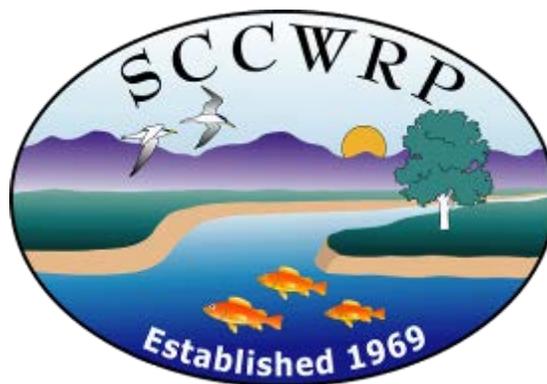


# **Southern California Coastal Water Research Project Authority**

## ***Quarterly Director's Report To the SCCWRP Commission***

***May 2013***

(Detailing activities January 31 – May 2, 2013)



**Stephen B. Weisberg  
Executive Director**

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# HIGHLIGHTS

## News:

### California Rapid Assessment Method for Wetlands (CRAM) endorsed

On March 29, the State Water Resources Control Board's Surface Water Ambient Monitoring Program ([SWAMP](#)) officially endorsed CRAM as an assessment method for wetlands. A detailed [quality assurance memorandum](#) was issued and will soon be made available online. This endorsement represents a significant step regarding programmatic and institutional acceptance of the integrated habitat health assessment method, which SCCWRP staff members were instrumental in developing. SCCWRP continues to support CRAM practitioner training and contribute to updating guidance manuals. For further information, please contact [Dr. Chris Solek](#).

### Southern California SETAC Annual Meeting featured SCCWRP scientists

The Southern California Society of Environmental Toxicology and Chemistry ([So Cal SETAC](#)) held its Annual Meeting April 18–19 at Cabrillo Marina in San Pedro. The first day, SCCWRP scientists (Steve Bay, Ken Schiff, and Nathan Dodder) helped to organize and present a short course on risk assessment of bioaccumulated contaminants and a complementary plenary session on the status of bioaccumulation in Southern California. Questions about the short course can be directed to [Steve Bay](#).

### New SCCWRP fact sheet on hydromodification

SCCWRP released its sixth in a series of [fact sheets](#) on topics of interest to coastal environment managers in Southern California. The most recent features general information about [hydromodification](#) and explains SCCWRP activities that support monitoring and management. All SCCWRP fact sheets are available electronically and printed copies can be requested by contacting [Karen Setty](#). For more information on hydromodification, please contact [Dr. Eric Stein](#).



### **Bight '13 to evaluate/validate seven new measurement techniques**

The collaborative Southern California Bight Regional Monitoring Program is moving ahead full steam, with sampling to begin this summer. Beyond its core aspects, the Bight Program provides an opportunity for special studies that investigate applicability of new measurement methods without permanently altering ongoing monitoring permits (pending their full evaluation). The 2013 Bight Program is slated to investigate seven new methods in the sediment contaminant impact assessment (one of five monitoring elements). These include:

- Analysis of contaminants of emerging concern in sediment samples,
- Testing of new bioanalytical screening tools with Bight '13 sediment extracts,
- Sediment toxicity identification evaluations (TIEs) in embayments,
- Gene microarray analysis of sediment toxicity samples,
- Comparison of alternative toxicity test species,
- *In situ* toxicity testing using the Sediment Ecotoxicity Assessment Ring (SEA-Ring), and
- Evaluating efficacy of new sample preservation techniques for genetic barcoding.

Questions about Bight '13 can be directed to [Ken Schiff](#).



*SEA-Ring showing test chamber configuration for whole sediments and deployment/retrieval technique for shallow waters using an attached pole*

*SCCWRP Scenes:*

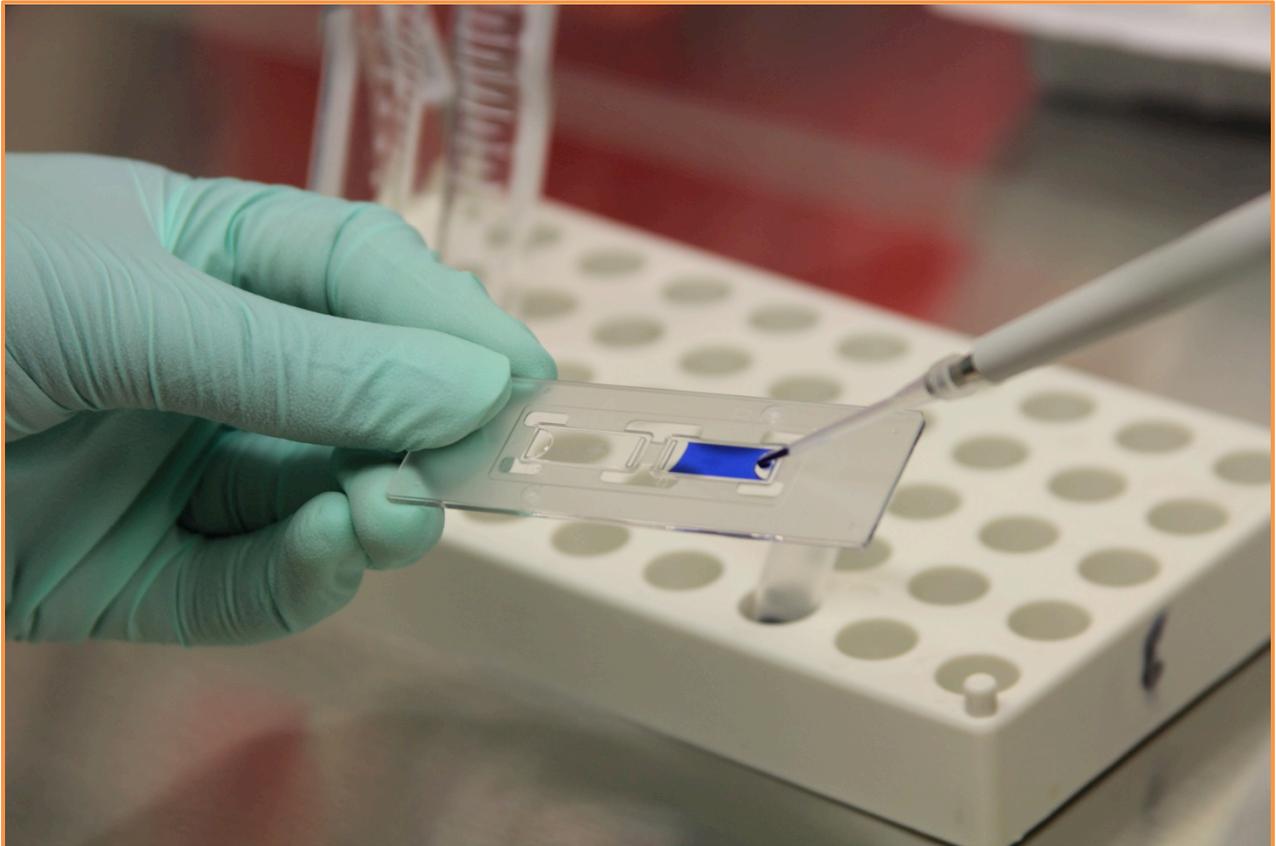


Photo credit: Michael Hang

*Dr. Alvina Mehinto adds blue dye to a slide to determine if bioanalytical test cells are alive before exposing them to environmental samples (in this case, treated wastewater) in the SCCWRP molecular biology lab.*

# PEOPLE

## *Honors and Awards:*

- Nothing to report

## *Personnel:*

- Mark Engeln was hired March 1 as a research technician in the Microbiology Department. Mark is pursuing his Master's degree in biological sciences at California State University, Fullerton, and previously worked as a laboratory assistant in SCCWRP's Biology Department. Mark replaces Christine Pham, who left SCCWRP February 8 to pursue a new opportunity with the Orange County Water District.
- Donna Ferguson, a scientist in the Microbiology Department, left SCCWRP February 28 to continue pursuing her doctoral degree at the University of California, Los Angeles.
- Karlene Miller, an editor who provided cross-departmental support, left SCCWRP on March 31. Karlene will continue to work as a contractor for SCCWRP.
- Bruce Bealer, a Programmer/Analyst in the Information Management and Analysis Department, left SCCWRP on March 31.



*Engeln*

## *Commission:*

- Nothing to report

## *Commission's Technical Advisory Group:*

- Dr. Gerald McGowen is retiring from the City of Los Angeles Bureau of Sanitation and has been replaced by Dr. Curtis Cash as the City of Los Angeles's CTAG representative.

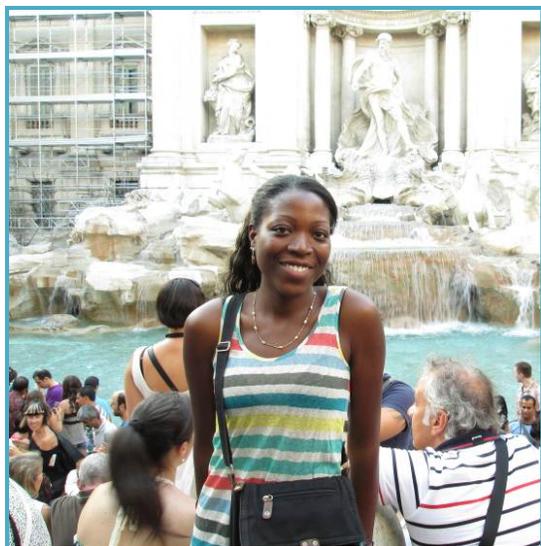
## Spotlight on Staff:

### Dr. Alvina Mehinto — Molecular Toxicologist

Dr. Alvina Mehinto is a scientist in SCCWRP's Toxicology Department, specializing in the toxic effects of natural and manmade contaminants on aquatic organisms, especially fish. Alvina joined SCCWRP in February 2013. Her primary work involves the impact of contaminants on gene expression. Current projects include the development and application of molecular Toxicity Identification Evaluation (TIE) methods that could be used in monitoring programs. She is also working with the Chemistry Department to develop bioanalytical assays for monitoring emerging contaminants in recycled waters.



Alvina grew up in a town northwest of Paris. She was always interested in nature, especially marine mammals, so she decided to go to England to learn English and pursue a marine biology degree at the University of Portsmouth. Her undergraduate research examined the effects of fish-farm effluents on the physiology of salmon smolts. This further sparked an interest in environmental pollution and its effects on aquatic organisms. She next undertook a PhD program at the University of Exeter (also in England) studying how human pharmaceuticals biodegrade and their effects on fish gene expression and metabolomes. She “hopped the pond” and continued to conduct research as a postdoctoral scholar at the University of Florida under the supervision of SCCWRP collaborator Dr. Nancy Denslow. There, her projects included gene expression profiling of fish exposed to various pollutants, development of microarrays for non-model species, and microarray application to evaluate the effects of environmental pollutants in US watersheds. As a postdoc, she also spent time as a visiting researcher at the University of California, Berkeley.



Alvina observes that many scientific methods and concepts could potentially be used to monitor environmental pollutants and conditions. She sees SCCWRP as an important conduit to consider and develop these tools effectively and facilitate their use. She looks forward to engaging with SCCWRP collaborators at universities as well as interacting with management and regulatory agencies.

In her free time, Alvina loves traveling and discovering new countries. Her hobbies include hiking, snorkeling, dancing, and horseback riding whenever possible. She is also a sports fan and enjoys watching basketball and soccer.

For more information on Dr. Mehinto and her research, please visit:

<http://www.sccwrp.org/AboutSCCWRP/SCCWRPStaff/MehintoAlvina.aspx>.

## Spotlight on Partners:

### Dr. Mark Gold — University of California, Los Angeles

Dr. Mark Gold is Associate Director and an adjunct professor at the University of California, Los Angeles (UCLA) [Institute of the Environment and Sustainability](#). He accepted the position about 16 months ago, and his responsibilities include guiding and deepening the Institute's engagement with government agencies, policymakers, and the environmental community; building the Institute's education and research program; and conducting outreach to donors and the public. He also provides leadership to the Institute's Coastal Center, teaches, and serves on the advisory board for Heal the Bay, a Santa Monica-based nonprofit.



Mark's path in life has come full circle, or as he puts it, "gone nowhere." He was born at UCLA Medical Center, received his degrees from UCLA (a bachelor's and master's in biology and a doctorate in environmental science and engineering), and now works for the university. His interest in environmental issues piqued when he took a class in urban planning featuring Dorothy Green as the guest speaker. She spoke about a new environmental group formed in 1986 (Heal the Bay) and was seeking volunteers to help her clean up Santa Monica Bay's pollution problems. Since Mark grew up on the Bay and saw the pollution firsthand, he started volunteering. Two years later, Green hired him as Heal the Bay's first employee. He remained there for more than 23 years — much of this time leading the organization as executive director or president.

Gold has been working closely with SCCWRP for many years. In partnership with the University of California, Berkeley, SCCWRP and Heal the Bay conducted [epidemiology studies](#) at Avalon, Doheny, and Surfrider Beaches. Gold was also a stakeholder advisor for the SCCWRP-coordinated state [advisory panel](#) on contaminants of emerging concern in freshwater, coastal, and marine ecosystems. He previously joined SCCWRP Director Steve Weisberg on the California Ocean Science Trust Board of Trustees, and is now working with Weisberg and UCLA researchers toward a potential ocean acidification modeling project. Gold says, "SCCWRP has been a big part of my career since the very beginning... I've spent my career trying to solve environmental problems and their research has been critical to those efforts."



Mark's three children take after him and his wife Lisette, an environmental engineer who works on groundwater remediation for the city of Santa Monica. Zack studies marine biology at Stanford and works as a state parks ocean lifeguard, Jake loves music and plays trumpet and French horn at Santa Monica High School, and Natalie "swims like a fish." Mark's hobbies (as you might guess) include going to the beach, hiking, and rooting for the UCLA Bruins and LA Lakers and Dodgers.

## Spotlight on Commissioners:

### Cid Tesoro — County of San Diego Flood Control



Cid Tesoro manages the County of San Diego’s Watershed Protection Program, which is responsible for complying with water quality regulations. He is also the Manager for the San Diego County Flood Control District, a separate agency. The Flood Control Section is responsible for maintaining and constructing stormwater drainage facilities, flood warning, hydrologic data collection, and assuring private development projects meet flood control objectives and comply with Federal Emergency Management Association (FEMA) guidelines. His staff members include both water quality and water quantity folks working together across a range a disciplines — engineers, scientist, technicians, maintenance workers, and others.

Tesoro is a California native and has lived in San Diego all his life aside from a brief period spent in Los Angeles after his college graduation. He earned a degree in Civil Engineering from San Diego State University and then worked with the California Department of Transportation (Caltrans) for 13 years. Early on in his career he focused mainly on highway construction projects, but in the late 1980s had an opportunity to oversee a water quality program with Caltrans, shifting from his original structural design focus to the “water world.” Since then, he has developed a passion for working on Clean Water Act compliance and flood control issues. He has been with the County since 2003 and joined the SCCWRP Commission in 2006.

The County is currently collaborating with SCCWRP on several projects, including monitoring to establish background concentrations of contaminants in San Diego [reference streams](#) and local beaches, [microbial source tracking and identification](#), [regional watershed monitoring](#), studies of [atmospheric nutrient deposition](#), and [hydromodification assessment and management](#). Commenting on the positive ongoing partnership, Cid says he frequently uses SCCWRP as a scientific resource. You can follow Cid’s updates on his agency’s activities on Twitter (@Cid\_Tesoro).



In his spare time, Cid likes to run and has participated in several marathons. He is currently sidelined by a foot injury, but plans on entering more races in the future. He’s also always been a fan of surfing, and, because he finds it very calming, feels drawn to live alongside the ocean or another large water body. He currently lives in Escondido with his wife and is a proud father to two sons. Christian recently graduated from UC Irvine and Justin will graduate this spring from San Diego State University.

For more information on the Watershed Protection Program and Flood Control Section, please visit: <http://www.sdcounty.ca.gov/dpw/watersheds.html>.

# COMMUNICATIONS

## *Journal Articles — Published:*

- [Phosphorus cycling in the Sargasso Sea: Investigation using the oxygen isotopic composition of phosphate, enzyme-labeled fluorescence, and turnover times](#). 2013. K [McLaughlin](#), JA Sohm, GA Cutter, MW Lomas, A Paytan. *Global Biogeochemical Cycles* 27:1-13.
- [Antifouling biocides in water and sediments from California marinas](#). 2013. Y Sapozhnikova, E Wirth, K [Schiff](#), M Fulton. *Marine Pollution Bulletin* 69:189-194.
- [Benthic macrofaunal assemblages of the San Francisco Estuary and Delta, USA](#). 2013. B Thompson, JA [Ranasinghe](#), S Lowe, A Melwani, SB Weisberg. *Environmental Monitoring and Assessment* 185:2281—2295.

## *Journal Articles — Published Online:*

- [Reach-scale geomorphic and biological effects of localized streambank armoring](#). ED [Stein](#), MR Cover, AE Fetscher, C O'Reilly, R Guardado, CW Solek. *Journal of the American Water Resources Association*.
- [Phosphorus cycling in the Sargasso Sea: Investigation using the oxygen isotopic composition of phosphate, enzyme labeled fluorescence, and turnover times](#). K [McLaughlin](#), JA Sohm, GA Cutter, MW Lomas, A Paytan. *Global Biogeochemical Cycles*.

## *Journal Articles — Accepted:*

- Comparison of PCR and quantitative real-time PCR methods for the characterization of ruminant and cattle fecal pollution sources. MR [Raith](#), CA Kelty, JF Griffith, A Schriewer, S Wuertz, S Mieszkin, M Gourmelon, GH Reischer, AH Farnleitner, JS Ervin, PA Holden, DL Ebentier, JA Jay, D Wang, AB Boehm, TG Aw, JB Rose, E Balleste, WG Meijer, M Sivaganesan, O Shanks. *Water Research*.
- Performance of viruses and bacteriophages for fecal source determination in a multi-laboratory, comparative study. VJ Harwood, AB Boehm, LM Sassoubre, V Kannappan, JR Stewart, TT Fong, MP Caprais, RR Converse, D Diston, J Ebdon, JA Fuhrman, M Gourmelon, J Gentry-Shields, JF [Griffith](#), D Kashian, RT Noble, H Taylor, M Wicki. *Water Research*.
- Bacteroidales terminal restriction fragment length polymorphism (TRFLP) for fecal source differentiation in comparison to and in combination with universal Bacteria TRFLP. Y [Cao](#), LC Van De Werfhorstb, EA Scott, MR Raith, PA Holden, JF Griffith. *Water Research*.
- Performance evaluation of canine-associated Bacteroidales assays in a multi-laboratory

comparison study. A Schriewer, KD Goodwin, CD Sinigalliano, A Cox, D Wanless, J Bartkowiak, DL Ebentier, KT Hanley, J Ervin, LA Deering, OC Shanks, LA Peed, WG Meijer, JF [Griffith](#), J Santo Domingo, JA Jay, PA Holden, S Wuertz. *Water Research*.

- Multi-Laboratory evaluations of the performance of *Catellibacoccus marimammalium* PCR assays developed to target gull fecal sources. CD Sinigalliano, J Ervin, LC Van De Werfhorst, B Badgley, E Ballesté, J Bartkowiak, AB Boehm, M Byappanahalli, KD Goodwin, M Gourmelon, JF [Griffith](#), PA Holden, J Jay, B Layton, C Lee, J Lee, WG Meijer, R Noble, M Raith, H Ryu, MJ Sadowsky, A Schriewer, D Wang, D Wanless, R Whitman, S Wuertz, JW Santo Domingo. *Water Research*.
- Evaluation of molecular community analysis methods for discerning fecal sources and human waste. Y [Cao](#), LC Van De Werfhorst, EA Dubinsky, BD Badgley, MJ Sadowsky, GL Andersen, JF Griffith, PA Holden. *Water Research*.
- Characterization of fecal concentrations in human and other animal sources by physical, culture-based, and quantitative real-time PCR methods. JS Ervin, TL Russell, BA [Layton](#), KM Yamahara, D Wang, LM Sassoubre, Y Cao, CA Kelty, Sivaganesan, AB Boehm, PA Holden, SB Weisberg, OC Shanks. *Water Research*.
- Recommendations following a multi-laboratory comparison of microbial source tracking methods. J Stewart, AB Boehm, EA Dubinsky, TT Fong, KD Goodwin, JF [Griffith](#), RT Noble, OC Shanks, K Vijayavel, SB Weisberg. *Water Research*.
- A regional survey of extent and magnitude of eutrophication in Southern California estuaries. K [McLaughlin](#), M Sutula, L Busse, S Anderson, J Crooks, R Dagit, D Gibson, K Johnston, L Stratton. *Estuaries and Coasts*.
- Development, comparison and validation using ELISAs for the analysis of domoic acid in California sea lion body fluids. EL Seubert, MDA [Howard](#), RM Kudela, TN Stewart, RW Litaker, R Evans, DA Caron. *Journal of AOAC International*.
- Thresholds of adverse effects of macroalgal abundance and sediment organic matter on benthic habitat quality in estuarine intertidal flats. M [Sutula](#), L Green, G Cichetti, N Detenbeck, P Fong. *Estuaries and Coasts*.
- Identifying reference conditions and quantifying biological variability within benthic macroinvertebrate communities in perennial and non-perennial Northern California streams. K Lunde, MR Cover, R [Mazor](#), C Sommers, V Resh. *Environmental Management*.
- Refocusing Mussel Watch on contaminants of emerging concern (CECs): the California pilot study (2009–10). K [Maruya](#), N Dodder, R Schaffner, S Weisberg, D Gregorio, S Klosterhaus, D Alvarez, E Furlong, K Kimbrough, G Lauenstein, J Christensen. *Marine Pollution Bulletin*.

- Occurrence of contaminants of emerging concern in mussels (*Mytilus* spp.) along the California coast and the influence of land use, storm water discharge, and treated wastewater effluent. N [Dodder](#), K Maruya, P Ferguson, R Grace, S Klosterhaus, M La Guardia, G Lauenstein, J Ramirez. *Marine Pollution Bulletin*.
- Occurrence of contaminants of emerging concern along the California coast (2009–10) using passive sampling devices. D Alvarez, K [Maruya](#), N Dodder, W Lao, E Furlong, K Smalling. *Marine Pollution Bulletin*.
- The Mussel Watch California pilot study on contaminants of emerging concern (CECs): synthesis and next steps. K [Maruya](#), N Dodder, S Weisberg, D Gregorio, J Bishop, S Klosterhaus, D Alvarez, E Furlong, S Bricker, K Kimbrough, G Lauenstein. *Marine Pollution Bulletin*.

### *Technical Reports:*

- [Modeling and managing hydromodification effects: summary of available tools and decision-making approach](#). 2013. E [Stein](#), B Bledsoe. Technical Report 753. Southern California Coastal Water Research Project. Costa Mesa, CA.
- [Framework for developing hydromodification monitoring programs](#). 2013. E [Stein](#), B Bledsoe. Technical Report 752. Southern California Coastal Water Research Project. Costa Mesa, CA.
- [Southern California Bight 2008 Regional Monitoring Program: VII. Water Quality](#). 2013. MDA Howard, G Robertson, M Sutula, BH Jones, NP Nezlin, Y Chao, H Frenzel, MJ Mengel, DA Caron, B Seegers, A Sengupta, E Seubert, DW Diehl, SB Weisberg. Technical Report 710. Southern California Coastal Water Research Project. Costa Mesa, CA.

### *Conference Presentations:*

#### **Remediation of Contaminated Sediments — February 2013**

- [Using passive samplers to measure dissolved background concentrations of organic contaminants in the water column of the Palos Verdes shelf superfund site](#) — LA Fernandez, W [Lao](#), K Maruya, C White, and RM Burgess
- [Technical guidance on bioavailability/bioaccessibility measurements using passive sampling methods for management of contaminated sediments](#) — T Parkerton, K [Maruya](#), P Chapman, B Escher, U Ghosh, MS Greenberg, SK Driscoll, P Landrum, M Lydy, P Mayer, W Peijnenburg, and E Zeng

#### **South Western Regional Conference — February 2013**

- [National mussel watch monitoring of the California coast in 2010](#) — N [Dodder](#)

### Association for the Sciences of Limnology and Oceanography (ASLO) — February 2013

- [CDOM as a tracer of effluent plumes for water quality compliance assessment around submerged ocean outfalls](#) — NP [Nezlin](#), JR Gully, MJ Mengel, GL Robertson, A Steele, and SB Weisberg

### Annual Pretreatment, Pollution Prevention and Stormwater Conference and Exhibition Emerging Issues Session — February 2013

- [What could be future sampling requirements for POTWs and stormwater programs on emerging contaminants?](#) — K [Maruya](#)

### US Recreational Water Quality Criteria: A Vision for the Future — March 2013

- [The occurrence of virulence genes among \*E. faecalis\* and \*E. faecium\* isolates from beaches, urban runoff, humans, sewage, dogs and birds in southern California](#) — DM Ferguson, G Negron Talavera, LA Ríos Hernández, SB [Weisberg](#), RF Ambrose, JA Jay
- [Implementing qPCR methods for recreational water management decisions: Using the culture-based numeric threshold directly or the NGI equivalent thresholds in the new RWQC?](#) — Y [Cao](#), MR Raith, C Pham, JF Griffith
- Progress and issues in use of quantitative polymerase chain reaction (qPCR) studies for enterococci to assess recreational water quality — J [Griffith](#)
- An examination of water quality indicators in swim sites located in the Upper Los Angeles River Watershed — C Lee, K Morris, K Johnstone, L Pendleton, A Ponce, C Tang, N Fingold, J [Griffith](#), N Steele
- Performance of general fecal and host-associated Bacteroidales markers in the California Source Identification Protocol Project Method Evaluation Study — B [Layton](#)

### CAL GIS — April 2013

- [Developing a remote, multi-camera image acquisition system for beach monitoring](#) — S [Steinberg](#), A Santana
- [An open source system to compute and geospatially visualize benthic indices](#) — S [Steinberg](#)
- [Data display and analysis tools for the Southern California Bight Survey](#) — R [Schaffner](#), L Cooper
- [Smart field computing, taking advantage of readily available technology](#) — L [Cooper](#)
- (Poster) The California Environmental Data Exchange Network (CEDEN): A statewide water quality monitoring and visualization system for California — S [Steinberg](#)

### *Other Presentations:*

- Nathan [Dodder](#) gave a presentation entitled “Levels of persistent organic pollutants in blubber of free-ranging bottlenose dolphins (*Tursiops truncatus*) off Southern California” at the Southern California Marine Mammal Workshop on February 1 in Newport Beach, CA.
- Keith [Maruya](#) gave a presentation entitled “Monitoring for CECs in aquatic ecosystems” for the California Water Quality Monitoring Collaboration Network webinar series on February 14.
- Nathan [Dodder](#) gave a presentation entitled “National Mussel Watch monitoring of the California coast in 2010” at the Korean-American Scientists and Engineers Association Regional Conference on February 16 in Carlsbad, CA.
- Steve [Bay](#) and Darrin [Greenstein](#) conducted a short course on “Sediment quality analysis for sediment quality objectives” at the Santa Ana Regional Water Quality Control Board on February 19–20 in Riverside, CA.
- Ken [Schiff](#) was an invited participant in a quantitative microbiological risk assessment workshop for the Great Lakes on February 20–21 in Chicago, IL.
- Steve [Weisberg](#) gave a seminar entitled “The Clean Water Act 40 years later: Has it been successful?” on February 22 at Chapman University in Orange, CA.
- Eric [Stein](#) gave a presentation entitled “Effects of Southern California wildfires on storm water contaminant runoff” at the US Geological Survey Fire and Wildlife Strategic Plan Workshop on March 13–14 in San Diego County, CA.
- Steve [Weisberg](#) gave a presentation on ocean acidification at the California Ocean Protection Council meeting on March 27 in Sacramento, CA.
- Eric [Stein](#) gave a presentation entitled “Fire effects on water quality” at the American Society of Civil Engineers Hydrology & Hydraulics Technical Group Luncheon on April 4 in Irvine, CA.
- Steve [Bay](#) led a short course entitled “Bioaccumulatives in the Southern California Bight” at the Society for Environmental Toxicology and Chemistry Southern California Chapter Annual Meeting on April 18 in San Pedro, CA.
- Ken [Schiff](#) gave a plenary presentation entitled “Contaminants in Southern California sportfish” at the Southern California Society of Environmental Toxicology and Chemistry Southern California Chapter Annual Meeting on April 18 in San Pedro, CA.
- Nathan [Dodder](#) gave a plenary presentation entitled “Contaminants of emerging concern in Southern California” at the Society for Environmental Toxicology and Chemistry Southern California Chapter Annual Meeting on April 18 in San Pedro, CA.

- Steve [Bay](#) co-presented a plenary presentation entitled “Developing an implementation framework for human health-related sediment quality objectives” at the Society for Environmental Toxicology and Chemistry Southern California Chapter Annual Meeting on April 18 in San Pedro, CA.
- Doris [Vidal-Dorsch](#) gave a presentation entitled “Biological responses of marine flatfish exposed to municipal wastewater effluent” at the Society for Environmental Toxicology and Chemistry Southern California Chapter Annual Meeting on April 19 in San Pedro, CA.

***Professional Appointments:***

- Eric [Stein](#) was appointed to the Santa Monica Bay Restoration Commission Technical Advisory Committee.
- Steve [Steinberg](#) was sworn in as President of the Southwest US Region of ASPRS: The Geospatial Information Society.
- Nathan [Dodder](#) was appointed to the California Sea Grant Review Panel.

***Meetings & Workshops Held at SCCWRP:***

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Apr 22	Trash Policy Development	<a href="#">State Water Resources Control Board</a>
Apr 17	Sediment Quality Objective Application in Ports of Los Angeles and Long Beach — Technical Workgroup	<a href="#">Bay</a>
Apr 15	Los Angeles County Sanitation District Supplemental Environmental Project	<a href="#">Bay</a>
Apr 15	Southern California Society of Environmental Toxicology and Chemistry — Toxicity Advisory Group	<a href="#">Greenstein</a>
Apr 15	Southern California Association of Marine Invertebrate Taxonomists	<a href="#">Stein</a>
Apr 11	Bight '13 Contaminant Impact Assessment	<a href="#">Schiff</a>
Apr 10	SCCWRP Commission’s Technical Advisory Group — Publicly Owned Treatment Works Subgroup	<a href="#">City of San Diego Public Utilities</a>
Apr 9	Santa Margarita River Watershed Nutrient Numeric Endpoints	<a href="#">Sutula</a>

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Apr 4	Bight '13 Benthic	<a href="#">Gillett</a>
Apr 3	Bight '13 Trawl	<a href="#">Schiff</a>
Mar 29	Field Sampling and Laboratory Analyses <a href="#">Request for Proposals</a> — Bidders' Meeting	<a href="#">Nece</a>
Mar 28	Orange County Coastal Coalition	<a href="#">Orange County Watersheds</a>
Mar 27	Bight '13 Toxicology	<a href="#">Bay</a>
Mar 27	Bight '13 Chemistry	<a href="#">Dodder</a>
Mar 26	Bight '13 Information Management	<a href="#">Cooper</a>
Mar 26	Bight '13 Field Operations	<a href="#">Diehl</a>
Mar 20–22	Training: California Rapid Assessment Method for Wetlands	<a href="#">University of California, Davis Extension</a>
Mar 15	Tijuana River National Estuarine Research Reserve — Temporal Investigations of Marsh Ecosystems	<a href="#">Stein</a>
Mar 15	Seminar: Dr. Carrie Kappel — <a href="#">“Incorporating ecosystem tipping points into marine management”</a>	<a href="#">Weisberg</a>
Mar 14	Bight '13 Field Computer	<a href="#">Cooper</a>
Mar 8	SCCWRP Commission	<a href="#">Weisberg</a>
Mar 7	Southern California Urban and Regional Information Systems Association	<a href="#">Steinberg</a>
Mar 7	Bight '13 Information Management	<a href="#">Cooper</a>
Mar 6	Bight '13 Marine Protected Areas	<a href="#">Schiff</a>
Mar 6	Southern California Wetland Recovery Project Wetland Managers Group	<a href="#">Solek</a>
Mar 5	Microarray Analysis Group	<a href="#">Moore</a>

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Mar 5	Bight '13 Contaminant Impact Assessment	<a href="#">Schiff</a>
Mar 5	Sediment Quality Objective Application in Ports of Los Angeles and Long Beach	<a href="#">Bay</a>
Feb 28	Headwaters to Ocean (H2O) Conference Planning	<a href="#">Solek</a>
Feb 28	Bight '13 Microbiology	<a href="#">Griffith</a>
Feb 27	Hyperion Treatment Plant Diversion	<a href="#">Howard</a>
Feb 27	Southern California Society of Environmental Toxicology and Chemistry Toxicity Advisory Group	<a href="#">Greenstein</a>
Feb 26	Bight '13 Debris	<a href="#">Sutula</a>
Feb 26	Bight '13 Field Operations	<a href="#">Diehl</a>
Feb 25	Upper Newport Bay Monitoring	<a href="#">Schiff</a>
Feb 25	Clean Beach Task Force	<a href="#">Weisberg</a>
Feb 22	Sediment Quality Objective Application in Ports of Los Angeles and Long Beach	<a href="#">Bay</a>
Feb 21	Southern California Society of Environmental Toxicology and Chemistry	<a href="#">Bay</a>
Feb 21	Bight '13 Toxicology	<a href="#">Bay</a>
Feb 21	State Wetland Policy Regulatory Team	<a href="#">Stein</a>
Feb 20	Bight '13 Trawl Debris Methods	<a href="#">Moore</a>
Feb 20	Bight '13 Benthic	<a href="#">Gillett</a>
Feb 19	Bight '13 Information Management	<a href="#">Cooper</a>
Feb 19	Bight '13 Trawl	<a href="#">Diehl</a>

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Feb 13	Bight '13 Chemistry	<a href="#">Dodder</a>
Feb 13	Beach Water Quality Workgroup	<a href="#">Weisberg</a>
Feb 8	Seminar: Dr. Denny Takahashi-Kelso and Dr. George Leonard — <a href="#">“What we put in and what we take out of the ocean: Current and emerging issues in marine conservation”</a>	<a href="#">Weisberg</a>
Feb 7	Wetland Status and Trends Kickoff	<a href="#">Stein</a>
Feb 7	Bight '13 Nutrients	<a href="#">Howard</a>
Feb 6	SCCWRP Commission’s Technical Advisory Group (CTAG)	<a href="#">Weisberg</a>
Feb 5	Southern California Stormwater Monitoring Coalition Executive Committee	<a href="#">Schiff</a>
Feb 4	Southern California Stormwater Monitoring Coalition Bioassessment Workgroup	<a href="#">Mazor</a>

*Upcoming Commission/CTAG Meetings:*

- SCCWRP will host the next [CTAG](#) meeting on Thursday, May 9 from 9:00 to 4:00.
- SCCWRP will host the next [Commission](#) meeting on Friday, June 7 from 9:30 to 12:00.

# PROJECTS

**Note:** The following progress updates describe accomplishments for each of SCCWRP's projects in the last quarter. Find more details about each project in SCCWRP's [2012–2013 Research Plan](#).

***Projects with significant activity this quarter:***

[Traditional Toxicity Identification Evaluation Methods](#)

[DNA Barcoding](#)

***Completed Projects:***

[Quantitative Microbial Risk Assessment](#)

[Hydromodification Assessment and Management](#)

***New Project:***

[Ocean Acidification](#)

## A. ENVIRONMENTAL ASSESSMENT METHOD/TOOL DEVELOPMENT

### 1. Chemistry Assessment

#### a. [Analytical Methods for Toxaphene](#)

Purpose: Develop analytical methods for quantifying toxaphene residues in environmental sample extracts

Update: Staff members are beginning analysis of laboratory intercalibration samples with fish tissue and spiked marine sediments, and will compile data from participating labs as they are submitted.

Lead Investigator: [Maruya](#)

#### b. [Nontargeted Analysis](#)

Purpose: Develop analytical methods for identifying unknown contaminants of emerging concern (CECs) in tissue, sediment, and water samples

Update: Initial contaminant identifications in cetacean blubber samples were completed using comprehensive two dimensional gas chromatography time of flight mass spectrometry (GC×GC-TOF), and a draft mass spectral library was built from these data. Over the next quarter, researchers will verify

the identifications, build the final version of the mass spectral library, and begin drafting a manuscript summarizing the findings.

Lead Investigator: [Dodder](#)

### c. [Passive Samplers](#)

Purpose: Evaluate whether passive samplers can be used in coastal sediments to predict bioaccumulation and sediment toxicity

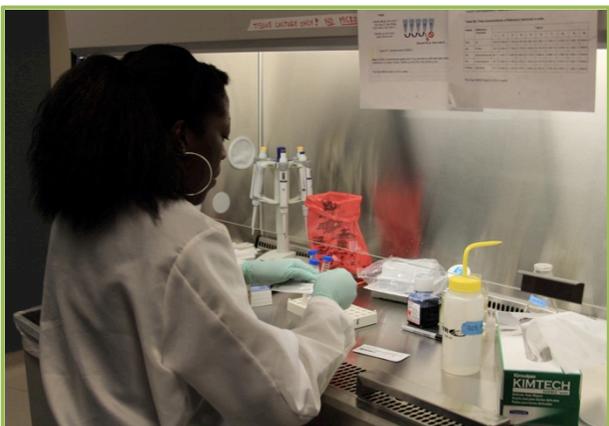
Update: SCCWRP initiated experiments to determine uptake and desorption kinetics of performance reference compounds pre-loaded into passive samplers. Next, staff members will oversee production and submission of a series of five articles resulting from the Society of Environmental Toxicology and Chemistry technical [workshop](#) on passive sampling methods for contaminated sediment management held in November 2012 at SCCWRP.

Lead Investigator: [Maruya](#)

### d. [Bioanalytical Screening Tools](#)

Purpose: Evaluate and optimize bioanalytical methods for monitoring CECs in recycled water and ambient waters that receive treated wastewater effluent and/or stormwater discharge

Update: A project meeting was held February 11 and SCCWRP and collaborators completed evaluation of recycled water samples using multiple bioassay endpoints. Staff members will next finalize protocols for all recycled water bioassays, and initiate studies to adapt these protocols for receiving water and sediment samples. New capabilities are coming online as staff members begin analyzing five bioanalytical cell lines exposed to reference CEC samples.



*Dr. Alvina Mehinto is beginning bioanalytical tests in the new SCCWRP molecular biology lab.*

Lead Investigator: [Maruya](#)

Highlight

## 2. Toxicity Assessment

### a. [Traditional Toxicity Identification \(TIE\) Evaluation Methods](#)

Purpose: Develop and refine analytical methods for identifying the specific constituents responsible for toxicity in marine sediments

Update: A final [summary report](#) was completed for a workshop on determining the causes of sediment toxicity to amphipods in San Francisco Bay. It identifies several factors with high potential for influencing toxicity results, including high sediment clay content, variations in amphipod health, and nontraditional contaminants. Several research proposals are currently being developed to implement the workshop recommendations. Laboratory experiments to develop TIE treatments for fipronil toxicity are also in progress. Preliminary results using *Ceriodaphnia* indicate that manipulation of sample pH prior to toxicity testing is effective at reducing toxicity due to fipronil.

Lead Investigator: [Bay](#)

### b. [Molecular Tools for Toxicity Identification Evaluation](#)

Purpose: Develop new methods for evaluating sediment toxicity via gene microarrays that reveal molecular-level responses in sentinel organisms (e.g., marine fish and invertebrates)

Update: Sample analysis was completed for an interlaboratory study using an amphipod gene microarray, and statistical analyses of the results from five laboratories are underway. Initial results indicate each laboratory prepared tissue extracts of similar quality. A high correlation of probe signal intensity was found both within and between laboratories. Additional statistical analysis, including comparison of differential gene expression among labs, will be conducted next quarter. RNA sequencing of hornyhead turbot tissue samples has been completed as part of the process to develop an improved gene microarray, and scientists are now working to annotate the sequences and design the microarray. Laboratory exposure of hornyhead turbot to selected contaminants will be initiated next quarter to obtain samples for evaluating the new microarray.

Lead Investigator: [Bay](#)

## 3. Biological Assessment

### a. [Rocky Reefs](#)

Purpose: Develop an assessment index to interpret the ecological integrity of rocky reefs

Update: After participating in the Marine Protected Area (MPA) report card workshop series over the last six months, SCCWRP staff members and collaborators are embarking on a Best Professional Judgment (BPJ) exercise. The goal is to identify the most important biological metrics for developing the rocky reef index and to agree upon a set of validation sites for index development. The BPJ exercise will take place in coordination with the Bight '13 MPA element.

Lead Investigator: [Schiff](#)

**b. [Periphyton](#)**

Purpose: Produce tools that utilize benthic soft-bodied algae and diatom assemblages for biological assessment of stream condition, anthropogenic disturbance, and nutrient levels

Update: Staff members completed the Prop 50-funded project to develop an algal Index of Biotic Integrity (IBI) this quarter and a manuscript is under review. The manuscript describes several alternative IBIs based on only diatoms, only soft-bodied algae, or a hybrid utilizing both algal types. It also discusses tradeoffs in terms of IBI resolution and cost.

Lead Investigator: [Fetscher](#)

**c. [DNA Barcoding](#)**

Purpose: Assess the efficacy of DNA barcoding for rapidly identifying marine and freshwater benthic invertebrate and algal species

Update: SCCWRP staff members completed two manuscripts on the application of barcoding for freshwater bioassessment. The first demonstrates that certain bioassessment metrics derived from barcode data have higher sensitivity to detecting environmental effects than the same metrics derived from morphological data. The second evaluates four different species delimitation methods and shows that they all produced comparable results in terms of taxa richness and the resultant bioassessment metrics. Staff members also coordinated development of detailed study designs for two barcoding studies that may be included in Bight '13. The first would investigate sample preservation methods for marine barcoding specimens and the second would use barcoding methods to help differentiate cryptic organisms important for marine benthic index calculations. Sample processing and analysis continued for the San Gabriel River study evaluating the application of barcoding to assess streams impacted by in-stream hydromodification structures. Lastly, marine barcoding specimens from the Oregon and Washington coasts are still being processed, and partner labs continue testing various next-generation sequencing methods to analyze composite DNA samples.

Lead Investigator: [Stein](#)

**d. [Cyanobacteria](#)**

Purpose: Increase understanding of environmental drivers for cyanobacterial bloom occurrence and toxin production in streams and wetlands

Update: Based on widespread cyanotoxin detection in the 2012 pilot survey of Southern California depression wetlands and wadeable streams, work has begun on a manuscript summarizing the effects of microcystin and saxitoxin expression on the benthos of Southern California wadeable streams. This dataset not only describes the geographic extent of toxin production by benthic cyanobacteria in California streams, but also helps explain relationships among landscape and water chemistry

Highlight

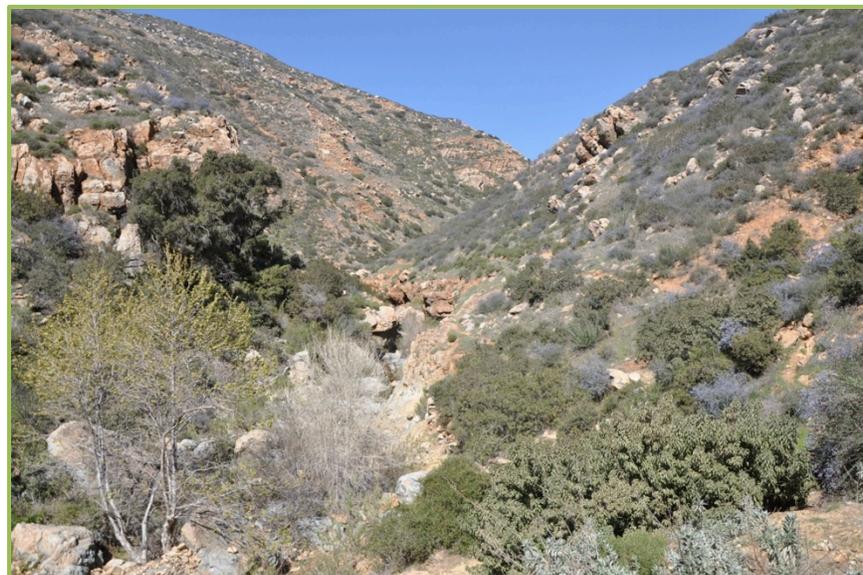
parameters, toxin production, and benthic macroinvertebrate communities. The Southern California Stormwater Monitoring Coalition (SMC), Surface Water Ambient Monitoring Program (SWAMP) Perennial Stream Assessment, and SWAMP Depressional Wetlands Assessment programs have agreed to continue collecting samples to measure cyanotoxins in the upcoming field season. The San Diego Regional Water Quality Control Board will also sponsor additional sampling in coastal lakes and estuaries in 2013.

Lead Investigators: [Fetscher](#), [Howard](#)

### **e. Nonperennial Streams**

Purpose: Develop and test bioassessment tools for use in arid/episodic and intermittent nonperennial streams

Update: For arid/episodic stream assessment, staff members continue to refine a conceptual model and classification system. They identified several initial study sites in Southern California, where fieldwork has begun to field-test several new rapid assessment metrics. For the intermittent stream assessment, SCCWRP scientists and partners identified an approach to mapping nonperennial streams in a watershed in the San Diego region. This approach, developed by US Geological Survey scientists, characterizes monthly flows at a site based on antecedent rainfall and catchment characteristics. SCCWRP will implement this approach at a target watershed and validate the predictions with site visits and stream gauge data over the next two years. In addition, benthic macroinvertebrate and algae samples were collected from four nonperennial reference streams in San Diego, Riverside, and Orange Counties. Continuous water level and conductivity data loggers were also deployed at these locations and at sites being considered for potential sampling in 2014. Because extreme drought will soon dry many of these streams, follow-up sampling is planned for only a subset of the sites.



*Copper Canyon (a tributary of the Tijuana River near the border with Mexico) is one of the reference sites sampled in this study.*

Lead Investigators: [Solek](#); [Mazor](#)

#### 4. Microbiological Assessment

##### a. [Rapid Water Quality Indicators](#)

Purpose: Develop and test application of rapid methods for enumerating indicator bacteria at high-risk beaches

Update: A meeting took place February 20 to discuss preliminary results of a study comparing three new qPCR chemistries for *Enterococcus* based on their susceptibility to environmental interferences at Los Angeles County beaches. Next quarter, scientists will present the study results to the SCCWRP Commission's Rapid Methods Task Force (meeting date TBD).

Lead Investigator: [Griffith](#)

##### b. [Microbial Source Tracking and Identification](#)

Purpose: Develop and implement protocols for identifying microbial contamination sources to beaches throughout the state

Update: Planning is underway for additional sampling at Doheny State Beach. The journal *Water Research* has accepted multiple manuscripts describing the results of the microbial source identification method evaluation/comparison study for publication in a special issue.

Lead Investigator: [Griffith](#)

##### c. [Quantitative Microbial Risk Assessment \(QMRA\)](#)

Purpose: Apply QMRA to characterize the risk of illness to swimmers at a southern California marine beach impacted by nonhuman sources of fecal indicator bacteria

Update: Since human fecal bacteria sources were detected at the two target sites (Hobie and Kiddie beaches in Ventura County), the current QMRA project has ended and a final report deliverable was completed this quarter. A separate QMRA project will be initiated for the 2013–14 Research Plan.

Lead Investigator: [Schiff](#)

#### 5. Biogeochemical Cycling Assessment

##### a. [Coastal Hypoxia](#)

Purpose: Investigate trends in oxygen conditions in southern California waters and assess the relative importance of natural versus anthropogenic drivers

Completed

Update: Staff members continued work on one manuscript summarizing dissolved oxygen trends from quarterly discharger monitoring data and another manuscript reviewing hypoxia trends, causal factors, effects, and management implications in upwelling systems.

Lead Investigator: [Sutula](#)

**b. [Harmful Algal Blooms](#)**

Purpose: Improve understanding of conditions leading to *Pseudo-nitzschia* blooms and toxin production in Monterey Bay and San Pedro, California

Update: Based on ocean conditions, several additional sampling events were added. Spring field sampling and experiments for the Ecology and Oceanography of Harmful Algal Blooms (ECO HAB) research program are now completed.

Lead Investigator: [Howard](#)

**c. [Microbial Response to Environmental Gradients in Streams](#)**

Purpose: Evaluate the efficacy of microbial community analysis as a bioassessment tool in streams and rivers

Update: Samples have been selected based on stressor data and DNA extraction from the samples has been completed. The next steps will be DNA amplification, purification, and quantification.

Lead Investigator: [Cao](#)

New

**d. [Ocean Acidification](#)**

Purpose: Improve ocean acidification monitoring capacity for the US West Coast and evaluate the role of different causal factors

Update: Working with collaborators, SCCWRP staff members are developing standard operating procedures for monitoring ocean acidification parameters from several monitoring platforms: land-based, ship-based, moorings, and gliders. A subset of these protocols will be implemented during the Bight '13 Offshore Water Quality surveys to begin evaluating ocean acidification in the Southern California Bight. SCCWRP staff members are also helping to prepare a [vision document](#) and other guidance materials to support the California Current Acidification Network (C-CAN).

Lead Investigator: [McLaughlin](#)

## **B. TECHNICAL SUPPORT FOR MANAGEMENT/REGULATORY PROGRAMS**

### **a. [Nutrient Objectives in Streams](#)**

Purpose: Support state nutrient objectives program by developing stream eutrophication indicators related to nutrient concentrations, algal biomass, and algae and macroinvertebrate taxonomy

Update: Most recently, SCCWRP has been assisting the State Water Board in drafting a freshwater NNE work plan. A stakeholder meeting will be held next quarter to vet the work plan. Technical work, including analysis of statewide Wadeable Stream Bioassessment data, continues to: 1) identify tipping points or thresholds between algal biomass and benthic invertebrates, and 2) improve nutrient-response models for Wadeable Streams. In addition, monitoring activities to support modeling of nutrient-algal relationships in the Santa Margarita River watershed will begin this fall.

Lead Investigator: [Sutula](#)

### **b. [Nutrient Objectives in Estuaries](#)**

Purpose: Support state nutrient objectives program by developing estuarine eutrophication indicators related to algae, nutrients, and dissolved oxygen

Update: SCCWRP staff members finished updating the estuarine NNE work plan. Data analysis was completed and a report was written summarizing results of experiments linking macroalgal dynamics to seagrass. Finally, work continued on the San Francisco Bay phytoplankton assessment framework; a white paper was drafted summarizing existing approaches assess eutrophication in estuaries using phytoplankton.

Lead Investigator: [Sutula](#)

### **c. [Biological Objectives](#)**

Purpose: Support state bio-objectives program by developing biological condition assessment tools for perennial streams and rivers

Update: The State Water Board is actively developing its policy on bio-objectives. To support this development, staff members and collaborators completed final drafts of three manuscripts documenting the technical progress of the Science Team:

- 1) Reference Condition Assessment for setting biological expectations;
- 2) California Stream Condition Index (CSCI), the newly calibrated and validated scoring tool; and
- 3) Stressor Evaluation and Guidance Technical Report, for identifying the causes of impacted biological condition

The three documents were favorably reviewed by the project Science Advisory Panel and will be discussed at the next Regulatory and Stakeholder Advisory Group meetings to be held June 4 and 5 in Sacramento, CA.

Lead Investigators: [Stein](#), [Schiff](#)

**d. [Sediment Quality Objectives \(SQOs\)](#)**

Purpose: Support implementation of an assessment framework for evaluating the indirect effects of bay and estuarine sediment contamination on human health

Update: First, a short course on applying the SQO methodology to assessment and regulatory activities was conducted February 19–20 in Riverside, CA for Regional Water Board staff. The short course included hands-on instruction in data analysis methods and presentations of case studies to illustrate methods for stressor identification and cleanup target development. Second, a Harbor Technical Workgroup (HTWG) has been established to facilitate technical oversight and collaboration regarding development of a TMDL sediment management plan to comply with SQOs in Los Angeles and Long Beach harbor. The HTWG met February 22 and April 16 to review research plans and receive updates on special study progress. The next HTWG meeting is scheduled for May 23. Third, a meeting of the SQO Advisory Committee was held on April 16; an update on the schedule for the next phase of SQO adoption (extended to early 2015) was presented and the group developed preliminary recommendations for development of contaminated sediment management strategies. Finally, progress continues toward compiling fish and sediment contamination data from California bays and estuaries to support application of a draft assessment framework for the human health SQO.

Lead Investigator: [Bay](#)

**e. [Hydromodification Assessment and Management](#)**

Purpose: Support state and local management programs by developing tools to evaluate hydromodification causal factors and susceptibility to hydromodification effects

Update: Staff members completed the project on developing hydromodification assessment and management tools. The final Technical Advisory Committee Meeting was held January 30 to discuss the last two technical products (a hydromodification [monitoring plan template document](#) and a [guidance document](#) on hydromodification modeling and management), which were finalized and released over the past quarter. SCCWRP also produced a [fact sheet](#) on hydromodification.

Lead Investigator: [Stein](#)

Completed

## C. REGIONAL MONITORING

### 1. Regional Marine Monitoring

#### a. [Southern California Bight Regional Monitoring Program](#)

Purpose: Coordinate the Bight '13 Program to monitor regional environmental conditions

Update: Intensive effort continues within the planning committees and technical working groups to refine program logistics for each of five thematic areas: contaminant impact assessment, nutrients, microbiology, trash and debris, and Marine Protected Areas. The technical working groups have initiated quality assurance activities such as training; interlaboratory round-robin exercises; and drafting field plans, laboratory manuals, and quality assurance plans. SCCWRP staff members and collaborators are preparing for a sampling campaign to take place between July 1 and September 30 for the contaminant impact assessment element. In addition, the Information Management group is working to develop mobile applications for field data collection.

Lead Investigator: [Schiff](#)

#### b. [Pollutant Sources Data Cataloguing](#)

Purpose: Continue estimating pollutant mass emissions from different sources to assess relative inputs and track trends over time in response to management actions

Update: Staff members are working to fill data gaps identified in earlier efforts by working with agencies to complete their respective historical datasets.

Lead Investigator: [Sutula](#)

#### c. [Mussel Watch](#)

Purpose: Characterize spatial and temporal trends in legacy pollutants and emerging contaminants by providing regional data for the nationwide Mussel Watch Program

Update: The project team completed re-submission of conditionally accepted manuscripts that will make up a special issue of *Marine Pollution Bulletin*. Over the next quarter, staff members will draft the introduction and oversee publication of the special issue.

Lead Investigator: [Maruya](#)

#### d. [Areas of Special Biological Significance \(ASBS\)](#)

Purpose: Evaluate BMP projects for reducing pollution inputs to ASBS and report to the California legislature on success of the Proposition 84 water bond program

Update: Staff members continue auditing each of the 14 ASBS water bond grantees' field monitoring programs to ensure high quality data. SCCWRP also helped facilitate the development of three ASBS regional monitoring groups (Southern, Central, and Northern California). The State Water Resources Control Board has approved all three regional work plans and quality assurance plans. Sampling began this winter and captured several site events. It will extend into next winter due to the statewide drought.

Lead Investigator: [Schiff](#)

## 2. Regional Watershed Monitoring

### a. [Stormwater Monitoring Coalition \(SMC\) Regional Watershed Monitoring](#)

Purpose: Support implementation of the SMC's regional watershed monitoring program for southern California's coastal streams and rivers

Update: Participating agencies are preparing to sample for the fifth and final season of the first cycle of the SMC stream monitoring program. The technical workgroup has initiated discussions to identify special studies for the 2014 season. On April 15, field crews from all participating agencies met at Starr Ranch in Orange County to conduct intercalibration exercises, focusing on bioassessment, CRAM, and trash assessments to ensure crews from different agencies implement SWAMP's bioassessment protocols consistently. Finally, staff members have begun preparations to produce a report summarizing results of the initial five-year program from 2009 to 2014.



*Field crews conducting SWAMP's rapid trash assessment protocols were asked to locate 103 items of litter in this stretch of Bell Creek in Orange County. Efficiency of the crews ranged from 85 to 99%.*



*Staff members from the San Diego Regional Water Quality Control Board and San Diego County assess in-stream and riparian habitat.*

Lead Investigator: [Mazor](#)

**b. [Background Concentrations of Contaminants in Reference Streams](#)**

Purpose: Derive natural, background-level numeric targets for bacteria, nutrients, and heavy metals from unimpacted streams

Update: The second year's reference stream sampling campaign continues, and work on the dry weather study will be completed next quarter. Sampling for the newly added beach bacteria reference study will begin this fall.

Lead Investigator: [Sutula](#)

**c. [Atmospheric Deposition of Nutrients to Coastal Watersheds](#)**

Purpose: Refine measurement techniques and estimate rates of atmospheric nutrient deposition in southern California watersheds

Update: Staff continued the field sampling campaign at five sites in San Diego County, some of which are co-located with reference sites (see [Background Concentrations of Contaminants in Reference Streams](#)). Sampling will continue through the summer.

Lead Investigator: [McLaughlin](#)

**3. Regional Wetland Monitoring**

**a. [Wetlands Status and Trends](#)**

Purpose: Develop tools for tracking wetland conditions and support implementation of state and national wetland monitoring programs

Update: The project team for the Phase 2 Status and Trends program held its first meeting in February, and work began to analyze sources of mapping error. Intercalibration plots are being analyzed to identify areas where interpretation and classification errors can be reduced and to produce data quality objectives for future mapping efforts. In addition, individuals from the joint venture community were solicited to participate in the first stakeholder advisory committee meeting. For the wetland performance curves project, initial performance trajectories were developed based on CRAM assessments conducted at 49 restoration sites located throughout San Diego, Orange, Los Angeles, Riverside, and Santa Barbara counties. Additional work is ongoing to improve curve accuracy by adding older (> 10 year old) restoration project data. Finally, staff reviewed databases from the Regional Water Quality Control Boards and Army Corps of Engineers to identify additional sampling sites for the 2013 field season.

Lead Investigator: [Stein](#)

#### **b. [Depressional Wetlands](#)**

Purpose: Develop and test assessment tools and a monitoring approach for depressional wetlands throughout the state

Update: Taxonomic identification was completed this quarter for benthic invertebrates collected during the 2012 spring/summer seasons. These data will be used to calculate an index of biological integrity (IBI) for depressional wetlands. Staff members conducted office- and field-based reconnaissance of 2013 sampling sites to identify locations that meet the requisites of the study (e.g., freshwater, earthen lined, water present). Eighty-six sites have been evaluated in the field so far, in an attempt to find 15 ponds that meet the physical requirements of the project as well as the possibility of permission to sample. Ten sites have met both of these conditions to date. Activities over the next quarter will focus on the remaining field reconnaissance, and conducting the field survey, anticipated to begin in late April 2013.

Lead Investigator: [Stein](#)

#### **c. [Eelgrass](#)**

Purpose: Develop a system for tracking the extent and condition of eelgrass habitat in southern California

Update: Addition of eelgrass web content to the state's [My Water Quality](#) website is pending.

Lead Investigator: [Solek](#)

#### **d. [Historical Ecology](#)**

Purpose: Establish a framework for compiling historical data on watershed and wetland conditions, and evaluate changes in response to land use modification and resource management efforts

Update: Data compilation has been completed for the north San Diego Lagoon historical ecology project. Initial analysis and interpretation results were presented to the project Technical Advisory Committee

and synthesis results are being refined based on their input. For the regional t-sheet mapping, new historic coastal maps (t-sheets) continue to be merged with t-sheets processed during an earlier watershed historical ecology project. A crosswalk between the historical and contemporary classification systems is being developed and applied in coordination with the Wetland Recovery Project's Wetland Managers Group.

Lead Investigator: [Stein](#)

## **D. INFORMATION MANAGEMENT AND ANALYSIS**

### **a. [Database Management](#)**

Purpose: Oversee development and management of the California Environmental Data Exchange Network (CEDEN) and Beach Watch database

Update: Staff members continue to oversee activities of the four CEDEN regional data centers and to support data providers with submitting water quality monitoring data to CEDEN through the Southern California Regional Data Center. The regional centers are processing new data records and types from data providers throughout the state on an ongoing basis.

Lead Investigator: [Steinberg](#)

### **b. [Dynamic Data Processing and Visualization](#)**

Purpose: Develop data visualization and geospatial visualization capabilities to support projects across SCCWRP's research portfolio and enhance management communication tools

Update: Data collection to quantify birds on beaches in association with microbial source tracking studies continues. Image analysis (automated object identification in sequential images collected by *in situ* cameras) will begin this summer. In addition, the SCCWRP Geoportal, designed to provide access to SCCWRP datasets and associated metadata via a user-friendly web interface, is currently being beta-tested by staff members and will soon be made available on the SCCWRP website.

Lead Investigator: [Steinberg](#)

### **c. Portal Development**

Purpose: Lead development of two new California Water Quality Monitoring Council web portals: "MARINe" and "Safe to Drink"

Update: Addition of the "MARINe" web portal to the Council's [My Water Quality](#) website is pending, and a mock-up of the "Safe to Drink" portal developed by SCCWRP is currently under review. A working prototype will be developed in the coming months.

Lead Investigator: [Steinberg](#)

## **E. MEMBER AGENCY SUPPORT**

### **b. Quality Assurance for Offshore Monitoring**

Purpose: Prepare method quality objectives (MQOs) for quality assurance of statewide ocean monitoring data

Update: In coordination with Bight '13 working groups and the Southern California Ichthyological Taxonomists and Ecologists (SCAITE), staff members previously created an inventory of quality assurance activities. Based on these results, a focus arose on taxonomic MQOs. These were presented at the field working group meeting on April 17. Further analysis and interpretation will occur at the SCAITE meeting on May 6.

Lead Investigator: [Schiff](#)

### **c. Pilot Monitoring with Autonomous Underwater Vehicle (AUV)**

Purpose: Test application of an AUV (glider) for ocean monitoring in southern California

Update: The SCCWRP glider is currently doing a box pattern around the Orange County Sanitation District (OCSD) outfall in support of a harmful algal bloom study coordinated by SCCWRP scientist Dr. Meredith Howard and University of Southern California and UC Santa Cruz researchers. Since a ballasting issue was resolved, the glider has achieved 14 consecutive days without serious issues. This study will soon end, and the next planned deployment will take place in coordination with the City of Los Angeles quarterly water quality monitoring survey.

Lead Investigator: [Weisberg](#)

### **d. Effects of Ocean Outfall Diversion on Nutrient Cycling**

Purpose: Assess changes in the Newport Coast nearshore waters related to nitrogen cycling and primary production resulting from diversion of the Orange County Sanitation District (OCSD) ocean outfall

Update: The analysis of laboratory samples continued this quarter and staff members began data analysis.

Lead Investigator: [Howard](#)

### **e. Newport Bay Watershed Model Monitoring**

Purpose: Facilitate a critical review of current monitoring efforts in the Newport Bay Watershed to improve effectiveness, cost-efficiency, and data synthesis

Update: The first collaborative meeting with the watershed's stakeholders, including the Regional Water Quality Control Board, regulated agencies, nongovernmental organizations, health department, and

landowners, occurred February 25. At this meeting, participants identified and prioritized six different monitoring questions. Since the meeting, SCCWRP staff members have been inventorying current ongoing monitoring programs to determine if these questions are being answered and where redundancies and inefficiencies exist. The stakeholder group will reconvene May 28.

Lead Investigator: [Schiff](#)

#### **f. Water Quality Compliance Assessment for Offshore Outfalls**

Purpose: Develop a shared water quality compliance assessment protocol for coastal southern California publicly owned treatment works

Update: Meetings were held on February 21 and April 23, at which additional permutations were presented for the algorithm differentiating oxygen conditions in plume-affected areas from reference areas. The meetings focused on application of the algorithm to examine the underlying data at sites identified as “out of range,” and the algorithm appears to be making reasonable determinations. The project committee turned its attention to potential compliance issues, such as identification of the chimney effect in which apparent outranges result from deeper, naturally hypoxic water being drawn into shallow areas by buoyancy of the plume. The committee also met independently of SCCWRP to discuss compliance issues, such as how many outranges are necessary before a site is determined to be out of compliance. Finally, the committee began analyses to determine how the algorithm should be modified to address compliance questions for pH and water clarity, as the Ocean Plan compliance criteria for these parameters differ slightly from the dissolved oxygen criteria.

Primary Investigator: [Weisberg](#)