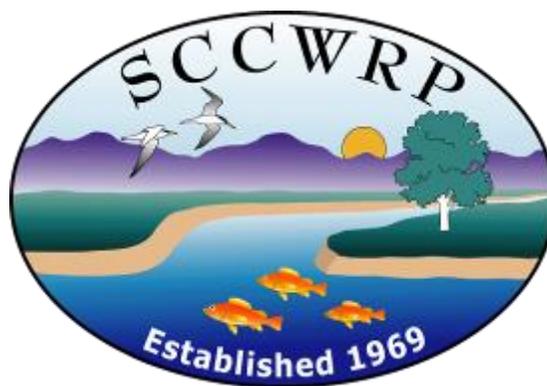


Southern California Coastal Water Research Project Authority

Quarterly Director's Report To the SCCWRP Commission

November 2013

(Detailing activities August 2 – November 11, 2013)



**Stephen B. Weisberg
Executive Director**

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HIGHLIGHTS

News:

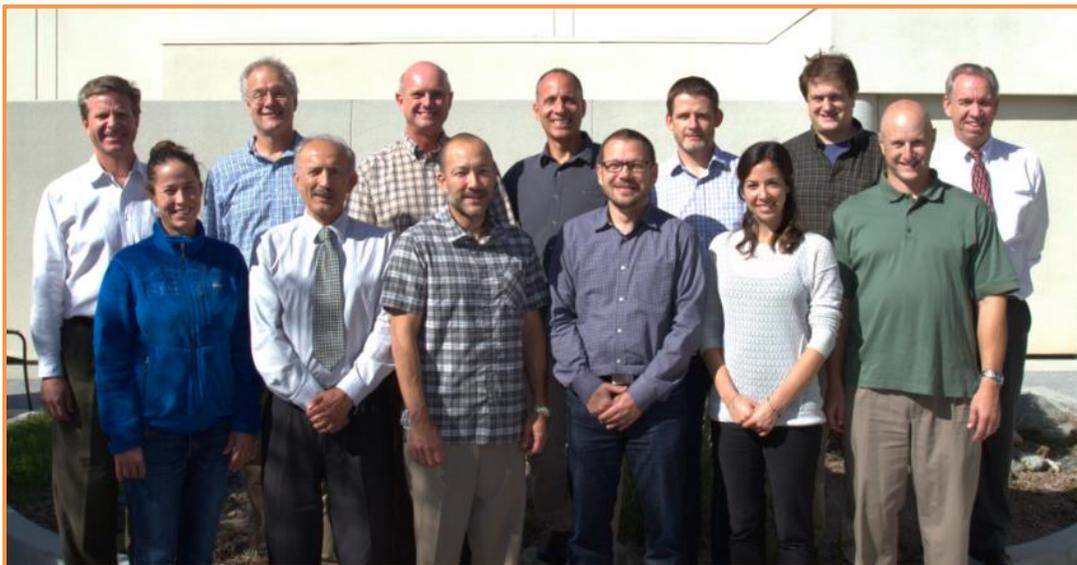
SCCWRP and California Ocean Science Trust gain joint postdoctoral fellow

SCCWRP and the [California Ocean Science Trust](#) are jointly sponsoring a postdoctoral fellow, Dr. Julia Coates, to support integration of water quality and Marine Protected Area research. Coates, who started on October 1, will be a formal link between the OST's [Marine Protected Area \(MPA\) Monitoring Enterprise](#) and SCCWRP's [Southern California Bight Regional Monitoring Program](#). She will spend most of her time at the SCCWRP offices in Costa Mesa addressing issues such as baseline biological characterizations inside versus outside of MPAs, as well as the relative impacts of pollution versus fishing on ecosystem health.



Southern California Stormwater Monitoring Coalition setting new research agenda

The Southern California Stormwater Monitoring Coalition ([SMC](#)) was formed in 2001 to improve technical understanding of stormwater impacts and to develop tools that support stormwater management. The SMC convened an expert panel at SCCWRP October 1-3 to help set the SMC research agenda for the next five years. Panel members included (from left to right, starting on back row) Scott Taylor, Eric Strecker, Gary Hildebrand, Ken Schiff, David Senn, Peter Ode, Larry Honeybourne, Ali Boehm, Iraj Nasser, James Smith, Chris Sommers, Sara Aminzadeh, and Eric Stein. For more information on the expert panel and their findings, please contact [Ken Schiff](#).



Kickoff for statewide CEC monitoring in receiving waters

A kickoff meeting to initiate a pilot monitoring study for constituents of emerging concern (CECs) in receiving waters throughout California took place September 12 at SCCWRP. The meeting introduced the project goals and approach, highlighted regional CEC studies, and discussed perspectives from dischargers, regulators, and nongovernmental organizations. The [agenda](#) and [presentations](#) from the meeting are available for download. For questions, please contact [Dr. Keith Maruya](#).

West Coast data network to meet November 19-20

A data network formed to support the [West Coast Governor's Alliance on Ocean Health](#) (WCGA) will



meet November 19-20 at SCCWRP. Dr. Steve Steinberg, head of SCCWRP's Information Management and Analysis Department, is a Co-chair of the WCGA Data Action Coordination Team. The goal of this meeting is for members of the network to connect with other network members, learn about the West Coast Regional Data Framework (RDF), and inform the RDF about how the network and WCGA can serve stakeholder needs. For more information on data management efforts at SCCWRP, please contact [Steve Steinberg](#).

Ocean acidification modeling workshop to be held December 10-11

An invitation-only workshop on "Modeling in Support of Coastal Hypoxia, Acidification and Nutrient Management in the California Current Ecosystem" will be held at SCCWRP December 10–11. Sponsored by the [Center for Ocean Solutions](#), the [California Ocean Science Trust](#), and SCCWRP, the workshop will bring together physical oceanographic and biogeochemical scientist/modelers to stimulate development of coupled biogeochemical and physical circulation models for the US West Coast. Participants will address two key questions: "To what extent do local nutrient inputs exacerbate the problem by enhancing algal growth?" and "Which areas of the coast are more susceptible than others to hypoxia and acidification?" For more information on the workshop, please contact [Dr. Martha Sutula](#).

SCCWRP Commission strategic planning meeting to be held May 2014

The SCCWRP Commission set a date of May 1, 2014 for their next strategic planning meeting, which they hold approximately every five years, to guide future directions of the Agency. The previous strategic planning meeting led to inclusion of the California Ocean Protection Council on the SCCWRP Commission and enhanced interaction with the California Resources Agency. In preparation, an external review panel comprised of current and previous research Laboratory Directors will meet February 5–7, 2014 to prepare recommendations for the Commission. For more information on SCCWRP's strategic planning, please contact SCCWRP Executive Director [Steve Weisberg](#).

SCCWRP Scenes:



Photo credit: Michael Hang

Darrin [Greenstein](#) of SCCWRP's Toxicology Department prepares to remove a liver from a hornyhead turbot captured in the Dana Point area and injected with PCBs and PBDEs. Researchers will compare reference, lab-exposed, and field-exposed fish from the Palos Verdes shelf to identify exposure markers using [gene microarray](#) technology.

PEOPLE

Honors and Awards:

- Keith Maruya was recognized as an exceptional reviewer for the journal *Environmental Toxicology and Chemistry* in 2013.

Personnel:

- Dr. Julia Coates started October 1 as a joint postdoctoral fellow with SCCWRP and the California Ocean Science Trust.
- Christina Steidley started October 14 as an administrative assistant, replacing Angelica Bajza who relocated to Tennessee.
- Melissa Studer started November 1 as a senior research technician to provide support for the San Diego wet weather epidemiology study.
- Ananda Ranasinghe, a benthic ecologist in the Biology Department for 14 years, left SCCWRP on October 31.

Commission:

- Halla Razak is the new Commissioner and Director for the City of San Diego Public Utilities Department. Halla replaces Roger Bailey, who moved to a different agency.
- Tim Stebbins is the new alternate Commissioner for the City of San Diego, replacing Steve Meyer, who is retiring.

Commission's Technical Advisory Group:

- Nothing to report



Coates



Steidley



Studer



Razak



Stebbins

Spotlight on Staff:

Dr. Julia Coates — Marine Ecologist

Dr. Julia Coates began at SCCWRP in October as a Science Integration Postdoctoral Fellow to support collaboration between the California Ocean Science Trust (CalOST) and SCCWRP. CalOST is a nonprofit organization based in Oakland, CA with a mandate to act as a bridge between the producers and users of ocean science. As a part of their mission to facilitate the use of science in policy and management, CalOST's Marine Protected Area (MPA) Monitoring Enterprise program seeks to develop monitoring protocols for evaluating the performance of the statewide MPA network. Julia will help bring together the MPA and water quality monitoring communities, as well as CalOST and SCCWRP, to share resources and achieve common goals.



Julia grew up in San Diego, sailing and snorkeling from a very early age. She learned SCUBA diving as a teenager. After earning her BA in integrative biology at UC Berkeley, she completed a post-baccalaureate research program in fish ecology at the University of Washington's Friday Harbor Laboratory and remained there to participate in research on rockfish larval transport across MPA boundaries. She continued in the biological oceanography field, earning an MS in biology at San Francisco State University. Working briefly as a biologist for a San Diego environmental consulting firm, Julia ultimately returned to academia to earn a PhD in ecology in a joint program between UC Davis and San Diego State University. Her dissertation focused on the reproductive biology and potential for population restoration of pink abalone, a formerly harvested kelp forest invertebrate.

One effort of her fellowship will be resolving the substantial overlap in SCCWRP's Bight Regional Monitoring Program and the MPA Monitoring Enterprise's South Coast MPA Baseline Program. Julia will identify opportunities to share data, perform combined data analyses, and collaborate on future monitoring. In addition, Julia will integrate data already collected by both monitoring programs to build an index of kelp forest ecosystem condition that responds to water quality, fishery, and other spatially variable ecosystem stressors. Julia feels lucky to have the benefit of learning from *both* SCCWRP and CalOST as she develops skills in science, management, and policy integration. She says, "SCCWRP's inclusive and collaborative history means I now have access to an amazing data set, derived from a whole suite of research programs, to help me tackle broad regional-scale questions."



Julia lives in San Diego with her husband and two young children. She enjoys playing with her kids, running, diving, and spending time at the beach.

For more information on Dr. Coates and her research, please visit [SCCWRP's website](#).

Spotlight on Partners:

Dr. Chad Nelsen – The Surfrider Foundation



Dr. Chad Nelsen is the Environmental Director at the Surfrider Foundation, headquartered in San Clemente, CA. He works with coastal activists around the world to protect oceans, waves, and beaches.

Nelsen grew up on the coast, surfing, swimming, and fishing, and eventually got his first job as an ocean lifeguard in Laguna Beach, CA. Through these experiences, he gained both love and respect for the power and fragility of the ocean. He initially studied geological sciences at Brown University in Providence, RI. After working with the US Geological Survey for 18 months in Menlo Park, CA, he attended Duke University's Nicholas School of the Environment and received a Master's in Coastal Environmental Management. During this time, he spent one year at the Duke Marine Lab in Beaufort, NC and interned with the Surfrider Foundation, researching artificial reef construction. Nelsen then received a fellowship from the National Oceanic and Atmospheric Administration to spend two years working with Oregon's Coastal Management Program on a Coos Bay estuary management information system. As the fellowship wound down, he landed a job at the Surfrider Foundation. Nelsen returned to school about six years ago in UCLA's Environmental Science and Engineering doctoral program. Studying under Dr. Linwood Pendleton, his research has spurred development in the field of "surfonomics," using resource economics to understand and communicate the value of coastal recreation areas.

Chad appreciates the opportunity for personal interaction with many passionate people, from local surfing activists and marine science researchers to world surfing champions and elected officials. Surfrider has had a good working relationship with SCCWRP for many years and uses SCCWRP's water quality research and expertise to inform much of their work. They are currently collaborating directly with SCCWRP on an [epidemiology study](#) to examine health risks associated with surfing in wet and dry weather. This will be the first study of its kind and will provide valuable insight into how bacterial levels affect surfer health.

Nelsen describes SCCWRP as a unique and important organization whose influence stretches far beyond Southern California. He says, "SCCWRP's scientific rigor and objective approach gives their research credibility yet they focus on using science to solve real world problems and their research can often be directly applied to important management decisions."

Chad still loves surfing with his wife and twin 12-year-old boys in Laguna Beach, CA. The family also enjoys mountain biking, rock climbing, and snowboarding. A self-proclaimed "twitter geek," you can find Chad online at @chadenelsen.



Spotlight on Commissioners:

Gary Hildebrand – Los Angeles County Flood Control District



Gary Hildebrand is the Assistant Deputy Director of the Watershed Management Division with the Los Angeles County Department of Public Works. He joined the SCCWRP Commission this past summer. In his current position, Hildebrand oversees planning and development for the Los Angeles County Flood Control District and implementation of the Municipal Stormwater permit for the District and County unincorporated areas. In addition to operating flood control infrastructure and implementing new projects, the District works with underground basin managers and accepts highly treated wastewater for groundwater recharge.

Hildebrand was born in Canada and moved to the Los Angeles area at age two. He grew up near the LA River and Griffith Park and frequently visited the River to explore and observe it during storms. He later attended the University of Southern California, earning a bachelor's degree in civil engineering, and worked in the private sector for about a year before joining the Department of Public Works. Hildebrand held several positions, such as area engineer and head of operations. When tides were shifting in 1990 toward a need to improve storm water quality (in addition to flood control), he developed the MS4 program from scratch as the County's first stormwater program manager. He has now been with the Department and a registered civil engineer in the State of California for 30 years.

Hildebrand finds his work rewarding because water quality and supply issues are so vital to people, the environment, and the quality of life in Southern California. His agency has supported aquifer recharge over its nearly 100-year history (they will celebrate a centennial anniversary in 2015), and this poses a continual challenge moving forward. The County also works with SCCWRP on various efforts including the Bight '13 Regional Monitoring Program, an epidemiology study at Malibu's Surfrider Beach, and the Southern California Stormwater Monitoring Coalition's (SMC's) regional watershed monitoring program. Hildebrand recently represented his agency on a cross-sector expert panel to reevaluate the SMC's research priorities for the next five years, organized by SCCWRP Deputy Director Ken Schiff.



In his free time, Gary enjoys home improvement projects and working in his yard. His son and daughter both recently graduated from college at Cal Poly Pomona and San Diego State University, respectively. He and his wife are taking advantage of their newfound financial freedom by making plans to travel. They celebrated their 25th wedding anniversary as a family on a Western Mediterranean cruise, and hope to enjoy a European river cruise in the near future.

Spotlight on CTAG:

Bram Sercu – Ventura County Watershed Protection District



Dr. Bram Sercu is a water resources specialist at the Ventura County Watershed Protection District, and has been a member of CTAG since 2012. He currently serves as one of the CTAG Vice-Chairs, representing the stormwater management sector. Most of his work focuses on design and implementation of special studies, water quality monitoring, and data analysis and reporting.

Bram grew up in a coastal town in Belgium, enjoying horseback riding, beaches, and skateboarding with his friends. He obtained his environmental engineering degree in 2000 and PhD in applied biological sciences in 2006 from Ghent University. His then-girlfriend (now wife) and he decided to live and work abroad for a while, and he landed a position as a postdoctoral researcher in Dr. Patricia Holden's lab at the University of California, Santa Barbara's Donald Bren School of Environmental Science and Management. Most of his research focused on microbial source tracking method development and field implementation, but he also studied the microbiology of groundwater remediation and natural oil seep plumes. Ultimately, he decided not to pursue an academic career, and in 2011 started working as a water resources specialist at the County of Ventura.

SCCWRP collaborates with the County in several areas, such as stream and Bight regional monitoring studies. They also receive data for the State as the regional data center for CEDEN. SCCWRP and Ventura County recently collaborated on a source identification study at Kiddie and Hobie beaches, and will kick off a natural background study in the Ventura River watershed this winter. Bram appreciates the relatively small size of Ventura County's stormwater group, as he is exposed to all facets of stormwater management. Given his academic background, he strives to incorporate the scientific process into decision making wherever possible. He says, "It really helps to have SCCWRP as a resource, as they focus on applied research that matters locally."

Bram lives in Ojai with his wife and two girls, ages three and five. In his free time, he enjoys traveling, surfing, reading, cooking, and throwing kid-friendly parties. His parents moved to Normandy, France in 2000, where they own a hotel with horse stables. His younger brother travels the world with his girlfriend in search of snowy mountaintops and cross-cultural experiences.



COMMUNICATIONS

Journal Articles — Published:

- [Reach-scale geomorphic and biological effects of localized stream bank armoring](#). 2013. ED [Stein](#), MR Cover, AE Fetscher, C O'Reilly, R Guardado, CW Solek. *Journal of the American Water Resources Association*. 49:780-792.
- [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* 27:375–387.
- [Genomic methods in marine monitoring: New challenges in assessing marine health status](#). 2013. SJ Bourlat, A Borja, J Gilbert, MI Taylor, N Davies, SB [Weisberg](#), J Griffith, T Lettieri, D Field, J Benzie, FO Glöckner, N Rodríguez-Ezpeleta, DP Faith, TP Bean, M Obst. *Marine Pollution Bulletin* 74: 19-31.
- [Seasonal and annual dynamics of harmful algae and algal toxins revealed through weekly monitoring at two coastal ocean sites off southern California, USA](#). 2013. E Seubert, AG Gellene, MDA [Howard](#), P Connell, M Ragan, B Jones, J Runyan, DA Caron. *Environmental Science and Pollution Research*, 20:6878-6895.
- [Identifying reference conditions and quantifying biological variability within benthic macroinvertebrate communities in perennial and non-perennial northern California streams](#). 2013. KB Lunde, MR Cover, RD [Mazor](#), CA Sommers, VH Resh. *Environmental Management* 51:1262-73.
- [Comparison of PCR and quantitative real-time PCR methods for the characterization of ruminant and cattle fecal pollution sources](#). 2013. 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, T Gim Aw, JB Rose, E Balleste, WG Meijer, M Sivaganesan, OC Shanks. *Water Research* 47: 6921–6928.
- [Nitrogen-fixing cyanobacteria \(free-living and diatom endosymbionts\): their use in southern California stream bioassessment](#). 2013. R Stancheva, RG Sheath, BA Read, KD McArthur, C Schroepfer, JP Kocielek, AE [Fetscher](#). *Hydrobiologia* 720:111-127.
- [Performance of human fecal anaerobe-associated PCR-based assays in a multi-laboratory method evaluation study](#). 2013. BA [Layton](#), Y Cao, DL Ebentier, K Hanley, E Ballesté, J Brandão, M Byappanahalli, R Converse, A Farnleitner, J Gentry-Shields, ML Gidley, M Gourmelon, C Soo Lee, J Lee, S Lozach, T Madi, WG Meijer, R Noble, L Peed, GH Reischer, R Rodrigues, JB Rose, A Schriewer, C Sinigalliano, S Srinivasan, J Stewart, LC Van De Werfhorst, D Wang, R Whitman, S Wuertz, J Jay, PA Holden, AB Boehm, O Shanks, JF Griffith. *Water Research* 47:6897–6908.

- [Swimmer illness associated with marine water exposure and water quality indicators impact of widely used assumptions](#). 2013. BF Arnold, KC Schiff, JF Griffith, JS Gruber, V Yau, CC Wright, TJ Wade, S Burns, JM Hayes, C McGee, M Gold, Y Cao, SB Weisberg, JM Colford, Jr. *Epidemiology* 24:845-853.
- [Molecular analysis of endocrine disruption in hornyhead turbot at wastewater outfalls in southern California using a second generation multi-species microarray](#). 2013. ME Baker, DE Vidal-Dorsch, C Ribocco, L J Sprague, M Angert, N Lekmine, C Ludka, A Martella, E Ricciardelli, SM Bay, JR Gully, KM Kelley, D Schlenk, O Carnevali, R Šášík, G Hardiman. *PLoS ONE* 8: e75553.
- [Gene expression of fathead minnows exposed to two types of treated municipal wastewater effluents](#). 2013. DE Vidal-Dorsch, RC Colli-Dula, SM Bay, DJ Greenstein, L Wiborg, D Petschauer, ND Denslow. *Environmental Science and Technology* 47:11268-11277.
- [Using regional stormwater monitoring programs to provide reference data for wetland mitigation performance evaluation](#). 2013. ED Stein. *National Wetlands Newsletter* 35:13-14.
- [Long-term population and community patterns of benthic macroinvertebrates and fishes in Northern California Mediterranean-climate streams](#). 2010. VH Resh, VH, LA Beche, JE Lawrence, RD Mazor, EP McElravy, AP O'Dowd, D Rudnick, SM Carlson. *Hydrobiologia* 719: 93-118.
- [The salinity transition zone between the Southern Everglades and Florida Bay](#). 2013. J Day, F Sklar, J Cable, D Childers, C Coronado-Molina, S Davis, S Kelly, C Madden, B Perez, E Reyez, D Rudnick and M Sutula. *In: Gulf of Mexico Origin, Waters, and Biota*. J Day and A Yanez-Arancibia (eds). Texas A&M University Press.
- [Pre- and post-fire pollutant loads in an urban fringe watershed in Southern California](#). 2013. MP Burke, TS Hogue, A Kinoshita, J Barco, C Wessel, ED Stein. *Environmental Monitoring and Assessment* 185:10131–10145.

Journal Articles — Published Online:

- [Recommendations following a multi-laboratory comparison of microbial source tracking methods](#). 2013. JR Stewart, AB Boehm, EA Dubinsky, T-T Fong, KD Goodwin, JF Griffith, RT Noble, OC Shanks, K Vijayavel, SB Weisberg. *Water Research* dx.doi.org/10.1016/j.watres.2013.04.063.
- [Performance of forty-one microbial source tracking methods: A twenty-seven lab evaluation study](#). 2013. AB Boehm, LC Van De Werfhorst, JF Griffith, PA Holden, JA Jay, OC Shanks, D Wang, SB Weisberg. *Water Research* dx.doi.org/10.1016/j.watres.2012.12.046.
- [Development and comparison of stream indices of biotic integrity using diatoms vs. non-diatom algae vs. a combination](#). 2013. AE Fetscher, R Stancheva, JP Kociolek, RG Sheath, ED Stein, RD Mazor, PR Ode, LB Busse. *Journal of Applied Phycology* DOI 10.1007/s10811-013-0088-2.

- [How much is too much? Identifying benchmarks of adverse effects of macroalgae on the macrofauna in intertidal flats](#). 2013. L Green, P Fong, M [Sutula](#). *Ecological Applications* DOI 10.1890/13-0524.1.
- [Comparison of Enterococcus species diversity in marine water and wastewater using Enterolert® and EPA Method 1600](#). 2013. DM Ferguson, JF [Griffith](#), CD McGee, SB Weisberg, C Hagedorn. *Journal of Environmental and Public Health* DOI 10.1155/2013/848049.
- [Evaluation of the repeatability and reproducibility of a suite of qPCR-based microbial source tracking methods](#). 2013. DL Ebentier, KT Hanley, Y [Cao](#), BD Badgley, AB Boehm, JS Ervin, KD Goodwin, M Gourmelon, JF Griffith, PA Holden, CA Kelty, S Lozach, C McGee, LA Peed, M Raith, H Ryu, MJ Sadowsky, EA Scott, JS Domingo, A Schriewer, CD Sinigalliano, OC Shanks, LC Van De Werfhorst, D Wang, S Wuertz, JA Jay. *Water Research* DOI 10.1016/j.watres.2013.01.060.
- [Multi-laboratory evaluations of the performance of *Catellibacoccus marimammalium* PCR assays developed to target gull fecal sources](#). 2013. CD Sinigalliano, J Ervin, LC Van De Werfhorst, BD Badgley, E Ballesté, J Bartkowiak, AB Boehm, M Byappanahalli, KD Goodwin, M Gourmelon, JF [Griffith](#), PA Holden, JA Jay, BA Layton, C Lee, J Lee, WG Meijer, R Noble, M Raith, H Ryu, MJ Sadowsky, A Schriewer, D Wang, D Wanless, RL Whitman, S Wuertz, JW Santo Domingo. *Water Research* DOI 10.1016/j.watres.2013.02.059.
- [Performance of viruses and bacteriophages for fecal source determination in a multi-laboratory, comparative study](#). 2013. VJ Harwood, AB Boehm, LM Sassoubre, K Vijayavel, JR Stewart, T-T Fong, MP Caprais, RR Converse, D Diston, J Ebdon, JA Fuhrman, M Gourmelon, J Gentry-Shields, JF [Griffith](#), DR Kashian, RT Noble, H Taylor, M Wicki. *Water Research* DOI 10.1016/j.watres.2013.04.064.
- [Performance evaluation of canine-associated Bacteroidales assays in a multi-laboratory comparison study](#). 2013. A Schriewer, KD Goodwin, CD Sinigalliano, AM Cox, D Wanless, J Bartkowiak, DL Ebentier, KT Hanley, J Ervin, LA Deering, OC Shanks, LA Peed, WG Meijer, JF [Griffith](#), J SantoDomingo, JA Jay, PA Holden, S Wuertz. *Water Research* DOI 10.1016/j.watres.2013.03.062.
- [Characterization of fecal concentrations in human and other animal sources by physical, culture-based, and quantitative real-time PCR methods](#). 2013. JS Ervin, TL Russell, BA [Layton](#), KM Yamahara, D Wang, LM Sassoubre, Y Cao, CA Kelty, M Sivaganesan, AB Boehm, PA Holden, SB Weisberg, OC Shanks. *Water Research* DOI 10.1016/j.watres.2013.02.060.
- [A regional survey of the extent and magnitude of eutrophication in Mediterranean estuaries of Southern California, USA](#). 2013. [K McLaughlin](#), M Sutula, L Busse, S Anderson, J Crooks, R Dagit, D Gibson, K Johnston, L Stratton. *Estuaries and Coasts* DOI 10.1007/s12237-013-9670-8.
- [Passive sampling in contaminated sediment assessment: Building consensus to improve decision-making](#). 2013. TF Parkerton, KA [Maruya](#). *Integrated Environmental Assessment and Management* DOI 10.1002/ieam.1488.

- [An adaptive, comprehensive monitoring strategy for chemicals of emerging concern \(CECs\) in California's aquatic ecosystems](#). 2013. KA [Maruya](#), D Schlenk, PD Anderson, ND Denslow, JE Drewes, AW Olivieri, GI Scott, SA Snyder. *Integrated Environmental Assessment and Management* DOI 10.1002/ieam.1483.

Journal Articles — Accepted:

- Anthropogenic nutrient sources rival natural sources on small scales in the coastal waters of the Southern California Bight. MDA [Howard](#), M Sutula, DA Caron, Y Chao, JD Farrara, H Frenzel, B Jones, G Robertson, K McLaughlin, A Sengupta. *Limnology and Oceanography*.
- Thresholds of adverse effects of macroalgal abundance and sediment organic matter on benthic habitat quality in estuarine intertidal flats. 2013. M [Sutula](#), L Green, G Cicchetti, N Detenbeck, P Fong. *Estuaries and Coasts*.
- Does DNA barcoding improve performance of traditional stream bioassessment metrics? ED [Stein](#), BP White, RD Mazor, JK Jackson, JM Battle, PE Miller, EM Pilgrim, BW Sweeney. *Freshwater Science*.
- Comparison of four species-delimitation methods applied to a DNA barcode data set of insect larvae for use in routine bioassessment. BP [White](#), EM Pilgrim, LM Boykin, ED Stein, RD Mazor. *Freshwater Science*.
- Impacts of pesticides in a Central California estuary. BS Anderson, BM Phillips, JW Hunt, K Siegler, J Voorhees, K Smalling, K Kuivila, M Hamilton, JA [Ranasinghe](#) and RS Tjeerdema. *Environmental Monitoring and Assessment*.
- Passive sampling methods for contaminated sediments: state of the science for organic contaminants. MJ Lydy, PF Landrum, AMP Oen, M Allinson, F Smedes, AD Harwood, H Li, KA [Maruya](#), J Liu. *Integrated Environmental Assessment and Management*.
- Passive sampling methods for contaminated sediments: practical guidance for selection, calibration and implementation. U Ghosh, S Kane Driscoll, RM Burgess, MTO Jonker, D Reible, F Gobas, Y Choi, S Apitz, KA [Maruya](#), WR Gala, M Mortimer, C Beegan. *Integrated Environmental Assessment and Management*.
- Factors affecting the relationship between quantitative polymerase chain reaction (qPCR) and culture-based enumeration of *Enterococcus* in environmental waters. MR [Raith](#), DL Ebentier, Y Cao, JF Griffith, SB Weisberg. *Journal of Applied Microbiology*.

Technical Reports:

- [Evaluation of Sediment Condition Using California's Sediment Quality Objectives Assessment Framework](#). 2013. SM [Bay](#), DJ Greenstein, SL Moore, KJ Ritter, JA Ranasinghe. Technical Report 0764. Southern California Coastal Water Research Project. Costa Mesa, CA.

- [Condition of California Perennial Wadeable Streams Based on Algal Indicators](#). 2013. AE Fetscher, MA Sutula, LB Busse, ED Stein. Technical Report 0781. Southern California Coastal Water Research Project. Costa Mesa, CA.

Conference Presentations:

California Stormwater Quality Association (CASQA) — September 2013

- [Natural loadings of fecal indicator bacteria, metals and nutrients from Southern California reference streams: Improving the scientific basis for water quality standards](#) — L [Tiefenthaler](#), M Sutula, J Shrake, R Christoph, C Beck, J Burns
- [Causal assessment as part of California’s bio-objectives: What is it and how does one do it?](#) — DJ [Gillett](#), K Schiff, A Rehn
- Building tools to increase water productivity — A [Sengupta](#), M Sutula, S Grant, A AghaKouchak
- Quantifying the natural background levels of contaminants: Applications to stormwater management — M [Sutula](#), L Tiefenthaler
- Potential future elements of hydromodification management — ED [Stein](#)
- Site-specific indices improve bioassessment in complex environments: An introduction to the California Stream Condition Index — RD [Mazor](#)

Chinese American Environmental Professionals Association (CAEPA) International Conference on Sustainability and Environmental Protection — October 2013

- Post-disinfection persistence of microbial indicators measured by molecular and culture-based methods — Y [Cao](#)

International Conference on Environmental Specimen Banking — October 2013

- Which contaminants are truly emerging? — N Dodder, W Lao, D Tsukada, K [Maruya](#)

Symposium on Harmful Algae in the United States — October 2013

- [Untangling the effects of anthropogenic versus natural nutrient sources and implications for harmful algal blooms in the Southern California Bight](#) — MDA [Howard](#), K McLaughlin, M Sutula, DA Caron, Y Chao, H Frenzel, A Gellene, K Hayashi, B Jones, RM Kudela, MJ Mengel, N Nezlin, G Robertson, A Sengupta, E Seubert

North American Lake Management Society (NALMS) Symposium — October 2013

- [The California Environmental Data Exchange Network \(CEDEN\): A statewide water quality monitoring system for California](#) — S [Steinberg](#)

Coastal and Estuarine Research Federation (CERF) — November 2013

- [Distribution and amount of plastic pellets and debris on beaches in California](#) — SL [Moore](#), C Beck, S Friedman, E Siegel, D Gregorio
- [Historical analysis of coastal wetlands as a tool to help improve restoration planning for the Ballona Wetlands](#) — ED [Stein](#), R Grossinger, S Dark, T Longcore
- [Should nutrients or biological response be the basis for regulating effects of eutrophication? Thoughts based on work in Southern California Bight estuaries](#) — K [McLaughlin](#), M Sutula, L Busse, S Anderson, J Crooks, R Dagit, D Gibson, K Johnston, N Nezlin, A Sengupta, L Stratton
- [Untangling the effects of anthropogenic versus natural nutrient sources in the Southern California Bight](#) — MDA [Howard](#), K McLaughlin, M Sutula, DA Caron, Y Chao, Hartmut Frenzel, B Jones, RM Kudela, N Nezlin, G Robertson
- [Adapting cell-based bioassays for screening of water quality](#) — K [Maruya](#), A Mehinto, N Denslow, S Jayasinghe, S Westerheide, J Mendez, D Schlenk, J Crago, S Snyder and AiJia
- [Chiral pesticides: the names have changed but the song remains the same](#) — K [Maruya](#), W Lao and W Vetter
- [Refining contaminant transport modeling at the Palos Verdes Shelf Superfund site using data from passive samplers](#) — L Fernandez, W [Lao](#), E Adams, K Maruya and R Burgess
- Transitioning Science to Management in California — K [Schiff](#)

2013 ESRI Oceans GIS Forum – November 2013

- Spatial analysis of natural and anthropogenic pollutant exposure in rocky reefs and Marine Protected Areas (MPAs) — R Schaffner, S [Steinberg](#), K Schiff, N Nezlin, P Rogowski

20th Annual California Bioassessment Workgroup – November 2013

- Developing assessment tools for arid, episodic streams — C [Solek](#)
- California’s bioassessment program for depressional wetlands — E [Stein](#)
- Developing an index of physical integrity — R [Mazor](#)

Other Presentations:

- Ken [Schiff](#) presented an Informational Item entitled “Bight Regional Marine Monitoring; Focus on San Diego Bay” to the San Diego Regional Water Quality Control Board on August 14 in San Diego

- Steve [Steinberg](#) presented a seminar entitled “Field microscopy for environmental monitoring” on September 17 for the University of California, Berkeley’s Department of Bioengineering in Berkeley, CA.
- Keith [Maruya](#) gave an invited seminar entitled “Science-based recommendations for monitoring of CECs in California’s water resources” sponsored by the California Water Environment Association, San Francisco Bay Section, on September 19 in Berkeley, CA.
- Ken [Schiff](#) gave an invited presentation entitled “Southern California Bight 2013 Regional Marine Monitoring” to the Santa Ana Regional Water Quality Control Board staff on October 8 in Riverside, CA
- Ken [Schiff](#) served on a Study Development Panel for the Sacramento River Delta Regional Monitoring Program on Oct 11 in Sacramento, CA
- Yiping [Cao](#) gave an invited presentation entitled “Droplet digital PCR for simultaneously quantifying Enterococcus and human-associated Bacteroidales for water quality assessment” at the Second Annual Droplet Digital™ PCR User Meeting on October 10 in San Diego, CA.
- Keith [Maruya](#) gave an invited seminar entitled “A new, comprehensive strategy for monitoring of contaminants of emerging concern (CECs) in water resources” on October 11 at Tongji University in Shanghai, China.
- Eric [Stein](#) gave a presentation on SCCWRP’s DNA barcoding research at the Southern California Association of Marine Invertebrate Taxonomists (SCAMIT) quarterly meeting at the Museum of Natural History on October 14 in Los Angeles, CA.
- Blythe [Layton](#) gave an invited seminar entitled “Development of a statewide framework for microbial pollution source identification in environmental waters” on October 18 at the University of California, Irvine in Irvine, CA.
- John [Griffith](#) gave an invited seminar entitled “Advancing technology for rapid indicators and source tracking to improve water quality” on November 5 at Virginia Polytechnic Institute and State University in Blacksburg, VA.
- John [Griffith](#) gave an invited presentation on technology transfer to the Stewards of the Future Regional Exchange Group meeting on November 6 in Morehead City, NC.
- John [Griffith](#) gave a presentation on implementation of rapid methods for beach water monitoring at the Rapid qPCR Methods for Water Workshop at the University of North Carolina, Chapel Hill on November 7 in Chapel Hill, NC.

Professional Appointments:

- Martha [Sutula](#) was appointed to the Louisiana Coastal Protection and Restoration Authority National Advisory Panel on Diversions for the Mississippi River and Atchafalaya Basins.
- Keith [Maruya](#) was appointed to the Scripps Center for Oceans and Human Health advisory team.

- Steve [Steinberg](#) was appointed to the US Environmental Protection Agency’s 2014 Exchange Network National Meeting (EN2014) Integrated Project Team.
- Steve [Weisberg](#) was appointed to the Ocean Acidification International Reference User Group for the International Union for Conservation of Nature.
- Steve [Weisberg](#) was elected as incoming President of the Western Association of Marine Laboratories.
- Ken [Schiff](#) was appointed to the Kings County Science and Technology Review Team.

Meetings & Workshops Held at SCCWRP:

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Aug 7	Southern California Wetland Recovery Project Wetland Managers Group	Solek
Aug 8	Commission’s Technical Advisory Group	Weisberg
Aug 9	Temporal Investigations of Marsh Ecosystems (TIME)	Tijuana River National Estuarine Research Reserve (NERRS) Science Collaborative
Aug 13	Areas of Special Biological Significance (ASBS) Grant Monitoring	City of Newport Beach
Aug 14	Beach Water Quality Work Group	Weisberg
Aug 20	Southern California Stormwater Monitoring Coalition Bioassessment Workgroup	Mazor
Aug 21	Bight ’13 Contaminant Impact Assessment: Chemistry Committee	Dodder
Aug 23-24	Training Course for Post-Construction Runoff Permits	State Water Resources Control Board
Aug 27-29	qPCR Training	Griffith
Sept 6	SCCWRP Commission	Weisberg
Sept 10	Seminar: Dr. Julia Coates — “Requirements for population recovery of pink abalone (<i>Haliotis corrugata</i>); implications of movement, restoration technique, and reproductive output”	Schiff

Date	Meeting	SCCWRP Contact/ Sponsoring Agency
Sept 11	California Environmental Data Exchange Network	Steinberg
Sept 12-13	Statewide CEC Monitoring Prioritization Pilot Study	Maruya
Sept 26-27	Bio-objectives Stakeholder and Regulatory Advisory Groups	Schiff
Oct 1	Bight '13 Contaminant Impact Assessment: Trawl Committee	Schiff
Oct 1-3	Southern California Stormwater Monitoring Coalition Workshop and Expert Panel Meeting	Schiff
Oct 4	Central Coast Wetlands Group Riparian Technical Advisory Committee	Moss Landing Marine Labs
Oct 7	Southern California Association of Ichthyological Taxonomists and Ecologists	Diehl
Oct 7	Sediment Quality Objectives Tool Demonstration Webinar	Bay
Oct 8	Bight '13 Nutrient Impact	Howard
Oct 15	California Clean Beach Task Force	Weisberg
Oct 17-18	California Rapid Assessment Method for Wetlands (CRAM) Estuarine Training	Solek
Oct 28	Bight '13 Marine Protected Areas/Rocky Reef	Schiff
Nov 4	Southern California Association of Ichthyological Taxonomists and Ecologists	Diehl

Upcoming Commission/CTAG Meetings and Seminars:

- SCCWRP will host the next [CTAG](#) meeting on Monday, Nov 18 from 9:00 to 4:00.
- SCCWRP will host the next [Commission](#) meeting on Friday, Dec 6 from 9:30 to 12:00.
- SCCWRP will host a [Fall Seminar Series](#) on Friday, Nov 22 from 11:00-12:00 – Dr Alan Heyvart from the Nevada Desert Research Institute will be speaking on stormwater BMP effectiveness.
- SCCWRP will host a [Fall Seminar Series](#) on Friday, Dec 13 from 11:00-12:00 – Dr Sergey Nuzhdin from the University of Southern California will be speaking on geographical genomics.

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 [2013–2014 Research Plan](#).

Projects with significant activity this quarter:

[Non-targeted Contaminant Analysis in Tissue, Sediment, and Water Samples](#)

[DNA Barcoding](#)

[Cyanobacteria](#)

New Projects:

[Wet Weather Epidemiology](#)

Concluded projects:

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

[Freshwater Biological Objectives](#)

[Pilot Monitoring with Autonomous Underwater Vehicle \(AUV\)](#)

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: Researchers continued analyzing laboratory intercalibration samples with fish tissue and spiked marine sediments.

Lead Investigator: [Maruya](#)

b. [Non-Targeted Analysis](#)

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

Highlight

Update: SCCWRP researchers and collaborators completed preliminary analysis of contaminant profiles in cetacean blubber samples, and manuscript preparation began. The manuscript identifies interesting compound classes for detailed discussion, including over one dozen DDT breakdown products, polychlorinated terphenyls, dimethyl bipyrrroles (DMBP), and unknown halogenated compounds. Some are unique to Southern California's legacy contamination issues while others have not been measured previously. Researchers have compiled the mass spectra library and, over the next quarter, will continue data analysis and manuscript preparation.

SCCWRP researchers also initiated collaboration with San Diego State University to perform non-targeted analysis on black skimmer eggs from San Diego Bay. The eggs contained approximately 130 identifiable compounds, including anthropogenic contaminants, natural halogenated compounds, and halogenated but unidentifiable mass spectra. Over the next quarter, researchers will continue data analysis and begin manuscript preparation.

Lead Investigator: [Dodder](#)

c. [Passive Samplers](#)

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

Update: In Phase II of our work on the Palos Verdes Shelf, SCCWRP researchers retrieved two types of passive samplers pre-loaded with performance reference compounds (PRCs) to (1) compare how water concentrations at a marine Superfund site have changed over time; and (2) to determine uptake and desorption kinetics of water column pollutants in situ. They also conducted a laboratory-based time-series experiment to quantify the behavior of isotopically labeled PRCs. Next, researchers will process and analyze the passive samplers and experimental samples using gas chromatography-mass spectrometry.

Lead Investigator: [Maruya](#)

d. [Emerging Contaminant Prioritization](#)

Purpose: Enhance availability of emerging contaminant occurrence data to enable continued prioritization within the state

Update: SCCWRP researchers and collaborators collected water, sediment, and fish tissue samples from Los Angeles area rivers during two low-flow events to analyze high priority CECs. In addition, SCCWRP hosted the kickoff meeting for the statewide CEC monitoring planning process. Next, SCCWRP will begin processing and analysis of the river samples, and begin generating technical requirements for statewide CEC monitoring.

Lead Investigator: [Maruya](#)

e. [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: SCCWRP researchers and collaborators prepared and shipped materials and written protocols for a second intercalibration study. This study will investigate the bioassay response of recycled water samples from California and Arizona utilities. Next, SCCWRP will analyze the intercalibration samples with a battery of commercially available bioassay endpoints.

Lead Investigator: [Maruya](#)

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: This project has been postponed pending future funding. It will not appear in future Director's Reports.

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: To analyze differential gene expression data from the amphipod microarray interlaboratory study, SCCWRP researchers and collaborators are looking at replicate samples of a standard RNA extract and amphipod tissue using multiple statistical methods. In addition, they completed design of a revised gene expression microarray for hornyhead turbot. The new array contains 14,757 unique probes and will be used to analyze hornyhead turbot samples from recent field collections off Palos Verdes and Dana Point, plus a laboratory exposure to PBDEs and PCBs. Extraction and tissue sample analysis is underway.

Lead Investigator: [Bay](#)

3. Biological Assessment

a. [Rocky Reefs](#)

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

Update: SCCWRP and the Ocean Science Trust (OST) hired a joint post-doctoral fellow, Julia Coates, to enhance interaction and communication among the two agencies and support the OST's Marine

Postponed

Protected Area Monitoring Enterprise. At SCCWRP, Julia will bring OST expertise to developing a biological response index for Southern California rocky subtidal marine ecosystems.

Lead Investigator: [Schiff](#)

b. [DNA Barcoding](#)

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

Update: Researchers focused on the environmental DNA (eDNA) study, which measures DNA from a stream water column sample to identify barcodes of the organisms residing in that stream reach. SCCWRP met with partners from the University of Georgia and US Geological Survey on August 19 to plan research involving eDNA and bulk sample processing utilizing next generation sequencing. Researchers collected samples from six sites in the Malibu Creek and San Gabriel River watersheds, and extracted DNA to send to the US Environmental Protection Agency lab for sequencing. In addition, investigators completed a spiking study to determine how far downstream a known DNA signal will persist; preliminary results suggest good site fidelity with minimal downstream propagation of DNA in the water column.

In addition to the eDNA study, samples were collected for the marine sample preservation study and sent to the USEPA lab for sequencing. This study investigates the effect of short-term formalin exposure on barcode detection. Partners at the Washington Department of Ecology completed taxonomic analysis of cosmopolitan species and are preparing sample plates to send to SCCWRP for DNA extraction and amplification. Southern California Association of Marine Invertebrate Taxonomists (SCAMIT) members have volunteered to do quality control checks on the samples identified by Washington Department of Ecology staff. SCCWRP completed revisions to several papers that will be included in a special issue of *Freshwater Science* on molecular approaches for bioassessment. Finally, sample processing and analysis continued for the San Gabriel River study evaluating the application of barcoding to assess biological impacts by in-stream hydromodification structures.

Lead Investigator: [Stein](#)

c. [Cyanobacteria](#)

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

Update: Over the past quarter, SCCWRP partners collected 300 cyanotoxin samples from fresh water streams, lakes, and estuaries statewide through a cooperative effort of the Southern California Stormwater Monitoring Coalition, the Surface Water Ambient Monitoring Program (SWAMP) Perennial Stream Assessment and Depressional Wetlands Assessment, a San Diego reference stream study, an estuarine reference study, and a San Diego region cyanotoxin screening study. Samples from lentic water bodies and estuaries included particulates (filtered water-column grabs including planktonic cyanobacteria), dissolved microcystins (using passive samplers). Samples from wadeable streams

Highlight

Highlight

included biofilms and filamentous algae (benthic cyanobacteria) from stream substrata. Sample analysis will begin in November.

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

d. [Nonperennial Streams](#)

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

Update: For the arid/episodic stream project, researchers completed and received Environmental Protection Agency approval on the Quality Assurance Project Plan (QAPP). They then initiated data collection for the newly proposed field indicators at select field sites throughout Southern California. For the non-perennial streams project, researchers retrieved data loggers deployed in April 2013. Preliminary analysis show some sites drying more gradually (typically associated with evaporative losses), while others dried more abruptly (typically associated with infiltration to groundwater). Sampling in 2014 will target a range of streams along this infiltration/evapotranspiration gradient. Collaborators at California State University, Northridge finalized data collection to create a GIS model of stream flow persistence in the San Diego Region. They will explore a variety of modeling techniques.

Lead Investigators: [Stein](#)

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: SCCWRP trained 23 scientists from a variety of local, state, and federal agencies (including most member agencies) to perform the rapid qPCR method for *Enterococcus* and microbial source identification markers at a workshop held August 27–29 in SCCWRP’s new molecular laboratory. Next quarter, most of these same agencies will participate in a laboratory intercalibration exercise.

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: The research team submitted a draft source identification manual to the State Water Resources Control Board for review by the State’s Clean Beach Task Force. Once finalized in the upcoming quarter, the SWRCB intends to utilize the manual to guide future microbial source tracking investigations, fulfilling the mandate of AB 538. In addition, a stakeholder meeting was held September 4 at SCCWRP to discuss findings from the Doheny Beach dye study. In addition, source identification study findings

from Doheny State Beach, Topanga State Beach, Arroyo Burro Beach, and Cowell Beach were presented to the Clean Beach Task Force on October 15.

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: Study commencement, including site selection, awaits a final grant agreement with the State Water Resources Control Board.

Lead Investigator: [Schiff](#)

d. Wet Weather Epidemiology

Purpose: Quantify the risk of illness in surfers from water contact recreation following storm events

Update: This project launched this quarter, with staff preparing for a pilot study this winter including preparing the study instruments, creating a software application for participant reporting, initiating laboratory method development for pathogen measurements in a stormwater matrix, plus staffing and logistics. The study team has also been obtaining necessary approvals and permits including the Human Subjects Approval Committee. The Project Advisory Committee will have their first meeting to review the Project Workplan on November 14 in San Diego.

Lead Investigator: [Schiff](#)

5. Biogeochemical Cycling Assessment

a. [Harmful Algal Blooms](#)

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

Update: Field sampling is underway near the Orange County Sanitation District outfall. Planning for the spring 2014 field season has begun.

Lead Investigator: [Howard](#)

b. [Coastal Hypoxia](#)

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

New

Update: Researchers submitted a manuscript on the status and trends in quarterly discharger dissolved oxygen data to *Limnology and Oceanography*. They also continued work on a review paper synthesizing hypoxia in upwelling-dominated systems.

Lead Investigator: [Sutula](#)

c. [Ocean Acidification](#)

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

Update: This project is on hold pending initiation of Bight '13 offshore water quality surveys.

Lead Investigator: [McLaughlin](#)

d. [Causal Modeling](#)

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

Update: SCCWRP is organizing a workshop on December 10-11 to bring together the leading scientists in ocean circulation and biogeochemical models. The goal of the workshop is to identify and initiate a model of the California Current that will evaluate the relative effect of anthropogenic nutrient effects on coastal hypoxia and acidification.

Lead Investigator: [Sutula](#)

B. TECHNICAL SUPPORT FOR MANAGEMENT/REGULATORY PROGRAMS

1. Nutrient Objectives

a. [Nutrient Objectives in Streams and Lakes](#)

Purpose: Technical support for state nutrient objectives program by developing eutrophication indicators related to nutrient concentrations, algal/phytoplankton biomass, cyanobacteria/cyanotoxins, and algae and macroinvertebrate taxonomy

Update: SCCWRP researchers analyzed data to identify thresholds in the relationship between algal biomass and indicators of aquatic life use (benthic invertebrate and algal community composition). They also completed validation of a nutrient numeric endpoint spreadsheet tool and drafted a report, currently under review. Next quarter, the report will undergo Environmental Protection Agency peer review before submission for stakeholder review. Sampling will commence shortly in the Santa Margarita River to gather data to support modeling of nutrient targets in that watershed.

Lead Investigator: [Sutula](#)

c. [Nutrient Objectives in Estuaries](#)

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

Update: Two manuscripts written by SCCWRP researchers, both addressing eutrophication in estuaries, were accepted for publication in *Estuaries and Coast*. In addition, field experiments quantifying the effect of macroalgae on seagrass were completed, and manuscript preparation was initiated. Work on the San Francisco Bay nutrient numeric endpoints (NNE) assessment framework has begun and will proceed through the next six months with a series of expert workshops. SCCWRP has also begun a study to document the natural background levels of dissolved oxygen, macroalgae, and phytoplankton in bar-built estuaries, which are closed to the ocean by sand bars during portions of the year.

Lead Investigator: [Sutula](#)

2. [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: The Harbor Technical Workgroup (HTWG) met August 22, September 18, and October 22. At these meetings, the HTWG: (a) identified key issues regarding how SQO assessment results inform TMDL compliance; (b) reviewed work plans for estimating contaminant loads and natural recovery in Los Angeles and Long Beach Harbors, and; (c) discussed preliminary analysis of spatial and temporal trends in fish bioaccumulation. The next HTWG meeting will be December 3.

In addition, the SQO Advisory Committee met September 17. Meeting topics included reviewing draft descriptions of the human health SQO assessment framework and discussing integration of SQOs into regulatory programs. An updated version of the human health SQO Decision Support Tool was distributed to advisory committee members for evaluation and a webinar was held October 17 to demonstrate its use. Meetings were also held with personnel from the San Diego, San Francisco, and Los Angeles Regional Water Quality Control Boards to identify activities needed to facilitate more effective use of stressor identification in regulatory programs. This input will be used to develop additional guidance and tools for stressor identification over the next year.

Lead Investigator: [Bay](#)

3. [Flow Criteria](#)

Purpose: Define the relationship between stream flow and biological community impacts as measured by benthic macroinvertebrate communities

Update: SCCWRP received final contract documents and this project has officially begun. Researchers are developing a detailed project work plan for submittal to the State Water Board. During the past quarter, SCCWRP worked with our collaborators from Colorado State University to collect preliminary

data from 14 field sites, mainly in Orange and San Diego counties. These data, mostly on physical habitat, will aid development of preliminary hydraulic metrics for modeling of environmentally beneficial flows.

Lead Investigator: [Stein](#)

4. Modeling

a. [Modeling of BMPs](#)

Purpose: Develop a toolkit of linked models that will optimize BMP density, type, and location at a watershed scale

Update: SCCWRP researchers organized a special session at the Annual California Stormwater Quality Association (CASQA) Conference in September specifically on this project. A dedicated panel facilitated by SCCWRP at the upcoming CASQA quarterly meeting on November 14 will bring together BMP experts from the US and Australia.

Lead Investigator: [Sengupta](#)

b. [Stressor Response Modeling](#)

Purpose: Begin developing linked stressor-response models that managers can routinely use for protecting estuaries

Update: SCCWRP researchers completed a manuscript modeling that linked input of CECs (constituents of emerging concern) and their fate and transport in the Los Angeles River. Researchers also collected a variety of samples for CEC analysis in multiple estuaries from the Los Angeles region. These data will be used to initiate estuarine CEC fate and transport models.

Lead Investigator: [Sengupta](#)

5. [Freshwater Biological Objectives](#)

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

Update: As SCCWRP completes the final manuscripts for the technical development work being utilized by the SWRCB, this portion of the project is near completion. The SWRCB held Stakeholder and Regulatory Advisory Group meetings at SCCWRP September 26-27 to discuss implementation plans for bio-objectives.

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

Complete

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: The five different Bight '13 elements are in various stages of implementation. The Contaminant Impact Assessment just completed sampling of 400 sites located from Point Conception to Mexico ranging from 3–1,000 meters depth. The second element, Trash and Debris, initiated sampling this summer in coordination with the Contaminant Impact Assessment. Sampling for trash and debris will continue at selected locations through spring 2014. The third element, Microbiology, completed laboratory training and initiated an intercalibration study using new rapid molecular methods. Sampling began this summer and will continue until summer 2014. The fourth element, Marine Protected Areas, is making progress quantifying indices of fishing pressure and water quality based on data collected between 2004 and 2012. The last element, Nutrients, has nearly completed the planning phases with hopes to begin fieldwork by spring 2014.



Participants in the Contaminant Impact Assessment trawl for fish in Upper Newport Bay.

Lead Investigator: [Schiff](#)

b. [Pollutant Sources Data Cataloging](#)

Purpose: Continue our long-term pollutant mass emission estimates from different sources to assess relative inputs and track trends in response to management actions

Update: SCCWRP researchers continued compilation of POTW self-monitoring data.

Lead Investigator: [Stein](#)

c. 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: SCCWRP finished auditing each of the 14 ASBS water bond grantees' field monitoring programs to ensure data quality. SCCWRP researchers began compiling data for grantees who have started generating results. SCCWRP also continues to facilitate three ASBS regional monitoring groups (Southern, Central, and Northern California). Sampling will conclude this winter for both the grantees and the three regional monitoring groups.

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: Sampling wound down this summer for the fifth and final season of the first cycle of the SMC stream monitoring program. Participating agencies are finalizing data submission, and data analysis will begin this winter. The second five-year cycle will kick off in 2015.

Lead Investigator: [Schiff](#)

b. Background Concentrations of Contaminants in San Diego Reference Streams

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

Update: Researchers have initiated a third year of wet weather monitoring in reference streams for nutrients, metals, bacteria, and algal biomass. A beach bacteria study will begin this quarter.

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: Researchers will complete field sampling next quarter and initiate data analysis.

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 finalized standard operating procedures (SOPs) for mapping wetlands and instituted additional quality assurance measures to reduce inter-team variability. These SOPs will be used for an inter-team mapping comparison, which will help establish data quality objectives and expected levels of certainty for mapping during program implementation.

Lead Investigator: [Stein](#)

b. Depressional Wetlands

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

Update: SCCWRP researchers and project partners completed field sampling for 2013. Over the past three field seasons, they have sampled 53 wetlands for the California Rapid Assessment Method, benthic invertebrates, diatoms, chemistry, and water column toxicity. Preliminary analysis of 2011 and 2012 data was completed and presented at the California Bioassessment Workgroup meeting in Davis, CA. SCCWRP is also working with project partners in the San Francisco Bay region to assist with preparations for their 2014 regional survey.

Lead Investigator: [Stein](#)

c. 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: The north San Diego Lagoon historical ecology project team members met with the project's Technical Advisory Committee October 7 to review data interpretation and analysis. Findings will be refined based on their input as researchers begin the final project report. For the regional t-sheet mapping, the map attribution system and crosswalk between historic and contemporary mapping has been completed. Investigators are finalizing and updating the regional geodatabase of historic t-sheets. The project team also began work on a long-term change assessment over the past quarter.

Lead Investigator: [Stein](#)

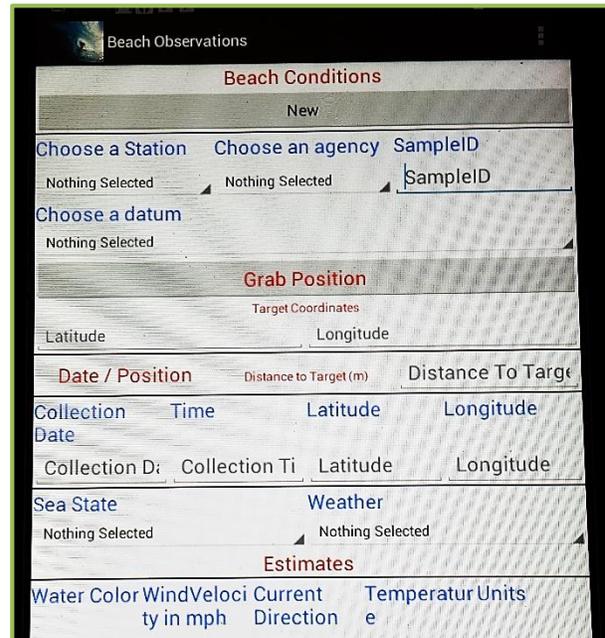
D. INFORMATION MANAGEMENT AND ANALYSIS

1. [Mobile Data Acquisition Technologies](#)

Purpose: Extend the capabilities of field sampling programs using smart phone applications, image capture devices, and wireless sensors

Update: SCCWRP is developing two new mobile applications. Following the field computer application for Bight '13, SCCWRP took on a second Android application for beach observations (shown at right). They are also testing a multi-platform mobile application for Android and iPhones as part of the wet-weather epidemiology pilot study. The app will collect data on water exposure and health symptoms from surfers on a weekly basis.

Lead Investigator: [Steinberg](#)



The screenshot shows a mobile application interface titled "Beach Observations". The main heading is "Beach Conditions" with a "New" button. Below this are several sections: "Choose a Station" and "Choose an agency" (both with "Nothing Selected" dropdowns), "SampleID" (with a text input field), "Choose a datum" (with "Nothing Selected" dropdown), "Grab Position" (with "Target Coordinates" sub-heading and "Latitude" and "Longitude" input fields), "Date / Position" (with "Date" input, "Distance to Target (m)" label, and "Distance To Target" input), "Collection" (with "Date", "Collection Time", "Latitude", and "Longitude" input fields), "Sea State" (with "Nothing Selected" dropdown), "Weather" (with "Nothing Selected" dropdown), and "Estimates" (with "Water Color", "Wind Velocity in mph", "Current Direction", and "Temperature Units" input fields).

2. [Seamless Data Sharing](#)

Purpose: Facilitate data collection and submission to, as well as access data and analytical results from, a common server for use by the scientific and management communities

Update: SCCWRP researchers have developed new quality assurance data checkers for Bight '13 data submissions using a new, streamlined approach based on the Python programming language and compatibility with California Environmental Data Exchange Network (CEDEN) data submission guidelines. SCCWRP also continued its role as a Regional Data Center for CEDEN to facilitate data submissions from other data providers in Southern California.

Lead Investigator: [Steinberg](#)

3. [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: The California Water Quality Monitoring Council published the "[Rocky Intertidal Coastal Habitats \(Tide Pools\)](#)" portal, which SCCWRP was instrumental in building. In addition, SCCWRP revised a mockup of the new "Safe to Drink" data portal, which will be reviewed at a forthcoming California Water Quality Monitoring Council meeting. SCCWRP researchers have also initiated discussions and planning for visualization of wetland restoration scenarios, using the Tijuana River Valley as a model for how to incorporate information from the past and present to inform management within uncertain futures.

Lead Investigator: [Steinberg](#)

E. MEMBER AGENCY SUPPORT

2. [Quality Assurance for Offshore Monitoring](#)

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

Update: Working with Bight '13 technical working groups, SCCWRP conducted extensive analyses to evaluate and agree upon data quality objectives for biological sampling, such as trawl-caught fish or benthic infauna. Researchers await results from Bight '13 to assess the success using these data quality objectives.

Lead Investigator: [Schiff](#)

3. [Pilot Monitoring with Autonomous Underwater Vehicle \(AUV\)](#)

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

Update: SCCWRP has now completed this project. Investigators found the glider overly prone to mishaps and unsuitable for routine application as part of a regulatory monitoring program. Thus, SCCWRP has shifted efforts towards capturing this experience in a manuscript. The glider will remain available for use by SCCWRP researchers and member agencies on specialty projects.

Lead Investigator: [Weisberg](#)

4. [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: Field sampling will take place next quarter.

Lead Investigator: [Howard](#)

5. [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 third collaborative meeting with the watershed's stakeholders, including the Regional Water Quality Control Board, regulated agencies, nongovernmental organizations, health department, and landowners, took place September 11. SCCWRP researchers presented a preliminary assessment of existing monitoring effectiveness and efficiency at answering the stakeholders' primary monitoring questions. Based on these results, researchers have delved into detailed data analyses to improve the least efficient monitoring designs.

Lead Investigator: [Schiff](#)

Complete

6. 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: The State Water Board's Water Quality Committee met October 21 and SCCWRP researchers presented some final details associated with the plume detection algorithm. SCCWRP also provided drafts of two manuscripts. One captures the rationale for using CDOM to identify the location of plumes, and one details development of the assessment algorithm as well as application to dissolved oxygen assessments.

Primary Investigator: [Weisberg](#)