manager of the city of Los Angeles' Economic and Workforce Development Department and former Los Angeles City Councilwoman, opened the day by thanking the audience for their work preserving and creating green space and spoke about the future of a sustainable Los Angeles. She highlighted two wetland park projects and the benefits they've provided to the surrounding communities, including water filtration, education, and recreational opportunities.

Mayor Aja Brown, the City of Compton's youngest Mayor in City history, closed out the morning session of speakers emphasizing environmental progress and green initiatives currently being implemented within the City. The passionate speech highlighted the depth of the progress that has been made in the recent past and looked to the possibility of a bright future. Mayor Brown spoke about her '12-Point Plan' to improve environmental measures, update city policies, and strategically advance the City of Compton.



LMU graduate student, Courtney McCammon, presenting a poster at the Socio-Economic Analyses of Coastal Ecosystem Resilience symposium.

One of the high points of the symposium was the keynote speech by 'organic' architect, Eric Corey Freed. A lifetime proponent of individualism and sustainability, Eric provided a humorous, impactful and interactive presentation on the benefits of innovative green design. At the end of the day, a student poster session of aspiring scientists provided a special opportunity for undergraduate and graduate students to discuss their recent coastal research with symposium attendees over appetizers and cocktails. The hugely success event gave an excellent opportunity for scientists, students, and members of the community to learn and interact.

**Project partner:** Loyola Marymount University Center for Urban Resilience; TBF.

## Out & About: Scientific Conferences

Eight scientific conference presentations by TBF staff are highlighted below:

- Southern California Academy of Sciences Conference: *"Geospatial Analyses of Plant Invasion and Habitat Transgression within an Impacted Ecological Reserve"*
- Southern California Academy of Sciences Conference: *"Non-lethal Detection of Sex in the California Halibut (*Paralichthys californicus*)"*
- Headwaters to Ocean Conference: *"Ecological Assessment of the Ballona Wetlands to Inform Restoration Planning and Develop Regional, Level-3 Protocols"*



Tom Ford presents kelp restoration project at Cabrillo Marine Aquarium.

- Conference on Ecological and Ecosystem Restoration: *"Evaluating the Restoration of a Seasonally Closed Estuary: A Case Study at Malibu Lagoon"*
- Conference on Ecological and Ecosystem Restoration: *"4-Year Ecological Assessment of the Ballona Wetlands to Inform Restoration Planning"*
- California Wetlands Monitoring Workgroup: *"Development of Southern California Tidal Estuarine Level-3 Indicators & Protocols"*
- California Estuarine Research Society: *"A Biological Survey of Terrestrial Arthropods of the Ballona Wetlands Ecological Reserve and their Distribution among Different Microhabitats"*
- Urban Coastal Research Symposium: *"Socio-Economic Analysis of Coastal Ecosystem Resilience: Potential of Kelp Forest and Human Use Patterns of the Southern California Mainland Coast"*



Left: Staff conducts elevation surveys at Malibu Lagoon. Inset: Least terns, a federally endangered species, photographed at Malibu Lagoon. Photo: James Kenney

## A Tale of Two Wetlands

### Restoration Successes at Malibu Lagoon

On May 15, a year after the 2013 grand reopening of the newly restored Malibu Lagoon, an adult steelhead trout, approximately 20 inches in length, was spotted during post-construction fish monitoring. Missing for decades, this marks the third discovery of expanded activity by an endangered species since the completion of the Malibu Lagoon Restoration Project. In summer 2013, the California least tern produced seven nests with eggs, which had not occurred in over 70 years. Federally listed tidewater gobies also expanded their presence into the restored area, taking advantage of almost two additional acres of suitable burrow habitat.

An extensive five-year monitoring program that measures water quality, avian resources, fish, benthic invertebrates and vegetation to determine the overall success of the program is currently



in progress. The vegetation is already well ahead of the success criteria, which requires 50% or greater coverage after the third post-restoration year. On one of the vegetation transects, surveyors found 48 plant species within a 10-meter radius, which is a far greater plant species richness than prior to the restoration, where there were approximately six dominant species.

Additionally, as a result of the restoration effort, the increases in dissolved oxygen and water circulation have led to the return of the benthic invertebrate community in the back channels.

Volunteer restoration events help to manage one of the biggest ongoing challenges: weeding and removing non-native plants and thinning aggressive native species that may take over areas and reduce biodiversity.

**Project partners:** California Department of Parks and Recreation; Resource Conservation District of the Santa Monica Mountains; Cooper Ecological Monitoring, Inc.; SMBRA; TBF.

### Updates from the Ballona Wetlands Ecological Reserve

Major progress on the Ballona Wetlands Ecological Reserve (BWER or Reserve) in 2014 included the completion of five years of biological, physical, and chemical monitoring, a comprehensive vegetation mapping project, completion of a seed collection and germination literature review, numerous public tours and cleanup events, and progress towards the development of a Draft Environmental Impact

Report (DEIR) for the proposed restoration project. For full project information, including scientific studies, and the opportunity to sign up for email updates, please visit [www.BallonaRestoration.org](http://www.BallonaRestoration.org).

**Project partners:** California Department of Fish and Wildlife; California State Coastal Conservancy; US Environmental Protection Agency; Mountains Recreation and Conservation Authority; Friends of Ballona Wetlands; SMBRC; TBF.



Ruderal marsh, salt marsh, and salt pan habitats within Area B of the Ballona Wetlands Ecological Reserve.

### Scientific Monitoring

The fifth year of monitoring concluded on 30 September, 2014. Surveys conducted over the past year included: vegetation (terrestrial and submerged aquatic / algae), phytoplankton, avifauna, water quality, soil texture and grain size, invertebrate, vertebrate mortality, photo point, and the California Rapid Assessment Method.

In this year's "Ballona Wetlands Ecological Reserve Vegetation Alliance and Habitat Crosswalk" study (surveys conducted May-October 2013), TBF found approximately 60% of the areas covered by plants (vegetated habitats) on the Reserve were dominated by plants that were either not native to the region or invasive. Much of the Reserve has had fill dumped on site, raising the elevation of the ground above wetland elevations, in some cases over 20 feet. As a result, these areas are no longer connected to the ocean by tidal waters or Ballona Creek, and are among those most impacted by non-native vegetation.

These findings are part of a comprehensive, site-wide GIS mapping study, and represent one of many significant scientific, data-driven studies contributing to the upcoming DEIR for the Reserve. Over 800 distinct areas were classified in this survey, making the survey the highest resolution vegetation study performed on the approximately 600-acre site to-date. Some of the key results included the following:

- The largest change from native to non-native habitats from 2007-2013 occurred in areas of the site with fill soils.
- There was a 360%, or 6-acre, increase of the aggressive, non-native herb, *Euphorbia terracina*, since 2007.
- There was a 20% increase of highly invasive iceplant since 2007, with over 35 acres mapped in the 2013 survey.
- Fourteen acres of formerly native salt marsh have become primarily 'ruderal' marsh (including non-native plants that are among the first to colonize disturbed land) and monocultures of invasive species. Non-native plants continue to invade areas disconnected from the tides.

To best restore native plants to the BWER, scientists will collect, preserve and grow plants from seeds collected from the soil. A six-month effort was conducted to develop plans for seed collection, storage, preservation, and germination. The results of this study will lead to the cultivation and preservation of these local plant species in Ballona and much of the knowledge gained will be transferable to other projects up and down the coast.

**Project partners:** California Department of Fish and Wildlife; California State Coastal Conservancy; US Environmental Protection Agency; Friends of Ballona Wetlands; California State University, Channel Islands; University of California, Los Angeles; Loyola Marymount University; TBF.

## Arroyo Sequit Check Dam Removal is Phase One in Helping Steelhead Trout



Check dam at Arroyo Sequit Creek prior to the removal and stream restoration project implementation.

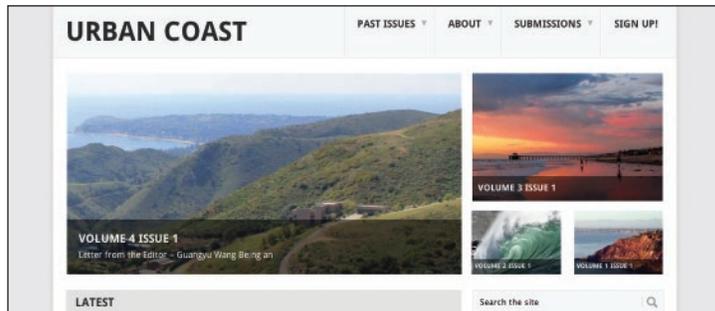
In August 2014, the California Department of Parks and Recreation, with assistance from the California Conservation Corps and TBF—and with funding from the SMBRC Prop 50 Grant Program funded by the State Water Resources Control Board—removed a two and a half foot tall check dam from Arroyo Sequit Creek in the western Santa Monica Mountains. The dam's removal is the first phase of a larger project to remove three barriers to the migration of federally endangered southern steelhead trout and provide immediate access to 4.5 miles of their historic habitat along Arroyo Sequit Creek. The project will also help to improve water quality by reducing channel erosion, and will improve public safety and recreational access. Arroyo Sequit is one of only three creeks in the Santa Monica Mountains that support the endangered southern steelhead trout. Steelhead rely on the upstream sections of our local rivers and streams to mate and lay eggs. It's estimated that due to damming and other human impacts, steelhead have lost 80-95% of their historic habitat range. The completed project will help fulfill the Bay Restoration Plan's objective to 'remove fish barriers and open 20 miles of stream habitat to migrating steelhead trout'.

**Project partners:** California Department of Parks and Recreation; State Water Resources Control Board, Los Angeles County; NOAA/American Rivers; Wildlife Conservation Board; National Park Service; California Department of Fish and Wildlife; Mountains Restoration Trust; California Conservation Corps; Resource Conservation District-Santa Monica Mountains; SMBRC; TBF.

## A Year of (Re)Launched Websites

This was our year of websites. Earlier this year, the Ballona Wetlands Ecological Reserve (BWER) partners launched a much more comprehensive website - [www.BallonaRestoration.org](http://www.BallonaRestoration.org) - for the restoration project. It includes the history of the Reserve, published reports, history of meetings, FAQs, newsletters, news articles, Draft Environmental Impact Report (DEIR) schedule and an outline of the potential restoration alternatives that will appear in a complete version of the DEIR upon its release in 2015.

In summer, TBF relaunched its website - [www.SantaMonicaBay.org](http://www.SantaMonicaBay.org) -which features expanded content and references, easy navigation and access to TBF's work from the home page, and easy sign-up for volunteering and inquiries. Highlights include expanded information on TBF's programs; volunteer and internship opportunities for each program; calendar of events; clearly categorized reports, research papers, and other publications; easily accessible staff directory and bios; new Media Center with sampling of staff expertise, press releases and news items; and social media connections. Concurrently, the Commission's website, [www.smbrc.ca.gov](http://www.smbrc.ca.gov), was updated to better reflect its structure.



Lastly, [www.UrbanCoast.org](http://www.UrbanCoast.org) was launched. The website serves as the online portal to the *Urban Coast* scientific journal, published by the Center for Santa Monica Bay Studies at Loyola Marymount University. See p. 6 of the report for expanded information.

Each website provides opportunity to sign up for email updates and information.

All the social media efforts we focused on improving in 2013 continue to expand in audience, in quality, and in usefulness and value to each program.

**Project partners:** Ballona Wetlands Ecological Reserve website - California Department of Fish and Wildlife; California State Coastal Conservancy. Urban Coast website - Loyola Marymount University's Seaver College of Science and Engineering; SMBRC; TBF.

## Southern California Boater's Guide Goes Digital

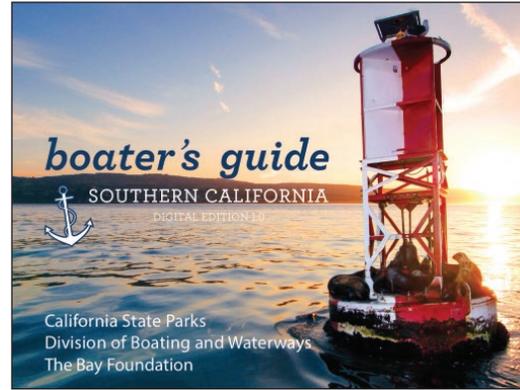
The Southern California Boater's Guide gets around, whether in the galley library of a boat or flipped to a favorite marina on a coffee table. In fact, the Boater's Guide even had a guest spot on an episode of "The Office." The 120-page, oversized, full color publication is the prevailing cruiser's guide within the Southern California boating community. Since release of the first edition in 2005, The Bay Foundation has distributed more than 22,500 copies. The 4th Edition is now available and includes a special section on the Channel Islands National Park & Marine Sanctuary.

This year, TBF partnered with the California Department of Parks and Recreation, Division of Boating and Waterways, to create an interactive e-book version of the Guide, the first for both organizations. Like the paper version, the Guide contains important and reliable information to guide a boater around all 15 SoCal harbors, from San Diego to Santa Barbara. Now with the "smart", electronic version the boater has access to:

- GPS-coordinates to popular boating destinations
- Live links to boating web resources
- Interactive maps where a boater can zoom in to find the exact location of the fuel dock, used oil recycling site, guest docks, and other important resources
- Video on how to use a pumpout
- Slideshows of award winning photography
- Audio of the phonetic alphabet and an example mayday call

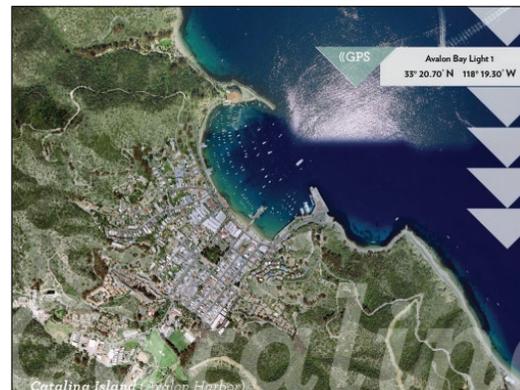
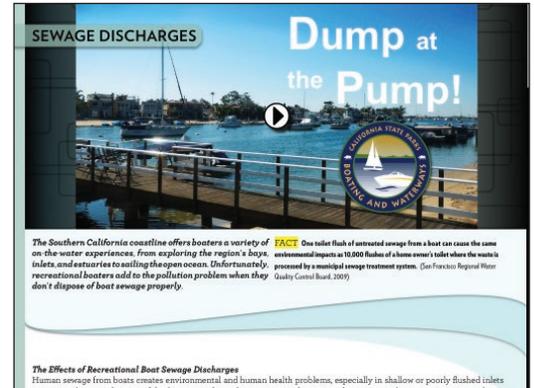
The Southern California Boater's Guide interactive e-book is available in the Apple iTunes App store, for free. It is compatible with iPads version 2 and higher, and requires iOS 6.0 or higher. The Bay Foundation hopes to bring this resource to other tablet devices and phones soon.

**Project partners:** California Department of Parks and Recreation, Division of Boating and Waterways; California Coastal Commission; Orange County Sheriff Department - Marina Operations Bureau; SMBRA; TBF.



Armed with the free Boater's Guide App for Southern California, mariners can make an unfamiliar harbor feel like home.

Pull up a video of step-by-step instructions in the new Boater's Guide App to see how to empty a boat's sewage holding tank.



The Boater's Guide makes planning a visit to any SoCal harbor easy, with info on harbor entrance obstacles, obtaining a guest slip, local rules and ordinances, things to do, and more.

## Collaborative Research Supports Management of California Halibut

The Santa Monica Bay supports several of California's top grossing commercial fisheries, including Market squid, spiny lobster, and red sea urchins; and several popular recreational species, such as kelp bass, rockfish and, historically, California halibut. Reliable data on fish stocks is critical to effectively manage these fisheries, and California halibut is a prime example. Data gaps for this fishery have



TBF's Lia Protopapadakis scans a California halibut with a veterinary ultrasound at the Marina Del Rey Anglers annual halibut derby, testing a non-lethal method of determining the fish's sex.

delayed the California Department of Fish and Wildlife (DFW) from developing a halibut fishery management plan. Getting good data for assessing halibut population health includes knowing the fish's sex in order to account for their very different growth rates and feeding patterns. However, for halibut this is especially challenging because it is near impossible to visually distinguish male from female halibut without killing them,

Over the last few years, TBF has been working with DFW and recreational fishermen to fill these data gaps; first, by testing a novel method for determining the sex of a halibut using a veterinary ultrasound, and next by developing a way to gather sex-specific data from the recreational fishery.

A non-lethal method for sex determination is critical for reducing the number of halibut sacrificed, facilitates sampling commercial landings, and enables tagging studies for halibut movement and growth rates. Tests done during the first project demonstrated this new method works on a range of sizes and throughout the year (publication in prep).

The second project built upon a relationship established with recreational fishermen during the first. TBF collaborated with the Marina Del Rey Anglers to create a citizen science program for



Recreational anglers learn how to visually identify the sex of a California halibut from Department of Fish and Wildlife staff during pilot phase of a citizen science monitoring program for California halibut.

collecting recreational landing data with funding from Collaborative Fisheries Research-West. Through this program, recreational fishermen are taught how to measure, weigh, and determine the sex of halibut and enter this information on a website, where it is compiled into a database. Summarized data are viewable to the public ([mdra.fishingstatus.com](http://mdra.fishingstatus.com)). During the pilot phase, data collected by anglers were compared to data collected by scientists. Results from this comparison show that the citizen science data is compatible with that collected by DFW. We hope the continuation and expansion of this project will provide much needed information to facilitate management of the California halibut in Santa Monica Bay, and serve as a model for developing other citizen science monitoring programs.

**Project partners:** California Department of Fish and Wildlife; Loyola Marymount University; Marina del Rey Anglers; Hubbs Sea World Research; Sea Lab; Aquarium of the Pacific; TBF.

## Increased Kelp, Marine Life & Gonad Size Show Year-One Progress

The Bay Foundation, with project partners—NOAA, Commercial Sea Urchin Harvesters, Vantuna Research Group (VRG) and Los Angeles Waterkeeper—continue to restore and study kelp forests along the Palos Verdes Peninsula through 2014, with 15.4 acres of urchin barren cleared of 1.99 million excess sea urchins, totaling 18.5 acres restored since the project began in July 2013. Dive teams spent over 2700 hours on the ocean floor, reducing sea urchin density from an average of 36 per m<sup>2</sup> to the target density of 2 per m<sup>2</sup>; and monitoring teams spent over 500 hours surveying and monitoring the areas, pre- and post-restoration activities.

The recent report from the first full year's responses to restoration efforts (July 1, 2013-June 30, 2014) describe preliminary results from data collected by VRG. The monitoring program focuses on: the density of giant kelp, the size/weight of the sea urchin gonads, fish species richness, and biomass of two fish species, i.e. kelp bass and sheephead. In each case, within restoration sites there were increases in the density or amount of the organisms being monitored, with 100s of giant kelp plants exceeding 30 feet in length. The increase of urchin gonads and the biomass of the fish indicate that the animals, urchins and fish, had more food and grew more as a result. Specifically: giant kelp density increased from 0 individuals to 25 per 100m<sup>2</sup> in Underwater Arch Cove and from 0



Diver swimming through restored kelp forest in Underwater Arch Cove, Palos Verdes 8 months after sea urchin density was reduced.



Volunteers dissecting red sea urchins collected from barren, restored, and existing kelp forest sites for gonad development comparison. The measurement of gonad development is an important measure of secondary production in kelp forest ecosystems. Photo: Tom Boyd

to 7.5 per 100m<sup>2</sup> in Honeymoon Cove. Other early results describe increases in gonad production, in both red and purple sea urchins, in areas that have been restored. Over the past year, fish species richness doubled in all restoration sites and the biomass of kelp bass in these same areas increased by 10 times.

These data suggest that the kelp forest community is responding positively to the reduction in sea urchin density in the restored barrens. The functionality and persistence of these changes will be determined by further monitoring. The project's goal is the restoration of 150 acres of kelp forest. The benefits of this project will mature over time promoting a more sustainable and resilient ecosystem and coastal economy for Los Angeles. For more information, visit the project website to read reports and view videos/photos.

Project partners: NOAA Restoration Center; Commercial Sea Urchin Harvesters; Los Angeles Waterkeeper; Vantuna Research Group; Southern California Marine Institute; California Science Center Foundation; TBF.

Montrose Settlements Restoration Trustees Council: National Oceanic and Atmospheric Administration; National Park Service; US Fish and Wildlife Service; California Department of Fish and Wildlife; California State Lands Commission; California Department of Parks and Recreation.

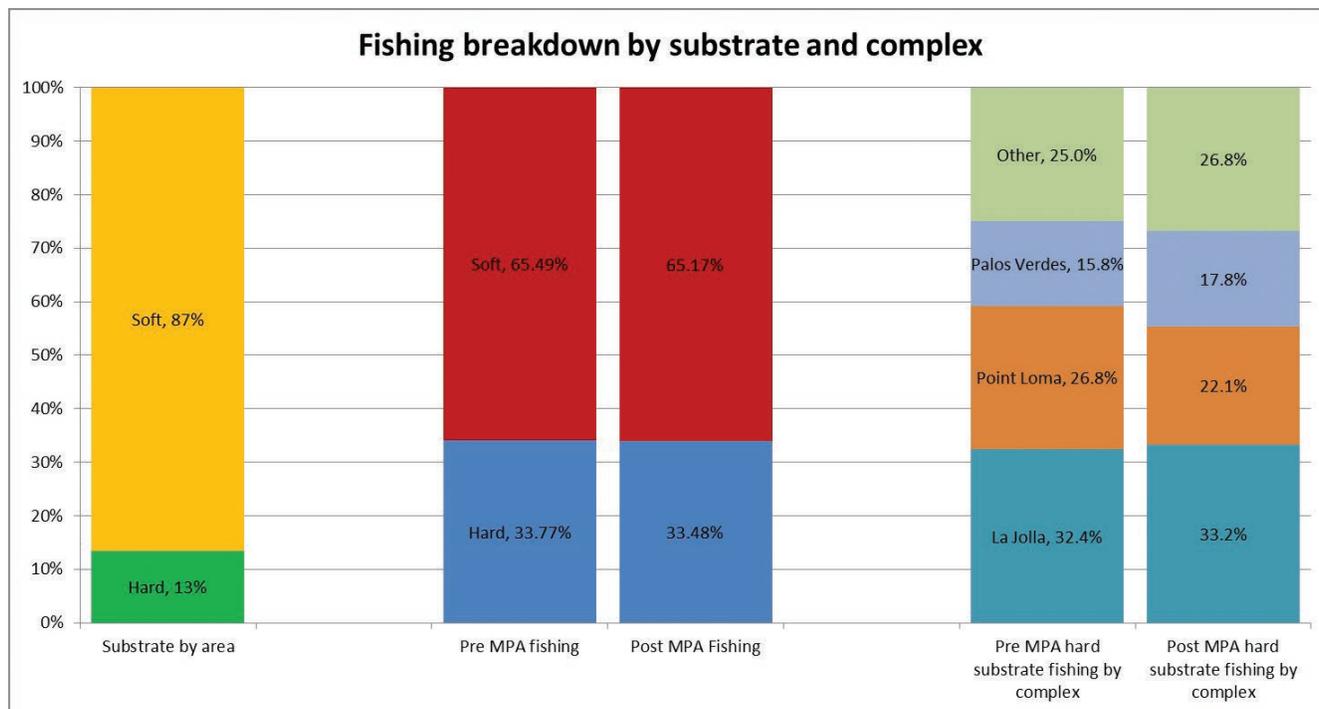
## Aerial Monitoring of Ocean Vessels in Southern California

TBF continues to fly with the support of The Campbell Foundation and project partners LightHawk and Vantuna Research Group over the state waters of Southern California. This survey area extends from the U.S. Mexican Border to Point Conception, Santa Barbara County; and from the shore out to three miles. This effort was launched in 2008 to better inform the socioeconomic potentials of marine protected areas. The survey accurately describes what types of boats are operating off the coast, what they were doing, e.g. fishing, sailing, anchored, and where these activities are taking

place. This fishery independent data set now has more than 12,000 data points and allows us to look at fine spatial scales over the past six years of boating activity off the Southern California coast.

Through analysis of the data set, TBF was able to determine the preference of fishermen to fish on rocky reefs rather than soft bottom (sand or mud), as presented in the accompanying graph. The data analysis also revealed clearly that La Jolla, Point Loma, and Palos Verdes are the most popular or heavily fished areas in our region, and the amount of fishing happening off of these headlands remained consistent before and after the implementation of Marine Protected Areas in January of 2012.

Project partners: The Campbell Foundation; Vantuna Research Group; LightHawk; TBF.



Thirteen percent of the Southern California mainland coast (Point Conception to the U.S. Mexican Border) is rocky bottom, characterized collectively as hard substrate; 87% is sand, mud, thusly soft substrate (left bar). One third of the total fishing observed pre- and post-MPA occurred on hard substrate (middle 2 bars). More narrowly, three rocky reef complexes off of three headlands, Palos Verdes, Point Loma and La Jolla, supported the highest concentration of fishing in the region (right 2 bars). As the hard substrate surrounding these headlands represents only 31% of all of the hard substrate in the region, yet supports roughly 75% of all the hard substrate fishing effort, they are presumably the most highly valued and impacted fishing grounds along the Southern California mainland coast.

## Projects Test New Infiltration System to Combat Urban Runoff Pollution

The City of Santa Monica recently completed an innovative demonstration project to treat dry- and wet-weather runoff from urban watersheds in the Bay. Using a \$300,000 grant from the SMBRC Prop. 84 grant program funded by the State Water Resources Control Board, the City installed three infiltration systems to capture runoff from 10 residential acres in the Kenter Canyon sub-watershed. Like so many other highly urbanized areas, Santa Monica lacked sufficient open space to install more traditional best management practices (BMPs). Instead, the City utilized existing storm drain facilities along city streets to capture, treat, and infiltrate urban runoff before it enters the Santa Monica Bay.

Along West Franklin Street, runoff from a 1.2 acre catchment is being diverted from a catch basin to a subsurface parkway infiltration system. On East Franklin Street, runoff from a 7.3 acre catchment is diverted from a catch basin to a dry-well infiltration system placed under the roadway. On Hill Street, runoff from a 1.7 acre catchment is diverted from a city storm drain into a sump and dry-well infiltration system under the roadway.

The projects allow infiltration and removal of runoff and its pollutants from all dry-weather and initial wet-weather runoff from private and public parcels and roadways upstream of these demonstration sites. These projects will improve water quality by removing pollutants such as trash, sediments, hydrocarbons, heavy metals, nutrients, organics and pathogens. They serve as demonstration projects for others to consider when developing BMPs for their highly urbanized environments. This BMP strategy, if successful, may give other highly urbanized Santa Monica Bay and Southern California cities a new viable tool in their efforts to capture and treat runoff, and recharge groundwater.

**Project partners:** City of Santa Monica; State Water Resources Control Board, SMBRC; TBF.



The City of Santa Monica installed an infiltration zone as part of a project to capture urban runoff.



## Funding Sources for The Santa Monica Bay National Estuary Program Activities

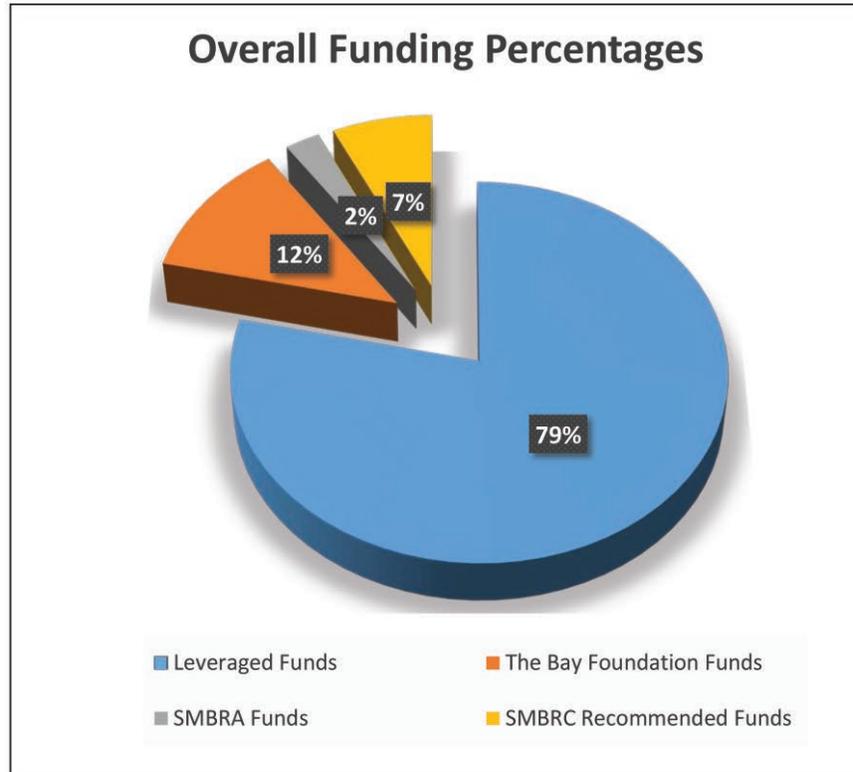
### Leveraged Funds:

Non-Federal,  
State, local,  
private  
\$12,868,335

### SMBRA:

Federal Grants  
and Contracts  
\$379,432

Non-Federal  
Grants and  
Contracts  
\$22,697



### The Bay Foundation:

Federal Grants and  
Contracts  
\$1,456,961.

Non-Federal Grants  
and Contracts,  
\$575,574

Other Sources,  
\$348,917

### SMBRC Recommended Funds:

Prop 84  
\$1,000,000.

Prop 50  
\$155,000

The financial summary on this report was not prepared by a CPA. The numbers presented here are intended to provide a general overview of the resources of the Santa Monica Bay National Estuary Program and may not meet GAAP standards.

# SANTA MONICA BAY NATIONAL ESTUARY PROGRAM – BOARDS & STAFF

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<b>Matt Rodriguez</b>	Secretary, California Environmental Protection Agency
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<b>Enrique Zaldivar</b>	City of Los Angeles Dept. of Public Works, Bureau of Sanitation

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<b>Shelley Luce</b>	Environment Now
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<b>Catherine Tyrrell</b>	RMC Water

## STAFF

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<b>Grace Lee</b>	Director of Outreach Programs (TBF)
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<b>Ivan Medel</b>	Watershed Programs Manager (TBF)
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